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# Consulting Common Ground During Referential Interpretation

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## Introduction

Common ground consists of information which is mutually believed by conversational participants (Clark, 1992). This information comes from world knowledge, joint cultural or community membership, perceptually salient objects and events, past personal interactions, and a record of the current conversation. This can be contrasted with privileged ground, information that is known to only one of the participants.

While a large body of research suggests that common ground affects the construction and interpretation of referential expressions, almost no work has examined the time course of these processes. Recently, Keysar and colleagues have presented evidence that common ground may be used to filter rather than restrict initial processing. The key finding is that privileged information is used in the production and interpretation of referential expressions rather than just information in common ground (Horton & Keysar, 1996; Keysar et al., 1996). However, a potential criticism of these studies is that common ground was not established interactively. The research reported here used a referential communication task in which common ground was clearly established to investigate its effect on the domain of reference. We hypothesize that during interpretation, perceptually available alternatives in privileged ground will be considered along with alternatives in common ground, indicating that common ground does not initially restrict the possible set of interpretations for a referring expression.

## Method and Results

We placed subjects in a referential communication task with a confederate speaker. Subjects' eye-movements were recorded with an Applied Scientific Laboratories free-head eyetracker as the speaker instructed them to manipulate colored shapes on a vertical display board (with the pretense of getting their boards to match). For each trial, subjects placed a "secret shape" unknown to the speaker on the board, establishing privileged ground. In addition, the confederate and subject went through a process of entering four other shapes into common ground before the matching task began. The critical instruction on experimental trials was always the last instruction given by the confederate:

"Put a [stacking shape] on the [target shape]."

Experimental trials varied on two dimensions: whether or not a competitor (possible but not actual referent of "target shape") was in common ground or in privileged ground; and

whether or not the competitor was the same color as the target shape.

In the common ground conditions, a potential competitor was located in common ground; i.e., the competitor and the target shape had both been identified and placed into position as the subject followed the confederate's instructions. In contrast, in the privileged ground conditions a potential competitor was located in privileged ground; i.e., the secret shape matched the target shape.

Preliminary analysis of eye-movement latencies and false launches to competitor shapes show that when the competitor shape and the target shape were different colors, there was no competition between them; e.g., a "red square" was not considered a possible location when a subject was told "Put the green square on the blue one". However, in the same color conditions, where the competitor matched the target shape, subjects considered the competitor shape as a possible location in *both* the common ground and the privileged ground conditions. When the competitor and target shapes were both located in common ground, subjects expressed verbal confusion about the appropriate interpretation. When the competitor was in privileged ground, subjects took longer to locate the correct target location, and often briefly looked at their "secret shape".

This data pattern suggests that while information from common ground is rapidly available, it does not initially restrict the interpretation of referential expressions.

## Acknowledgments

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## References

- Clark, H. H. (1992). *Arenas of Language Use*. Chicago: The University of Chicago Press.
- Clark, H. H. (1996). *Using Language*. Cambridge: Cambridge University Press.
- Clark, H. H., Schreuder, R., & Buttrick, S. (1983). Common ground and the understanding of demonstrative reference. *Journal of Verbal Learning and Verbal Behavior*, 22, 245-258.
- Horton, W. S. & Keysar, B. (1996). When do speakers take into account common ground? *Cognition*, 59, 91-117.
- Keysar, B., Barr, D. J., Balin, J. A., & Braunder, J. S. (1996). Common ground: An error detection mechanism in comprehension. Paper presented at the 37th Annual Meeting of the Psychonomic Society. Chicago, IL.