Do We Live on a Privileged (and Anomalous) Planet?
A TESTABLE Hypothesis
by David A. J. Seargent

According to one form of the Intelligent Design (ID) theory the Earth is anomalous in many ways. Because of this, life at the level of complexity displayed by human beings and higher animals is possible. G. Gonzalez and J. Richards showed in *Privileged Planet* that terrestrial anomalies do more than provide an environment for advanced life. They also allow us to discover facts about the wider universe in a manner that would otherwise be impossible.

In my book *Planet Earth and the Design Hypothesis*, I argue that the anomalous environment of terrestrial life also adds significantly to our knowledge and experience of beauty and the sense of awe. That this is more than simply a happy coincidence is implied by the curious fact that it satisfies the deeper (in a broad sense, "spiritual") desires of humanity – what we might call "cosmic" curiosity about the nature of the universe and the appreciation of the beautiful and the awesome. These desires seem basic to the human psyche, yet they appear to have little survival value in the strictly biological sense. They are, in the words of Aldous Huxley, "biological luxuries." Planet Earth appears to have been fashioned in such a way as to satisfy our basic "spiritual" as well as our "biological" drives. This is not what one would expect from an indifferent or (to borrow Richard Dawkins' term) "pitiless" nature!

In *Planet Earth*, I point out that the manner in which anomalous characteristics of our terrestrial environment conspire not merely to make the existence of very complex forms of life possible, but also to satisfy our spiritual as well as purely biological needs, satisfies the criterion for genuine intelligent design that I have termed "transitive complexity" and is therefore logically incompatible with unintelligent causation.

This hypothesis is, at least in principle, testable. If the hypothesis is correct, future anomalous characteristics of Earth itself, or its cosmic environment, will have a high probably of adding to the explanation of both the habitability of this planet and its efficacy as a place from where information about the nature of the wider universe may be obtained with unusual ease.

The verification of the prediction that anomalies contribute to making Earth *both* an unusually suitable habitat for life *and* a "platform for discovery" is necessary to support the hypothesis that ID has played a decisive role in these anomalies. The demonstration that anomalies are necessary for terrestrial life in itself is insufficient, as it can be plausibly argued that this only proves that life requires an anomalous environment in which to evolve. This is essentially the position put forward by D. Brownlee and P. Ward in their book "Rare Earth". Neither of these authors accepts ID.

The “Privileged Planet” hypothesis predicts that anomalies will be found to contribute to the existence of the “biological luxuries” that nourish our spiritual nature, not just the “biological necessities” required for our very existence.

What might be rightly characterised as an anomaly? Every object in the universe will have some characteristic or set of characteristics that distinguishes it from other objects. We should not expect to find another *exact* clone of Earth; but neither should we expect to find an *exact* clone of Venus or Jupiter. Where does a differentiating characteristic become a genuine anomaly? The best answer to this is to classify as anomalous, a characteristic which seems so at variance with the characteristics of similar objects as to demand an explanation. To use a personal example, a characteristic of my face is a combination of brown eyes and bushy eyebrows. If someone was to draw me for identification purposes, these would almost certainly be the features stressed most. Yet, they are hardly anomalies. On the other hand, if I had been born without an ear, I suppose that could rightfully be called an anomaly!

The hypothesis does not demand that every anomaly will directly contribute to terrestrial habitability and discovery. It does however predict that a high percentage will. Conversely, any newly discovered anomaly will have a high probability of either contributing directly to habitability/discoverability or to be dependent upon a deeper process thus contributing. The hypothesis will be falsified if large numbers of anomalies are found which contribute in no way either to Earth’s habitability or to its function as a platform for discovery.

A report in *Nature* for 28 June, 2007, details a recently discovered terrestrial anomaly concerning the presence of heavy isotopes of silicon in the Earth’s crust. A University of Oxford and ETH Zurich team has found that, compared with meteorites believed to have arisen from Mars and the asteroid Vesta, Earth’s crust is enriched with heavy silicon isotopes. This shows that the formation of Earth’s core differed from the way in which the cores of Mars and Vesta formed. No such enrichment has been found in ordinary meteorites of the type believed to be fragments of the small undifferentiated asteroids (i.e. those that did not form cores) which exist in large numbers in the inner solar system and from which the rocky planets (including Earth) are thought to have formed.

This terrestrial anomaly is thought to have resulted from the larger mass of Earth and the greater pressures reached during core formation. Higher temperatures induced by collisions may also have contributed. No data for Mercury and Venus is available, so we cannot say whether Earth is alone in this anomaly amongst solar system planets. The anomaly is shared by the Moon, an important finding, as the Moon itself does not have sufficient mass to generate heavy isotope enrichment. This strengthens the theory that the Moon was largely formed from terrestrial material blown out of the crust in an early collision event.

Does this anomoly have any significance for habitability and discoverability? Some might like to examine this possibility more closely. It is not completely divorced from habitability/discoverability. If the enrichment resulted from the greater mass of Earth, it becomes a "marker" for one of the ingredients of habitability. We find ourselves on a planet that is anomalously enriched in this way, suggesting that if Earth been insufficiently massive for enrichment to take place, it would have not been a suitable home for advanced life. The scientists who discovered this anomaly also suggested that Earth had a higher early impact rate than Mars, and that the heat generated through these impacts probably added to the formation of the isotopic excess. A high impact rate has been thought necessary for the Earth to be sufficiently enriched with water and carbon compounds to make it habitable.

Does the isotopic enrichment enable discovery?

The discovery of similar enrichment in the Moon's crustal rocks gives a timeline for our satellite's formation. If much of the Moon's material was originally present in Earth's crust, we can conclude that the Moon-forming collision took place after Earth's core had already formed and the differentiation had taken place. It opens a new window on the very early history of the Earth-Moon system.

In time, other facts may be gleaned from this new discovery. Our Privileged Planet hypothesis does not sink or swim on the basis of this anomaly alone, although it seems that the anomaly at least weakly supports it. No doubt other terrestrial anomalies will be found either confirming or deny the hypothesis that, ***ours is a very privileged planet.***

David A Seargent has recently authored "Planet Earth and the design hypothesis."

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