Agents Interpreting Imperative Sentences

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Abstract. The aim of this paper is to present a model for the interpretation of imperative sentences in which reasoning agents play the role of speakers and hearers. A requirement is associated with both the person who makes and the person who receives the order, which prevents the hearer coming to inappropriate conclusions about the actions s/he has been commanded to do. By relating imperatives with the actions they prescribe, the dynamic aspect of imperatives is captured. Further, by using the idea of *encapsulation*, it is possible to distinguish what is demanded by an imperative from the inferential consequences of the imperative. These two ingredients provide agents with the tools to avoid inferential problems in interpretation.

1 Introduction

There is a move to produce formal theories which attempt to capture different aspects of agents, such as the ability to reason, plan, and interpret language. Some such theories seek to formalize power relations between agents, where an agent can make other agents satisfy his/her goals (e.g. [10;11]). Here we present a model in which agents represent speakers and hearers. Once an agent has uttered an order, the main role of the agent addressed is to interpret it and decide what course of actions s/he needs to follow, so that the order given can be satisfied. Nevertheless, without care, such autonomous reasoning behavior might lead to inappropriate inferences, as we shall see. In the specific case of the interpretation of imperatives, there is an additional problem: imperatives do not denote truth values. The term *practical inference* has been used to refer inferential patterns involving imperatives. For instance, if an agent A is addressed with the order *Love your neighbours as yourself!* and A realizes that Alison, is one of those object referred as his/her neighbours, then A could infer *Love Alison as yourself*. Even though the order given cannot be *true* or *false* [9; 13; 18].

Formalizations in which imperatives are translated into statements of classical logic are problematic as they can lead an agent to draw inappropriate conclusions. In those approaches, if an agent A is given the order *Post the letter!*, s/he can erroneously infer that s/he has been ordered to *Post the letter or burn the letter!* by using the rule of introduction for disjunction. Thus, having a choice, agent A might