Purpose: By the end of this discussion, students should be able to describe the purposes of Leibniz's universal characteristic and limitations of its logic. The questions below are difficult. Give them your best shot.

1 Leibniz on necessary truths

1. Analyze the last two paragraphs on page 189 of Leibniz's letter to Queen Charlotte. Each paragraph contains an argument.

   (a) What is the conclusion of each paragraph? Hint: Recall the difference between axioms and rules of inference.

   (b) Construct your own argument, using premises you think Leibniz would accept, for each conclusion.

   When you have finished raise your hand, and we will have a larger group discussion.

2. Review your group work from last time.

   (a) Reconstruct Leibniz's argument that our senses are incapable of providing us knowledge of necessary truths [Leibniz, 1989, pp. 189-190].

   (b) Reconstruct Leibniz's argument that "we know [necessary truths] only by this natural light."

   (c) Devise your own arguments for what you consider to be the most controversial Leibnizian premise.

3. On page 11, Leibniz [1989] discusses what it means for the predicate of a proposition to be "contained in" the subject. Summarize Leibniz's definition in your own words. A proposition is called *analytic* if its predicate is contained in the subject. Are analytic propositions necessary truths according to Leibniz? Why or why not?

4. What is a characteristic number? If the concept of "dog" is contained in the concept "mammal", then what is the relationship between their two characteristic numbers?

2 Leibniz's Universal Characteristic

1. Leibniz [1969, p. 6] writes, "But no one has put forward a language or characteristic which embodies, at the same time, both the art of discovery and the art of judgment, that is, a language whose marks or characters perform the same task as arithmetic marks do for numbers and algebraic marks do for magnitudes considered abstractly." Brainstorm what distinction might be [Hint: It might be helpful to consider the distinction between analysis and synthesis that you encountered in Bos' book.]

2. Leibniz [1969, p. 10] distinguishes between a "formal calculus" and calculi for various "subject matters." Explain in your own words what the difference is, and give a concrete example of how a calculus for a particular subject matter might differ from a particular subject matter.

3. Leibniz [1969, p. 11] argues that all propositions are either universal or particular, and they are either affirmative or negative.

   (a) Give your own examples of each type of proposition.
   (b) According to Leibniz's classification, are there any propositions that did not appear in Aristotelian syllogisms?
   (c) Review your notes about the expressive limitations of Aristotelian logic. Do the same limitations apply to Leibniz's logic?

References

G. W. Leibniz. Gottfried Wilhelm Leibniz: philosophical papers and letters. 1969.

G. W. Leibniz. G.W. Leibniz: Philosophical Essays. *Indianapolis and Cambridge: Hackett Publishing Company*, 1989.