Context-specific Inconsistencies in the Use of Spatial Reference Systems

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One topic that interests me as a linguist is the interaction between the content of general concepts and deviations from that content that arise in particular contexts. A simple example would be the meaning and use of the prefix \textit{kilo-}, namely 1000. However, a \textit{kilobyte} is not 1000 bytes, but rather 1024 bytes. In this case the usage is conventionalized (\textit{kilobyte} cannot mean 1000 bytes), as well as having an obvious motivation, namely the fact that bytes are counted as powers or 2 (1024 = 2^{10}, which is moreover the power of 10 closest to 1000). An example closer to the thrust of this paper is the identification of hot and cold faucets. The surest way of identifying each faucet is to run the water and test its temperature. In addition, each faucet may be identified by the word “hot” or “cold,” or an abbreviation thereof, or an icon such as red color for hot and blue color for cold—these thus stand for the result of applying the direct temperature test. In addition, many cultures have a convention for arranging the two faucets, e.g., in the U.S. the hot tap to the left, the cold tap to the right. Someone accustomed to this arrangement may well take left position to indicate hot, right position to indicate cold, even in the absence of any explicit indication on the faucet, indeed even contrary to such indication. Left-right position thus “hijacks” conceptually the actual temperature of a faucet—until, of course, one feels the water.

With respect to space, a fair amount of attention has been paid recently to shifts between different frames of reference in shifting between different tasks, as witnessed by several contributions to this special meeting. My own interest is somewhat different, concerning as it does shifts in the orientation of an individual frame of reference in shifting between different tasks. While I have presented this phenomenon to an audience of linguists (Comrie 2003), and to a broader audience in a 3-minute talk under the auspices of the UCSB Center for Spatial Studies, I would welcome feedback from and discussion with a broader spectrum of specialists from different disciplines with an interest in spatial reference systems. Both examples cited here come from my own experience. Although they have been confirmed anecdotally by others, suggestions for more systematic investigation are welcomed.

The first concerns left-right orientation. In general, I do not have problems with “left” versus “right,” and can orient myself systematically and correctly when given directions in these terms. It was therefore somewhat disconcerting, when I moved from the UK to the US, to find that I would often confuse the two directions when receiving instructions while driving, turning to the right when told to turn to the left and vice versa. I did not experience the problem in contexts other than driving, nor had I experienced similar problems when driving in the U.K. A moment’s
thought revealed why the problem had arisen, although unfortunately it did not provide a solution.

In the UK, traffic drives on the left-hand side. This means that a left-hand turn is (other things equal) easier than a right-hand turn, since the latter comprises all the factors involved in the former plus the additional factor that one is driving across the line of oncoming traffic. In the U.K., therefore, a left-hand turn is an “easy” turn, while a right-hand turn is a “difficult” turn. This provides a mechanism for the concepts “easy turn” and “difficult turn” to hijack the content of the terms “left” and “right” respectively when driving. The change from “left/right” to “easy/difficult turn” makes no practical difference in a context such as the U.K. where traffic drives on the left, indeed it had never occurred to me that I had made the change. However, in the context of the U.S., where traffic drives on the right, the change has the predictable outcome, namely confusion of left with right and vice versa—but only in the context of driving. Indeed, mixed contexts, e.g. describing the interacting behavior of a vehicle and pedestrians, can lead to recognition of the conflict, a perceived contradiction. Recognition of the conflict does not, however, necessarily provide a practical solution. The shift from “left/right” to “easy/difficult turn” is so powerful that, even though I have not driven in the U.K. or any other country that drives on the left for more than a decade, I still have to concentrate, when driving, on instructions that involve “left” and “right” if I am not to veer off in the wrong direction.

The second example concerns the cardinal directions. Although I do not regularly update myself on the cardinal directions of my environment, I have no problem in principle with the concepts involved and can orient myself successfully, for instance, in a grid system that is oriented to the cardinal directions. When I moved to Los Angeles I was therefore surprised to find that I systematically confused the cardinal directions, more specifically confusing “south” with “north” and “east” with “west”. I had never experienced this problem in my home region around the city of Sunderland on England’s North Sea coast, nor before or since in most other places where I have lived for an extended period at various periods of my life: Schondorf (southern Germany), Cambridge (England), Moscow (Russia), Aradip (highland Papua New Guinea), Leipzig (Germany), Tokyo (Japan).

My home region is located on a coastline that runs north-south, with the sea to the east. This thus provides a fertile base for the sea to hijack the cardinal directions—“east” is towards the sea, “west” away from the sea, “north” to the left as one faces the sea, and “south” to the right as one faces the sea. All of this works perfectly on an east coast. But on a west coast, as in California, it systematically gives the wrong results. Interestingly, in places that are far enough from the sea, or that do not obviously orient themselves to the sea, such as the other places listed above, the problem does not arise—there is no sea to cause confusion, just as when not driving there is nothing to hijack the usual interpretations of “left” and “right.” And in Santa Barbara, where the freeway runs west-east but is said to run north-south, I just have to concentrate, welcoming the habitual use of explicit single directions such as to the north, towards the mountains.

These observations, though surely valid, require more general investigation, more explicit grounding, and more rigorous testing.
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