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Beyond Practicality: George Berkeley and the Need for Philosophical Integration in Mathematics.

“When am I ever going to use this?” As a math teacher, this is the number one question that I hear from students. It is also a wrong question; it isn’t the question the student truly intended to ask. The question they are really asking is “Why should I value this?” and they expect a response in terms of how math will solve their problems. But should we study math only because it is useful? Or should we study math simply for its own sake?

It is my contention that valuing mathematical inquiry for its own sake in the general pursuit of truth is a better mindset in which to approach the practice of mathematics, rather than exalting practicality. This paper will demonstrate one unexpected reason to support such a philosophical view: it actually leads to *more* practical applications of mathematical endeavors than would otherwise be discovered.

Support for this theory may be found in the life of George Berkeley. This paper will examine the historic mathematical implications of Berkeley’s philosophical convictions: the refinement of real analysis and the development of nonstandard analysis. Berkeley not only answers the question of why we need philosophical integration in mathematics, but also how we approach such integration. I will close by examining the latter. (Received August 09, 2011)