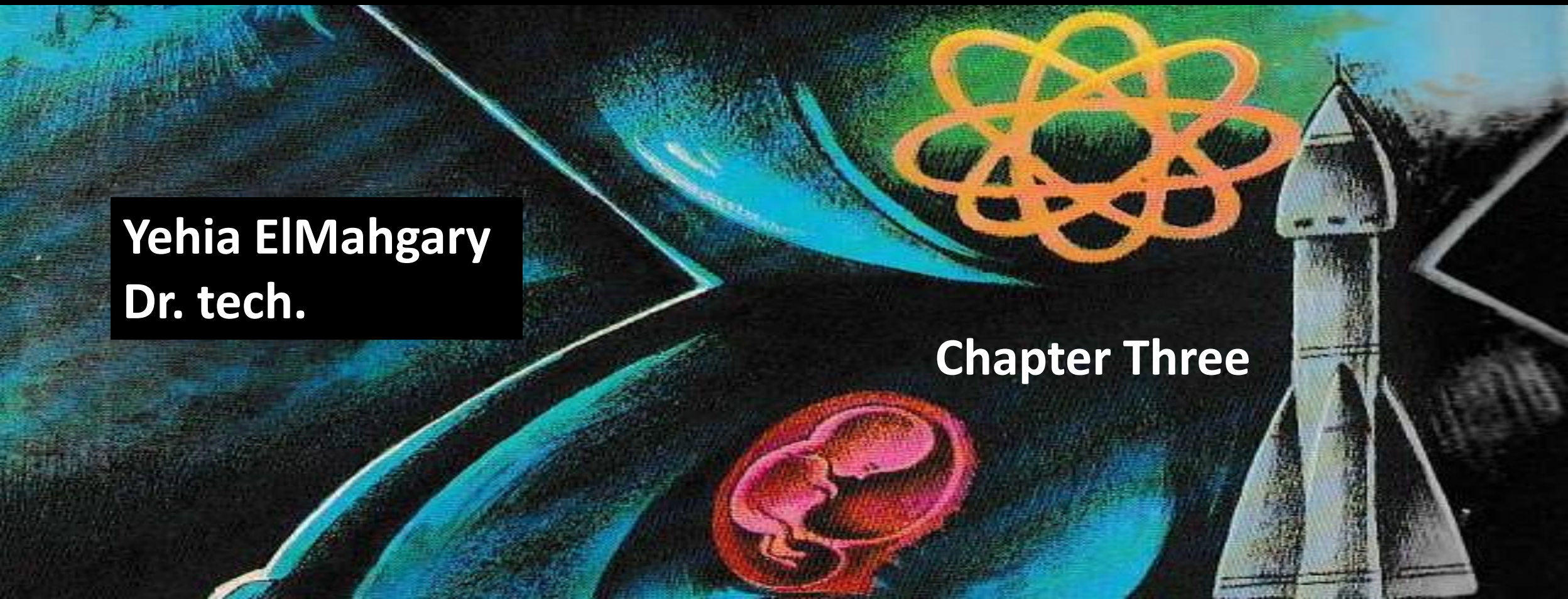


VERSES OF QUR'AN IN THE NICHE OF SCIENCE

Yehia ElMahgary
Dr. tech.

Chapter Three



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

IN THE NAME OF ALLAH THE MOST GRACIOUS THE MOST MERCIFUL

Chapter Three

Celestial Objects

The Qur'an Verses“

• هُوَ الَّذِي جَعَلَ الشَّمْسَ ضِيَاءً وَالْقَمَرَ نُورًا وَقَدَّرَهُ مَنَازِلَ لِتَعْلَمُوا عَدَدَ السِّنِّينَ وَالْحِسَابَ (يونس 5)

• “It is He who made the sun a shining thing and the moon as a light and measured out for it stages that you might know the number of the years and the reckoning.” (10/5)

• وَجَعَلَ الْقَمَرَ فِيهِنَّ نُورًا وَجَعَلَ الشَّمْسَ سِرَاجًا (نوح 16)

• “And has made the moon a light therein, and made the sun a lamp.” (71/16)

• لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَلَا اللَّيْلُ سَابِقُ النَّهَارِ ۚ وَكُلٌّ فِي فَلَكٍ يَسْبَحُونَ (يس 40)

• “It is not for the sun to overtake the moon, nor does the night outstrip the day. They all float, each in an orbit.” (36/40)

• وَالشَّمْسُ تَجْرِي لِمُسْتَقَرٍّ لَهَا ۚ ذَلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ (يس 38)

• “And the sun runs on its fixed course for a term (appointed). That is the decree of the All-Mighty , the All-Knowing.” (36/38)

• وَالنَّجْمِ إِذَا هَوَىٰ ، مَا ضَلَّ صَاحِبُكُمْ وَمَا غَوَىٰ (النجم 1 – 2)

• “By the star when it falls/collapses. Your companion (the Prophet) has neither gone astray nor erred.”(53/1 - 2)

• وَالسَّمَاءِ وَالطَّارِقِ ، وَمَا أَدْرَاكَ مَا الطَّارِقُ ، النَّجْمُ الثَّاقِبُ (الطارق 1 – 3)

• “By the Heaven and the Knocker, and what will make you to know what the “Knocker” is? It is the piercing star.” (86/1 – 3)

• فَلَا أُقْسِمُ بِالْخُنَّسِ ، الْجَوَارِ الْكُنَّسِ (التكوير 15 – 16)

• “So verily, I swear by the stars that recede/disappear, and sweep as dark slaves.” (81/ 15 – 16)

وَجَعَلَ الْقَمَرَ فِيهِنَّ نُورًا وَجَعَلَ الشَّمْسَ سِرَاجًا (نوح 16) هُوَ الَّذِي جَعَلَ الشَّمْسَ ضِيَاءً وَالْقَمَرَ نُورًا وَقَدَرَهُ مَنَازِلَ لِتَعْلَمُوا عَدَدَ السِّنِّينَ وَالْحِسَابَ (يونس 5)

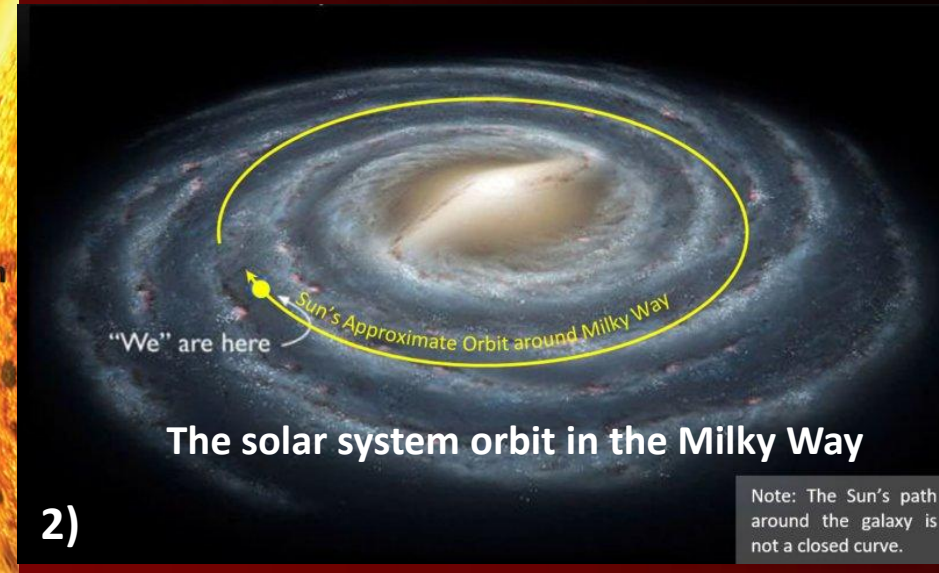
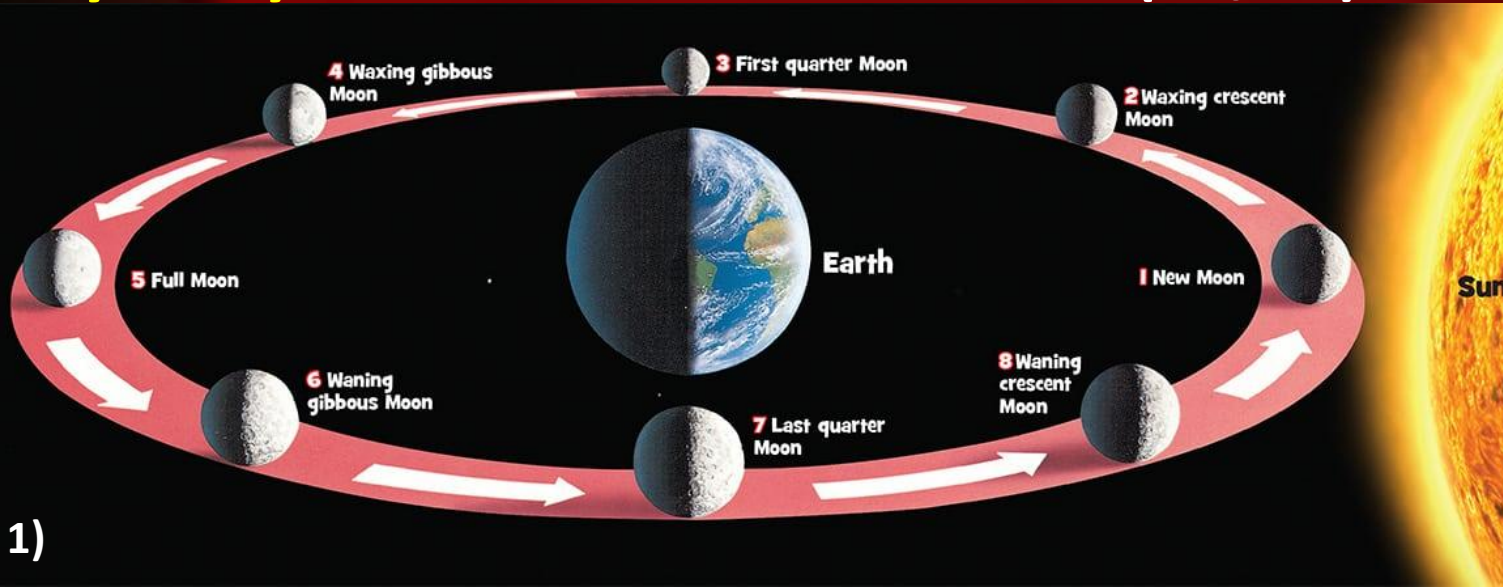
“And has made the moon a light therein, and made the sun a lamp.” (71/16). “It is He who made the sun a shining thing and the moon as a light and measured out for it stages that you might know the number of the years and the reckoning.” (10/5)



In these verses God Almighty has differentiated between the sun as a source of light, “the shining thing”, and the moonlight reflected from the sun. With the help of the moon’s movement, “the stages”, we can count the months and the years. Some civilizations depended, and still depend, on the lunar calendar.

لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَلَا اللَّيْلُ سَابِقُ النَّهَارِ ۗ وَكُلٌّ فِي فَلَكٍ يَسْبَحُونَ (يس 40)

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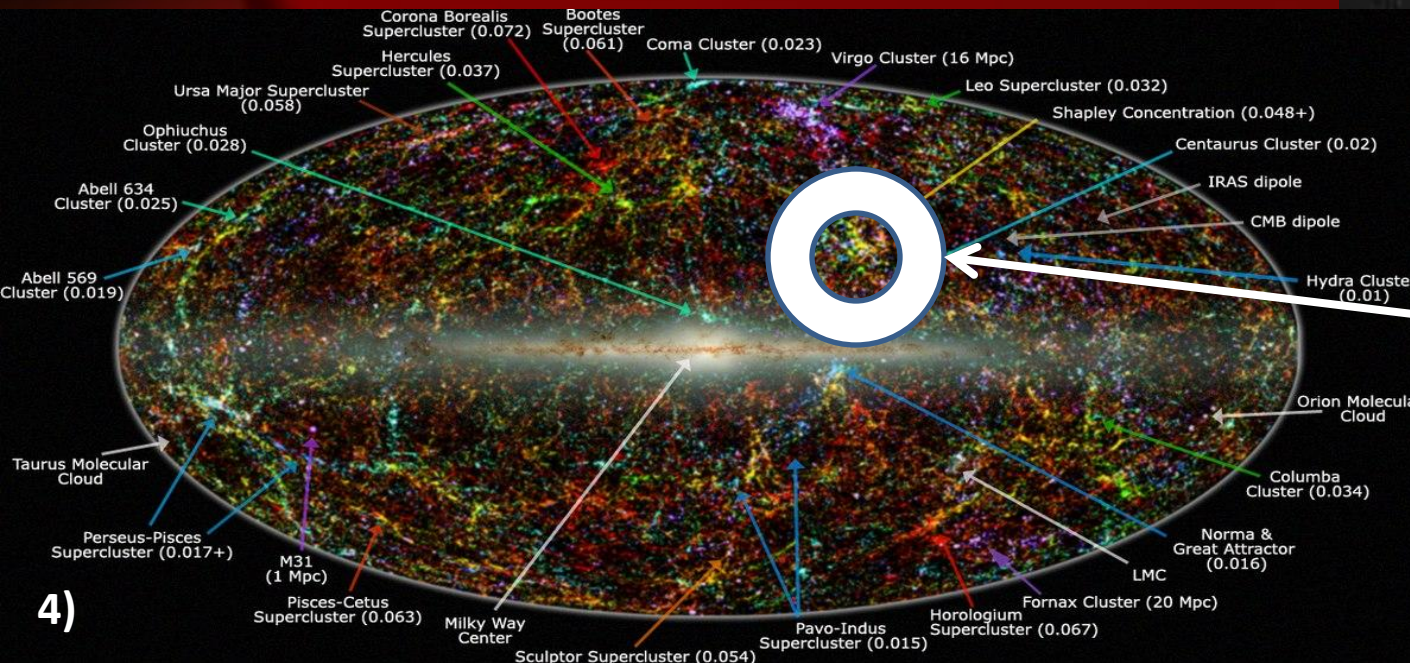


❖ It has been known for centuries that the moon is orbiting the earth once every 29.5 days. This is the lunar month.

❖ On the other hand, the orbit of the sun around the centre of the Milky Way was discovered only last century, though it was mentioned in the Qur'an 14 centuries ago. The galactic year, which is about 240 million years, is the time it takes for the sun to complete one round about the centre of the galaxy, as the distance between the sun and the centre of the galaxy is about 26,000 light years.

وَالشَّمْسُ تَجْرِي لِمُسْتَقَرٍّ لَهَا ذَلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ (يس 38)

“And the sun runs on its fixed course for a (appointed) term. That is the decree of the All-Mighty , the All-Knowing.” (36/38)



The motion of the sun is not described here by orbiting or by floating, but by running, i.e., moving forward in what could be a straight line, in addition to orbiting around the centre of the galaxy. The Milky Way, with our solar system in it, is moving towards the Great Attractor (a massive cluster of galaxies near Shapley Supercluster) with a speed of about 630km/s. This was confirmed in 2005.

The Birth and Death of Stars

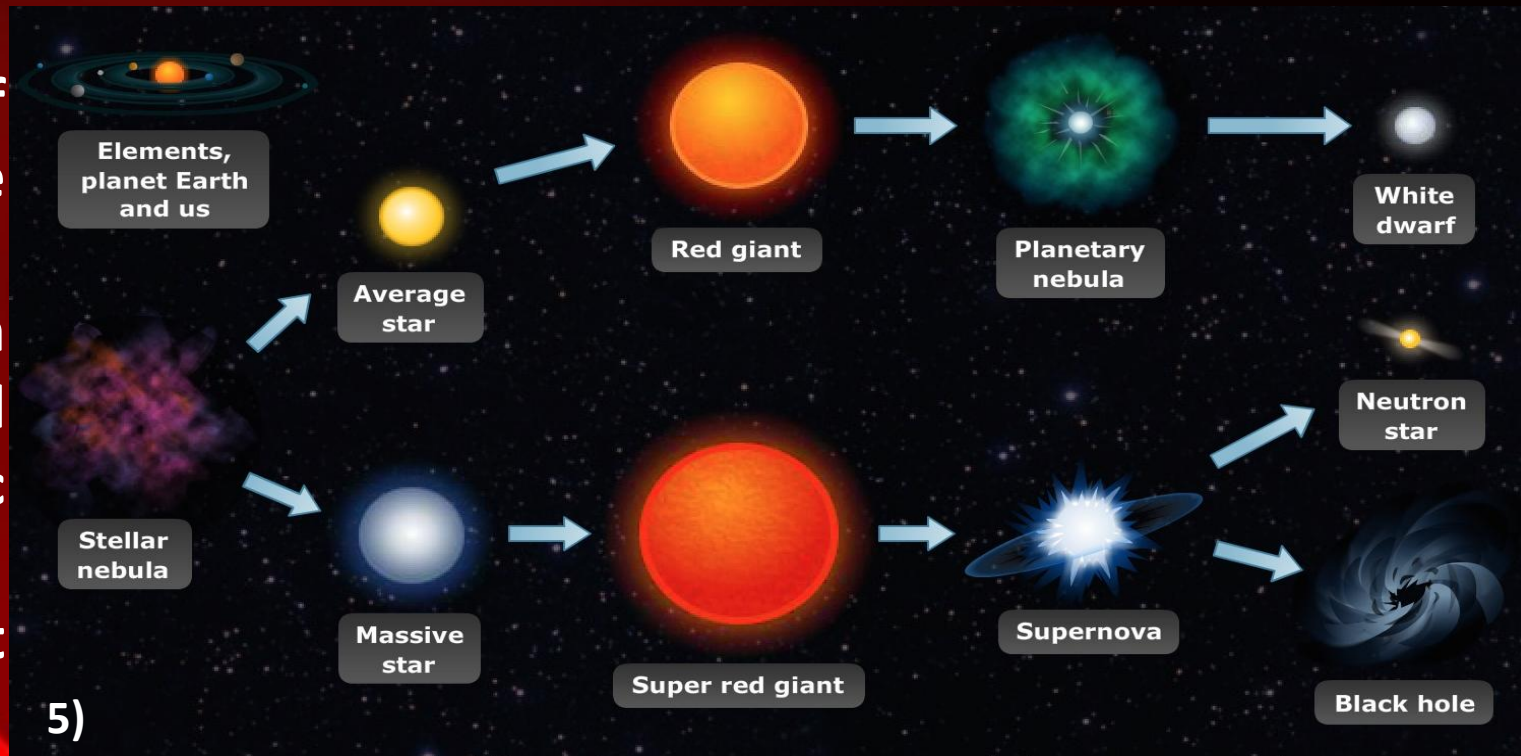
1. The first stage of a star's lifecycle is the nebula, a huge cloud of hydrogen and dust present in the universe.

2. Particles gather slowly and form a large, hot disc. Due to heat and pressure, the matter in the disc fuses to form a protostar.

3. After a Protostar is formed, it takes about 100,000 years to reach

the main sequence and the lifecycle of a star. The life cycle is then split into three categories depending on their size.

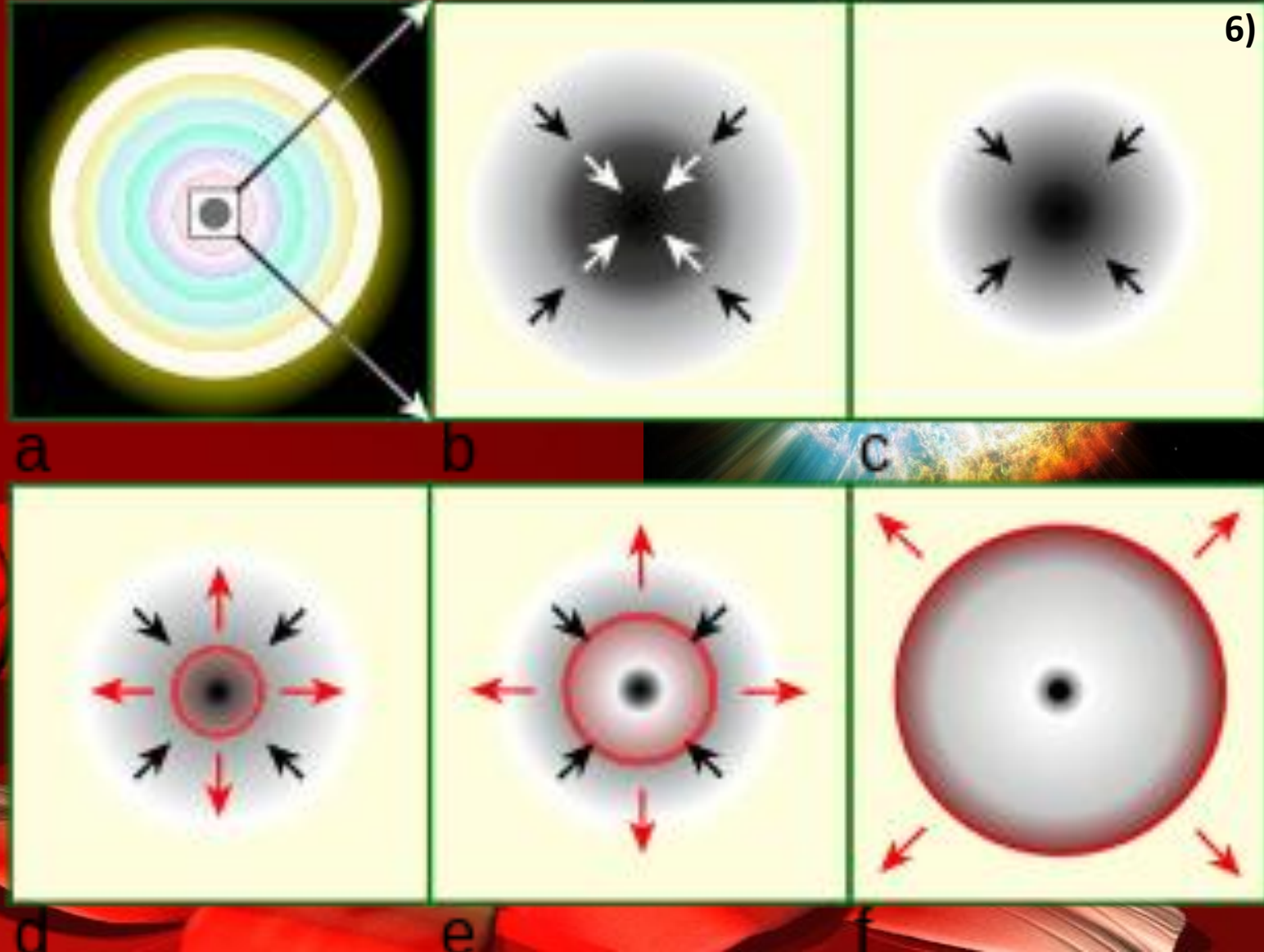
4. If the size of the star is no more than 1.43 the size of the sun, it turns into nebula and ends up as a white dwarf. If its mass is more than 1.43, it becomes a supernova and then a neutron star, if its mass is less than 3 the mass of the sun. If its mass is more than 3 times the mass of the sun, the supernova becomes a black hole.



وَالنَّجْمِ إِذَا هَوَىٰ ، مَا ضَلَّ صَاحِبُكُمْ وَمَا غَوَى (النجم 1 - 2)

•“By the star when it falls/collapses. Your companion (the Prophet) has neither gone astray nor erred.”(53/1 - 2)

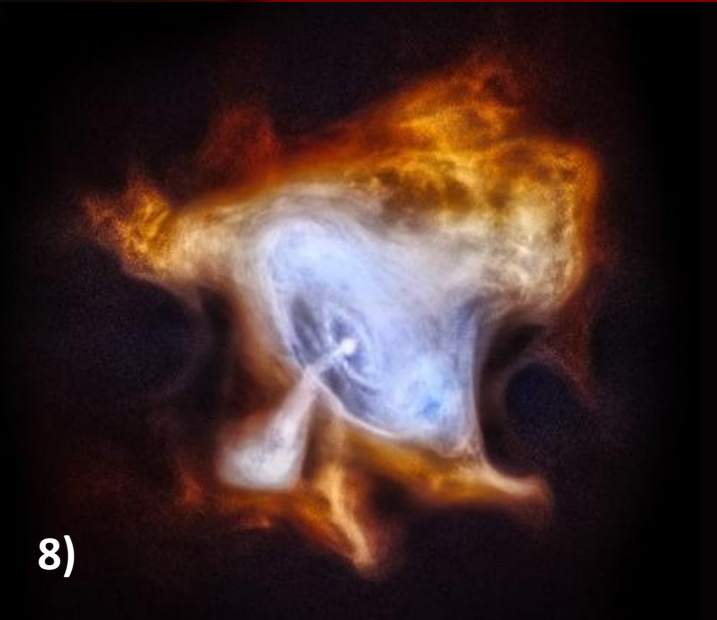
The falling, or the collapsing, star is most probably the Super Nova, which is a powerful and luminous stellar explosion. It occurs mostly when the nuclear fusion reaction in the core of the star ends by the formation of iron (a). The nuclear fusion becomes unable to sustain the core against its own gravity. It collapses inwards on itself with velocities reaching 70,000 km/s (b). The inner part of the core is compressed into neutrons (c), causing infalling material to bounce (d) and form an outward-propagating shock wave (red). The shock starts to stall (e) and the surrounding material is blasted away (f), leaving only a degenerate remnant. The Creator vows with the phenomenon of a Collapsing Star.



6)

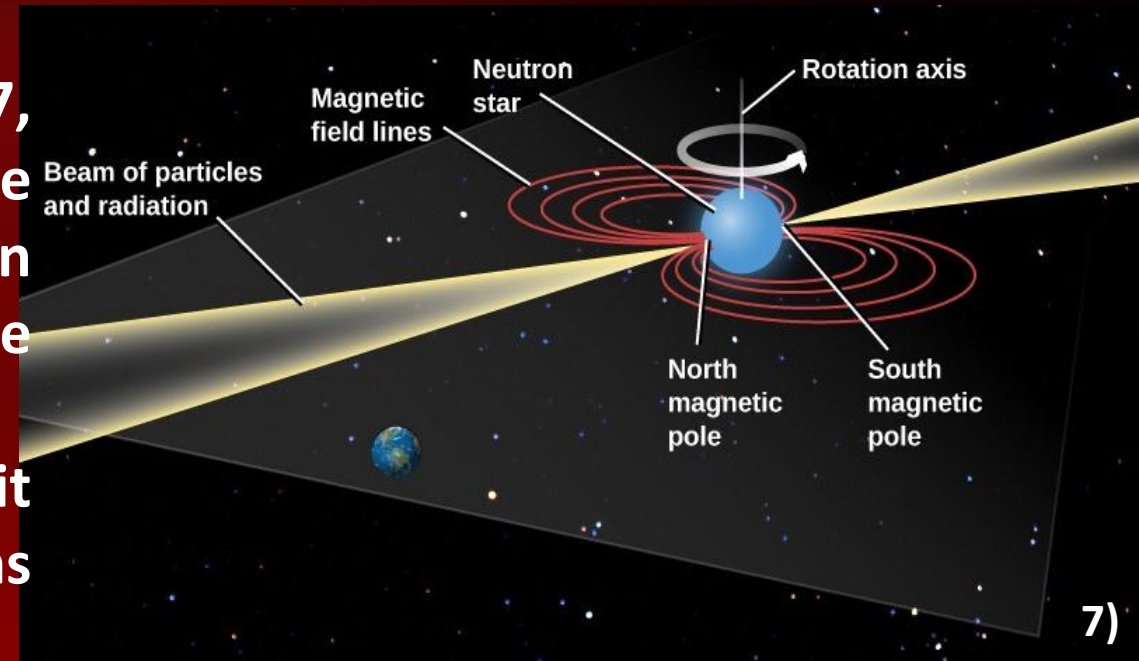
وَالسَّمَاءِ وَالطَّارِقِ ، وَمَا أَدْرَاكَ مَا الطَّارِقُ ، النُّجْمُ الثَّاقِبُ (الطارق 1 – 3)

“By the Heaven and the Knocker, and what will make you to know what the “Knocker” is?
It is the piercing star.” (86/1 – 3)



8)

As we saw in slide 7, one outcome of the supernova is a neutron star, which has three important properties:
1) It is a star. 2) When it rotates, it emits beams of radiation from its



7)

magnetic poles (pulsar). These beams generate radio pulses, which resemble knocking, that can be detected with radio telescopes on earth. 3) Neutron stars have a radius of the order of 10 km and a mass of about 1.4 solar masses. They are so dense, that a normalized matchbox containing neutron-star material would have a weight of about 3 billion tonnes. This huge density would pierce any other celestial object (except the black hole), if it collided with it. This makes the neutron star (pulsar) the best interpretation of the “Knocker”.

فَلَا أُقْسِمُ بِالْخُنَّسِ ، الْجَوَارِ الْكُنَّسِ (التكوير 15 – 16)

So verily, I swear by the stars that recede/disappear, and sweep as slaves do” (81/ 15 – 16)



When the mass of the Red Giant is more than 3 solar mass, the supernova collapses into a Black Hole. A black hole is a region of spacetime, where gravity is so strong that nothing — no particles or even electromagnetic radiation, such as light — can escape from it. The gravity on the surface of a black hole is about 1500 billion times that on the earth’s surface. After a black hole has formed, it can continue to grow by absorbing mass from its surroundings. This looks like sweeping anything around it, as “slaves do”. Also, the descriptions given in the above verse, viz., a disappearing and sweeping star, do apply to the black hole. The picture in the middle is the region around the super massive black hole at the center of the M87 galaxy, as seen in radio, visible and X-ray wavelengths by the ALMA telescope array, NASA’s Hubble and Chandra space telescopes, respectively. (Image credit: The EHT Multi-wavelength Science Working Group; the EHT Collaboration; ALMA (ESO/NAOJ/NRAO); and others.). The picture on the right is the first picture taken to a black hole.

Summary of Chapter 3

- ❖ We tried in this chapter to find scientific interpretations to Qur'anic verses about Celestial Objects. We noted that the Creator has differentiated between the direct sun light, which is compared to the lamp light, and the indirect light of the moon as well as the rest of the planets, which only reflect the sun's light.
- ❖ The verse about the orbits of the moon and the sun were explained. In addition to the sun orbiting the galaxy centre, the whole galaxy (including the sun and planets) moves towards the Great Attractor.
- ❖ After explaining the birth and death of stars, we interpreted three different verses dealing with stars. Firstly, the collapse of a star as the Super Nova phenomenon. Secondly, the "Knocker" as the Pulsar (Neutron star) and thirdly, the disappearing and sweeping star as the Black Hole.

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