

U3A-GROUP ASTRONOMY (29-6-2007)

BAD ASTRONOMY

(Book – by Philip Plait about astronomical wrong ideas and misconceptions). Some examples:

The Big Moon (and Sun) Illusion

Moon and Sun, when low near the horizon, look much bigger than when they are high up in the sky.

There are various explanations:

1. When the Moon is near the horizon, it's nearer to us.
Wrong: the variation in distance is never larger than about 10%.
2. Atmosphere works as a lens. Low Moon → longer way of rays through the atmosphere → Moon 'enlarged'.
Wrong: rays from lower part of the Moon are bent a bit more than from the top → Moon looks 'flattened' = smaller!
3. Low Moon looks bigger because we compare it to trees, buildings etc.
Wrong: low Moon in the desert or at sea or seen from a plane also looks bigger.

So the apparent difference in size is just an illusion. There is no generally accepted explanation. It must be something psychological, a 'trick of the brain', but nobody knows exactly how it works.

The 'planetary alignment' disaster of 2000

Many people believed that a huge astronomical disaster would take place on 5/5/2000, with the total annihilation of the Earth as a possible result. Cause would have been *planetary alignment* (a number of planets located in one small part of the sky as seen from the Earth). Their combined gravitational pull would cause havoc on Earth: earthquakes, huge floods, gales etc. Nothing happened, as gravitation gets weaker very quickly with distance. There have been 13 planetary alignments over the past millennium alone, and never the Earth was destroyed! Next alignment in 2040.

The Moon-landing hoax

Many people have doubts that there were ever men on the Moon and believe that the whole *Apollo project* was a NASA-hoax. NASA were in trouble when shortly before the launch of *Apollo-11* a technical fault was discovered, but didn't want to cancel the project. So it was decided in the last minute to launch a dummy rocket, while the astronauts were quickly transported to a hastily assembled movie set in the Nevada desert, where they 'played' the Moon-landing. The hoax believers tell us that proof for their ideas is in the photographs:

1. There are no stars visible on any of the photographs.
Answer: matter of exposure time, which had to be very short in order not to over-expose the astronauts and their instruments in the very bright sunlight – too short to see stars.
2. There was dust visible around the *Lunar Module* (footprints!). The LM-rocket, used during the landing, would have blown all the dust away in a large area below and around the LM.
Answer: As there is no air on the Moon, the dust was only blown away directly under the rocket, but not further away from it (no 'wind' to transport it).

They further pointed out – among many other things - that:

3. The astronauts could never have survived the dangerous radiation in space.
Answer: The quantity of radiation to which the astronauts were exposed was very small, given the short time and the protection given by the space vehicles and suits.
4. The astronauts could never have survived the temperatures, which can reach up to 120° C.
Answer: these extreme temperatures occur only at 'mid-day', which is in the middle of the approximately 2 weeks lasting 'day' on the Moon. But the lunar landings were always planned early in the lunar day, when the Sun was low (see the long shadows in all the photographs).

Astrology

Basic idea: The arrangement of stars and planets at the time of our birth effects our lives, mainly through forces based on gravity. But the gravitational pull from planets and (certainly) from stars is minimal at Earth.

"Astrology is a pseudoscience based on ideas that are scientifically unsound and dismissed by the majority of rational people". (Philip's Astronomy Dictionary)

However, through the centuries astrology stimulated the study of the skies and as such the development of astronomy.