

7-1-1997

## Book Reviews: Uncommon Sense, by Alan Cromer, and The Physics of Immortality, by Frank J. Tipler

Harald M. Ness

*University of Wisconsin, Fond du Lac*

Follow this and additional works at: <http://scholarship.claremont.edu/hmnj>

 Part of the [Mathematics Commons](#), and the [Religious Thought, Theology and Philosophy of Religion Commons](#)

---

### Recommended Citation

Ness, Harald M. (1997) "Book Reviews: Uncommon Sense, by Alan Cromer, and The Physics of Immortality, by Frank J. Tipler," *Humanistic Mathematics Network Journal*: Iss. 15, Article 17.

Available at: <http://scholarship.claremont.edu/hmnj/vol1/iss15/17>

This Book Review is brought to you for free and open access by the Journals at Claremont at Scholarship @ Claremont. It has been accepted for inclusion in Humanistic Mathematics Network Journal by an authorized administrator of Scholarship @ Claremont. For more information, please contact [scholarship@cuc.claremont.edu](mailto:scholarship@cuc.claremont.edu).

# Book Reviews: *Uncommon Sense* by Alan Cromer and *The Physics of Immortality* by Frank J. Tipler

Harald M. Ness

University of Wisconsin, Centers-Fond du Lac

Fond du Lac, WI 54935

hness@uwcmil.uwc.edu

**George Polya, when asked why he became a mathematician, said that he was too good to be a physicist, and not good enough to be a philosopher.**

*Uncommon Sense: The Heretical Nature of Science.* Alan Cromer. Oxford University Press: New York, 1995. 256p. ISBN 0-19-509636-3.

*The Physics of Immortality: Modern Cosmology, God, and Resurrection of the Dead.* Frank J. Tipler. Doubleday: Anchor NY, 1995. ISBN 0-385-46799-0.

This is a pair of interesting books written by physicists. Why, you might ask, are books written by physicists being reviewed in a mathematics journal, in particular, in a journal dedicated to mathematics as a humanistic discipline? Well, in the first place, they are of a mathematical nature. The first is about rational thought, which we believe we use in mathematics; the latter has a detailed mathematical development of theorems leading to the major conclusion. Furthermore, mathematicians and physicists are of the same ilk. I'm not sure, but I think it was George Polya who, when asked why he became a mathematician, said that he was too good to be a physicist, and not good enough to be a philosopher. I hope these reviews will make clear why they are appropriate for a humanistic journal.

Alan Cromer is a theoretical nuclear physicist at Northeastern University who is actively involved in school science education. When teaching elementary college physics, he was always troubled by the inability of students to follow the rational analytical thought which, he believed, was necessary for the understanding of basic physics. Well, welcome to the club. Anyone who has taught high school or beginning college mathematics or physical science has encountered and has been troubled by this. Cromer applied more rational thought than most of us to this problem and came up with the primary premise of this book. The reason for the difficulty for most people, he argues, is that the analytic, rational, deductive thought process

so necessary, most of us in the business believe, for success in understanding mathematics, science and, hence, the universe, is unnatural. He argues that if it is natural, it would have evolved in most, if not all, cultures. The only culture where it did evolve was, according to Cromer, the Greek culture. It is part of our culture (so-called "Western" culture) because it was nurtured in Islam and came to Europe in the European Renaissance. Cromer lists seven cultural factors that stimulated the development of objective thinking in the Greek culture: (1) the assembly, where men first learned to persuade one another by means of rational debate, (2) the maritime economy, that prevented isolation and parochialism, (3) a widespread Greek speaking world, (4) an independent merchant class that could hire its own teachers, (5) the *Iliad* and the *Odyssey*, the epitome of rational thinking, (6) a literary religion not dominated by priests, and (7) the persistence of these factors for one thousand years. His presentation is convincing.

Unlike the egocentricity of other cultures, which Cromer says is natural, the Greeks were able to separate internal thought from external objectivity. In addition to objective thinking as unnatural, Cromer cites monogamy, honesty, and democratic government. He says that in the Old and New Testaments, knowledge is belief. Regarding his beliefs, Cromer states, "I believe that rational civilization, with its science, arts, and human rights, is humankind's greatest hope for nobility. But like Jericho, it's but an oasis in the midst of a vast desert of human confusion and irrationality." For elucidation of the last sentence in that quote, I invite you to peruse the preface of the book.

So, what is to be done about it? Cromer submits that since our higher rational abilities do not develop spontaneously, they must be cultivated by the formal educational system. He says that since many intelligent



students are unable to grasp mathematical logic, the normal sequence does not lead to this ability. He concludes that while physical development, given adequate nutrition, is pretty well programmed in the genetic make-up, mental growth depends strongly on the cultural and social environment. We should nurture objective, rational thought in our culture, I would imagine, through our educational system. Is there something wrong with this picture? I grew up in a fairly stable environment. There was very little change

---

***It is not that the use of the computer is bad; it is very good and absolutely necessary. What is bad is the substitution of learning by observation for learning by thinking, and I think there is too much of that.***

---

in the student population and in the teaching staff. Yet, when we got to geometry (traditionally, the first chance at deductive thinking) some of us caught on early, while every week or so a couple more would catch on, and, perhaps, a few never did. Of course, those in the "other track" probably never had the chance. One of my earliest teaching positions (and a great experience it was) was in a small village where there was even less change in the student body and faculty. These students, as we, were subjected to essentially the same learning environment. Although with the "new math," I started with deductive processes in Algebra I, I still experienced the same thing with the rate and extent of student development in deductive abilities. Again, the students in the "other track" didn't have the opportunity. Could there be a gene for relatively quick development of the ability, one for a slow development of the ability, and one for no development of the ability? Or could it be testosterone, as some have concluded? At any rate, I think Cromer's suggestion of an educational environment that attempts to develop rational thought is a good one. I fear, however, the trend is in the opposite direction. One culprit, I believe, is the egalitarian movement which pervades current education; everyone should get the same education, they demand. Of course, there were some flaws in the old tracking system, but might there not be some middle ground? Another culprit, I believe, is the extensive use of the computer. It is not that the use of the computer is bad; it is very good and absolutely necessary. What is bad is the substitution of learning by observation for learning by thinking, and I think there is too much of that. Cromer presents a broad sweep of criticism of the

schools in the United States. These broad generalizations are dangerous; there are many excellent schools in the U.S. I won't debate the ideas presented there (I could write pages about that. In fact, I did, but decided to zap them), but I do agree that in many cases teachers and parents are not demanding enough and there is a great need for improved methods of developing objective, rational thought in students.

Cromer does a nice job of presenting historical and cultural information pertinent to his case. This is familiar stuff, I think, to most of us, but I think it is good to be reminded and to get it from a different perspective.

My major criticism of this book is the author's attack on religion. He is as irrational in his criticism of religion as he accuses religion to be. I really think this detracts from his presentation and should have been left out. Belief in God, Mr. Cromer, is not ego-centric. God is not an extension of self, but rather, self is an extension of God. I quote from Albert Einstein, who was, himself, a fair to middlin' physicist, "Science without religion is lame, religion without science is blind." All of which provides us with a neat segue to the other book to be reviewed.

Frank Tipler, also a theoretical physicist, has written a book, albeit a very formidable book, that provides us with the science that Einstein suggested is needed for religion. The author uses 339 pages of exposition, 35 pages of notes, and 123 pages of Appendix For Scientists (well, maybe for some scientists) where he provides the deductive development to prove the immor-

---

***Tipler defines all life forms (including humans) as machines, the brain as an information processing device, and the soul as a program being run on a computer (brain).***

---

ality of all. The concepts he uses in the exposition and the mathematical model he uses in the deductive development are quantum field theory. Now, we all know that for any deductive development, there must be definitions and postulates. In order to apply physics to the question, Tipler defines all life forms (including humans) as machines, the brain as an information processing device, and the soul as a program being run on a computer (brain); the basic postulate is that the universe is such that life can continue until



the end of time. This definition may be somewhat troubling to some. We must not, however, consider it as a denigration of human life, but rather as necessary for the mathematical model in order to apply the deductive process to the question. Assuming that humans are machines allows for the proof of free will and life after death in a place that resembles the Heaven of major religions. Tipler explains that while we are machines, we differ from the machines we build in that we have "true free will." He further explains that the postulate that life can continue until the end of time is necessary because the Einstein field equations are maximally chaotic and it is impossible to make predictions regarding the universe in the near future, cosmologically speaking. The postulate, which chaos theory makes plausible, solves the prediction problem along with other puzzles of physics such as what boundary conditions to put on the wave function and why the universe exists, and leads to the conclusion of immortality.

I quote from the preface:

When I began my career as a cosmologist some twenty years ago, I was a convinced atheist. I never in my wildest dreams imagined that one day I would be writing a book purporting to show that the central claims of Judeo-Christian theology are in fact true, that these claims are straight-forward deductions of the laws of physics as we now understand them. I have been forced into these conclusions by the inexorable logic of my own special branch of physics.

Tipler does a fine job of motivating and explaining the technical concepts needed for the deductive development. One is tempted to try to convey the essentials of this, but soon finds the ideas needed to do this expanding exponentially. I will, however, attempt to pass on some of the ideas without adhering to sequence or continuity. The postulate that life can continue until the end of time is made feasible by defining a living being as any entity which codes information. By developing self-replicating computers, it is possible to accomplish this. Tipler states, "From the

Berkstein Bound it follows that, using computer memory capacity of the amount indicated by the Berkstein Bound, a computer simulation of a person...will not merely be very good, it will be perfect. It will be an emulation....an emulation of an entity is the entity. An emulated human will be made of emulated human cells, made of emulated molecules, quarks, and gluons." Since information processed (life) must diverge to infinity in finite proper time, we had better get crackin'. Well, you folks had better; I'm retired. Come to think of it, maybe you won't have to. Maybe someone out there is already well on the way, and we are merely simulations (remember New Mexico). On the other hand, we do have free will. Don't we? The devil made me say that. The theory requires that information, the available energy, the temperature and density of the universe all diverge to infinity as the universe converges to a single point (the Omega point) in finite proper time. Tipler distinguishes "proper" time from "subjective" time and relates these to the "tempus" and "aevum" respectively as described by Thomas Aquinas. He states that the mathematics of quantum mechanics forces us to accept the Many Worlds Interpretation. After an hour in the steel chamber, Schrodinger's cat is in the quantum state—both dead and alive, and we, too, split into two worlds, observing both the cat dead and the cat alive. This Omega Point theory results in the existence of God as creator of the universe and immortality for all life with God at the Omega Point. The theory leads to a model of "God who is evolving in His/Her immanent aspect (the events in space time) and yet is eternally complete in His/Her transcendent aspect (the Omega Point, which is neither space nor time nor matter, but is beyond all of these). According to the author, the properties of the universal wave function constrained by the Omega Point Boundary Condition are those of the biblical Holy Spirit. This all sounds far out, but I have one caution. Don't scoff at this or reject it out of hand without studying this book.

Tipler admits that there are few physicists who understand quantum field theory. Prior to this book, belief in everlasting life had to depend on faith. Now, with Tipler's proof of the Omega Point Theory, at least most of us can base our beliefs on, well, faith. I'll see you all at the Omega Point. If you get there first, draw a blue line; if I get there first, I'll erase it.