

"Optical Illusions" by Bob Turner F.R.A.S, a review of our January 2018 talk by **Wendy Knaap**

" The Eye sees all, but the Mind shows us what we want to see " - William Shakespeare.

Back by popular demand, Bob sailed into port, disembarked and left one adventure on the high seas, where he gives educational talks on board cruise ships ...to take us on another fascinating adventure!

- Discovering how our Brain works and how our Eyes and Mind play tricks with our Brains. These are the Optical Illusions. 'Perception of what we see and what our brain is telling us'.

Bob started off the evening presentation by showing us an Engraving by Hogarth. As we looked at it, Bob explained there were 28 flaws in the artwork. The perspective was terribly inaccurate and contents not in proportion, which wasn't obvious at first sight and by staring at it for a longer amount of time we realised that many things were out of place, yet on the first sighting the image depicted what appeared to be a typical village scene from a bygone age.

..This is because our brain fills in the gaps. Our eyes are the doorways to the brain. We learn to see from the time we are babies, following shapes and bright lights. We do not actually see with our eyes! We see with our brain. The brain decides what we see - when viewing a subject in front of us, in reality the image is upside down, yet transmits as being the correct way up. Our brain is a storage area of thousands of objects and images that we have learned about during our Life.

We see mainly in black and white and the Electromagnetic Spectrum determines how we see in colour, yet some people are 'colour blind' and cannot see the same colours that the rest of us do. Rods and cones are to be found in our retinas and we have more rods than cones, enabling us to see better in dark light. The colour disappears at night time and we view shades of black and white or grey. Street lighting can illuminate the background allowing us to make sense of what is in the foreground. Rods are not sensitive to red light.

We have to decide what we are looking at!.. Bob showed us an example of a photograph of the Moon. There appears to be 'a Face on the Moon!' but in fact it is a Mountain. This is because our brain creates images of what it sees or changes the images of what is seen. A clump of black dots on a white background appeared to be a 'dalmation dog' as we try and make sense of an image through a memory of a familiar subject. But a dog was not there! We think we can see faces and mysterious objects in cloud formations too.

Artists can use these Optical Illusions to their own advantage and create realistic looking images, such as giant pot-holes in the ground with people climbing in and out of them in an unexpected place. These are fantasies but look so convincing. Bob showed us further examples, with sketches and objects positioned in a certain way, that causes the brain to decipher and switch between the different ways of interpreting them. The same subject placed in a fixed position can look entirely different from the way the mind can see it - and in many ways with a prolonged viewing; the brain becomes so puzzled and confused that it does not know how to make sense of it at all!

The ability to gage or distinguish distance and relative size is known as Stereoscopic Vision, which we possess - but we can also see what's not there! We were shown a picture of a grid and after gazing at it for a short while, we noticed that black dots 'appeared' randomly on the grid. They were not there. You wonder what tricks your brain is playing on you. Bob showed us various images of stairs that appeared to be going down, along .. Or was it Up?! Rooms with different size walls yet appeared to join and match perfectly ! even with the stairs leading to nowhere ! We focused on another object which seemed to resemble a skull at first, but then our minds switched to make it appear as something unrelated and totally different.. a basket balloon!

Giovanni Shiaparelli Astronomer, during the opposition of Mars in 1877 thought he had observed Canals on Mars. So did Lovell have similar thoughts...Rats, Mermaids, Street lights - and more apparitions were 'spotted' from funny shapes on the red planet. Our Brain tries to make sense of what it sees. The 'Coalsack Nebula' which is part of the galaxy of countless stars, is difficult to

analyse. Looking at a photograph with a lot of depth we do not know which parts are the nearest distance to us, or which stars are between us and the galaxy. We make up our own ideas - We see what we want to see.

Viewed from the Hubble Space Telescope, vast clouds of gas take on the shape of a Rotating Tunnel and The Eagle, Horsehead and Hourglass Nebulae were so named as our mind sees familiarity within these images. The Southern Crab Nebula also resembles a Diabalo as two cone-like shapes face each other with an ongoing energy force taking place between them!

At the end of what was an enlightening and entertaining evening, Bob asked us to close our eyes and try to visualise the colour of the carpet in the room we were in, as well as the adjoining room. There were various replies - a mix of right and wrong answers. Our imagination plays a large role in this perception.

We went home with plenty to think about, knowing that we are using our Brain for seeing..Not our eyes!

Wendy Knaap