Word Sense Disambiguation with Basic-Level Categories

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Abstract. Research in basic-level categories has provided insights that can be beneficially used in word-sense disambiguation. Human beings favor certain categories over others and this is reflected in their use of language. Parts and functions categories are especially useful in providing contextual clues. The disambiguation effort in this article concentrates on the two main senses of the word "palm." The results are encouraging and indicate that basic-level categories will have a role to play in computational linguistics.

1   Introduction

If a word has only one sense, a non-native speaker can confirm its meaning by a quick look at a dictionary. Most of the words do have, however, more than one sense, and both the native and the non-native speaker need to use the word context in order to find its correct sense. For example, when we look at the sentence,

> There was a large blister on the heel of his right palm.

it is obvious to us that the word *palm* refers to a body part rather than to a tree or a handheld computer. The words *blister*, *heel*, *his*, and *right* when combined in a certain way point us towards the correct meaning.

Most of the automated disambiguation techniques, one way or another, are context-based, making use not only of the words themselves, but also of the part-of-speech information, word order, document genre and so on. Generally, we can say that these techniques are justified by our observations that certain words do co-occur quite regularly with each other within certain contexts. This notion has been used somewhat heuristically in automated word sense disambiguation, and often there is no reference to any cognitive disambiguation mechanism that could have been involved. Nevertheless, it is not disputed that context plays a very important part in the word sense disambiguation by our cognitive faculties.

The question arises: what is this human disambiguation mechanism like if it exists, and would it be possible to mimic and exploit it in automated word sense disambiguation? Is it rooted in our biology, and consequently reflected in our cognitive abilities, including our ability to categorize? The classical view of categories is often interpreted as meaning that things belong to the same category only if they have certain properties in common. It might seem that car parts such as a wheel and an engine do not share any properties, therefore should one assume that they cannot belong to the