



## A Little Man Who Wasn't There

Editorial

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*Editor, Notes*

Last June I wrote about major wrong turns in various sciences: things like angle trisection, alchemy, and perpetual motion. Recently I found myself thinking about the role, especially in mathematics, of minor wrong turns: the things researchers try to do, and can't, but end up explaining why it can't be done.

As with so much of mathematics, we can trace this back at least to that apocryphal boat cruise by the Pythagorean Brotherhood, during which somebody possibly called Hippias was (or maybe wasn't) sent to do geometry with the rays and anglerfish for proving (or maybe revealing) that the diagonal of a square wasn't commensurable with its side. If this simple little result was such a surprise to the Tenure and Survival Committee, it must have been very nearly the first of its kind.

This leads us to suspect that Hippias (or whoever it was) started out trying to prove the opposite—to find the (rational, because those were the only numbers they had back then) ratio between side and diagonal. When this attempt failed, he (or maybe she: it's said that the Pythagoreans were coeducational) had a flash of inspiration and did what uncounted thousands of us have done since: changed sides and declared—nay, proved—that the grapes were sour. The rest is history, and we are the richer for it.

It's hard to tell what early mathematicians beat their heads against until they realized their error, because it wasn't the fashion until recently to discuss lacunae. There is no note in Euclid asking whether some clever soul might prove the parallel postulate! Nonetheless, when we look at the structure of the first book, with the use of that postulate being delayed for very nearly as long as possible, we feel that Euclid must have thought about the matter, even if he did not make the breakthrough and invent non-Euclidean geometry.

Wanzel on constructibility, Galois on quintics, Gödel on decidability: the history of mathematics is full of results like these. Some may say "if you can't beat 'em, join 'em." We say, "if you can't prove it, prove you can't prove it."

\*This familiar phrase comes from an 1899 poem by William Hughes Mearns entitled (really!) "Antigonish." X-persons may make of this what they will.

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