

A Critique of Bob Enyart's "The Geocentric Universe v. Extreme Geocentrism"

Bob Enyart: The Geocentric Universe vs. Extreme Geocentrism: It's one thing to notice that *the most extensive scientific observations ever made* seem to place the Earth in a privileged location, apparently even in a galaxy that's virtually in the center of a terrestrially-aligned universe. It's quite another thing to claim that the entire universe, including our Sun, orbits the Earth once every 24 hours. If this were true and the universe is the size that it is generally believed to be, even by many geocentrists, then the furthest galaxies would be orbiting us at 30 trillion times the speed of light. (See *If the universe were orbiting earth.xlsx*, a spreadsheet that works out this simple calculation, available from Bob@realscienceradio.com.)

R. Sungenis: This is a common objection but it is commonly misplaced. (Incidentally, we have a whole section on this question in the book "Galileo Was Wrong.")

To claim that something is moving means that one must specify that it is moving in relation to something else that is either moving or not moving. From that perspective, in the geocentric system, no galaxy or star or any other celestial body moves with respect to the universe, except for any independent "proper motion" it may have.

In the geocentric system, space, the space of the universe, rotates around the Earth in sidereal time (23 hours, 56 minutes and 4.7 seconds). Within that rotation of space, the celestial bodies are carried. So, it is not the celestial bodies, per se, that are moving very fast, but the frame in which they are located.

The question then becomes, can the "frame" of space, the universe, rotate around the Earth in about a day's time?

There is no certain and absolute answer that modern science can give to this question, since modern science is as much in the dark about such things as we are.

But, if we were to use modern science's theories as the most current answer to whether the universe can rotate around the Earth in a day, then there are simply no objections modern science can mount on this possibility.

For example, modern science no longer holds that either light or mass cannot move at superluminal speeds. The theory that motion must be confined to c or subluminal speeds is only according to Einstein's Special theory of Relativity (and even then it is doubted by many scientists who object to the contradictions such limitations cause in physics). The Special theory, however, was more or less superseded by the General Theory of Relativity, which Einstein invented 10 years later. In the General theory, light and mass can travel at any speed, since it all depends on the gravitational and inertial forces present in the frame in which they travel. Einstein admitted this himself. He writes:

"In the second place our result shows that, according to the general theory of relativity, the law of the constancy of the velocity of light in vacuo, which constitutes one of the two fundamental assumptions in the special theory of relativity and to which we have already frequently referred, cannot claim any unlimited validity. A curvature of rays of light can only take place when the

velocity of propagation of light varies with position. Now we might think that as a consequence of this, the special theory of relativity and with it the whole theory of relativity would be laid in the dust. But in reality this is not the case. We can only conclude that the special theory of relativity cannot claim an unlimited domain of validity; its results hold only so long as we are able to disregard the influences of gravitational fields on the phenomena (e.g., of light)." (Albert Einstein, Relativity: The Special and General Theory, 1920, p. 76).

A book on General Relativity spells it out even more descriptively. Notice that he says the stars can rotate around the Earth at superluminal speeds:

"Relative to the stationary roundabout [the Earth], the distant stars would have...linear velocities exceeding 3×10^8 m/sec, the terrestrial value of the velocity of light. At first sight this appears to be a contradiction...that the velocities of all material bodies must be less than c [the speed of light]. However, the restriction $u < c = 3 \times 10^8$ m/sec is restricted to the theory of Special Relativity. According to the General theory, it is possible to choose local reference frames in which, over a limited volume of space, there is no gravitational field, and relative to such a reference frame the velocity of light is equal to c If gravitational fields are present the velocities of either material bodies or of light can assume any numerical value depending on the strength of the gravitational field. If one considers the rotating roundabout as being at rest, the centrifugal gravitational field assumes enormous values at large distances, and it is consistent with the theory of General Relativity for the velocities of distant bodies to exceed 3×10^8 m/sec under these conditions. (An Introduction to the Theory of Relativity, William Geraint Vaughn Rosser, 1964, p. 460).

Modern science already allows a superluminal speed of space since:

(1) the Big Bang theory claims that space is expanding much faster than the speed of light.

(2) modern science, courtesy of quantum mechanics, also believes that space is not empty but is composed of a material substance that is 10^{120} more dense than ordinary baryonic matter, this means the universe could spin a 1000 trillion times the speed of light and still remain stable. Since it remains stable, there is no instability on the celestial bodies placed within it. They can rotate with the universe and not even "know" they are rotating with it, since they will experience no inertial effects independently of the rotating universe.

As we can see, modern science can posit no objections to the geocentric universe, since its own theories and practices allow for the very ingredients needed for a geocentric universe.

Bob Enyart: The Bible, Earthquakes, and the Earth Shall Move and Tremble: When a figure skater pulls in her arms, by the law of the conservation of angular momentum, she spins more rapidly. Like that skater pulling in her arms, in earthquakes, the Earth squeezes itself more tightly by falling in on itself, so to speak, making itself more dense. Thus, scientists using the same law of physics suggest that after a major earthquake, careful measurements should show, as they seem to do, an increase in the speed with which we see the stars appearing to spin around the Earth.

R. Sungeis: This is another common objection that is commonly wrong. We have a whole section on this in the book “Galileo Was Wrong.”

Invariably, when major earthquakes or tsunamis occur we are inundated with newspaper articles declaring that the Earth, as a result of the force coming from these catastrophes, was slowed in its rotation rate and/or its axis moved. The rotation rate is said to decrease by microseconds and the axial tilt by inches. The 2011 tsunami that hit Japan produced numerous articles.

First, if we add up all the earthquakes occurring on an annual basis, there are on average 1,450,000 per year. About 90% are in the 2 – 2.9 Rictor scale range; about 9% in the 3 to 3.9 range; and the rest between the 4 to 9. Let’s say for the sake of argument about 25,000 significant earthquakes occur per year that affect the Earth’s rotation and figure axis the way it is claimed. Let’s say we take the estimates back 10,000 years to 8000 BC. That means 250 million noticeable earthquakes occurred since 8000 BC. Let’s also assume, based on present data, that Earth’s rotation changes by 0.5 microseconds for significant earthquakes. This means the Earth would have changed its rotation by 125 seconds or 2.08 minutes since 8000 BC. If we go beyond 8000 BC to 108,000 BC, we now have the rotation of the Earth decreased by 20.8 minutes, which yields a rotation of 23 hours, 36.2 minutes. If we use 1 million years, it lessens the rotation by about 200 minutes. If 10 million: 2000 minutes. If 100 million: 20,000 minutes. If 200 million, then 40,000 minutes, which means the Earth would have been rotating in about 12 hours. Anything beyond 86,400 minutes, the Earth will rotate once every second or less. If we use 4.5 billion years (which is the time modern science says the Earth has been in existence), the Earth would be spinning about 10 times every second.

It matters little if we change the 25,000 earthquakes to 15,000; or the 0.5 microseconds to 0.25 microseconds. Over time the Earth’s rotation will be dramatically affected, which includes only earthquakes. There are hundreds of aftershocks, tsunamis, atomic and high-powered explosions, hurricanes, tornados, and, as Dr. Chao of NASA said, anything “from seasonal weather down to driving a car” will affect the rotation rate. If we add up all those little forces over thousands of years, the heliocentric system has a very fragile Earth that is easily knocked out of whack and couldn’t possibly sustain life.

We can escape this frightening scenario by considering some very important facts. First, most of the so-called changes in the Earth’s rotation and figure axis are not actually measured with a yardstick, as it were. Rather, modern geology presumes that the changes in rotation and orientation occur, of necessity, from Newton’s laws of motion for a rotating object. In principle, scientists believe that the changes in the Earth’s rotation are as calculable as the ice skater who, in a pirouette twirl, suddenly draws in her arms and begins to spin faster. All one needs to do to calculate the effect of the earthquake on Earth’s rotation is to plug in the numbers of the mass of the Earth; the force of the earthquake; the velocity of rotation, etc., into Newton’s equations and it will show how much the Earth must change its rotation and axis in order to make the equation balance. Scientists then report this calculated change as a real change and a newspaper article is written declaring that the Earth has changed its rotation rate and its axis has shifted. The reality is, the conclusions were made on paper with equations, not by field research and measuring.

Second, although there is a purported method by which scientists could measure changes in Earth’s rotation, the method is flawed and presumes the Earth is rotating before it interprets the data. The method commonly used is VLBI or Very Long Baseline Interferometry. In brief, two interferometers (an instrument that can detect slight phase shifts in the wavelengths of light) are placed on either side of the Earth, which would make them 8000 miles apart. Light from a distant stellar object is absorbed by each interferometer, usually waves from a quasar or radio source galaxy. If there is any difference in the phases of the waves

between the two interferometers, this means that something has moved. Either the source has moved, the Earth has moved, or even the radiation itself has moved. But because VLBI is commonly used by NASA and JPL under the assumption that the Earth is rotating, they find it perfectly justifiable to obtain the VLBI measurement from only one stellar source. Hence, if there is a difference in how the single stellar source is received by the two interferometers, it is then assumed the difference is because the Earth's rotation changed, not because the source had moved. Essentially, the way in which NASA or JPL have set up the VLBI, they can have no means of determining whether the movement was due to the Earth or the source. This flaw is especially significant since it is already known that stars, quasars and galaxies have "proper motion," that is, each of them have slight independent motion with respect to other stars. In fact, the proper motion of some objects is even greater than their parallax motion. They also have independent "long-term drift motion." Both of these could very easily show up as a phase shift in a VLBI measurement. Consequently, it is absolutely necessary to distinguish whether the phase shift is caused by the source's motion or caused by a modified rotation of the Earth. The only way NASA or JPL could distinguish between the two is for them to allow the VLBI to absorb radiation from at least three sources, if not more. If it is found that all the other sources are moving in the same precise way as the original source, then there is evidence that the Earth is rotating. Without this methodology, all VLBI measurements are invalid to prove whether the Earth is rotating.

Another problem for VLBI measurements is that they are performed using radio wavelengths. These are very long wavelengths compared to X-rays or gamma rays. Longer wavelengths create poor resolution. Hence, what may look like a phase shift in VLBI may, indeed, be only a false reading due to poor resolution.

All in all, we must look in retrospect at this issue. Not only is there no proof from the VLBI that the Earth is rotating, recorded history has shown that there is no evidence of any appreciable difference between solar time and sidereal time. If the theory were correct that the Earth changes its rotation rate every time there is a cataclysmic disturbance on its surface, we would have seen the difference over time. Moreover, we would have seen the effects in the weather, the jet stream, biological rhythms, and just about anything that is dependent on the precision of a sidereal day.

Conversely, the geocentric cosmos has a very stable system that keeps the sidereal clock from changing. There is no fragile Earth that changes its rate for every bump it encounters. Rather, the geocentric cosmos incorporates a whole universe that is rotating around the Earth. Due to the extreme mass of the universe, the tremendous inertia with which it completes its sidereal cycle can neither be increased or decreased. Like a giant flywheel, once pushed the geocentric universe will continue to rotate evenly, ad infinitum. In fact, to move the Earth from its fixed position, one would have to move the universe itself. Due to the dense constitution of the universe, the force of any potential axis-changing or rotation-changing disturbance on Earth (e.g., earthquakes) will be transferred and spread out to the entire universe. As such, the force dissipates so much that it has less of an effect than throwing a small stone into the ocean.

Bob Enyart: But let's leave the question of physics for a moment to consider some of what the Bible says about the Earth's movement, much of which is metaphor referring to deeper, spiritual matters. "Let the peoples tremble... let the Earth be moved..." (Ps. 99:1). More than a dozen verses describe the Earth itself trembling, such as "the earth shook and trembled; the foundations of the hills also quaked and were shaken" (Ps. 18:7). Yet, "we will not fear, even though the earth be removed, and though the mountains be carried into the midst of the sea" (Ps. 46:2). And of course the Bible presents prophetic and historical accounts of actual earthquakes. So, even those who claim that the Bible teaches that the Earth does not

move acknowledge that *this is not an absolute*, as is attested by many Bible verses and also by thousands of major and millions of minor earthquakes. Thus, as with the Scriptures, all parties admit that the Earth moves. The question is, How much?

R. Sungenis: We cover all these passages in Volume 3 of "Galileo Was Wrong," in their original Hebrew and the Greek Septuagint.

Briefly, when the Bible speaks about the Earth "trembling," it is referring to intrinsic movements, not extrinsic. Even a river flowing or ocean waves breaking show intrinsic movements of the Earth. But it would be incorrect to claim the Earth itself moves based on merely internal shifting of the Earth's mass.

Likewise, when Scripture speaks of movement on or in the Earth, it is not referring to movement in outer space, such as diurnal (rotation) and translational (revolution) movements.

So the question is not "how much" the Earth moves. Rather, the question is: of the two bodies that must complete a revolution in 365.25 days, which is it, the sun or the Earth? If we deal with that question (rather than the question of how we define "motion of the Earth") then there is no escape from what the Bible literally teaches, since it teaches that of the two, it is the sun that revolves around the Earth, and not vice-versa.

Bob Enyart: The Earth Shall Not Move, and Neither Shall I: An extreme geocentrist would point out that all those verses above use verbs for *movement* that are from a different Hebrew root than the verb used in passages claimed by extreme geocentrists. For, using the root word (*mowt*) the Bible says that God has firmly established the world so that, "the earth...shall not be moved" (1 Chr. 16:30 Hb. *timmot*, as also in Ps. 93:1 & 96:10) and further, that God, "laid the foundations of the earth so that it should not be moved forever" (Ps. 104:5). However evidence that those passages are metaphorical includes the many other Hebrew verbs from the exact same root (*mowt*), that teach that God's *people* "shall not be moved" (Ps. 16:8 *emmot*), and neither shall the godly king (Ps. 21:7 *yimmot*), and that, "Those who trust in the Lord are like Mount Zion, which cannot be moved (*yimmot*), but abides forever" (Ps. 125:1). The very next verse further illustrates that this concept is a common metaphor: "As the mountains surround Jerusalem, so the Lord surrounds His people... forever" (and see Isa. 45:10). The same figure of speech is evident where we read that for the wicked, "All the foundations of the earth are unstable" (i.e., moved, Ps. 82:5 *yimmotu*). Even one of the favorite passages of the extreme geocentrists (as referenced just above) demonstrates this metaphor. "Say among the nations, 'The Lord reigns; The world also is firmly established, It shall not be moved (*timmot*), He shall judge the peoples righteously'" (Ps. 96:10). These passages describe God's purposes for Mount Zion, for the world, for the king, and for His people. Further though, the prophet Isaiah compares a future judgment to the destructiveness of the flood: "the foundations of the earth are shaken. The earth is violently broken, The earth is split open, The earth is shaken exceedingly (*mot hitmottah*). The earth shall reel to and fro like a drunkard, and shall totter like a hut" (Isa. 24:18-20). Yet, ultimately God's purposes will prevail, for, "though the earth be removed (a different root), and though the mountains be carried into the sea... the city of God... shall not be moved" (Ps. 46:2-5, same root, *timmot*). (See also Ps. 55:22; 66:9; 121:3 *mot*; 30:6; 62:2, 6 *emmot*; 15:5; 112:6; 125:1; Job 41:23; Prov. 10:30; 12:3 *yimmot*; and of footsteps Ps. 17:5 *namottu*; and even of the wicked, Ps. 10:6 *emmot*.) Now consider the relative apparent motion of the Earth and the stars, which measurably speeds up with the largest earthquakes.

R. Sungenis: Again, we cover all these passages in their original Hebrew in the book “Galileo Was Wrong.” Let me deal with two of them here just to show you how they should be understood.

Isaiah 24:19-23: “The earth is utterly broken, the earth is rent asunder, the earth is violently shaken. 20 The earth staggers like a drunken man, it sways like a hut; its transgression lies heavy upon it, and it falls, and will not rise again. 21 On that day the Lord will punish the host of heaven, in heaven, and the kings of the earth, on the earth. 22 They will be gathered together as prisoners in a pit; they will be shut up in a prison, and after many days they will be punished. 23 The moon will be confounded and the sun ashamed; for the Lord of hosts will reign on Mount Zion and in Jerusalem and before his elders he will manifest his glory.

We could also add Isaiah 13:13: “Therefore I will make the heavens tremble, and the earth will be shaken out of its place, at the wrath of the Lord of hosts in the day of his fierce anger”)

or Job 38:12-14: “Have you commanded the morning since your days began, and caused the dawn to know its place, that it might take hold of the skirts of the earth, and the wicked be shaken out of it? It is changed like clay under the seal, and it is dyed like a garment.”

Here is the unavoidable fact. As much as Mr. Enyart may want to use these passages to prove that the Earth moves, the glaring fact is, these passages already assume as their starting point that the normal state for the Earth is one of non-motion (the precise scientific requirements for geocentrism). It is only an extraordinary event that could alter that stationary state.

Moreover, when does that extraordinary event occur? In all these biblical passages (and there are about a half dozen of them) the language is obviously apocalyptic and thus points to one specific day in which the cosmos will be disrupted from its normal course – Judgment Day, when the whole universe is disrupted. At that time the Earth will certainly be moved, but not before that.

Let’s look at Psalm 96:9-11: 9 Worship the Lord in holy array; tremble before him, all the earth! 10 Say among the nations, “The Lord reigns! Yea, the world is established, it shall never be moved; he will judge the peoples with equity.” 11 Let the heavens be glad, and let the earth rejoice; let the sea roar, and all that fills it.

Although it would be proper to interpret the Hebrew *kun* (“established”) and *mōht* (“moved”) as words conveying the idea that the Lord’s reign over the nations is such that it will be uninterrupted and always produce justice, the unavoidable dimension of this passage is that the Lord’s reign is being compared to the already known fact of the world’s immovability, and it is the Hebrew poetic form that brings these two dimensions into comparison. In other words, the Lord is trying to teach the people of His stable relationship with them by comparing it the stable position of the Earth, that is, an Earth that doesn’t move.

In a non-poetic form the passage could have simply stated: “The Lord’s reign is established and it shall never be moved, he will judge the people with equity,” and the salient point of the Psalmist would have been accomplished. But in the poetic form, the Psalmist is drawing on facts that he and other authors have stated elsewhere about the world’s established position and immobility, such as Ps 104:5: “Thou didst set the Earth on its foundations, so that it should never be shaken” or 1Ch 16:30: “tremble before him, all the Earth; yea, the world stands firm, never to be moved.”

In other words, the Psalmist is using the scientific fact of the Earth's motionlessness as the basis for the analogy as to why the Lord will always reign and judge with equanimity. Both states will always be true: (1) the Lord will reign with equity, and (2) the world will never move. One verifies and supports the other. If one fails, the other fails also.

Conversely, we can imagine how difficult it would have been for the Psalmist to try prove his point if, indeed, the world was constantly moving through space. If it were a fact that the Earth was moving, the Psalmist would, instead, have had to make a comparison between the stability of the Earth's orbit and the stability of the Lord's reign. In actuality, however, he cannot do so, for the simple reason that prior to this Psalm he had already made a comparison between the stability of the Lord's reign and the orbit of the sun (e.g., Ps 19:4-14), and thus it would not be permissible now to compare the Lord's reign to the orbit of the Earth, since obviously both the sun and the Earth cannot be orbiting around each other.

On a theoretical basis, one might object that since the Psalmist regards the sun as orbiting the Earth he could just have easily regarded the Earth as orbiting the sun, since both systems are equivalent, geometrically speaking. But although the geometrical reciprocity between the two celestial models is true, the Psalmist is working from a perspective of propositional truth that will only allow him to appeal to the actual celestial events and thus force him to discount its geometric or mathematical equivalent. That is, since the Psalmist's major point concerns the eternal stability of God's reign, he can only communicate such an important truth if he knows for certain which celestial model is actually true, the heliocentric or the geocentric. Any false information will necessarily negate his analogy.

To say it another way, although one could argue that from a relativistic perspective the Psalmist has the option of using the stability of an orbiting Earth as the analog to the Lord's stable reign, the fact remains that he, in the general scope of his Psalmic writings, chooses an immobile Earth (Ps 96:10) and a moving sun (Ps 104:4-6). This choice is significant, since in order to make valid the analogy he is proposing the Psalmist must base it on an incontrovertible scientific fact. If he chooses the wrong celestial model, his very purpose in creating the analogy is defeated, for the Lord's reign cannot be compared to something fictitious. Either the Earth is fixed and the sun moves around it, or the sun is fixed and the Earth moves around it. Both cannot be true, and the Psalmist must adopt the correct one in order for his analogy to be genuine.

In retrospect, we can see why the Psalmist does not state cosmological truths as mere brute facts. Rather, to make the strongest argument, he purposely compares the immobility of the Earth to the unshakable reign of the Lord, since in serving as witnesses to one another, both must be absolutely true, or, consequently, both are absolutely false. Similar to instances in which God swears to Himself because he can find no one greater to serve as a witness (cf. Hb 6:13-18), so here in the Psalms we see the Lord comparing his unflappable divine justice to a divinely-set immovable object, the Earth.

Some might object, however, that passages such as Ps 82:5 ("They have neither knowledge nor understanding, they walk about in darkness; all the foundations of the earth are shaken") contradict the above conclusion that the Earth does not shake. A careful comparison, however, will show that Ps 82:5 specifies that the "foundations" of the Earth, not the Earth itself, are shaken, while Ps 96:10 says that the world, in its totality, will not be shaken or moved. As noted earlier, the "foundations" of the Earth are part of the inner structure of the Earth which lie beneath its surface. The foundations may shake but they will not move the Earth itself out of the position in space God has given it.

Bob Enyart: Earthquakes Move the Earth, but Not Distant Galaxies: If extreme geocentrism were true, not only the stars of the Milky Way, but the furthest galaxies, and indeed the entire universe, would spin faster around the Earth after earthquakes. The outer core of the Earth is melted rock, and rock is also melted in places in the mantle and in the crust itself. (Differences in temperature at the same depths in the Earth vary by a factor of six, even far from volcanoes, which would be unexpected if our planet really had been cooling for billions of years, whereby the heat should have dissipated far more evenly.) When rock melts deep in the Earth, below what is called the "crossover depth", it becomes more dense and so its volume decreases, which melt therefore produces instability. Whereas the discovery of unexpectedly deep earthquakes surprised geologists, melting may be the source of such instability in the Earth. Thus, with instability underneath, and as gravity pulls the crust downward toward the mantle, and the mantle toward the core, earthquakes occur, and whether shallow or deep, if large enough they can measurably increase the density of the Earth. Thus, by the law of the conservation of angular momentum, after large earthquakes scientists expect that the rotation of the Earth will speed up (as with that figure skater pulling in her arms) and sure enough, they then see the stars reappearing in the morning a fraction of a second sooner than before the quake. This is a powerful argument against extreme geocentrism, because first of all, in earthquakes, the earth itself moves, which alone violates their fundamental claim that it doesn't move, and further, geologic faults and rock melt in the Earth would not speed up galaxies that were allegedly orbiting us.

R. Sungenis: This question was already dealt with above.

Bob Enyart: Extreme Geocentrism and the Vastness of the Universe: Like all scientifically informed persons, the extreme geocentrism authors will agree to the vast distances even to the *nearest* stars, which are determined by parallax. And like many, they'll argue that the full story on redshift distances may not yet be known, such that the furthest objects may not be as far as commonly presumed. Regardless though, realizing that their claim would require galaxies to travel far faster than the speed of light, such geocentrists correctly point out that many of today's cosmologists accept faster-than-light speeds for entire galaxies due to the expansion of space. By general relativity, cosmologists assume that "all objects with a redshift greater than ~ 3 are, and always have been, receding faster than the speed of light" (Davis and Lineweaver, 2001, arXiv.org). However, while mainstream cosmologists accept widespread ($z > 3$) superluminal (faster than light) movement, they attribute this to the expansion of space. These geocentrists commit two logical fallacies when they make this argument. First, they they commit a bait-and-switch (improper transposition) fallacy because their hypothesis has nothing to do with the expansion of space. Thus, if there were any reasonableness to the typical big-bang cosmologist's belief in superluminal movement, such reasonableness would not automatically transfer to extreme geocentrism, which claims that entire galaxies move, not by the expansion of space itself, but via angular momentum, spinning around the Earth by as much as trillions of times faster than the speed of light.

R. Sungenis: This was already answered above, but let's reiterate. Mr. Enyart would need to prove that space cannot travel at superluminal speeds to win his argument. Since both General Relativity, Quantum Mechanics, and String Theory allow for such superluminal movement, he will not be able to prove his point.

Let me answer this question from another vantage point. Although Hermann Bondi (d. 2005) would not refer to himself as a geocentrist, nevertheless, he would be one of the first to admit that modern physics ably defends geocentric cosmology. This becomes abundantly clear in a 1994 paper Bondi wrote titled:

“Angular Momentum of Cylindrical Systems in General Relativity.” (Royal Society Proceedings, Series A - Mathematical and Physical Sciences, vol. 446, no. 1926, July 8, 1994, pp. 57-66).

Bondi discovered two important facts from General Relativity that can be employed to defend geocentrism. First, Bondi derived and quantified what has been traditionally known as angular momentum, discovering in the process that the universe’s cylindrical symmetry prohibits gravitational waves from carrying angular momentum. This finding resolves a critique of geocentrism which posited that, to conserve angular momentum, the universe would slow down if a mass is raised on Earth and accelerate if the same mass were lowered. Bondi showed that, according to General Relativity, this is not the case, and thus the criticism is neutralized.

Related to the above, Bondi also discovered that, according to General Relativity, all the mass beyond the Schwarzschild radius (where the tangential speed of the universe exceeds c) can be ignored, since it will contribute nothing more to the frame dragging and centrifugal forces already present. He writes:

“The main point to note is that whereas in the newtonian, non-rotation of the reference system at infinity is taken for granted, in the relativistic treatment such rotation is permitted but irrelevant to the measure of angular momentum, which is an intrinsic characteristic of the material system....What is the nature of this limit? For such a cylinder the required angular velocity makes the tangential velocity at $r = r_2$ equal to the speed of light....Both the space drag on the core and A [angular momentum] will be unaffected by such outside layers....The conservation of A occurs even if gravitational waves are emitted by the cylinder. This is perhaps not surprising, since the cylindrical symmetry of the waves precludes their carrying angular momentum.... Therefore the intrinsic nature of the angular momentum of the inner becomes patent as it is wholly unaffected by anything that goes on outside. Thus there is no transfer of angular momentum between outer and inner.” (Ibid, pp. 63-64).

Bondi arrived at the above derivation a little earlier in his paper: “It is a remarkable fact, discussed later, and of some relevance to Machian considerations, that this unique conserved measure of angular momentum appropriate to the symmetry imposed is independent of any superposed state of rotation.” (Ibid, p. 61). The same conclusion was stated in a different way in Bondi’s abstract: “It emerges that angular momentum and space drag behave very differently as thicker and thicker spinning cylinders are studied” (Ibid., p. 57).

Hence, from the perspective of General Relativity, Bondi makes geocentrism completely feasible. That is, if the argument against geocentrism that appeals to the conservation of angular momentum is valid, it would violate the strong principle of Relativity. To rescue Relativity theory from this failure, Bondi, by means of his meticulous tensor analysis, has simultaneously refuted the objection as it has traditionally been directed against geocentrism. The angular velocities used by Bondi are completely compatible with geocentric mechanics, since his analysis specifically validates cosmologies which have rotations at tangential velocities far greater than the speed of light.

Bob Enyart: Secondly, these geocentrists utterly reject mainstream cosmology's superluminal interpretations of redshift. So, their use of this argument as a defense of their own superluminal claim is a *non sequitur*, that is, it does not follow. A claim of superluminal rotation cannot appeal to expansion as a defense.

R. Sungenis: I would say that the only appearance of a *non sequitur* here is from someone who arbitrarily claims that only Big Bang advocates can use superluminal speeds but geocentrists cannot. As to Mr. Enyart's claim that "superluminal rotation cannot appeal to expansion as a defense," this has also been shown to be fallacious since Mr. Enyart is basing it on the angular momentum of galaxies instead of the angular momentum of quantum space. Since quantum space is 10^{120} more dense than galaxies, then angular momentum is not an issue.

Bob Enyart: New Discoveries Require Increasingly Bizarre Adjustments to Extreme Geocentrism: Many adjustments to the theory, both secondary and tertiary, leave little similarity with the original simple model. Here is the story of today's extreme geocentrism.

- The classical geocentrism of Plato (427-347 BC) claimed that the Sun and planets (with the stars) orbited the Earth.

- Ptolemy (92-168 AD) adjusted Plato's model because it was in such great tension with actual observations. Ptolemy added "epicycles" which were little rescue devices designed to explain the apparent movement of the planets that did not match the predictions of solar geocentrism. (Scientists often ignore historians, and that whole failed era may be repeating itself with the relatively simple plate tectonics theory growing increasingly complicated as observations lead to claims of increasing numbers of plates.)

- Tycho Brahe (1546 - 1601) dramatically modified Plato's and Ptolemy's geocentrism. (Notice meanwhile that while Plato's model retarded the advancement of science, including throughout Christendom, likewise, his pagan Greek philosophy also greatly damaged Christian theology.) More than two millennium had passed until the first *major* adjustment to the theory, and this modification is still adhered to today. Brahe admitted that the other planets are not orbiting the Earth. Instead, he acknowledged that the planets of our solar system are orbiting the Sun, but made the modified claim that the Sun thereby pulls the planets around us as it orbits the Earth. That was terribly unexpected by the model. For, if there were some conceptually or physically compelling reason for God to create the Sun, moon, and stars to orbit the Earth, it seems *ad hoc* to omit the planets from such direct influence. Regardless though, geocentrism had its *major* secondary adjustment to the model (the epicycles were an attempt to avoid such a major change). Adding to the unexpectedness of this development, extreme geocentrists will deny also the existence of gravity, yet they have given in to the influence of the Sun over the planets. This is how they describe the motions within the solar system. Enter the Milky Way.

- Ancient astronomers argued that the Earth could not be moving around the Sun because if it were moving, then as we moved we would see a slight shift in the position of the planets in much the same way things shift back and forth when we alternately open and close our eyes. The apparent movement is called parallax, and the distance to the nearest stars was so great, and measurements so poor, that for many centuries no parallax could be detected. Consider though the amazing technological developments, including to where we now put telescopes in space, even beyond the orbit of the moon. And consider also that the Sun is about 93 million miles from the Earth. And with orbital mechanics being what they are, regardless of one's model, after one half a year, there is a distance of double that between the locations that these bodies had occupied. So, rather than the few inches between your eyes, now there is a base of a triangle 186 million miles wide from which astronomers measure stellar parallax. If biblical creationists Copernicus, Newton, Kepler were correct, and the Earth did orbit the Sun, then with precise measurements, we should be able to see the stars shifting back and forth. And we do. At this point the

extreme geocentrists introduced a tertiary assumption. Now they claim that stellar parallax is created by the Sun swaying back and forth with the distant stars.

R. Sungenis: Let's look at the history a bit closer. Ptolemy introduced the equant (in addition to the epicycle) since he knew that the planets did not revolve around the sun in perfectly circular orbits. The equant was the precursor to Kepler's elliptical orbits and it worked the same, that is, it allowed non-uniform orbits. Copernicus, however, because he was wedded to the concept of the circle as being the perfect shape (from Aristotle's metaphysics), arranged his model of heliocentrism in perfect circles, which was demonstrated in his *Commentariolus* in 1510. But thereafter Copernicus discovered to his dismay that if he insisted on putting the planets in circular orbits, he would then need more epicycles than Ptolemy did for his model, which is precisely what Copernicus published in his famous book *De revolutionibus* in 1543.

The point is this: there have been a lot of "adjustments" to both the heliocentric and geocentric systems over the centuries. To call the shift from the Tychonic model (where the stars revolve around the Earth) to the Neo-Tychonic model (where the stars are centered on the sun and both revolve around the Earth) a mere "tertiary assumption" is wrong. It is an adjustment to coordinate with the scientific facts, just as Copernicus tried to do with his model and Kepler did with his for the heliocentric system. The fact is, the Neo-Tychonic model now satisfies all the celestial phenomenon we see, including stellar aberration in addition to stellar parallax.

Bob Enyart: - But there's more. Compared to the size of the Milky Way, geocentrists claim that the Sun has a relatively tiny range of motion, that is, just around the Earth, which they say does not move. However, there are also observations showing that the Sun is not only orbiting the Milky Way, it is also moving through the Milky Way. To account for this effect, while the Sun pulls the planets with it about the Earth, they claim even more complex movements for the Sun and the galaxy, again, in a previously unexpected way.

R. Sungenis: The fact is, there are no "observations" that prove the Sun is revolving around the Milky Way. All motion is relative in a heliocentric system (since heliocentrists must accept their postulate that there is no absolute frame), thus no one can tell whether things in the Milky Way are moving toward the Sun or the Sun is moving toward the things in the Milky Way.

Moreover, recent evidence shows that the attempt to attribute the CMB dipole to solar motion has been discredited, since the Sun in the heliocentric system moves 100 times too fast to create the dipole (according to the latest paper by the Univ. of Michigan team of Copi, Huterer, Schwarz and Starkman in Nov. 2013).

As far as "complex movements," in reality, it is the heliocentric system that has the greater complexity. It requires the Earth to spin at a constant rate of 23 hours, 56 minutes and 4.7 seconds even though it constantly has earthquakes and is bombarded by space debris, which will slow it down. How does it always keep a sidereal time pace if its inertia has been decreased by these innumerable internal and external forces? Consider the fact that Venus has decreased in its rotation by six minutes and then you can see why the question as to how the Earth can keep in lockstep year after year is a good question.

The heliocentric system requires the Earth itself to revolve around the sun in 365.25 days per year, without variation. How could that happen if the Earth's inertial moment is decreased by continuous internal and external factors?

Heliocentrism also requires the sun to orbit the Milky Way with the same precision, and the Milky Way must revolve around some other cluster of galaxies, and so on and so on.

Conversely, the geocentric system is much simpler. The universe rotates around its center of mass, which the Earth occupies, and it carries the sun and stars with it. As the universe also oscillates vertically within the ecliptic plane, it carries the sun with it, which causes our seasons. Moreover, nothing can stop the universe from rotating since it is so massive, and thus our sidereal rate of rotation never changes, even when there are earthquakes on the Earth. This is a much simpler system than the heliocentric.

Bob Enyart: This is a fourth level adjustment to account for observations. Consider a NASCAR racing analogy. The green flag starts the race as each driver heads for a *point that is constantly moving and lies always just ahead of them*. Likewise, as the Sun orbits the Galaxy (centrists say, *appears* to orbit), it also heads toward a point just ahead of it, called the *solar apex*. This is a separate movement that gradually changes the relative position of thousands of stars in our sky. This systematic drift seen in the night sky is called star streaming. It is affected by the movement of the Sun and also by the proper motion of many stars, which, generally speaking, from our perspective move from the apex to a point which is in the opposite direction when compared to the Sun's local trajectory, called the antapex.

R. Sungenis: Star-streaming is the optical phenomenon occurring when stars seem either to spread apart from each other or come closer together. It is analogous to a person riding in a car that is parallel to a forest and noticing that as the car moves, the trees seem to spread apart from each other, while other trees seem to come closer together. It is an optical illusion that is caused by the relative movement between the objects and the observer. In 1783 William Herschel discovered that the sun appears to move through the stars. He isolated thirteen such stars and found that as the sun moved through them they were spreading apart from a point in the constellation Hercules. He then isolated thirty-six stars and found similar results. Friedrich Argelander, an assistant to Friedrich Bessel, found similar results with 390 stars in 1830. In 1842 Otto Struve confirmed the results. As in the case of parallax discovered in 1838, these star-streaming results were invariably touted as proof of the heliocentric system. In reality it provides no proof at all. The reason is simple. The optical illusion of the separation of the stars can be caused either by the Earth moving past the stars or the stars moving past a fixed Earth. Both will produce the phenomenon of star-streaming. We cover this issue in *Galileo Was Wrong*.

Bob Enyart: So in addition to the solar system's apparent 220 km/s orbit around the Galaxy, the Sun has its own 16 km/s movement within its immediate stellar neighborhood (i.e., within its LSR, local standard of rest), as it moves in the direction of Vega (near the constellation Hercules). To account for this, leading geocentrist Gerardus Bouw makes this quaternary (fourth level) assumption, since it would be surrender to admit the Sun is moving toward any direction, by claiming that the stars are moving past the Sun (Bouw, *Geocentricity*, 1992; Faulkner, 2001).

R. Sungenis: Again, there is no proof the sun is orbiting the Milky Way nor has its own movement toward Vega, since Vega could be moving toward the sun and the same blue shift would occur.

Bob Enyart: Extreme geocentrism is harder to falsify than one might initially assume because advocates use the concept of a reference frame, by which many kinds of relative motion can be presented as though any particular point were stationary.

R. Sungenis: Einstein does the same, since that is what the theory of “relativity” forces him to conclude. Thus, geocentrists cannot be faulted for doing the same when it is appropriate. What is good for the goose is good for the gander. It is the very reason Einstein was forced to conclude this: “The struggle, so violent in the early days of science, between the views of Ptolemy and Copernicus would then be quite meaningless. Either coordinate system could be used with equal justification. The two sentences: “the sun is at rest and the Earth moves,” or “the sun moves and the Earth is at rest,” would simply mean two different conventions concerning two different coordinate systems” (The Evolution of Physics: From Early Concepts to Relativity and Quanta, Albert Einstein and Leopold Infeld, 1938, 1966, p. 212).

Bob Enyart: However, with earthquakes changing the speed of the Earth's rotation, and with the weight of the many rescue devices, that is, of assumption added upon assumption upon assumption, the system is broken.

R. Sungenis: Again, earthquakes don't prove anything for the heliocentric system, since no one has ever shown empirical evidence that the supposed rotation of the Earth has ever changed. The only ones “assuming” here are those who assume the Earth's rotation has changed and that its axis has shifted.

Bob Enyart: The Calendar vs. The Clock: To account for the universe being anywhere near the size that it appears to be, extreme geocentrists claim that there is an “ether” which is orbiting the Earth and carrying with it all the millions of galaxies, at likely about 30 trillion times the speed of light.

R. Sungenis: For the record, ether has little to do with the size of the universe. Once again, the fact is, modern science, courtesy of General Relativity, says the universe could spin at any speed. Modern science, courtesy of Quantum Mechanics, says the universe is filled with ether, to the tune of 10^{120} the density of baryonic matter. In other words, modern science cannot disprove geocentrism.

Bob Enyart: Extreme geocentrism, as shown above, makes complex claims not foreseen by its own model.

R. Sungenis: No model ever “foresaw” the problems it would encounter. The first heliocentrists of the Pythagorean school in 500 BC and developed by Aristarchus in 300 BC, could never get their model to work correctly. Copernicus could never get his heliocentric model to work correctly either, even after he added his 48 epicycles. Even Kepler couldn't get his model to work correctly, since the planets do not travel in textbook elliptical orbits but wobble quite significantly due to gravitational perturbations.

Bob Enyart: That the Bible overtly teaches that earth moves, at least in earthquakes and relative to itself,

R. Sungenis: I don't know what “relative to itself” could possibly mean. Nonetheless, the Bible is clear that when it speaks about the Earth not moving it is referring to translation and rotation, not to internal or intrinsic movement. This is why Joshua 10:10-14 is so important, since the question of what body is

moving, the sun or the Earth, is answered by Joshua 10, which says it is the sun and the moon, not the Earth, that is moving.

Bob Enyart: a lot, should suffice to correct the woodenly literal misinterpretation.

R. Sungenis: It seems odd for someone to call geocentrism a “woodenly literal misinterpretation” when that is precisely what creationists, such as Mr. Enyart, are accused of doing when they interpret Genesis 1-2 to refer to a six day creation; and Genesis 7-9 to refer to a literal worldwide flood. It seems that for Mr. Enyart it is perfectly acceptable to be “wooden” when it supports his beliefs, but he won’t allow the same literal hermeneutic for Genesis 1:1-14 or Joshua 10:101-4 or any of the other passages that speak of a central or non-moving Earth. This is a glaring contradiction in the hermeneutic of conservative Protestants.

Bob Enyart: Then scientifically, that the experimentally verified conservation of angular momentum slightly increases the Earth's speed of rotation should suffice to falsify extreme geocentrism by way of physics.

R. Sungenis: Yes, as a rule for spinning object on Earth, angular momentum is conserved, but that doesn’t prove that the Earth rotates.

Bob Enyart: Real Science Radio hosts the website, 360dayyear.com, which documents that the Scriptures and much historical evidence suggest that the Earth initially had a 360-day year. If so, here's how the length of our calendar year changed. During [the global flood](#), catastrophic tectonic activity melted the outer core (8 moons worth is now liquid) to shrink the Earth sufficiently to increase its rotation on its axis enough to add 5.24 days per solar orbit.

If true, this also falsifies their cosmology. A leading extreme geocentrist presented to me yet another rescue device, claiming that any apparent changes in the Earth's speed of rotation are the result of earthquakes that were actually responses to catastrophic events out in the most distant galaxies. That is, when such a geocentrist admits, even if only for the sake of argument, that after major earthquakes, we see the galaxies spinning a bit faster around the Earth, they will claim that there was a disturbance in the farthest galaxies that caused the quake.

R. Sungenis: Correction: Dr. Bouw does not say the galaxies spin faster around the Earth. He merely says that gravitational disturbances among the galaxies may be transmitted to Earth and thus cause earthquakes. Additionally, Bouw never says that the sidereal rate of the universe’s rotation changes.

Bob Enyart: Aside from the obvious scientific and theological difficulties with that claim, it also seems to undermine their belief that the Earth doesn’t move. Scientifically, Earth's mapped, quake-prone geologic faults are not tied to any pattern related to the relative movements of our globe and the universe. Theologically, regarding the foundations of the Earth, quaking is movement. Overthrusts, the Great Unconformity at the Grand Canyon, and quaking in general (like [Japan's 9.0 quake](#) in 2011) are all evidence of very destructive movement. Even if the wild speculation that events in distant galaxies cause Earth movement, then the Earth moves.

R. Sungenis: No, because internal movement (even rivers flowing on Earth) do not qualify as movement of the Earth relative to space and the other celestial bodies. The question is what is revolving around what in outer space, not what is moving on or in the Earth.

Bob Enyart: Further, my friend was dismissive of the use of atomic clocks as timekeepers, correctly pointing out the limits to their (astounding) precision. He claimed that the only perfect timekeeper is the Earth itself, apparently forgetting the enormous difficulty we have today of using the Earth and the sun and stars as timekeepers. For thousands of years, entire *leap months* were added to the calendar. Today, leap *days* are added, just to try to keep us in sync with the stars and seasons, to stabilize our time and date keeping. Forget leap seconds. Using the Earth as the calendar requires leap months or leap days.

R. Sungenis: Our man-made calendars are obviously subject to revision when they encounter the precision of the celestial bodies. We add to our calendars to keep up with the celestial bodies; the celestial bodies don't change their movement to keep up with what we think should be in a calendar. As for atomic clocks, it is well-known that they tick differently at higher altitudes and varying gravitational potentials, and thus are not completely reliable. There is also suspicion that the alpha constant may have changed, which would then affect radioactive decay rates.

Bob Enyart: Today the creation has lost its original perfection. Everything is somewhat askew due to the judgment for, and the natural consequences of, sin. So, geocentrists will have a tendency to deny that earthquakes speed up the earth's rotation, but by my experience, they will give in to that reality when confronted with measurement of the Earth's rotation as compared to cesium atom oscillations, and to astronomical, sidereal observations, and then also, from long-term biblical and profane history. (And though I've not seen any claim to this effect, I assume that the GPS satellite network can detect a speed up of the Earth's rotation after major quakes.)

R. Sungenis: In order for him to make such claims, Mr. Enyart will need to show indisputable proof that the sidereal rotation rate changes after an earthquake. So far, all we've seen are *ipse dixit* assertions.