Honest Signaling and the Maxim of Quality

Christopher Ahern
University of Pennsylvania

The modern study of meaning presupposes that agents are, by and large, truthful. In the semantic tradition, the focus has been on determining the truth conditions of sentences, that is, specifying what the world must be like in order for a sentence to be true. In Gricean pragmatics this is seen in the assumption that agents act according to a *Cooperative Principle* and obey the *Maxim of Quality*: Try to make your contribution one that is true, (1) Do not say what you believe to be false, (2) Do not say that for which you lack adequate evidence. In fact, (Grice, 1975, 27) took this to be the most fundamental of his maxims, of a substantially different character than any of the others.

However, in the face of incentives to lie, these assumptions beg the question. If I lie, then you have no reason to listen to me. If you cease to listen to me, I have no reason to speak in the first place. The tempting pull of deception unravels the ability of signals to carry meaning. The fact that words can be used to convey meaning suggests that there are, at the very least, disincentives to being dishonest. How this came to be so rests on the evolution of cooperation broadly (Nowak, 2006; Bowles and Gintis, 2011), and the evolution of honest signaling in particular. Here we consider three general classes of mechanisms for ensuring the stability of honest signaling that have been proposed in the animal signaling literature (Maynard Smith and Harper, 2004; Searcy and Nowicki, 2005). We explore the cognitive capacities and social structures that support the stability of honest signaling, and relate these findings to how we use language.

In particular, we examine how the ability of agents to remember interactions and condition behavior on reputations (Trivers, 1971) might enforce the first submaxim in a population. We define the impact of a memory under certain conditions and determine the role of population size in its effectiveness in curbing dishonesty. We then consider how the spread of reputations via gossip can act as a countervailing force to a dramatic increase in the size of a population. Finally, we look at the problem of honesty in gossip. Through simulations, we find that when agents are held accountable for the gossip they spread, they do best by observing the second submaxim and only making claims with sufficient evidence.

This work shows how the cognitive and social structures of memory, reputation, and gossip act as deterrents to dishonest signaling. More broadly, it connects work on social evolution to the way we use language. We find that it is not the case that we use language in a Gricean manner because our interests are perfectly aligned. Rather, our socio-cognitive circumstances constrain our behavior despite divergent preferences.

References

Bowles, Samuel, and Herbert Gintis. 2011. *A cooperative species: Human reciprocity and its evolution.* Princeton: Princeton University Press.

Grice, H.P. 1975. Logic and conversation. In *Studies in the way of words*, 22–40. Harvard University Press.

Maynard Smith, John, and David Harper. 2004. *Animal signals.* USA: Oxford University Press.

Nowak, Martin A. 2006. Five rules for the evolution of cooperation. *Science* 314(5805):1560–1563.

Searcy, William A., and Stephen Nowicki. 2005. *The evolution of animal communication: Reliability and deception in signaling systems.* Princeton: Princeton University Press.

Trivers, R.L. 1971. The evolution of reciprocal altruism. *Quarterly review of biology* 35–57.