THE EXPANDING UNIVERSE THEORY IS INTERNALLY INCONSISTENT

RUSSELL AKRIDGE*

Received 5 January, 1981

Free photons must lose energy if the Big Bang is the origin of an expanding universe. Free photons must not lose energy if the universe is expanding. This inconsistency in photon behavior disproves the Big Bang expanding universe theory that claims the universe is billions of years old. The evidence alleged to support the Big Bang expanding universe theory is in better agreement with a vast recently created universe than with an expanding universe billions of years old.

I. INTRODUCTION

"The heavens declare the glory of God."[1] That glory is an infinite, working, beautiful complexity characteristic of the Creator. What glory of God could there be in a universe created by the Big Bang billions of years ago so violently that the fragments are still expanding away from the explosion? None.

This article shows that there never was a Big Bang, and that the universe is not expanding. Section II outlines the two primary evidences claimed to prove the expanding universe theory. The two evidences are the recession of the distant galaxies and the 3° K background radiation. In Section III the two evolutionary interpretations of the evidences are shown to be mutually contradictory. Particular attention is given to the behavior of free photons traveling through intergalactic space. Section IV concludes that, because of internal inconsistencies, the Big Bang and the expanding universe cannot be true. Rather, God, the divine Artisan, created a magnificent universe filled with galaxies and light.

II. EVOLUTIONARY ASTROPHYSICS

Evolutionary astrophysicists claim the universe began with a huge explosion called the Big Bang.[2] This Big Bang is said to have occurred about 15 billion years ago. They claim all matter (the galaxies) in the universe is still expanding away from the explosion.

Neither the Big Bang nor the motion of the distant galaxies has even been observed directly.[3] What indirect observation is made to infer the Big Bang, and what indirect observation is made to infer the expansion of the universe?

The Red Shift May Indicate an Expanding Universe

The motion of the distant galaxies away from us is indicated by their red shift. The greater the distance to a galaxy is, the more the galactic light is shifted toward the red end of the spectrum

The red shift that we observe on earth is usually explained as a Doppler shift that occurred at the distant galaxy. The Doppler shift follows from wave theory but can be expressed in terms of photon energies. As a galaxy moving away from us emits a photon, the energy of the photon is less than it would have been if the galaxy were stationary. The fractional wave length $\Delta\lambda/\lambda$ or energy shift $\Delta E/E$ equals the fraction of the speed v of the galaxy compared to the speed c of light, or

$$\frac{\Delta E\ \text{photon}}{E_{photon}} = \frac{\Delta\lambda}{\lambda} = \frac{v}{c} \qquad (1)$$

Equation (1) can be solved for the recessional speed v of the galaxy, when the Doppler shift $\Delta\lambda/\lambda$ is known.

Equation (1) gives the shift $\Delta\lambda/\lambda$ in the light *emitted* by the galaxy. It will be the same as the shift $\Delta\lambda/\lambda$ *observed* by us on the earth only if the wave length or energy of the photon remains unchanged as the galactic photon travels its vast distance through space. Astrophysicists assume nothing at all happens to this photon on its long journey, so that the total shift, $\Delta\lambda/\lambda$ observed here is due only to recessional motion of the galaxy. It is very important in this paper to understand that this assumption must be made to relate observed red shifts to recessional galactic speeds.

When galactic distances r and galactic recessional Doppler-shift velocities v are compared, on the average, it is said, v is proportional to r (This has been questioned, though.)

$$v = Hr \qquad (2)$$

The constant of proportionality H is called the Hubble constant. The presently accepted value for H equals 15 km per sec/millon light-years.[4]

A simple example will illustrate the Hubble law expressed by equation (2). If all the red shift observed from a galaxy 100 million light years distant is due to the galaxy's recessional velocity, the galaxy is moving away from us at a velocity of 15 km per sec (about 10 miles per second). A galaxy 200 million light years distant would be moving away from us at a velocity of 30 km per second, etc. Interpreted this way, the observed red shifts attributed to Doppler shift, and Hubble's law picture an expanding universe. Extrapolating all the galaxies backward in time, makes it appear that they all started out at the same place at the same time about 15 billion years ago.[5]

The concept of an expanding universe hinges on the astrophysicists' assumption that no change occurs to the galaxies' photons on their long, undisturbed trip from the galaxies to us.

The 3° K Background Radiation May be Remnant of the Big Bang

The Big Bang is the name given to the ultra-high temperature, ultra-dense explosion that astrophysicists say began the universe about 15 billion years ago. After the initial explosion, the high-temperature light (radiation) that filled the universe began to expand along with the rest of the universe.

*Russell Akridge, Ph.D., is with the Westminster Schools, 1424 W. Paces Ferry Road, N.E., Atlanta, Georgia.

After the Big Bang, the residual radiation is assumed not to interact any more with the matter in the universe. It is like the light from a firecracker bang. After the bang, the light freely travels through space, but it no longer interacts with the material of the firecracker. The way to detect the firecracker bang would be to detect some of the intial radiation that has spread out through the universe.

What kind of photon should we search for to prove the firecracker exploded? We should search for photons of orange light. The firecracker's brief glow was orange, so its orange-light photons are spreading out through space. The density of the orange-light photons is continually decreasing, but the photons are still orange-light photons. The number of photons and the energy of each photon would be constant as the firecracker's photons travel outward. That is what we would expect.

What kind of photons should we search for if we want to detect the Big Bang which ended at a temperature of 3,000° K?[6] We would hunt for a very low-density collection of high-temperature photons, by analogy with the firecracker example. This phenomenon is what we should get, if the universe were not expanding, say astrophysicists. However, Big Bang theorists claim that the photons left over from the Big Bang are becoming lengthened in wave length and lowered in energy, because the universe is expanding.[7]

If R is a distance which increases with the size of the universe, say the distance to a remote galaxy, then the wave length of a Big Bang photon has increased by a factor proportional to R, $\lambda \propto R$, for light from that galaxy. Some details of this relation are presented in the Appendix.

If the universe expanded and doubled in size, the Big Bang photons would double their wave length; they would each have only half their original energy ($E = hc/\lambda$). These photons are supposed to suffer their energy reduction only because of the expansion of the universe. They are free photons. They do not interact with anything. They travel undisturbed through space, unaffected by anything, except the expansion of the universe.

We can now answer the question, "What kind of photons should we hunt for to detect the Big Bang?" If the universe is expanding as the galaxies seeem to indicate, then the original photons from the Big Bang have been greatly reduced in energy. If the universe has expanded by a factor of 1,000 since the Big Bang, and if the temperature of the Big Bang photons (i.e. of the distribution: a single photon has no temperature) after they ceased to interact with matter was 3,000° K, then the average Big Bang photon now would be at a temperature of 3,000° K ÷ 1,0000 = 3° K.[8] If the universe is expanding, we should hunt for radiation characteristic of only 3 degrees above absolute zero. This radiation is called the 3° K background radiation.

Penzias and Wilson[9] detected radiation characteristic of about 3° K from all parts of the universe accessible to them in 1965. They received the Nobel Prize in physics for their work. Evolutionary astrophysicists have claimed the radiation Penzias and Wilson detected was the expanded remains of the Big Bang glow.[10] Drs. Slusher, Barnes, and I have showed in a previous article that this 3° K radiation was actually the result of the galaxy's absorbing some of its own radiation and heating itself in the few thousand years since Creation.[11] However, let us assume for the moment that the Big Bang explanation is correct so that we can explore the principle behind the Big Bang expanding universe.

Photons May Evolve

The Big Bang produced a concentrated field of high-temperature photons. These photons have traveled for billions of years since the Big Bang. During that time, they have traveled unaffected by anything except the expansion of the universe. The expansion of the universe by itself caused these free photons slowly to decrease in energy in proportion to the expansion of the universe. These free Big Bang photons *must* slowly decrease in energy according to evolutionary astrophysicists, so that the 3° K photons detected now can be identified with the original high energy Big Bang photons. The following principle must hold true, if the 3° K photons are remnants of the Big Bang.

Principle: Photons from the Big Bang traveling freely through space without interactions lose energy, because the universe expands.

Can this principle be restricted to only Big Bang photons? If a Big Bang photon of energy 1 eV. and a photon from another source but of identical energy 1 eV. travel side by side, is there some reason that the Big Bang's photon would slowly lose energy while the other photon would remain at constant energy? Each of the photons is identical. Neither photon "remembers" where it came from. A photon of given energy, direction, and polarization is identical to any other photon of that same energy, direction, and polarization. If one freely traveling photon loses energy slowly when the universe expands, all photons traveling freely *must* do likewise. This reasoning requires us to generalize the photon principle stated earlier. The restriction that it applies only to Big Bang photons must be dropped, because the expansion of the universe, if it occurs, is common to everything.

Free Photon Evolutionary Principle: *Any* photon traveling freely through space without interactions slowly loses energy as the universe expands according to $E \propto 1/R$.

The reader is reminded that all material discussed in this section presupposes that the Big Bang and the expanding universe are true. The purpose was to extract the behavior required of photons traveling the vast distances from the galaxies, or the vast times since the Big Bang. In the next section, the Big Bang expanding universe will be shown to be self-contradictory.

The reader may already see the contradiction. Free photons traveling for vast times *must* remain at *constant* energy for the observed red shifts to be Doppler shifts meaning the distant galaxies are really expanding away from us. Conversely, free photons traveling for vast times *must decrease* in energy, so that the 3° K radiation detected can be identified as the cooled remnant of the Big Bang that is supposed to have begun the explosion.

III. THE BIG BANG AND THE EXPANDING UNIVERSE

Light from an Example Galaxy is Twice Red Shifted

Suppose a galaxy was 100 million light years away from us 100 million years ago. Then we are just now observing the light it emitted 100 million years ago. The Hubble law can be used to determine the velocity of this galaxy away from us when it emitted its light. Since $v = Hr = (1.5 \times 10^4$ m per sec/million light years)•(100 million light years), then $v = 1.5 \times 10^6$ m per sec. The photons *emitted* by this galaxy should be Doppler shifted relative to us by the factor of $v/c = (1.5 \times 10^6$ m per sec)/(3×10^9 m per sec) = 0.005 = 1/2%.

These photons travel undisturbed through space to us. However, they, like all photons, are affected by the expansion of the universe as they travel. The wave length of a photon traveling through space undisturbed except for the expansion of the universe should increase. The wave length λ is related to the radius R of a point in the expanding universe by $\lambda = (\text{constant}) \times R$.[12] As the universe expands by a certain factor, the photon's wave length increases by the same factor.

What fraction has the universe expanded during the 100 million years the galaxy's light traveled toward us? The answer is once again found in the Hubble constant H. For any distant object, $H = v/r =$ (rate of change of r)/r. H is the rate of fractional increase in the universe. The fractional increase in the universe in 100 million years is H times 100 million years. When $H = 1.5 \times 10^4$ meters per second/million light years is converted into appropriate units for this problem, one gets $H = 5{\cdot}0 \times 10^{-5}$ per million years.

In the 100 million years since the galaxy emitted its light, the universe has expanded by the fraction $Ht = (5.0 \times 10^{-5}$ per million years)$\times$(100 million years) = 0.5%. All free photons have increased their wave lengths by this same factor. The photons arrive here with a wave length 1/2% greater than when the galaxy emitted them, because of the expansion of the universe during the travel time.

Wait a minute! The 1/2% lengthening of the wave length due to the expansion of the universe was previously attributed to the Doppler shift. If the 1/2% lengthening of the wave length is entirely due to the expansion of the universe, the Doppler shift must be *zero*. The distant galaxies are all stationary. They are not receding. The observed shifts may indicate great distances, but they do not indicate recessional speeds.

The Appendix proves in general that the red shift a photon experiences enroute equals the red shift attributed to the Doppler effect. If all of a red shift is needed to indicate distance, zero is left for Doppler shifts.

The Expanding Universe is Self-contradictory

We have arrived at a result that is most embarrassing to evolutionary astrophysics. We have found that if the universe did begin with the Big Bang billions of years ago, and if the background radiation is the remnant of the Big Bang, then the fragments (galaxies) of the Big Bang are *not* moving away from the explosion. The galaxies are not moving away from one another. The universe is *not* expanding.

If the universe is not expanding, then the light from the Big Bang should not have cooled down at all, since it is cooled only by the expansion of the universe. It should still exist at its original temperature. Furthermore, if the universe is not expanding, then light from the distant galaxies cannot be increased in wave length at all. Wave lengths of free photons increase due only to galactic Doppler shift and the expansion of the universe, but neither of these is happening. The entire Big Bang theory is internally inconsistent.

IV. CONCLUSION

A photon's energy loss is counted twice in the big Bang expanding universe theory. In the Big Bang theory free photons must lose most of their original energy as they travel for vast times. In the expanding universe theory, free photons must lose any energy as they travel for vast times. A free photon cannot do both at the same time.

If a free photon loses energy, the Big Bang theory may be correct, but the universe is not expanding. However, if the universe is not expanding, free photons do not lose energy, because any photon energy loss is due to the expansion of the universe.

If a free photon does not lose energy, the universe may be expanding, but the Big Bang theory cannot be correct. However, if the universe is expanding, then in the remote past it was a dense, hot mass. There must have been a Big Bang.

If either the Big Bang or the expanding universe is true, the other cannot be true. Yet, they are both parts of the same evolutionary scheme. Both must be true for either to be true. Therefore, the Big Bang expanding universe theory is false.

The universe has been in existence for only thousands of years since God created it. The 3° K background radiation is the blackbody temperature of the galaxy heating itself during those thousands of years. It is not the expanded remnant of the Big Bang. The reddening of galactic light indicates distance only. It is not caused by a Doppler shift of an expanding universe. The great distances indicated by galactic reddening point to the infinite complexity of God. "The heavens declare the glory of God."[13]

V. ACKNOWLEDGEMENT

I gratefully acknowlege the assistance of my wife, Anita, for proofreading this article, and for the suggestions she offered.

APPENDIX

This Appendix shows that the fractional increase in wave length $\Delta\lambda/\lambda$ caused by the recession of the distant galaxies equals the fractional wave length increase produced by the expansion of the universe. Both effects will be assumed to be real effects, so that the shifts $\Delta\lambda/\lambda$ they would produce can be determined. The body of the article shows that neither effect actually does occur in nature.

The Recession of the Galaxies Would Increase Photon Wave Lengths

A distant galaxy is supposed to be moving radially away from us with a speed v proportional to its distance r. The constant of proportionality is Hubble's constant, H. Thus, $v = Hr$. The fraction $\Delta\lambda/\lambda$ by which the galactic light is Doppler-shifted equals the fraction v/c of the galaxy's speed relative to the speed of light.

When $v = Hr$ is substituted into $\Delta\lambda/\lambda = v/c$, the result is

$$\Delta\lambda/\lambda = Hr/c \text{ (Doppler shift alone)} \qquad (A1)$$

The Expansion of the Universe Could Increase Photon Wave Lengths

The number of Big Bang photons in the universe has to be constant after the Big Bang. Big Bang theorists assume the Big Bang photons do not interact with the matter of the universe after the Big Bang.[14]

The photon distribution is supposed to be given by the blackbody radiation laws at all times during the expansion of the universe after the Big Bang.[15] The energy density $E/V \propto T^4$, where T is the absolute temperature of the photons. The average energy per photon $E_p = hf = hc/\lambda$ is proportional to the photon temperature T, so that $T \propto 1/\lambda$. The photon energy density is then $E/V \propto \lambda^{-4}$.

The number density of photons N/V is found by solving the equation (energy density) = (number density) × (energy per photon). The result is $N/V \propto \lambda^{-3}$. The total number N of Big Bang photons within a sphere of radius R centered at the location of the Big Bang is the number density N/V times the volume of the sphere, $4\pi R^3/3$, or $N \propto (R/\lambda)^3$.

The number of photons within this sphere is assumed to be constant as the expanding universe expands. Thus, during the expansion of the universe, Big Bang photons increase in wave length so that $N \propto (R/\lambda)^3$ remains constant. If R/λ remains constant, then

$$\Delta\lambda/\lambda = \Delta R/R \qquad (A2)$$

The fraction by which the universe has expanded during the travel time of the photon is found from the Hubble law.

$$v = Hr$$

$$\frac{\Delta r}{\Delta t} = Hr$$

$$\frac{\Delta r}{r} = H \cdot \Delta t \qquad (A3)$$

Photons from a galaxy a distance r from us at the time of emission travel for $\Delta t = r/c$ to reach us. Thus, if that galaxy were *stationary*, the rest of the universe expanding around it, there would be no Doppler effect, but during their travel to us photons would lose energy because of the expansion of the universe. When equations (A2), (A3), and $\Delta t = r/c$ are combined,

$$\frac{\Delta\lambda}{\lambda} = \frac{Hr}{c} \quad \text{(Expansion of universe alone)} \qquad (A4)$$

The fractional change in wave length due to Doppler shift alone given by equation (A1) equals the fractional change in wave length due to the expansion of the universe alone given by equation (A4).

References

[1]Psalm 19:1.
[2]Wald, Robert M., 1977. Space, time, and gravity. University of Chicago Press, Chicago, chapters 3 through 6.
[3]Silk, Joseph, 1980, The big bang. W. H. Freeman, San Francisco, chapter 4.
[4]*Ibid.*, p. 48.
[5]*Ibid.* p. 63.
[6]*Ibid.*, p. 139.
[7]*Ibid.*, pp. 139-140.
[8]*Ibid.*
[9]Shipman, Harry L., 1978. The restless universe. Houghton Mifflin, Boston, pp. 394-396.
[10]*Ibid.* chapter 4.
[11]Akridge, Russell, Thomas Barnes, and Harold S. Slusher, 1981. A recent creation explanation of the 3° K background blackbody radiation. *Creation Research Society Quarterly*, 18(3):159-162.
[12]See the Appendix for a derivation.
[13]Psalm 19:1.
[14]Silk, *op. cit.*, chapter. 8.
[15]*Ibid.*, pp. 137-139.
[16]Kittel, Charles and Herbert Kromer, 1980. Thermal physics. W.H. Freeman, San Francisco, p. 94.

Language was Created, Not Evolved

(Continued from page 55)

References

[1]Watkins, Calvert, 1973, Language and its history. *Daedalus* 102, 99. (Summer).
[2]Haeckel, Ernst (trans. Joseph McCabe, 1900) The riddle of the universe. Harper and Brothers, New York. P. 18.
[3]Darwin, Charles, The descent of man. (Edition in: The Great books of the Western World, 1952.) Encyclopaedia Britannica, Chicago. P. 299.
[4]Reference 2, p. 126.
[5]Gaeng, Paul A., 1971. Introduction to the principles of language. Harper and Row, New York. Pp. 3-6.
[6]Robertson, A.T., 1934. A grammar of the Greek New Testament in the light of historical research. Broadman Press. Nashville. P. 144.
[7]Compare Briggs, Charles Augustus, 1900. General introduction to the study of Holy Scripture. Charles Scribner's Sons. Reprinted 1970. Baker Book House, Grand Rapids, Also Driver, S.R., 1899. Hebrew authority. (In) Authority and archeology, sacred and profane, ed. David G. Hogarth. P. 9. Also Brown, Francis, 1908. The laying of the corner-stone of the new building of the Union Theological Seminary and the inauguration of the Reverend Francis Brown as the President of the Faculty. Union Theological Seminary, New York. P. 44.
[8]Reference 5, p. 10.
[9]Terrace, Herbert S., 1979. How Nim Chimpsky changed my mind. *Psychology Today* 13, 67. (November).
[10]Seboek, Thomas A., and Jean Umiker-Seboek, 1979. Performing animals: secrets of the trade. *Psychology Today* 13, 91. (November).
[11]Bodmer, Frederick, 1944. The loom of language. W.W. Norton and Co., New York. Pp. 170-180.
[12]*Ibid.* pp. 419 & 87.
[13]Reference 2, p. 187.
[14]Reference 11, p. 77.
[15]Barr, James, 1961. The semantics of Biblical language. Oxford University Press. P. 28.
[16]Bloomfield, Leonard, 1933. Language, Holt, Rinehart, and Winston, New York. P. 271.
[17]Webster's Third New International Dictionary, s.v. "concrete" and "abstract".
[18]Cassirer, Ernst, Language and myth. Tr. Susanne K. Langer. Dover Publications, New York. P. 31.
[19]Reference 16, p. 429.