Palestine Journal of Mathematics

Vol. 12(4)(2023) , 474–476

MATHEMATICAL MUSINGS I
The Pseudomath, Graphomath, and Philomath: Humour of Augustus de Morgan

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Communicated by Ayman Badawi

MSC 2010 Classifications: Primary 00A09.

Keywords and phrases: Augustus de Morgan; humour; personality types.

Abstract Musings of British mathematician and logician Augustus de Morgan (1806–1871) provide a light-hearted look at particular types of character that inhabit the world of mathematics and places around it.

Most of the pieces in de Morgan's unusual and eclectic text *A Budget of Paradoxes* appeared originally as short essays, letters and book notices in *The Athenæum* (full title, *The Athenæum Journal of Literature, Science, and the Fine Arts*).[1] Out of these—in some cases revised and extended with additional material—de Morgan put together the *Budget* which was published posthumously by his wife, Sophia, the year after his passing. In December 1867 he addressed a letter to *The Athenæum*, headed 'Pseudomath, Philomath, and Graphomath', which offered amusing definitions that are shared here.

The Pseudomath

> "The *pseudomath* is a person who handles mathematics as the monkey handled the razor. The creature tried to shave himself as he had seen his master do; but, not having any notion of the angle at which the razor was to be held, he cut his own throat. He never tried a second time, poor animal! but the pseudomath keeps on at his work, proclaims himself clean-shaved, and all the rest of the world hairy."[2] [1, p. 338].

I speak from personal experience of pseudomaths, having received a number of cranky communications from them over the years on all manner of topics; containing erroneous logic born of mathematical ignorance or inexperience, the psychological flaws and personality disorders they may also reveal range from the mild to the more serious.

The Philomath

> "The *philomath*, for my present purpose, must be exhibited as giving a lesson to presumption. . . ." (p. 338).

He provided an anecdote—apparently true, telling of an instance when the great Euler 'demonstrated' algebraically the existence of God to an unsuspecting atheist Denis Diderot (1713–1784), the French philosopher, art critic and writer, during the latter's invited visit to the Court of Russia's Catherine II—by which we see that a particular philomath with gravitas was able to apply

[1] *The Athenæum* was a magazine published in England from 1828 to 1921, at which point—with decreasing circulation figures—it was incorporated into a younger competitor, *The Nation*, becoming *The Nation and Athenæum*. In 1931 this successor publication merged with *The New Statesman* to form *The New Statesman and Nation*, finally eliminating the name *Athenæum* from literary circles.

[2] He continued (tongue in cheek, of course), "So great is the difference between moral and physical phenomena! Mr. James Smith is, beyond doubt, the great pseudomath of our time. His $3^1/_8$ is the least of a wonderful chain of discoveries. . . ." By 1860, a certain James Smith (of Liverpool) had published several works and pamphlets arguing for the accuracy of his value of π (in seeking the ratio of the circumference to the diameter of a circle), and even attempted to bring it before the British Association for the Advancement of Science. Professors de Morgan and Whewell (William Whewell (1794–1866), English polymath, scientist, Anglican priest, philosopher, theologian, and historian of science), and even the Irish mathematician, astronomer and physicist Sir William Rowan Hamilton (1805–1865), apparently tried unsuccessfully to convince him of his fallacy.

the 'power' of mathematics to debunk the religious beliefs of a technically vulnerable layman; Diderot, wrote de Morgan, was suitably "disconcerted" (as ". . . peals of laughter sounded on all sides."), and returned to France immediately. *L'ignorance est le bonheur*?—maybe not always.[3]

The Graphomath

> "The *graphomath* is a person who, having no mathematics, attempts to describe a mathematician. Novelists perform in this way: . . ." (p. 340).

De Morgan gave supporting examples of misrepresentations of mathematicians and their work accordingly, one or two of which were on a considerable scale. Many of us professional practitioners are all too familiar with false interpretations and misunderstandings of both who we are and what we do, on the part of the graphomath (I never fail to be amazed by people who feel it is acceptable to pass trite and ill informed comment on my discipline, and to infer personality traits by simplistic stereotyping)—such an individual should perhaps adopt a *ne supra crepidam sutor iudicaret* mindset, and apply it.

A Photograph of Augustus de Morgan (Wikimedia Commons)

Appendix

In Aldous Huxley's 1928 novel *Point Counter Point* (Chatto & Windus, London, 1929 reprint), a telephone call is made to Lord Edward, whose relative Lord Gattenden (yearning for evidence of the 'absolute' which he has been seeking for years) wishes to announce ". . . a most extraordinary mathematical proof of the existence of God, . . ." Illidge, who initially takes the call and passes the speaker over to Lord Edward,

> ". . . did not smile, his tone was grave. Gravity in the circumstances was the wildest derision. The statement made fun of itself. Laughing comment made it less, not more, ridiculous." (p. 187).

Gattenden excitedly imparts the news:

> " 'Ah, Edward,' cried the disembodied voice of the head of the family from forty miles away at Gattenden. 'Such a really remarkable discovery. I wanted your opinion on it.

[3] I am grateful to friend James Stanton for pointing me towards another literary reference to such a mathematical 'proof' (see the Appendix).

> About God. You know the formula, m over nought equals infinity, m being any positive number? Well, why not reduce the equation to a simpler form by multiplying both sides by nought? In which case you have m equals infinity times nought. That is to say that a positive number is the product of zero and infinity. Doesn't that demonstrate the creation of the universe by an infinite power out of nothing? Doesn't it?' " (p. 188);

the crass assertion that, for real $m > 0$, $\infty = m/0 \Rightarrow 0 \cdot \infty = 0 \cdot (m/0) = m$ is played out here.

Author's Note

This piece is the first of a series of occasional 'Musings', *each written as a readable, easily digestible and entertaining monograph that deals with an interesting issue in mathematics or else promotes mathematically related curiosities, humour, historical figures, topics tangential to or augmenting mainstream discussion, etc; choice of material is entirely mine, for which I thank the editorial board of the Palestine Journal of Mathematics.*
P.J.L.

References

[1] A. de Morgan, James Smith will not down, *in* D.E. Smith (Ed.), *A Budget of Paradoxes* (Vol. 2), Dover Pubs., New York (1954 republished 2nd edition), 336–344 (1915).

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