

David Wengrow opens his fascinating book with a conjecture that he attributes to cultural epidemiologists (not without good reasons): composite animals are “minimally counter-intuitive” and thus, some monsters enjoy a supplement of cultural success by virtue of being composites (and not because they are, say, big animals, or predators). By the last pages of *The Origins of Monsters*, though, this hypothesis is all but jettisoned. There might be something universally appealing about composites, but that ingredient, by itself, is utterly insufficient to explain the vogue of Bronze Age monsters that he documents (and the absence of such a vogue in earlier periods). I agree, and I would go even further: it is entirely possible that composites are nothing special, and that the psychological hypothesis Wengrow started with is not just insufficient, but false. This does not mean we should despair of psychological explanations, though: it just means we had the wrong hypothesis in mind.

More specifically, I'll discuss two ideas that loom large in *The Origins of Monsters*:

(i) Composites are appealing. Representations that fuse together different animal parts into one single animal shape, like the chimaera or the griffin, are cognitively special, and culturally successful for that reason. The odds of successful diffusion are better for composites than they would be for most other representations of animals (monstrous or not).

(ii) Composites are “minimally counter-intuitive.” What makes composites appealing is “minimal counter-intuitiveness,” as theorised in particular by Pascal Boyer. Composite animals are weird, but they also respect some basic and widespread intuitions about animal shapes. Because of this, composites are rapidly and easily perceived, memorised, or (if needed) reconstructed; but composites also thwart these same intuitions in a way that makes them seem informative and worth paying attention to.

This comment will explain why I doubt both views, starting with the second: there may not be anything “minimally counter-intuitive” about animals combining features of different species. I take the phrase “minimally counter-intuitive” in its usual technical sense: a belief is counter-intuitive if it violates one (not two) elements of an early-developing, implicit, cross-culturally robust naive theory. In the case at hand, a counter-intuitive animal would violate one element of “folkbiology.”

We should not too readily assume that monsters are counter-intuitive in that sense. After all, babies are not born expecting to see horses, cows and eagles in the world, as opposed to unicorns and griffins. Few people would say a complete knowledge of the particular species or taxa that exist on Earth today is part of our species' early-developing, cross-culturally robust “folkbiology.” Neither is our intuitive zoology made of implicit intuitions, based on deep, unconscious principles we cannot easily spell out. Quite the contrary.

If this is true, then many composite monsters aren't counter-intuitive in the proper technical sense. Weird, unusual, *unheimlich*, yes—but not in a way that we can use to link monsters with the cognitive anthropology literature on religious beliefs. More generally, folkbiology (or what we know of it) is not terribly useful in predicting the appeal of imaginary animals. Violations of folkbiology don't usually make good monsters. Composite animals do not, for instance, contravene the inheritance principle, which states that any creature bequeathes an invisible and powerful “essence” to their offspring, and few if any successful monsters do so. Lastly, there are much better ways to explain what draws our minds to monsters (composite or not), starting with the cognitive appeal of big, dangerous animals.

Counter-intuitive, or just weird?

As an excellent paper by Benjamin Purzycki and Aiyana Willard (2015) recently showed, “minimal

counter-intuitiveness” is becoming a murky concept. Originally, a counter-intuitive belief or concept had to violate a “deep” (early developing, cross-culturally robust, implicit) intuition about a particular ontological domain. Merely surprising or unusual beliefs would not do. Why?

Before the “minimal counter-intuitiveness” idea took hold, earlier authors had tried to show that weird, atypical or uncommon ideas are better remembered or communicated—the “bizarreness bias.” It seems clear from Purzycki and Willard’s account that human memory does not, in fact, have a “bizarreness bias”: weird content is not better remembered than prototypical content. In the aesthetic sphere, I don’t know that there is a body of work showing that “minimally weird images” are better remembered and more likely to be transmitted, or that specifies the optimal dose of weirdness in a clear, analytic fashion. There is intriguing work (in robotics, for instance) on the Freudian “feeling of the uncanny” that a certain degree of admixture between familiar and unfamiliar features elicits. Yet (as far as I know), no one claims that uncanny images are particularly successful (the opposite would be just as likely).

The “minimally counter-intuitive beliefs” research program is successful precisely because it proposes something different—a theory grounded in cutting-edge developmental psychology and comparative ethnography. Minimally counter-intuitive beliefs or concepts are supposed to contradict one and only one of these fundamental (i.e., cross-culturally robust, implicit, and often early developing) intuitions. Yet, as Purzycki notes, it can be hard to be consistent with this commitment, and the view that “counter-intuitive” simply means “weird” sometimes creeps back. Monsters seem to be a case in point.

Folkbiology is not against composites (or monsters)

A counter-intuitive belief should not merely challenge common expectations—like the belief that pigs can’t fly. It should go against deeper intuitions. What could these intuitions be in the case of animals? Intuitive “folkbiology” has three principles that could be relevant here: inheritance (dogs don’t breed cats), a belief in more or less isolated and fixed species (sometimes deemed essentialist), expectations regarding a few dangerous taxa (like spiders and snakes), and (possibly) a sharp distinction between humans and other animals.

Inheritance. Young children, as we know since Frank Keil and Susan Gelman’s work (Keil 1992) have strong implicit intuitions regarding biological inheritance: Dogs don’t breed cats. Real and imaginary animals may change shape (of course), but they bequeath a constant, species-specific biological legacy to their offspring. This legacy is understood as a constant and immutable gift, even though it cannot be perceived to the naked eye: a raccoon’s offspring is a raccoon, even when disguised as a cat. Do composites and other monsters challenge these intuitions? Arguably not. Unicorns breed unicorns (but horses don’t), and dragons breed dragons. Composite monsters either don’t have parents, or they have composite parents, or their parents each belong to one of the species that make up the composite (like the Minotaur, descended from a bull and a human mother). The only exception that I can think of is monsters that can’t reproduce but have to be “created” in some way (like vampires)—but they don’t really contradict the inheritance principle (since they don’t reproduce).

Species (possibly essentialised). As Douglas Medin and Scott Atran have shown, the classification of living things into species-like categories appears universal (Medin and Atran 1999). Folkbiological categories are species-like, because they include rules like the inheritance principle. Some have argued that part of people’s intuitions about species is that they cannot change through time (a belief that would explain many a form of resistance to Darwinism). Whatever the case may be, composites do not in any way challenge these intuitions. Folk biology does not, of course, say that species X cannot possess any feature also possessed by species Y—otherwise the fact that horses have legs like humans, or that bats have bird-like wings, would be deeply counter-intuitive; endless

songs and tales would be composed about lichens; platypi, marsupial dogs, mole-rats, would be box office regulars on a par with sharks and dinosaurs.

Fear of snakes and spiders. Folkbiology is not entirely incompetent about the shape of animals, and even of specific species. For instance, we share with other primates a vivid and partly innate repulsion for snakes and spiders-like shapes: aversion to these things is more readily learnt. How taxonomically precise these expectations are is still quite unclear. Here again, most cultures have not come up with monsters that go against this deep intuition—no sweet snakes, no cuddly spiders.

Human uniqueness. Some could argue that a “human exception” is another cross-cultural constant of folkbiology: humans are thought to occupy a distinct ontological niche. One consequence is that properties possessed by most other animals will not be projected on to humans without unusual and specific difficulties (Carey 1987). Michael Kelly and Frank Keil’s remarkable analysis of metamorphoses in Western folk tales (Kelly and Keil 1985) seems to confirm that humans occupy a distinct ontological domains there. Human-animal composites (like Taweret, the hippopotamus-headed protector) clearly challenge this boundary, as Wengrow does not fail to note. It would seem, thus, that some (but not all) composites do challenge one deep folk-biological intuition.

I see two reasons to disagree. First, it is doubtful whether human uniqueness is a universal intuition. Bang, Medin and Atran (2007) found that Carey’s result, obtained with urban USA children, did not generalise to Menominee children. (I suspect that Wengrow, who is clearly influenced by recent anthropological trends coming from Descola or Viveiros de Castro’s work, would not claim that a belief in human uniqueness enters into a universal folk biology.) Second, even if we accept that all humans share an intuitive belief in their own uniqueness, the frequency of human/animal composites could be explained in many other ways. It is true that humans are more likely than (say) ants to enter into composite creatures, but so are horses or lions. The human form is interesting for many reasons, and we expect human bodies to be extremely prevalent in all kinds of visual cultures (unless actively banned). Monsters should be no exception.

We have to conclude that, of all the principles of folkbiology that we can plausibly identify, composite animals violate only the most dubious one (and only some composites do so). Overall, composite animals do not counter deep folk-biological intuitions (and neither, by the way, do giants, pygmies or mutant animals). It is no coincidence, then, that Wengrow’s account is most persuasive when he stresses all the *intuitive* features of composites—most strikingly the conservation of the vertebrate body plan. This phenomenon had been shown in a psychological study by Thomas Ward (1994), but to see it fleshed out in impeccable archaeological detail is a delight.

Are composite creatures particularly appealing—and as compared to what?

If many composites are not counter-intuitive, then why do composites spread? Well, in fact, the view that composites as such enjoy a strong and specific cultural advantage is hard to assess. The composite creatures that Wengrow shows flooding Eurasian visual culture in the Bronze Age could, in fact, owe their success to many different factors, and we won’t know which ones exactly without comparing the success of several types of cultural items, ideally in a systematic and quantitative way. Cultural success can’t be properly assessed meaningfully without a baseline: What should we compare representations of composite animals to? Representations of plant or non-animals? Of normal animals? Of mutants? Of outliers? Of truly counter-intuitive creatures? I don’t know. A wide range of options are on the table and have been defended, including the view that prototypical animals are just as cognitively attractive as monsters (Sperber 1975).

This, in fact, is what *The Origins of Monsters* ends up demonstrating, and quite convincingly. His main conclusion seems to be that the success of composites is quite contingent on particular social

contexts that have little to do with humans' evolved psychology, which plays the role of an enabling factor, at best. One thing that makes composites attractive is the variety of forms they permit, which comes in handy when one needs to generate a great variety of animal forms, for heraldry or for marketing, in what Wengrow called elsewhere "cultures of commodity branding." Nothing seems to connect this particular coincidence to a universal and specific bias for composites, and I don't really know what psychological theory could predict such a bias.

What would it take to show that composites, as such, enjoy some added intrinsic appeal? Ideally, a perfect dataset should show composites to be successful, not only compared non-animal shapes (rocks, plants, etc.), but also compared to other animal shapes, and possibly to other kinds of imaginary animals, of which there are many. Some, like botched reconstructions of dinosaurs, dragons, or ogres, are only partly imaginary, being based on (more or less badly misinterpreted) fossil evidence. They do not clearly qualify as composites. Animal outliers, too, are the stuff of legends, without being composites (the tiniest dog in the world, the tallest man, the biggest boa, the Gévaudan beast). Mutants (cyclops, eight-armed humans, etc.) are a hit too. So are over-sized or miniaturised animals (e.g., giant spiders). ([Giant spiders, interestingly, are physically impossible but perfectly intuitive.](#)) I would not bet that composites are more successful than other imaginary creatures (T-Rex still beat griffins in the toy store). Specifically, it seems plausible that the appeal of composites, most of which also happen to be big, predatory animals, cannot be distinguished from the appeal of other big predators—at least not with the kind of data we are dealing with here.

Two simple (yet untested) ideas

I closed David Wengrow's book with the feeling that the cultural epidemiology of animal iconography now appears to be a promising subfield, thanks to this book's contribution; but also that we haven't even started to prove the simplest things in the area. I'll take as examples two simple conjectures that would, I think, seem obvious to many people on this site.

The appeal of animal shapes. We have some psychological reasons to expect animals (as opposed to plants or minerals) to enjoy a strong cognitive appeal, which should translate in higher cultural prevalence. Joshua New's experimental work suggests as much (New, Cosmides, and Tooby 2007). A cursory glance at patterns of visual culture worldwide seems to confirm this; even the exceptions are revealing: most Islamic visual arts ban animal representations—but, precisely, they do so only because of an explicit ban—and one that is not easily forced upon the public. (As is well known, Islamic aniconism was not always respected, and most other monotheistic traditions found ways to tweak the Second Commandment in a way that allowed them to ban the Golden Calf and still carve it.)

How nice it would be, though, to have this intuition confirmed in a systematic, comparative and quantitative fashion! It would allow us, for a start, to address the doubts of most anthropologists (some of whom would probably be dismissive of the notion of a universal and evolved preference for animal shapes). It would also address one nagging doubt that I had while reading Wengrow's book: Perhaps the success of composite monsters could simply be explained by the fact that composite animals are attractive as animals, their composite character being quite irrelevant.

The appeal of predators and dangerous animals. As Karolina Prochownik rightly stresses [in her comment](#), there is at least one obvious alternative to the "minimally counter-intuitive composites" account. Most successful monsters (composite or not) are also predators, and most composites are likely to include snakes, hippopotamus, lions, scorpions, etc., not only in Wengrow's books but also in the myths and visual imagery of many cultures. (Do you know the tale of the three-headed snail? Precisely.)

Evolutionary psychologists have much to say about the hold that predators have on our imagination (Barrett 2015), and from this point of view, it would seem that an epidemiology of monsters won't be doing its job unless it explains the obvious connection between monsters and fangs, horns, stings, and claws.

Yet, here again, the simplest things remain to be proven. First of all, we'd need a baseline to compare the prevalence of predators to: lions and hippos make good monsters, but so do horses and crows. Next, we'd need to go quantitative (unless we get stuck in endless counterexample-mongering). Lastly, we'd need to rule out some alternatives to the evolutionary account. As Wengrow stresses when discussing the apotropaic role of monsters (like Taweret or Medusa), predatory features may owe their success to the perceived need to ward off evil spirits with scary animals. More generally, [as Erhard Schüttzel notes](#), we should not discount the terrifying effects of some monstrous imagery on some of its human spectators (laughable though it may seem to the more blasé consumers of horrible images that we are).

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Whatever else makes composites and other monsters appealing, "minimal counter-intuitiveness" seems to play a small part at best. Should this lead us to give up the search for a psychologically grounded epidemiology of monsters? Not so fast. Numerous appealing hypotheses—the appeal of predators, the appeal of animal forms—have not even been tried yet. I take *The Origins of Monsters* as an invitation to get to work, hand in hand with archaeologists, anthropologists and art historians.

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