Philosophy 240: Symbolic Logic Fall 2013

## A Note on Goats and Cows and the Former 3.1c: 26

Until I changed it, today, 3.1c: 26 read: "Goats and cows produce milk." Mercy raised some questions about this one outside of class and I've been reflecting on the deep issues of translation and interpretation it raises. Here are some thoughts I thought worthy of sharing.

To regiment the given sentence, the first question we have to ask is whether it's a universal or existential claim, U or E.

U	$(\forall x)[(Gx \lor Cx) \supset Mx]$
E	$(\exists x)(Gx \bullet Mx) \bullet (\exists x)(Cx \bullet Mx)$

As always, the existential claim is weaker than the universal one, requiring only that one goat and one cow produces milk for its truth. In contrast, the original sentence seems to be making a claim about a property of goats and cows. 'Goats and cows have spots' and 'goats and cows are in the barn' are more clearly existential claims: some goats and cows have spots; some goats and cows are over there in the barn. But the claim about producing milk is likely to be intended as identifying a natural property of the two species which is more properly understood as universal.

So far so good: U is the better interpretation. But wait a second: What about the boy goats and cows? They don't produce milk. If we translate the original sentence as U, we're taking what seems like a true sentence and regimenting it as a false one. That violates one of the first rules of interpretation: the principle of charity.

The principle of charity has a variety of formulations, but it's basically: try to understand the words of others as true unless you have good reason to think that they're not. When you're given a sentence in a logic book to translate, there's no speaker, but we should practice charity anyway. We don't want to take what looks like a true sentence, 'goats and cows produce milk', and turn it into a false one, U.

Maybe there's a true sentence of **M** nearby that we can use instead of U. How about UR, which restricts the claim to female goats and cows?

UR 
$$(\forall x) \{ [(Gx \lor Cx) \bullet Fx] \supset Mx \}$$

UR is better at charity than U, but it's not better as a translation. The original sentence said nothing about female goats and cows. We've imposed this extra predicate on the translation. It looks as if we're kind of stuck in a dilemma between a strict translation of the words and a charitable interpretation of them.

So be it. That's a problem with interpretation generally. Sometimes our best translations of other people's words aren't literal (or what we sometimes call homophonic). Consider what it takes to translate poetry, like the *lliad*. We don't match words in English with the words in Ancient Greek, directly. Instead, we aim to match other factors, like rhyme or meter or feel, while preserving what we can of content. Also, sometimes we speak in euphemism. Your friend might say, "I'm going to the barn dance tonight," when it's common knowledge among you that you use 'going to the barn dance' to mean 'going to the library to study logic' because you don't want other people to know that you spend a lot of time a the library studying logic. A friend of mine feeds his children chicken nuggets a lot. But they're made of soy, not chicken. (Any Buffy fans out there might compare my friend's kids' dinners with the ending of Doublemeat Palace from the sixth season.)

All of which is to say that UR might be preferable to U in real life. But it's too much interpretation for a logic class. If you gave me UR rather than U on an exam, I'd be puzzled. Where'd the 'Fx' come from?

And things get worse: UR doesn't even get things right! Baby goats don't produce milk. Lactating cows stop producing milk if they aren't milked. There are ailments which will prevent milk production. Just like other mammals, goats and cows need to meet conditions other than being female in order to produce milk. If we're interpreting charitably, we would have to expand past UR to include all of these other conditions.

Well, perhaps it's not quite so bad. Maybe we can appeal to some sorts of dispositions. Let's take 'Dx' to stand for the property of being disposed to produce milk, a simple predicate standing for the complex of properties that are required of a goat or a cow to produce milk: having given birth, having continued milking, not suffering from mastitis or lameness or other problems that Wikipedia tell me can reduce or end milk production.

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UD 
$$(\forall x) \{ [(Gx \lor Cx) \bullet Dx] \supset Mx \}$$

UD looks a little better than UR at first, but I hope you're not too surprised when I tell you doesn't work. The speaker of the original sentence might use the given English words to mean any of a variety of claims. But it would be pretty deviant to use it to mean something like: If p then p. Or even: If you're a goat or a cow, then if p then p. But that's what UD does: For all x, if x is a goat or a cow disposed to make milk, then x is disposed to make milk. That's tautological. But the original sentence is nothing like a tautology. So UD is no good.

At this point, you might just want to give up completely on charity. What's the use of charity if it gives you such a headache? But charity is always a factor in our translations. Even taking the sentences I've given you to translate in *What Follows* as grammatical sentences of English requires charity. You might take them as Swahili nonsense, for example, and refuse to translate nonsense! Or take a mostly random example, 3.1c: 16: All presidents are American politicians. Do we take this as a true sentence, and thus interpret 'president' as 'president of the United States'? Or do we take this as a false sentence in which the speaker forgot that there are presidents of many different sorts. In practice, it often doesn't matter. We mainly work on the surface grammar. For the purposes of this class, U is the best choice for the original 3.1c: 26. But the interpretive questions are just below the surface and, as in the goats and cows case, sometimes they poke out without warning.

Here are a couple of further examples, more practically interesting, from the sheet of extra translations I posted yesterday.

9 Only executives have secretaries.

9 seems false unless we were to stipulate it as a definition of 'executive' or restrict the domain (we'll talk more about domains soon) to a particular institution in which only executives have secretaries. But such a definition of executive is impluasible and there's no indication of which institution we might be talking about. There's little obvious in the principle of charity to help the utterer of 9 and we're best off just translating it according to the surface grammar:  $(\forall x)(Sx \supset Ex)$ .

In contrast, the surface grammar of 10 is not what we usually use it to mean.

10	All that glitters is not	gold. (Gx, Ax)	
10S	$(\forall x)((Gx \supset \sim Ax))$		
10C	$\sim (\forall x)(Gx \supset Ax)$	or, equivalently:	$(\exists \mathbf{x})(\mathbf{G}\mathbf{x} \bullet \sim \mathbf{A}\mathbf{x})$

10S, the surface grammar version of 10, says that nothing gold glitters. But really, 10 is just a poetic way of saying the more-charitable 10C, in either version, that there are things that glitter that aren't gold, so you'd better not conclude from its glittering that what you've got is valuable.

Ordinarily, we'll just look at the surface grammar. But in cases like 10, where the usage is so obviously not according to the surface grammar, we have to invoke charitable interpretation. It would be nice if language were cleaner and easier to translate. But if it were, we wouldn't need logic.