Problems for 'giant impact' origin of moon

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Evolutionary astronomers have great trouble accounting for the origin of the moon. There have generally been three competing hypotheses, but they all have serious physical problems:

1. *Fission theory*, invented by the astronomer George Darwin (son of Charles). He proposed that the earth spun so fast that a chunk broke off, with the Pacific Ocean as the probable scar (or a modification of the theory that had the earth molten at the time). But this theory is universally discarded today. First, the moon is too chemically different from the earth; second, the earth could never have spun fast enough to throw a moon into orbit; and third, the escaping moon would have been shattered while within the Roche Limit.
2. *Capture theory* — the moon was wandering through the solar system, and was captured by Earth's gravity. But for one approaching body to enter into orbit around another, it would need to lose a lot of energy, which is why spacecraft sent to orbit other planets are designed with retro-rockets. Otherwise the approaching body would have been 'slingshotted' rather than captured, a phenomenon the Voyager probes exploited. Finally, even a successful capture would have resulted in an elongated comet-like orbit.
3. *Condensation (or co-creation) theory* — earth and moon formed at about the same time from the same portion of the swarm of planetesimals which supposedly orbited the sun in the early phases of the evolution of the solar system. However, it's unlikely that the gravitational attraction could have been strong enough, and it doesn't account for the moon's low iron content.

The evolutionary astronomer Lissauer affirms that these three theories have insoluble problems.[1] He even cited an only half-joking statement in a university astronomy class about 20 years ago by Irwin Shapiro: since there were no good (naturalistic) explanations, the best explanation is that the moon is an illusion! This counts as strong evidence for the moon's special creation.[2,3]

Lissauer's article was actually commenting on a paper[4] supporting what evolutionary scientists consider a fourth promising hypothesis for the origin of the moon, developed during the past decade. It is called the Giant Impact Hypothesis. This hypothesis suggests that the proto-Earth and a Mars-sized protoplanet had a glancing collision 4.5 billion years ago. The moon subsequently formed from the ejecta. A variant of the hypothesis, the Impact-triggered Fission Hypothesis, propounds that, instead of one giant impactor, the moon formed from the debris of multiple impacts of smaller planetesimals. However, recent dynamical and geochemical analyses call the Giant Impact Hypothesis into question.

Computer models have been constructed to simulate such a giant impact. Although such computer models are simplified and depend too much on initial conditions, the results have strained the hypothesis to the breaking point. One of the new dynamical results is that the debris from the collision would rain back down onto Earth instead of remaining in orbit and forming the moon.[5] To hurl the debris far enough from the earth, the impactor would need to be three times the size of Mars. The results of such a collision are hard to understand, much less model. And if the moon did form after such a collision, the orbit would likely be unstable with a distance of only 14,000 miles above the earth and circling it every two hours. Lissauer also noted the unsolved problem of losing the excess angular momentum.[1]

Planetary scientists are trying to work through all the dynamical problems to patch up this hypothesis by employing multiple computer simulations.[6] Of course, multiple computer attempts with different initial conditions and physics are bound to come up with something plausible. But, some researchers are sceptical that such computer models are realistic:

> *'However, Jay Melosh (University of Arizona) argued that we do not know the equations of state well enough to calculate the energy of such an impact and that we may have grossly underestimated them, to the point that specific dynamic models are currently unjustified.'* [7]

In spite of a growing consensus in favor of the Giant Impact Hypothesis, some workers remain sceptical of the hypothesis on both dynamical and geochemical grounds.[7]

Ruzicka, Snyder and Taylor reviewed the geochemical data,[8] especially the diagnostic elements of Ni, Co, Cr, V, and Mn. These elements have been used to argue in favor of the Giant Impact Hypothesis, but these researchers, after reviewing observed data from the moon and meteorites, conclude *'... that*

there is no strong geochemical support for either the Giant Impact or Impact-triggered Fission hypotheses.'[9] Much of the geochemical support for the hypothesis was based on *genitive models*, which of course are simplified with too few variables. It is the *observed* data that call these hypotheses into question. The researchers also add that the reason the Giant Impact Hypothesis has become popular lately is because other hypotheses don't work:

> *'This [hypothesis] has arisen not so much because of the merits of [its] theory as because of the apparent dynamical or geochemical shortcomings of other theories ...'*[9]

Planetary scientists won't give up. They must have a naturalistic hypothesis for all origins, including the moon's, so will believe almost any hypothesis to fill the void. In regard to the moon and despite a long history of theorizing, '*The origin of the Moon is still unresolved.'*[9] The idea that the moon was specially created *ex nihilo* at its present distance and in its present orbit some 6,000 years ago is still the most reasonable explanation for its origin.

References

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How well do paleontologists know fossil distributions?

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It is unfortunate but true. Similar fossils can be given different names when found in strata of different supposed ages. This practice masks the true range of the fossil within the geological time scale. In a recent example, even though the fossils were almost identical, they were assigned to different species. Such practices multiply the number of names, confuse our knowledge of fossil distribution, and hide the fact that the geological column may well be compromised.

It would be great if we could know the actual three-dimensional distribution of the fossils in the earth. This would go a long way towards understanding their deposition during the Flood. Usually all that is available is a fossil sample along a cliff, ravine or some other cut into a particular formation.

One might think that good extrapolations have been made from these limited, two-dimensional outcrops and that the fossil content in the remainder of the formation is well understood. But some surprises would be in store if we could actually know the distribution of all the fossils in the formation. The more the sedimentary rocks of the earth are examined, the more the fossil ranges are expanded — especially downward.

One such surprise occurred on Vancouver Island, British Columbia, Canada, when a sponge of Upper Triassic 'age' (the standard geological time scale is used for communication purposes only) was discovered in a carbonate formation.[1] It was named *Nucha*? *vancouverensis sp. nov*. Now, the formation where the sponge was found is considered a standard reference for the North American Triassic because of its ammonoid index fossils. Surprisingly, the sponge is nearly identical to one previously found only in the Middle Cambrian of western New South Wales, Australia, named *Nucha naucum*.[2]

In spite of the obvious similarity, because the Vancouver Island specimen was not **exactly** the same as its Australian counterpart, a question mark was placed after its genus name and it was given a different species name. Still, the researcher who reported the find, George Stanley, believes the similarities are striking enough to put the fossil in the same genus.

The Vancouver Island fossil is used to support some very large geological ideas —that an exotic terrane[3] (the Wrangellia terrane) was plastered onto the western side of the North America plate from an unknown, tropical-ocean locality. The problem is that the two fossils are located on opposite sides of Pangaea, the hypothetical, huge ancient landmass of the Paleozoic (Figure). Their respective oceans were supposedly separated by thousands of kilometres of continent.

Because it was previously only known from Australia, Nucha is considered a Tethyan taxon from the Paleozoic tropics.[4] So the two fossils, although very similar in appearance, are separated greatly in space and time.

Stanley downplays the significance of the separation in time: '*The absence of Nucha between Middle Cambrian and Late Triassic time is somewhat of a conundrum.*'[5] The reason for this nonchalant attitude toward a fossil not found during a supposed 300 million-year period and separated spacially by a considerable distance is, I believe, because this case is not isolated.

In fact, Stanley mentions several examples and refers to other authors who know of a number of other examples. These seeming anomalies are referred to as '*holdover taxa*', '*refugia species*', or even '*Lazarus taxa*'. Of course, if a representative of the fossil is found alive today, it is called a '*living fossil*'. The importance of such holdover taxa to paleontologists is stated by Stanley: