

FAILURES OF PERSPECTIVE TAKING IN AN OPEN-ENDED SIGNALING TASK

JUSTIN SULIK & GARY LUPYAN

*Department of Psychology, University of Wisconsin-Madison
Madison, WI USA
jsulik@wisc.edu lupyman@wisc.edu*

Imagine needing to communicate some meaning in the absence of a shared, conventional signal. A modern human might do this in a number of ways. Lacking the word *snake*, for example, one might vocally imitate its hiss, or gesturally imitate its slithering, or its biting strike. One could draw a simple stick-figure, or, if speaker and listener share conventional signals other than *snake*, one could say something like ‘legless reptile’. Each of these choices foregrounds — makes salient — a different feature of the snake: its hiss, its movement, its bite, its anatomy, its taxonomy.

Some of these choices about salience will be better than others in conveying the meaning to the interpreter. If the slithering gesture were to make most people guess *fish*, the signal would be a poor choice for communicating about snakes. How does a signaler select a signal in the absence of convention? In particular, what information drives the inference about which out of several potentially salient features is most likely to lead to successful communication? Understanding how signaling occurs in the absence of convention is crucial for understanding the origins of convention (Cubitt & Sugden, 2003), and ultimately for understanding the evolution of language with its reliance on conventional signals.

According to several influential theories (Lewis, 1969; Sperber & Wilson, 1995), people are able to take their interlocutor’s point of view into account when deciding how to signal, inferring either what would be salient from an interlocutor’s perspective, or what information would be relevant to them. We experimentally tested the assumption that people are able to use information about salience or relevance from another’s point of view using a word-guessing game.

In the game, a signaler is given an item, such as *bank*. He/she has to think of a one-word signal to help a guesser guess the item. A very good signal in this case is *teller* because most people guess *bank* given *teller* (Nelson, McEvoy, & Schreiber, 1998). On the other hand, *money* is a poor choice because very few people guess *bank* given *money* (Nelson et al., 1998). The challenge of choosing a good signal is twofold. First, communication of this sort is inherently asymmetric

in the sense that the signaler is **given** *bank*, while the guesser must **infer** *bank*. In addition, salience is often asymmetric, in the sense that *money* is likely to occur to a signaler given the item *bank*, but *bank* isn't likely to occur to the guesser given the signal *money* (Nelson et al., 1998). The question, then, is whether the signaler is able to override the comparatively high salience of *money* from his/her point of view to choose a signal that is more informative from the guesser's point of view, such as *teller*.

Our results show that signalers are more likely to use information about salience from their own perspective than the guesser's perspective in an unconstrained task like the one just described. This leads to low communicative success. For example, 40% of signalers chose *money* to signal *bank* — the most common choice — while 0% chose *teller* (we use this example as an illustration; the experiments used many other items). In an unconstrained task like this, signalers are quite poor in using information from the guesser's perspective, and guessers are even worse at inferring salience from the signaler's perspective.

In a second study we show that communicators do have access to information about salience from the opposite perspective, but they do not access this information outside of tightly constrained contexts. For example, when given a list of 5 potential signals including *money* and *teller*, and asked to pick which would be most likely to help someone guess *bank*, 42% now chose *teller* and just 25% *money*. In a third study, we show that contextual information can promote perspective taking if the context is clearly shared between signaler and guesser. Participants were given a list of items, all of which made *money* salient. They were then asked to help the guesser pick *bank*. This partially inhibited their choosing *money* as a signal for *bank* if told that the guesser also had the list.

In sum, the results show that in a novel signaling task, people are sometimes able to take another's perspective on salience, but this is difficult and achieved only under specific conditions. We give examples of such conditions and conclude that these impose severe limitations on any theory that relies on inference in perspective taking to explain the emergence of successful linguistic conventions.

References

- Cubitt, R. P., & Sugden, R. (2003). Common knowledge, salience and convention: A reconstruction of David Lewis' game theory. *Economics and Philosophy*, 19, 175-210.
- Lewis, D. (1969). *Convention: A philosophical study*. Cambridge, MA: Harvard University Press.
- Nelson, D. L., McEvoy, C. L., & Schreiber, T. A. (1998). *The University of South Florida word association, rhyme, and word fragment norms*. <http://w3.usf.edu/FreeAssociation/>. (Last checked 14 January 2016)
- Sperber, D., & Wilson, D. (1995). *Relevance: Communication and cognition* (2nd ed.). Malden, MA: Blackwell Publishing.