

THE CENSORSHIP OF VELIKOVSKY'S INTERDISCIPLINARY SYNTHESIS

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I

What may we expect of an empirical theory before we judge it successful? The criteria are three: 1) the overall logical simplicity or economy of the theory in comparison with other theories, 2) the extent to which statements deducible from the theory turn out to be true, and 3) the absence of any statements deducible from the theory which turn out definitely to be false.

Velikovsky's theory (1950) of global catastrophes, the more recent of which occurred within historical times, is by now a near-classic case of a successful empirical hypothesis, namely, it was accompanied by an extensive collection of evidence that seemed to lend it considerable plausibility; it provided a simple, yet comprehensive set of premises around which to organize and to understand a vast range of previously disconnected phenomena; the theory was eminently open to testing, since it entailed a number of important consequences not yet verified, and many of these were incompatible with rival theories; and finally, succeeding years witnessed the verification of a great many of those consequences and the disconfirmation of none. By all the usual canons of sound methodology the theory should now be accepted as a successful one, that is, one that may be regarded as very probably true.

Nearly all bold theories that were on the right track have encountered initial opposition irrelevant to the canons of acceptance listed above. Scientists often reveal elaborate and sometimes inflexible views about the traits a theory must have merely in order to be proposed for examination; usually, these traits have

nothing to do with the traits that theories are expected to have in order to be judged successful.

The theory proposed by Velikovsky in 1950 led to the expression of a number of such views about prior requirements. On May 20, 1950, in a letter of protest and threat written to the Macmillan Company, Dean B. McLaughlin, Professor of Astronomy at the University of Michigan, wrote:

“The claim of universal efficacy or universal knowledge is the unmistakable mark of the quack. No man can today be an expert even in the whole of geology or the whole of astronomy. There is specialization within specialties. I do not mean that we are ignorant of all fields but our own; I do mean that we are not equipped to do highly technical original research in more than several distinct specialties for each scientist. But no man today can hope to correct the mistakes in any more than a small subfield of science. And yet Velikovsky claims to be able to dispute the basic principles of several sciences! These are indeed delusions of grandeur!”

Four paragraphs later, McLaughlin reveals that:

“No, I have not read the book.”

One notes in passing that this self-confessed ignorance of the contents of *Worlds in Collision* does not prevent McLaughlin from protesting the Macmillan Company's

“promulgation of such *lies*,—yes, *lies*, as are contained in wholesale lots in *Worlds in Collision*.”

But McLaughlin's principal objection seems to be directed both at the interdisciplinary character of Velikovsky's investigations and at the boldness of his conclusions. It is interesting that what McLaughlin sees as grounds for objection are in other quarters seen as grounds for admiration. Thus, Professor Horace M. Kallen, then Dean of the Graduate Faculty of the New School for Social Research, wrote to Velikovsky on May 21, 1946:

“The vigor of the scientific imagination that you show, the boldness of your construction and the range of your inquiry and information fill me with admiration.”

Range and boldness, then, are the points at issue, and it is true that Velikovsky's investigations have led him into many different fields of learning. It is also true that the conclusions to which his theory leads are in conflict with some of the more popular *theories* in those fields. But his theory is not in conflict with any clear-cut *facts* unearthed by other disciplines, and claims to the contrary have never been substantiated. Whether it is true that "no man can today be an expert" in several fields at once depends upon what is meant by "expert." If it means "able to hold his own in debate with specialists from many fields for more than a quarter of a century," then it appears that Velikovsky himself is an exception to McLaughlin's rule. And on the chance that there *are* occasional exceptions to that rule, we would do well not to censor in advance any suggestion that happens to cut across disciplinary boundaries.

Unlike universities, the world around us is not neatly divided into departments and specialties. If each specialty restricts itself to its own selected subject matter, with no serious regard for the relevance of other specialties and with no real effort toward synthesis, what chance is there that the mere summation of isolated special theories will be anything more than a disconnected jumble of progress reports that cries out for synthesis into a unified, coherent theory that has some real chance of truly representing the unity and integration of the operations of nature? Indeed, many students of scientific methodology have concluded that *only* an interdisciplinary approach, seeking one coherent theory to describe our one universe, has much prospect of turning out to be true.

An important consequence of the present disciplinary isolation has been the continuing preference for theories that are uniformitarian. Uniformitarianism is the thesis that only the processes that we see operating today could have operated in earlier periods of history; this rules out any of the sudden, global catastrophes of the sort described by Velikovsky. What seems to have happened is that each discipline has borrowed unchallenged the uniformitarian conclusions of each of the other disciplines, and has assumed that those other disciplines have encountered no serious indications of catastrophism. Each discipline is left with the impression that only in *that* discipline are there any data that might suggest a catastrophic model rather than a uniformitarian model. These unwanted data are then either ignored or else forced into a uniformi-

tarian framework they do not really fit. The strain is tolerated so as not to conflict with the uniformitarianism of the other disciplines.

Thus, each isolated discipline tends to borrow only the uniformitarian *conclusions* of the other disciplines, and to remain unaware of the catastrophic *data* that are hidden away as skeletons in the closets of all the disciplines. Velikovsky has removed those skeletons from the various closets and has been rattling them loudly for all to hear. His suggestion is that when one looks at all of the evidence, without restricting oneself to the limited number of "facts" usually considered by one group of specialists, it becomes possible to make a strong case for catastrophism. This interdisciplinary foundation of his arguments is one of the principal reasons for both their novelty and their cogency.

Giordano Bruno long ago pointed out that what the "facts" are will be determined in large part by the observer's *intenzioni*, the whole "set" that he brings to his work. Sometimes these disciplinary "sets" are so influential in our methodology that we decide in advance what ramifications will ensue even from "facts" whose nature is not yet known! And so NASA was able to announce, prior to any moon landing, that the findings of such expeditions would shed further light on the creation of the solar system some billions of years ago, when, as everyone (except Velikovsky) knows, the moon's features were being formed. Here it would seem that each investigator works on his own specialized assignment, and has no responsibility for the overall theory, since it has not been included as part of his assignment; and yet the overall theory, that general uniformitarian picture, serves as an unquestioned backdrop for his activity, and is so influential that it even predetermines the character of a new, unexplored world.

We have seen that the viewpoint expressed by McLaughlin rejects in advance any interdisciplinary reforms that would transgress the boundaries of the separate specialties; and that it rejects Velikovsky's theory in particular both because of the degree of boldness in Velikovsky's constructions and because of the number of areas in which that boldness is expressed. Anyone who is led to challenge the basic conclusions of several different disciplines is said to be suffering from delusions of grandeur; any kind of uni-

versality in such enterprises is seen as "the unmistakable mark of the quack." But is it not possible that there are some people whose range and capacities exceed the disciplinary boundaries? Is it not possible that some of the basic conclusions of a number of disciplines do need to be challenged? Has there ever been a time in history when all of the basic conclusions of all of the various disciplines were beyond any need of re-examination?

Discoveries in the years since 1950 have forced extensive revision of astronomy texts in order to correct the misinformation they contained about the temperatures of the planets, the role of electricity and magnetism in astronomical phenomena, the wanderings of the Earth's axis, et cetera. On the other hand, no major claim made by Velikovsky in *Worlds in Collision* in 1950 has had to be retracted, though a great many of the claims that he did make and that were at the time considered by others to be false are known to be true.

Velikovsky's own theory illustrated the danger of rejecting a theory in advance because it is interdisciplinary and daring. This policy, if successfully applied, would have led us to discard just about the only theory of the solar system and of ancient history that has *not* had to be drastically revised during the past two decades.

II

Despite the success of Velikovsky's theory, one continues to hear objections of the same sort that were advanced when the theory was first proposed. Perhaps the most frequently expressed objection is that Velikovsky's theory violates the laws of "celestial mechanics," that it overthrows Newton's theory of gravitation, that it is dynamically impossible. Usually this attitude is traceable to a merely hearsay grasp of what Velikovsky has written. One of the earliest statements of this objection was made in a letter to Horace Kallen, on May 27, 1946, by Harlow Shapley, then Director of the Harvard College Observatory:

"Dr. Velikovsky's claim that there have been changes in the structure of the solar system during historical times has implications which apparently he has not thought through; or perhaps was unable

to convey to me in our brief conversation. If in historical times there have been these changes in the structure of the solar system, in spite of the fact that our celestial mechanics has been for scores of years able to specify without question the positions and motions of the members of the planetary system for many millennia fore and aft, then the laws of Newton are false. The laws of mechanics which have worked to keep airplanes afloat, to operate the tides, to handle the myriads of problems of everyday life, are fallacious. But they have been tested competently and thoroughly. In other words, if Dr. Velikovsky is right, the rest of us are crazy.”

(All that Shapley knew of Velikovsky's work at the time of this letter was the latter's claim that the present order of the solar system was stabilized only in historical times—not billions of years ago. Later [1950], it transpired that Velikovsky claimed the participation not only of gravitation and inertia but also of electromagnetic fields and forces in celestial mechanics, even if only as minor factors; in catastrophic conditions and at close distances these ignored forces could become dominant.)

The general motions of the bodies in the solar system at present conform very closely to Newton's gravitational formulas. But there are numerous phenomena that are not explained, such as the origin and movements of solar spots, the paths followed by solar prominences, certain librations of the Moon, the variations in the planets' periods of rotation, some of the orbital perturbations of the exterior planets, the capture of particles by the Van Allen belts, et cetera. And it has certainly not been established that even the large-scale motions of the planets have *always* been primarily in accord with celestial mechanics built on gravitation and inertia alone.

The history of the solar system is but one branch of natural history, and if historical data conflict with astronomical theories, it is strange that history should have to be rewritten to conform to these theories! Indeed, it is the historical material itself, together with corroborating evidence from other fields, that led Velikovsky to conclude that space is not empty, but is swept by particles and permeated with electromagnetic fields, and that when planets are in close approach they are greatly affected by electromagnetic interrelations, so that their subsequent paths are not determined solely by gravitational fields.

As a matter of fact, in *Worlds in Collision* Velikovsky has not only not denied that gravity plays a role in determining the motions of astronomical objects, but has also shown, in the epilogue, how the historical events could have happened in the frame of the celestial mechanics in which gravitation and inertia are the only forces in action. Yet he admitted that in "searching for the causes of the great upheavals of the past and in considering their effects [he] became skeptical of the . . . celestial mechanics based on the theory of gravitation" in which "electricity and magnetism play no role." In his admiration of Newton, Velikovsky likes to stress that on the last page of the *Principia* Newton prophetically wrote of electricity—very little explored in his time—as a force that will need to be reckoned with in future studies.

Shapley assumes that to deny gravity the *sole* role in astronomy is to deny gravity *any* role in astronomy. But in all sorts of familiar situations on Earth we see gravitational attraction outweighed by other factors. The laws of gravitation are not then wrong; they are simply seen for what they are: descriptions of *one* of the factors that determine the actual motions of objects. The Newtonian laws need not on this account be revised; what does need to be revised is the unjustified belief that gravitational laws are the sole factor determining astronomical events.

Shapley begs the question by assuming that the planetary motions have been successfully calculated "for many millennia fore and aft." The only way to check these calculations is to wait several millennia and see, or to check them against the testimony of history, a procedure that Shapley has ruled out of court in advance.

Shapley continued to insist that if Velikovsky is right, then *everything* we have learned about the operation of gravity is wrong. When *Worlds in Collision* was finally about to be published, Shapley wrote a threatening letter to Macmillan (on January 25, 1950) and reiterated "that if the earth could be stopped in such a short space of time it would overthrow all that Isaac Newton had done."

The history of science will inevitably record, even if Velikovsky should somehow turn out to be mistaken, that Shapley and his colleagues made a snap decision about Velikovsky. That decision will be seen as based far less on evidence and argument than on various untenable prejudices.