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.

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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:

One view of ancient world geography combines the continents into a single landmass, Pangaea (after Dietz and Holden).[8] Nucha is found on Vancouver Island corresponding to the west coast of Laurasia and in Australia, the east side of Gondwana south of the Tethys Sea — separated by thousands of kilometres of land.

> *'Of great interest to paleontologists and evolutionary biologists alike is the occurrence of relict or holdover faunas, also known as Lazarus taxa. These taxa, mostly at family, genus, and species levels, appear to leapfrog large intervals of geologic time, including the recovery phases following mass extinctions. They seem to elude our most concerted sampling efforts, failing to be accounted for over considerable intervals of time.'*[2]

What lessons do such holdover taxa have for creationists? First, they show that geologists and paleontologists do not know the three-dimensional distribution of fossils, although they may have reasonable estimates in isolated formations. There have been and will always be surprises. Fossils seem to be constantly extending their geological time ranges. We should be sceptical of statements to the effect that a particular fossil is an index fossil that is restricted to, say, the Cambrian 'period', or the Permian 'period', etc.

Second, such holdover taxa make it hard to believe that the alleged millions of years between the fossil occurrences are real. Where was the organism living all those millions of years? Why is there no fossil record of its existence throughout all that time? In this particular example, paleontologists may eventually find fossils of this sponge between the 'Middle Cambrian' and the 'Upper Triassic'. Even so, the fossils would still be very scarce between these two 'periods' and a few finds would not alter the obvious conclusion that the time gap is illusory.

Third, a fossil can be assigned to a different species because it is found at a supposed different geologic time, obscuring the true range of the taxon within the geological time scale. In the case of *Nucha*, the difference between the Vancouver Island sponge and the Australian sponge was slight, but the former fossil was given a different species name with a question mark after the genus name.

Similar practices with other taxan contribute to the multiplication of names and a more limited distribution of taxa. Thus, the true range of any organism is likely broader than one is led to believe by the examination of its taxonomy.

Since much variability is present within any given organism and hence its fossils, paleontologists often do not know where to draw the line in their classification schemes. Different names for nearly identical fossils are probably common. This tendency to give different names to similar fossils found in formations with supposedly different ages, even to placing them in different superfamilies, has been demonstrated by Tammy Tosk for the microfossils called foraminifers.[6]

John Woodmorappe found that much of the stratigraphic order in the ammonoids is due to time-stratigraphic concepts and taxonomic manipulations.[7] This is particularly serious because particular types of foraminifera and ammonoids are used as index fossils for dating formations.

Geologists do not know the three-dimensional distribution of fossils in the rocks, and tend to invent different names for similar fossils, just because they are found in strata of supposedly different ages. This does not engender confidence in the geological column they construct, or in the fossil-dating scheme on which it is based.

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