Assignment 2: Secrets of the Mind

1. The phantom limb syndrome is the feeling of the brain still registering the amputated limb or any part of the body (except for the brain) as if it's still attached.

2. Dr Ramachandran has concluded that there is a complete map of the surface of the body in the brain; the left side of the body is mapped along the right somatosensory cortex and vice versa. Every point of the body surface has a corresponding point on the body map in the somatosensory cortex, thus the representation of the face area is next to the representation of the hand area. Derrick can feel his phantom left hand when his cheek is touched because since there is no more sensory information for the hand area, the face area expands and takes over the empty hand area to provide sensory information to the empty "hungry" hand area.

3. On the proof of the Dr Ramachandran's theory, there has been new theories that pathways connecting the areas are made or the connections were already there in reserve and only become active when an amputation happens.

4. The mirror box helped trick James's mind that his phantom hand was there again and so he could "unclench" his phantom hand by visually seeing a copy from his left hand.

5. Dr Ramachandran meant with that quote was that signals are being sent from the brain to the limb, and signals are sent back from the limb as it responds; when the limb is amputated, there is no more feedback signals from the limb but the brain still sends signals to the amputated limb, thinking that it's still there.

6. Blindsight allows people who are blind to respond to things they do not consciously see.

7. The main visual centres in humans occupy nearly half the brain, in a large region towards the back of the brain.

8. There is not one pathway from the eyeball to the occipital lobe, there are multiple pathways which provide different aspects of vision. One pathway goes from the eyeball, through the thalamus to the visual cortex of the brain and that equals to visually seeing. The other - evolutionary older – pathway goes through the brain stem and gets relayed to the higher centres of the brain; that equals to reflexive behaviour.
   People with blindsight have the visual cortex pathway damaged but their reflexive behaviour is still intact so they cannot consciously see but they can react to stimuli – if something is moving or orientating.

9. Visual neglect is when part of one's vision does not register to them because their parietal lobes are damaged. The parietal lobes are to create a 3D representation of the layout of the world, allowing a person to navigate without bumping into things. Due to their 3D representation being damaged, it also births the problem of one's spatial look of their memories and how its warps the way their world is viewed.

10. The "How Pathway" is mainly concerned with navigation and it leads from the main visual pathways to the parietal lobes. The "What Pathway" is concerned with recognising the object and it leads from the main visual areas to the temporal lobes.

11. The Capgras Syndrome is the delusion that a person or place has been replaced with an exact replicate, so an imposter.

12. David did not believe that his parents were real in person because when he was visually seeing them, there was no emotion connected to the vision due to his amygdala (visual cortex → temporal lobes → amygdala) being severed; and since he was not feeling any emotion to those people, David concluded that they were imposters. However, since there is a separate pathway in the temporal lobe for the auditory cortex to the amygdala, David feels emotion when hearing his parents' voice without seeing them and he concludes that since he feels emotion when hearing them, they are real now.

13. When John has temporal lobe epileptic seizures, he asks a lot of philosophical questions, everything feels surreal, he feels he is omnipotent and triggers a lot of spiritual feelings.

14. John has a high emotional intensity after the seizures, highs and lows. The patient does not understand the extreme range of emotions due to an epileptic temporal lobe and thus concludes the fact that God has visited them.
    Another explanation is the way how temporal lobes are constructed to deal with the world emotionally; the way one determines what is important and not is how the temporal lobe and amygdala interact with each other – how emotionally salient something is to you. One with temporal lobe epilepsy disrupts that salience and makes everything seem deeply important and have meaning.

15. Dr Ramachandran explains that there may be parts of the temporal lobe that is conducive to religious belief; and it may have evolved to help the stability of society. In the olden times, remote tribes and villages and modern society, religion can be used to explain why bad things happen and if they can be deflected to a supernatural being then the mind rests more easily.