КОГНИТИВНАЯ ЛИНГВИСТИКА.
АКСИОЛОГИЧЕСКАЯ СЕМАНТИКА
COGNITIVE LINGUISTICS. AXIOLOGICAL SEMANTICS

ABSOLUTE FRAMES OF SPATIAL REFERENCE
IN AUSTRONESIAN LANGUAGES

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Abstract. This paper provides a brief survey on various absolute frames of spatial reference that can be observed in a number of Austronesian languages — with an emphasis on languages of the Oceanic subgroup. It is based on research of conceptions of space and systems of spatial reference that was initiated by the "space project" of the Cognitive Anthropology Research Group (now the Department of Language and Cognition) at the Max Planck Institute for Psycholinguistics and by my anthology "*Referring to Space*" (Senft 1997a; see Keller 2002: 250). The examples illustrating these different absolute frames of spatial reference reveal once more that earlier generalizations within the domain of "SPACE" were strongly biased by research on Indo-European languages; they also reveal how complex some of these absolute frames of spatial reference found in these languages are. The paper ends with a summary of Wegener's (2002) preliminary typology of these absolute frames of spatial reference.

Keywords: *space, absolute frames of spatial reference, Austronesian languages, Oceanic languages, typology of absolute systems*

1. INTRODUCTION

In 1991 I joined Stephen Levinson's "Cognitive Anthropology Research Group" at the Max Planck Institute for Psycholinguistics in Nijmegen. The central aim of this group, now the Language and Cognition Department of the Max-Planck-Institute for Psycholinguistics, has been to further research into the relationships between language, culture and cognition by conducting fieldwork on issues of common interest to anthropology, psychology, and linguistics (see Levinson, Senft 1991, Senft: 2001: 522). There are many important questions about the nature and extent of universal human intellectual endowments in various domains, for which there has been little reliable cross-cultural data so far. The goal of the department was — and still is — to fill some of these gaps and to contribute to the development of more sophisticated theories about the relationship between learned and native abilities, about the contribution of culture to cognition, and about the nature and transmission of culture itself and its relation to social structure and process. Our initial major goal of research was to investigate the conceptualization of space and spatial reference in a cross-cultural/cross-linguistic perspective (see Pederson et al. 1998; Levinson and Wilkins 2006).

Before we started our "space project", Kant's ideas about the central coordinate system the reference planes of which we use for spatial references were believed to hold

universally (see Miller and Johnson-Laird 1976: 395): In 1768 Immanuel Kant stated the following in his pamphlet against Gottfried Wilhelm Leibniz titled "Von dem ersten Grunde des Unterschiedes der Gegenden im Raume" (On the First Ground of the Distinction of Regions in Space):

> In dem körperlichen Raume lassen sich wegen seiner drei Abmessungen drei Flächen denken, die einander insgesamt rechtwinklicht schneiden. Da wir alles, was außer uns ist, durch die Sinnen nur in so fern kennen, als es in Beziehung auf uns selbst steht, so ist kein Wunder, daß wir von dem Verhältnis dieser Durchschnittsflächen zu unserem Körper den ersten Grund hernehmen, den Begriff der Gegenden im Raume zu erzeugen. Die Fläche, worauf die Länge unseres Körpers senkrecht steht, heißt in Ansehung unser horizontal; und diese Horizontalfläche giebt Anlaß zu dem Unterschiede der Gegenden, die wir durch O b e n und U n t e n bezeichnen. Auf dieser Fläche können zwei andere senkrecht stehen und sich zugleich rechtwinklicht durchkreuzen, so daß die Länge des menschlichen Körpers in der Linie des Durchschnitts gedacht wird. Die eine dieser Verticalflächen theilt den Körper in zwei äußerlich ähnliche Hälften und giebt den Grund des Unterschieds der r e c h t e n und l i n k e n Seite ab, die andere, welche auf ihr perpendicular steht, macht, daß wir den Begriff der v o r d e r e n und h i n t e r e n Seite haben können.
>
> (Immanuel Kant 1768)[1]

One of the central findings of our early research was that this coordinate system for spatial reference is not universal at all. First analyses of the data gathered in the languages researched by members of our project revealed fundamental differences in how these languages refer to space (see Senft 1994; 1995; 2001: 526f.). For describing these differences we have been using a typology of spatial systems or frames of spatial reference. This typology defines three such systems (see Senft 2001; Levinson 2003: 24—61; also Terrill and Burenhult 2008). We refer to them as 'relative', 'absolute', and 'intrinsic'. They differ with respect to how angles are projected from the 'ground' (or 'relatum') in order to situate the location of the 'figure' (or 'theme') that is referred to (see also Talmy 1978: 627).

Relative systems are viewpoint-dependent: Localizations in space are derived from, and described on the basis of, the position and orientation of the speaker. In these systems a sentence like

— 'The ball is to the right of the man.' —

is understood from the speaker's point of view only — i.e., this reference completely neglects the orientation of the man.

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[1] Van Cleve and Frederick (1991: 28—29) provide the following English translation of Kant's statement:

In physical space, on account of its three dimensions, we can conceive three planes which intersect one another at right angles. Since through the senses we know what is outside us only in so far as it stands in relation to ourselves, it is not surprising that we find the relation of these intersecting planes to our body the first ground from which to derive the concept of regions in space. The plane to which the length of our body stands perpendicular is called, in reference to us, horizontal; it gives rise to the distinction of the regions we indicate by *above* and *below*. Two other planes, also intersecting at right angles, can stand perpendicular to this horizontal plane, in such manner that the length of the human body is conceived as lying in the line of their intersection. One of these vertical planes divides the body into two outwardly similar parts and supplies the ground for the distinction between *right* and *left*; the other, which is perpendicular to it, makes it possible for us to have the concept of *before* and *behind*.

Intrinsic systems utilize inherent, intrinsic features of an object to derive a projected region or to anchor the spatial reference to an object in these features. In these systems a sentence like

— 'The ball is to the man's right.' —

is understood as follows: A man is an object with a front and back, a left and right side assigned to it. Thus, in intrinsic systems this sentence refers to the position of the ball on the basis of the orientation of the man — the ball is at the right side of the man, then — the orientation of the speaker does not play any role whatsoever and is — within this system — completely irrelevant for the understanding of this sentence. However, we want to note here that speakers using intrinsic systems for their spatial references also refer to the same configuration with the sentence we already mentioned above, namely:

— 'The ball is to the right of the man.'

Thus, languages can be ambiguous with respect to whether they use an intrinsic or a relative perspective in their spatial references. Sentences like the last one presented can only be disambiguated in the actual situation and context.

Absolute systems operate on absolute concepts of direction (which may be linear or defined by quadrants). They are based on conventionalized directions or other fixed bearings that can be derived from meteorological, astronomical, or landscape features. In these systems (and in our data) we find sentences like

— 'The ball is to the west of the man/uphill from the man/seawards to the man.'

Note that this absolute frame of reference was not acknowledged — and even assumed to be non-existent — in previous linguistic research on conceptions of space and forms of spatial reference.

All three systems can be found in a given language, and they can be utilized for spatial reference; however, many of the languages we have been studying so far prefer one frame of reference in a particular context (see also Senft 2014: 45ff; 114ff).

In 1997 I published the anthology "*Referring to Space — Studies in Austronesian and Papuan Languages*" which turned out to be — according to Janet Dixon Keller (2002: 250) — the "initial publication ... to include a focus on spatial analyses in ... Austronesian ... as well as Non-Austronesian languages". In the introduction to this volume I summarized recent findings on conceptualizations of space and spatial reference in Australian Aboriginal, Austronesian, Papuan, and some Mayan languages and showed that we must give up many of our notions of universals with respect to space and spatial reference. This insight was further supported by contributions to this volume. I will neither repeat (all) these findings here, nor will I present my own follow-up research on spatial reference and conceptions of space in Kilivila, the language of the Trobriand Islanders (see Senft 2004, 2006, 2007, 2008). This paper provides a brief overview of research results on various absolute frames of spatial reference that can be observed in a number of Austronesian languages — with an emphasis on languages of the Oceanic subgroup — as well as a summary of Claudia Wegener's (2002) preliminary typology for these absolute frames of spatial reference.

2. CONCEPTS OF SPACE AND FRAMES
OF SPATIAL REFERENCE IN AUSTRONESIAN LANGUAGES

In this section I briefly present a survey on the contributions in Giovanni Bennardo's (2002a) anthology "*Representing Space in Oceania*", highlighting Bill Palmer's contribution to this anthology which is partly based on papers published in my 1997 volume. Then I present some of Gaby Cablitz's findings on absolute frames of spatial reference in Marquesan, feature Alexandre Francois' research on space in Vanuatu, and briefly present the geocentric reference system Mary Chambers found in the North West Solomonic language Kubokota.

2.1. Giovanni Bennardo's anthology
"*Representing Space in Oceania*"

In 2002 Giovanni Bennardo, a former PhD student in our group in Nijmegen, published the anthology "*Representing Space in Oceania*". This volume contributes to research on space in Austronesian languages and cultures, in particular to the linguistic, mental, and cultural representations of spatial relationships. And it attempts to prove the value of "cross-linguistic and cross-cultural research" (Bennardo 2002b: 1) for the domain of space in an areal survey (see also Senft 2003).

The first section of the book is entitled 'Language and space'. Margaret Florey's and Barbara F. Kelly's survey on "Spatial reference in Alune", an Austronesian language of the Malayo-Polynesian subgroup spoken on Seram in Eastern Indonesia, emphasizes that elicited data on spatial reference need to be confronted with data that document their actual use in discourse. Catriona Hyslop's analyses of Ambae, entitled "Hiding behind trees on Ambae: spatial reference in an Oceanic language of Vanuatu" as well as Wolfgang B. Sperlich's article "Inside and outside Niuean space" in which he compares Niuean and Tongan prepositions, directionals and spatial nouns, and Kenneth W. Cook's research on "The case markings of Hawaiian locative nouns and place names" provide extensive linguistic data and sophisticated linguistic analyses. All these contributions "highlight the privileged status of nouns over other parts of speech" (Bennardo 2002b: 4) in languages spoken in Oceania.

Section two, entitled 'Space in mind', starts with Bill Palmer's comprehensive survey of Oceanic languages with respect to "Absolute spatial reference and the grammaticalisation of perceptually salient phenomena". In subsection 2.2 below I present Palmer's study in detail. Giovanni Bennardo's paper "Mental images of the familiar: cultural strategies of spatial representations in Tonga" introduces a 'radial' subtype of the absolute frame of reference. However, the system Bennardo presents is a possible analysis of directionals, but not a frame of reference as defined by Levinson (2003) and the members of the Cognitive Anthropology Research Group (Pederson et al.: 1998). Moreover, Bennardo's attempt to support his linguistic claim with psychological experiments (also developed by our Group; see Senft 2007) only shows that his consultants solve non-linguistic problems by remembering certain spatial configurations in an absolute way. However, the proposed principle of radiality is supported by cultural patterns in Tonga and by observations with respect to how Tongans draw maps of their surroundings and their islands. In their paper "On the relevance of point field for spatiality in Oceania"

F.K. Lehman and David J. Herdrich contrast 'point fields' — a notion that regards space as an unbound field defined on any point — with bounded containers as alternative views of space and they illustrate their ideas with Samoan spatial concepts.

The third section on 'Space and culture' starts with Elizabeth Keating's anthropological linguistic paper on "Space and its role in social stratification in Pohnpei, Micronesia", which ties the ethnographic use of space to verbal practices. Christina Toren's cognitive anthropological analyses of "Space-time coordinates of subjectivity in Fiji" reveal how gender, seniority, and morality are projected onto and expressed by spatial language and by behavioural repertoires. And Anne E. Guernsey Allen's research on "The house as social metaphor: architecture, space, and language in Samoan culture" shows that the same terms that indicate social relations are used to describe architectural features of the Samoan house and thus highlights the significant spatial dimensions of spatial cognition and spatial reference in language and nonverbal practice.

The volume closes with Janet Dixon Keller's chapter on "Spatial representations of islands worlds". Keller critically discusses the contributions to this volume. She addresses the cultural and conceptual constraints on spatial relations as they are demonstrated in Oceanic systems of thought and practice and rightly points out that the contributions to this volume strongly support the claim that spatial reference, spatial arrangements and spatial concepts are critical components of cultural events and artefacts.

2.2. Bill Palmer's summary of, and research on, systems of absolute spatial reference and the grammaticalisation of perceptually salient phenomena in Oceanic languages

In this subsection I present Bill Palmer's (2002) study "Absolute spatial reference and the grammaticalisation of perceptually salient phenomena" in more detail. On the basis of our frames of reference typology, Palmer presents a variety of absolute frame of reference systems in Oceanic languages, starting with the system of Longgu, a South East Solomonic language, described by Deborah Hill in my 1997 anthology. Hill provides a detailed example of how a spatial system based on geographical reference points is used (see Senft 1997b: 26). Her paper demonstrates that a close description of the use of this system adds to our knowledge of the discourse functions and the cultural import of such a system. Moreover, in her description of the Longgu system Hill shows that it can be used both on small and large scales on the vertical as well as on the horizontal axis. The Longgu system has a sea-inland and a sunrise-sunset axis. The two horizontal axes represent conventionalized directions. The northwest-southeast line represents a conventionalized coastline (actually 45 degrees off the cardinal east and west directions). This line is expressed by the directional terms *toli* — glossed as "west" — and *ala'a* — glossed as "east". This axis is based on the path of the sun; however, it is slightly skewed to allow it to run orthogonal to the land-sea axis. Palmer (2002: 127) defines such an axis which is "directly motivated by a perceptually salient physical world phenomenon [as] primary [and] 'traverse' as a secondary axis ... which has no motivating physical world phenomenon of its own, and which derives its bearing from another, primary, axis". The *toli-ala'a* axis in Longgu is unbounded and can be used on land and

at sea. The landward-seaward axis, oriented in cardinal terms northeast-southwest, is expressed by the terms *longa* — glossed as "inland", coding a direction away from the coast towards the inland — and *asi* — glossed as "sea", coding the direction from the inland towards the coast. This axis is highly constrained. The terms *longa* and *asi* only refer to directions within two areas inhabited by Longgu speakers. *Asi* only refers to the seaward direction on land; *longa* only refers to the inland edge of the Longgu speaking area and the inland boundary of Honiara, the capital of the Solomon Islands. Longgu can be seen as a language that has two primary axes operating together in a single system. Other terms can be used to refer to areas beyond this; however, these are ordinary nouns and not grammaticalised directions. Palmer points out that such constraints on the scope of landward-seaward axes occur in a number of Oceanic languages and he emphasizes that the constraints that Hill reports for Longgu are not a universal feature of landward-seaward axes. The Longgu terms refer to quadrants and not to vectors as the directions in the English cardinal system. It is interesting to see the differences between these two directional axes and to realize that these differences are reflected in the use of the directional terms within the language. Hill emphasizes that the use of a system based on geographical reference points requires and depends not only on knowledge of the environment in which this language is spoken, but also on knowledge of people's daily routines within their environment. However, there are other linguistic means for spatial reference in this Oceanic language, namely prepositions, local nouns, terms for left and right, and particles indicating direction towards and away from the speaker. These systems do not take their points of reference from the environment but depend on a human (or animal) body as their point of reference. Hill describes these means as competing systems of spatial reference within Longgu. But she also points out that the geographical reference system has the widest range of use of these competing systems in Longgu.

The next system that Palmer discusses is the Nemi system which Francoise Ozanne-Rivierre described in my 1997 anthology. Ozanne-Rivierre presents in her paper on "Spatial References in New Caledonian Languages" descriptive sketches of systems of orientation and spatial reference putting the emphasis on sets of non-deictic and deictic directionals and on locatives (see Senft 1997a: 25). She points out that in many Oceanic languages systems of orientation consist of a combination of geographic/topographic reference points like sea/land, upriver/downriver, or the direction of prevailing winds on the one hand, and reference points centering on ego on the other hand. It is quite interesting to note that we find in many New Caledonian languages systems of spatial reference that are quite similar to systems that can be found in some Mayan languages. As already mentioned above, these systems differentiate between an up/down-axis on the one hand and an across-axis on the other hand. Ozanne-Rivierre emphasizes that the use of spatial reference terms in New Caledonian languages is highly context dependent. In certain contexts of speech, social factors may transcend geographic space. Thus, to properly understand spatial reference terms (in many Oceanic languages) asks for the hearer's ability to accurately set these terms in their context of utterance. Ozanne-Rivierre therefore concludes that the use of locatives, deictics, directional markers, etc. is not only dependent on the given material situation but that it can also be a function "of

a social context of which space is an essential component". Nemi also has an axis that corresponds with the coastal line and an axis that runs at right angles to it (Palmer 2002: 128f). Nemi distinguishes two scales of reference and uses different reference systems on these two scales. One system is only used for relations across the whole island and for inter-island travel. The other system applies to smaller-scale relations, for example within a single valley or a village or a house. The large-scale system also uses a conventionalized, regularized coastline and an axis orthogonal to that line. The northwest-southeast line is constituted by the terms *-dic* — glossed as "northwest" — and *-da* — glossed as "southeast". And the landward-seaward axis uses the same terms *-dic* — now glossed as "seaward" — and *-da* — now glossed as "landward". Whether these axes reflect quadrants or vectors is unclear. Palmer (2002: 128, fn.22) points out that "co-lexification of one non-vertical axis with the vertical axis is common in Oceanic languages". The seaward direction is unbounded, the landward direction is bounded, extending from out at sea towards the coast and into the island till the west coast, but not further. The coastline axis is unbounded again. The small scale system uses the landward-seaward axis and an axis which is orthogonal to it; however, this axis is an undifferentiated traverse derived from a primary landward-seaward axis, and constituted by the term *-en*, which is glossed as "across". Palmer (2002: 129) also points out that "[t]he axis corresponding to the coastline is defined in terms of the path of the trade winds that blow from southeast to northwest. In the small scale, wind direction appears to play no part".

In contrast to the Nemi system of spatial reference, Tolai — a language spoken around Rabaul on the island of New Britain in Papua New Guinea — only uses one system that consists of a directionally differentiated land-sea axis with *-a* — glossed as "seaward" ("downward") and *-ä* — glossed as "landward" — and an undifferentiated traverse represented by the suffix *-o* — glossed as "same level" (see Mosel 1982).

On the basis of these three systems Palmer (2002: 130) summarizes the comparative statuses of a landward-seaward axis and a coastal axis as follows:
- Where the boundary between land and sea motivates only one axis in a system, that axis is the landward-seaward axis (as in Longgu and large scale Nemi).
- Where the boundary between land and sea underlies both axis, but only one axis is differentiated for direction, that axis is the landward-seaward axis (as in Tolai and small scale Nemi).

Palmer (2002: 130) continues as follows:

These points suggest that the boundary between land and sea will motivate a landward-seaward axis as a primary axis, and that where an axis orthogonal to the landward-seaward axis is not motivated by its own separate perceptually salient phenomenon, it will be a secondary and derived axis.

Based on Ozanne-Rivierre (1997), Palmer then refers to the systems of Iaai, a language spoken on Ouvea, one of the Loyalty Islands. Iaai also has a small-scale system consisting of a landward-seaward axis (*hoot* — "landward", *hnyiköio* — "seaward") with an undifferentiated traverse (*-lee* — "traverse"/"there") — like Tolai and small scale Nemi. The large-scale system, however, which is used for travel between islands and on the island as a whole to situate villages on the east and west coast consists of an east-

west axis (*-ü* — "west", *-iö* — "east") which is defined with respect to the path of the sun and an undifferentiated traverse (*-lee* — "traverse"/"there"). Thus we have two co-exist-ing distinct systems, one of which is motivated by the boundary between land and sea and the other by the path of the sun.

All these systems of spatial reference discussed above are systems of languages that are spoken on sections of a coast along one side of a long island. What about systems of spatial reference used by speakers of languages which are spoken on both sides of an island, on a round island, and on an atoll?

Kokota, spoken on Santa Isabel, one of the Solomon Islands, has a system of spatial reference consisting of a landward-seaward axis, and orthogonal to that axis an east-west axis (actually running northwest-southeast). Both axes are differentiated and there are directionals referring to all four directions. Kokota is spoken in two villages on the north-east coast and in one village on the south-west coast. In the northeast coast villages the term which refers to the direction from the interior of the island towards the coast, from the village to the shore and away from the shore out to the sea is *rauru*. The term that refers to the direction from the sea towards the land and then into the interior of the island is *rhuku*. On the east-west axis the term referring to northwest is *paka* and the term referring to the southeast is *fona*. However, the system used by speakers of Kokota who live on the southwest coast cannot be identical. The term *fona* must continue to mean "east" and *rauru* must also mean "seaward". Thus, the system used by speakers living on the southwest coast constitutes the mirror image of the system of speakers living on the northeast coast. This means, that when you are living on the northeast coast and you are facing *rauru*, *fona* is on your right. However, when you are living on the south-west coast, and you are facing *rauru*, *fona* is on your left. Palmer (2002: 136) concludes, that this example

> ...demonstrates two facts about absolute spatial reference. Firstly, where two axes are each motivated by separate perceptually salient phenomena, and consequently are to a degree conceptually independent, they will interact differently in locations where the interaction of the motivating phenomena differs. Secondly, it demonstrates that this can occur with-in a single language, where what is fundamentally a single conceptual system can be mani-fest differently in different parts of the language locus. This is not dialect difference, but the effect of the environmental constraints on an environmentally sensitive system.

Now what about reference systems on a round island? Palmer illustrates this situa-tion with the system that is found in Manam, a language spoken on Manam Island in Pa-pua New Guinea. Based on Lichtenberk (1983), Palmer (2002: 137ff) points out that in the Manam system of spatial reference, the sea-land boundary is the only motivating phenomenon for this absolute system (which is only used for large scale spatial refer-ence (see Wegener 2002: 22)). Manam thus has a landward-seaward axis which

> radiates out from the centre of the island, apparently in every direction, crossing a regu-larised but curved coastline orthogonally at every point... The axis which crosses the land-ward-seaward axis, crosses it at right angles at every point on the regularised coast. Since the coast is curved, so too is the axis. One direction on this curved axis follows the coast in a clockwise direction [*ata*], the other anticlockwise [*awa*].

(Palmer 2002: 137f).

Thus, as Palmer points out, one could walk around the whole island without changing the direction. Lichtenberk (1983: 572) lists the following directionals for Manam:

ilau   seaward

auta   inland (landward)

ata   to one's right when one is facing the sea, to one's left when one is facing inland

awa   to one's left when one is facing the sea, to one's right when one is facing inland

Together with these directionals Manam has motion verbs which indicate motion in each of these directions (see Lichtenberk 1983: 576):

oti   move in **ilau** direction

oro   move in **auta** direction

ra'e   move in **ata** direction

bala   move in **awa** direction.

At first sight this system does not seem to constitute an absolute frame of spatial reference. However, Palmer (2002:139) points out the following:

> Using these directional terms, a referent is located by projecting a search domain of the relatum in a direction determined arbitrarily and by convention among speakers of the language. The system is not intrinsic — there is no requirement that the relatum [!] have an agreed asymmetry, and when a relatum is asymmetrical it does not matter how it is oriented. Nor is the system relative — no viewpoint is explicit or implicit in references within the system, and the presence of a viewer has no impact on the process of identifying the search domain. It is the binary and arbitrary nature of the system that makes it absolute.

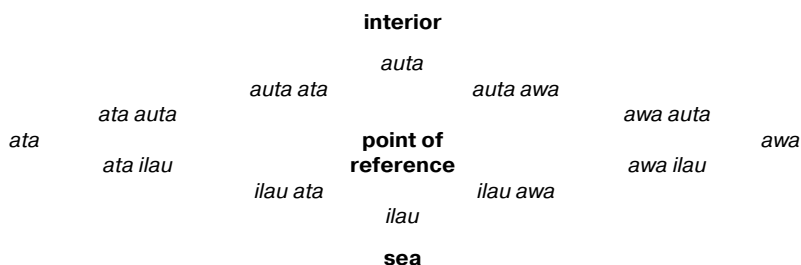Lichtenberk (1983; 572) illustrates the use of the directionals in Figure 1:

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                            interior
                              auta
              auta ata                 auta awa
       ata auta                               awa auta
ata                         point of                        awa
       ata ilau             reference              awa ilau
              ilau ata                 ilau awa
                              ilau
                               sea
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Figure 1: The use of directionals in Manam (lichtenberk 1983: 572)

Palmer then presents a (slightly modified) summary of Ingjerd Hoem's (1993) description of the spatial reference system of Tokelauan, the language spoken on the atoll Tokelau. Atolls usually have the land in a ring or fragments of a ring around a central lagoon. Tokelauan also encodes a landward-seaward axis. Hoem (1993: 141ff) points out that the orientation of interest in the Tokelau village is centripetal, toward the lagoon and not toward the ocean and the world beyond. The lagoon side is seen as the front of the village; the open ocean is at its back. The noun *moana* refers to the open ocean. The lagoon is called *namo*, and as a locative noun it means the lagoon's side of the village.

Hoem (1993: 141ff) describes the Tokelauan spatial orientation as seen from the village as follows:

> The locative noun *gatai* denotes direction towards the lagoon. The locative noun *gauta*, from *ga-* and *uto* meaning the islets on the far side of the lagoon, denotes "towards land", "on land" or "further inland". The islets on the far side of the lagoon where the coconut plantations are, are called *uta* ... The lagoon side of the village is commonly referred to as *gatai*, the open ocean side as *i tua*, and any direction further inland, i.e. away from the shore, as *gauta*. ... If one is out on the open sea fishing, *gatai* is used about "further out towards the ocean" and *gauta* about "towards land".

As mentioned above, Palmer (2002: 139ff) represents the Tokelauan system somewhat differently, but this does not really matter for understanding this absolute system of spatial reference.

In a paper published in 2007, Palmer compares the Tokelauan system with absolute spatial terms in Marshallese and Kiribati. Marshallese, the language of the Marshall Islanders, uses absolute directional/locative terms which are "anchored in three distinct phenomena: the path of the sun; the boundary between lagoon and ocean, and the boundary between land and sea" (Palmer 2007: 101). Moreover, Marshallese also has a NSEW-system. Kiribati (also: Gilbertese) is the language of the islanders of the Republic of Kiribati which consists of more than 30 atolls and a raised coral island. Kiribati also differentiates between an east-west and a lagoon-oceanward axis and uses a fully-fledged NSEW-system, but lacks a landward-seaward axis (Palmer 2007; 109). Comparing these systems with the Tokelauan system (see above) he comes to the following conclusions which he claims to be extendable — at least in part — to all Oceanic languages (Palmer 2007: 115f.):

- ♦ All these languages have terms for referring to a vertical axis.
- ♦ All these languages employ NSEW systems; this may be specific for languages that are spoken "in environments lacking phenomena more salient than the path of the sun" and by "populations practicing sea voyaging" (Palmer 2007: 115).
- ♦ It is remarkable that Kiribati does not differentiate a landward-seaward axis — an axis which is "pervasive throughout Oceanic" (Palmer 2007: 116).
- ♦ All three languages employ

> "a unique terrestrial system tailored to the topography of an atoll. All employ grammaticalised terms referring to directions and locations on an axis crossing at right angles the perimeter of an atoll lagoon. Moreover, two of these languages [Marshallese and Tokelau, G.S.] co-lexify the ocean side of an atoll island and the back of an entity, expressing a psychologically real association. This system has not been described for any other language" (Palmer 2007: 116).

These examples from Palmer's papers should suffice for the purposes pursued here[2]. I just want to point out that he discusses the implications of these systems for understanding cognition in the last section of his 2002 paper, emphasizing the following:

> The linguistic absolute systems present in these ... languages attend to certain physical world phenomena because for humans those phenomena dominate the environment of the language locus...

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[2] Palmer (2010) presents latest results on the Kiribati spatial reference system.

... The fact that linguistic systems, regardless of their original nature, modify to correspond to features of the physical world in new loci, strongly suggests that it is the features of the physical world which motivate the linguistic systems.

This raises questions about the interrelationship between perceptual and linguistic modalities. Whatever the nature of the interface between these modalities may be, and whatever conceptual structure or processes may intervene, the evidence of absolute spatial reference suggests very strongly that perceptual input can determine linguistic structure, and that perceptually accessed phenomena may be grammaticalised as components of a linguistic system.

<div align="right">(Palmer 2002: 150)</div>

2.3. Gabriele Cablitz's Marquesan grammar of space

In her seminal Marquesan grammar of space, Gabriele Cablitz describes and analyses in detail locative constructions and their usage in large- and small-scale reference. The Marquesan within-valley absolute system for spatial reference is based on a sea/inland-axis and a lexically undifferentiated across-axis that can be lexically differentiated by using place names of the neighbouring valleys. Cablitz proposes that the "landmark SEA is the only real landmark upon which the within-valley-system is based" (Cablitz 2006: 518), because the local landmark noun for "sea" is distinguished from the other two nouns for "inland" and "across" on morphosyntactic properties. Moreover, the term for "sea" denotes a landmark and a quadrant, whereas the terms for "inland" and "across" just denote valley quadrants. This geocentric system is used for references in large scale spatial arrays as well as in small scale spatial arrays to locate, for example, an object in a house, or on a table, or even on a person's cheek. The adequate use of this system requires that speakers keep track of their own current positions in relation to the fixed local landmarks all the time and in all places, be they familiar or not. The sea-, inland-and across-expressions are "nominals occurring as lexical heads in complex noun-phrase constructions which are marked by different locative prepositions ... These locative NPs can be combined with three different types of attributive NPs and several modifiers ... in varied and complex ways" (Cablitz 2002: 42f.). Navigation on sea — at least as far as intra-island navigation is concerned — is based on local and equatorial sea currents — but not on the prevailing trade winds which constitute an east-west axis (see Cablitz 2006: 510—519).

2.4. Alexandre Francois' research on space in Mwotlap, an Oceanic language of Vanuatu

In his paper "Of men, hills and winds: Space directionals in Mwotlap" Alexandre Francois (2003: 407) points out that in this language "the principle device for referring to space is a paradigm of six directionals ... [which] ... define three ways to draw a vector in space".

Two of these morphemes — *me* and *van* — which can be glossed as "hither, toward speaker" and "thither, toward nonspeaker" constitute a vector to "vectorize an event toward a specific participant , provided the latter is salient and relevant in the reference situation" (Francois 2003: 414). The morpheme for "hither" can only be used in situations in which the participant belongs to the speaker's sphere. Both morphemes define co-

ordinates which Francois calls 'participant-oriented coordinates' or simply 'personal coordinates'.

The other four directionals are defined "by reference to an asymmetry perceptible within the immediate local setting" (Francois 2003: 407). The two directionals *hag* and *how* express the vertical asymmetry "up/down". They are required whenever an event is vectorized in space; thus, the directional "up" is required to express an event like "growing up" and the directional "down" is required to express events like "plant, be night, finish" etc. The other two directionals *hay* and *yow* express the container asymmetry "in/out". In situations where speakers have the option of using either the "in/out"-(container)-contrast or the vertical contrast, the perceptually more salient dimension is used. However, these 4 directionals cannot cover situations "when a vector extends on the horizontal plane — so that the up/down contrast becomes irrelevant — and it cannot easily be associated with any containing figure — which makes the in/out pair useless, too" (Francois 2003: 416). In these situations a system of geocentric coordinates is used for spatial reference.

These geocentric coordinates consist of a fixed cardinal axis — an east/west-axis (*hag — how*) and a variable landward/seaward axis (*hay — yow*) which changes depending on which side of the island speakers are when using this system for spatial references. They divide the horizontal plane in four quadrants. Note that the four expressions used in this geocentric system are homophones with the 4 local directionals presented above. I will come back to this issue later.

Francois points out that the Mwotlap system of directionals "exploits three different cognitive strategies ... the PERSONAL STRATEGY ... the LOCAL STRATEGY ... and ... the GEOCENTRIC STRATEGY" (Francois 2003: 419). He shows that the selection of one of these strategies is rule governed:

♦ Whenever a direction can be represented by reference both to a participant *and* to a cardinal direction, the personal strategy ... will take priority over the geocentric one (Francois 2003: 421).

♦ When both the personal strategy and the local strategy may be relevant, the personal set ... will always take priority (Francois 2003: 421).

♦ If a movement in space corresponds both to a local asymmetry and a geocentric axis, the former will always have priority over the latter (Francois 2003: 422). However, this priority rule "only holds if a local asymmetry (in/out or up/down) can actually be perceived in the geometry of the current situation" (Francois 2003: 424).

This means that the geocentric strategy is only used when the other two strategies are not available (and this relativizes the importance of geocentric reference — very much in line with Roger Keesing's (1997: 127) caveat with respect to the "search of the exotic"!).

Above I pointed out that the four expressions used in this geocentric system are homophones with the 4 local directionals. Francois explains this phenomenon as follows: He argues that the formal similarity between the local directions "in/out" and the geocentric directions "landward/seaward" goes back to the fact that Mwotlap speakers perceive their island(s) as a container. (Francois 2003: 425) The fact that "east" (or rather

"southeast") is "up" and "west" (or rather "northwest") is "down" can be explained with the directions of prevailing winds (Francois 2003: 433). According to Francois (2003: 434) this cardinal axis can be used in two different ways:

> When the speaker is at sea, or refers to a long-distance relation between islands, then the cardinal axis regularly points southeast, dividing space into two equal halves, one 'down' and one 'up'... But when the speaker is on dry land, or on a boat close to an island, then the cardinal axis combines with the land/sea axis, defining four equal quarters. If the system has to be applied to a novel landscape, then the land-sea axis is always assigned in priority, whereas the up/down axis is secondarily mapped onto the contours of the island. This adaptive process may involve pivoting the cardinal up away from the actual southeast, though never more than 90 degrees on either side.

In more recent research Francois (2010) has verified his finding with material collected for 17 languages spoken in the Torres and Banks Islands: Thus, the fact that "southeast" is "up" and "northwest" is "down" in Vanuatu can be explained with the directions of prevailing winds.

2.5. Mary Ruth Chambers' research on the syntactic and semantic behaviour of motion verbs in Kubokota

In her 2009 PhD thesis "*Which way is up? Motion verbs and paths of motion in Kubokota, an Austronesian language of the Solomon Islands*" Mary Ruth Chambers describes and analyses the motion verbs of Kubakota, a North West Salomonic language of the Oceanic subgroup. These motion verbs also operate within an absolute frame of reference. In the first part of her thesis, Chambers presents information on the language and a first sketch grammar of Kubakota. The second part describes the syntactic and semantic behaviour of motion verbs, and the third part examines how these verbs are used to express motion and orientation in real physical space. For the purposes pursued here I will concentrate on Chambers' research results on geocentric directions presented in chapter 7 of her thesis (Chambers 2009: 359—401).

Kubakota has a geocentric system that is based on a coastal axis in which up-down as well as undifferetiated terms are available, and an inland-seaward axis, in which up-down terms as well as specific bushward-seaward terms can be used (see Chambers 2009: 362f). There are four geocentric scales: a local and an intermediate scale in the land domain and the navigational and land-sea boundary scales in the sea domain. Chambers (2009: 400) points out that

> [e]ach of these scales use the terms *zae* 'go up' and *gore* 'go down' and the corresponding 'come' terms on their primary axis, such that, from a given point on the Tranongga coastline, three or four different directions can potentially be described as 'up'.

However, these multiple up-down axes do not create problems for the speakers of this language; they resolve possible ambiguities "on the basis of contextual information and sociocultural knowledge" (Chambers 2009: 401). As to the usage of the scales in the land and in the sea domain, Chambers (2009: 401) emphasizes the following:

> Within the land and sea domains there is considerable interaction between scales ..., and variation in the ways that they are applied. The choice of scale, and its interpretation depends on the terrain of the village, the salience of the sea, the nature of the activity being described, and a variety of other sociocultural and contextual factors.

These other sociocultural and contextual factors include "the distance over which a part extends, ... the use of landmarks to differentiate scales, and the physical location and orientation of the speakers themselves". Chambers' points out (and illustrates extremely well) that this — for an outsider — incredibly complex geocentric system "can only be understood in the pragmatic context in which utterances are produced, and with reference to the sociocultural and environmental space occupied by the Kubokota people". She also points out that "without an understanding of the pragmatic context in which a geocentric system operates, it is impossible to provide an adequate account of the semantics of the system" (Chambers 2009: 401).

3. CLAUDIA WEGENER'S PRELIMINARY TYPOLOGY OF ABSOLUTE SYSTEMS OF SPATIAL REFERENCE

In this section I provide a summary of Claudia Wegener's unpublished Master's Thesis "*Absolute frames of spatial reference: a preliminary typology of absolute systems*" (Wegener 2002). Wegener based her typology of absolute frames of spatial reference mainly on publications by members of our research group in Nijmegen and on Bill Palmer's 2002 paper (discussed in subsection 2.2 above). Note that she looked not only on absolute systems in Oceanic languages, but also on these frames of reference in other Austronesian languages, in Australian Aboriginal and in Mayan languages.

In her preliminary typology Claudia Wegener first differentiates between languages that use only one absolute coordinate system and languages that use more such coordinate systems.

Languages that use only one absolute coordinate system are differentiated into languages with a rather simple system of coordinates that are based on just one phenomenon like for example Manam with its land-sea axis — other languages that fall into this category are Mpartnwe Arrernte (Paama-Nyungan, Australia; see Wilkins (1989)) and Melanau (Austronesian, Sarawak, Borneo; see Clayre (1973)) — and languages that consist of a complex system of coordinates that are based on more phenomena like for example Longgu and Kokota with their east-west and inland-sea or landward-seaward axes — another language that falls into this category is Balinese (Austronesian, Bali; see Adelaar (1997: 56f.); Wassmann and Dasen (1998)).

Languages that use more coordinate systems can be differentiated in the following way: On the one hand, there are languages that use more coordinate systems in parallel like Aralle-Tabulahan (Austronesian, Malayo-Polynesian subgroup, South Sulawesi; see Mc Kenzie (1997) and below) — other languages that fall into this category are Guugu Yimithirr (Pama-Nyungan, Australia; see Haviland (1993; 1998)) and Tzeltal (Maya, Mexico; see Brown, Levinson (1993)). On the other hand, there are languages that use more coordinate systems in a complimentary way for reference to different distance scales like for example Nemi (Oceanic, New Caledonia) and Iaai (Oceanic, Loyalty Islands); these languages differentiate a small-scale reference system from a large-scale reference system — other languages that fall into this category are Marquesan (Austronesian, Marquesas Islands; see Cablitz (2006) and subsection 2.3 above) and Taba (Austronesian, Moluccas; see Bowden (1997)).

So far we have not discussed languages that use more coordinate systems in parallel, therefore I will briefly describe the systems that are used by speakers of Aralle-Tabulahan, the West Austronesian language spoken in South Sulawesi (McKenzie 1997). Geographic as well as social and historical knowledge is important for the understanding of locatives and directionals in this language. Aralle-Tabulahan offers its speakers two absolute coordinate systems for spatial reference. Both these systems consist of a primary differentiated axis and an undifferentiated traverse. One system is based on geographic contour, i.e. height differences, the other system is based on the course of rivers (see Wegener 2002 43ff). In his paper "Downstream to here: Geographically determined spatial deictics in Aralle-Tabulahan" (see Senft 1997a: 29ff) Robin McKenzie outlines the spatial deictic system of this language with particular emphasis on its geographically determined forms. In most cases the usage of the six locatives and directionals in Aralle-Tabulahan relate to geographic contour (with expressions equivalent to what we gloss with "up(wards), down(wards), level(wards)"), and to river(s) (with expressions equivalent to what we gloss with "upstream/in(wards), downstream out(wards), across(wards)"). After a description of the grammatical usage and meaning of these terms, McKenzie discusses how the system (of directionals) is used for spatial reference when more than one geographic factor could apply, either sequentially or concurrently. If more than one geographical factor is operative concurrently, forms that refer to the 'river(s)' seem to take precedence over forms referring to geographical 'contour'. If several geographic factors are to be considered in sequence for the choice of a directional, "the factor representing the final stage of a journey", e.g., "is the relevant one for choosing an appropriate directional". McKenzie calls this "the principle of the ultimate factor" and points out that this principle holds especially for references to short range travel sequences. However, if a speaker's perception of a route takes into account the relative positions of his starting point and his destination, "the principle of relative position" holds, especially for references over longer distances. This principle only cares for the relative positions of start and goal, and thus relates to the overall geographic contour of the geographical environment. However, McKenzie also illustrates that speakers of Aralle-Tabulahan will in certain contexts also select locatives and directionals that run counter to geographic considerations. The author shows that in these cases social and/or historical factors influence a speaker's choice and usage of locatives and directionals in Aralle-Tabulahan.

After this first classification of different types of absolute frames of reference and after the illustration of these systems as they are used in the languages mentioned above, Wegener develops three approaches towards a typological classification of absolute systems for spatial reference:

1. Languages with absolute frames of spatial reference can be classified according to the characteristic features of the coordinate systems used (this approach is documented in the presentation above).
2. Languages with absolute frames of spatial reference can be classified according to social and environmental phenomena that are basic and motivating for their reference axes, like, for example, local height, course of rivers, boundary between land and sea, the path of the sun, sea currents and wind directions.

3. Languages with absolute frames of spatial reference can be classified according to the degree of their dependence on immediate environmental phenomena (like the ones mentioned in 2.).

The first type of classification results in a discrete division of languages with absolute frames of spatial reference, the third type of classification introduces a scalar ordering of the phenomena (mentioned in 2. above) based on their dependence or independence of their immediate environment. This allows, of course, for a multiple classification of languages with absolute systems. However, Wegener requires that the respective motives for the typological classification of such a language are made explicit.

4. CONCLUDING REMARKS

In her study Claudia Wegener first classified different types of absolute systems for spatial reference based on their usage and then developed three approaches towards a typological classification of these systems. She points out
   ♦ that the different characteristic features of the coordinate systems that constitute these absolute frames of reference,
   ♦ that social and especially environmental phenomena that are basic and motivating for these reference axes (like local height, course of rivers, boundary between land and sea, the path of the sun, sea currents and wind directions),
   ♦ and that the degree of dependence of the absolute frames of reference on immediate environmental phenomena

are fundamental for developing such a typology. In his 2002 paper Bill Palmer also emphasized that his survey on absolute spatial frames of reference in Oceanic languages reveals that features of the physical world motivate these linguistic systems; he concludes that therefore perceptual input can determine linguistic structure.

Studies like the ones by Cablitz (2002; 2006), Francois (2003; 2010) and Chambers (2009) indicate that approaches to a linguistic typology of absolute systems also have to take into account that spatial references of speakers who have more complex geocentric systems available in their language — that is the speakers actual utterances — are anchored in the overall pragmatic context in which these utterances are produced. The understanding of the pragmatic context in which a geocentric system operates is fundamental for providing an adequate account of the semantics of the system.

This illustrates again that researching the interface between the semantics and pragmatics of geocentric systems in Austronesian languages forces us to frame our research within the complex interface between language, culture and cognition. This requires multidisciplinary approaches involving linguistics, anthropology and the cognitive sciences.

I would like to end this survey on space research in Austronesian languages with a personal remark: In her contribution to Giovanni Bennardo's (2002) anthology "*Representing Space in Oceania*" Janet D. Keller (2002: 250) kindly acknowledged the influence the research program of the Cognitive Anthropology Research Group and my anthology "*Referring to Space: Studies in Austronesian and Papuan Languages*" (Senft: 1997a) had on space research especially in Oceanic languages. As one of the first mem-

bers of Stephen Levinson's research team I cannot suppress some pride in realising that our research program not only contributed to initiate innovative interdisciplinary approaches to the research of spatial reference, spatial representations and conceptualizations in natural languages, but that we also managed to help set up a framework for researching the relationship between language, culture and cognition within this fundamental domain.

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Bio Note
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АБСОЛЮТНЫЕ ФРЕЙМЫ ПРОСТРАНСТВЕННЫХ ОТНОШЕНИЙ В АВСТРОНЕЗИЙСКИХ ЯЗЫКАХ

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Статья представляет собой краткий обзор абсолютных фреймов пространственных отношений в некоторых австронезийских языках, главным образом в языках подгруппы островов Океании. В ее основе — исследования концептуализации пространства и способов выражения пространственных отношений, которые были инициированы Исследовательской группой когнитивной антропологии (ныне Факультет языка и когниции) в составе Института психолингвистики Макса Планка, а также антология автора (Senft 1997a, см. Keller Келлер 2002: 250). Примеры, иллюстрирующие различные фреймы пространственных отношений, в очередной раз доказывают, что предшествующие обобщенные представления о пространстве складывались под влиянием исследований индоевропейских языков; они также показывают, насколько сложны некоторые из этих фреймов в рассматриваемых языках. Статья завершается кратким описанием предварительной типологии фреймов пространственных отношений, разработанной К. Вегенер (Wegener 2002).

Ключевые слова: *пространство, абсолютные фреймы пространственных отношений, австронезийские языки, языки Океании, типология абсолютных систем*

Сведения об авторе:
Гюнтер Сенфт — старший научный сотрудник Института психолингвистики Макса Планка (Нидерланды), почетный профессор лингвистики Кельнского университета. С 1982 г. изучает языки и культуру жителей Тробриандских островов (Папуа—Новая Гвинея), где провел в общей сложности около 4 лет, совершив 16 исследовательских поездок. *Сфера научных интересов:* австронезийские и папуасские языки, антропологическая лингвистика, прагматика, семантика, взаимодействие языка, культуры и сознания, концептуализацию пространства и пространственных отношений. Список публикаций насчитывает более 150 статей и 20 монографий. *Контактная информация:* e-*mail:* Gunter.Senft@mpi.nl; *Вебсайт:* http://www.mpi.nl/people/senft-gunter; Публикации: http://www.mpi.nl/people/senft-gunter/publications