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Galaxies Report

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[Updated 2/7/12]

Galaxies Summary

As late as the 1980's, when the Hubble telescope was being built, astronomers were very skeptical about how far more powerful telescopes would be able to penetrate deep space. Various factors led astronomers in this direction—the Big Bang theory, redshift issues, gravitations forces, etc. The people who built the Hubble telescope were told not to worry about seeing galaxies in deep space because it would not be possible. In 1977 a Scientific American article noted that astronomers estimated that there were about 10 million visible galaxies. Nonetheless, the authors of *The Urantia Book* (published in 1955) assert, “In the not-distant future, new telescopes will reveal to the wondering gaze of Urantian [Earth's] astronomers no less than 375 million new galaxies in the remote stretches of outer space.” Data collected by the Hubble telescope greatly increased earlier estimates. Currently, astronomers estimate that there are well over 100 billion galaxies.

Galaxies Review

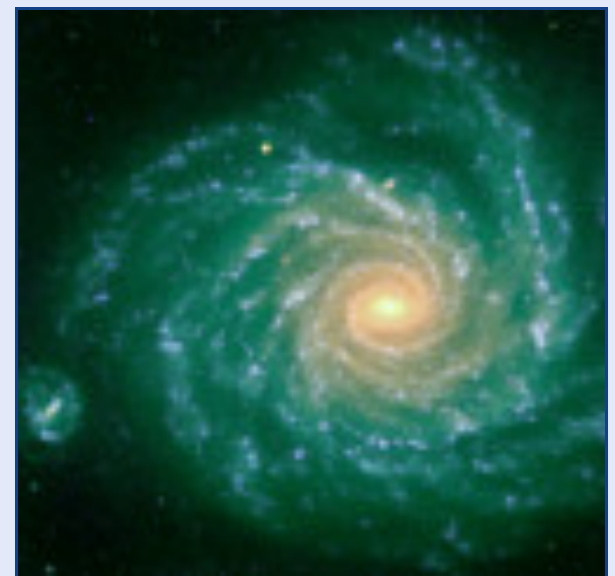
The Urantia Book, published in 1955, states:

In the not-distant future, new telescopes will reveal to the wondering gaze of Urantian astronomers no less than 375 million new galaxies in the remote stretches of outer space. At the same time these more powerful telescopes will disclose that many island universes formerly believed to be in outer space are really a part of the galactic system of Orvonton [the Milky Way Galaxy]. . . . [T]he periphery . . . is gradually expanding; new nebulae are constantly being stabilized and organized; and some of the nebulae which Urantian astronomers regard as extragalactic are actually on the fringe of Orvonton and are traveling along with us.(1)

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For decades after *The Urantia Book* was published, astronomers thought that there would be a limit to how far out into space we would be able to see. It was not generally assumed that the invention of more powerful telescopes would lead to the ability to see more and more galaxies. An *American Scientist* article in 2007 states:

In the 1930s, Richard Tolman proposed such a test, really good data for which are only now becoming available. Tolman calculated that the surface brightness (the apparent brightness per unit area) of receding galaxies should fall off in a particularly dramatic way with redshift—indeed, so dramatically that those of us building the first cameras for the Hubble Space Telescope in the 1980s were told by cosmologists not to worry about distant galaxies, because we simply wouldn't see them. Imagine our surprise therefore when every deep Hubble image turned out to have hundreds of apparently distant galaxies scattered all over it . . .(2)

The SPACETEC website provides a history on counting galaxies. It states:

What's really up in sky, was realized after finishing the first Palomar Observatory Sky Survey (POSS). This was the signal for scanning the skies systematically to catalogue different object classes. George Abell started in 1958, searching for rich clusters of galaxies - he found 2712. Vorontsov-Velyaminov and also Fritz Zwicky scanned the POSS for galaxies (all three by visual [sic] inspecting copies of the original plates). Vorontsov-Velyaminov and his coworkers published the data of 29981 galaxies in the Morphological Catalogue of Galaxies (MCG) between 1962 and 1974. Zwicky and his coworkers published the Catalogue of Galaxies and of Clusters of Galaxies (CGCG) between 1963 and 1968, containing 29378 galaxies and 9133 clusters of galaxies. Zwicky later wrote, that he has identified more than [sic] 1,5 Millionen [1.5 million] galaxies (cluster members included) on the POSS.(3)

In November 1977 *Scientific American* reported estimates were in the range of 10 million galaxies visible to a distance of 2,800 million light years.(4) In 1995 *Exploration of the Universe*, 7th ed. stated, “Our telescopes can see many billion of them within reach of modern instruments.”(5) Just a few years later *World Book Encyclopedia* reported that “Studies of distant space with optical and radio telescopes indicate that there may be about 100 billion galaxies in the universe.”(6)

The estimation of the number of observable galaxies continues to grow. The Hubble Space Telescope has been instrumental in expanding our appreciation for the vastness of the universe. Some researches even put the number of galaxies at over a trillion.(7)

This brief history demonstrates that, when *The Urantia Book* was published, the number of observable galaxies being estimated by astronomers was considerably less than 375 million. Additionally, the theory that we would eventually be able to see this many galaxies once we developed better telescopes was not in vogue. The estimation of visible galaxies exceeded 375 million a few decades—in the “not-distant future”—after *The Urantia Book* was published.

All contemporary estimates of the total number of galaxies are extrapolations from observations of a relatively small part of the celestial dome, not from direct observations. For this reason these numbers can only be expressed as rough estimates.

The term “outer space” has a specific meaning in *The Urantia Book*. Its comment about seeing “no less than 375 million new galaxies in the remote stretches of outer space” comes in Paper 12: *The Universe of Universes*. This section of *The Urantia Book* describes how there are seven inhabited “superuniverses,” each roughly equivalent to what we refer to as the Milky Way Galaxy:

Practically all of the starry realms visible to the naked eye on Urantia belong to the seventh section of the grand universe, the superuniverse of Orvonton. The vast Milky Way starry system represents the central nucleus of Orvonton. . . This great aggregation of suns, dark islands of space, double stars, globular clusters, star clouds, spiral and other nebulae, together with myriads of individual planets, forms a watchlike, elongated-circular grouping of about one seventh of the inhabited evolutionary universes.(8)

“Outer space” refers to currently uninhabited regions beyond the seven superuniverses that are being prepared and organized for future habitation. *The Urantia Book* says that there are currently four outer space levels.(9) The authors explain:

The Outer Space Levels. Far out in space, at an enormous distance from the seven inhabited superuniverses, there are assembling vast and unbelievably stupendous circuits of force and materializing energies. Between the energy circuits of the seven superuniverses and this gigantic outer belt of force activity, there is a space zone of comparative quiet, which varies in width but averages about four hundred thousand light-years. These space zones are free from star dust—cosmic fog. . . [A]bout one-half million light-years beyond the periphery of the present grand universe . . . [is] the beginnings of a zone of an unbelievable energy action which increases in volume and intensity for over twenty-five million light-years. These tremendous wheels of energizing forces are situated in the first outer space level, a continuous belt of cosmic activity encircling the whole of the known, organized, and inhabited creation.

Still greater activities are taking place beyond these regions. . . These activities undoubtedly presage the organization of the material creations of the second outer space level. . .(10)

The superuniverses are said to rotate opposite the first outer space level.

Although your spectroscopic estimations of astronomic velocities are fairly reliable when applied to the starry realms belonging to your superuniverse and its associate superuniverses, such reckonings with reference to the realms of outer space are wholly unreliable. . .

But the greatest of all such distortions arises because the vast universes of outer space in the realms next to the domains of the seven superuniverses, seem [to the purported celestial authors of *The Urantia Book*] to be revolving in a direction opposite to that of the grand universe. That is, these myriads of nebulae and their accompanying suns and spheres are at the present time revolving clockwise about the central creation. The seven superuniverses revolve about Paradise in a counterclockwise direction. It appears that the second outer universe of galaxies, like the seven superuniverses, revolves counterclockwise about Paradise.(11)

Physicist Chris Halvorson, Ph.D., who is also a *Urantia Book* scholar, considers the current estimates of the number of observable galaxies to be gross overestimates. He points out that distinguished astronomers—such as Halton Arp, Geoffrey Burbidge, and Margaret Burbidge—have published extensive evidence indicating that high redshift objects are not extremely remote, as most astronomers assume, and that younger objects have greater intrinsic (nonvelocity) redshifts. Halvorson thinks that this evidence suggests that the high redshift galaxies in the Deep Field images are not billions of light years away; they are only a few hundred million light years away (in what would be the second, not the third, outer space level, according to *The Urantia Book*). In addition, as described in *The Urantia Book*, the distribution of galaxies is not spherically symmetric: the levels are toroidal (doughnut-shaped). Together, these two ideas would imply that the current extrapolations—extrapolations to the entire celestial sphere of the number of galaxies in the very small angular areas of the Deep Field images—are huge overestimations.

Whether these considerations would reduce the estimate to a number near 375 million galaxies is yet unknown. Nonetheless, at this point in time, in all fairness, the only conclusion to reach based on the current and widely accepted estimates of the number of observable galaxies is that they are well in excess of the 375 million galaxies that *The Urantia Book* asserted in 1955 would be seen in the “not-distant future.” And it is noteworthy that such estimates were uncommon among astronomers when the book was published.

Documenting how new discoveries and scientific advances increasingly support *The Urantia Book* is an ongoing process. Specifically, the paragraph that foretold how many galaxies we would soon be able to see also said:

At the same time these more powerful telescopes will disclose that many island universes formerly believed to be in outer space are really a part of the galactic system of Orvonton [the Milky Way Galaxy]. . . . [T]he periphery . . . is gradually expanding; new nebulae are constantly being stabilized and organized; and some of the nebulae which Urantian astronomers regard as extragalactic are actually on the fringe of Orvonton and are traveling along with us.(12)

The authors of *The Urantia Book* use “island universes” and “nebulae” as synonym, consistent with

the transition in terminology from “island universes” to “nebulae.” The Wikipedia page on Galaxies states, “In 1750 Thomas Wright, in his *An original theory or new hypothesis of the Universe*, speculated (correctly) that Milky Way was a flattened disk of stars, and that some of the nebulae visible in the night sky might be separate Milky Ways. In 1755 Immanuel Kant introduced the term “island universe” for these distant nebulae.”(13)

If you are aware of discoveries that support these additional statements in *The Urantia Book*, please email the UBtheNEWS project with this information.

Footnotes:

- 1) [Urantia Book 12:2.3](#) References to *The Urantia Book* are formatted with respect to chapter (referred to as “Papers” in *The Urantia Book*), section, and paragraph. In this example, 12:2.3 refers to Paper 12, section 2, paragraph 3. The word “Urantia,” denoting Earth, is a coined word in the *Urantia Book*, with the etymological meaning “(y)our place in heaven.”
- 2) Michael J. Disney, “Modern Cosmology: Science or Folktale?”, *American Scientist*, September-October 2007, 385.
- 3) http://klima-luft.de/steinicke/Deep-Sky/deep-sky_e.htm
- 4) <http://www.urantiabook.org/archive/science/milkyway.htm>
- 5) Morrison, David, Sidney Wolff & Andrew Fraknoi. *Exploration of the Universe*, 7th ed. Philadelphia: Saunders, 1995: 7.
- 6) *World Book Encyclopedia*. Chicago: World Book, 1997: 205
- 7) <http://www.astro.uu.nl/~strous/AA/en/antwoorden/melkwegstelsels.html#13>
- 8) [Urantia Book 15:3.1](#)
- 9) [Urantia Book 12:1.3](#)
- 10) [Urantia Book 12:1.8,9](#)
- 11) [Urantia Book 12:4.14,15](#)
- 12) [Urantia Book 12:2.3](#)
- 13) <http://en.wikipedia.org/wiki/Galaxy>

Galaxies: Deeper and Broader

History of the New General Catalogue of Nebulae and Clusters of Stars

Covering from the late 1700's until present, this site lists who created the catalogues and indexes for nebulae and star clusters. It features a number of historical photographs and images.

http://klima-luft.de/steinicke/ngcic/history_e.htm

Cornell University, November 2000

How many known galaxies are there?

The site provides a brief answer to the question and links to additional information.

<http://curious.astro.cornell.edu/question.php?number=40>

HubbleSite, 1996: Hubble's Deepest View of the Universe Unveils Bewildering Galaxies across Billions of Years

Mankind's deepest, most detailed optical view of the universe — provided courtesy of NASA's Hubble Space Telescope — was unveiled today to eager scientists at the 187th meeting of the American Astronomical Society in San Antonio, Texas. The image, called the Hubble Deep Field (HDF), was assembled from 342 separate exposures taken with the Wide Field and Planetary Camera 2 (WFPC2) for ten consecutive days between December 18 and 28, 1995. . . .

<http://hubblesite.org/newscenter/archive/releases/1996/01/text/>

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