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Catastrophism

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The Pseudoscience Wars: Immanuel Velikovsky and the Birth of the Modern Fringe by [Michael Gordin](#)

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Fifteen hundred years before the birth of Christ, a chunk of stuff blew off the planet Jupiter. That chunk soon became an enormous comet, approaching Earth several times around the period of the exodus of the Jews from Egypt and Joshua's siege of Jericho. The ensuing havoc included the momentary stopping and restarting of the Earth's rotation; the introduction into its crust of organic chemicals (including a portion of the world's petroleum reserves); the parting of the Red Sea, induced by a massive electrical discharge from the comet to Earth; showers of iron dust and edible carbohydrates falling from the comet's tail, the first turning the waters red and the second nourishing the Israelites in the desert; and plagues of vermin, either infecting Earth from organisms carried in the comet's tail or caused by the rapid multiplication of earthly toads and bugs induced by the scorching heat of cometary gases. Eventually, the comet settled down to a quieter life as the planet Venus, which, unlike the other planets, is an ingénue at just 3500 years old. Disturbed by the new girl in the neighbourhood, Mars too began behaving badly, closely encountering Earth several times between the eighth and seventh centuries BCE; triggering massive earthquakes, lava flows, tsunamis and atmospheric fire storms; causing the sudden extinction of many species (including the mammoth); shifting Earth's spin axis and relocating the North Pole from Baffin Island to its present position; and abruptly changing the length of the terrestrial year from 360 to its present 365¼ days. There were also further shenanigans involving Saturn and Mercury.

If this story makes you feel even the slightest stab of recognition, you're probably at least fifty years old, because it's a summary of the key ideas in Immanuel Velikovsky's *Worlds in Collision*. Published in New York in 1950, the book is now almost forgotten, but it was one of the greatest cultural sensations of the Cold War era. Before it was printed, it was trailed in magazines, and immediately shot onto the American bestseller lists, where it stayed for months, grabbing the attention and occupying the energies of both enthusiasts and

enraged critics. The brouhaha subsided after a few years, but the so-called Velikovsky affair erupted with greater violence in the late 1960s and early 1970s, when the author gathered a gaggle of disciples and lectured charismatically (and at times incomprehensibly) to large and enraptured campus audiences. Velikovsky's story was chewed over by philosophers and sociologists convinced of its absurdity, some trying to find standards through which one could securely establish the grounds of its obvious wrong-headedness, others edgily exploring the radical possibility that no such standards existed and reflecting on what that meant for so-called demarcation criteria between science and other forms of knowledge.

Worlds in Collision was Velikovsky's blockbuster – I haven't found exact sales figures, though there is an estimate from the late 1970s that millions of copies had been sold, with translations into many major languages – but there were follow-up volumes through the 1970s, fleshing out the basic astronomical-historical picture and offering ingeniously reflexive accounts of the developing controversies over his theories. By the late 1960s and 1970s, Velikovsky's books must have been in most American college dorm rooms. Other countries were not nearly as besotted, but neither were they immune: in 1972, both the BBC and the Canadian Broadcasting Corporation produced respectful documentaries on the man and his views. Velikovskianism had gained so much traction in America that in 1974 there was a huge set-piece debate over his views at the annual meeting of the American Association for the Advancement of Science. His scientific opponents reckoned he was 'quite out of his tree', while some of his acolytes – and these included an assortment of scientists with appropriate credentials – were of the opinion that Velikovsky was 'perhaps the greatest brain that our race has produced'.

Velikovsky appeared in American culture pretty much as a man from Mars: he was almost unknown to the intellectual communities whose expertise his book most directly engaged. Born in Vitebsk (now in Belarus) in 1895 to well-off Jewish parents, Velikovsky studied a wide range of subjects at Montpellier and Edinburgh before taking his medical degree in Moscow in 1921. Emigrating to Berlin, then to Vienna and Palestine, he learned psychoanalysis under Freud's pupil Wilhelm Stekel and practised as a psychiatrist before escaping the Nazis in 1939 and living first on the Upper West Side of Manhattan and later in Princeton. From that point on, he never had an academic appointment or regular salaried employment, apparently supporting himself with money inherited from his father, a bit of practice as a shrink and, later, book royalties and fees for speaking engagements. When you look up Velikovsky online, he's most often described as a psychiatrist or psychoanalyst. Despite the celebrity of his astronomical-historical stories, and despite the fact that he almost entirely gave up the couch when he became a celebrity, that's quite right.

Between the wars, Velikovsky turned himself into one of those then common Central European scholars of enormous intellectual range, always seeking the Big Unifying Idea.

His interest in planetary astronomy was a late development: it was psychoanalysis and Jewish history that were the keys to the story in *Worlds in Collision*. A Zionist, though not notably religious, Velikovsky was infuriated by Freud's last book, *Moses and Monotheism* (1937), which claimed that Moses wasn't actually Jewish but a runaway Egyptian priest from Pharaoh Akhenaten's monotheistic sun religion, later murdered by the Israelites, who ended up fabricating a syncretic deity from an Egyptian sun god and a Midianite volcano god called Jehovah. Subsequently, the idea of a Messiah was concocted as an expression of guilt for father-murder, a sense of guilt which has been handed down to the Jews as a common psychological inheritance. The historical account Judaism offered of itself was therefore, according to Freud, a form of dream-work, a collective repressed memory needing skilled decoding by modern interpreters. To Velikovsky, all this was yet another manifestation of Freud's Jewish self-hatred. How dare he impugn the Old Testament story about who the Jews were and how they came to be Chosen? But Freud's methods in *Moses and Monotheism* nevertheless signalled a productive new way of interpreting human history, one in which psychoanalytic techniques could effectively expose the true meaning of the world's dream-myths.

At the same time, Velikovsky was convinced that the Old Testament, decoded in this way, was an overwhelmingly reliable historical account, that the Jewish records could be used as a standard to calibrate archives of dream-myths – from the Egyptian and Greek to the Chinese and Choctaw – and that, once this radical reinterpretation of world religions was achieved, we would have an accurate account of the physical events that had occurred in historical times and were encrypted in the dream-myths.

Although *Worlds in Collision* was a pastiche of comparative mythology and planetary astronomy, its major purpose was a radical reconstruction of history. Velikovsky had worked through the annals of myth and ancient history, which substantially supported each other and told the same historical stories; the Jewish story and its chronologies could be used reliably to gauge all the others. The apparent datings of events did differ, but a wholesale recalibration of ancient chronology was both possible and necessary. The ancient historians had got their dates badly wrong, and so too had the astronomers, biologists and geologists, who now needed to understand that spectacular cosmic catastrophes had happened and that historical methods of interpreting ancient texts could be used to establish radically unorthodox scientific stories. Properly understood, Jewish history not only laid bare the inaccuracy of scientific accounts, it securely established the reality of natural events and processes which scientists assumed could not possibly have happened.

It was American scientists who went ballistic over Velikovsky, not historians, and one purpose of Michael Gordin's probing and intelligent *The Pseudoscience Wars* is to ask why they responded to Velikovsky as they did. Putting that sort of question is a sign of changed

times. Passions have cooled; circumstances have altered. Almost all previous books about Velikovsky and the affair have been for or against, celebratory or accusatory, justifying the way the scientific community handled the business or criticising them for handling it badly. There's no evidence that Gordin considers Velikovsky's theories anything but nutty, yet affirming and identifying their nuttiness is a non-barking dog here. Gordin is a disengaged and dispassionate historian of science – much of his work has been about Russian science and the science and politics of nuclear weapons in the postwar period – and the questions he poses about Velikovsky are meant to illuminate the condition of American science in 'the postwar public sphere' and to figure out what has been meant by the notion of 'pseudoscience'. The Velikovsky affair was at once a long-running episode of surpassing strangeness and, Gordin says, 'ground zero' in a series of Cold War era 'pseudoscience wars'. Understanding the pathological is here meant to encourage a new perspective on the normal.

Scientists in the years after World War Two were upset by Velikovsky because, Gordin argues, they felt insecure, uncertain of the new authority and influence they had apparently gained by building the bomb and winning the war. Enormous amounts of government money had been dumped on them and government agencies designed to ensure the support of even basic research had been established, with unprecedented arrangements allowing the recipients of government largesse to determine its distribution. Yet there were reasons to be fearful, and in Cold War American culture there was more than enough fear to go around. Some forms of fear specially afflicted scientists. First, there was concern that political support might translate into political control. There were the Marxists – not all that many, of course, in America – who had actively worked for the organised planning and direction of scientific research, and there was the cautionary tale of genetics in the Soviet Union, especially after 1948, when Stalin had decreed, against the canons of 'Western bourgeois' Mendelian genetics, that the ideas of the charlatan Ukrainian agronomist Trofim Lysenko about the inheritance of acquired characteristics should count as dogma. Lysenkoism seemed to show how vulnerable orthodox science might be to the fantasies and ideologies of those who weren't scientists at all or whose scientific credentials had been burnished by the political powers. And there were the McCarthyite witch-hunts, some of which targeted distinguished scientists. How much autonomy did American scientists actually have? How vulnerable was that autonomy to the dictates of politicians and to the delusions of popular culture? No one could be sure. In 1964, Richard Hofstadter brilliantly described the 'paranoid style' of American politics: your opponents weren't simply wrong, they were conspiring against you, mobilising dark forces to suppress free and rational thought. The joining up of psychiatry and history was in the air, like the UN's Black Helicopters over the US – or perhaps in the cultural water, like fluoride dumped in reservoirs by alien agents.

Velikovskianism belonged to the intellectual genre known as catastrophism, the notion

that sudden and massive changes, not just gradual ones, have occurred in the natural world and that the more or less uniform natural processes now observable do not constitute all the modes of change that have historically shaped the world. Darwin was a notable uniformitarian, and Velikovsky opposed Darwinism for that reason, but there is nothing inherently unscientific about catastrophism, nor did Velikovsky's catastrophism invoke divine intervention. It was bizarre, but it was offered as a scientific (not a religious) theory about natural objects, natural events and natural powers. At a theoretical level, the objections orthodox scientists had about Velikovskianism mostly had to do with celestial mechanisms: his assertions about the insufficiency of gravitation and inertial motion to account for planetary behaviour and related claims about the significance of electromagnetic forces. The problem at a factual level was that these spectacular catastrophes were supposed to have happened quite recently, while orthodox science recognised no evidence that they had.

The greatest ingenuity of Velikovsky's thought lay in its merging of naturalistic catastrophism and psychoanalytic theory. This allowed him to account at once for the annals of comparative myth and religion and for scientists' resistance to his scheme, and that is the reason *Worlds in Collision* was offered, in Gordin's phrase, as 'a dream journal for humanity'. The key was what Velikovsky called 'collective amnesia'. The catastrophes let loose on Earth by the Venus comet had so scarred the human mind that memories of them had either been erased or, more consequentially, encoded in allegory. Just as with Oedipal father-killing and mother-mating, amnesia and suppressed memory were coping mechanisms, and so a proper interpretation of ancient myth would decode the allegorical forms into which traumatic memories had been cast. At the same time, what was the violence of scientists' opposition to Velikovsky's ideas but a persistence of that same tendency to deny the catastrophic truth of what had happened to the human race, how very close it had come to obliteration? The fact that the scientists were leagued against him was precisely what Velikovsky's theories predicted. It was further evidence that he was right. What the scientists needed, indeed what the culture as a whole needed, was therapy, a cure for collective amnesia.

Here are the reasons for the enormous appeal of Velikovsky's theories to Cold War America, and, specifically, to the young, the angry and the anxious. Lecturing to campus audiences, Velikovsky told the students what they already knew: the world was not an orderly or a safe place; Armageddon had happened and could happen again:

The belief that we are living in an orderly universe, that nothing happened to this Earth and the other planets since the beginning, that nothing will happen till the end, is a wishful thinking that fills the textbooks ... And so it is only wishful thinking that we are living in a safe, never perturbed, solar system and

a safe, never perturbed past.

Alfred Kazin, writing in the *New Yorker*, understood that this was part of Velikovsky's appeal, and tellingly linked the great pseudoscientist with the Doomsday warnings of orthodox atomic scientists: Velikovsky's work 'plays right into the small talk about universal destruction that is all around us now', he said, 'and it emphasises the growing tendency in this country to believe that the physicists' irresponsible scare warnings must be sound.'

The counterculture emerging in 1960s and 1970s America was born from fear and bred to hope. It feared nuclear catastrophe; it was disposed to think that the military-industrial-academic complex had scant regard for preventing catastrophe or even that it was conspiring to bring it about. (In 1962, the war-gamer Herman Kahn suggested that we should begin to 'think the unthinkable' and work out how to fight and win a nuclear war, and in 1964 Stanley Kubrick's *Dr Strangelove* made Kahn's vision box-office.) The counterculture expressed whatever optimism it had about the future in a characteristically American psychotherapeutic idiom. So did Velikovsky. Humankind could save itself if it confronted its irrationality and the collective amnesia that was responsible for all forms of racist, social and military violence: 'Nothing is more important for the human race than to know our past and to face it.' Velikovsky offered both diagnosis and treatment. And if his theories were not, in themselves, religious, they so clearly pointed to political and moral consequences that one disciple cited his Velikovskianism to the draft board as a way of getting out of the Vietnam War: pacifism flowed from planetary astronomy. (The reluctant soldier happily failed his physical, not his metaphysical.)

When Velikovsky's bizarre story about planetary hi-jinks was so energetically puffed up in 1950, the American scientific establishment was presented with a choice, a choice endemically faced by orthodoxy confronted by intellectual challenges from alien sources: do you ignore the heterodox? Do you invite it to sit down with you and have a calm and rational debate? Do you crush it? There were scientific voices counselling Olympian disdain but they were in general overruled. Still, pretending to take no notice of Velikovsky might have been the plan had *Worlds in Collision* not been published by Macmillan, a leading producer of scientific textbooks, and packaged not as an offering to, say, comparative mythology or as popular entertainment, but as a contribution to science. Elite scientists, notably at Harvard, reckoned that they might be able to control what Macmillan published when it was represented as science. A letter-writing campaign was organised to get Macmillan to withdraw from its agreement to publish the book; credible threats were made to boycott Macmillan textbooks; hostile reviews were arranged; questions were raised about whether the book had been peer-reviewed (it had); and, when *Worlds in Collision* was published anyway, further (successful) pressure was exerted to make

Macmillan wash its hands of the thing and shift copyright to another publisher. The editor who had handled the book was let go, and a scientist who provided a blurb and planned a New York planetarium show based on Velikovsky's theories – admittedly not the sharpest knife in the scientific drawer – was forced out of his museum position and never had a scientific job again.

From an uncharitable point of view, this looked like a conspiracy, a conspiracy contrived by dark forces bent on the suppression of free thought and different perspectives – and the Velikovskians took just that view. An establishment conspiracy centred on Harvard had sought to control scientific thought; the conspirators had closed minds and wanted to close others' minds; they refused to engage with Velikovsky's ideas at the level of evidence, to show exactly where he was wrong. When Velikovsky made specific predictions of what further observation and experiment would show, his enemies declined to undertake those observations and experiments. This was the way the Commies behaved, Velikovsky's allies suggested. Analogies were drawn from the history of science seen as the history of martyrs to dogma. Velikovsky figured himself as Galileo and his opponents as Galileo's critics, who wouldn't even look through the telescope to see the moons of Jupiter with their own eyes. 'Perhaps in the entire history of science,' Velikovsky said, 'there was not a case of a similar violent reaction on the part of the scientific world towards a published work.' *Newsweek* wrote about the spectacle of scientific 'Professors as Suppressors' and the *Saturday Evening Post* made sport of the establishment reaction as 'one of the signal events of this year's "silly season"'. Some scientists who were utterly convinced that Velikovsky's views were loopy had qualms about how the scientific community had treated him. Einstein, in whose Princeton house Velikovsky was a frequent visitor, was one of them. Interviewed just before his death by the Harvard historian of science I.B. Cohen, Einstein said that *Worlds in Collision* 'really isn't a bad book. The only trouble with it is, it is crazy.' Yet he thought, as Cohen put it, that 'bringing pressure to bear on a publisher to suppress a book was an evil thing to do.'

The Velikovsky affair made clear that there were radically differing conceptions of the political and intellectual constitution of a legitimate scientific community, of what it was to make and evaluate scientific knowledge. One appealing notion was that science is and ought to be a democracy, willing to consider all factual and theoretical claims, regardless of who makes them and of how they stand with respect to canons of existing belief. Challenges to orthodoxy ought to be welcomed: after all, hadn't science been born historically through such challenges and hadn't it progressed by means of the continual creative destruction of dogma? This, of course, was Velikovsky's view, and it was not an easy matter for scientists in the liberal West to deny the legitimacy of that picture of scientific life. (Wasn't this the lesson that ought to be learned from the experience of science in Nazi Germany and Stalinist Russia?) Yet living according to such ideals was

impossible – nothing could be accomplished if every apparently crazy idea were to be given careful consideration – and in 1962 Thomas Kuhn's immensely influential *Structure of Scientific Revolutions* commended a general picture of science in which 'dogma' (daringly given that name) had an essential role in science and in which 'normal science' rightly proceeded not through its permeability to all sorts of ideas but through a socially enforced 'narrowing of perception'. Scientists judged new ideas to be beyond the pale not because they didn't conform to abstract ideas about scientific values or formal notions of scientific method, but because such claims, given what scientists securely knew about the world, were implausible. Planets just didn't behave the way Velikovsky said they did; his celestial mechanics required electromagnetic forces which just didn't exist; the tails of comets were just not the sorts of body that could dump oil and manna on Middle Eastern deserts. A Harvard astronomer blandly noted that 'if Dr Velikovsky is right, the rest of us are crazy.'

By 1964, some of Velikovsky's scientific critics were drawing a different lesson from the affair: the nuclear chemist Harold Urey was concerned 'about the lack of control in scientific publication ... Today anyone can publish anything,' and it was impossible to tell the signal of truth from the noise of imposters. We must return to the past, Urey urged, when there was a proper intellectual class system and a proper system of quality control: 'Science has always been aristocratic.' In a society insisting on its democratic character, that was not a wildly popular position, though doubtless it had appealed to the scientists who tried to prevent the original publication of Velikovsky's book and who sought to block his later efforts to publish in mainstream scientific journals.

Then there was the tactic of labelling Velikovskianism 'pseudoscience'. One of the strengths of Gordin's book is its careful historical unpicking of what scientists had in mind, and what they were doing, when they called something pseudoscientific. Pseudoscience isn't bad science – incompetent, shallow, containing egregious errors of fact or reasoning. (In those senses, there's a lot of bad science around which is almost never identified as pseudoscience.) Rather, what postwar scientists meant when they called Velikovskianism pseudoscience (along with contemporary parapsychology, resurgent eugenics, Wilhelm Reich's orgone energy theory, creationism and the fantastical world ice theory) was that these were bodies of thought that pretended to be scientific, dressing themselves up in the costumes of science, but which were not the thing they pretended to be. Pseudoscientific thought might indeed contain errors of fact and theory, but the orthodox regarded it as fundamentally misconceived.

There were attempts to spell out in exactly what ways Velikovsky had transgressed the rules of scientific method, and, while some critics satisfied themselves that they had identified those errors, there was little if any agreement about what this transgressed method was. For example, Velikovsky did make a series of specific predictions (about the temperature and chemical composition of Venus and about Jupiter as a radio source)

which would have permitted his system to be empirically tested, and some of these predictions were eventually advertised as confirmed (even in major scientific journals), but it proved notoriously difficult to disentangle those specific observations – whether supposedly confirming or refuting – from a complex network of claims and assumptions. This ‘network’ character of confirmation and disconfirmation is now generally recognised as endemic to science. Einstein spoke with his usual wisdom when asked how scientists might tell by inspection whether unorthodox ideas were brilliant or barmy. He replied, with Velikovsky clearly in mind: ‘There *is* no objective test.’ The term ‘pseudoscientist’ is a bit like ‘heretic’. To be a pseudoscientist is to be accused; you don’t describe yourself as a pseudoscientist. (Velikovsky, indeed, was exquisitely cautious about joining a *salon des refusés*, disinclined to associate his cause with that of the parapsychologists and members of the other pseudoscientific tribes who identified themselves as martyrs to orthodoxy.) So there *was* a lot of pseudoscience about in the Cold War decades, but the category – not the content – was manufactured by orthodox scientists concerned about maintaining the boundaries of legitimacy but unable to find a stable and coherent way of defining what the category consisted of, other than its violation of valued structures of plausibility.

If pseudosciences are not scientific, neither are they anti-scientific. They flatter science by elaborate rituals of imitation, rejecting many of the facts, theories and presumptions of orthodoxy while embracing what are celebrated as the essential characteristics of science. That is at once a basis for the wide cultural appeal of pseudoscience and an extreme difficulty for those wanting to show what’s wrong with it. Velikovsky advertised his work as, so to speak, more royalist than the king. Did authentic science have masses of references and citations? There they were in *Worlds in Collision*. Was science meant to aim at the greatest possible explanatory scope, trawling as many disciplines as necessary in search of unified understanding? What in orthodoxy could rival Velikovsky’s integrative vision? Authentic science made specific predictions of what further observation and experiment would show. Velikovsky did too. Was science ideally open to all claimants, subjecting itself to all factual criticisms and entertaining the possibility of radically new theoretical interpretations? Who behaved more scientifically – Velikovsky or the Harvard ‘suppressors’?

Gordin sides with those – like Einstein and a number of modern sociologists and philosophers – who doubt that universal and context-independent criteria can be found reliably to distinguish the scientific from the pseudoscientific. But here is a suggestion about how one might do something, however imperfectly, however vulnerable to counter-instances and however apparently paradoxical, to get a practical grip on the difference between the genuine article and the fake. Whenever the accusation of pseudoscience is made, or wherever it is anticipated, its targets commonly respond by making elaborate displays of how scientific they really are. Pushing the weird and the implausible, they bang

on about scientific method, about intellectual openness and egalitarianism, about the vital importance of seriously inspecting all counter-instances and anomalies, about the value of continual scepticism, about the necessity of replicating absolutely every claim, about the lurking subjectivity of everybody else. Call this hyperscience, a claim to scientific status that conflates the PR of science with its rather more messy, complicated and less than ideal everyday realities and that takes the PR far more seriously than do its stuck-in-the-mud orthodox opponents. Beware of hyperscience. It can be a sign that something isn't kosher. A rule of thumb for sound inference has always been that if it looks like a duck, swims like a duck and quacks like a duck, then it probably is a duck. But there's a corollary: if it struts around the barnyard loudly protesting that it's a duck, that it possesses the very essence of duckness, that it's more authentically a duck than all those other orange-billed, web-footed, swimming fowl, then you've got a right to be suspicious: this duck may be a quack.

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