

Spatial Orientation in Yami*

Mei-hsiu Chen

National Chung Cheng University

There are three frames of reference, which we call the Relative (egocentric), the Intrinsic (object-centered) and the Absolute (using fixed bearings like the mountain). Since these frames are coordinate systems used to compute and specify the location of objects with respect to other objects, they have long been thought of as innate concepts, built into our neurocognition. However, recent work shows that the use of such frames in language, cognition and gesture varies cross-culturally (Majid et al. 2004). For example, although a relative encoding is also used, most Balinese employ the Absolute frame of reference provided by their language and culture (Wassmann and Dasen 1998). This paper aims to find out which frame(s) of reference the Yami people use to describe the spatial relationships and point out the difficulty encountered during the elicitation. Data related with spatial orientation in Yami are mainly collected by picture elicitation. The results show that Yami allows the use of all three frames of reference. Similar to Balinese, the absolute reference system in Yami fits with its symbolic importance in Yami culture, i.e., there is an obvious coherence between the cultural and linguistic systems.

Key words: spatial orientation, Yami, frame of reference, picture elicitation.

1. Introduction

Think where you left your glasses. Of course, they were to the left of the computer! This is the sort of everyday coding of spatial location we use. But some people from other cultures may think differently about the same situation: they would code the glasses as being on the computer's own right side, or even as being south-west of the computer! As the scene is the same, the differences in coding are clearly something we bring to the scene – what Gestalt theorists called a “frame of reference”, or a coordinate system, which we impose on the objects to get a specified direction for the glasses with respect to the computer. There has been a great deal of thought about spatial frames of reference in psychology, neurocognition, linguistics and elsewhere (Majid et al. 2004).

At a level of abstraction we can talk of just three frames of reference, which we will call the Relative (roughly, egocentric), the Intrinsic (object-centered) and the Absolute (using fixed bearings like the mountain) (Majid et al. 2004). We consider ourselves to be the center of the universe, and everything around us is seen from our point of view. This egocentric view of the world also shows in our use of language (Dirven and Verspoor 1998). Wassmann and Dasen (1998) mention that descriptors such as “on the

* I am grateful to the anonymous reviewers for their valuable suggestions and comments. I thank Professor D. Victoria Rau for reading an earlier draft of this paper and providing suggestions. I would also like to thank Professor James T. Myers and Professor Jung-hsing Chang for their encouragement. My gratitude also goes to my language consultant Ms. Esther. I am indebted to Maa-Neu Dong for her help. Any remaining error is my own responsibility.

right”, “on the left” and “towards me” are called Relative (egocentric or viewpoint-dependent) frame of reference because they are, prototypically, relative to the viewpoint of the speaker, with a coordinate system based on the planes through the body; the space is thus structured by the dichotomies “up”/“down”, “front”/“back” and “left”/“right”. On the other hand, descriptions such as “side by side” and “a short distance apart” are called intrinsic descriptors, because they refer to the relative position of an object with respect to another, to a frame of reference that involves an object-centered coordinate system, where the coordinates are determined by the inherent features of the objects and independently of the speaker. These two types of descriptors – the Relative and the Intrinsic – are familiar to speakers of Chinese and Indo-European languages. However, many languages (including Balinese) use predominantly, and sometimes exclusively, geocentric or absolute descriptors. The absolute descriptors are independent of the speaker or the position of some other object, but they are related to arbitrary fixed bearings in the landscape, for example: towards the mountain/sea, towards sunrise/sunset, upriver/downriver, and so forth. This type of topography-dependent orientation system can also be found in other languages of Southeast Asia, Oceania and Australia (Barnes 1993, Ozanne-Rivierre 1987, Senft 1997). In most cases, the Absolute frame of reference is used in combination with the Intrinsic frame of reference, which seem to be found in all languages (Wassmann and Dasen 1998:695).

Most of the literature in psychology, neurocognition and linguistics privileges egocentric coordinates. However, in fact, many languages make little or no use of the Relative frame of reference. They emphasize one or more of the other frames instead. And perhaps it is more surprising that speakers of these languages appear to code their everyday non-linguistic spatial representations in line with their linguistic frames of reference. Languages have specialized expressions for one, two or all three frames of reference. The frequency and range of application of these frames of reference differ across languages (Majid et al. 2004).¹

Since these frames of reference are coordinate systems used to compute and specify the location of objects, they have long been thought of as innate concepts, built into our neurocognition. However, recent work shows that the use of such frames in language, cognition and gesture varies cross-culturally (Majid et al. 2004). It is also believed that sometimes the language the native speakers use to describe spatial relationships is closely related to their culture (Carroll 1999).

¹ Majid et al. (2004:112) show 20 languages with their associated frames of reference, along with information about environment (operationalized as the ecological zone speakers of that language inhabit), dwelling (predominantly rural or urban), and subsistence patterns (representing habitual action).

Wassmann and Dasen (1998) investigate the intricacies of the Balinese geocentric spatial orientation system. They claim that while a relative encoding is also used, most Balinese employ the Absolute frame of reference provided by their language and culture. The Absolute frame of reference is used even to describe the location of an object on a body part. A Balinese, for instance, will tell us that there is a fly on the “west” side of your face. Hu and Yu (2007) propose that Yami people use the name of the location to denote direction instead of descriptors like north or south.

Yami is a Philippine Batanic language spoken by some 3,800 residents on Orchid Island southeast of Taiwan. The name “Yami” was originally used by the Batanic people to refer to the group that had immigrated to the very north end of the Batanic Islands (Gonzalez 1966). The self-reference of the Yami people is *Tao* ‘human’ and their language is called *ciriciring no Tao* ‘human speech’. Although the younger generation of Yami prefers to be identified as *Tao* instead of *Yami*, this issue has not been without controversy (Rau and Yang 2005-2007). This paper will use the traditional name *Yami*.

The aims of this paper are thus: (a) which frame(s) of reference the Yami people use to describe the spatial relationships between objects, and (b) whether the Yami people use spatial orientation in the same way as Balinese or Chinese since both Bali and Orchid Island are small islands with mountains in the middle and Chinese is the main language taught in school. In addition to these two research objectives, the difficulty encountered during the elicitation of spatial orientation will be pointed out.

The rest of this paper proceeds in the following order. Section 2 outlines methods used to investigate the spatial orientation in Yami. Section 3 presents the results from the collected data. Section 4 discusses the results and the methods used. Section 5 provides limitation of this study and suggestions for future research. Finally, some concluding remarks are provided in Section 6.

2. Methodology

To begin, some basic vocabularies about spatial relationships from Yami Online Dictionary (Rau and Dong 2007-2009) were collected. That is, I made a preliminary word list of Yami spatial orientation. After data was collected, a Yami spatial orientation dictionary with glosses in Chinese and English in Fieldworks Language Explorer (FLEX)² was built. By doing so, the data could be archived systematically. In addition, field work research was conducted, including an experiment and picture elicitation, with the Yami consultant at National Chung Cheng University. The

² Fieldworks Language Explorer (or FLEX, for short) is a program designed to help field linguists perform many common language documentation and analysis tasks. It can be used to create dictionaries. FLEX is available at <http://fieldworks.sil.org/flex/>.

consultant, Ms. Esther, is a certified Yami language teacher. In addition to using elicitation to collect first-hand data, I also consulted a secondary source – the Digital Archiving Yami Language Documentation (Rau and Dong 2005-2007).

2.1 The experiment

In Wassmann and Dasen’s (1998) experiment, subjects were presented with an arrow pointing left on a table. They were then asked to turn 180° and are presented with two arrows, one pointing to the left and the other pointing to the right. The subjects were asked which of the two arrows is identical to the one on the first table (Levinson 1996:375), as illustrated in Figure 1. If the subjects choose the arrow oriented to the left, they have used an egocentric encoding, related to their own bodies. But, if they are encoding space in the geocentric way, they will choose the arrow oriented to the right, because it points to the same absolute direction. That is, a relative encoding will lead the subjects to choose a stimulus that seems to be identical (congruent) with the visual image of the arrow on the first table, whereas an absolute encoding will make the subjects choose a stimulus that is a mirror image of the first stimulus, which would be incongruent with the initial arrow, and represents therefore an additional processing of the primary sensory information.

A delay of 30 seconds is inserted between the stimulus and the response after the 180° rotation. This is to minimize specific short-term memory effects (“snap-shots”) that could lead the subjects to relative solutions (since a visual image automatically encodes an egocentric viewpoint). But a visual image is normally flushed by new visual information and has a natural decay period of below 30 seconds (Baddeley 1990). Some other experiments also show that the Relative/Absolute trend matches the preferred linguistic frame of reference (see Levinson 1997 and Majid et al. 2004).

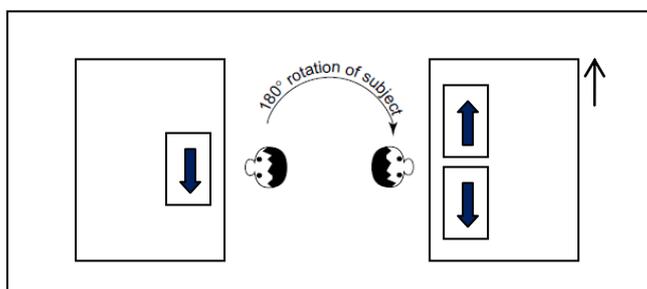


Figure 1. Memory for spatial configuration (revised from Majid et al. 2004:110)

A similar experiment was conducted with my consultant. In this experiment, no verbal explanation is given that might have induced the subjects to use one or the other spatial reference system; the instructions are devoid of as much spatial information as

possible. She chose the arrow oriented to the left. This indicated that she had used an egocentric encoding, related to her own body. In order to know whether the consultant mainly used an egocentric encoding when describing the locations of objects in space, I conducted picture elicitation following the experiment.

2.2 Picture elicitation

Hellwig (2006) used pictures of objects to collect the data on postural verbs in Goemai (a West Chadic language of Nigeria). The author showed that visual stimuli provide speakers with possible contexts for their answers, and thereby minimize the risk of misunderstanding. Besides, since the procedure is flexible, it allows the field linguist to probe for potentially relevant parameters as well as to systematically test hypotheses. To collect the Yami data, I designed some pictures, which were adapted to the local culture in such a way that I hoped they genuinely contributed to a better understanding of spatial orientation (see some pictures in appendix). Then, I asked the consultant to imagine that she was the person on the picture or an observer viewing the scene and then described the spatial relations between the person, animal or objects depicted in the pictures. Although the consultant could speak fluent Chinese, she still could not understand my intention immediately. At the start, she could not imagine that she was the man on the picture. As a result, she only used intrinsic descriptors, as given in (1).

- (1) a. Wajin na yan-an no otobay?
 Where 3S.GEN³ exist-LF GEN motorcycle
 ‘Where is the motorcycle?’
- b. Am-ian do **katanged** no kayo.
 AF-exist LOC side GEN tree
 ‘(The motorcycle) is beside the tree.’

Since I am not a native speaker of Yami, I could only explain my intention in Chinese then. I asked the consultant to imagine that she’s seeing those objects in real physical space and then told me their locations. I also asked her if Yami has lexical items corresponding to east/west or left/right in Chinese. After our discussion, the consultant finally understood the instructors and gave me the sentence as in (2).

³ The abbreviations used in this paper are: 3=Third person; S=Singular; LF=Locative focus; GEN=Genitive; AF=Agent focus; LOC=Locative; LIN=Linker; CON=Conjunction; NOM=Nominative; AUX=Auxiliary verb; P=Plural; NF=Nominal affix; OBL=Oblique; RED=Reduplication; PAR= Particle.

- (2) a. Wajin na yan-an no otobay?
 Where 3S.GEN exist-LF GEN motorcycle
 ‘Where is the motorcycle?’
- b. Am-ian do **panman/likod** no kayo o otobay.
 AF-exist LOC front/back GEN tree NOM motorcycle
 ‘The motorcycle is in front of/in back of the tree.’

When the objects were changed to animals, the descriptors were not changed. The sentences were recorded, transcribed and translated later.

3. Results

To answer the question of which frame(s) of reference the Yami people use to describe the spatial relationships between objects, I conducted one experiment and picture elicitation with my consultant. According to the collected data, the Yami language allows the use of all three frames of reference, i.e., the Intrinsic (object-centered), the Relative (roughly, egocentric) and the Absolute (using fixed bearings like the mountain).

Intrinsic frame of reference refers to the relative position of an object with respect to another, to a frame of reference that involves an object-centered coordinate system, where the coordinates are determined by the inherent features of the objects and independently of the speaker (Wassmann and Dasen 1998). Examples of intrinsic descriptors in Yami are given in (3).

- (3) a. Ka-to da pangay-an sia do **siri** no
 CON-AUX 3P.GEN put-NF 3S.OBL LOC side GEN
 ra-raham a.⁴
 RED-road PAR
 ‘The students placed it (the stick) on the side of the road.’
- b. Am-ian do **katangked** no kayo o otobay.
 AF-exist LOC side GEN tree NOM motorcycle.
 ‘The motorcycle is beside the tree.’

Egocentric frame of reference is relative – prototypically – to the viewpoint of the speaker, with a coordinate system based on the planes through the body. There are several egocentric descriptors in Yami, i.e., *panman* ‘front’/*likod* ‘back’, *ozi*

⁴ This sentence is collected from Digital Archiving Yami Language Documentation (Rau and Dong 2005-2007).

‘left’/*wanan* ‘right’ and *teyngato* ‘above’/*teyrahem* ‘below’. They are very similar to English and Chinese. It is noted that when denoting a long distance behind a person or an object, a degree adverb is added in both English and Chinese, e.g., *far behind* in English and *hen houmian* ‘very back’ in Chinese, while Yami has one word “*panonowji*” for such description. The examples of egocentric descriptors in Yami are given in (4).

- (4) a. Am-ian do **panmaen/panman/likod/panonowji**
 AF-exist LOC cause.to.be.the.first/front/back/far.behind
 no kayo o otobay.
 GEN tree NOM motorcycle.
 ‘The motorcycle is in front of/in back of/far behind the tree.’
- b. Am-ian do **kaozi(ozi)/kawanan (wanan)/teyngato/teyrahem** no
 AF-exist LOC left/right/above/below GEN
 rako a vato.
 big LIN stone
 ‘It is on the left of/the right of/above/under the big stone.’

The Absolute frame of reference is independent of the speaker or the position of some other object, but it is related to arbitrary fixed bearings. In Yami, there are two special directions, *irala/teyrala* ‘towards the mountain’ and *ilaod/teylaod* ‘towards the sea’. *Teyrala* and *teylaod* are used when the locations are near the speaker, i.e. the speaker is the center, while *irala* and *ilaod* are mainly used in large physical space, i.e., Orchid Island is the center, as in (5). In addition, similar to Balinese, these two absolute terms can be used to describe a place where one wants to go (‘I am going down to *teylaod*’), as in (6a) and (6b), or to give directions (‘I am facing the direction of *teyrala* and will go into the mountains’), as in (7).

- (5) Mi-arap sira do ingato a ka nira do
 AF-fight 3P.NOM LOC above LIN 2S.NOM 3P.GEN LOC
ilaod.
 below (near the ocean)
 ‘They (living) at the top fought with those near the ocean.’⁵

⁵ This sentence is revised from Ex 1 in Rau and Dong (2006:200) and the original sentence is available at http://yamiproject.cs.pu.edu.tw/yami/yami_ch/corpus/corpus_005.htm.

- (6) a. Ko ma-osok do **teylaod**.
 1S.NOM AF-go.down LOC near.the.ocean
 ‘I am going down to the place near the ocean.’
- b. Vahay na ni nan Iva am, am-ian do
 house 3S.GEN GEN mother Iva PAR AF-exist LOC
teyrala.
 near.the.mountain
 ‘The house of Iva’s mother is near the mountain.’
- (7) Ko s<om>azap do **teyrala** a ma-ngay do
 I <AF>face LOC towards.the.mountain LIN AF-go LOC
 takey.
 mountain
 ‘I am facing the direction of teyrala and will go into the mountains.’

Since the mountains and the sea are the main scenes in the habitants’ daily life, *irala* and *ilaod* can be said to play an important role when the habitants denote directions. Therefore, Taiwan is *ilaod* while Orchid Island is *irala* (Rau and Dong 2007-2009, Hu and Yu 2007). It should be noted that the name of the wind in Yami is very different from that of English or Chinese. In English or Chinese, the wind is named after the direction where it comes from. For example, if the wind comes from the north, it is called the north wind in English and *bei feng* ‘the north wind’ in Chinese. Surprisingly, the inhabitants at Iratay⁶ call the wind coming from the mountains and towards the sea *ilaod* (Maa-Neu Dong, p.c.). Besides, *irala* and *ilaod* refer not only to physical but also to cultural space. For example, both the door of *vahay* ‘main house’ and the door of *makarang* ‘work house’ face the direction of *ilaod* (Chen 1996).

4. Discussion

Which frame(s) of reference do the Yami people use to describe the spatial relationships between objects? According to the collected data, Yami language allows the use of all three frames of reference, i.e., the Intrinsic, the Relative and the Absolute, while the Balinese language allows the use of two of the three frames of reference – the Intrinsic and the Absolute – but with a clear preference for the Absolute frame of reference (Wassmann and Dasen 1998). The results indicate that the use of frames of reference in language and cognition varies cross-culturally.

The use of the Intrinsic and the Relative frames of reference in Yami is very

⁶ Iratay is a village located in the southwest of Orchid Island.

similar to Chinese and English. In the experiment, the consultant chose the arrow oriented to the left. This indicated that she used an egocentric encoding, related to her own body. This seems to be congruent with her performance during the picture elicitation, in which she mostly used egocentric descriptors.

According to Wassmann and Dasen (1998), there are four main absolute descriptors in Balinese: “towards the mountain” is the sacred and pure direction, and is called *kaja* while “towards the sea” is the direction called *kelod*. *Kangin* is the direction from which the sun rises and its opposite is *kauh*. In Balinese, a direction refers not only to physical but also to cultural, religious and social space. Numerous aspects of Balinese life are thus traditionally organized according to this schema. Although Yami does not have lexical items for the direction from which the sun rises and the direction toward which the sun sets, there are some similarities between the cultures of these two peoples. For example, in both cultures, the cemetery is on the sea side and the direction from which the sun rises and the direction toward the mountain are the sacred directions.⁷ It should be noted that in both cultures, the sea is not impure in itself; indeed, the sea can purify and provide sacred water (Wassmann and Dasen 1998, Liu 1959).

5. Limitation of this study and suggestions for future research

During the elicitation of spatial orientation, I encountered some difficulties. Since spatial orientation is a very abstract concept, it is not an easy topic to investigate. The absolute system of languages, in particular, would be easily ignored during elicitation. Picture elicitation is easier to be conducted. However, there is the possibility that the situations may be too artificial to be fully understood by the consultant and may have little connection to her daily routine, even though the objects of picture elicitation have been adapted to the local culture. When the consultant was asked to describe the spatial relations between the people and the objects on the pictures, it was not easy for her to imagine the situation in the real space. Perhaps photographs of real space or pictures with many objects, persons or animals will be more comprehensive to the consultant since such pictures are more like what she sees in her daily life. However, they could only induce intrinsic and egocentric descriptors. Maybe because it was not easy to know where the fixed bearings were in an unfamiliar place, the consultant never used absolute descriptors in such elicitation. Even though I tried to use the map of Orchid Island, the collected data was limited. The advantage of classroom elicitation is that we can focus on our topic, gather preliminary data, and better prepare before going into the field.

⁷ For details, see <http://siyapenjipeaya.pixnet.net/blog/post/28069447>.

Since the computations required when using the Absolute frame of reference are of a quite different kind, maybe the best way to collect data related to the absolute system is to conduct field work on Orchid Island. For example, we would have to know at all times and in all locations where our conventional fixed bearings are. We need to maintain mental maps correctly oriented so that we can calculate the bearing between any two points we might want to talk about. We also need to dead-reckon our current location so that we can correctly describe where unseen points are from the current location (Majid et al. 2004). However, it should be noted that even in the real space of the Yami inhabitants' life, it still takes a long time to observe, collect, and investigate the role of the Absolute frame of reference in the cultural, religious and social space.

On Orchid Island, a researcher can ask for a route description. In other words, we can ask a consultant to describe the path from place A to place B and obtain the data in its natural environment. In addition, among those individual characteristics, the age factor should be noted. Yami people above 60 years of age are mostly monolingual in Yami, whereas those below twenty consider Mandarin Chinese their L1 and Yami their L2 (Rau et al., 2009; Chen 1998). Maybe the younger generation use fewer absolute descriptors.

A researcher can also conduct "space/matching games" (Wassmann and Dasen 1998, Hellwig 2006) on Orchid Island. To record the language used in the description of spatial references, a situation is organized to allow two speakers to verbally negotiate over spatial arrangements, with little or no interference from the researchers. Each "player" has an identical set of photographs (or toy models) representing two persons in various positions and orientations, with the possible addition of some reference elements such as a tree or an animal. The two players, separated by a screen, look in the same direction. One of the players is the designated leader and has to take each photograph in turn and describe it so that the other player can select the corresponding photograph.

A researcher can investigate in detail how the inhabitants of various sites on Orchid Island use *irala* and *ilaod*. Maybe there is a focal point as a prototype indicating the "best" spot of *irala* and *ilaod*. Maybe similar to Balinese *kaja* 'towards the mountain' and *kelod* 'towards the sea' (Wassmann and Dasen 1998), the directions of *irala* and *ilaod* in Yami are not at all uniform but strongly local, that it is adapted to topography and that it can be used in different ways by individuals of different villages.

In addition, Wassmann and Dasen (1998:694) proposed that orientation terms be understood mainly as place names initially, but after age four, children gradually generalize the system from its local basis into an abstract system. It is noted that

teyrala can also mean “close to the middle/inside” of a house, as in *Ko nipangay o vanga do teyrala* ‘I put the pot near the inside.’ Perhaps *irala/teyrala* and *ilaod/teylaod* in Yami are acquired through similar process and this could also be a topic for future research.

6. Conclusion

In conclusion, Yami allows the use of all three frames of reference. In addition to the object-centered co-ordinate system, i.e., the Intrinsic frame of reference, and the coordinate system based on the planes through the body, i.e., the Relative (egocentric) frame of reference, Yami has the Absolute (geocentric or viewpoint-independent) frame of reference, which seems to be incongruent with the sensory information which is viewer-centered. Indeed, the system is strongly local and is adapted to geographical scenes since the mountains and the sea are basic scenes in the inhabitant’s daily life. After collecting preliminary data and testing some methods in classroom elicitation, I believe that perhaps the best way to collect data containing absolute descriptors is to obtain the information directly on Orchid Island since the language speakers must know at all times and in all locations where their conventional fixed bearings are. When surrounded by the real mountains and sea, the inhabitants can connect their language use with their acquired abstract topography-dependent orientation system naturally. The results also indicate that the use of frames of reference in language and cognition varies cross-culturally.

References

- Baddeley, Alan. 1990. *Human Memory: Theory and Practice*. Hillsdale, NJ: Erlbaum.
- Barnes, Robert. 1993. Everyday space: some considerations on the representations and use of space in Indonesia. *Alltagswissen: Der Kognitive Ansatz Im Interdisziplinaren Dialog [Everyday Cognition: Interdisciplinary Perspectives]*, eds. by Jürg Wassmann and Pierre Dasen, 159-178. Germany: Universitätsverlag Freiburg.
- Carroll, David W. 1999. *Psychology of Language* (3rd edition). CA: Brooks/Cole.
- Chen, Hui-Ping. 1998. A Sociolinguistic Study of Second Language Proficiency, Language Use, and Language Attitude among the Yami in Lanyu. MA thesis, Providence University, Taiwan.
- Chen, Yu-Mei. 1996. Wenhua jiechu yu wuzhi wenhua de bianqian: yi Lanyu Yameizu wei li [Cultural contact and the change of material culture: take Yami in Lanyu as an

- example]. *Zhongyang Yanjiuyuan Lishi Yuyan Yanjiusuo Jikan [Bulletin of the Institute of History and Philology Academia Sinica]* 67.2:415-444.
- Dirven, René, and Marjolijn Verspoor. 1998. *Cognitive Exploration of Language and Linguistics*. Amsterdam: John Benjamins.
- Gonzalez, P. Julio. 1966. *The Batanes Islands*. Manila: University of Santo Tomas Press.
- Hellwig, Birgit. 2006. Field semantics and grammar-writing: stimuli-based techniques and the study of locative verbs. *Catching Language: The Standing Challenge of Grammar Writing*, eds. by Felix K. Ameka, Alan Dench, and Nicholas Evans, 321-358. Berlin: Mouton de Gruyter.
- Hu, Zheng-Heng and Guang-Hong Yu. 2007. Lanyu de diming: Lanyu Dizhi Ziliaoku jieshao [The place names of Lanyu: the introduction of Lanyu Topographic Database]. *Zhongyang Yanjiuyun Minzu Yanjiusuo Ziliao Huibian [Field Materials, Institute of Ethnology, Academia Sinica]* 20:185-244.
- Levinson, Stephen C. 1996. Language and space. *Annual Review of Anthropology* 25: 353-382.
- Levinson, Stephen C. 1997. Language and cognition: the cognitive consequences of spatial description in Guggu Yimidhirr. *Journal of Linguistic Anthropology* 7.1: 98-131.
- Liu, Pin-Hsiung. 1959. Lanyu Yameizu sangzang de yili [Burial Rites on Botel Tobago Island]. *Zhongyang Yanjiuyun Minzu Yanjiusuo Jikan [Bulletin of the Institute of Ethnology Academia Sinica]* 8:143-183.
- Majid, Asifa, Melissa Bowerman, Sotaro Kita, Daniel B.M. Haun, and Stephen C. Levinson. 2004. Can language restructure cognition? The case for space. *Trends in Cognitive Sciences* 8.3:108-114.
- Ozanne-Rivierre, Françoise. 1987. L'expression linguistique de l'orientation dans l'espace: quelques exemples océaniens [The linguistic expression of spatial orientation: some Oceanian examples]. *Cahiers du Lacito [Bulletin of Lacito]* 2:129-156.
- Rau, D. Victoria and Maa-Neu Dong. 2006. *Yami texts with reference grammar and dictionary*. Language and Linguistics Monograph Series A-10. Taipei: Institute of Linguistics, Academia Sinica.
- Rau, D. Victoria and Meng-Chien Yang. 2005-2007. Yami Language Learning Center. <http://yamiproject.cs.pu.edu.tw/elearn/index.php>.
- Rau, D. Victoria, Hui-Huan Ann Chang and Maa-Neu Dong. 2009. A table of two diphthongs in an indigenous minority language: Yami of Taiwan. *Variation in Indigenous Minority Languages*, eds. by James N. Stanford, and Dennis R. Preston, 259-279. Amsterdam and Philadelphia: John Benjamins.

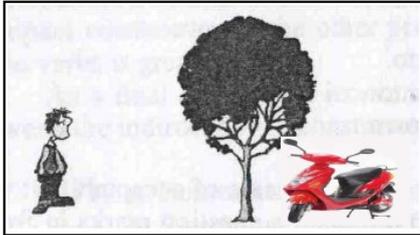
- Senft, Gunter. (ed.) 1997. *Referring to Space: Studies in Austronesian and Papuan Languages*. Oxford: Clarendon Press.
- Wassmann, Jürg and Pierre R. Dasen. 1998. Balinese spatial orientation: some empirical evidence of moderate linguistic relativity. *Journal of the Royal Anthropological Institute* 4:689-711.
- Rau, D. Victoria and Maa-Neu Dong. 2005-2007. Digital Archiving Yami Language Documentation. <http://yamiproject.cs.pu.edu.tw/yami>.
- Rau, D. Victoria and Maa-Neu Dong. 2007-2009. Yami Online Dictionary. <http://yamibow.cs.pu.edu.tw>.

[Received January 2, 2012; revised March 20, 2012; accepted March 29, 2012]

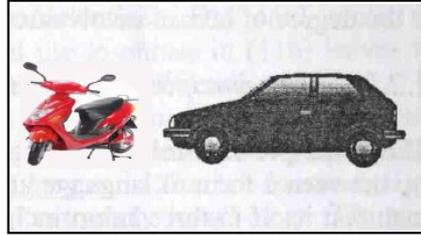
Graduate Institute of Linguistics
National Chung Cheng University
Chia-Yi, TAIWAN
littmi@yahoo.com.tw

Appendix⁸

1.



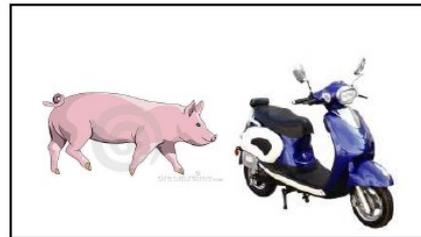
4.



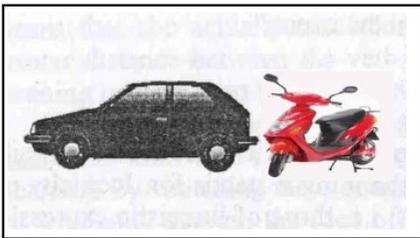
2.



5.



3.



6.



⁸ The appendix contains six examples of the pictures designed by me and used in the picture elicitation. They are composed of smaller pictures gathered from Dirven and Verspoor (1998:7) and some websites:
<http://tw.efamoto.com/%E9%9B%BB%E5%8B%95%E6%A9%9F%E8%BB%8A/EFA-M-151.html>;
<http://morakot1.big5.made-in-china.com/product/IeymQciAvYhr/%E7%94%B5%E5%8A%A8%E6%91%A9%E6%89%98%E8%BD%A6%EF%BC%882%EF%BC%89.html>;
<http://www.dreamstime.com/>

雅美(達悟)語的空間定位概念

陳美秀

國立中正大學

人類在空間定位時一般會使用三種參考框架：相對（以自我為中心）、固有（以對象為中心）及絕對參考框架（使用固定的方位，如：山）。由於這些框架是用來估算及詳細指明某物體與其他物體相關位置的座標系統，長久以來它們被認為是與生俱來並嵌入神經認知系統的概念。然而近來的研究顯示這些框架在語言、認知及手勢方面的使用會因文化而有所調整（Majid et al. 2004）。舉例來說：雖然峇里人也有使用相對參考框架，但大部分的峇里人都使用他們語言及文化所提供的絕對參考框架（Wassmann and Dasen 1998）。本文旨在找出雅美人使用哪一種參考框架來描述空間關係並指出在採集語料時所遇到的困難。本文中雅美（達悟）語空間定位的相關語料主要藉由圖片誘發方式取得，結果顯示三種參考框架在雅美（達悟）語中皆有使用。與峇里語相似的是：雅美（達悟）語中的絕對參考框架和其在雅美文化中的重要性相符合，說明了文化和語言系統之間有明顯的連貫性。

關鍵詞：空間定位、雅美(達悟)語、參考框架、圖片誘發法