



'Hume on Space and Geometry': A Rejoinder to Flew's 'One Reservation'

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Hume Studies Volume VIII, Number 1 (April, 1982), 66-69.

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'HUME ON SPACE AND GEOMETRY':
A REJOINDER TO FLEW'S 'ONE RESERVATION'.¹

Flew's reservation about my assertion that the Enquiry contains no significant revision of the Treatise conception of geometry as a body of necessary and synthetic knowledge, appears to involve two charges. Firstly, he alleges that I dismiss but offer no substantial argument against his own view that the Enquiry restores pure geometry "to its place alongside the other two elements of the trinity". Secondly, he thinks that I have committed a serious sin of omission in failing to take into consideration a certain passage in the Enquiry (page 31, section 27) which, in his opinion, constitutes "a quite decisive reason" for supposing that Hume abandoned the Treatise position, in that it contains an account of applied mathematics, a subject on which the Treatise is silent.

To the charge of omission I plead guilty, and I shall presently seek to remedy this defect and to state why I do not share Flew's view of the significance of the said passage. To the former charge I am not so ready to plead guilty, and I shall counter-charge that Flew has failed not only to do justice to my proposed reading of Enquiry page 25, section 20, but also to provide clear and convincing support for his own.

One difficulty encountered in answering Flew lies in understanding whether or not his claim about the status of geometry as a pure science in the Enquiry is put forward independently of his interpretation of E31. As originally presented in Hume's Philosophy of Belief this appears to be the case, and if so, on what evidence does it rest?

In his book², Flew's statement about Hume replacing pure geometry alongside arithmetic and algebra follows directly upon a paragraph in which he comments that Hume's references to geometrical propositions at E25 signify "an important advance from the position of the Treatise". For whereas the status of *perfect precision and certainty* was

there withheld from geometry (T71), Hume now speaks of the *certainty and evidence* of the propositions of Euclidean geometry, and declares such propositions to be *discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe.* (E25)

Now, I argued at some length in my paper (pp.21-24) that Hume is prepared to grant scientific status to geometry in the Enquiry because he has come to regard its certainty as that proper to a mathematics of space. He has abandoned the Treatise contrast between an ideal or theoretical standard of equality, viewed therein as necessary to geometry considered as a science proper, and the merely sensible standard of equality upon which geometry as practised depends. It should not be forgotten that Hume recognises two kinds of certainty where "Relations of Ideas" are concerned, intuitive and demonstrative. Since he fails to provide any detail of the place of each of these in mathematics, the door is left open for speculation along the lines followed in pp. 28-29 of my paper. For there is nothing in E25 which implies that the certainty of all geometrical propositions is of the same kind, or that the process of geometrical demonstration is of the same logical nature as demonstrative reasoning in arithmetic and algebra. In his comment on my position Flew makes no reference to my proposed reason why Hume classes geometry as a science in the Enquiry. Yet, even if this reclassification does mark an advance of a kind, the fact remains that E25 does not furnish incontrovertible evidence for that advance which Flew thinks he finds there. Nor, therefore, is it conclusive against my assertion that Hume in both works regards the propositions of geometry as necessary and synthetic truths. Given that Flew does not wish to deny the inclusion of a synthetic element even in the Enquiry account of mathematics (see H.P.B. pp. 64-66), I find it difficult to see why he supposes that the logical status of the propositions of geometry is different in the Enquiry from that in the Treatise, since in the latter too they are held

to be truths which *depend entirely on the ideas, which we compare together* (T69), and hence as necessary once the ideas are given.

Turning to Enquiry 31, section 27, I note first that it is Flew and not Hume who introduces the concepts 'pure' and 'applied'. Hume speaks only of *mixed mathematics*, and although this term is not unambiguous it is clear from the content of the discussion that he is speaking of the employment of mathematics within those areas of enquiry which concern what he calls "Matters of Fact". If this is all Flew means to convey by referring to "an account of applied mathematics", then I have no quarrel with him, and any disagreement must revolve around a difference of opinion as to Hume's view of geometry when not applied. If the concept of a pure mathematics is taken to connote a system of abstract concepts and principles developed without reference to either physical or perceptual reality, then it would seem, at the very least, bold to assert that Hume regards geometry as a branch of pure mathematics in the Enquiry on the strength of this passage. Maybe this conception is not the one Flew has in mind, although it is certainly suggested by his drawing a parallel between Hume's remarks here and Einstein's epigram.

Hume's comments on geometry in this passage occur within the general context of his thesis that *all the laws of nature, and all the operations of bodies without exception, are known only by experience* (E29). Mathematics, he says, can occupy an auxiliary role in the pursuit and application of knowledge about matters of fact, but it cannot by itself discover laws of nature, nor go beyond experience to give *knowledge of ultimate causes* (E31). In other words, although Hume still regards geometry as the science of sensible, and ultimately physical, space, he does not hold it adequate to the task of determining, for example, the laws of motion of bodies in that space. These laws have a separate status from those relating to the properties of space itself; unlike the latter they are contingent, and their contingency

is unaltered by the invariant nature of space to which the axioms and definitions of geometry owe their necessity.

Hume summarizes his position neatly at E43:

The conclusions which it [reason] draws from considering one circle are the same which it would form upon surveying all the circles in the universe. But no man, having seen only one body move after being impelled by another, could infer that every other body will move after a like impulse. All inferences from experience, therefore, are effects of custom, not of reasoning.

Geometrical inferences, says Hume, rest on reason not experience. Reason considers the spatial properties and relations of appearances and draws conclusions from these by a process of intuition and demonstration. Such conclusions hold universally and necessarily because of the constant nature of our idea of space. So the fact that geometry and mechanics stand on opposite sides of Hume's division of knowledge despite the basic ideas and principles of the former being drawn from sensible appearances reflects Hume's failure to resolve the incompatibility between an empiricist account of space and the certainty of geometrical knowledge. With this in mind I remain unconvinced that Hume's description of the restricted role of geometry in mechanics constitutes a reason for supposing that he has abandoned the Treatise conception of that branch of mathematics, other than in that respect I formerly indicated.

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1. My original paper appeared in the April 1981 edition of Vol. VII.
2. Antony Flew, Hume's Philosophy of Belief (London: Routledge & Kegan Paul, 1961), p.62.