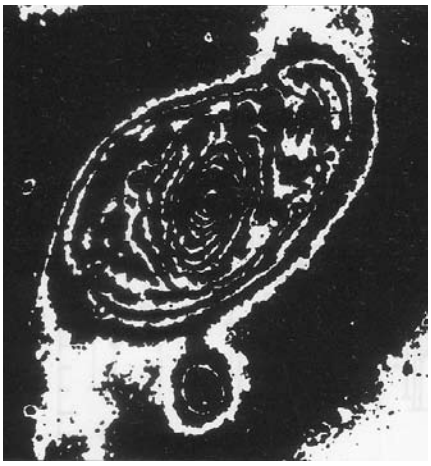

Figure 2. *An isophote of the galaxy and the quasar (below) from the 200 inch Palomar telescope (north is up, east is left). The luminous bridge connecting the two objects is clearly visible, indicating they not only appear to be neighbours, but are neighbours. This photo appears in Arp, Ref. 7.*

Interpretations driven by cosmology?

The NASA commentary on the space image refers to dark and unusually misshapen dust lanes in the galaxy's inner region and claims they are evidence of a disturbance. Of course they can't attribute this disturbance to the quasar which appears alongside the galaxy, in the image as large as life. That's because, driven by their ideological framework, they have already placed the quasar a billion light years away. So, the disturbance must be due to some unseen cause, perhaps another galaxy not visible in the photograph. These interpretations seem to be motivated less by the observations of the billion-dollar HST, and more by a prior cosmological commitment. It is hard to imagine that this is the best way for science to proceed.

It seems that some people would like to erase part of the history of astronomy. Is this because the NGC-4319 observations are so problematical for current cosmological thinking? The discussions in scientific journals over 30 years that have seriously questioned the methods of measuring distance are ignored. Is this omission to protect the current cosmological view from the need to compete with any contrary opinion?

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Extrasolar planets suggest our solar system is unique and young

Rod Bernitt

More extrasolar planets discovered

The claims that more planets have been discovered in orbit around nearby stars continue to make the news,[1,2] with over 100 now documented.[3] A recent report in *Sky & Telescope* discloses

> 'The new discoveries, like most of the previously known exoplanets, generally follow eccentric (elongated) orbits and are closer to their stars than the giant planets in our solar system are to the Sun.'[2]

Much excitement concerns the star 55 Cancri. Apparently, it has a Jupiter-like planet orbiting further out—at about 5.9 AU with a mass about 4.05 M_Jupiter. (AU, stands for astronomical unit, the unit of length for solar-system-scale measurement, and equals the average distance of the Earth from the Sun. The mass unit, M_Jupiter, is based on the mass of the planet Jupiter, about 318 times the mass of the Earth.) Because this exoplanet with 55 Cancri exists, so the thinking goes, other exoplanets must exist much farther out from their host stars. If so, our solar system would not be unique.

Evolutionists hope that many stars will be discovered with habitable Earth-like planets and gas-giant planets orbiting far from their host stars—similar to our solar system configuration. It's interesting that this latest speculation has arisen from extrapolating a single observation with both mass and measured orbital eccentricity ($e = 0.16$) much greater than Jupiter's ($e = 0.05$). The reports also reveal that 55 Cancri apparently has two other Jovian-mass planets orbiting much closer (< 0.3 AU). Obviously the planetary system for 55 Cancri is not particularly

similar to our solar system.

Many of the stars reported to have extrasolar planets[3] range from spectral class K2 to F7 (typically red to white) and luminosity class IV–V (subgiants to main sequence stars). A few spectral class M stars are listed as well as Gliese types. Our Sun plots on the Hertzsprung-Russell (H-R) colour-brightness star diagram as spectral class G2V. The distances from Earth of parent stars range from 3 to 60 pc[4] (10–200 light-years) with spectral class G stars common and 25–35 pc (80–115 light-years) distance common. Almost ⅓ of the exoplanets listed have orbits less than 0.4 AU from their parent stars—inside Mercury's orbit if placed in our solar system.

Our solar system is different

A simple statistical analysis of some of the data for the exoplanets listed to date[3] yields the following averages:

- Mean semimajor axis, a = 1.24 AU
- Mean eccentricity, e = 0.274 (larger than Pluto's e = 0.244, the most eccentric of our solar system)
- Mean mass = 3.295 M_Jupiter

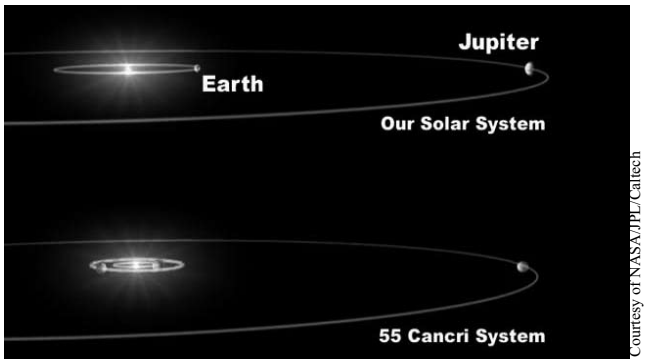
If this average gas-giant planet were orbiting in our solar system it would have a perihelion, (q) of 0.90 AU and aphelion, (Q) of 1.58 AU and continually cut across Earth's orbit. We need to keep in mind that the masses reported are a minimum estimate, not a maximum.

In our solar system, the average values of the nine planets for the same three properties are:

- Mean semimajor axis, a = 11.902 AU
- Mean eccentricity, e = 0.081
- Mean mass = 0.156 M_Jupiter

The 'average' perihelion, q is 10.938 AU and the aphelion, Q is 12.866 AU, which is well removed from the Earth's orbit.

This makes an interesting comparison. First, the extrasolar planets have a much larger masses than our gas giant planets. The 4.05 M_Jupiter gas giant at 55 Cancri is an example. Then, the extrasolar planets orbit much closer to their host stars and have a greater orbital eccentricity than the planets in our solar system. In fact, the exoplanets seem to be more similar to double stars, visual binary systems, and spectroscopic binary systems, that to the planets in our solar system.[5] For binary stars the mean eccentricity, e is 0.28 and the orbital period ranges from 1.0 to 10,000 days.[6] It is worth remembering that, for the extrasolar planets reported so far, the method of detection may favour large gas giant planets orbiting close to their parent stars.



The 55 Cancri system has a Jupiter-mass planet in an orbit similar to the orbit of our Jupiter. At least one other planet is thought to exist, orbiting at one tenth the distance between Earth and our Sun.

It is surprising that the characteristics of the extrasolar planets are so different from the gas-giant-planets of our solar system. Surprising because it has been claimed for decades that the naturalistic evolution model thoroughly explains our solar system. According to evolution, the rocky, terrestrial planets formed because inner solar nebula was hot, while the outer regions of the solar nebula were cold, forming the gas giants.[2] The same characteristics were expected for the planetary systems of other stars since they supposedly formed the same way. However, gas-giant planets orbiting less than 0.4 AU from their parent stars explode this belief. Somehow, evolutionists have avoided publicizing this issue.

How to explain?

The extrasolar-planet data suggests our solar system is special, which is difficult to explain from a naturalistic evolutionary perspective. For some reason, when our solar system formed, the Sun managed to avoid the more common 'fate' of other star systems. Specifically, we do not have gas-giant planets orbiting from 0.1 to 3.0 AU from the Sun, like 75% of the stars with planets so far listed.[3] The other planets in our solar system are well clear of the Earth's orbit.

Nearby stars of spectral class G, similar to the Sun, are expected to be of a similar age (as determined from the H-R diagram). In fact, 55 Cancri is a spectral class G8 star and considered to be 4–7 billion years old on the H-R diagram.[2] Stars of similar age would have completed a similar number of galactic rotations[7] since their origin. So, although our Sun would have completed some 20 galactic rotations (assuming the astronomical age of the galaxy is correct), it has somehow managed to avoid interactions which produced gas-giant planet configurations with orbits near 1.0 AU, the Earth's location. That's pretty significant for the survival of life on Earth.

The data is easy to understand from a young-Earth creation model. Since Creation Week ended (Genesis 2:1–3) some 6,000 years ago as measured on Earth, the Sun and nearby spectral class G stars have completed much less than one galactic rotation. Certainly, since Creation Week, these nearby star systems have experienced little stellar evolution. The creation interpretation affects our understanding of the origin of our solar system and of extrasolar planets.

I wonder if evolutionists thank their lucky stars and random particle collisions for the unique configuration of our solar system and our habitable Earth. Modern secularists cannot consider that the Creator had anything to do with it. Such thinking would violate a central tenet of modern science—methodological naturalism.[8]

From a creation perspective, God, during the Creation week, predetermined the initial conditions of our solar system to provide a habitable Earth. We know from Genesis 1:31, that at the end of Creation week God's creation was 'very good'. It is hard to imagine that gas-giant planets orbiting near the Earth and gravitationally interacting with it would fit the description of 'very good'. Such interaction would cause the Earth to become as volcanically active as Jupiter's moon Io, even if the orbits were stable.

Thus, the gas giant planets were created in the outer orbits of the solar system and the smaller rocky planets in the inner orbits. This has ensured that the Earth has remained stable and habitable because, as explained in Isaiah 45:18, the Creator formed the Earth to be inhabited. Because of its naturalistic evolutionary philosophy, modern science does not want to recognise that our solar system is specially created, and so it has problems explaining the data for exoplanets, which show that our solar system is special, and young.

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Large and systematic regional-scale errors in Middle Eastern carbon-14 dating

John Woodmorappe

Recent issues of the *TJ* have featured a debate between the relationship of Biblical chronologies and secular ones. Down[1,2] has favored a reduction in the Egyptian chronologies in order to reconcile them with the Biblical ones. Montgomery has suggested a non-chronological interpretation of certain OT chronologies to escape the impasse. Wood[3] has claimed that the Egyptian chronology is too solid to be compressed. He has emphasized the agreements which do exist between Biblical chronologies and the currently accepted extra-Biblical ones.

A recent bombshell[4] has exploded across the Middle East. It is a scientific, not a military one:

> 'Many archaeologists studying the Ancient Near East have claimed (or complained) that radiocarbon dates are earlier than archaeo-historical dates for the early historical period: for Egypt … Sumer … Israel-Palestine … Italy … and the Aegean … among others … Too-early ^{14}C dates occur from the earliest historical times until the mid second millennium BC. Disparities vary between about one and three centuries, depending on the historical period and location. The ^{14}C dates are from a variety of samples (many short-lived) and have been processed by numerous researchers; although there is scatter, the problem remains prevalent.'[5]

Keenan[5] also cites a number of Middle Eastern researchers who have become quite skeptical of C-14 dating as a consequence of the foregoing problems. In addition, some of these researchers have openly indicated an acceptance of particular ^{14}C dates only if they do not contradict archaeo-historical chronologies, or complained that ^{14}C dates are being selectively accepted and rejected based upon their support or confutation of a favored hypothesis. Still others have attempted to publish ^{14}C results that contradict archaeo-historical chronologies, only to see their papers rejected.

As for the Egyptian chronology, Keenan[5] offers the following opinion:

> 'Of course, it might be that there are errors in the archaeo-historical chronologies of the Ancient Near East. All such chronologies ultimately derive from (archaeo-historical synchronisms with) Egypt [Refs]. Hence, if there are errors in Ancient Near Eastern chronologies, then their genesis lies in Egyptian chronology. In fact, Egyptian chronology does not have secure foundations (Cryer 1995; Rohl 1995; Hagens 1996) [Note, per the earlier *TJ* debate, that Rohl is not the only scholar to question the Egyptian chronology]—and some workers have argued for revising it. Arguments have been made for both earlier and later dates.'

Fundamental C-14 dating assumptions violated

In order to understand Keenan's provocative hypothesis, the reader must first understand some basic assumptions of ^{14}C dating. Cosmic radiation is constantly striking nitrogen atoms in the upper atmosphere, and converting some of them into ^{14}C. The latter radioactive isotope becomes mixed, vertically and horizontally, throughout the atmosphere. The ^{14}C also works itself into the surface water of the oceans and, to a lesser extent, into deep waters. The whole process is illustrated in Figure 1.

The C-14 dating method thus assumes that virtually all living things are in equilibrium with the ^{14}C of the upper atmosphere. At any one instant of time, the ^{14}C content of the atmosphere, land areas, and upper ocean surfaces are assumed to be (and always have been) in mutual equilibrium. Whenever a living object exists on Earth, it should