What hallucination reveals about our minds ~ Oliver Sacks

The author begins by describing hallucination and how it is different from imagination and normal perception in the sense that they're sudden, change rapidly, and are not under complete conscious control to be manipulated. He describes one of her patient who was blind completely and suddenly started to see things not present in reality. This is a type of hallucination associated with visual cortex impairment called Charles Bonnet Syndrome. Charles Bonnet first discovered this in the 18th century when observing his grandfather exhibiting abnormalities of describing seeing things that aren't there. Sometimes the same hallucination will repeat, a situation called "palinopsia". Another of her patient had a tumor in the occipital cortex and would describe seeing Cartoons, especially the Kermit Frog. What is common in all these cases, that their hallucination would not include them or address them anytime, this is different from psychotic hallucinations, in which the whole hallucination is about hurting, accusing, or humiliating the person itself. So Charles Bonnet Syndrome would mostly include deformed faces, cartoons, deformed physical structures, etc. unaddressed from the actual person. About ten percent of the visually impaired people the author has analyzed have visual hallucinations, the same percentage of mapping between hearing impairment and musical hallucinations. Using fMRI we're better able to track the activation regions corresponding to hallucinations. Like there are temporal lobe hallucinations, in which the person would feel like went back in time, and feeling all sorts of emotions, for known people. Geometric hallucinations may occur due to abnormality in the primary visual cortex, which is responsible for edges and pattern detection. And then there's this area fusiform gyrus in the temporal lobe and damage to it renders people incapable to recognize faces. There are different areas in the fusiform gyrus for different functions like for teeth and eye representation, for facial expression recognition, for cartoons, etc. Abnormality to any of these areas may render hallucinations as well, e.g., damage to teeth and eye region may render hallucinations with deformed teeth, eyes. In fact, not only regions, functions are specific to cells as well, e.g. face cells(encoding the facial expressions), Jennifer Aniston Neurons(activated on Jennifer Aniston pictures), etc. So, in visual cortex and its following parts in the temporal lobe, are responsible for vision tasks, such as recognizing the image, etc. only after they pass signals onto higher levels of the brain that they're being connected to person's emotions and memory and it is when these areas are abnormal is that the person's experiences tweaked perception-visual hallucinations. In Charles Bonnet Syndrome the signal never goes to higher levels, this for one reason explains why there's no personal addressing in the hallucination, and for other that those visual deformities in the hallucination come from visual deciphering areas. Charles Bonnet back 250 years expressed his awe for this wonderful mechanism of the brain to form visual imagery or film, and now with advanced technology we're closer to understanding the spectacular mechanism..