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Metaphor and the Grammaticalization of Evidentials
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1.0 Introduction

Evidentials, linguistic units comprising part of epistemic modality, code a speaker's source of information, and some degree of certainty about that information. Rarely marked as a separate grammatical category, evidentiality typically overlaps with the tense/modality system of a language. Research on evidentiality exists (primarily in Amerindian languages), but a clear understanding of it as a coherent linguistic category is yet to be realized.

This paper analyzes the role of metaphor in the grammaticalization of evidentials. First, I present some information about evidentials, including the distinction between *direct* versus *indirect* speaker experience in relation to various degrees of certainty. Then I discuss the evolution of verbs to evidentials. Next I analyze the KNOWING IS SEEING metaphor and its role in the grammaticalization of an evidential marker in Maricopa.

1.1 Direct versus Indirect Evidence

Evidentials express the speaker's attitude towards a situation, including some degree of certainty or uncertainty. How certain the speaker is about her assertion depends on how the information was obtained. (See Willett 1988.) When the speaker is certain about her information she uses an evidential that codes "strong" evidence, and when she is uncertain she uses an evidential that codes "weak" evidence.

Languages generally distinguish between *direct* versus *indirect* experience. Direct experience includes a speaker's direct visual, auditory, or other sensorial experience of a situation. Indirect experience includes *reported* information (typically hearsay), and *inferred* information (typically observation of end results). Crosslinguistically, there is a natural hierarchy of evidentials which correlates directness of experience to certainty of knowledge: direct experience corresponds to a high degree of certainty, indirect experience of the reported type corresponds to less certainty, and indirect experience of the inferred type corresponds to even less certainty. (See Willett 1988.)

The evidentials in (1)(a)-(e), from Tuyuca (Tuyucan), illustrate different degrees of certainty of speaker knowledge.

Tuyuca (from Barnes 1984)

(1)(a) direct visual perception:

diiga ape-wi
he played soccer (I saw him play.)

(b) direct auditory perception:

diiga ape-ti
he played soccer (I heard the game, but didn't see it.)

(c) indirect visual perception:

diiga ape-yi
he played soccer (I have seen evidence that he played: his shoe
 print on the field. But, I didn't see him play.)

(d) reported:

diiga ape-yigi
he played soccer (I obtained the information from someone else.)

(e) reasoning:

diiga ape-hiyi
he played soccer (It is reasonable to assume that he did.)

Not all languages have such an exhaustive inventory. Basque, for instance, has only one evidential, *omen*, which refers to various types of unspecified indirect evidence. In (2), this evidential implies hearsay.

Basque

(2) jon-ek liburu bat irakurri omen du
John-ERG book one=ABS read EV AUX=ERG-ABS
I hear that John read a book

2.0 The Evolution of Evidentials from Verbs

Languages mark evidentiality in different ways.¹ In some languages, evidentiality is marked *explicitly*, i.e., through discrete grammatical markers (typically verbal affixes). This is the case in Amerindian languages including Maricopa, Wintu, and Makah, as well as in Korean, Turkish, and Japanese. In other languages, evidentiality is realized *implicitly*, i.e., by particular combinations of lexical items. This is the case in English, Spanish, Swedish, Arabic, and Vietnamese. Some languages, e.g., German, combine both types of evidentiality.

Crosslinguistically, it is common for evidentials to evolve from verbs. This is the case for evidential markers, which mark evidentiality explicitly, and for verbs that are used (in evidential constructions) to mark evidentiality implicitly. In the diachronic development of evidential markers, the verb adopts a different grammatical function and gains an evidential meaning. (Examples are discussed later.) In the diachronic development of verbs that are used to imply evidentiality, the verb semantically extends, receiving an additional, evidential meaning. For instance, in English the verb *see*, which earlier referred only to visual perception, has adopted an evidential meaning. This is seen in expressions such as *I see that you ate all the Cheerios* (upon picking up an empty cereal box), and *I see that somebody spilled honey on the floor* (when my shoes are sticking to the tile). In these types of expressions, *see* refers to the speaker's deduction with respect to a past event, not to visual perception. Both types of diachronic developments involve similar semantic changes (even though one type involves adopting a new grammatical function via grammaticalization).

English and Spanish are languages that code evidentiality implicitly. One way that evidentiality is realized in these languages is through the use of a perceptual verb followed by a *that*-clause (e.g., *I see (that) [X]*). In such cases, the degree of directness of perception coded is consistently less than it is in prototypical uses of the same perceptual verbs. For example, in expressions such as *I saw you eating Cheerios*, the viewer directly perceives the event as it takes place. In contrast, evidential uses of perceptual verbs code the speaker's deduction based on the perception of the end results of an event. The English example in (3) and the Spanish example in (4) illustrate this.

- (3) I see that you were sick last night
- (4) veo que estuviste enfermo anoche

In (3) and (4), the speaker might see an aspirin bottle, or vomit, and deduce the person had been sick. Crosslinguistically, such evidence is considered to be somewhat "weak" in terms of how likely the assertion is to be true.

It is also common to code reported speech -- a type of indirect evidence -- by using verbs which canonically refer to audition. This is illustrated with English *hear* and Spanish *oír* in (5) and (6).

- (5) I heard that you did well
- (6) oí que te fue bien

The "hearing" cases in (5) and (6) are similar to the "seeing" cases in (3) and (4); in each the speaker indirectly experiences the event. However, (5) and (6) differ from (3) and (4)

because they code an intermediary. That is, (5) and (6) imply the speaker obtained the information about the event through a third party (e.g., a neighbor). Because (5) and (6) involve indirect transmission of information, there is greater "distance" between the speaker and the information being asserted than in (3) and (4). This increase in "distance" results in greater uncertainty on the part of the speaker. Such cases constitute "weaker" evidence than if the speaker were to witness the event firsthand.

Finally, it is common in languages such as Spanish and English to use verbs that refer to tacton to indicate intuition or premonition. In such cases, a verb that canonically refers to "feel" is semantically extended to indicate a subjective, uncertain sort of claim. Examples include (7) and (8).

- (7) I feel that I am going to do well
 (8) *siento* que me va a ir bien²

Such evidential uses express even less certainty on the part of the speaker than those referring to hearing and seeing. They also constitute the "weakest" forms of evidence. (See Willett 1988, Matlock and Sweetser 1989).

As was shown above with examples from English and in Spanish, a verb that originally referred solely to perception semantically extends, giving a new, indirect evidential meaning. This diachronic process occurs in many languages, typically such that the mode of perception coded by the verb in its original meaning correlates with the meaning of the new, evidential meaning of the verb at a later stage. Namely, verbs of vision are held to be "stronger", or more reliable forms of evidence than are those of audition or tacton. This correlation is not arbitrary; rather, it is systematic, natural, and motivated by the inherent nature of perception and the ways we think about perception. (See Matlock and Sweetser 1989.)

When verbs grammaticalize to evidential markers they undergo similar semantic changes to verbs which adopt an evidential meaning, but which do not take on a new grammatical function. I will now discuss some cases of grammaticalized evidentials.

In Newari (Tibeto-Burman), the direct experience evidential *tql* (shown in (9)) evolved from *tql*, a verb meaning 'keep, put'. In grammaticalizing to an evidential marker, it has adopted a new meaning; it now refers to the observation of the end results of something that occurred in the past. It has also taken on a new grammatical function. (This morpheme, in its non-evidential function, also serves as a benefactive marker and a perfective marker.) ('PD' = past disjunct.)

Newari (Genetti 1986)

- (9) *wq-q swama piy-a tol-q*
 he-ERG flower plant-PART EV-PD
he has planted the flowers (I see them blooming)

The evidential *tol* implies greater certainty of knowledge, or "stronger" evidence, than does *dhun(k-)*, another evidential in the language, shown in (10). The speaker uses this evidential marker to express unspecified inferred evidence. It evolved from the verb meaning 'finish'. (Genetti 1986)

Newari (Genetti 1986)

- (10) *wq-p swama pi-i dhun-k-qlq*
 he-ERG flower plant-PART EV-PD
he has planted the flowers (they're not up yet)

Maricopa (Yuman) has a complex system of evidentials.³ One evidential, *-yuu*, a verbal suffix, refers to direct visual experience. This is illustrated in (11). (*-k-* indicates 'neutral realis aspect'.) (See Gordon 1986b.)

Maricopa (Gordon 1986b)

(11) *iima-k'-yuu*

dance-ASP-EV

he danced (I know because I saw it)

This evidential evolved from *yuu*, a verb which still exists independently with the meaning 'see'. Like *-'a*, a verbal affix that means 'I heard it', and other evidentials in Maricopa, *-yuu* is in its early stages of grammaticalization (evidenced, for example, by the lack of phonological erosion). (See Gordon 1986a.)

Not all instances of *-yuu* indicate visual perception. Sometimes this evidential refers to situations that involve firsthand experience. This is shown in (12), in which *-yuu* occurs with the first person. Here, this evidential marker codes "strong" evidence even when it does not refer to visual perception.⁴

Maricopa (Gordon 1986b)

(12) *'-iima-k'-yuu*

1-dance-ASP-EV

I danced (for sure in the past)

Another example of an evidential that has evolved from a perceptual verb is found in Wintu (Wintun). In this language, the evidential *-nther*, evolved from a passive form of the verb *mut*, 'hear, feel, sense'. (See Schlichter 1986.) Shown in (13), this evidential marker indicates direct auditory perception. It also refers to other forms of non-visual perceptual experience, shown in (14). ('IM' indicates imperfective aspect.)

Wintu (Schlichter 1986)

(13) *heket wira waca:-bi-nthe:-m*

someone come cry IM-EV-DUB

someone is crying (I hear them)

(14) *pi k'ilepma: daqca-nthe:-m*

it awfully hot-EV-DUB

it's awfully hot (I feel the heat)

This evidential sometimes refers to speaker intuition, illustrated in (15).

Wintu (Schlichter 1986)

(15) *po:m yel-hurawi-nthe:-m*

earth destroy- SEQ-EV-DUB

the earth will be destroyed (I feel it intuitively)

In cases (9)-(15), a verb grammaticalized into an evidential marker, and in (3)-(8), a verb semantically extended to take on an evidential meaning. Both of these types of diachronic developments involved a verb gradually adopting a new, evidential function. I will now discuss some of the semantic changes that occur in the grammaticalized cases. In doing so, I will consider earlier observations about semantic change and how they relate to the grammaticalization of evidentials.

Each of the cases in (9)-(15) involved a verb grammaticalizing into an evidential. In each case, a shift from non-epistemic to epistemic has taken place. For instance, the Newari verb *ʔol* at Stage I simply indicated physical grasp. At Stage II, it functions as an evidential that codes attested knowledge of the speaker.

Also in (9)-(15) the meaning of the item undergoing grammaticalization becomes more abstract. For instance, in Wintu, the evidential *-nther* once (as a verb) referred to hearing and other forms of non-visual perception. It now, in some instances, refers to intuition, illustrated in (15). This meaning-shift is not surprising considering the nature

of perception and thought. Relatively speaking, hearing is more concrete than intuition. It is also more objective; we are exposed to the same sort of sounds, which we process accordingly. For instance, I can hear exactly what the person next to me is hearing, but I cannot think (under normal circumstances) exactly what the other person is thinking. Hearing is also less conscious and more passive than intuition. Sounds simply "enter" our auditory field and we process them. In contrast, intuition is generally more inaccessible and requires more conscious control. These kinds of differences motivate the shift from concrete to abstract.

At first glance, it might appear that there is semantic loss when a verb grammaticalizes to an evidential.⁶ For example, as shown in (12), in Maricopa, a verb meaning 'see' has grammaticalized to an evidential that in some instances does not refer to visual perception, but to "strong" evidence. This case initially seems to suggest that there is "loss" of the central part of the meaning of this item: visual perception. However, there are several reasons for ruling out the possibility of "loss" of meaning in the grammaticalization of verbs to evidentials. For one, it could be argued that there is actually an "increase" in meaning. For instance, with each of the above cases, the item undergoing grammaticalization increases its semantic scope. Specifically, in each case, the item at the beginning of the diachronic process had only verbal scope; at a later stage, it gained propositional scope.⁷ The Maricopa evidential *-yuu* illustrates this. At Stage I in its development, *yuu* expressed that a situation was visually perceived by some viewer. At Stage II, as shown in (11), it codes not only visual perception of some situation, but also the speaker's attitude about the situation.⁸

With each of the above developments, there is also an increase in speaker *situatedness*. Each verb took on a greater degree of situatedness when it grammaticalized because the coding of the evidential directly involves the speaker's experience and knowledge of a situation. This can be seen in the Newari example in (9). As a verb, *tol* expressed physical grasp, and as an evidential, it refers to direct experience of the speaker (her attitude toward the situation).

These changes parallel the cases shown in (3)-(8) (which are essentially semi-grammaticalized cases). For instance, when used as an evidential, *see* becomes epistemic, increases in propositional scope, and reflects a greater degree of speaker situatedness. Hence, we see from several cases, "loss" of meaning does not occur because the argument could be made that there is increase in meaning. It is better to look at such cases as meaning-shifts.¹⁰

3.0 Metaphor as a Motivation in the Grammaticalization of Evidentials

Metaphor allows us to express abstract things in terms of concrete things. The basic structure of metaphor is as follows: a concrete domain, *source domain*, is mapped onto an abstract domain, *target domain*.¹¹ Examples of metaphors include LIFE IS A JOURNEY, TIME IS SPACE, MIND IS A CONTAINER, IDEAS ARE OBJECTS, and ANGER IS HEAT (Lakoff and Johnson 1980, Lakoff 1987). Some metaphors are more basic than others, reflecting deep cognitive entrenchment. Such metaphors are generally more conventionalized, and are more likely to occur crosslinguistically. As Lakoff (1987 and elsewhere) and many others have shown, metaphor is much more than simply a lexical phenomenon; it is a central part of everyday cognition.¹²

It is important to consider the role of metaphor in diachronic change because it reveals much about the conceptual nature of meaning-shifts that occur through various stages of development. (See Sweetser 1987a.) Research on how metaphor figures in grammaticalization has been done;¹³ however, its role in the diachronic development of evidentials has not yet been addressed. In attempting to better understand the role of metaphor in the diachronic shift of verbs to evidential markers, I will now discuss KNOWING IS SEEING, arguing that this metaphor is evoked synchronically with evidentials that refer to visual perception, and that it motivates the grammaticalization of evidentials from verbs of visual perception.

3.1 KNOWING IS SEEING

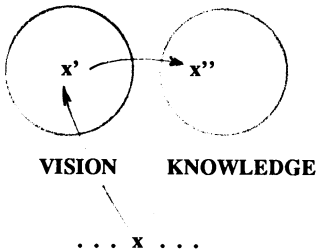
KNOWING IS SEEING is a pervasive and highly conventionalized metaphor.¹⁴ It occurs throughout Indo-European languages (see Sweetser 1984), and in many other types of languages. This metaphor underlies expressions such as *I see what you mean*, *her argument was clear*, and *in my view*... (See Lakoff and Johnson 1980 for other examples). In each of these, a word that pertains to vision is extended via this metaphor to indicate certain aspects of knowledge or thought. For instance, in *I see what you mean*, *see* does not refer to visual perception; rather, it refers to understanding.

In the KNOWING IS SEEING metaphor, VISION structures KNOWLEDGE.¹⁵ Each time this metaphor is evoked, elements of the source domain (VISION), map onto the target domain (KNOWLEDGE). "Elements" here refers to Lakoff's (1987) *basic image-schemata*,¹⁶ preconceptual, quasi-primitive elements that figure prominently in the mapping of KNOWING IS SEEING and other metaphors.

Existing at the preconceptual level, basic image-schemata are instantiated in the source domain (VISION), and where they then map onto the target domain (KNOWLEDGE). In this process, certain inferences arise, determined partially by the type of image-schemata evoked, and partially by the pre-existing structure of the source and target domains.

I will now discuss some of the details involved in the mapping of KNOWING IS SEEING. Figure I represents a partial mapping. It depicts the mapping of only one of the elements of this metaphor, the *link schema*. (See Lakoff 1987.) Simply stated, this element schematically relates any two entities. In Figure I, the link schema is represented by x . In the mapping of KNOWING IS SEEING, the link schema is generated preconceptually, i.e., selected from an array of basic image-schemata (represented by the dots). It "emerges", structures part of the source domain, and is invoked as x' : *the viewer is linked to an entity via visual contact* (where *entity* refers to an object or process). The link schema is then mapped onto the target domain from the source domain via a *connector*, which is represented by the arrow. (See Fauconnier's 1985 *mental spaces*.) In the target domain this element is realized as x'' : *the mental experiencer is linked to an entity via mental contact*.

Figure I



The *source-path-goal* schema (not shown) is another basic image-schema that structures KNOWING IS SEEING. It is instantiated in the source domain as the viewer's *line of sight*, is mapped onto the target domain, and realized as the mental experiencer's *focus of attention*. Evidence for the existence of this schema follows. When we look at something we direct our line of sight toward the entity, and when we think of something, e.g., idea, notion, we **direct** our focus of attention toward it. For example, the idea of direction of attention is invoked in "I see what you mean." This direction of attention constitutes a path at the preconceptual level. Certain inferences arise in this mapping. For example, the *viewer* becomes *mental experiencer* and *visual processing* becomes *mental processing*.

KNOWING IS SEEING occurs each time a speaker uses vision to refer to knowledge. This is the case with visual verbs such as *see* in expressions like *I see what you mean*. This is also the case with evidential markers that canonically refer to direct visual perception. For instance, the Maricopa direct visual evidential marker, *-yuu*, is used to indicate that the speaker has attested knowledge. (See (11) and (12).) Each time a speaker uses this evidential marker, she says 'I saw it firsthand', which indicates to the hearer that the evidence is "strong", i.e., **known** to be true.

KNOWING IS SEEING also motivates the grammaticalization of evidentials from verbs of visual perception, and motivates semantic extensions such as *see* referring to *know*, e.g., *I see what you mean*. This is partly because of the similarity between vision and cognition. For instance, one can pick out an object and focus on it visually, just as one can pick out an idea and focus on it mentally. Also, vision and knowledge are interconnected: knowledge often presupposes vision because vision is our primary source for obtaining information. Conversely, vision often presupposes knowledge; for instance, if I look at a picture of Richard Nixon, I recognize him because of my knowledge about his physical appearance. Finally, our construal of vision and our construal of knowledge are similar; for instance, I have objects in my visual field -- an abstract container (Lakoff and Johnson 1980) -- which I can visually access at will; similarly, I have mental objects, i.e., ideas, in my mind -- another abstract container -- which I can mentally access at will.

4.0 Perception and Knowledge

It was argued that the KNOWING IS SEEING metaphor is evoked synchronically with direct visual evidentials, and that it plays a role in the grammaticalization of evidentials from verbs of visual perception. Now the following question must be asked: Why is VISION used to structure KNOWLEDGE instead of AUDITION or other types of perception? For instance, in Maricopa, we saw that visual perception is used to indicate "strong" evidence, or attested knowledge, and not audition or other forms of perception. To answer this question, we must consider why VISION is associated with more certainty of knowledge than other forms of perception, and why AUDITION and other forms of non-visual perception are associated with inferred knowledge. Part of the answer relates to the nature of perception and our beliefs about it.

Our beliefs about visual perception can be explained by Lakoff's (1987) ICM OF SEEING. (ICM = "Idealized Cognitive Model".) A central component of this ICM is: *we believe what we see*. This is evidenced by the fact that vision is our primary way of gaining information about the real world; it affords us a means of accurately differentiating stimuli as to color, depth, space, size, distance, and a number of other properties. (See Rock 1976, Marr 1982, and Treisman 1986.) We do not have the ability to make such fine-tuned distinctions with audition or other types of perception. Additionally, vision is more active than audition; we can shut our eyes, but we cannot shut our ears (at least not to the same extent).

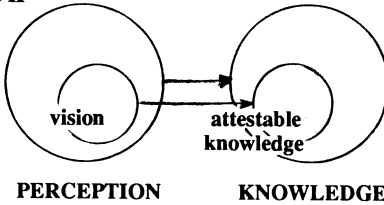
In summary, the way we conceive of perception determines the way we express it linguistically, and this conception motivates the evolution of evidentials from verbs of perception. This accounts for why visual perception has come to indicate "strong", certain evidence (attested knowledge) and why non-visual perception has come to refer to "weaker", less certain evidence (inferred knowledge). Because vision is inherently more accurate than other forms of perception, information obtained through this sensory modality is believed to be more certain or reliable than information gained through other modalities. (For discussion on linguistic coding of perception and knowledge, see Matlock and Sweetser 1989.)

4.1 Higher Level Mapping: PERCEPTION onto KNOWLEDGE

Mapping VISION onto KNOWLEDGE accounts for the cases of grammaticalization in which verbs that referred to vision evolved into evidentials that indicated attested knowledge. Now we need to consider what sort mapping occurs in the semantic change and grammaticalization of verbs of non-visual perception into evidentials.

As shown in the Wintu case in (14), an evidential that indicates inferred knowledge has evolved from a verb that indicated **non-visual** (ultimately auditory) perception. What type of metaphor motivates this type of semantic change, in which a verb of non-visual perception comes to indicate (a "weaker" type of) knowledge? It is possible to posit another metaphor, e.g., HEARING IS KNOWING, but because this mapping is not very productive it is more feasible to posit a more general, higher level metaphor along the lines of that shown in Figure II.

Figure II



In this mapping, PERCEPTION maps onto KNOWLEDGE. Subsumed under this mapping (at a lower level) are more specific metaphors relating to knowledge and perception. For instance, KNOWING IS SEEING, indicated here by the mapping of VISION onto (ATTESTABLE) KNOWLEDGE, is part of this mapping.

Although the details of this higher level mapping requires explication, it potentially accounts for the correlation between the different degrees of certainty of knowledge and the types of perception coded by evidentials. For instance, the correspondence between attestable knowledge and visual perception, as in Maricopa, is sanctioned, and so is the connection between intuition -- a type of unattested evidence -- and non-visual perception, as in Wintu. It also accounts for cases like the indirect visual evidential in English and in Spanish as shown in (3) and (4), in which vision is used to structure inferred knowledge. This is realized by the prominence of the *part-whole* schema because inference involves knowing part of something. Given this, the prominent portion of the target domain is **inferred** knowledge instead of **attested** knowledge, as would be the case with KNOWING IS SEEING.

5.0 Knowledge and Belief

We also need to consider the connection between knowledge and belief, because when the speaker uses an evidential, her intention is to inform the hearer of the certainty of her knowledge. To understand the relation between knowledge and belief fully, we must examine cultural models. According to Sweetser (1987b), our folk models of knowledge allow us to believe information unless otherwise indicated. Generally, it is only when information is contrary to what we would normally believe that we have to make explicit specification. This is evidenced by the fact that in many languages, the highest degree of certainty of evidence is zero-marked. For example, in Wintu, lack of an evidential implies direct visual experience. (See Schlichter 1986.) In such languages, the inferred types of evidence require overt specification. Furthermore, it is never the case that languages that mark direct evidence do not mark indirect evidence. (See Willett 1988.)

6.0 Conclusion

In this paper, I argued that metaphor plays an important role in the grammaticalization of evidentials. To demonstrate this, I analyzed the Maricopa visual evidential, *-yuu*, which refers to attested knowledge, and discussed its diachronic development from a visual verb. It was argued that the KNOWING IS SEEING metaphor was evoked synchronically each time a speaker uses this evidential, and that this metaphor figures in this

type of diachronic change. Also, a higher level metaphor that maps perception onto knowledge was proposed.

This research, in its initial stage, is part of a more global endeavor: to analyze how we conceptualize and structure meanings that relate to perception and other cognitive processes. Such research may lead ultimately to a clearer understanding of the relation between language and other cognitive processes such as vision. Exploring the conceptual structures underlying linguistic constructs is crucial to understanding their synchronic nature as well as their diachronic development.

Notes

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1. Although for *descriptive* purposes it is useful to differentiate the two ways in which evidentiality is coded, a clear-cut distinction cannot be made. A natural gradation exists between these two types of constructions. See Langacker (1987) and Talmy (1988), who argue that the difference between a morpheme and any larger linguistic category is gradational.

2. Some Spanish speakers prefer *presentir*.

3. See Gordon (1986a) and (1986b) for discussion of the development of *-yuu* and other evidentials in this language, and for arguments that these elements have gained grammatical status.

4. I am not saying that no sense of visual perception is coded in cases such as (12). I am saying that visual perception is backgrounded or at least not central to the meaning evoked. For instance, if I am dancing I might see my hands and legs moving, but I would not normally direct my line of sight towards my body. This viewing would be more subjective and less conscious.

5. Sweetser (1988), Traugott (1982), and others have discussed how the meaning of an item becomes more abstract in grammaticalization.

6. Semantic loss has been referred to by Heine and Reh (1984) as "desemanticization", and by Givon and others as "bleaching".

7. See Givon (1982) for discussion on the semantic scope of evidentials.

8. This development is similar to the evolution of modals in English, discussed by Bybee (1988).

9. Traugott (1988) argues that semantic changes, including those involved in grammaticalization, exhibit "greater situatedness of speaker": the meaning becomes more anchored in the context of the speech act, particularly the speaker's orientation to situation. See Traugott (1982:253).

10. Sweetser (1988), Traugott (1988 and elsewhere), and others have shown it is more appropriate to treat cases of grammaticalization as shifts in meaning, not loss of meaning.

11. Lakoff and Johnson (1980).

12. See Lakoff (1987), Turner (1987), Lakoff and Turner (1988), and Johnson (1987).

13. See Sweetser (1988), Claudi and Heine (1986), Bybee and Pagliuca (1985), Fleischman to appear, Traugott and König (1988), and Heine, Claudi, and Hünemeyer (1988).

14. This metaphor has been referred to (e.g., Lakoff and Johnson 1980, Turner 1987) as UNDERSTANDING IS SEEING. Because knowing typically presupposes understanding it is probably better to treat KNOWING as the target domain.

15. This is a natural mapping because vision is more basic than knowledge. (See Sweetser 1984.)

16. These elements are preconceptual elements that have their own internal logic and which shape

our experience. For instance, the *container* schema is comprised of the following properties: an interior, an exterior, and borders that divide the former from the latter. It is evoked linguistically with expressions that we use to refer to containment, for instance, *he's in the room*, *she's in my dreams*, and *the idea is in my head*. See Lakoff (1987) for in-depth discussion.

17. D'Andrade's (1987) *Folk Model of the Mind*, which claims that perception leads to knowledge, captures the essence of this higher level metaphor.

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