Do Spiders Dream of Arachnology Professors?

by Kenneth Francis (January 2021)

The Smiling Spider (L’Araignée), Odilon Redon, 1887

Have you ever wondered if insomniac spiders count imaginary arachnology professors jumping over college desks? Silly questions aside, it's not something that constantly occupies my mind. Anyhow, the other night as I rested in bed reading a book, I noticed a spider on the ceiling above where I lay. I wondered was it awake or asleep.

This sight occurs every seven or eight weeks, and if my ceiling was made out of steel and I had a flame-throwing drone, I'd incinerate the creepy-crawly immediately because they give me the creeps. But instead, I usually get out of bed and, without killing the tiny creature, gently place the head of a sweeping brush under it in order to usher it out safely onto the window ledge.

Insects also give me the creeps even though they're different to spiders (spiders belong to the *class arachnida*, insects to the *class insecta*). And, on a micro level, the thoughts of one scaling down its silk web 'rope' like a Navy Seal during the middle of the night, and landing in my mouth as I sleep, reminds me of what happened to John Hurt in the movie *Alien*, when he peeked into a pod.

However, what struck me again the other night when I reached up the brush to the ceiling to catch the spider, was the way it tried to dodge my efforts of capturing it by fleeing in the opposite direction. This, it seemed to me, is similar to how a human would react if a giant spider tried to do likewise to him or her. Being aware of anthropomorphising the situation, it nonetheless made me wonder: Do spiders, or insects, have some form of primitive consciousness? Or are such manoeuvring tactics nothing more than an electrochemical reaction in its brain?

In an article in internet's best scientific website, *Uncommon Decent*, Ronald R. Hoy, Cornell University professor of neurobiology and behaviour, considers the spider "one of the smartest of all invertebrates." But while its behaviour is

comparable to that of many vertebrates, its anatomy is not, according to the article. It added: Dr Hoy and his colleagues wanted to study jumping spiders because they are very different from most of their kind. They do not wait in a sticky web for lunch to fall into a trap. They search out prey, stalk it and pounce. “They’ve essentially become cats,” said Dr Hoy.

There is certainly no doubting the spider’s hunting prowess, especially their ingenuity in weaving complex web traps.

Such webs come in range of sizes, as do spiders. The smallest creatures, *Patu digua* from Colombia, are less than 0.015in in body length, while the biggest spiders are called tarantulas, with a body length of 3.5in and leg span of 9.8in. And if you’re eating lunch, look away now: Cooked tarantulas are served as a delicacy in Cambodia!

But the ruthlessness of spiders devouring their prey in a web can make a person wonder what kind of a God would create such vile creatures, some of whom devour their tiny insect prey by injecting them with poison before eating them alive.

In an excellent essay last August in Takimag (*A Tangled Web*), Theodore Dalrymple posed the above theological question, after he witnessed such a killing by a funnel-web spider (*Agelina labyrinthica* to be precise) in his back garden.

He wrote that, in evolutionary terms, “we know that the funnel-web spider was fit to survive because it *did* survive, and we know that it survived because it was fit to survive. This seems to me to be dangerously circular, a pseudo-explanation. But what is the alternative explanation? That some force, divine or otherwise, created the funnel spider from a blueprint? This seems to me absurd. Who would

decide that what the universe really needed for its completion was a funnel spider, let alone any or all of the other millions of arthropod species on earth?”

This is a profoundly complex question which relates to the study of theodicy and the Fall. There are various views by Christians as to how Adam’s sin affected the animal kingdom. Was God’s creations perfect before the Fall in the Garden of Eden? Did they develop sharp teeth and claws after the Fall or did they already have them? Some theologians believe that outside the bounds of the pristine Garden, there was a fallen world with death and destruction. Sin had entered the universe through the fall of Satan and the earth was subject to his dominion. (I bet 2020 is one of his favourite years.)

If the Devil had already sinned before Adam and Eve, then evil had already been brought into the universe. Adam’s sin, therefore, would affect only the earth, not the heavens; thus, some Bible commentators want to restrict Adam’s sin to Eden – the ‘Garden’ that had not been tainted by sin. In such a tiny paradise, animals would have had to eat plants before the Fall.

St Paul could not have been referring to sin affecting the *entire* world but instead only humanity (Romans 5:12). The Scriptures indicate animals were affected by the Fall. However, the new heavens and new earth will be free from all sin which testifies to the original state of creation without sin and death.

Furthermore, non-human creatures are not moral agents, thus they lack free will. And let’s not forget, spiders that kill flies protect humans from the diseases that winged creatures bring to our kitchen surfaces. They also kill mosquitoes and other pests.

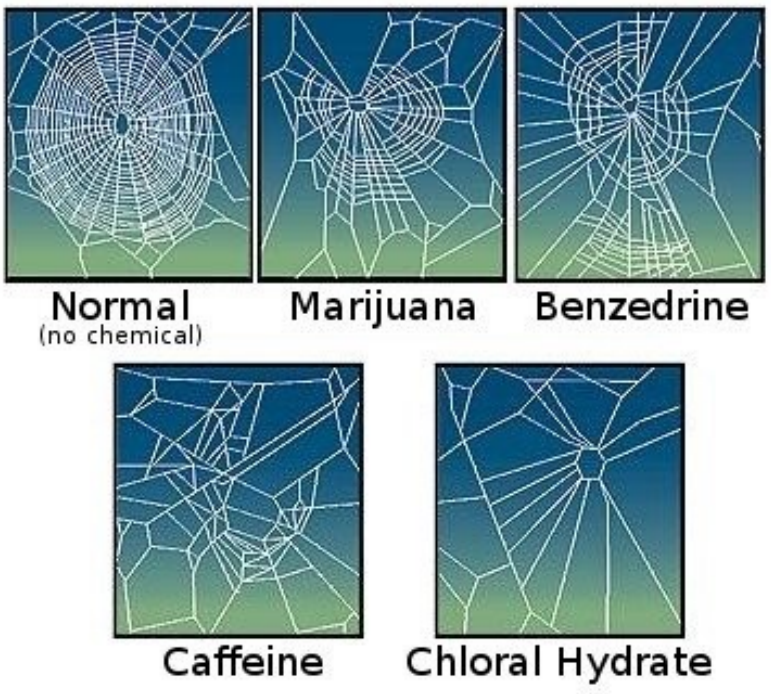
As for the suffering of the bigger creatures: In a fallen world, the animal kingdom is a place of perpetual

screaming in the survival of the fittest. Have you ever seen a documentary on TV of a pack of hyenas eating a wildebeest while the poor creature is still alive, while the poor creature looks back at all his lower entrails hanging out of his body and being devoured? Such grotesque scenes make a spider's dietary habits look like a vicar's tea party in comparison.

However, to return what goes on in spiders' brains: Besides my bedroom ceiling, there is another spider who has a nest in a tiny crack beside my car's rear-view mirror. It's bad enough having an ancient 17-year-old Saab without having a cobweb on the window. Anyhow, His (or her?) web is fixed to the mirror, which no doubt attracts insects or flies to land on the web. And even on the windiest day, if I'm driving at speed down the motorway, the web is like a net of steel in its durability; it never breaks.

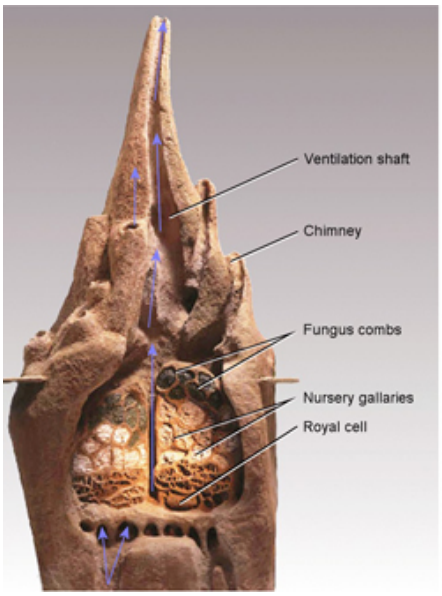
But here's the difficult question: How did the spider know that the mirror on my car would attract its prey during daytime hours? How does it know how to weave the perfect 'net' to catch its lunch? And what is one to make of the effects drug-taking has on the design of a spider's web?

In 1948, Swiss pharmacologist Peter N. Witt experimented with such effects of drugs on spiders. He tested spiders with a range of psychoactive drugs, including LSD, amphetamine, mescaline, strychnine, and caffeine, and found that the drugs affect the size and shape of the web rather than the time



when it is built. The drugs were administered by dissolving them in sugar water, and a drop of solution was touched to the spider's mouth. In some later studies, spiders were fed with drugged flies. The webs were photographed and this is what they looked like.

But webs aside, consider the other strange, sometimes ingenious, tiny creatures/organisms, like a colony of termites, that produce astonishing land structures. Most termites are blind and communicate by chemical, mechanical and pheromonal cues; they build giant, complex mounds with sophisticated 'air-conditioning', as seen close-up in one of these two photos below:



And let's give a hat tip to the little Japanese puffer fish, who works 24-hours a day for an entire week in a row, creating a visual, sand-art masterpiece below the sea, in order to attract a female fish to mate with. It looks like this:

There must be some form of consciousness or invisible force of guidance at work here. How else could a fish be aware that the aesthetic beauty of a sand structure could attract a female to mate with him? Information of any sort has to come from a mind, an Informer.

In his new book, *Miracle of the Cell* (2020), biochemist Michael Denton talks about the ways our bodies' individual cells appear, to researchers, to show intelligence: "No one who has observed a leucocyte (a white blood cell) purposefully—one might even say single-mindedly—chasing after a bacterium in a blood smear would disagree."

Although this sounds quite spooky, just like other non-human creatures or cells, it's unlikely such brainless organisms are conscious like us but instead are capable of reacting, as well as possessing, like a complex machine, information, like being hard-wired. But notice how all of these things have one thing in common: They're purpose-driven.

So, my answer to 'Do spiders have consciousness?': In 1974 in a paper entitled, 'What is it Like to be a Bat?', the

philosopher Thomas Nagel posed a similar question. The paper is a critique of reductionist theories of the mind. Nagel argues that consciousness has a subjective aspect, and that understanding other mental states is difficult or impossible for those not able to experience those mental states.

Nagel chose bats because they are mammals, and relatively closely related to humans. But he said that "anyone who has spent some time in an enclosed space with an excited bat knows what it is to encounter a fundamentally alien form of life." Just like spiders, I'd imagine, Nagel writes that bats experience a range of activity and possess a sensory apparatus so different than ours that imagining what their experiences are like is an extremely complex question.

But let me briefly distinguish different states of consciousness: Like evolution, which seems plausible on the micro level because nearly every creature evolves ever-so-slightly and slowly in some way or other, but it is not the same as Darwinian Evolution, which claims extraordinary leaps of change, e.g. from a sponge to Michelangelo painting *The Creation of Adam* on the Sistine Chapel ceiling. Consciousness can also be simple and basic to something more profound like awareness of the self: Qualia (the awareness of the "I"). Can you see where this is going? You got it—next level, the Soul. And it's hard to imagine spiders have qualia or souls.

Even without recourse to the notion of a soul, there are a number of ways in which the mind is not simply brain. The wet, grey organ known as the brain does not have mental states such as love, hate or sadness even though they interact with the brain as they are expressed in the natural world. Then there is the problem of propositional attitudes such as fear, hope, desire, wish, dread and thinking. The last thing my ceiling spider was thinking was: "Oh no! ***I*** hope he doesn't kill ***me***