



# Endogenous ambiguity in cheap talk <sup>☆</sup>

Christian Kellner <sup>a,\*</sup>, Mark T. Le Quement <sup>b</sup>

<sup>a</sup> Department of Economics, University of Southampton, UK

<sup>b</sup> School of Economics, University of East Anglia, UK

Received 16 February 2016; final version received 27 September 2017; accepted 16 October 2017

Available online 24 October 2017

---

## Abstract

This paper proposes a model of ambiguous language. We consider a simple cheap talk game in which a sender who faces an ambiguity averse receiver is able to perform ambiguous randomization, i.e. to randomize according to unknown probabilities. We show that for any standard influential communication equilibrium there exists an equilibrium featuring an ambiguous communication strategy which Pareto-dominates it in terms of consistent planning ex ante utilities. Ambiguity, by triggering worst-case decision-making by the receiver, shifts the latter's response to information towards the sender's ideal action, thus encouraging more information transmission.

© 2017 Elsevier Inc. All rights reserved.

*JEL classification:* D81; D83

*Keywords:* Cheap talk; Ambiguity

---

---

<sup>☆</sup> We thank Sarah Auster, Massimiliano Amarante, Eric Danan, Sidartha Gordon, Martin Hellwig, Jean-Philippe Lefort, Willemien Kets, Peter Klibanoff, Daniel Krämer, Stefan Laueremann, Anders Poulsen, Frank Riedel, Gerhard Riener, Robert Sugden, Dezsö Szalay as well as seminar and conference audiences in Bonn, MPI Bonn, SAET 2015 in Cambridge, Workshops on Ambiguity in Bielefeld and Paris, EEA 2015 in Mannheim, ICGT 2015 in Stony Brook, ESWC 2015 in Montreal, GREQAM Aix-Marseille, LEDA Paris-Dauphine, THEMA Cergy-Pontoise, Namur, Southampton, Düsseldorf, East Anglia.

\* Corresponding author.

*E-mail addresses:* [c.kellner@soton.ac.uk](mailto:c.kellner@soton.ac.uk) (C. Kellner), [m.le-quement@uea.ac.uk](mailto:m.le-quement@uea.ac.uk) (M.T. Le Quement).

## 1. Introduction

Ambiguous language is a recurrent feature of economic and political communication. The term *Fedspeak* for example refers to the cryptic language used by chairmen of the Federal Reserve Board. On the face of it, the phenomenon of ambiguous language is puzzling because it appears to gratuitously decrease the precision of transmitted information. Within the standard cheap talk game à la Crawford and Sobel (1982) (CS in what follows), we find that ambiguous language on the contrary increases the payoffs achievable by both parties.

An informed sender ( $S$ ) faces an uninformed receiver ( $R$ ) and  $S$  is known to favor a higher action than  $R$  for any realization of the state.  $R$  is ambiguity averse and applies Max–Min expected utility in the presence of ambiguity. For the canonical Uniform–Quadratic specification of the CS model, we find that  $S$  and  $R$  can both benefit from the use of an ambiguous communication strategy according to which  $S$  conditions her messages on a private draw from an Ellsberg urn. For any standard influential equilibrium, there exists an ambiguous communication equilibrium which strictly Pareto-dominates it. Ambiguity mitigates conflict by shifting upwards  $R$ 's response to information, which encourages greater information transmission.  $S$  gains as she effectively faces a less misaligned receiver.  $R$  also benefits because her suboptimal response to information is more than compensated by more information transmission.

In CS, preference misalignment (i.e. bias) causes imprecise communication. Any equilibrium outcome can be implemented via a so-called partitional equilibrium. The state space is divided into adjacent intervals  $1, \dots, N$  and  $S$  reveals the interval in which the state is located by sending  $m_i$  when the state is in interval  $i$ . Reducing bias causes the largest equilibrium partition to become more informative (i.e. to have more and/or better distributed intervals), yielding a higher expected payoff for both parties.

We propose a new communication strategy which exploits the dynamic inconsistency of  $R$ 's behavior in the presence of ambiguity. By generating local ambiguity, communication leads  $R$  to act as if her preferences were less misaligned than they are. Given a set of standard intervals  $1, \dots, N$ ,  $S$  subdivides every standard interval  $i$  into two adjacent subintervals  $i_-$  and  $i_+$ . If  $S$  draws a red ball from the Ellsberg urn, she sends  $m_i^A$  if  $\omega \in i_-$  and  $m_i^B$  if  $\omega \in i_+$ . If instead  $S$  draws a blue ball, she uses the reciprocal rule, i.e. she sends  $m_i^B$  if  $\omega \in i_-$  and  $m_i^A$  if  $\omega \in i_+$ . Upon observing  $m_i^A$  and  $m_i^B$ ,  $R$  is now Knighteasily uncertain as to whether the state is situated in  $i_-$  or  $i_+$ . We model ambiguity aversion by assuming Max–Min preferences. This involves evaluating every action according to its lowest expected utility under all possible priors (i.e. all possible compositions of the urn) and picking the action that maximizes the thus-constructed objective function. The key mechanism is that if the left subinterval  $i_-$  is significantly larger than the right subinterval  $i_+$ , so that the state is ex ante much more likely to be situated in  $i_-$  than in  $i_+$ ,  $R$  (driven by worst-case thinking) evaluates all low and middle actions as if certain that the state is in  $i_+$ , no matter how unlikely this event.  $R$  thus acts as if subjectively overweighting the event that the state is in  $i_+$ . As a result, she takes a higher action than the expected utility maximizing action conditional on the event that the state is located in the standard interval  $i$ .

Our main contribution is to study Ellsbergian strategies within the classical Crawford and Sobel (1982) cheap talk game. In so doing, we build on Bade (2010), Riedel and Sass (2014), Azrieli and Teper (2011) and Riedel (2017), who introduce ambiguous strategies and equilibrium under such strategies.<sup>1</sup> The ambiguous communication strategy that we introduce builds

<sup>1</sup> See also earlier work by Lo (1996) and Klibanoff (1996) on equilibrium in ambiguous beliefs.

Download English Version:

<https://daneshyari.com/en/article/7359261>

Download Persian Version:

<https://daneshyari.com/article/7359261>

[Daneshyari.com](https://daneshyari.com)