

# Re: Seeing in the Dark

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- *From:* oriel36 <geraldkelleher@xxxxxxxxxx>
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On Sep 23, 10:33 pm, Margo Schulter <mschul...@xxxxxxxxxxxxxxxxxx> wrote:

oriel36 <geraldkelle...@xxxxxxxxxx> wrote:

Galaxies,as seperate stellar islands,were observed in the mid 1920's and before that,the perception of stars scattered willy nilly throughout space was the only idea known to humanity.You should be laughing your socks off at Albert's idea for the structural universe given that he wrote it before Galctic structure and the seperation of these stellar islands was observed –

Hi, there, and thank you for an invitation to clarify some basic points regarding the history of astronomy and just what the "cosmological principle" does or doesn't mean.

First of all, while indeed the contributions of Hubble and others in the 1920's were indeed a dramatic watershed in galactic astronomy, I would consider it a total misconception to opine that before this breakthrough, there was only a "perception of stars scattered willy nilly throughout space."

So Margo,who would you like to attribute the discovery of galaxies to ?,tell me in what year did another observational astronomer,other than Hubble, determine that these giant rotating stellar islands known as galaxies are distinct from ours .I quite like the historical trajectory the way that it is but as this is a different era where even the history of discovery is flexible,even poor Edwin is not exempt –

"The universe goes beyond the Milky Way galaxy" "Hubble's arrival at Mount Wilson in 1919 coincided roughly with the completion of the 100–inch Hooker Telescope, then the world's largest telescope. At this time, the prevailing view of the cosmos was that the universe consists entirely of the Milky Way galaxy. Using the Hooker Telescope, Hubble identified Cepheid variables (a kind of star; see also standard candle) in several objects, including the Andromeda

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Galaxy, that, at the time were known as "nebulae" and had been assumed to lie within the Milky Way. His observations in 1923–1924 conclusively proved that these objects were much more distant than previously thought and were hence galaxies themselves, rather than constituents of the Milky Way. Announced on January 1, 1925, this discovery fundamentally changed the view of the universe."

[http://en.wikipedia.org/wiki/Edwin\\_Hubble](http://en.wikipedia.org/wiki/Edwin_Hubble)

Reading William Herschel's prefaces to the catalogues of 1786 and 1789 each containing 1000 nebulae observed by his sister Caroline Herschel and himself, would quickly dispel any such misconception.

What is it you wish to do, an intelligent person notes that before Hubble discovered galaxies in the mid-1920's, the Andromeda galaxy was known as the Andromeda Nebula and considered part of the Milky Way. Do you clearly understand the difference between an apparent concentration of stars within a galaxy as nebula and galactic structure itself. Good, you do, then let's move on or would you rather argue the point ?

He writes

as different types of nebulae or clusters as likely representing different stages of evolution in "sidereal systems," rather like plants in a garden at different stages of their life histories. Further, he proposes that universal Newtonian gravitation helps shape sidereal systems just as it shapes our own solar system.

Herschel is talking Nebula while I am talking from as a 21st century person who recognises galaxies, distinct stellar islands apart from our own Milky Way galaxy. When you decide to join me in the 21st century and acknowledge separate stellar islands then let me know. A mediocre person is patient Margo, a truly talented person learns to live with their impatience so if you wish to waste my time then let me know

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As to Albert Einstein:

As to Albert indeed !,I quite enjoy the hilarious pronouncements coming from that guy but favor dealing with Newton's original work where some damage was done and even further back to John Flamsteed where the real damage was done.

"There are stars everywhere, so that the density of matter, although very variable in detail, is nevertheless on the average everywhere the same. In other words: However far we might travel through space, we should find everywhere an attenuated swarm of fixed stars of approximately the same kind and density."

<http://www.bartleby.com/173/30.html>

Since even pre-1920's, Einstein was very likely aware of the variety of sidereal systems (Caroline and William Herschel had started their "sweeps for nebulae" in 1782-1783 as a result of her successes with modest instruments in finding new objects not catalogued by Messier), I would interpret his statement reasonably to mean that the universe is essentially isotropic on \_very large scales\_. So interpreted, its validity is enhanced rather than falsified by Hubble's wonderful discoveries, facilitated by Henrietta Swan Leavitt's cepheid period-luminosity correlation (whose centennial we will be celebrating 2008-2012).

Look,you did not find the passages from Albert to be genuinely funny so what can I say further .the lead in of those passages was the lament that light leaving stars (minus galaxies,remember !) would go to waste hence 'warped space' ect.I have'nt dealt with that material for years now but it still is as funny now as it was back then –

"This conception is in itself not very satisfactory. It is still less satisfactory because it leads to the result that the light emitted by the stars and also individual stars of the stellar system are perpetually passing out into infinite space, never to return, and without ever again coming into interaction with other objects of nature. Such a finite material universe would be destined to become gradually but systematically impoverished."

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It takes a very 'special' person to take Albert's reasons seriously but then again he give the guys in the early 20th century hope that they had escaped Isaac's clockwork solar system .

Funny,funny,funny !.

Indeed the real changes and surprises regarding our view of the universe \_are\_ humorous, but I'd see it as a benign Olympian laughter, the insight that comes from "standing on the shoulders of giants," with Newton and the Herschels not the least of these.

The Olypam laughter is that when you think you are standing on the shoulders of giants,make sure that Flamsteed is not one of them,the poor guy created a false correlation between axial rotation and constellational or 'fixed star' geometry,The early 20th century nonsense is a consequence of Flamsteed's error,not Newton's.

Today, as in the youthful Einstein's era, an isotropic universe at the largest scales does not imply a lawless or structureless universe. It's notable that Bishop Nicholas of Cusa, who in the mid-15th century proposed a stellar universe "whose center is everyone and whose circumference is nowhere," also took an interest in the concept of impetus, and came close to formulating Newton's First Law of Motion.

Newton was an Arian heretic which is why it is easy enough to work through his errors or rather his maneuvering with ease,he behave like an Arian in how he operates and the ends he seeks but as you are probably not Christian,I would not expect you to know this.

Nicolas of Cusa,in using that saying,was working with the contemplative Christian tradition for he approaches natural/celestial phenomena with the same respect as he approaches Spiritual matters.Contemplative Christianity is not sitting alone and pondering material,it means putting oneself in the cauldron where ideas are reduced to a molten state before they reform.The center of Cusa's life is a life of love and not knowledge,I know this because he uses an author that is beloved by all Christians from the contemplative tradition notwithstanding that you can be both a denominational Christian and a contemplative Christian simultaneously. Kepler marked contemplative astronomy as the highest form of the discipline and so it remains.

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The 'laws' of Newton are just old testament 'moral laws' rewritten for an audience suited to consider nature, celestial and terrestrial in those terms, a weak form of gnosticism in other words. The thing is that Newton's followers extract the pseudo-religious element of Newton, impose an astrological element and being neither religious or scientific, exist in a very anonymous and unstable state between science and matters of faith. It shows in the way you act as one voice with no distinction between one or another.

Those guys were arguing without the benefit of modern imaging techniques and powerful magnification, I use modern imaging to dispel most of the junk that surrounds the great astronomical insights, and especially the Copernican/Keplerian insights, yet I have to find an individual who can think like an individual and depart from worshipping mathematicians who can't reason properly with astronomical material, even with images in front of them.

Actually the advent of photographic imaging and spectroscopy in the middle to late 19th century paved the way for lots of discoveries, including, critically, Leavitt's. The emerging concept of the main sequence provided one line of argument for Shapley and Curtis, while the cepheid "standard candle" helped neatly to resolve the controversy. Maybe if Leavitt had had better support to follow through on her germinal research and papers of 1908–1912, she might have helped to reach Hubble's conclusion on spiral nebulae as external galaxies before 1920.

Maybe I'm biased as a visual observer <grin>,

In the 1920's when these giant stellar islands were discovered it should have consigned the exotic nonsense of relativity to oblivion, instead they simply went from 'stars everywhere' to galaxies everywhere' and kept on talking as if nothing happened. Magnification is a facet of astronomy but only a facet, putting those images into correct context makes a person an astronomer.

but I think we should

applaud and celebrate the tentative conclusions drawn by an astronomer such as William Herschel in seeking out "the construction

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of the heavens" and the application of universal gravitation to sidereal as well as planetary systems as well as the technology of the times would permit.

Most appreciatively,

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Presently you are not doing the Herschel's any favors, in fact you are undermining their achievements along with Edwin Hubble and all the other minor astronomers. The trajectory of discovery of galaxies as separate stellar islands to our own is truly a 20th century observational achievement that cannot be forced back into the late 18th century, you can try if you wish, but this is why I am correct in seeing nothing but astrologers here, at least for the moment.

I can take people like Isaac apart because he was at least consistent in his maneuvering whereas the early 20th century notions are mere trivia, something that can be found easily in the late 19th century excellent sci-fi novel by H.G. Wells. If you wish to die believing that a science fiction novel imposed on natural phenomena then there is little I can say –

"Really this is what is meant by the Fourth Dimension, though some people who talk about the Fourth Dimension do not know they mean it. It is only another way of looking at Time. There is no difference between time and any of the three dimensions of space except that our consciousness moves along it. But some foolish people have got hold of the wrong side of that idea. You have all heard what they have to say about this Fourth Dimension?" 1898

<http://www.bartleby.com/1000/1.html>

Last week I give you a new motion to look at, the orbital change in orientation of the planet attached to orbital motion, it is tricky enough to discern the motion save that Herschel's discovery of Uranus and the extreme difference between axial and orbital orientation helps ease the perceptual difficulty. Now that, Margo, is how you praise the Herschels –

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[http://astro.berkeley.edu/~imke/Infrared/UranusAo/ur\\_time\\_2001\\_2005.jpg](http://astro.berkeley.edu/~imke/Infrared/UranusAo/ur_time_2001_2005.jpg)