

Titles and Abstracts:

Anton Benz (ZAS Berlin): Communication, games, and errors

Classical game theory is concerned with the interdependent decision making of rational agents. Parameters which enter its models are the agents' information states, preferences, and choices of action. Models of bounded rationality, in general, acknowledge cognitive parameters only in the form of weaker rationality criteria. In this talk we argue that cognitive processes of language production play a central role in linguistic pragmatics, in particular, in their capacity of predicting deviations from strictly literal communication. We further argue that standard signaling games have to be extended to allow for hearer feedback in the form of clarification requests. If costs of communication are nominal and deviations from literal communication are interpreted as errors, then the existence of clarification requests will remove all ambiguity from communication, in particular, they will not allow interpretation by guessing. We will discuss a number of examples involving relevance implicatures, exhaustification, and embedded scalar implicatures.

Anton Benz & Katja Jasinskaja (ZAS Berlin): Implicatures in discourse: some observations and ideas

In the neo-Gricean tradition quantity implicatures are generated on sentential, or even sub-sentential level. In recent years more and more arguments have been put forward which indicate that implicatures are, in fact, discourse phenomena. Among the most interesting examples are those discussed by Asher (2012):

- (1) If you take cheese or dessert, you pay \$ 20; but if you take both there is a surcharge.
- (2) If you take only a cheese dish or only a dessert, the menu is 20 euros; but if you take both, there is a surcharge.
- (3) If John owns two cars, then the third one outside his house must be his girlfriend's.
- (4) If John owns two cars only, then the third one outside his house must be his girlfriend's.

The sentences in (1) and (3) have the implicatures in (2) and (4). However, it has often been argued that standard scalar implicatures do not arise in negative polarity contexts. Asher explains that they are triggered by the discourse relations of the conditionals. We discuss these and similar examples but argue that they can be explained in a question based discourse theory. In particular, we will demonstrate in detail how example (1) can be explained in the framework of error models as proposed in (Benz 2012).

Stefano Demichelis (U Pavia): Stating the obvious: evolutionary foundations of a fragment of conversational maxims

We show that in repeated games or in games with previous communication evolution leads to efficient outcomes, as intuition suggests. Actions used a implicit messages or the presence of a shared meaning correspondence enable to suggest better coordination and to break symmetries when these lead to inefficiency.

For coordination games and their generalizations this characterizes evolutionary stable payoffs. Simple "behavioral maxims" emerge in the evolutionary path, in the case of Communications these constitute a fragment of Grice's conversational maxims. Previous claims to have solved the problem and their shortcomings will be discussed, too.

Michael Franke (Amsterdam): Fuzzy language in action

Sim-max games are signaling games with a large state space and only few messages where the receiver tries to guess the actual state and both players' utilities are proportional to the similarity of the actual state and the receiver's guess. These games have been used to account for some alleged key properties of basic perceptual categories, such as convexity and vagueness (Jäger 2007, Jäger and van Rooij 2007, Franke et. al 2010). In this talk I explore an extension of sim-max games in which some messages are basic predicates (think: tall or short) while others are composite (think: tall and not tall). The meaning of atomic expressions varies as usual with the way the expression is used. The meaning of composite expressions then is derived from the variable meaning of atomic expressions based on a fixed fuzzy logical semantics. Effectively, this extension helps study the influence that the availability of compositional expressions has on the use/meaning of the underlying atomic expressions. Moreover, we obtain predictions about the optimized use of the derived compositional expressions. Numerical simulations show that the available compositional terms push the meaning of atomic expressions to more extreme values as vindicated in empirical studies (e.g., Schmidt et al. 2009, Solt & Gotzner 2012), thus explaining why tall does not denote individuals just slightly taller than average, as plain sim-max games would predict. We also receive clear predictions about the use of complex expressions, including so-called borderline contradictions, such as tall and not tall, that line up well with recent experimental results (Alxatib and Pelletier 2011, Ripley 2011, Serchuck et al. 2011).

Roland Mühlenbernd (U Tübingen): Interdependencies of Production and Perception in Signaling Games

The application of signaling games (Lewis, 1969) to explain conventional language use is manifoldly examined by employing various dynamics that generate cultural evolution in a multi-agent setup (as an overview see Huttegger and Zollman, 2011). Particularly prominent in combination with repeated signaling games are the replicator dynamics (cf. Wärneryd, 1993; Huttegger, 2007), different imitation dynamics (cf. Zollman, 2005; Wagner, 2008) and learning dynamics (cf. Young, 1993; Skyrms, 2010). In contrast to the standard 'two players one shot' game here in most of the studies agents play a symmetrized game by switching between sender and receiver role. In such a scenario agents use a strategy pair (s,r) of sender strategy s and receiver strategy r. In all referable accounts known to me agents' sender role and receiver role behavior are isolated from each other. Concerning this issue I claim that it is much more plausible that agents' sender role and receiver role behavior are influenced by each other. For that purpose I define the set of plausible strategy pairs for static signaling games. Furthermore for dynamic signaling games I present a learning dynamics account that considers interdependencies of production (sender role behavior) and perception (receiver role behavior).

Sascia Pavan (Italy): Quantity implicatures and signalling games. Iterated admissibility as a solution concept in game-theoretic pragmatics

In this talk I shall propose a game-theoretic account of quantity implicatures which models a conversation as a signalling game. It is shown that methods usually employed for signalling games in the literature are effective solution concepts in this case. Attention will be focused on iterated admissibility (a.k.a. iterated weak dominance, see Fudenberg and Tirole 1991) and elimination of type-message pairs by dominance (Cho and Kreps 1987). In some cases, this approach will presuppose an additional assumption which will be defended providing some independent empirical evidence. Some rival game-theoretic accounts of the same phenomena will be criticised. It will be argued that the theories of Prashant Parikh (1992, 2001) and Gerhard Jäger (2011) lead to incorrect empirical predictions, while Robert van Rooij's theory (2008) will be criticised from a more abstract perspective. Finally, a possible improvement of

the present account will be briefly explored, namely the employment of the much stronger notion of strategic stability (Kohlberg and Mertens 1986).

Jason Quinley (U Tübingen): About Face!

Politeness is arguably both the most strategic domain of pragmatics and the most counter-intuitive, as many of its strategies tend to run counter to traditional pragmatic processes of efficient information transmission. This paper builds on recent work in game-theoretic treatments of politeness towards two ends: connecting speech acts with game models and the notion of face with reputation.

The speech acts considered will include, but not be limited to, requests and proposals. In particular, we will discuss the use of the subjunctive mood as both an extra strategy players can use and an expression encoding possible world semantics that can change the information states of the two players involved.

As for face, we will examine Brown and Levinson's (1978) notions of positive and negative face, i.e. the preferences for autonomy and acceptance that agents have and how they can be factored into game models in a manner similar to work done on reputation within games like the Prisoner's Dilemma.

Daniel Rothschild (Oxford U): Modeling scalar implicatures with iterated weak dominance

I will discuss some of the basic decision points in representing the derivation of scalar implicatures using a game-theoretic model. I argue that iterated weak dominance captures scalar implicature derivation in a more traditional and robust way than many other current methods. I will also discuss the downsides of using iterated weak dominance.

Benjamin Russell (USA): "Embedded" scalar implicature and probabilistic reasoning

A number of studies appeared in the linguistic pragmatics literature around the turn of the millennium that questioned the traditional Gricean view of scalar implicature. These studies argued that, while the application of Gricean reasoning may be straightforward for simple sentences, typical Gricean arguments do not apply when scalar terms appear in more complex sentences, particularly sentences where the scalar term is embedded below a belief operator or other propositional attitude. Gricean proponents countered that these "embedded" implicatures can be derived using extra assumptions about the attitudes of agents: with respect to belief, the necessary assumption is that an agent is opinionated with respect to a stronger alternative (George either believes all of the students are missing or he believes not all are missing). Grammatical proponents responded that, while an opinionatedness assumption is plausible for neg-raising predicates like believe, it is not plausible for non-neg-raisers, like certain. In this talk, I present experimental evidence that the strength of an embedded implicature is sensitive to the likelihood of opinionatedness for the embedding predicate (which is correlated with the neg-raising property), in line with a probabilistic theory in which the strength of an embedded implicature is determined by the prior probability distribution.

Elliott Wagner (Amsterdam): Communication in finite populations

When a speaker's and hearer's interests are sufficiently misaligned, communication may not be possible at Nash equilibria. After all, why would the receiver listen to signals if the sender has a temptation to deceive, and why would the speaker signal informatively if she can gain through exploiting the receiver's behavior? Roughly speaking, this wisdom is confirmed through standard infinite population models of learning and evolution in games. Infinite population models do not have limit points that are not Nash equilibria, and therefore these models will not lead to communication in signaling games with sufficiently misaligned interests. Models of finite populations, however, sometimes have radically different long-run

behavior. Due to random chance (which is washed out in infinite population models), non-equilibrium strategies will occasionally become fixed in finite populations. Using techniques developed by Fudenberg and Imhoff (2006), it is demonstrated in this paper that finite populations may have a high probability of sustaining communication even when the speaker's and hearer's interests are so divergent that separating strategies are not Nash equilibria of the underlying signaling game.