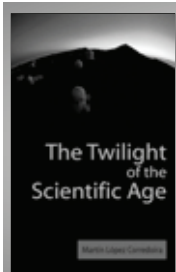


Book Reviews



The Twilight of the Scientific Age

by Martin Lopez Corredoira

ISBN 1-51233-634-5

\$25.95 Paperback, 208 pp.

BrownWalker Press, 2013

Review by Thomas E. Phipps, Jr.

The message of this book is both simple and arresting: Success has spoiled science, in fact, has spoiled it rotten. The author, a Spanish astrophysicist and cosmologist, with Ph.D's in physics and philosophy, currently doing research at an astrophysics institute in Tenerife, is well qualified to judge. He takes a birdseye view of all science, comparing ancient with modern, to the marked disadvantage of the latter.

We tend to find more congenial today the Pollyanna view that all is well with science, provided the government will kick in the next installment of megabucks for our latest research megaproject. But that is the mark of our current scientific decadence, the most visible result of which is ever-diminishing returns. Science, let us say in Newton's day, used to be a *calling*. Its transition to a *profession* was the beginning of the end. We all know it in our bones. We just don't like to face the implications. There are aspects of the associated problems not treated in this book. For instance, what used to be called science, an activity open to all whom it interested, has shrunk to what is now almost exclusively *academic science*. The academies of higher learning, together with a few research institutes, having acquired the equivalent of a patent or copyright on science, have gained a death-grip on all aspects of the subject. (Try submitting a paper with a home address on it to any mainline scientific journal—any paper, any journal, any time. The outcome is independent of scientific merit.) The author does come close to touching on the academic monopoly of what is meant by the "scientific community," in the words: "It would be a shame for formal science if a young man working in a patent office developed a better science than that produced in official places, and the scientific community is nowadays doing its best to ensure this does not happen again, by excluding outsiders." For the most part, the author's treatment of his subject is exhaustive and definitive.

The book opens with a review of some of the highlights of scientific achievement throughout history. It is humbling to recall that right up to the time of Einstein and Schrödinger the landmark "revolutions" in science were effected almost exclusively by thought processes taking place free of charge in the minds of single individuals. Contrast the massive and costly research *teamwork* responsible today for *nichts Neues im Westen*. The modern research administrator lets it be thought that money can buy progress. In fact, if empirical experience may be allowed to speak, the more money the less progress. More research money, more science hype. It is a sorry trade—and poor value for money.

In a chapter on the institutionalization of science, the

author covers many of the sins of repression that must be laid at the door of the established scientific communication system (publication and refereeing). An advocate of freedom and its benefits to all aspects of culture, he adduces many examples of the suppression of freedom within the culture of science as practiced today. Among the peaks of achievement in this area, he points to the gratuitous decision in 2004 by the Cornell University mentors of the arXiv internet scientific preprint service to limit acceptance of papers to authors capable of showing endorsement by the Establishment. Before that, freedom reigned and constituted no threat to the academic petty dictators. But, in token of their basic timidity, they felt the need to make sure. Academia, indeed, shows a consistent contempt and distrust of freedom. Possibly because of its intimacy with irresponsible youth, it has always done so; and we are presently seeing the results clearly only because academia has nowadays attained a more dominant role in the control of our lives. In large part this dominance is owed to its monopoly of the credit for science. As to whether credit is due, perhaps it should be shared with the Swiss patent office. The author makes many pithy remarks about the refereeing system, a unanimous international renunciation of freedom. For instance: "This method of censorship of the promotion of new ideas is on a par with censorship in the Middle Age or in certain totalitarian regimes." The truth is that nowhere in the world do the exponents of higher learning believe in freedom as worth implementing.

The next chapter deals with knowledge and its limits. A dominant theme is that we are drowning in knowledge. In this reviewer's opinion, what we are drowning in, particularly what scientific referees and editors are drowning all of us in, is conviction rather than knowledge.

The subsequent chapters on "Orthodox and Heterodox Science," and on "The Decline of Science," are my favorites. Considering that the author has all the marks of having himself experienced a successful scientific career, which should entitle him to the usual smugness of destiny's favorites, he shows a remarkable sensitivity to the worm's eye view peculiar to those the system grinds under its heel: the people who neither offer nor ask for money, but who offer unconventional ideas. Either he is gifted with exceptional insight, or he has had personal experiences he is not telling us about—or both. I will not spoil these chapters for the prospective reader by too many direct quotations; but cannot resist a few:

- "It is not the time of individual scientists. It is the time of big corporations, of megaprojects which know how to make the maximum profit from state funds."
- "We can use one adjective to describe the status of science at present and in the near future: decadent."
- "Given a theory A self-proclaimed orthodox...and a non-orthodox theory B. If the observations/experiments achieve what was predicted by theory A and not by theory B, this implies...something which must be divulged immediately to the all-important mass media. This means that there are no

doubts that theory A is the right one...If the observations/experiments achieve what was predicted by theory B...this means nothing. Science is very complex...further tests...are needed...We must be sure before we can say something...Furthermore, by adding some new elements to theory A..." [Cannot you hear the Ptolemaists using just those words to refute Kepler's theory B?]

- "A terrible reality: democracy gives freedom to individuals provided that they do not use it."
- "Why, argued students, elect to study some damned hard subject like compiler design, when you could study something cool like web design and get better marks? So these old hard core subjects began to drop off. Even worse, the School (following the logic of the market), having seen that these hard core subjects were not attracting a following, simply dropped them from the curriculum."
- "Intelligence and a higher capacity for thought are becoming extinct within science." [One might add that with the reduction of attention span encouraged by the mass media, even the desire and ability to *read* are being extinguished.]

The next chapter takes up "philosophizing about science." I found it less compelling, though equally informative about the three philosophers selected for consideration, Nietzsche, Unamuno and Spengler. Apparently Nietzsche attributed all scientific (and many other) motivations to the "will to power." The author agrees with this, but I do not. It seems to me that science at the idea level is essentially puzzle-solving, a mental activity that can, and generally does, supply its own motivation. To be sure, there is a will to power over the puzzle—but I doubt that was what Nietzsche had in mind. In a footnote in this chapter the author alludes to Karl Popper, but I think not fairly. He says that Popper's idea "states that the falsehood of an assertion should be demonstrated by a particular observation or a physical experiment; otherwise we cannot be sure that it is false." I admit that I have never read Popper, but this is far indeed from the impression I had picked up in the street about his main thesis. I thought that he laid it down as a criterion, or filter for passing theories, that a good theory had in principle to be falsifiable by experiment. Thus, in physics most historical theories pass the filter, but string theory probably does not—because it seems unlikely that any empirical proof could ever be given of its falsehood. Meanwhile, string theory, thus granted eternal life, coasts on consensus, Popper be damned. The same is true of theories of the "multiverse."


The last chapter is full of meat. Here he offers specific suggestions for alleviating some of the troubles with modern science he has identified in previous chapters. For instance, he suggests trying freedom as an alternative to imposing censorship on the scientific literature. It will not be tried, of course. The idea is too radical; the mere suspicion of it scares the socks off established scientists. What, open the gates to all that hairy, smelly, patent office rabble? You must be out of your head. Suppose it did occasionally inject a new idea not spawned in academia. Who needs it? We are very happy with the ideas we have, thank you. Inform yourself. Have you read our *NY Times* best-seller on string theory in the multiverse?

The basic message of the book is that, despite any Band-Aids that can be applied, science has seen its great days and is headed for the cemetery. In fact, science is already mori-

bund, our society has just not waked up to the fact. That may be putting it a bit strongly. I think so. It seems to me that there remain two categories of potential progress: (1) The correction of consensus-supported truths in known science that are in fact false. (2) The opening up of new fields not yet conquered. Corredoira is convinced that both these categories comprise the null set. I do not believe that either set is entirely empty. Within physics, both relativity and quantum theory, in my opinion, are vulnerable to improvement. In fact I venture to suggest that even more obviously desiccated areas of human "science," such as mathematics, could benefit in some cases from fundamental definitional improvements. As for new fields, the recent work of Paul Stamets suggests that the science of mycology has barely been touched.

It is scientific hubris to believe that we already know the whole of what is worth knowing. Still, this book's contention, that science's glory days are over, and that the lust for research will die the minute the funders catch on, is all too likely to prove correct. I agree with the author, that there is no reason to shed tears. When the megabucks go elsewhere, science may yet be able to recover some vital shreds of its soul. It could even revert to a calling.

This book will make you think. Your thoughts may not in all cases align with those of its author; but there is no denying the gist of what he has to say: Science, and western culture generally, are in a phase of decadence. The first step away from decadence is to recognize its existence. Gratitude is due to anyone who helps us take that step. Highly recommended.



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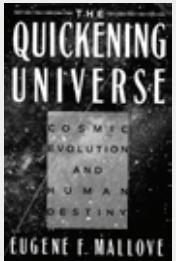
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