

**“Believe possible” verbs: Would you believe they’re possible after all?**

I discuss the nonfactive epistemic attitude predicates (hereafter NEAPS) of K’ichee’, a Mayan language of western Guatemala. These are of a type which has long been known to be logically possible, but which has not so far been found lexicalized in any natural language; they bear the same relation to English ‘believe’ as epistemic ‘might’ bears to epistemic ‘must,’ and involve existential rather than universal quantification.

**Background** Since Hintikka (1969), ‘believe’ has been analyzed as universally quantifying over worlds:

$$\llbracket x \text{ believes } p \rrbracket^{M,w} = 1 \iff \forall w' \in \text{Dox}_x(w), \llbracket p \rrbracket^{M,w'} = 1$$

Now, in most linguistic domains in which there is universal quantification, there is also existential quantification. And so the question has been raised whether any natural language has lexicalized the existential counterpart of ‘believe’ that could fill the blank below (see von Stechow and Heim 2011).

$$\llbracket x \text{ --- } p \rrbracket^{M,w} = 1 \iff \exists w' \in \text{Dox}_x(w), \llbracket p \rrbracket^{M,w'} = 1$$

Note that if we do not limit ourselves to lexicalized predicates, the question becomes trivial. If we are willing to ignore compositionality, we could give an existential analysis of English multiword expressions such as ‘believe it possible that’ or ‘entertain the possibility that.’ But if we do restrict ourselves to lexicalized predicates, then the answer so far has seemed to be “no, there are no existential NEAPS.”

Specifically, it seems the lexical NEAPS in English and other well-studied languages are *consistency-enforcing*.

(1) An attitude predicate  $\mathcal{A}$  is *consistency-enforcing* iff  $(p \wedge q \models \perp) \iff (\mathcal{A}_x p \wedge \mathcal{A}_x q \models \perp)$  for any  $x, p, q$ .

Even intuitively “weak” NEAPS such as ‘suspect’ are consistency-enforcing, as seen by the infelicity of (2). But an existential NEAP, would not have this property. Thus, even ‘suspect’ and similar words cannot be existential.

(2) # John suspects that Obama will win and suspects that Romney will win.

**An existential NEAP in K’ichee’** I show that in K’ichee’, we do find lexicalized existential NEAPS. Indeed, the K’ichee’ lexicalization pattern appears to be the opposite of the English one: based on the field data I have collected, no *universal* NEAPS have been lexicalized in K’ichee’. The existential NEAPS, being strictly weaker than their universal counterparts, are used to describe either full belief or the mere entertaining of a possibility.

The most common existential NEAPS in K’ichee’ are the verbs *-chomaaj* and *-kojoh*. *-Chomaaj* is generally translated ‘think,’ and is used in the frame *-chomaaj cher p* which is generally translated ‘think that  $p$ .’ *-Kojoh* is polysemous; but on the relevant sense it is generally translated ‘believe,’ and *-kojoh cher p* is generally translated ‘believe that  $p$ .’ These translations are inaccurate, though, since they suggest a universal meaning, whereas the data suggests an existential meaning for both predicates. Examples like (3), judged felicitous by native K’ichee’ speakers, show that *-chomaaj* is not consistency-enforcing.<sup>1</sup> Thus the gloss in (3a) is inappropriate. Asked to explain what sort of situation (3) describes, they will say (for instance) “Well, he can’t rule out either one. They’re both doing well. For all he knows, either one will win.” This suggests that the gloss in (3b) is the correct one, and that an existential analysis is viable. Speakers give similar judgments for clauses with *-kojoh*.

(3) *K-u-chomaaj cher k-ch’ayon ri Pérez Molina, choq k-u-chomaaj cher k-ch’ayon*  
 IMPF-3SG-chomaaj that IMPF-win the Pérez Molina also IMPF-3SG-chomaaj cher IMPF-win  
*ri Baldizón.*  
 the Baldizón.

a. # “He thinks Pérez Molina will win and he thinks Baldizón will win.”

b. “He thinks it’s possible Pérez Molina will win and he thinks it’s possible Baldizón will win.”

<sup>1</sup>The names here are of the two most viable candidates in the recent Guatemalan presidential election. As in the United States, Guatemalan electoral law guarantees one and only one eventual winner.

In other respects, however, *-chomaaj* and *-kojoh* have similar properties to English ‘think’ and ‘believe,’ and this includes properties discussed in the epistemological literature as necessary conditions for attributing belief. For instance, K’ichee’ speakers feel that the attitude described by these verbs ‘aims at the truth’ just as belief does — if an agent has this attitude towards a false proposition, then they feel he has made a mistake, and if he discovers his mistake then he ought to change his attitude (see Shah 2003; Williams 1973). This suggests that the difference between the K’ichee’ verbs and their English near-counterparts is really just a difference in quantificational strength, and not a difference in the type of attitude which they describe.

Similarly, one might worry that this data points to a psychological or cultural phenomenon rather than a linguistic one. I show that this is not the case. Significantly, K’ichee’-Spanish bilinguals who accept (3) will *reject* Spanish sentences such as (4) — and, pressed for a reason, point out that you cannot *creer* ‘believe’ in two mutually exclusive outcomes. This shows that we are looking at a linguistic difference between K’ichee’ and better-studied languages, and not a logical error on the part of my K’ichee’ consultants or a difference between K’ichee’ culture and other cultures in folk-metaphysics or folk-epistemology. What’s more, some of the bilinguals who I have worked with are K’ichee’-dominant, so the result in (3) is not an error due to the burden of working in a non-dominant language, or due to misunderstanding or mistranslation.

- (4) # *Cree que Alemania ganará y cree también que España ganará.*  
 believes that Germany will.win and believes too that Spain will.win  
 # “He believes that Germany will win and he also believes that Spain will win.”

Now there is the question of whether K’ichee’ has any lexicalized universal NEAPS. While it is difficult to prove a negative, I will show evidence suggesting that it does not; after an extensive search, the only expressions with universal NEAP meaning I have been able to find are the obvious Spanish loanwords *seguro* ‘sure’ and *cierto* ‘certain’ and the idiomatic multiword expression *-bij wih* ‘be certain’ (literally ‘really say’), suggesting that the universal meaning has not been lexicalized elsewhere in the language.

Note though that this does not limit the expressive power of K’ichee’ — any more than English is limited for lacking a lexicalized existential NEAP. When a distinction between full belief and entertaining-a-possibility is needed, K’ichee’ speakers will fill in the lexical gap with multiword expressions or loanwords. When the distinction is not needed, they will use the existential NEAPS to attribute either full belief or entertaining-a-possibility. Since there is no stronger NEAP to compete with them, use of an existential NEAP does not generate a scalar implicature (compare Deal 2011) and so is pragmatically compatible with full belief.

**A typological question** I close with a broader typological question. We have seen that some languages have lexicalized only universal NEAPS, and some have lexicalized only existential NEAPS. But could there be a language with both? The question becomes even more interesting if we consider the related semantic domain of epistemic modals. Here we find languages which have lexicalized both existential and universal modals (including English, with both epistemic ‘might’ and epistemic ‘must’); and we find languages such as Nez Perce (Deal, 2011) which has lexicalized only existential modals; but no language has yet been reported which has lexicalized only universal modals.

This suggests a broader research program for semantic fieldworkers. Can the asymmetrical gaps in Table 1 be filled in? And if they cannot, then can semantic theory provide an explanation for *why*?

	Existential only	Universal only	Both
Epistemic modals	Nez Perce	???	English
NEAPS	K’ichee’	English	???

Table 1: The typological picture so far

Deal, A.R. (2011). “Modals without scales.” *Language*. \* von Stechow, P. and Heim, I. (2011). *Intensional Semantics*. \* Hintikka, J. (1969). *Models for Modalities*. \* Shah, N. (2003). “How truth governs belief.” *The Phil. Review*. \* Williams, B. (1973). “Deciding Not to Believe,” in *Problems of the Self*.