

SCIENCE

A CHRISTIAN ANALYSIS

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The purpose of the American mission to the planet Mars in the year 2005 was presented as a mission to find evidence of “life” on Mars, or at least, evidence that life could have existed on Mars.¹ The News Hour with Jim Lehrer,² Public Broadcasting System, January 26, 2005, included a segment billed as an update on the success of that mission. Featured scientists expressed unbridled excitement with the mission’s progress, and one confidently stated the mission conclusively established warm water had once been present on Mars, and the presence of the warm water made it very likely some life forms developed. The camera focused on graphical images of the rock formations which the scientist said confirmed the presence of water. His confident, friendly affirmation of the mission’s purpose was persuasive, but it could hardly be called scientific. That’s because nothing was said of the work of other scientists who developed contrary interpretation.

David Shuster, California Institute of Technology, and Benjamin Weiss, Massachusetts Institute of Technology,³ studied the content of argon gas in the nakhlite group of Martian meteorites and meteorite ALH840001 to establish the thermochronology of the rocks. They determined the rocks could not have been above freezing for more than one million years out of the last 3.5 billion years, and that warm, flowing water could only have existed on Mars more than 4 billion years ago. That scenario was clearly inconsistent with the affirmation on public television. It was not the only inconsistency.

Detailed analysis of images of the surface of Mars generated by the Mar Global Surveyor

¹ “Nova: MARS,” Chapter One - Introduction, <http://www.pbs.org/wgbh/nova/mars/program.html>

² News Hour with Jim Lehrer, 3 pm to 3:30 pm (pst), January 25, 2006, KQED - Channel 9, San Francisco, California.

³ David L. Shuster & Benjamin P. Weiss, “Martian Surface Paleotemperatures from Thermochronology of Meteorites,” *Science*, 22 July 2005, pages 594-600. David Shuster is now at the Berkeley Geochronology Center, Berkeley, California.

indicated Martian geology was very complex.⁴ Valleys were indeed present on the surface of Mars that might have been caused by flowing water, but if that were the case where were the smaller tributaries that would have been expected to develop as water covering a larger area flowed and necessarily concentrated as it sought lower elevation? It was suggested the valleys actually resulted from ground subsidence. A probable cause of the ground subsidence was said to be the sudden thaw and consequent movement of underground water. But what caused the sudden thaw of previously frozen underground water? . . . was such an event only possible 4 billion years ago?

The Mars Orbiter also created detailed images of “Outflows,” or compact geographical points from which some sort of liquid erupted and flowed away from the point of eruption in a manner that created erosion of the previously existing surface condition. Water, of course, was the favored liquid. It was theorized that frozen underground water was suddenly heated by an impact event, expanded quickly and burst onto the surface. Maybe, but there was a problem with the theory. If water erupted onto the surface, flowed away from the point of origin, and eroded the surface as it flowed, where were the debris fields at the outer boundaries of the flow? In any case, isolated and comparatively small impact events could not have brought about a change in Martian climate, and could not have created a body of standing surface water, especially “warm” surface water.

Good scientific method required excessively contrived reasoning aimed at shoring-up favored theoretical constructs give way to radically different possibilities. One such possibility was offered by Peter Ravenscroft.⁵ He made the case that large parts of Mars were covered with a combination of “fine basalt dust and carbon dioxide ice,” and the resulting mixture could easily spread in a manner which gave the appearance of water flows.

The warm, confident proclamations on the News Hour with Jim Lehrer were not necessarily wrong, but they were premature and overstated. Did it matter? What ulterior motive, if any, was served by excessive enthusiasm? It had been rumored for years the National Aeronautical and Space Administration (NASA) desperately needed a dramatic success in order to secure its government funding. Dramatic success on Mars would likely have been sufficient to achieve that security. But even if true the explanation was simplistic because discrepancies between public pronouncements on behalf of scientific endeavor, and the reality of the underlying scientific research was commonplace and evident in areas entirely unrelated to NASA.

Consider, for example, the extinction of the dinosaurs. In the late 1970's Luis and Walter Alvarez,⁶ a father-son team from the University of California at Berkeley, discovered a layer of iridium during an Italian excavation at the precise boundary between the Cretaceous and Tertiary Periods (KT Boundary) of geological history. Subsequent research showed a similar layer of iridium at multiple locations around the world. Since the iridium was of the type that could only come from an asteroid the Alvarez team theorized the broadly dispersed layer could only have resulted from the impact of a very

⁴ Nasa website <http://antwrp.gsfc.nasa.gov/apod/ap980205.html>, authored by Robert Nemiroff & Jerry Bonnell.

⁵ “The Strange Sediments of Mars,” by Peter Ravenscroft, “Martian Soil,” <http://martiansoil.com/archives/003505.php>

⁶ <http://pbs.org/wgbh/aso/databank/entries/do80i.html>

large asteroid. At the time, however, no such impact site was known. That changed. In the 1991 Alan Hildebrand of the University of Calgary, Canada, discovered the Chicxulub impact site off Mexico's Yucatan peninsula.⁷ The site was certain confirmation of an asteroid impact of the expected magnitude. Since the KT Boundary was also accepted as the end of the period of the dinosaurs, that site appeared to solve the mystery of their demise. Providentially, Hildebrand's discovery was followed in 1993 by the release of the extremely popular dinosaur movie, "Jurassic Park."⁸ The dinosaur movie catapulted the Chicxulub event to the forefront of popular culture. Like the 2005 Mars mission, little was said in the mass media of alternate possibilities and contradictory findings.

Peter Goddard⁹ of the University of Bristol, presented the case for the gradual extinction of the dinosaurs and other plant and animal life of that period. The dinosaurs, he said, had been in decline for millions of years before the KT Boundary.

Dewey McLean¹⁰ developed the theory that the Deccan Traps volcanism in India ejected 1,000,000 cubic km of material over a 600,000 year period (Mount St Helens produced 1 cubic km) spanning the KT Boundary. The resulting pollution and greenhouse effect caused the gradual extinction of the dinosaurs and other life forms.

S. Chatterjee and D. K. Rudra¹¹ also embraced the Deccan Traps theory but added a two piece asteroid impact at the KT Boundary with one piece impacting off the west coast of Mumbai and the other piece at the Seychelles Islands. The combined pieces would have constituted an impact event much larger than the proposed Chicxulub site. Chatterjee and Rudra also mentioned the large number of fossilized dinosaur eggs found near Mumbai. The salient question? . . . why did so many eggs remain unhatched? None of the eggs x-rayed were fertile. Did that mean a much smaller population of male dinosaurs? . . . or perhaps hormonal changes and/or deficiencies caused by pollution, climate change, and greenhouse effect?

Clare M. Belcher,¹² Royal Holloway, University of London, led a team that searched for the presence of charcoal at the KT Boundary which would have been an essential by-product of the instant incineration of the biomass of North America resulting from the asteroid impact at Chicxulub. The team did not find the requisite charcoal, but did find a significant presence of non-charred plant fragments. They concluded the impact event at Chicxulub was not as violent as previously thought and did not cause the extinction

⁷ http://www.chairs.gc.ca/web/chairholders/viewprofile_e.asp?id=276&

⁸ http://www.jurassicpark.com/maingate_flash.html

⁹ Goddard, Pete, "Timing and Rate of the KT Extinction: What Else Died Out?," Research Group, Department of Paleontology, University of Bristol, <http://pales.gly.bris.ac.uk/Communication/Goddrd/page1.html#cret>

¹⁰ McLean, Dewey, "The Deccan Traps Volcanism - Greenhouse Dinosaur Extinction Theory," http://filebox.vt.edu/artsci/geology/mclean/Dinosaur_Volcano_Extinction/pages/studentv.html

¹¹ Chatterjee, S. & Rudra, D. K., "KT events in India: impact, rifting, volcanism, and dinosaur extinction," *Memoirs of the Queensland Museum*, Volume: 39, Part 3, year 1996, pages 489-532.

¹² Belcher, Claire M., Collinson, Margaret E., Scott, Andrew C., Sweet, Arthur R., Hildebrand, Alan R., "Fireball passes and nothing burns - The role of thermal radiation in the Cretaceous-Tertiary event: Evidence from the charcoal record of North America," *Geology*: Volume 31, No. 12, pages 1061-1064. <http://www.gsaajournals.org/gsaonline/?request=get-abstract&doi=10.1130%2FG19989.1>

of the dinosaurs.

James E. Fassett¹³ presented evidence of dinosaurs in the San Juan Basin of New Mexico one million years after the so-called extinction event of Chicxulub.

Gerta Keller,¹⁴ Professor of Geosciences at Princeton University, led a team that conducted a detailed study of the Chicxulub impact site and determined the impact event occurred 300,000 years before the KT Boundary. Therefore that event could not have caused the extinction of the dinosaurs.

The scientific certainty of a popular explanation for the demise of the dinosaurs, as presented in the mass media, betrayed the reality of scientific research. That research was complex and indecisive, and likely to remain so for an indefinite period into the future. A partial explanation for the betrayal of real science was likely to have been a consequence of the end of the Cold War. The anticipated cuts in defense spending by the United States government threatened the livelihood of many individuals and corporations. The threat of an asteroid impact and the possibility of saving the world from such an impact with a hydrogen bomb equipped missile was bandied about for a number of years. The Chicxulub impact event certainly reinforced that discussion. Even if true, however, a conspiracy theory could not be an adequate explanation for such complex human behavior.

Deeper insight into the contradictory expressions of science can be gleaned from consideration of the social role of theoretical physics in America. Albert Einstein dominated the world of theoretical physics throughout the Twentieth Century. He was a genius . . . he was humble . . . witty and transparent. The four scientific papers he published in 1905,¹⁵ the fourth of which included the famous equation $E=mc^2$ that led to the development of nuclear weapons, set the course of research physics for the rest of the century. In spite of his fame and the importance of his contribution to theoretical physics, he struggled the rest of his life with the incongruities posed by quantum mechanics.

“For the time being we have to admit that we do not possess any general theoretical basis for physics which can be regarded as its logical foundation. The field theory, so far, has failed in the molecular sphere. It is agreed on all hands that the only principle which could serve as a basis of quantum theory would be one that constituted a translation of the field theory into the scheme of quantum statistics. Whether this will

¹³ Fassett, James E., “Comment: The Extinction of the Dinosaurs in Northamerica,” GSA Today: Volume 15, No. 7, page 11; and Fassett, James E., Zielinski, R. A. & Budahn, J. R., “Dinosaurs That Did Not Die: Evidence for Paleocene dinosaurs in the Ojo Alamo Sandstone, San Juan Basin, New Mexico: in Koeberl, C., and MacLeod, K. G., eds, “Catastrophic events and Mass Extinctions: impacts and beyond,” Boulder, Colorado, Geological Society of America Special Paper 356, pages 307-336.

¹⁴ Keller, Gerta, Adatle, Thierry, Stinnesbeck, Wolfgang, Rebolledo-Vieyra, Mario, Urrutia Fucugauchi, James, Kramer, Utz, and Stuben, Dons; “Chicxulub impact predates the KT Boundary mass extinction,” Proceedings of the National Academy of Sciences, PNAS 2004 101:3753-3758, published online before print as 10.1073/pnas.400396101. <http://www.pnas.org/cgi/search?fulltext=gera+keller&submit,x=7&submit,y=11&submit=GO>

¹⁵ The four papers in the order of their publication were: “**On the Motion - Required by the Molecular Kinetic Theory of Heat - of Small Particles Suspended in a Stationary Liquid,**” “**On a Heuristic Viewpoint Concerning the Production and Transformation of Light,**” “**On the Electrodynamics of Moving Bodies,**” and “**Does the Inertia of a Body Depend Upon Its Energy Content?**” <http://www.spaceandmotion.com/albert-einstein-biography-pictures.htm>

actually come about in a satisfactory manner, nobody can venture to say.

Some physicists, among them myself, cannot believe that we must abandon, actually and forever, the idea of direct representation of physical reality in space and time; or that we must accept the view that events in nature are analogous to a game of chance. Probably never before has a theory been evolved which has given a key to the interpretation and calculation of such a heterogeneous group of phenomena of experience as has quantum theory. In spite of this, however, I believe that the theory is apt to beguile us into error in our search for a uniform basis for physics, because, in my belief, it is an incomplete representation of real things, although it is the only one which can be built of the fundamental concepts of force and material points (quantum corrections to classical mechanics). The incompleteness of the representation leads necessarily to the statistical nature (incompleteness) of the laws.” (Albert Einstein, on Quantum Physics, 1954)

The search for a general theoretical foundation for physics that would integrate the cosmology of Sir Isaac Newton, the general and special theories of relativity of Albert Einstein, and quantum physics which focused on the fundamental building blocks of matter, continued into the 21st Century and attracted the best minds in science. It was not successful. The December 10, 2005, edition of New Scientist contained an editorial entitled, “Physics’ greatest endeavor is grinding to a halt.”¹⁶ The best minds in science were apparently no longer attracted to the dilemma in theoretical physics articulated by Einstein, but instead were shifting to biotechnology.

Even as one brilliant scientist after another turned away from the most important of scientific endeavors, science of the mass media portrayed a *fête accompli*. Definitive explanations of black holes and the instantaneous *big-bang* creation of the universe, along with the inevitable mathematical equations, infused the Internet. Physicists were frequently quoted in the print and television media extolling their knowledge of *black holes* and affirming their “millisecond by millisecond,” understanding of the creation of the universe.

Einstein himself inadvertently revealed the quality of math used for such cosmological purposes. His original general theory of relativity predicted gravity would eventually cause the universe to collapse in on itself. Since most physicists, including Einstein, believed the universe existed in a steady state, he introduced the *cosmological constant* which dutifully changed the prediction to a steady state universe. Later, when more accurate observations indicated an expanding universe, Einstein removed the *cosmological constant*, referring to it as his “biggest mistake.” The question of what caused the universe to expand was addressed with the introduction of *dark matter*, whose gravitational force *pulled* the universe through expansion. It could not be observed, detected or measured but *it had to be there*. Such mental gymnastics may have been received as profound by physicists and students of physics, but an independent critical thinker had to label it ad hoc science driven by need. Perhaps that tarnished the idealist image of science but it was not entirely bad. The most fundamental principle of science, whether admitted or not, was “did it work.” If it worked a satisfactory theoretical explanation was found. If it did not work it was abandoned.

¹⁶ “Physics’ greatest endeavor is grinding to a halt,” New Scientist, Issue 2529, December 10, 2005.

The social role of science developed in two separate and quite distinct processes though there was some overlap in the participants of each process. One process was characterized by scientists and engineers actually engaged in research and development where theories were most always a work in progress and definitive conclusions rare. Such processes produced useful results, workable concepts, and avenues for future inquiry. It was science at its best.

The second social process related to science was that which sought to advance the cultural influence and authority of science. That social process included some scientists, especially famous or award winning scientists, but also scientists that were usefully exuberant. In addition, it included academics, politicians, journalists, public relations experts, and committed supporters. Sometimes that process was affected by mundane objectives . . . such as NASA'S need for a triumphant mission to Mars in order to secure its government funding . . . or the defense industry's overstatement of the threat of an asteroid impact on earth in order to survive after the end of the Cold War. Such conspiracies, however, were small to point of insignificance when compared to the overall function of that social process. What was that overall function? It part it sought to portray science as decisive and authoritative even to the point of distorting the scientific reality it was defending. Such was its function in its over-emphasis of the asteroid impact at Chicxulub as the cause of the extinction of the dinosaurs, and it was also evident in the public portrayal of theoretical physics. Even though the presence and function of that social process was clearly evident from an historical perspective, it was far too complex and variegated to have resulted from orchestrated conscious intention. What then was the driving force behind it? Consider again the 2005 mission to find life on Mars. What exactly was the anticipated value of such a discovery? On the surface it offered nothing more than passive information. A cost/benefit study would have concluded no economic benefit would accrue to the American culture regardless of the degree of mission success. The apparent lack of significant positive benefit was counter-balanced by certain and serious damage to the social stature and authority of science if the mission failed. The scientific community took enormous risk in setting the discovery of life on Mars, or at least the potential for life on Mars, as the mission objective. There had to be a potential benefit worth the risk. What was it? Epistemology . . . the system of knowledge that undergirded science. In order for science to successfully claim the social role of arbiter of truth and error the epistemology had to be definitive. It had to define all of the known world in a consistent, all-inclusive manner. The purpose of life and an account of the emergence of life was an essential and critically important tenet in that epistemology. The doctrine of evolution was, of course, the scientific community's response to that need. Whereas that account was broadly accepted at face value during the zenith of the scientific community's social stature (circa the 1950's) it was later subjected to sustained assault from the religious sub-culture. The counter-assault was a mission to Mars to establish final and definitive confirmation of that doctrine.

Epistemology also required science to define the universe. During much of the 20th Century it was accepted as an article of faith that theoretical physics would generate the requisite understanding. All that was required was a synthesis of Newtonian physics, the general and special theories of relativity, and quantum physics. As previously mentioned the effort failed and was abandoned early in the 21st Century. Left to their own devices humans driven by need will never rationally acknowledge such failure. They will always resort to irrational initiative to 'do away with,' and/or 'disguise,' such failure and those initiatives will become more hostile over time. Such was the social dynamic that drove the obvious and growing disparity between real science and the science of the mass

media.

Was there ever a chance science could have succeeded in generating an internally consistent, definitive definition of all reality? Consider the following segment of the quote from Einstein noted above:

“Some physicists, among them myself, cannot believe that we must abandon, actually and forever, the idea of direct representation of physical reality in space and time; or that we must accept the view that events in nature are analogous to a game of chance.”

In that statement Einstein revealed he was dependent upon, and encapsulated by, the Aristotelian world view. “. . . the idea of direct representation of physical reality in space and time . . .” was a restatement of Aristotle’s objective view of reality. “. . . that we must accept the view that events in nature are analogous to a game of chance . . .” mirrored Aristotle’s assumption that reality was constructed and ordered according to perfect, consistent laws that could be deduced by humans and exploited for the greater good of humanity. However attractive that proposition may have sounded, it was an assumption. It was not the only assumption at the foundation of the scientific method. That method also called for the identification and assembly of *facts*. What was a fact? . . . a fact was defined herein as a self-evident, self-contained fragment of reality. A fact must be differentiated from an abstraction of reality such as weight, velocity, angle, rotation, et. al. That facts existed was an arbitrary assumption. That abstractions of reality reflected a precise, complete representation of reality was an arbitrary assumption. That facts, if they existed, and/or abstractions, if they were precise and complete, could be assembled into greater truth and eventually into ultimate truth was an arbitrary assumption. There was no prior confirmation that inductive reasoning was capable of generating absolute truth or capable of unlimited extension.

The above logic identified the dilemma posed by quantum physics. If an experiment was designed to determine if light was a wave, the experiment confirmed light to be a wave. If the experiment was designed to determine if light was a particle, the experiment confirmed light was a particle. Quantum physics held that an atomic particle could exist at multiple locations at the same time even though it could actually be observed at only one location. The act of measuring or quantifying the particle at the one location changed the particle at that location and also changed the particle at all of other locations even though those locations could not be observed and there was no knowledge as how the change at one location was transmitted to the other locations. The failure to reconcile quantum physics with relativity and Newtonian physics was actually a failure of Aristotle’s world view . . . it had reached the limit of its extensibility.

Science therefore could not succeed in establishing a definitive understanding of the cosmos without first abandoning Aristotle . . . but what would science look like in a post-Aristotelian age? The more immediate question was how could a social process intent on extending scientific method to a definitive world view flourish without orchestrated conscious intent? Humans needed an absolute datum around and upon which identity, meaning and social process could be constructed. The datum had to have been absolute because it had to be compelling for all participants. To make such a datum subject to conditional logic was tantamount to the introduction of chaos. The drive to such an absolute datum had to remain subconscious until the absolute was present. Conscious awareness of the need for an absolute when no absolute was available induced immediate mental dysfunction and breakdown. Nevertheless, the need for an absolute was so

compelling humans over the centuries have unconsciously conspired together to create an absolute to fill that need. All such attempts failed. History was littered with the remnants of civilizations once thought to be the carrier of absolute truth.

Science is the most modern attempt . . . it too will fail. Is there any hope?

. . . if humans had a need for an absolute and knew it not

. . . were humans created with that need and had discovered it not?

. . . if humans were created with a need for an absolute and had discovered it not, was there in creation an answer to that need and humans had discovered that not?

. . . is that need a need for God?

“How blest are those who know their need of God; the kingdom of Heaven is theirs.” Matthew 5:3, New English Bible.