

Philosophy: A mind's design

At the May meeting of the Philosophy Special Interest Group (Tuesday 23rd) I gave the second part of my presentation entitled 'Mind the Gap'. The gap in question is the *hard consciousness problem* – how personal subjective experience can arise from the workings of approximately 3 lbs (1.4kg) of squishy tissue, namely the brain? This issue remains unresolved and is a profound gap in our knowledge and understanding of brain/mind.



However, we now know that everything that is thought of as mind – sensory perceptions, thoughts, intentions, decisions, memory, motivations, personality, emotions, movements, and actions – are associated with neural activity in different brain circuits. They can be all be altered, manipulated, or abolished when different regions of the brain are stimulated or inactivated.

Our minds can be thought of a society where each member plays a specific role. Examples would be members that look after our energy balance (hunger), our fluid balance (thirst), and those that keep us safe (defence). There are many others.

However, the idea of our minds having many independent members all serving different functions entails a major problem. It's not good to try to do incompatible things at the same time, i.e. in any situation, which member should have control of the muscles? In all vertebrates this problem is solved by part of the brain called the basal ganglia – a group of structures that prevents clashes by selecting between members of the mind's society – who should control the muscles and who shouldn't. On what basis are such selections made? The answer is simple – the mind's members can all 'shout' at the selector (basal ganglia). All the selector does is select the one shouting loudest and puts a block on all others.

The next question was who or what determines the relative strengths of the competing shouters? The answer is genetics (e.g. pain always comes in with a good shout), and experience in the form of reinforcement learning. Because we choose neither, it's difficult to see where the concept of free-will might fit in. This brought up a final question. If you make choices, but play no *prior* part in what is chosen, how can the legal system hold you responsible for your actions? I proposed that making laws and having individuals held responsible is society's way, by means of individual reinforcement learning, of encouraging pro-social choices. No change in the law required!

Pete Redgrave

Next Philosophy meeting **Tuesday 27th June at 10am at Enterprise House**, when we conclude our study of the Mind by examining the question of whether we have freewill. **On Tuesday 25th July** we begin to look at The philosophy of Art. All welcome.