

Ponder This ...

In the time of Copernicus, Galileo, and Kepler, as they sought to refit astronomical data to a better model (and not, as some want to purport, to deny the veracity of Scripture by doing so¹), one of the major objections from some quarters (i.e., those influenced by and committed to Aristotelianism) to the idea of the Earth exhibiting two-fold motion (rotational and orbital) can be summarized by this observation:

“Well, I am living on planet Earth. You say it is rotating and orbiting. But, I don’t feel that. To me, from my common sense viewpoint, the Earth does not move. As I look at the Sun during the day and the stars, planets, and moon at night, they move; I and the Earth do not.”

Comments like this also stirred the pot:

“Why is it that clouds are not blown off the surface of the Earth as it rapidly moves along its orbit around the Sun? Why is it that balls dropped from a vertical tower fall parallel to the wall of the tower if the Earth rotated?”

Copernicus had an answer to this objection; i.e., bodies on the Earth share the moving Earth’s impetus. He derived the impetus concept from 14th century scholastics, Nicole Oresme and Jean Buridan (they were professors in the Sorbonne in Paris). These men posited, as their starting point for developing the concept of inertial motion, the doctrine of creation in time. It was not until Newton that the success of mathematical physics, based on his fully developed inertial law of motion, made those problems appear if not meaningless at least irrelevant for the purposes of science.

Neither Copernicus, Kepler, Galileo, nor Newton had access to a 747 Jumbo Jet. If they did, they could demonstrate what it means to share the impetus of a moving object. If you remove all the seats, you could easily play catch and perform any standard physics experiment (dropping balls, etc.) as if you were “stationary” on the Earth. At cruising speed (nearly 600 mph) and given the absence of



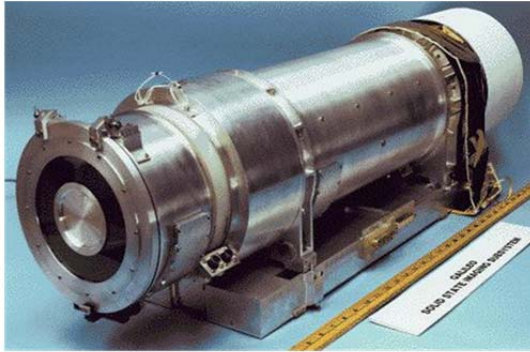
Boeing 747

Some Thoughts on Objects in Motion

¹ When approaching Scripture and its genre, these men sought, not to reject it, but to interpret it wisely.

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turbulence, if you close all the windows, *you feel as if you are not moving*. But, in reality, the plane is moving. Hence, *our senses deceive us on a jet plane*.² We have to commit a “rape of our senses” to jar us to the reality that we really are moving.³



Solid-State Imaging camera of the Galileo spacecraft

named in Galileo’s honor, on a mission which would take it into orbit around Jupiter. In December of 1990, using time-lapse photography, the Galileo spacecraft looked back to capture the rotation of the Earth, from a distance of about four million miles (<http://apod.nasa.gov/apod/ap070514.html>).

It is instructive to note how Geocentrists reason away the evidence of these pictures (i.e., since they interpret certain Scriptures to mean the Earth does not move, this evidence from the Galileo spacecraft cannot be true). They use the same argument as Copernicus, *et. al.*, but reverse key words:

Copernicus, *et. al.*, “The Earth only appears to be *stationary*. What you see or feel is false since it is really *moving*.”

The Geocentrist about these pictures from space, “The Earth only appears to be *moving*. What you see is false since it is really *stationary*.”

The same goes for the Earth. It is a somewhat larger (an understatement!) than a Boeing 747 so we do not “sense” any aspect of its movement. Yet, in the words that Galileo purportedly said, “Eppur si muove” (And yet it moves!).

In 1989, NASA launched a spacecraft,

Says the Geocentrist about the sense evidence of the earth moving: “The Earth only appears to be moving. What you see is false since it is really stationary.”

Says the Heliocentrist about the sense evidence of the earth not moving: “The Earth only appears to be stationary. What you see or feel is false since it is really moving.”

² This is why classical physicists (according to Newtonian mechanics) say that linear motion (what the jet is doing in the air) is *relative*; i.e., your senses fool you into thinking you are not moving, but you are. In contrast, rotational motion (remember carnival rides) is *absolute*; i.e., you know you are moving.

³ Galileo coined “rape of the senses” in the context of the motion of the Earth when it appears, to our senses, to be at rest.

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What is the Geocentrist explanation for the movement of the entire universe about the earth every twenty-four hours? They use the firmament from Genesis 1 and interpret it, using some pretty fanciful reasoning (reasoning considerably more complex than the application of Newton's inertial law of motion) and "scientific facts" (enough facts of the "technical" nature to smokescreen the unaware layman) to be like *plenum* (some material that fills space). *It is the plenum, and everything in it (i.e., all celestial objects including the far-distant galaxies), that rotates around the stationary Earth, in mass, once every day.* And, any object that invades the plenum *joins with this rotation.* Hence, it is the Galileo spacecraft that is moving around the Earth and the time-lapse pictures make it "appear" as if the Earth is rotating. Nifty "turn" of reasoning, isn't it?

According to some Geocentrists, this rotating firmament acts like a "gyroscopic" and the "rotation of the universe stabilizes the Earth at its center of mass." Technically, this statement is nothing but nonsense for it confuses *solid body dynamics* with *many-body kinematics*. As an illustration of *many-body kinematics*, Geocentrism runs into this problem. The Sun has a mass about 1,000,000 times larger than the Earth. Hence, the gravitational attraction of the Sun (mass: 1.98892×10^{30} kg) as it rotates around the Earth (mass: 5.9742×10^{24} kg), will pull, according to Newtonian mechanics, the Earth from its supposed "stationary" position.⁴

Of course, the Geocentrist must deny much of classical and modern physics to justify their theories. How? For example, most Geocentrists deny Einstein's General Relativity⁵ but then use some of it (i.e., its principle that there is no special state of motion) to posit that the Earth is the absolute (fixed position) and stable (non-rotating) center of the universe, a center around which everything else rotates. Geocentrists also use Newtonian gravitational theory, but, as we have noted above, Newtonian mechanics states that if the Sun revolves around the Earth, the Earth, due to the gravitational force of the Sun, cannot remain stationary.

Geocentricity: The earth, unmovable and stationary, is the center of the universe and all other celestial objects go around it.

Heliocentricity: The earth and its associated planets orbit the Sun which is the center of our local solar system, a system that possesses galactic rotational dynamics.

⁴ To illustrate this principle, attach an object that has a mass greater than yours to one end of a rope. Then, holding the other end, try to whirl that object around you (the rope acts like the force of gravity). You will not be able to hold a stable position.

⁵ For one example, see Walter van der Kamp, *The Cosmos, Einstein, and Truth* (self-published, 1993).

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As per the mathematics of Einstein's Special Theory Relativity, any reference frame (point of view) is valid.⁶ This means that one can choose the center of the Andromeda Galaxy as the point of reference (i.e., the universe rotates around the center of the Andromeda Galaxy) and the mathematics will work out. If one omits the issues of gravitational mass (an omission not to be taken lightly), then, in terms of the mathematics of the cosmology of our local solar system, Geocentricity is *just as valid* as Heliocentricity.

But note the phrase ... *just as valid*. By Einstein's Theory of Special Relativity, Geocentricity cannot be *any more valid*; i.e., Geocentricity is just a frame of reference.⁷ What Geocentrists assert is that Geocentricism is the *one, true frame or cosmological reference point*. They come to this conclusion based upon their reading of the Bible, a reading that borders at times on radical literalism (promoted falsely as "the plain reading of the language of Scripture" or the "strict adherence to Scripture") where the historical and Biblical context of a particular verse or passage is not consistently addressed.⁸

To say that Geocentricism is *not* wrong, you must accept the premise that *any* frame of reference is just as valid as any other. But, to claim the Geocentricism is true, *you have to ignore the very same premise*. Thus, to assert the Geocentricism is the one, true frame of cosmological reference is logically self-refuting.⁹

⁶ Galileo Galilee (1564-1642) also noted the importance of starting from a frame of reference when one analyzes motion.

⁷ It is a non-inertial reference frame, though. See any standard physics text for a fuller explanation of what is meant by a non-inertial reference frame.

⁸ For example, Psalm 96:10 states that the "... earth shall be established that it shall not be *moved* [מֹוֹת: mowt] ..." Hence, Geocentrists conclude from this passage that the globe we call the Earth is stationary. It has no two-fold motion; it neither rotates around its axis every twenty-four hours nor orbits the Sun every 365.24 days (approximate). A reflection on the context will show that this phrase is not to be understood as a statement of cosmology, but something deeper, an ethical standard related to God's righteous judgments. The Old Testament context is the metaphorical shaking of the earth by war and anarchy. Because of the coming of God's righteous judgments, it now stands upon foundations that cannot be shaken. This is the joyful tidings of the new era which the psalmist predicts from out of his own times, when he depicts the joy that will then pervade the whole creation. The same Hebrew word for "moved" is used in Psalm 60:2, "Thou hast made the earth to tremble; thou hast broken it: heal the breaches thereof; for it *shaketh* [מֹוֹת: mowt]." Here the earth is said "to move" but it moves in terms of God's calamitous judgments (a local phenomenon), *not in terms of cosmology*. This one example of contextual Biblical exegesis ought to be enough to deflect the Geocentric allegations that the Earth does not physically move rotationally or orbitally. We have to be careful to make sure that the Bible intends to teach us is what we assume it teaches us. To read the Bible as a technical claim about a specific scientific theory is to misread the Bible. In other words, it is incorrect to read these passages as if they asserted a particular scientific theory about the physical position and movement (or non-movement) of the Earth. For an example of the exegesis of radical literalism, see Gerardus D. Bouw, *With Every Wind of Doctrine: Biblical, Historical and Scientific Perspectives of Geocentricity* (Tychonian Society, 1984).

⁹ Also, to assert that Heliocentricity removes the Earth as a special place (just another planet doing "its rotational thing") and that only Geocentricity can restore the Earth as the special creation or place designed by God is just that ... an assertion; it is not proof of anything.

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Since conundrums and logical inconsistencies abound in Geocentrism, observe how its proponents invent esoteric theories to explain everything (this is a form of rationalism¹⁰). These theories are also eclectic since they “cut and paste” information from a wide variety of scientific technical journals (past and present). For the normal layman, this “drawing from a host of technical sources” leads one to believe that scholars are truly at work. In reality, this methodology is a smokescreen that hides one from the true nature of what is really going on.

Hence, for both scientific and logical reasons, Geocentrism (i.e., the doctrine that the Earth is the unmoving center of the universe) is not a *tenable* hypothesis for a reasonable person.

In summary, note especially how the Geocentrist, using reasoning borrowed from Copernicus, *et. al.*, commits the same “rape of the senses” when he explains away the evidence of the motion of the Earth as seen from the Galileo spacecraft. And, remember what goes on if you are a passenger in a 747 jet. The appearance of no motion when there really is motion will point the interested reader in the right direction because it shows that, indeed, classical and modern physics have tremendous explanatory power, much more than Geocentrists are willing to admit.

¹⁰ A Biblical Christian uses reason, but he does not use reason to reason away logical inconsistencies.