

Parasites, Emotions, And Identity

Blithering Genius

2023 November 14

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1 Describing Sacculina



Image source.

Sacculina is a strange parasite of crabs. It is an arthropod in the subclass Cirripedia (the barnacles). The female Sacculina larva swims around, as all barnacle larvae do. Instead of attaching itself to a rock, however, the Sacculina larva attaches itself to a crab. It then injects its soft body into the crab.

The parasite grows inside the body of the crab. It sends out “roots” to various parts of the crab’s body, to absorb nutrients and to control the crab. The parasite consumes the crab’s genitalia, making it infertile. Eventually, the parasite partially emerges from the crab’s body, as a sac on the bottom of the crab. If the crab is male, the parasite secretes feminizing hormones, which cause the crab to develop female traits, including a broader abdomen and female behaviors.

A male Sacculina larva (like most males) roams around seeking a mate. If it finds a mature female on the body of a crab, it deposits some of its own cells into a special pocket of the sac. The cells then produce spermatozoa. Essentially, the male Sacculina gives the female “balls”.

Normally, female crabs lay their eggs inside a brood pouch. Males then fertilize the eggs. When the eggs are ready to hatch, the female crab climbs onto a rock, and does a “dance” that disperses the hatching larvae.

See The Green Crab Lifecycle.

In an infected crab, the Sacculina sac occupies the place where the brood pouch would be. The parasite lays its own eggs. When they are ready to hatch, the parasite releases hormones that cause the crab (male or female) to do the hatching dance, releasing the Sacculina larvae into the water and completing the Sacculina life cycle.

2 Sacculina And Reproducing Machines

I don't know whether a crab has a mind. If it does, we must imagine the crab to be happy, perhaps even ecstatic, as it releases the larvae of the parasite. To the mind of the crab, it is fulfilling its life's purpose. It would feel the same way as an uninfected female crab releasing her offspring.

Sacculina is an extreme example of a parasite that controls its host. Most parasites just use the host as food: a source of energy and raw materials for creating new parasites. Some parasites, like Sacculina, take this one step further. They not only use the host as a food source, they also make the host do work toward their reproduction.

The body of a human or a crab is a reproducing machine. A human body is a machine for creating new humans. A crab body is a machine for creating new crabs. But those machines can be used to do other things. In the case of Sacculina, a crab body becomes a machine for creating new Sacculina organisms, rather than new crabs.

Whenever we see a reproducing machine doing something other than reproducing its own form, we should consider the possibility that it is reproducing something else: that it has been taken over by a parasite.

3 Rabies And Toxoplasma Gondii

There are other examples of parasites that control their hosts in various ways.

For example, colds and flus irritate mucous membranes. This causes us to sneeze and cough, which spreads the virus to new hosts.

The Rabies virus is a more extreme example. It causes the host animal to produce saliva containing many viruses. It also causes a type of madness, which makes the host likely to bite other animals. The Rabies virus controls the host by affecting the brain in specific ways that cause specific behaviors.

Toxoplasma gondii is another example of a mind-controlling parasite. It can infect almost any warm-blooded animal, including humans, but its life cycle seems to require a feline host, and it often involves a rodent host as well.

Toxoplasma gondii is a protozoan. It is a single-celled eukaryote with a complex life cycle. The life cycle begins with an oocyst, which is essentially a resilient spore that contains a zygote. The oocyst is shed in the feces of a feline host, such as a domestic cat.

If the oocyst is swallowed by a rodent, then it will infect the rodent, multiplying asexually within the host and infecting all the tissues of the host, including the brain. It has certain effects on the emotions, and thus the behaviors, of its host. It causes rodents to lose their aversion to cat urine, and it lowers their anxiety in general, making them easier prey for cats.

When a cat eats an infected rodent, the parasite infects the intestine of the cat, where it sexually reproduces with other parasites, and completes its life cycle by producing oocysts.

Toxoplasma is closer to home than Sacculina. It affects mammalian behavior, and we can be intermediate hosts. You might have Toxoplasma gondii in your brain. Many people do.

The emotions are the steering mechanism of the mammalian brain. (Arthropods may have an analogous mechanism, but I don't know.) Emotions drive us in one direction or another. Change

emotions, and you change behavior. The best way for a parasite to control a mammal is to control its emotions.

If your emotions were controlled by a parasite, they wouldn't seem wrong or foreign to you. They would still be *your* emotions, psychologically. They would not be serving your biological interests as a reproducing machine, but they would be constitutive of your mind.

In a sense, if a parasite takes over your mind, you become the parasite.

4 Hedonism, Altruism, Value, And Emotions

Our culture views emotions as the ultimate source of value.

The implicit value theory of the modern West has two core values:

- **Hedonism:** Pain is intrinsically bad for the experiencer, pleasure is intrinsically good for the experiencer, and nothing else is intrinsically bad or good.
- **Altruism:** You should help others and avoid harming others, even at some cost to yourself.

Hedonism defines personal good and bad for the individual. Altruism defines moral good and bad, which depend on personal good and bad.

To the hedonist, emotions are the ultimate source of value, because emotions generate pain and pleasure. The purpose of life is to affect emotional experience: to feel more pleasure and less pain.

Although our culture recognizes some pathologies of emotion, this recognition is not based on biological functionality, but on an implicit value theory.

For example, our culture pathologizes pedophilia but not homosexuality. Why? Because pedophilia violates the principle of altruism. If acted upon, pedophilia harms children physically or psychologically. So, our culture views pedophilia as a disorder and/or as evil.

By contrast, homosexuality is not pathologized by our culture, because it does not seem to conflict with the norms of hedonism and altruism. It seems that homosexuals can pursue happiness in their own way, and they are not harming anyone else by their actions.

There are other examples. Our culture pathologizes depression, because it seems to conflict with hedonism. Our culture also pathologizes hate, because it seems to conflict with altruism.

I don't want to get into all of our culture's myths about emotions, but it is important to understand the following:

- Our culture's theory of value centers on the emotions.
- Our culture recognizes no higher source of value or standard of value.
- Hedonism is not necessarily aligned with biological functionality.

5 How A Hedonist Would View Parasites

For the sake of argument, let's assume that crabs have an emotional mechanism analogous to ours, and let's also assume that an infected crab feels pleasure when releasing the *Sacculina*

larvae into the water.

The crab is standing on a rock, doing its little dance, feeling ecstasy at having fulfilled its purpose. But it is actually fulfilling the purpose of the parasite.

The hedonist could not judge the outcome to be harmful to the crab. The infected crab has the same emotional experiences as a female crab fulfilling its biological purpose. If feelings are what ultimately matter, there is no difference.

Likewise for homosexuality and heterosexuality. Or sex with birth control and sex without birth control.

What about a mouse that isn't afraid of cats, because its brain is infected with *Toxoplasma gondii*?

In *The Restaurant at the End of the Universe*, Douglas Adams proposed an interesting thought experiment: an animal that has been genetically engineered to want to be eaten. This horrifies Arthur, but he can't really explain why. The animal comes to the table in the restaurant, introduces itself, and offers portions of its body. Eventually, everyone except Arthur agrees to a meal. The animal says that it will go off and shoot itself. "Don't worry, sir," it tells Arthur, "I'll be very humane."

To Arthur, the animal's desire to be eaten seems perverse: the opposite of what it should be. But the animal is not stupid or crazy. It fully understands the situation. It just wants to be eaten.

In a way, the animal is a puppet of human desires. But the puppet strings are not external to the animal. They are part of its essence. So, are they really puppet strings?

This thought experiment makes you think about desires, and how they ultimately trace back to a mechanism in the brain.

We tend to assume that we know what is good for us. If emotions are the ultimate source of value, then you directly experience negative and positive value. You could be mistaken about what causes more pleasure or pain in the long run, but you can't be mistaken about what is ultimately good or bad for you. You feel it directly, and thus you know it.

But if emotions are a mechanism, then they do not reflect some cosmic truth about what is good or bad for you. The mechanism has a biological function. It can be manipulated or modified to have some other function. It can serve a purpose other than your own.

If we adopt a biological standard, we can critique emotions and desires as adaptive or maladaptive. This produces very different results from hedonism. In this view, homosexuality is pathological, because it is biologically dysfunctional. Homosexuality is bad for the individual, because it is not adaptive. It is a disorder of the emotions.

Homosexuality was once classified as a psychological disorder, but the classification was changed. Essentially, the APA decided that homosexuality is not pathological, because it does not violate the norms of hedonism and altruism.

See "Gay Is Good": History of Homosexuality in the DSM and Modern Psychiatry.

6 What if homosexuality is caused by a parasite?

What if homosexuality is caused by a parasite?

There is no generally accepted explanation for homosexuality. The “gay germ” hypothesis fits the evidence as well or better than any competing explanation. It also fits evolutionary theory. If a reproducing machine is doing something other than reproducing, we should suspect the involvement of a parasite that has captured the machine.

A plausible explanation for male homosexuality is a parasite that spreads through anal sex. Like *Toxoplasma gondii*, it would affect the brain of its host, reversing the polarity of some emotions, causing the person to be sexually attracted to the same sex.

The gay germ hypothesis seems plausible to me, but I’m not trying to make the argument for it here. I’m more interested in the philosophical issues that it raises. Specifically, it raises a question of identity.

Imagine that you are a homosexual man, and you discover that your homosexuality is due to a parasitic infection. In light of that knowledge, would you view your homosexual desires as intrinsic to you, or as something imposed on you?

7 What makes people who they are?

What are you? Your mind? Your body? Your DNA?

If your emotions are constitutive of you, then you would be partly an expression of the parasite’s DNA and partly an expression of your own DNA. By changing your emotions, the infection would change you into something else. In a sense, you would become the parasite, because the emotions are the most essential aspect of the psychological self.

On the other hand, if you are defined by your DNA, then homosexuality would not be an expression of you. It would be a perversion of your essential nature and opposed to your real interests. The psychological self would be partly in conflict with the biological self. You would be a puppet, with your sexual emotions as the puppet strings.

8 The Cuckoo Bird And Emotions

The cuckoo is another example of a mind-controlling parasite. Cuckoos lay their eggs in the nests of other birds. Cuckoo eggs are typically larger than the eggs of the host bird. Cuckoo females can afford to invest more energy in creating eggs, because they don’t invest energy in raising their offspring. When the cuckoo chick hatches, it ejects the eggs or chicks of the host parents from the nest. The host parents then imprint on the cuckoo chick and raise it as their own.

The cuckoo exploits the ad hoc nature of bird emotions: that they depend on the process of imprinting. The cuckoo bird generates the stimulus that causes parental bonding and parental behavior. It deceives the emotions of its host, to make the host act in the interests of the parasite.

Emotions are heuristic, ad hoc and stimulus-dependent. That makes them relatively easy to deceive.

A pet has a similar relationship to its owner as a cuckoo chick to its host “parents”. People bond emotionally with pets and treat them like their own children. This is an uncomfortable analogy for most people. Is your little cat or dog a parasite?

Not exactly, but pets are a type of emotional deception. Pets plug into parental instincts to generate parental behavior. There are important differences. We consciously choose to adopt pets. We know that they aren't our offspring. A house pet does not typically reproduce. However, pets are bred to appeal to our emotions, and thus to deceive us emotionally. They create the emotional illusion of a parent-child relationship.

There are also people who reproduce at the expense of society by having children that they can't support. They are social parasites, essentially. Again, this analogy makes many people uncomfortable.

When we think of a parasite, we think of something disgusting, such as a tapeworm or a tick. We don't think of a parasite as something cute and cuddly. But some parasites are emotionally appealing, because that is how they attach to their hosts.

Presumably, the adoptive parents of the cuckoo chick love their parasite, just as they would love their own chick. If we view love as a mechanism for generating adaptive behavior, we can identify errors of love.



Image source.

9 Memes Can Be Parasites Too

Not all parasites are organisms. Memes can also be viewed as parasites.

A meme is a chunk of information that propagates from mind to mind. The meme gets into the brain of a host, and then causes the host to act in a way that propagates the meme.

Most memes are beneficial to the host. For example, brushing your teeth is a meme that propagates from parents to children, because it is a healthy practice. But memes are not necessarily beneficial to the host. Memes can evolve to propagate at the expense of the host.

Ideologies can be understood in this way. Ideologies motivate signaling behavior that propagates the ideology to other brains. They are parasitic memes that “tickle” the brain in a certain way, causing it to “sneeze” out copies of the meme. When people are virtue-signaling or ranting on the internet, they are spreading parasitic memes. They are like the infected crab standing on a rock, doing its dance.

What about the low fertility of people in the developed world? It is clearly maladaptive. Is it due to a parasitic meme?

Modern low fertility is mostly due to the mismatch between human emotions and the modern environment. Our ancestors didn't have the birth control pill or the latex condom. Women needed men to survive. In the ancestral environment, human emotions caused reproduction. In the modern environment, they often don't.

Of course, low fertility is pathological, even if it is not caused by a parasite. It is the breakdown of human nature in the modern environment — something our culture has not come to grips with.

But memes play a role in low fertility, even if they are not the primary cause. It is fashionable to have an extended youth of casual sex and consumerism, rather than family formation. This fashion is a meme that propagates from brain to brain.

One could even argue that the humanist value theory of hedonism and altruism is a parasitic meme. It is used to justify maladaptive behaviors, such as low fertility.

10 The Zombie Snail Parasite

I would be remiss if I didn't mention *Leucochloridium paradoxum*, which creates the so-called “zombie snail”.

Leucochloridium paradoxum is a flatworm. Like *Toxoplasma gondii*, its life cycle involves two hosts: snails and birds. A snail becomes infected by ingesting an egg in bird feces. Inside the snail, the egg grows into a sporocyst, which looks more like a plant than an animal. It has multiple branches that grow into different parts of the snail's body. The sporocyst reproduces asexually, creating worm-like larvae. The larvae inhabit broodsacs, which extend into the eye tentacles of the snail. The broodsacs resemble caterpillars.

When the larvae are ready to hatch, the parasite manipulates the snail's behavior. The snail seeks higher, well-lit places, where it is conspicuous to birds. Then the larvae in the broodsacs become active, doing a little “dance”. Their motions cause the broodsac to wriggle in a way that resembles the movement of a caterpillar. If a bird sees the snail, it may eat the broodsacs, tearing them out of the eye tentacles of the snail.

Inside the infected bird, the larvae take up residence in the cloaca. There, they reproduce sexually, either hermaphroditically or with other parasites, releasing eggs into the bird's feces and completing their life cycle.

It is debatable whether a snail has a mind, but it does have a brain, and the parasite somehow controls the brain of the snail, changing its behavior. The parasite also controls the brain of the bird with an artificial stimulus: a fake caterpillar. It uses two types of mind-control: fake desires and fake stimuli.



Image source.

11 Conclusion And Different Types Of Identity

There are different types of identity. In a sense, there are different *yous*. You have a biological identity, which we can (roughly) equate with your DNA. You have a psychological identity, which consists of your memory and personality traits. Emotions are a core aspect of your psychological identity. There is no mind without emotions.

The psychological self can be captured by another biological entity, or even by a meme, and that's where things get weird.

The best way for a parasite to control a complex organism is to capture the control center: the emotions. If the parasite controls the emotions, then it controls the mind, and thus the body. The host becomes a puppet of the parasite.

This does not make the host into a “zombie” that is devoid of consciousness. The puppet is fully conscious. It just wants to do what benefits the parasite.

This should make you think about what you are, and why you want what you want.