Jose Miguel M. Abito
U021579H Arts I

PH1101E Paper (3)
DW8 even (Eric)

Cows and Math

In Lecture Session 15, Dr. John Holbo attacked George Lakoff and Rafael Nuñez's[1] claim that the only mathematics humans know is a "brain-and-mind based mathematics (Lakoff, 1)" by 'cowifying' certain passages taken form *Where Mathematics Comes From*[2]. Holbo explicitly stated in the lecture that he suspects that Lakoff, in his usage of the argument on mathematics, is "committed" to believing that there is no independent existence of cows—cows are creations of the mind. To deny that cows exist external and independent of the human mind is deeply absurd. However, I am sceptical to fully accept Holbo's argument against Lakoff for two reasons, namely that cows and mathematics are two different 'things' or ideas and that though Lakoff's presentation of the argument is flawed, there is sense in saying that human mathematics is "brain-and-mind based."

The following is my construction of Holbo's cow argument:

P_1: Lakoff states that mathematics is mind based and it follows that mathematics does not exist independent of the human brain; man created mathematics and that there is no transcendent Platonic mathematics.
P_2: Cows and mathematics are the 'same'
P_3: Empirical data support independent physical existence of cows
C: Cows and mathematics exist independently and dependently from the human mind. Thus there exists a transcendent Platonic mathematics contrary to what Lakoff argues. (apparent contradiction)

As for my rebuttal, I shall question Holbo's second premise. In the lecture, Holbo admitted that there is stark confusion on the 'cowification' of passage 14. Instead of using 'created', Holbo translated it into 'raised'. He defends his usage of 'raise' by implying that mathematicians 'raised' mathematics by compiling and augmenting prior

[1] From here on, references to Lakoff and Nuñez would be simplified by just referring to Lakoff to save space.
[2] Refer to passages 14, 15, 17, 18 of Lakoff Lecture notes prepared by Dr. Holbo.

mathematical knowledge. There is some truth in Holbo's claim; however, if one accepts this translation, one denies the fact that this prior mathematical knowledge found in the 'old books' was created and written by prior mathematicians. Furthermore, one implies that creation is synonymous to raising or nurturing. Is it true that just because Tarzan was raised by apes, he is created by apes? Empirically, Tarzan is definitely 'created' by human parents, not apes.

The difficulty in using "cows as we know them have been created and used by human beings" in the 'cowification' of Lakoff's statement points to us that cows and mathematics are not the same. Is this difference between cows and mathematics relevant to our case? Yes, because the difference stems from the fact that the independent existence of cows can be confirmed empirically (as in Tarzan's case) while mathematics cannot, as Lakoff repeatedly mentions. One of the pillars of Lakoff's argument is the lack of empirical data to prove that human mathematics is independent of the human mind. Since the independent existence of cows can be verified empirically, the 'cowification' of Lakoff's argument is both unfair and incorrect.

For my final point, the conclusion that cows and mathematics have both independent and dependent existence is not really a contradiction. In the case of cows, I tend to believe that cows have 'dual existence'—one is the physical being and the other, a brain-and-mind based entity. As mentioned, the existence of a physical cow creature can be verified empirically. However, the human concept of cow is a mind-based entity. Cow, *baka*, *vaca*, *niow*, *tsu*, etc. are terms that refer to the brain-and-mind based cow. For each term, both similar and different meanings are attached. Similarities usually reflect the physical cow while differences occur as certain aspects of culture are attached to the

mental representation of the physical cow. Though sharing almost similar properties, characteristics, and meanings with the physical cow, the mind-based cow does not encompass the true and complete being of the former, and vice versa. For example, in Hinduism, cows are regarded as sacred beings and it is taboo to eat cow meat. In most Western cultures, cow is almost synonymous to tenderloin and rib-eye steak. As we can see, the mental representation of the cow (mind-based) differs across cultures though they tend to represent the same physical being. The same argument goes for human mathematics. Let us first assume that transcendent Platonic mathematics exists and this is our 'physical cow'. Using the previous argument regarding mental representations of cows, human mathematics, though not really cultural-bound (this is subject to debate but beyond the scope of the paper), is still limited and restricted to the capabilities of the human brain—human faculty that allow the creation and processing of the mental representation of transcendent Platonic mathematics. Thus to say that human mathematics and cows are brain-and-mind based and yet transcendent Platonic mathematics and physical cows do exist, is not contradictory and to some extent, 'palatable' to common sense.

What I think Lakoff should concentrate on arguing is that 'human mathematics' is the mental representation (conceptual metaphor) of something—be it a physical object like a cow or an abstract concept like God—and refrain from carelessly stating that through his arguments, he disproved the existence of transcendent Platonic mathematics. Whether transcendent Platonic mathematics exists or not, can neither be proved nor disproved by Science, as Lakoff admits (Lakoff, 2).