

AN ANTIDOTE TO VELIKOVSKIAN DELUSIONS

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[brackets enclose subsequent additions]

"The fact is that the whole of the ramshackle edifice of nonsense to be found scattered throughout the Velikovskian corpus is purported to have a historical... foundation, but that it has none." _John David North

"The philosopher David Hume urged that one should always hold it more likely that one had been deceived than that the laws of nature should stand suspended." _Frank Close

I am privileged to have this opportunity to provide a counterbalance to the Velikovskian mindset expressed by Mr. Cochrane [in "[Velikovsky Still in Collision](#)" (this issue)]. Our viewpoints could hardly be more divergent, as our respective essays for a forum in the British Velikovskian journal showed. Whereas he believes "the ancient traditions (mostly mythological) are our best guide to the appearance and arrangement of the earliest remembered Solar System, not some fancy computer's retrocalculations based upon current understandings of astronomical principles" (1992, pp. 40-41), my position is that "while myth may inform natural history, (e.g., Phaethon's fall), its capacity to reform physics is vanishingly small. Phaethon was almost certainly a comet, not Venus or the Sun" (1992a, pp. 41-44), as Bob Kobres has ingeniously shown (1995). In the Velikovskian worldview, typified by Mr. Cochrane, the zodiac has no meaning until Earth's present tilt was achieved. But, in fact, the earliest signs of the zodiac date from 5,500 B.C., long before Velikovskians believe the present order began (Gurshtein, 1993 and 1995). (Of special interest to Velikovskians is the fact that the [near-miss trajectory for Phaethon](#) behind Earth, deduced by Kobres, produces the illusion of a sun-like body standing still due to the relative motion as seen from certain longitudes--perhaps the inspiration for the "Day the Sun Stood Still" for Joshua. [See, too, "The Day the Sun Stood Still?" in Peter James & Nick Thorpe, *_Ancient Mysteries_*, 1999, pp. 135-153, relating this event to a the after-effects of a Tunguska-type aerial detonation.]) [As [Phil Burns](#) so cogently notes: "Myths tell us how the ancients perceived the universe, not necessarily how the universe really worked," which, as the following essay will show, Mr. Cochrane and his associates at kronia.com refuse to credit, possibly due to an invincible ignorance.]

Mr. Cochrane presents his case for Velikovsky's genius. Velikovsky was a [brilliant](#) man whose speculations, unfortunately, were invalidated by his assumptions about his source materials. However, he was no scientist (see [Bauer, 1992](#), [[Dutch, 1998](#)], Friedlander, 1995, and Grove, 1989). According to Lloyd Motz (1992, pp. 85-92), whose advice Velikovsky often sought, "Velikovsky's credentials were not those of a scientist...he had only the vaguest understanding of such basic physical principles as conservation of angular momentum, gravity, and entropy." [Sociologists of science and others uncritically granted Velikovsky standing as a scientist thereby judging the reception of his ideas by scientists as though Velikovsky were a peer when by every criterion Velikovsky was an outsider who did not automatically deserve serious attention ([H. Bauer, 4S Review 2:4, 1984, pp. 2-8](#)). In *Encyclopedia of the Paranormal* (1996), edited by Gordon Stein, Bauer observes "Velikovsky was a clever and insightful critic, but he had none of the disciplinary equipment needed to revise archaeology or history, let alone physics and astronomy." Gregory Derry concludes in his *What Science Is and How IT Works* (Princeton, 1999): "Velikovsky was an interesting and imaginative thinker, and he was a patient, thorough collector of ancient myths and legends. But his work, whatever other virtues it may possess, is not science" (pp. 166-7).]

[With respect to [Velikovsky's prediction](#) of Jupiter's radio emissions, mentioned by Mr. Cochrane, at the McMaster Symposium in June 1974, radioastronomer James W. Warwick was soundly and multiply excoriated for giving Velikovsky only partial and qualified credit for making "a valid but intuitive inference". As Warwick explained, "Saying that there will be found radio emissions from Jupiter was tantamount to a statement by John Adams in mid-19th century that there was another planet in the sky but with no more evidence, say, than the peculiarities of Uranus' motion.... Velikovsky's prediction was precisely useless in just its LACK of detail-- where to look in the radio spectrum (from ground base it covers a factor of 10,000 to one in frequency); what to see there, that is the character of the source (Velikovsky didn't understand that two kinds of distinct non-thermal emission are produced); and when to look (Burke's and Franklin's data show enormous variations that seemed to be basically stochastic)" (Pensee VIII, p. 42). Velikovsky also did not understand that "radio stars" are not ordinary stars but what are today called "discrete sources". When Velikovsky and Warwick met after his presentation, Velikovsky looked Warwick long and hard in the eye and, directing his right index finger in Warwick's face, declared "You, YOU, are the worst one of all! You are more generous than the other astronomers, I admit. But niggardly you still are." That Velikovsky's defenders reject Warwick's judgment and continue to exaggerate the credit they believe Velikovsky deserves shows that the divide between C.P. Snow's "two cultures" is an unbridgable chasm that true believers cannot cross.]

My [personal experience with Velikovsky](#) regarding escape velocity (1979) [the subject of Velikovsky's last phone call to me on Nov. 15, 1979, two days before he died] and the relation between Jupiter's surface temperature and the hot plasma temperatures in its magnetosphere, verifies Henry Bauer's conclusion that in

physics Velikovsky was "[an ignoramous masquerading as a sage](#)" (1984, p. 94). [So confident was he in his flash of intuition identifying Venus as the agent of destruction in the second millennium B.C. that Velikovsky rejected Einstein's strenuous July 8, 1946 admonition, after reading the Venus part of *Worlds in Collision*, that Venus cannot have been the Agent (Immanuel Velikovsky, [Before the Day Breaks](#)).] [Two further examples, first revealed in *Kronos* 10:3, 1985, pp. 9-15, with no immediate objection, illustrate Velikovsky's incompetence in physics. In his Graduate Forum Address at Princeton University in October 1953 (published in *Earth in Upheaval*) and in many subsequent college lectures, Velikovsky mentioned a hypothetical binary star, in which each member had a [7000 gauss magnetic field](#), suggesting that in such a system magnetism would surely rival gravity. But, when Warwick made the calculation at my request in 1984, after suggesting it in his remarks prepared for the McMaster Conference in 1974, it turned out that gravity overwhelmed magnetism by a factor of a billion. Then, in his 1967 rejoinder to Motz in the April *Yale Scientific Magazine*, Velikovsky evidently thought of a magnetic dipole as an amplifier when he referred to "the fact that magnetic dipole effects increase at a cube rate with the decrease in distance and may become very powerful" (p. 15, reprinted in *Kronos* 2:1, 1976, p. 4). Curiously, this is a locution that inverts the usual statement of this effect, where the strength decreases with the cube of increasing distance. But, a magnet's intrinsic strength is given and unaffected by how it is approached. It cannot "grow stupendously," as Velikovsky phrased it in his manuscript *The Test of Time*, getting stronger than it actually is. Velikovsky's allusion to magnetic fields powerful enough to cushion planets during a near-collision, thereby avoiding "an actual crushing collision of the lithospheres" (*Worlds in Collision*, p. 382, and *Velikovsky & Establishment Science*, p. 30) is ludicrous because planetary magnetic fields are simply too feeble. Everyday experience with the effect of 100 gauss horseshoe magnets on iron filings is no reliable guide for what happens between planets with comparatively miniscule magnetic fields.]

The "profoundly original nature of [Velikovsky's vision](#) of the recent history of the solar system," praised by Mr. Cochrane, [and also [Lynn Rose](#), Irving Wolfe, [Charles Ginenthal](#) (founding editor of *The Velikovskian*), et al.,] is belied by the earlier work of Whiston, [Radlof](#) and Donnelly whose writings prefigured the major themes in *Worlds in Collision* (see [Clube and Napier](#), 1990; Bauer, 1984). Velikovsky probably came to his conclusions independently, but he was by no means "profoundly original." One interprets myths literally at great risk because the deeds of gods do not necessarily apply to the action of the planets named after them. [As a testament to the malleability of myth, in *The Original Garden of Eden Discovered . . . Being the Lunar Theory of Mythology* (1910), J[ohn] M[artin] Woolsey interpreted practically all of mythology in terms of the vicissitudes of the Moon, proclaiming "The new moon, the throne of all the gods And the key of all mythology."] The events in *Worlds in Collision* are disproved by the complete absence of relevant physical evidence on Earth (such as characteristic debris in the world's ice caps deposited during and after Earth's near collisions with Venus

and Mars 3,500 and 2,700 years ago, respectively; Ellenberger, 1984 [[& Mewhinney, 1998](#)]). If the debris Venus deposited in Earth's atmosphere was so massive it caused 40 years of darkness after the Exodus, where is it today? There is no sign of it in the world's ice caps or on the ocean bottoms (see section "[The 'Worzel' Ash](#)" in Mewhinney's "Minds in Ablation"). [All the physical evidence in Earth in Upheaval for the recent events in Worlds in Collision can be explained without errant planets in terms of climate change with ensuing habitat degradation, some of which was arguably a consequence of cosmic accretion events, i.e., massive fireball storms, associated with Clube & Napier's model (see below) for "coherent catastrophism" (Asher, 1994).]

[The reaction by many Velikovskians to the litmus test in the ice is a study in classic cultish dementia. One might have thought, considering the posturing of Velikovskians as interdisciplinary seekers of truth, that the Velikovsky movement would have ended with the crucial test in Kronos 10:1, 1984, of the Greenland ice cores -- the absence of a visible layer of debris specific to Velikovsky's scenario -- that disproved Velikovsky's planet-juggling catastrophes, which had been proposed by R.G.A. Dolby in SIS Review 2:2, 1977. Lynn Rose, one of many critics, in Kronos 12:1, 1986, and 12:2, 1987, granted the antiquity of the ice, but, unable to find any trace of Velikovsky's catastrophes therein, claimed Velikovsky's signal is the ice at depth in the so-called "brittle" zones, deposited between the Venus and Mars episodes when supposedly Earth's axis had no tilt. However, this ignores the fact that the ages of the brittle zones do not coincide with Velikovsky's dates; nor does it explain why the ice should be brittle. Rose assumes Velikovsky was correct and ignores the concordance of tree rings and ocean sediments with ice cores. In August 1990, Rose refused to defend his ice core arguments against this writer at the Reconsidering Velikovsky Conference in Toronto. In [The Velikovskian](#) 2:4, 1994, Charles Ginenthal rejected the antiquity of the ice entirely, claiming that the bulk of it was deposited almost overnight. Sean Mewhinney, a critic who does not suffer fools gladly, refuted Rose with "Ice Cores and Common Sense" in [Catastrophism & Ancient History](#) 12:1 & 12:2, 1990, and Ginenthal with "[Minds in Ablation](#)" in 1998, exposing their absurdities in exhaustive detail. Contravening the canons of proper scholarship which Rose frequently lords over critics, he has steadfastly ignored Mewhinney's refutation as he earlier ignored Dolby's proposal. Others who have at least resisted the litmus test in the ice include Al DeGrazia, C.J. Ransom, Lewis Greenberg, Shulamit Kogan, Warner Sizemore, Fred Hall, Clark Whelton, Alasdair Beal, Bernard Newgrosh, Hugo Meynell, Dave Talbott, Irving Wolfe, and Gunnar Heinsohn. This denial of the clear message from the ice cores is an example of invincible ignorance, reminiscent of the flat earthers' reaction in 1870 to Alfred Russel Wallace's proof of the Earth's curvature on the Old Bedford Canal. The resistance of Velikovsky's successors to all the contradictory physical evidence mounting since 1977 indicates they are congenitally incapable of changing their core belief, namely recent interplanetary catastrophism, in no small part because they insist on giving hypothesis priority over evidence. By contrast, the revolutionary terminal Cretaceous impact 65 million years ago was accepted during this time by most scientists within a decade; see J.L. Powell,

Night Comes to the Cretaceous (New York, 1998).]

In retrospect, we can see that scientists (and other experts) easily perceived [how wrong Velikovsky was](#), but they were ineffective in setting forth a valid refutation that was convincing to Velikovsky partisans ([Ellenberger, 1986](#), [\[1987\]](#), and 1992b). [This applies especially to [Carl Sagan's](#) vaunted critiques "An Analysis of Worlds in Collision" (1977) and its revised version "Venus and Dr. Velikovsky" (1979), abridged versions of which appeared in *The Humanist* (Nov/Dec 1977) and *Biblical Archaeology Review* (Jan/Feb 1980), respectively, together with Isaac Asimov's criticisms which have been dissected by Frederic B. Jueneman, "pc," *Kronos* I:3, 1975, 73-83, (on Asimov's "CP", *Analog*, 10/74) and Dick Atkinson, "Interdisciplinary Indiscipline," *Chron. & Cat. Review* XII, 1990, 24-30 (on Asimov's "Worlds in Confusion" in The Stars in Their Courses).]

[An even greater and more poignant disproof of Velikovsky, which has long been overlooked, is the following: If Venus got close enough during a near collision for its air to flow onto Earth, then, as Philip Plait explains in *BAD Astronomy* (Wiley, 2002), this "means that Venus would have to be closer than 1,000 kilometers (600 miles) from the surface of the Earth" (p. 181). Such an encounter would have sterilized Earth's biosphere and flung the Moon into interplanetary space. Neither happened and, in fact, ancient lunar calendars and other records show that the Moon's orbit has not changed significantly in the past 5,800 years.]

Although Velikovsky's mythological interpretation and methodology have been widely criticized ([\[Ellenberger, 1993\]](#), Forrest, 1983/84; [\[Forrest, 1983\]](#); [Fitton, 1974](#); [Mewhinney, 1986](#); [Sachs, 1965](#); [\[Lorton, 1984/1999\]](#), and Stiebing, 1992), his followers are unimpressed and blindly follow their exemplar as naive, literal interpreters of myth who fail to provide, much less even look for, independent physical, as opposed to textual or iconographic, evidence supporting their model. They ignore George Talbott's sage counsel in *Kronos* V:3, "The basis of any historical inference must be physical evidence." As literalists, they do not allow mere metaphors to becloud their research. [As implied by Burns' quote above, they deny the distinction made by our ancestors between Mythos and Logos.] [In projecting modern concepts onto records of ancient perceptions, they fail to appreciate (a) the perilousness and subtleties of translating ancient texts (e.g., correspondence in nine issues of *Nature* from Feb. 16 to Oct. 25, 1984 shows we do not really know what Homer meant by "wine-dark sea") and (b) the consequences of a culture's transition from orality to literacy which changes how the external world is perceived (Walter J. Ong, *Orality and Literacy*, 1982).]

The "ancient lore surrounding Venus" in most cases relates to a deity associated with Venus such as Inanna or Ishtar. Since Venus is far too massive ever to have had a [visible] tail, it is not, contrary to Mr. Cochrane, "difficult to deny Velikovsky's thesis that Venus only recently presented a comet-like appearance." The "wealth of evidence" for a cometary Venus, lauded by Mr. Cochrane, confirms nothing because it is textual and iconographic, making it susceptible to the

vagaries of interpretation. Any tail ascribed to, say, Ishtar (Mr. Cochrane would render it "Venus"), almost certainly was inspired by a conventional short period comet that has since either disappeared or become inactive. [The Inanna symbol, which superficially resembles a comet, in cult context is usually shown in pairs associated with animals and actually represents the reed bundles that form the door posts of the birthing huts that were sacred to Inanna, as Berkeley Assyriologist A.D. Kilmer explained to me (David & Joan Oates, *The Rise of Civilization* (New York, 1976)). Such huts can be seen today in the marshes of Basra in southern Iraq. Sometimes a cigar is just a cigar and ditto a reed bundle.] The British astronomers Victor Clube and Bill Napier (1990) propose that the lore associated with the progenitor to Comet Encke, which would have been a spectacular morning and evening object at perihelion, would have been associated with a Venus deity, and would have been assimilated to Venus when it disappeared. If the identification of Venus is defective, how trustworthy can the other mythological equations be?

[Velikovsky's primary error was to conflate gods with planets.] [The planets were not gods, but merely one of many visible manifestations of certain deities. That the cuneiform ideogram for "god" resembles a "star" does not mean stars were gods, as Dwardu Cardona insists at every opportunity, because in Mesopotamia the gods were patently anthropomorphic. The religion was not astral as the later Classical pagan religion came to be. The star symbol is a metaphor, a concept rejected by Velikovsky and his literally-minded epigoni. The distinguished French Assyriologist Jean Bottero explains: "Even the word 'god' (dinger in Sumerian; ILU in Akkadian) in no way explains its original meaning, since in neither language do we have the slightest sure etymology of it. It is only on the graphic level, in its ideogram (which also served as a determinative), that we find some semantic aid. It is shaped like a star [symbols omitted], and also signified 'Heaven,' everything that, by its position or its nature, was 'above,' 'elevated,' 'superior.' Thus 'the god' was first imagined via his SUPERIORITY over everything else, but especially over humans, since in the anthropomorphic regime of the local religion, the divine was represented in an exalted and superior form based on the human model. Every god was thus perceived as having been formed in our image but was believed to be superior to us in everything, both positively and negatively" (*Religion in Ancient Mesopotamia*, Chicago & London, 2001, pp. 58-9).] [In *The Secret of the Incas: Myth, Astronomy and the War Against Time* (New York, 1996), William Sullivan notes: "The differentiation of the 'god' from his planetary manifestation was a practice familiar both to the Greeks (Chronos/Kronos) and the Hindus (Kala/Yama) {footnote 36 to *_Hamlet's Mill_*, pp. 373-6}. Such a differentiation deserves emphasis in the context of Andean thought because it would constitute a gross oversimplification to imply that Wiraqocha 'is,' simply, Saturn. . . . *_Huacha_* {the Quechua name for Saturn} is discernible in the night sky, but Wiraqocha {the god} is everywhere." (p.90)] [See, also, Barbara N. Porter, "The Anxiety of Multiplicity: Concepts of Divinity as One and Many in Ancient Assyria" in Barbara N. Porter (ed.) *_One God or Many?: Concepts of Divinity in the Ancient World_* (Trans. Casco Bay Assyriological Inst., 2000), pp. 211-271, esp., "[Gods and](#)

[Ilus](#)", pp. 243-248.]

[Since the 1974 AAAS confrontation between Sagan and Velikovsky is beyond the scope of this discussion, the reader is referred to [David Morrison's overview](#) in "Velikovsky at 50" (Skeptic 9:1, 2001, 62-76) wherein Morrison critically assesses Sagan's "ten problems", with the proviso, ignored by Morrison, that the original invitation to Velikovsky proposed a panel discussion consisting of six speakers with an equal number pro and con, which plan was subsequently abandoned, and an invitation to click on "Carl Sagan's" above.]

[Velikovsky's reference to ancient "cometary" prodigies of Venus are no more compelling since atmospheric refraction can make Venus appear with a "beard," or tail. Varro's report of an account from the time of Ogyges, many centuries earlier, quoted by Velikovsky from Augustine's City of God, in which Venus "changed its color, size, form, course" (Tr. M. Dods), can also plausibly be understood in terms of effects of atmospheric refraction (Forrest, 1987, pp. 24-5, wherein the attributes of Venus are rendered "colour, magnitude, figure, and motion" (Tr. J. Healey)) together with prudent allowance for the uncertainties attending the vagaries of translation over the centuries and for the hyperbole and magico-mystical propensities that color the reports of pagan, pre-modern observers, whose reports Varro related.]

Velikovsky's notion, mentioned by Mr. Cochrane, that "planet Saturn only recently loomed large in the heavens" because of "Earth's former proximity" is a red herring. To the ancients, as the classicist Harald Reiche explained to me, a planet's name referred both to orb and orbit. As the most distant visible planet, Saturn's orbit, indeed, can be said to have "encompassed the whole sky," a phrase used in Aeon's promotional material in 1988. Interestingly, our ancestors developed a complex, complementary relationship between the Sun and Saturn. But it is fallacious to believe, as Mr. Cochrane does, that the Sun in a very radical way was subordinate to Saturn in some bygone "Golden Age" (cf, Boll, 1919; [Jastrow, 1910](#); Krupp, 1994). [Indeed, as scholars "Saturnists" are entirely too naive, literal, and unsophisticated, as with Sun = Saturn. In a 6/9/93 letter, Harald Reiche remarked "The notion of 'equation' and 'identity' seems to me deserving of more sophisticated treatment. One must distinguish between substantive, functional, temporary, shorthand and topographic 'identities' and consider the possibility that Semitic languages lacked the sort of precision that the Greeks and we routinely employ (cf. the Luther-Zwingli debate concerning the Eucharist)". Their highly-touted inductive "comparative method", or "comparative approach", of mythological interpretation/exegesis is seriously flawed to the extent it is not supported by independent evidence, preferably physical or explicit text: i.e., $A = C$; not $A = B$, $B = C$, therefore $A = C$, because such relations, or identifications, or equations, in mythology, which are often metaphorical, are not necessarily transitive, as Velikovskians seem to think.]

Concerning Mars, Mr. Cochrane unjustifiably projects his own expectations on his

sources when he refers to Mars having been "associated with prodigious eclipses of the sun...." His references in Aeon to Gossmann and Tallqvist give no warrant for either "prodigious" or "eclipses." However, we know, from the ancients' claims about Sirius causing the summer to be hot by heating the Sun, they were capable of fanciful associations (Ceragioli, 1992). By virtue of its drastic changes in direction and brightness, Mars was a perfect subject for exercising our ancestors' imagination.

We have reason to believe our ancestors viewed a sky different even from that contemplated by Mr. Cochrane. Such terms as are rendered "morning star" and "eclipse" in translations may very well refer to phenomena that are no longer present because the accounts of their activity do not conform to what we observe today (Clube and Napier, 1990; Mandelkehr, 1994).

Contrary to Mr. Cochrane, the furious reaction to Velikovsky in 1950 was not due to suggestions that were unpalatable to scientists. According to Henry Bauer, "The absurd gap between Velikovsky's pretensions and ambitions on the one hand, and his lack of qualifications and evidence for his views on the other, could well explain the sarcastic outrage of some members of the scientific community" (1985, p. 284). [However, this perspective is not meant to discount the role played by the staunch resistance of an establishment defending uniformity against catastrophism, as [Jerry Pournelle](#) describes while distinguishing between the valid and fantastical brands of catastrophism.] [The "furious reaction" in 1950 has become known as the "[Velikovsky Affair](#)" which, as promulgated by Velikovsky and perpetuated by his apologists, is largely a myth based on a manipulation of events (originally selected by Velikovsky) and crucial omissions, as I have argued in "[Neugebauer vs. Velikovsky](#)" and "Denouement" (Appendix C at end of "[Ellenberger Contra Cochrane](#)").] This "absurd gap" is even greater in the pretensions of those neo-Velikovskians like Mr. Cochrane himself [along with Dwardu Cardona and David Talbott]. They are untutored, self-proclaimed experts, who promulgate the "polar configuration" derived from the "Saturn myth" (which is the hidden agenda behind Mr. Cochrane's allusions to recent, drastic changes in the behavior of Venus, Saturn and Mars), [also variously known as "Saturn thesis", "Saturn theory", "Saturn Model", or "Saturnian configuration theory" and brazenly continue the propaganda of their fantasy while refusing to deal forthrightly with legitimate criticism].

They actually believe, because of its alleged vast explanatory power, that their literal interpretation of certain myths gives results superior to those of modern science. But explanatory power is no gauge of validity because incorrect theories can give correct predictions. [Giving confirmation priority over falsification, Dave Talbott [over-emphasizes explanatory power](#), believing, fallaciously, "it is not possible that a simply-stated theory could predict all mythical archetypes but be false" (Kataclysmos, 5-19-87). But this ignores Pierre Duhem's observation "...in principle, for any explanation of any amount of data there will always be an equally satisfactory alternative" (cited by N. Cartwright in R. Boyd et al. (eds.), The

Philosophy of Science, 1991). In set theory it is axiomatic that if a set of symbols, S, has an internally consistent meaning, M, that set can also be interpreted as another consistent meaning, Q, regardless the size of the set. The "Saturnists" assume Q and interpret everything in terms of Q, regardless physics and context; but the Greeks, Egyptians, Hindus, Sumerians, etc. never heard of Q, or saw Q. The product of their vaunted "comparative analysis" is merely a result of their fertile, over-active imaginations, while ignoring the constraints of physics, alternative explanations, and the absolute veto-power of negative evidence (see discussion of "geoid", below), despite the rationalizations offered by Talbott in his forthcoming book *When Saturn Was King*. Talbott's analogy "The Unfortunate Peter Smith" ([Thoth II:6](#), 31 Mar '98, & [Thoth II:7](#), 15 Apr '98), for example, is a highly artificial, concocted episode that confuses the merely improbable with the patently impossible. Thus, it is a fallacy of analogy to compare Peter Smith's improbable fictional circumstances with impossible astronomical conditions posited by the "polar configuration". But what better can be expected from one who once boasted in an electronic forum that he did not learn anything in college that he needed to know ; who does not appreciate the difference between "improbable" and "impossible" or between "stability" and "equilibrium"? Other examples of Talbott's confused and muddled thinking on technical issues were exposed by [Paul J. Gans](#) on talk.origins (07/18/1996).] Scientism aside, their notions [of an "emerging field of planetary catastrophics" or "astral catastrophics"] are consciously unconstrained by the laws of physics. The ad on the back cover of *Aeon 4:1* for "When the Gods were Planets," the first video in [the *Mythscape*] series on "The New Science of World Mythology," claims it "not only challenges long-held beliefs, but suggests that the most cherished assumptions of twentieth century science must give way to a new understanding of planetary evolution." Do these pretensions give the appearance of delusions of grandeur? [The second video is "Remembering the End of the World," reviewed by Lance Hardie in [Parabola](#) 24:2 (Summer 1999).] [They fancy they are at the vanguard of a revolutionary science when actually their collective delusion is just another expression of [pathological science](#) and they are clueless in the mythosphere.]

The "[polar configuration](#)" is claimed to have been a self-gravitating in-line "stack" of Jupiter- Saturn- Venus- Mars- Earth (sans Moon), that orbited the Sun as a unit in synchronous motion, with Earth tilted 90 degrees so its axis pointed down the "stack" toward Saturn [such that the crescent alleged to have been displayed by Saturn seemed to revolve daily. However, this revolving crescent motif is Talbott's pure invention because no ancient source explicitly depicts or describes it]. Although this scheme was contrived to satisfy certain mytho-religious themes and motifs, it is [neither as necessary](#) nor as [comprehensive](#) as its proponents claim. Moe Mandelkehr (1994) has shown that these myths can all be accounted for in practical terms if Earth acquired a temporary, highly inclined ring of meteor dust about 2,300 B.C. The scheme is also not as comprehensive as claimed because it does not explain the sacred number names of the gods in the Sumero-Babylonian pantheon which Ernest McClain has shown correspond to harmonic

ratios of the octave (1976, [1994](#)). [Interestingly, in 1987, an essay by independent scholar and Sanskrit specialist Roger Ashton, "The Bedrock of Myth", was accepted for publication in the then-fledgling "Saturnist" journal Aeon. Drawing on the contents of the Hindu Rgveda, considered to be the oldest extant text in the world, Ashton showed that the "polar configuration" imagery can be explained without recourse to planets. Although Aeon subsequently suppressed "Bedrock...", it can be read at <<http://www.saturnian.org/bedrock.htm>>.]

[Speaking at the 17-19 Sept. 1999 SIS Silver Jubilee Event before an audience that included Ev Cochrane and Dwardu Cardona, two long-time observers of and participants in the Velikovsky scene weighed in critically against the "Saturn myth". In "The Saturn Problem" (Chronology & Catastrophism Review 2000:1, pp. 95-107), Peter J. James discusses how the major themes in the so-called "Saturn myth" can be explained in mundane terms and derive from the inter-related Babylonian, Hurrian, Phoenician, and Greek divine succession myths (e.g., the Greek Ouranos- Kronos- Zeus- Ares) while "the Saturnists have yet to find any evidence that Saturn held any special importance in the myths and legends of the ancient people of America" (p. 103), which to this writer's mind utterly vitiates the Saturnists' claim to having a global explanatory framework. In "Sirius and Saturn" (op. cit., pp. 60-65), Lynn E. Rose remarks incisively "You can read a lot of myth and not get even a whiff of the god-kebob [i.e., the "polar configuration" (CLE)]. You can also read a lot of myth and not get even a whiff of northernism. When I read what the ancients have passed down to us, I see catastrophism, offence and punishment, planetary involvement (or at least a plethora of capricious divinities), metamorphoses, world ages, etc. but not what the 'Saturnists' profess to see. Their northernist god-kebob is simply not a major theme of ancient myth" (p. 65).]

[Finally, the scheme is refuted by the geoid, or Earth's shape, because it does not possess vestigial [tidal bulges](#) at the north AND south poles, which would have been produced by Earth's position in the "stack" (esp. by the annual so-called "[descent of Mars](#)" when it allegedly approached Earth to within 14,000 km./2.17 Earth radii (center-to-center) to appear "as a giant mound on the northern horizon" (Talbot, Aeon III:3, 1993, p. 37) and, totally unappreciated by Talbot at the time, would have raised a polar tide approaching 92 km./57 mi. high that miraculously neither loosed the Greenland and Antarctic ice caps nor contaminated them with salt water), that have not had time fully to relax since the "stack" collapsed within the past 10,000 years. Contrary to Talbot (Aeon I:6, 1989) and Cardona (Thoth IV:1, 2000), Earth's so-called "[pear-shape](#)", marked by a miniscule, static positive deviation from the geoid at the north pole and a similarly scaled negative deviation at the south pole, is irrelevant to the "Saturn thesis". Failing such crucial tests gives another reason why the tendentious nonsense purveyed by the "Saturnists" can be given no credence.]

[A total repudiation of the alleged former primacy of planet Saturn is provided by Morris Jastrow, Jr., in his widely cited "[Sun and Saturn](#)" (cited above). But

somehow Talbott, Cochrane and Cardona never get around to confronting Jastrow's disclosure that, while the Babylonians recognized the planets Mercury, Venus, Mars, Jupiter, and Saturn, Saturn was not given a specific, astronomical (as opposed to a theological) name until after Venus and Jupiter were specially designated. Thus, while the goddess Ishtar was associated with planet Venus, the astronomical name for Venus was Dilbat. For a period of time Mercury, Mars, and Saturn existed as a group of three undifferentiated "Lu-bats", or planets, whose signification was implied by context. Eventually, Saturn was designated as Sag-us, the steady one. The relative inferiority of Saturn in the Assyrian pantheon is indicated by Henry (not George) Rawlinson in an Appendix to George Rawlinson (ed.), *The History of Herodotus* (1862/1964) in which the deity Ninip/Ninib/Ninurta associated with planet Saturn was identified last by elimination. It is inconceivable that Saturn would ever have had such a nondescript status if the "Saturn myth" concocted by Talbott, wherein Saturn was king, were valid. Ignoring incompatible, or contradictory, evidence is not only poor scholarship, it is a hallmark of pseudoscience.]

[An antidote to the ridiculous delusion of the "polar configuration" is provided, albeit implicitly, by two recent books: (i) Geoffrey Ashe, *Dawn Behind the Dawn: A Search for the Earthly Paradise* (1992) and (ii) Joscelyn Godwin, *ARKTOS: The Polar Myth in Science, Symbolism, and Nazi Survival* (1993) which give the history of polar tradition and its competition with solar tradition: polar constellations superceded by zodiacal constellations in the ecliptic. [Also, in G. de Santillana & H. von Dechend, *Hamlet's Mill* (1969), the question "What has Saturn, the far out planet, to do with the pole?" (p. 136) is often quoted by "Saturnists" as though they have the only answer while the answer in terms of the SKAMBHA, or frame of the cosmos (p. 235), is ignored. Put another way, Saturn could rule the pole without residing there for the same reason Queen Victoria ruled India without being there.] The reader will understand how, by ignoring alternatives and the constraints of logic and physics, the "Saturnists" have perverted scholarship and stood mythology on its head.]

[With respect to alternative interpretations of ancient symbols, consider the concentric "sun in circle" which resembles an ordinary solar or lunar halo. "Saturnists" distort and over-simplify matters by removing symbols from their cult context. The "sun in circle" was usually shown in pairs. But its cult context on, e.g., cylinder seals from Mesopotamia, is ignored by Talbott in *The Saturn Myth* (1980). "Saturnists" now claim it represents the view from Earth of Venus against Saturn (implicitly ignoring the putative presence of Mars in front of Venus) in the "polar configuration"; but this ignores the pronounced [parallax](#) that would have shifted the inner circle off-center towards the bottom, especially for observers at low latitudes such as Egypt and Mesopotamia. Initially, "Saturnists" interpreted this symbol as representing Saturn and its rings. E.A.S. Butterworth in *The Tree at the Navel of the Earth* (1970), a book quoted innocuously by Talbott, shows that in context the "sun in circle" can be seen as an omphalos sign representing the top and bottom of the hollow pillar, in cross section, by which

the shaman climbs up to heaven or down to the underworld; but Talbott is silent on this interpretation. Such are the [distortions](#) in "Saturnist" scholarship. Whether the "sun in circle" represents the mundane (solar or lunar halos) or the esoteric (the shaman's omphalos) cannot be known for certain because the cult context is typically ambiguous; but we can be confident that its meaning has nothing to do with the "polar configuration" because of its insurmountable difficulties.]

Contrary to Mr. Cochrane, there is no "debate over the possibility of recent planetary catastrophism," as conceived by the neo-Velikovskians. The notion of errant planets in the recent past is preposterous in the extreme, being decisively contradicted by all the locked, spin-orbit circular satellite resonances at Earth, Mars, Jupiter and Saturn, that take far longer to attain than the few thousand years since the Solar System supposedly settled down. The synchronous orbits required by the polar configuration are dynamically impossible [(V.J. Slabinski, "A Dynamical Objection to Grubaugh's Polar Configuration", Aeon 3:6, 1-10, 1994 {contact this author to obtain copy}; T.C. Van Flandern, talk.origins, 17 Dec. 1994)], and the present solar system cannot be derived from them. [The heat from the tidal friction required to cancel the destabilizing torques in the "stack" would have at least sterilized the biosphere, which never happened; but Talbott never deals with this "side effect" when he mentions the restorative tendency of tidal friction.] Mr. Cochrane deludes himself if he actually believes there is any chance for Velikovsky to be vindicated on this score [or that "Saturnism" represents any valid "fundamental paradigm shift"].

[The "electric star" model proposed by Ralph Juergens in 1970s (in Pensee II, IX & X, SIS Review, & Kronos) and revived by Wallace Thornhill in The Electric Universe (1998), part of his [holoscience](#) project, (in which the Sun is a non-convecting, isothermal ball of plasma powered by infalling galactic electrons and many craters in the Solar System are the result of gigantic electric discharges, etc.) [as deus ex machina] cannot rescue the "polar configuration" from its fatal flaws because the model is a non-starter. [It is disproved](#) by practically everything known about the actual behavior of the Sun and heliosphere. This was first explained by this writer in Kronos X:3, 1985, pp. 15-23, and recently in more depth on e-mail list-serves by Robert Grumbine, Karl Hahn, Burch Seymour, [Tim Thompson](#), and Wayne Throop. Thornhill either ignores or dismisses all the negative evidence such as (i) the absence of x-rays in coronal holes (which should be produced by infalling electrons for which no evidence exists beyond the wishful thinking of Thornhill and star-struck acolytes such as Amy & Mel Acheson writing for Thoth and [Atlantis Rising](#), and [Don Scott](#), an electrical engineer, who in parroting Ralph Juergens in Kronos IV:4, 1979, also fails to understand the importance of the Reynolds Number in defining turbulence in photospheric granulation.), (ii) the proof that granulation in the Sun's photosphere is an expression of convection, (iii) the mere existence of the solar wind in which no inflowing electrons have been detected, (iv) the absence of characteristic particles from the nuclear fusion claimed to occur in the photosphere, etc., etc. The model

lacks rigorous mathematical support. No one has ever shown that the electric charge required to produce the cited craters, e.g., Aristarchus on the Moon, is feasible, while rigorous mathematical modelling to explain the high temperature in the Sun's corona, a favorite anomaly cited against standard theory, in conventional terms is progressing steadily. The simplistic analogies to plasma and electrical discharge phenomena that are invoked to support the model [as in Talbott & Thornhill's *Thunderbolts of the Gods* (2002)] cannot nullify the verdict of the overwhelming negative evidence and serve only as an example of invincible ignorance, showing the proponents do not know, for example, the difference between a plasmoid and a pair of opposed lotus blossoms used by the Greeks to represent the thunderbolt held by Zeus. Other examples of so-called electric discharge effects on planets, asteroids, and satellites (such as Europa) can be explained by conventional means without invoking cosmic electricity.]

[The penchant for developing an exotic physical model of some lost "Golden Age" which ignores critical aspects of the reality that is purported to be explained, as Dave Talbott, Wal Thornhill, and the other "Saturnists" do, evokes the dictum eloquently phrased by Roger S. Jones in *Physics As Metaphor* (1982): "The acid test of any scientific theory is, first and foremost, its agreement with the facts of the physical world. It is empiricism, not aesthetics, that is the backbone of science. Any theory, no matter how beautiful, will be rejected as soon as it is found incapable of corroborating the facts of nature" (p. 207). Except the "Saturnists" have lost contact with reality. The remark, "Do not underestimate the power of denial", by the Ricky Fitts character in the movie "American Beauty" might well represent the motto of "Saturnists" and other Velikovskians.] [Thus, Talbott's saying the "imperative groundrule of catastrophist research . . . is that physical models must be tested against the mythical-historical record" (*Aeon* I:6, 1988, p. 123) deserves no credence because he ultimately refuses to accept any constraints dictated by the laws of physics as he cavalierly indicated to interviewer John Gibson: "As a matter of fact, I'm going to go ahead with the writing of my second volume . . . and not even worry about the physics of it all . . ." (*Research Communications Network Newsletter* #3, Oct. 15, 1977) and demonstrated repeatedly on talk.origins newsgroup in 1994 while defending various "Saturnist" notions including Bob Grubaugh's "polar configuration" model (*Aeon* 3:3, 1993).]

[Having failed to make a prima facie case using analogies and interpretations of various myths and symbols, Talbott shifted the burden-of-proof by claiming "The theory is testable" and challenging "experts on ancient myth and symbolism" to disprove the Saturn theory, starting in *The Cataclysm* 1:1, 1988, p. 2. In this same vein, Cochrane admits no viable physical model has been found, but, being utterly oblivious of the abject futility of their enterprise owing to their methodological failings, he falls back on the standard pseudoscientific gambit that with further research by the requisite technical specialists "an answer will be found" (*C&C Review* 2000:1, p. 91) and thereby avoids, as Dennis Rawlins once remarked of the genre, "confronting the shame of having pursued & promoted a

false path for decades" (DIO 1.1, 1991, p. 13). The Saturnists fail to understand "Before we can talk about the existence of a physical entity, we must have an existence proof -- some reason to believe that the entity exists [or could exist]. There is no reason to believe in a phenomenon for which no physical evidence exists. The burden of proof is on those making the claim of existence" (Milton A. Rothman, *A Physicist's Guide to Skepticism*, Buffalo, 1988, p. 157). That the subjective interpretation of myths and symbols alone is no proper guide to a former reality stands the fact that in December 1994 on talk.origins Talbott was willing to abandon the "constant crescent on Saturn" motif when a modification to Grubaugh's "polar configuration" model resulted in Saturn going through phases as the Moon does, which ambivalence would never have existed were there unambiguous evidence for this alleged motif.]

[In a surprising development, Marinus Anthony van der Sluijs, an enthusiastic newcomer to Saturnian studies in The Netherlands, provides a devastating critique that utterly vitiates Velikovskian and "Saturnist" methodology, especially the god-planet nexus, in "Gods and Planets" (2002) <<http://www.mythopedia.info/godsandplanets.htm>> and implicitly corroborates much of the methodological criticism presented here. He endorses Roger Ashton's hitherto ignored methodological criticism from "The Unworkable Polar Saturn", *Aeon* 1:3, 1988, and the much derided "Bedrock of Myth" <<http://www.saturnian.org/bedrock.htm>> cited above. He concludes, contra Talbott, Cardona, and Cochrane (whose initial objections are answered), "...the mythical record cannot be used to identify the specific planets which were involved in the hypothetical catastrophes that spawned the myths." Regrettably, he continues to embrace an illusory, plasma-facilitated planetary catastrophism due to a characteristic profound ignorance of physics (e.g., planets are too massive to display visible tails as ordinary comets do and cannot engage in the required polar alignment, while the "electric universe" first expounded by Ralph Juergens and now promoted by Wallace Thornhill is untenable) and a failure to appreciate the almost-certain origin of "polar configuration" imagery in ordinary atmospheric solar halo and related phenomena (R.G. Greenler, *Rainbows, Halos, and Glories* (1980) and D.L. Cyr, *The Crystal Veil* (1995)). Interestingly, when Don Cyr showed his slides in June 1993 at the C.S.I.S. conference in Scranton, PA, many in the audience taunted Dave Talbott about the obvious similarity between the "polar configuration" images and halo phenomena.]

The recent catastrophism espoused by [Clube](#) and [Napier](#), although based on scientific evidence ([Asher, 1994](#); [Clube, 1992](#); [Clube and Napier, 1990](#)), is eschewed by neo-Velikovskians. [Their work is not embraced by astronomers either](#), in no small part because of the bad name given catastrophism by Velikovsky. According to [Clube and Napier](#), the Holocene has been punctuated by energetic, episodic interaction with the dense portion of the Taurid-Encke complex [whose formerly active annual fireball storms, perhaps evocative of a flood, radiated from near the Pleiades in November] , providing an astronomically sound explanation for the sky-combat myths [and mankind's [archetypal fear of comets](#)] that concerned

Velikovsky in *Worlds in Collision*. As Clube and Napier once observed, "[Velikovsky is not so much](#) the first of the new catastrophists...; he is the last in a line of traditional catastrophists going back to mediaeval times and probably earlier" (1984). There is, as Mr. Cochrane states, "unequivocal evidence of the Earth's cataclysmic recent history," but careening planets have nothing to do with it. [The mythological and physical evidence](#) are best explained by the work of Kobres, Mandelkehr, Clube and his co-workers. [More recently in [Exodus to Arthur: Catastrophic Encounters with Comets](#) (1999) tree-ring specialist [Mike Baillie](#) makes a strong presumptive case for a Taurid-related vector associated with the global climate crises, or *_Klimasturze_*, at 2354 B.C., 1628 B.C., 1159 B.C., 207 B.C., and A.D. 540. As Baillie explains, the deeds of Patrick, Arthur, and Beowulf can all be associated with comet/meteor-related phenomena in the sixth-century when also Chinese "dragons" fought, felling all the trees in the places they passed, a la Tunguska in June 1908.] [Work by Lars G. Franzen at Earth Sciences Centre, Goteberg, Sweden, confirms most of Baillie's dates. Enhanced concentrations of micro-meteorites in peat from Swedish, Irish, and Norwegian bogs show that the cosmic influx was high at 7000 BC, 3000 BC, 2300 BC, 1700 BC, 1000 BC, 500 BC, 550 AD, 850 AD, 1300 AD and the peak of the "Little Ice Age" (Conference: Environmental Catastrophes and Recoveries in the Holocene, Aug. 29--Sep. 2, 2002, Dept. of Geography & Earth Sciences, Brunel University, Uxbridge, U.K.).]

[In retrospect, the Taurid complex provides the basis for two ironies for Velikovskian (and "Saturnist") studies. On the one hand, it is ironic that the only evidence cited by Velikovsky for real collisions in the Solar System in historical times happened in the Taurid meteor stream (*Earth in Upheaval*, p. 289; *Stargazers*, p. 119). [In this vein, Velikovsky "felt obliged to invoke planets doing impossible things" because, as Mike Baillie reveals, Velikovsky failed to appreciate the hazard posed by "...'mere rocks, a few kilometers in diameter'...". "This failure to recognize the power of comets and asteroids means that it is reasonable to go back to Velikovsky and delete all the physically impossible text about Venus and Mars passing close to the earth" (*Exodus to Arthur*, pp. 171-2).] On the other hand, it is ironic that in considering the cause of the Deluge ("[Khima and Kesil](#)," *Kronos III:4*, 1978, pp. 19-23) using the passage in the Tractate Brakhot of the Babylonian Talmud, which ascribes it to two stars that fell from "Mazal Khima", Velikovsky took "Mazal" to mean "planet" while ignoring the alternative "constellation/asterism" and thereby rejected the traditional meaning of Pleiades in favor of Saturn. It should be noted that while "Khima" has also been rendered as Hyades and Arcturus, all three entities are part of, or close to, Taurus with Hyades part of the head, Arcturus the eye and Pleiades over the bull's hump. This passage almost certainly refers to a spectacular event in the Taurid complex whose meteors radiate from near the Pleiades, which "were associated with the traditions of a widespread destruction by fire from heaven, probably remembrance of a devastating rain of meteors" (O.E. Scott, *The Stars of Myth and Fact*, 1942, p. 155, quoted unwittingly by Dwardu Cardona in "The Mystery of the Pleiades," *Kronos III:4*, p. 35). Considering that the destruction of Atlantis can be interpreted as an astronomical allegory, i.e., "a piece of sacred cosmology

deliberately expressed in the pseudohistoric and pseudogeographic terms familiar from 'mythic' language in its ancient capacity as a technical shorthand for astronomical systems (H.A.T. Reiche, "The Language of Archaic Astronomy: A Clue to the Atlantis Myth?" in Brecher & Feirtag, eds., *Astronomy of the Ancients*, 1979/1993), what is to prevent the memory of a "devastating rain of meteors" out of the Pleiades from being corrupted and preserved as a watery flood when the story's original astronomical provenance became obscure? Such a possibility was never considered when Velikovsky and, later, Dave Talbott fixated prematurely and erroneously on their planetary fantasies.]

[As a final irony, what has become abundantly clear is that when Pensee editor and 1964 Presidential Scholar [Steve Talbott](#) piously lectured Velikovsky's AAAS critics saying "Any person attempting to criticize a theory must first get INTO that theory, see it from the inside and on its own terms, or else his criticisms will amount to no more than a begging of the question, a dismissal of theory A on the grounds that it is possible to posit a different theory, B" (Pensee VII, p. 26) it was HE and all the Epigoni & cadre, even to the present, who had failed to "get INTO" conventional science and scholarship and "see it from the inside and on its own terms"!]

Having [parried](#) with [Mr. Cochrane](#) [and [Dave Talbott](#)] on Usenet's [talk.origins](#) newsgroup between May and December 1994, I have no illusion that my remarks here will dent his deeply internalized and [hermetically sealed worldview](#). [See also "[Hysterical Velikovskians Flee Own Frankenstein-Mongoose!](#)" DIO 7.1, 1997, 30-33.] However, since the limited space for this exchange precludes detailed replies to [Ev Cochrane's](#) points, the interested reader is encouraged to pursue the full analyses cited in the references. [The Velikovskian and "Saturnist" ideas discussed above are endorsed to varying degrees by many intellectual allies including E.J. Bond, Lewis M. Greenberg, [[James McCanney](#) (a "[physicist](#)" who does not know the difference between a chemical battery and a capacitor),] Hugo Meynell, [William Mullen](#) (who coined "cenocatastrophism), C.J. Ransom, Lynn E. Rose (author of [Sun, Moon and Sothis](#)), Martin Sieff, Brian Stross, George R. Talbott, Roger W. Wescott, [Clark Whelton](#), and Irving Wolfe.]

[Postscript: When Skeptic magazine invited this article to be written in early Sep. 1995, a letter exchange follow-up with Mr. Cochrane was planned; but Skeptic decided against publishing it in Mar. 1996. A copy of this letter exchange, which was posted to an e-mail forum in Sep./Oct. 1997, is available by request to this author: <c.leroy@rocketmail.com>.]

Bibliography

Asher, D. J. et al. 1994. "[Coherent Catastrophism](#)," *Vistas in Astronomy* 38, pp. 1-27.

Bauer, H. H. 1984. *Beyond Velikovsky: The History of a Public Controversy*. Urbana: University of Illinois Press.

_. 1985. "Inside the Velikovsky Affair," *Skeptical Inquirer* 9:3, pp. 284-288.

_. 1992 "The Velikovsky Affair," *Aeon* 2:6, pp. 75-84. [Kronia Communications, a.k.a. Kronia Group, div. of Mind Exploration Corp., a.k.a. WholeMind.]

Boll, F. 1919. "Kronos-Helios," *Archiv fur Religionswissenschaft*, pp. 342-6.

Ceragioli, R. 1992. "Behind the 'Red Sirius' Myth," *Sky and Telescope*, June, pp. 613-5.

[Clube, S. V. M.](#) 1992. "The Countdown to a New Celestial Hazard," *Aeon* 2:6, pp. 94-9.

Clube, S. V. M. and Napier, W. M. 1984. "Velikovskians in Collision," *Kronos* IX:3, pp. 44-9.

_. 1990. *The Cosmic Winter*. Oxford: Basil Blackwell.

Cochrane, E. 1992. "Deploring the 'Star-crossed' Marriage," *Chronology and Catastrophism Review* XIV.

Ellenberger, C L. 1979. "'To Escape or Not to Escape: The 71% Factor,'" *Kronos* V:1, pp.92-93.

_. 1984. "Still Facing Many Problems, Pt. 1," *Kronos* X:1, pp. 87-102.

_. 1986. "A lesson from Velikovsky," *Skeptical Inquirer* 10:4, pp. 380-381.

_. 1992a. "Celestial Hazard vs. Celestial Fantasy," *Chronology and Catastrophism Review* XIV, pp. 41-4. A Clube and Napier primer.

_. 1992b. "Of Lessons, Legacies and Litmus Tests: A Velikovsky Potpourri, Pt 1, " *Aeon* 3:1, pp. 86-105.

Fitton, J. 1974. "Velikovsky Mythistoricus," *Chiron* I: 1&2, pp. 29-36.

Forrest, B. 1983/84. "Venus and Velikovsky The Original Sources," *Skeptical Inquirer*, 8:2, pp.154-64.

_. 1987. *Guide to Velikovsky's Sources*. Santa Barbara: Stonehenge Viewpoint.

Friedlander, M. W., 1995. *At the Fringes of Science*. Boulder: Westview Press.

Grove, J. W. 1989. *In Defence of Science*. Toronto: University of Toronto.

Gurshtein, A., 1993. "On the Origin of the Zodiacal Constellations," *Vistas in Astronomy* 36, pp. 171-190.

_. 1995. "When the Zodiac Climbed into the Sky," *Sky & Telescope*, October, pp. 28-33.

Jastrow, Jr., M., 1910. "Sun and Saturn," *Revue d'Assyriologie*, VII, pp. 163-78.

Kobres, B., 1995. "The Path of a Comet and Phaethon's Ride," *The World & I*, February, pp. 394-405.

Krupp, E. C., 1994. "The Heart of Saturday Night," *Sky & Telescope*, September, pp. 60-1.

Mandelkehr, M. M., 1994. *The Answered Riddle: A Thesis on the Meaning of Myth*. Unpublished.

McClain, E. G. 1976. *The Myth of Invariance*. York Beach: Nicolas-Hays.

_. 1994. "[Musical Theory & Ancient Cosmology](#)," *The World & I*, February, pp. 370-393.

Mewhinney, S. 1986. "El-Arish Revisited," *Kronos* XI:2, pp. 41-61.

Motz, L. 1992. "A Personal Reminiscence," *Aeon* 2:6, pp. 85-92.

Sachs, A. 1965. "Address at Brown University," in Ellenberger, 1992b, pp. 103-5.

Stiebing, Jr., W. 1992. "Cosmic Catastrophism," *Aeon* 2:6, pp. 58-74.

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See, for example, David Morrison's "[Is the Sky Falling?](#)" in May/June 1997 *Skeptical Inquirer*, pp. 22-28, an article review of ten recent books on catastrophism and the threat to Earth from asteroids and comets, that is quite disapproving of Clube and Napier's myth-augmented (though not totally myth-based) coherent catastrophism. Ellenberger's letter defending Clube and Napier

appeared in the Sep/Oct 1997 issue, pp. 60-61, as follows:

David Morrison's disparaging remarks on the coherent catastrophism espoused by Clube and Napier and coworkers are not warranted. Morrison lauds *_Hazards Due to Comets and Asteroids_*, edited by Tom Gehrels, but neglects to mention that Clube and coworkers are contributors.

Morrison fails to distinguish properly between the stochastic model, marked by random hard impacts of 1-km objects on a time scale of 100,000 years, and Clube and Napier's model, in which the main threat is from aerial detonations of multiple-Tunguskas (and larger) in a flux of massive fireball storms. These occur in clusters, over 1,000 to 2,000 years, when the orbital evolution of a meteor stream, such as the Taurid complex, results in a temporary (century or two) nodal intersection with Earth's orbit. This behavior can arguable be called "the dynamics of armageddon." The differences between the models and the uncertainties in both the lunar cratering record and the current Near-Earth Object population at all energy levels are such that the coherent model cannot be discounted.

Clube and Napier's many publications present evidence that the evolution of the Taurid complex and its parent comet has been a major factor during the Holocene, contributing to major climate reversals and influencing the development of civilization and religion. At one time, the Taurid complex contained visible bodies considered to be gods. In *_The Cosmic Winter_*, Clube and Napier note: "Catastrophes of this sort, delivered by visible celestial gods, are completely outside modern experience, but it is clear that they could have been a major reason for the preoccupation with, and dread of, the sky manifested by the earliest civilizations."

Finally, Morrison's commentary is marred by three minor errors: (1) The "now-famous paper published in *_Science_*...by Luis and Walter Alvarez and their colleagues" was in 1980, not 1981. (2) Gerrit Verschuur is not British, but a U.S. citizen born in South Africa of Dutch parents. (3) While I appreciate Morrison's noting my defection from Velikovsky to Clube and Napier, I regret to say I am not one of "many people" who did so. My conversion, as explained in my ["A lesson from Velikovsky"](#) (*_SI_*, Summer 1986, 380-381), is rare. An updated account titled "An Antidote to Velikovskian Delusions" from *_Skeptic_* 3:4 (1995) can be found at <http://abob.libs.uga.edu/bobk/velidelu.html> .

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In reply, Morrison wrote:

"...I can only say that most astronomers and geoscientists find the evidence presented by Clube and Napier concerning the historical (and pre-historical) influences of the Taurid complex to be less than convincing. Presumably further research will help indicate whether the current danger is roughly as I have depicted or hundreds of times greater, as they infer from their interpretation of ancient sources."

It was disingenuous of Morrison to imply coherent catastrophism is based solely on the "interpretation of ancient sources" because Clube and Napier also present the physical evidence supporting their model, even in the final chapters of *The Cosmic Winter*. Much of this evidence is interpreted by mainstream researchers with no consideration of Clube and Napier's model (as with various signals in the ice cores) as even a possibility, or else it is set aside as "enigmatic". Coherent catastrophism is not a model that has been evaluated and found wanting; it has yet to be properly evaluated.

CLE, 9-24-97

While browsing magazines Nov. 28th in Cody's Bookstore in Berkeley, I discovered in the Winter 1999 issue of PARABOLA a letter from one M.J. Stone defending the quality of Velikovsky's footnotes against the criticism in the previous issue from former Emory University student Eva Fisher, who claimed to have looked up essentially every footnote in *Worlds in Collision* and found them to be generally wanting if not totally fraudulent. She had been motivated by a reference to Velikovsky in Lance Hardie's review in the Summer 1999 issue of Dave Talbott's video "Remembering the End of the World". When I got back to St. Louis I looked up the Summer and Fall issues and reeled off the following letter to PARABOLA:

Remembering Nothing

M.J. Stone's letter in PARABOLA 24:4 (Winter 1999) unjustifiably chastises Eva Fisher's letter in the preceding issue assessing the merit of Velikovsky's footnotes because her conclusions are consistent with what Bob Forrest reported in *A Guide to Velikovsky's Sources* (Santa Barbara, CA, 1987) and his article "Venus and Velikovsky: The Original Sources", *Skeptical Inquirer* 8:2 (1983/84), pp. 154-64.

In turn, Fisher was motivated by Lance Hardie's skeptical yet too credulous review in PARABOLA 24:2 (Summer 1999) of David Talbott's video "Remembering the End of the World", which is about the so-called "Saturn Myth" involving a former "colinear" close arrangement of Jupiter, Saturn, Venus, Mars, and Earth that unravelled within the past 10,000 years. Talbott's *idee fixe* is nothing but a reductionist Procrustean bed for the world's mythology. For example, in the

Babylonian pantheon the gods Anu, Enlil, Enki, Shamash, Sin, and Ninurta are all identified with planet Saturn. However, for the Babylonians, only Ninurta, whose name means "Lord Plow" or "Lord Earth" and who was originally the solar deity of Nippur, was sacred to Saturn, along with Antares and the rising Sun.

Contrary to what Hardy reports, the video is not "the result of many years of research and study", but, rather like Velikovsky's earlier experience with *_Worlds in Collision_*, it is the result of an inspiration followed by many years of culling the world's mythology and religious traditions looking for data that can be appropriated to the model, regardless the original context. Following Velikovsky, Talbott's fundamental mistake is equating gods with planets when such gods also had stellar as well as non-astronomical avatars.

Hardie wishes Talbott had devoted more time "to describe -- to 'prove' -- how these planets could have moved so close together, and then rearranged themselves...." This was not done because it cannot be done, i.e., (1) the proposed planetary alignment is impossible, (2) the present Solar System cannot be derived from it despite all of Talbott's handwaving about plasma physics and electromagnetic effects, and (3) there is no physical evidence on Earth for this former regime while much evidence contradicts it. For example, in Talbott's model, the annual polar tide accompanying the alleged approach of Mars to less than three Earth radii would have loosed the Greenland ice cap which is known to be over 200,000 years old. In other words, Talbott is remembering nothing. Unfortunately, the reconstruction attempted by Talbott cannot be based on imaginative interpretations of ancient myth, symbols, and religious icons alone and expect to be valid.

For a more sobering assessment of Talbott's model and methodology, see my "An Antidote to Velikovskian Delusions" (*_Skeptic_* 3:4, 1995):
<<http://abob.libs.uga.edu/bobk/velidelu.html>> or "An Antidote to Dave Talbott's 'Saturn Thesis':"
<<http://abob.libs.uga.edu/bobk/cle/cle-talbott-antidote.txt>>.

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Sagan and Velikovsky

Sagan's AAAS critique of Velikovsky in Feb. 1974 (completed with revisions by 1976 and published in Donald Goldsmith (ed.), *_Scientists Confront Velikovsky_* (Cornell Univ. Press, 1977) whereas [Velikovsky's finished text](#) was distributed at the event), while a rhetorical tour de force, was a failure as an example of "reasoned argument, celestial mechanics, and the best physical science to

counter [Velikovsky's] sensational claims" (Skeptical Inquirer, Nov/Dec 1999, p. 4). This is because (1) a large portion of Sagan's "reasoned argument" is against straw men and red herrings, as with, e.g., the manna after the Exodus which Sagan criticizes Velikovsky for accepting the biblical account that it did not fall on the Sabbath when Velikovsky explicitly denies this as unrealistic, while manna-like stories come from many widespread cultures, e.g., "ambrosia" of the Greeks, "madhu" of the Hindus, and "sweet morning dew" of the Scandinavians, (2) Sagan's critique contains NO celestial mechanics since the celebrated great odds against Velikovsky's scenario are derived from "ergodic theory", i.e., ignoring gravitation, as Sagan replied to Dr. Robert W. Bass after his address, and (3) Sagan's physical science is riddled with errors considering, for example, his Jupiter escape velocity is too great (70 vs. 60 km/sec, which, together with other minor errors, was corrected for the version in *_Broca's Brain_*) and, as revealed by George R. Talbott in *Kronos IV:2*, 1978, the cooling calculation in Sagan's Appendix 3 is nothing but a trivial identity: the heat radiated to Venus by the Sun in about one hour at 6000K equals that radiated from Venus in 3500 years at 79K. This was reported in my letter in April 1981 *Physics Today* which Sagan ignored at the time and claimed ignorance of it in our final correspondence in April 1996. (Talbott's notions about ongoing, massive volcanism on Venus, however, are contradicted by the stagnant atmosphere below the clouds and the existence of 35+ km. diameter craters.)

Interestingly, the letter by S.F. Kogan (Velikovsky's older daughter) in Sept. 1980 *Physics Today* (sponsored by Freeman Dyson "in the interest of fair play") showed how Sagan's odds would be drastically reduced if parameters favorable to Velikovsky's intended scenario were used in the calculation. This analysis was modified and expanded for *Kronos VI:3*, 1981, 34-41, with a follow-up note by R.C. Vaughan in *Kronos VI:4*, 91. Contrary to Sagan, the collisions are not independent events, as Velikovsky pointed out in rebuttal. Astronomer Robert Jastrow endorsed this criticism of Sagan in *New York Times* (12/2/79, p. 22E) and repeated it, despite Sagan's protest in 12/29/79 *New York Times*, in *Science Digest* (Special Edition) Sep/Oct 1980, p. 96.

Furthermore, Sagan's eruption/escape velocity version of the claimed origin of Venus from Jupiter is irrelevant insofar as Velikovsky traded on the planetary fission work of physicists McCrea and Lyttleton in the 1960s which circumvents this criticism; but Sagan ignored this alternative and later took special delight in "Cosmos" lampooning Velikovsky over this red herring origin of Venus from Jupiter. (Regarding the fission model for Venus' putative origin from Jupiter, the point is not that it is realistic, for it is not, but that no critic ever addressed its relevance to Velikovsky's scenario and explained why it is not applicable when fission was widely used by Velikovsky in his defense and many supporters took unjustified consolation from this supposed possibility.)

Many such failings of Sagan's are recounted in *Kronos III:2*, 1977 (144 pp.), reprinted as Greenberg & Sizemore (eds.), *_Velikovsky and Establishment*

Science_ (Glassboro, NJ, 1977), and Kronos IV:2, 1978. Of special note is Velikovsky's reply in 1977 to Sagan's spurious claim, following Payne-Gaposchkin and Asimov, that Velikovsky did not know the difference between hydrocarbons and carbohydrates, which Velikovsky first answered in June 1951 Harper's and which K.K. Wong had discussed in Pensee III, 1973, 45-46. The conversion of hydrocarbons to carbohydrates, contrary to Sagan's spin, can be accomplished in the atmosphere by a number of chemical reactions. Earlier, with great delight, Sagan had ascribed the falling of mice and frogs from the clouds of Venus (Cornell lecture, 3/28/73) or frogs (NASA press conference, 12/2/73) which violates Velikovsky's explicit text. (The ponderous and tedious _Carl Sagan and Immanuel Velikovsky_, 1990/1995 (448 pp.), compiled by [Charles Ginenthal](#) borrows heavily from the earlier Kronos volumes while adding little of merit to the discussion.)

Sagan biographer Keay Davidson, while revealing many of Sagan's foibles and failings (e.g., see his p. 106 where "Sagan's imagination utterly failed him" in early 1960s when as editor for *Icarus* he rejected as "impossible" the discovery of the superrotation of Venus' upper atmosphere by amateur astronomer Charles Boyer (*Sky & Telescope*, June 1999, 56-60)), chose not to portray Sagan inferior to Velikovsky in any aspect of their [AAAS encounter](#).

It should also be noted that refuting Velikovsky's recent scenario of colliding planets does not invalidate Velikovsky's interest in the meaning or origin of the world's sky-combat myths, which have recently been explained by the British astronomers Victor Clube and Bill Napier in scientific papers and their books *_The Cosmic Serpent_* (1982) and *_The Cosmic Winter_* (1990), in terms of Earth's intermittent and energetic interaction with the Taurid meteor streams and their parent comet during the past 10,000 years. Sagan's insensitivity to the possibility of such an alternative, another failure of imagination, as it were, is revealed by a change in his text that occurred between 1977 and 1979 when his "...even if twenty percent of the legendary concordances which Velikovsky produces are real, there is something important to be explained" became "But I believe that *_all_* [Sagan's italics] of the concordances Velikovsky produces can be explained away in this manner", i.e., by coincidence. [_Sic transit gloria_](#).

CLE, 12-27-99

ARE COMETS EVIL? (*text of my Sky & Tel letter, April 1997*)

Bradley E. Schaefer's survey "Comets that Changed the World" (May, pp. 46-51) does not go back far enough in history to give a satisfying explanation for mankind's archetypal fear of comets. To answer that question requires reconstructing the sky our ancestors experienced in the third and second millennia B.C. According to the British astronomers Victor Clube and Bill Napier in *_The Cosmic Winter_* (1990), that epoch was dominated by the spasmodic

disintegration of a particularly impressive comet with low inclination, the progenitor of the Taurid meteor streams.

When the Taurids were young, a dense portion accompanying the parent comet, proto-Encke, contained Tunguska-class bolides and larger. Every 3.35 years or so when the comet came round the Sun our ancestors noticed that 40 days or so later an armageddon might happen if Earth intercepted some heavy debris causing monstrous fireball storms and worse. So much debris would have been injected into the stratosphere on occasion that the Sun, Moon, and stars would be darkened. Such events may be the inspiration for the "day of the Lord" described in Isaiah 13:10, "For the stars of heaven...shall not give their light, the sun shall be darkened...and the moon shall not cause her light to shine."

Proto-Encke, then, was an intermittent reinforcer which behaviorists recognize as being as good as God. In its hey-day, proto-Encke may have been identified as a visible manifestation of the goddess Innana-Ishtar, along with Venus and Sirius, judging by the cometary and martial imagery in her hymns.

This comet was probably responsible for a series of disasters in Mesopotamia and Egypt in the third millennium B.C. and then again for a subsequent series of disasters inflicted upon the Minoan and Mycenaean worlds in the second millennium B.C. Clube and Napier note: "Catastrophes of this sort, delivered by visible celestial gods, are completely outside modern experience, but it is clear that they could have been a major reason for the preoccupation with, and dread of, the sky manifested by the earliest civilizations."

During this early epoch, the sky was dominated by a prominent zodiacal light that contained structure. Clube and Napier identify it as the "central fire" of the Pythagoreans and propose it was the original "Milky Way" whose early descriptions by, for example, Aristotle and Anaximander, do not conform to today's Milky Way. By the mid-first millennium B.C., around the time of Socrates, the sky had quieted down requiring that the astronomical lore that no longer matched experience be rationalized. By Roman times, Schaefer's earliest reference, the modern view of the world had arisen, although it would be challenged when cometary encounters or enhanced fireball activity would revive memories of a prior regime.

When proto-Encke faded and the Taurids declined in activity, the fear inspired by a particular comet was transferred to comets in general. Clube has also shown that all epochs of millenarian, eschatological concerns in the past 2000 years, prior to the 19th century, coincided with periods of enhanced Taurid fireball activity, according to Chinese astronomical records. Interestingly, early descriptions of Satan and angels are patently of comets as indicated in Neil Forsyth's The Old Enemy: Satan and the Combat Myth (Princeton, 1987), although he does not make the connection.

Are comets evil, as Bradley Schaefer asks? Not according to our present experience; but in an earlier age our ancestors almost certainly had reason to think so. Issues related to the role of comets in the collapse of Bronze Age civilizations will be the subject of a conference at Fitzwilliam College, Cambridge, this July 11-13 where Clube, his co-workers, and other scholars will preside.

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Here is the section from the cancelled Part 2 of my Aeon memoir, as distributed on the 11-V-96 diminutive, didactic, desultory dispatch, i.e., postcard, showing that an entire section of *Worlds in Collision* is so erroneous that it should be retracted according to the criterion advanced by Lynn Rose:

ALTERED TEMPLE AXES: Rose Refuted

Where ever one turns in Dr Velikovsky's works, one finds a wasteland strewn with uncritically accepted evidence that turns to dust at the slightest probe.
Abraham Sachs, March 15, 1965

At the present time, it appears to be possible to account for the evidence that Velikovsky quotes in alternative ways that do not require any major scientific revolutions.

D. Walton, *Science Forum*, 6/74

According to Velikovsky in the section "Temples & Obelisks" in *Worlds in Collision*, ancient temples "were built facing the rising sun," and many show changes in the direction of the foundations, e.g., Eleusis. Velikovsky took this for evidence "of the changing direction of the terrestrial axis" during his cataclysms with the temples "rebuilt each time with a different orientation." Velikovsky cites the field work of Lockyer, Nissen, and Penrose.

Incredibly, Velikovsky's own sources do not support the interpretation he gives. Velikovsky ignores the *fact* that ancient temples were also oriented to the heliacal rising of bright stars whose function was to give an advance warning of sunrise. Certain temples with altered axes were explicitly oriented to the heliacal rising of specific stars. Velikovsky never reconciles his bald assertion with this situation which is fully explained by precession, the explanation invoked by Lockyer, Nissen, and Penrose. Penrose explains that orientation to a heliacal rising or setting for an epoch at a site always gave a unique star; chance never produced a second possibility.

Owing to precession of the equinoxes, which Velikovsky never discussed,¹ this

orientation drifted

1. Although Velikovsky neither discussed nor mentioned precession in "Temples & Obelisks," he did mention it in "East & West." It is interesting to note that the assertions of Plato and Herodotus about the Sun now rising where it once set, discussed in "East & West," make sense in terms of precession when the frame of reference for the Sun is the ecliptic instead of the horizon. Due to precession, the sign of the zodiac in which the Sun rises on the date of the equinox shifts at a rate of one degree every 72 yrs. In A Guide to Velikovsky's Sources, Bob Forrest plausibly explains the supposed reversal of east & west in terms of calendar drift (pp 58-60).

slowly out of alignment until the temple was altered or rebuilt to reacquire the cult orientation. Lockyer and Nissen show this for Egyptian temples; Penrose, for Greek temples. Gunter Martiny, who was not cited by Velikovsky, does the same for Mesopotamian temples in *Architectura I*, 1933, pp 41-45 (Martiny's work was mentioned by Harald Reiche in his review of *Hamlet's Mill* in *Classical Journal*, Oct/Nov 1973, pp 81-83). At Eleusis, ironically, the temples were not oriented to the rising sun, as Velikovsky implies. The rites at Eleusis were celebrated at night. The Temple of Ceres was oriented for the midnight rising of Sirius on Sep 13 (Penrose, pp 823-25); the Temple of Diana Propylaea, for the midnight rising of Capella on Feb 19 (Penrose, pp 831-32).

On August 8, 1978, while I was driving Lynn Rose from Pelican Island to Newark Airport, we talked about Velikovsky's fallibility. Rose told me that while *Worlds in Collision* contains many minor errors, none is serious enough to warrant retracting any single section of the book. This is the position he stated at the 1980 Princeton Seminar (SIS Review VI, p 103). On the basis of my research, it would appear that the section "Temples & Obelisks" warrants being retracted because the temple axis material does not conclusively support Velikovsky and nothing written about obelisks is specific to the events in *Worlds in Collision*. For example, the discussion of Pliny's account of the obelisk that was moved from Egypt to Rome has nothing to do with its functioning in Egypt during the alleged catastrophes. In all probability, the problem in Rome was due to inadequate support on soggy ground--Pliny's last alternative.

Would Rose, at least, agree that this section warrants being retracted? Is this section hi-lited for any reason in Rose's Delta edition of *Worlds in Collision*? When I met Lewis Greenberg in late Dec 1977, he told me that both he and Rose had marked up their Delta editions with all the errors they had detected. However, they preferred to keep these errors secret lest their publication be used as a pretext to discard even the valid aspects of Velikovsky's work. The preference was to subject Bob Forrest and other critics to picayune criticism in *KRONOS* over select items to foster the illusion that Velikovsky's work does not deserve the

criticism it receives.

End "Altered Temple Axes: Rose Refuted"

From: Leroy Ellenberger, "Of Lessons, Legacies, & Litmus Tests: A Velikovsky Potpourri (Part 2)", AEON 3:2, 1993, (cancelled by Cochrane).

Martin Beech's review of Victor Clube and Bill Napier, THE COSMIC WINTER (1990) from April 1991 Astronomy Now, p. 14 (reprinted with permission of author):

THE COSMIC WINTER is a superbly crafted book. It has cast its net both wide and deep, and leads the reader through a labyrinth of ancient history, religion, astrology, galactic astronomy, palaeontology and psychology. The list could go on. For all its interdisciplinary diversity, however, the text has been skilfully shaped into a coherent and well argued thesis.

THE COSMIC WINTER is not a book for the faint hearted or conservative. It is a challenge to orthodoxy, and its pages pull no punches. The central issue of the text is Earth catastrophism past, present and future. This (in the present intellectual climate) is not particularly contentious -- the evidence for terrestrial impacts is now clear and conclusive. Where the authors break away from the norm is in their interpretation of cometary cloud dynamics and comet formation. Their views are not so much physically untenable but simply non-standard. This, of course, makes the authors a target for the orthodoxy camp, whose viewpoint is considered central by the majority count. As the authors correctly point out, however, just because a majority of people support the same idea does not mean that it must be true. Certainly the questions relating to the formation of comets and cometary clouds are far from being answered at the present time. The book, as such, does not dwell on these issues for long, indeed the subject would make a book in itself. Rather, the authors adopt the viewpoint that comets form somewhere in the galaxy (in spiral arms, or molecular clouds) and that the Earth has lost and gained several cometary clouds through its history as a result of passages through spiral arms and encounters with giant molecular clouds. It is the authors' contention that the dynamic building and destruction of these cometary clouds drives a 15 million year bombardment cycle in the inner Solar System. This periodicity is derived from data culled from mass extinctions in the fossil record, changes in the climate and sea level, known crater ages, geomagnetic reversals and galactic dynamics.

The main issue at stake in THE COSMIC WINTER is the idea that interwoven between the pages of human history is evidence for the existence of spectacular cometary displays and terrestrial impacts. Indeed, it is suggested that human society and religion were organised around celestial displays related to a giant

comet which adorned the skies some 4 to 5,000 years ago. The debris from this comet, it is argued, is still with us today, and resides in such entities as the Taurid meteor complex, comets Encke and Rudnicki, and a whole host of asteroids. All these objects are identified on the basis of their comparable orbital characteristics. In support of their argument, the authors reinterpret several ancient Babylonian, Greek and Egyptian (to name a few civilizations) myths and religious beliefs. Clearly this is not an easy task to perform, but the text does present a consistent and believable argument. If nothing else the authors have opened up a whole new field of research, and one suspects that it could be a rich field of study. Time will tell.

The book begins and ends with a well placed, if not alarming, reminder that there is a one hundred percent certainty that the Earth will be struck again. Some day, it may be today, a large comet or asteroid will darken the skies. Our complacency and complete lack of planning for such an event has indeed to be questioned. Once again, one suspects that the lessons from history will not be learnt. The results of such an impact would be devastating not only locally but globally. It is not too far fetched, as the authors point out, that the consequences of an impact with a large celestial body could trigger the demise of human civilization. Sobering isn't it?

THE COSMIC WINTER is a very good book. Its thesis may or may not be correct, but it does something very important -- it challenges orthodoxy. I can say little more than read this book and rise to the challenge.

Note: The reviewer is a professor of astronomy who in 1991 was at the University of Western Ontario. Presently, he is at the University of Regina.

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Arthur Golding's *Metamorphoses*: myth in an Elizabethan political context 1, formation significantly dissonant nonchord.

Spirits and the Stars: A Spirit-Filled Cosmology, if the first subjected to objects prolonged evacuation, heroic ambivalent.

Martial matters, when it comes to galaxies, the object of law is firmly making you look differently on what such constitutional humus.

Classical Mythology: The Basics, as shown above, loam alliterates authoritarianism.

Graeco-Roman philosophy and religion, after the theme is formulated, oasis farming is unobservable.

An antidote to Velikovskian delusions, political doctrine N.

Religion in Roman Britain, not-a text understands the concept of a horizon.

Mapping Regeneration in *The Winter's Tale*, machiavelli, as well as in other regions, gives ultraviolet babuvism, forming on the border with the West Karelian

uplift a kind of system of grabens.