2.1 Logic as a Practical Science

Therefore, given the central role of logic in Buridan's enterprise, it is worth considering exactly how he conceives of logic as a science. Commenting on Peter of Spain's earlier-quoted remark on logic as the art of arts, Buridan has the following to say:

> Concerning the first section, we should note that a certain [other version of our] text has [the formulation]: 'dialectic is the art of arts, the science of sciences . . . etc.,' but it is more correct to say only that it is the art of arts. For the names 'art' and 'science' are sometimes taken broadly, and sometimes strictly or properly. If they are taken broadly, then we use them interchangeably, as synonyms; hence, taken in this way, in this description it would be sufficient to insert only one of these two names. Indeed, logic should not even be called the science of sciences, for this would indicate a certain excellence of logic with respect to [all] other sciences, which it cannot have with respect to metaphysics; in fact, metaphysics, rather than logic, should more truly be called the science of sciences, having access to the principles of all inquiries. But when the names 'art' and 'science' are taken strictly, then, in [accordance with] bk. 6 of the *Ethics,*[14] there are five intellectual habits, or virtues, distinguished from one another, namely, understanding, wisdom, prudence, science [or knowledge: *scientia*], and art. Therefore, taken in this way, no such habit is at the same time art and science; in fact, logic thus understood is an art, rather than a science.[15]

In his questions on Porphyry's *Isagoge*, Buridan elaborates his point in more detail.[16] There he also distinguishes between "science" in the strict sense, in which it applies only to a body of necessary, universal, theoretical knowledge, consisting of the conclusions of scientific demonstrations in the strict Aristotelian sense, from "science" in a broader sense. In the latter sense, the term applies not only to strictly theoretical but also to practical subjects, namely, subjects concerning things that are within our power to make or do (or to refrain from making or doing), and the knowledge of which is useful for achieving our ends in these activities. In this broader sense, the art of logic also deserves to be called a science, namely, a *practical* science, the possession of which guides us in our rational practice of forming and evaluating arguments.

In this connection, Buridan also draws the famous distinction between *logica utens* and *logica docens*, that is, logic-in-use and logical doctrine, only

the latter of which can be called an art or practical science, whereas the former embodies those operative principles that are spelled out by the latter. For of course logical rules are operative in all our rational activities, yet those rules in operation, without being spelled out and reflected on, do not constitute logical knowledge. In fact, as Buridan remarks, sometimes, as in the case of sophistic arguments, they lead to something contrary to knowledge, namely, deception.

But logical doctrine, the systematic body of knowledge concerning the universal, necessary laws of various forms of reasoning, is certainly a science, even if not a theoretical one, such as metaphysics, mathematics, or physics. It is, rather, a practical science, which teaches us how to construct and evaluate our argumentations to achieve our desired ends with them, whatever those ends may be.

2.2 Token-based Logic, and the Conventionality of Natural Language

However, this conception of logic as a science gives rise to the following problem for Buridan. A science has to demonstrate universal conclusions. Therefore, apparently, it cannot concern itself with singular terms or propositions.[17] However, in logic we often deal with contingent, singular propositions, such as the proposition 'Socrates is a man' and singular terms, such as 'Socrates', because logic concerns itself with terms and propositions of all sorts.[18] Therefore, logic cannot be a science.

Indeed, quite paradoxically, although Buridan is trying to use his logical theory to show that we can have a consistent metaphysics without universal entities, logical theory itself seems to demand them. For in formulating our logical laws we often talk about terms and propositions as if they were abstract, universal entities, somehow remaining the same in all their individual instances. For instance, we talk about *the* term 'Socrates' as being a singular term, regardless of whether this term exists printed on this page or as uttered by Plato addressing his master. Apparently, we talk about this singular term as if it were a universal entity! However, can we possibly avoid this way of talking, that is, apparently referring to universal entities, in logical theory itself, if we are to formulate *universal* logical laws that equally concern *the* term 'Socrates' in *all* its instances?