

Review, by Dick Suiter (lightly edited in April 2018) of the book:

**The Final Theory, Rethinking Our Scientific Legacy. Author: Mark McCutcheon**

This is not really a book review as that term is generally known, but a story about a publishing phenomenon that can trap members into parting from their hard-earned money to buy worthless books. I was interested in the growing disappointment that string theory is not progressing rapidly enough, so I was searching Google and found the Amazon link and a website that gave away the first chapter of *The Final Theory*.

Well, the first chapter was awful. I saw immediately that McCutcheon was a crank. It contained a supposedly “suppressed” formula, called by McCutcheon the “geometric orbit equation.” It had the form:

$V^2R = K$  , where  $K$  = a constant,  $R$  = orbital radius of a planet, and  $V$  = orbital velocity

Now according to McCutcheon, everyone since Kepler has been trying to quash this formula, supposedly because it more successfully encapsulates the ‘geometrical’ origin of the gravitational force. But it is defined only for circular orbits and can be derived from Kepler’s third law: *The ratio of the cubes of the semi-major axes is equal to the ratio of the squares of their orbital periods*. Simplifying to a circular orbit, and noting that this orbital velocity is  $2\pi R/P = V$  (where  $P$  = period), Kepler’s third law can be rewritten  $R^3/P^2 = c = R^3/[(2\pi R)^2/V^2] = V^2R/(2\pi)^2$ .

Thus Kepler’s  $c$  is the same as McCutcheon’s  $K$  within the factor  $4\pi^2$ . Here we see that the equation that Kepler was supposedly working so hard to hide was a special case of his *much more general* third law. The third law works for even elliptical orbits. There is one thing of which McCutcheon doesn’t seem to be aware, however, and that is the fact that Kepler’s 3rd law is not exact, but this is a nit and not worth the time to discuss. It is interesting in that it gives an insight into the nature of his gaps in knowledge.

Intrigued, I waited for a used copy that was cheaper than a new one (the fact that most 3rd party advertisers of many Amazon books are not cheaper than the price of a new book is another topic!) and finally bought one. In chapters 1 through 3, which are the meat of the book, we are treated to a somewhat idiosyncratic view of gravity, in which the gravity between two bodies is replaced by an accelerating expansion, in other words, the apple falls not because of a gravitational force field, but because all of the atoms of the earth are expanding at an ever increasing rate, so the earth expands upward to meet the apple (the apple expands slightly too). This works well for explaining a direct central fall between a small test mass and a large body, because it is a simple change of viewpoint, but it does not work well to explain large bodies, multiple bodies or periodic phenomena. He goes on to explain his view of various features of the canonical tests of relativity, but his most hand-wavy stuff is the explanation or lack of explanation of the small things, including:

- a) the fact that after an orbit, the relative distances are about the same,
- b) the tides,
- c) the Lagrange-stable points.

He presents his theory of gravity as a simplified improvement, but never says just why it is more satisfying. I, for one, find the concept of force fields much more satisfying (and a better fit to Occam's Razor) than the idea that we are blowing up like balloons.

In these three chapters we see also the mix-ups of the concepts of energy and force. He apparently has never heard of the concept of potential energy and keeps complaining about the ability of magnets to keep on attracting. He insists that the fact that they do keep on attracting is a violation of the conservation of energy. In other words, he comes up with an incorrect definition of energy and shows that things violate it. In a later chapter, he insists that destructive interference of light violates the conservation of energy. He posits a thought-experiment showing that in conventional physics two laser beams joining a half-wave out-of-phase disappear. Conventional physicists says two waves do disappear along the original direction, but they reappear in another direction. This is the same process as an anti-reflection coating, and the last time I looked, anti-reflection coatings work fine.

Another disturbing thing about this book is the high-school level of the mathematics. There is no mention of vectors, none of calculus. Also, after a few crude attempts, he more or less abandons math arguments entirely. That feature is no problem with a popular book that can point at dozens of references that *do* perform the math, but he has no references, no bibliography, and no index. This book is the whole theory. I would think that if he were coming up with a beautiful theory that would entirely kick Newton and Einstein to the curb, he would come up with more mathematical demonstrations. In fact, as the book progresses the arguments become even more hand-wavy until they degenerate into a kind of extended PowerPoint presentation, pretty pictures and nothing else. I have the distinct impression that high-school algebra is about the limit of his knowledge. I also suspect that the supposed "failures" of present day physics he's arguing against are really failures of his elementary physics textbook to properly teach dynamics.

In later chapters he gives his theory of what is wrong with quantum mechanics, and it is clear that he learned quantum theory from the strained analogies of popular books, because much of what he think of as being standard quantum mechanics is not correct or even used. His replacement is pathetic and inadvertently embarrassing, and the less said about it the better.

I talked at the beginning about a new publishing phenomenon that allowed this addled hypothesis to get to print. Vanity publishers have been around a long time. If you were willing to cover the entire cost of publication, plus a profit margin for the publishing company, a vanity press would give your book a light editing, print and deliver (to the author) a small but significant number of books. The cost of this process is what kept it limited. A printing press can't be set up and run in a cost-effective manner for less than 500 to 1000 copies. People had to come up with at least many thousands of dollars to print a book no legitimate publisher wanted, and that kept the numbers of really bad books reaching print small. Better yet, customers were unlikely to be exposed to these books because of the difficulties with distribution and sales. (One sweet old 19th century lady in my home town wrote a vanity title and the historical society still gives away free copies, because the thing never sold!)

But now, a new application of computer technology has enabled the low-cost publication of any book. The publishers, called "POD" for Print On Demand, [see Note 1 at end] have a way of bundling a printing run together. Using the new technology the printer can group small orders of

different books into larger quantities. Small production-run printers also use a variant of laser printing. (Printers are usually different companies than publishers.)

The prices of vanity books drop sharply because there is no need to order 500 or 1000 copies at a time. The publisher just has to sell enough different titles at a dribbling rate to justify a frequent print run. Typically they charge an author between 400 and 1000 dollars to handle a book. (Universal Publishing, which handles *The Final Theory*, charges between \$495 and \$595.) Please note that this is different from “real” publishers, who don’t charge anything and might give an advance on royalties. Coupled with that is the advent of on-line bookstores where these books can actually be sold, and you have a publishing explosion. Amazon apparently does not discourage these books, and even has a POD subsidiary, BookSurge. [Note 2]

I am not in principle opposed to POD publishers, if they’d read the product and reject a few; but they don’t. For one thing, the cost of giving the book more than a flip-through reading would increase to well over a thousand dollars again. POD publishers claim they edit, but they don’t look at their product too closely. To test this statement, a number of science fiction authors got together and deliberately attempted to compose the worst novel in the history of the world, and they succeeded. This book, by made-up author “Travis Tea,” had blank chapters, a chapter composed of random characters, chapters that were repeats of previous chapters. Needless to say, a POD publisher (PublishAmerica) was willing to put it out verbatim. PublishAmerica pulled the title before printing when the authors went public with the story, but the damage to their reputation was done.

The trouble with science cranks is now they have a cheap venue. They’ve always been out there but now they have POD publishing. So every put-upon and suffering Galileo (such is how they see themselves) now has a relatively easy way of producing a neatly-printed and superficially professional book. And worse, they have a way of hawking it on Amazon.

You would think that it would attract negative reviews on Amazon and sell exactly zero copies, but somebody who likes *The Final Theory* has learned how to game the system. The minute a negative review is posted, someone, perhaps in the guise of many people by using different computers or stripping the cookies from one computer between opinions – one reviewer calls them “sock puppets” – starts clicking the “This review was not helpful” button. Amazon apparently has some sort of automatic system which removes negative reviews with too many of these. My review was gone in twelve hours. Negative reviewers of McCutcheon’s book slowly discovered that the only way they could get a review to stick was to give it five stars but say the bad things in the text of the review. Unhelpful positive reviews are for some reason not automatically removed. (There are some older one-star reviews, but I think reviews will ‘set’ after a while or perhaps the reviewer contacted Amazon directly and demonstrated that he had actually bought the book from Amazon and had a right to post a bad review.)

Still, the advocate or advocates of this book have found a countermeasure. The more recent 5-star negative reviews are quickly covered up by a spate of positive reviews, all in what appears to be the same writing style, all by people with two names (no nickname or middle initial), and all with only that one review to their credit. When no negative reviews appear, Amazon’s *Final Theory* page goes quiet, which is suspicious in itself. One negative reviewer caught on and called them “synthetic” reviews!

McCutcheon's book had worked itself up to be a minor Amazon bestseller. This is astonishing performance for a POD book, most of which spiral only to the earth, but it is bad news for people looking for legitimate science books. Admittedly, McCutcheon is at least a competent writer. One other POD book I saw had a review which admired its "creative use of punctuation." *Final Theory* is bound to attract imitators, certainly of the handling of the Amazon page. What it means is that if you ever see an interesting book, you cannot trust the reviews because they are bogus or suppressed. It is like the situation where the early halcyon days of eBay were finally over, when everyone finally learned to put in bids only in the last minutes of the auction and when over half the auctions are by commercial stores. Henceforth, the review feature of Amazon is compromised. [See Note 3.]

POD books have identifiable features. They are all, without exception, printed in "trade paperback" format, a book the size of an ordinary hardbound book but with soft covers. They are generally more expensive page-for-page than legitimate trade paperbacks (\$20 to \$30 vs. \$12 to \$16: 2006 prices). They are generally of poorer quality than real books – halftone art is discouraged. Finally, if you look up the website of the publishers, they always have a frank discussion of their publication rates and how much it will cost to publish your book. True publishers never do this. All real books are newly negotiated.

POD books could be a venue for small-run, low-profit, good books if there were any effort to cull them. As it is, the most rejection most POD publishers do is to have specialties, like some that want no fiction (by bad romance writers), or no juvenile fiction (by the next *Harry Potter* wannabe), or no poetry. (Nearly everyone demands this!) But they will probably continue to be an outlet for those fringe-science cranks who we didn't have to avoid before.

Oh, and if any of you is tempted to break into the publishing industry by writing your own publish-on-demand book, be advised that it is the kiss-of-death as far as legitimate publishers are concerned. Either write one under a pseudonym and never mention it or leave it off your résumé. Real publishers *hate* these vanity publishers and will avoid those who enrich them like the plague.

Notes added in 2018.

- 1) A distinction should be made now between "print-on-demand" technology, which is being embraced by even conventional publishers, and "publish-on-demand" companies, which are still putting out the same sort of self-published vanity titles as always. Small-issue academic publishers are now using this "print a few copies" technology to keep their inventories and storage costs low. (Oddly enough, it hasn't affected the retail price.) You can still identify the vanity publishers by their requests that the author subsidize their operations. There are even operations that charge for editing and marketing services now. When I wrote this review in 2006, the term "POD" was used to indicate the vanity publishers. Now the acronym has shifted meanings.
- 2) Amazon's BookSurge has renamed itself CreateSpace.
- 3) Amazon may have made it more difficult to get rid of negative reviews with its Verified Purchase type of review. As far as I know, it is still easy enough to plaster them over with a layer of synthetic reviews, however.