

ARISTOTLE AND PEIRCE: Two Views on Diagrams

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It appears that Aristotle (384 B. C.-322 B. C.) and Charles Sanders Peirce (1839-1914) had similar thoughts about the value of diagrams in thinking. The purpose of this article is to cite comments that indicate the merits of the foregoing remark.

Reference 1. Aristotle I. Categories, On Interpretation, Prior Analytics, H. P. Cooke and H. Tredennick, Translators, Loeb Classical Library, Cambridge, MA: Harvard University Press, 1983 (first printing, 1938)

From: *Prior Analytics*: II. "The Theory of Syllogism in the Prior Analytics: Summary of the Contents", p. 184.

"The first book of the *Prior Analytics* falls into two halves. The first 26 chapters are devoted to the formal statement of the theory: the enunciation and demonstration of the laws of syllogistic reasoning, and the analysis of the various forms which the syllogism can take. The last 20 chapters contain instructions for the construction of syllogisms either in general or for special purposes, and a number of practical directions and warnings for students.

"Aristotle begins naturally by defining his subject and explaining his terminology. It is worth noting in this connexion that the use of the words *ορος* (bound or limit), *ακρον* (extreme) and *μεσον* (middle) to describe the terms, and of *διάστημα* (interval) as an alternative to *πρότασις* (premiss), suggests that Aristotle was accustomed to employ some form of blackboard diagram, as it were, for the purposes of illustration. A premiss was probably represented by a line joining the letters chosen to stand for the terms. How quality and quantity were indicated can only be conjectured."

Reference 2. From: *The Essential Peirce, Selected Philosophical Writings, Vol. II (1893-1913)*, Edited by The Peirce Edition Project, Bloomington and Indianapolis: Indiana University Press. "The Nature of Meaning", page 212.

"All necessary reasoning without exception is diagrammatic. That is, we construct an icon of our hypothetical state of things and proceed to observe it. This observation leads us to suspect that something is true, which we may or may not be able to formulate with precision, and we proceed

to inquire whether it is true or not. For this purpose, it is necessary to form a plan of investigation and this is the most difficult part of the whole operation. We not only have to select the features of the diagram which it will be pertinent to pay attention to, but it is also of great importance to return again and again to certain features. Otherwise, although our conclusions may be correct, they will not be the particular conclusions at which we are aiming....”

I believe we have to say that both of these gentlemen anticipated structural models, and Peirce anticipated the concept of Interactive Management, the function of the problematique and the critical nature and purpose of the observatorium.

With this tradition of responsible scholarship, I hope we will be able, ultimately, to see the physical realization of the observatorium, now that we are able to help groups produce logically consistent diagrams having hundreds or even thousands of linked syllogisms.