

Article

Animism and Science

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Abstract: I discuss whether animism, the worldview that (some) objects, plants and animals are capable of communication, rational reflection and intentional action, is in conflict with contemporary science. I distinguish two conflicts. The first points to conflicting claims regarding the abilities of objects, plants and animals made by scientists and animists (agential vs. non-agential). I argue that the alleged conflict can be diffused by noting that science and animism advance different ways of looking at the world. The second conflict notes discrepancies between how animists treat nature and all therein (with respect and reverence) and how science does (instrumentalized). I argue that this conflict is more difficult, if not impossible, to overcome.

Keywords: animism; scientific explanation; scientific practice; science and religion

1. Introduction

Animism, the view that (some) objects, plants and animals have a spiritual core and human-like abilities, is primarily studied in the fields of anthropology and religious studies. There has been only limited recent, normative discussion on the topic, and animism is often assumed to be false.¹

This paper investigates the question of whether animism is in conflict with science. Animism and science may conflict with regard to what both claim about objects, plants or animals, or with how they ought to be treated. I argue that there is no conflict between the picture of objects, plants and animals yielded by scientific observation or theory and the picture upheld by animists. There does appear to be a conflict as to how science and animists engage with objects, plants and animals.

This paper is structured as follows: In Section 2, I discuss what animism is and what abilities are attributed to objects, plants and animals. In Section 3, I discuss the first conflict (different views of entities), and in Section 4, I argue against the conflict. In Section 5, I discuss a conflict between how objects, plants and animals are treated by animists and by scientists. I argue that both conflict profoundly concerning how entities ought to be treated. I end with a conclusion.

2. What Is Animism?²

Before we discuss the conflicts with science, I first discuss what animism is. The anthropological study of animism is vast and impossible to survey in this section. Therefore, I discuss some main tenets.

Contemporary groups with animistic beliefs or practices include American groups such as the Navajo, African groups such as the Zulu (Oosthuizen 1968) and Asian groups such as the Hmong (Plotnikoff et al. 2002). Some neo-pagan groups also hold animistic beliefs, and some Hindu and Buddhist rituals bear traces of animism. The number of animists alive today is, thus, considerable. Animism was also common in ancient religions such as those of the ancient Celtic or ancient Babylonian peoples. For example, the ancient Celtic religion showed respect to various spirits of rivers and forests (Cusack 2011). Ancient Incan (see: Sillar 2009), Germanic, Roman and Greek religions also show clear marks of animistic beliefs (cf. Lucas 2017). The scope of animistic beliefs is, thus, large, and arguments in favor of or against it have many ramifications.



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Contemporary anthropologists who study animism often make a distinction between “Old Animism” and “New Animism”, with most siding with the New Animism camp. Below, I discuss how both construe animism.

2.1. Old Animism

The term “animism” is usually traced back to Edward Tylor (1832–1917). Tylor regarded animism as a “doctrine of souls” or “doctrine of spirits”. The distinctive feature of animism is the belief that spiritual beings are common (Tylor 1871). Tylor regarded animism as an early, undeveloped form of religiosity which was gradually surpassed by more advanced forms of religion. For Tylor, animism was the religion of primitive people devoid of culture and devoid of any explicit religious conceptions whatsoever (Park n.d.).

Tylor’s account offers a good starting point. However, to gain more clarity on what animists believe, we need a more elaborate account of what spirits are. As I argued elsewhere, spirits are generally regarded as humanlike, invisible beings. Some believe that spirits are deceased people that continue to roam the earth. Others believe that spirits are divine beings (Van Eyghen 2018).³

Although belief in some kind of spirits is central to animism, it does not quite capture the distinctiveness of animism. Nineteenth century Spiritism⁴ and the traditions that sprung from it (e.g., Brazilian Umbanda) affirm the existence of spirits, but they are not commonly called animistic. Furthermore, belief in demons is common in Christianity, and a majority of Muslims affirms the existence of Jinn. Both demons and Jinn can be rightly classified as spirits. What distinguishes animism from spirit-belief in these traditions is the belief that spirits inhabit objects, plants and non-human animals.⁵ For example, Siberian shamans believe that animals have spirits that can be approached by imitating animal sounds (cf. Willerslev 2007). Contrary to other religious traditions such as Spiritism, adherents of animism tend not to regard spirits as *disembodied*.⁶ In Christianity, Islam and Spiritism, spirits are commonly regarded as existing without a physical body or carrier. Animists, by contrast, tend to believe that spirits inhabit a physical carrier (i.e., an animal body, plant or object), much like human souls inhabit a human body according to dualistic accounts of human personhood.⁷ As Rane Willerslev notes, animists do not always believe that *all* objects or *all* animals have spirits (Willerslev 2007). Some (or even most) objects, plants and animals are regarded as devoid of spirits, as most westerners believe.

Having a spirit can mean many things. Most adherents of animism likely do not have an elaborate metaphysical account of what it means to have a spirit or soul. The approach of animists is much more pragmatic. Regarding objects or animals as spirited means that objects or animals are approached in a similar or analogous way as humans are. In doing so, animists (tacitly) accept that spirited objects or animals have similar capacities or abilities to those of humans.

What are the abilities attributed to objects, animals and spirits? These are some of the main abilities that are ascribed to them:

1. Ability to communicate;
2. Ability to reflect;
3. Ability to act intentionally.

Construing “being spirited” as having abilities 1–3 misses out on one central aspect of animism. Having a spirit also means that objects or animals have a spiritual essence. In some cases, that essence is divine and immortal. In this sense, being spirited, again, bears significant similarities to being “ensouled” for humans. The spiritual core attributed to objects, plants and animals especially leads to different behavior towards them. I return to this point below.

2.2. New Animism

The idea that animism consists of a doctrine or a set of beliefs about spirited objects, plants and/or animals has been subject to growing criticism in recent years. Defenders of

“New Animism” argue that animism should be construed differently, with an emphasis on animistic practices rather than (primitive, misguided) animistic beliefs.⁸

Nurit Bird-David objects to traditional analyses of animism, wherein animism is regarded as a “proto-religion” or a “failed epistemology”. Such analyses trace back to Edward Tylor’s original account of animism (see above Section 2.1). As an alternative to his and similar rational approaches, Bird-David proposes that animism be regarded as a “relational epistemology”. Animism is not a well-articulated worldview or religious system consisting of clear claims, but rather a way of life. Animists live in a way that is very closely related with the natural world. They interact with their natural environment in a way similar to how they interact with fellow humans. For example, Bird-David observed how members of the Nayaka (a group of tribal people living in South India) talk and listen to stones or other objects (Bird-David 1999). Maureen Matthews also noted how members of Naamiwam engage in conversations with rocks (Matthews 2016).

The attitudes and practices of animists towards objects and animals can be compared to how most people act towards fellow humans. Most people that are not psychologically trained do not have a clear set of beliefs about the minds or cognitive capabilities of fellow humans. Instead, they learn how to interact with other humans from a young age, and most never ask questions regarding what these interactions imply or how they are made possible.

Animistic practices have their roots in a different concept of personhood, according to Bird-David. Whereas most westerners (tacitly) accept a strict dichotomy between human persons and non-human non-persons, animists tend to consider humans and animals as subcategories of a broader category of persons. Because of their broader concept, animists experience the world in a different way and interact with animals like they interact with humans (Bird-David 1999).

Bird-David notes one aspect of animistic practice among the Nayaka that sets it apart from interactions with fellow humans. On some occasions, animistic practice is evoked by special performances. In ritual⁹ settings, members of the Nayaka enter into trances and invoke various animals. Members try to imitate animal behavior as well as they can, and others make offerings to them. According to Bird-David, such performances bring to life various animal spirits¹⁰ for the Nayaka. During the performances, interactions between humans and animal spirits are highly personal and intense (Bird-David 1999).

Bird-David puts her New Animism in sharp contrast to Old Animism. She writes: “We do not first personify other entities and then socialize with them but personify them as, when, and because we socialize with them.” (Bird-David 1999, p. 78) This quote suggests that Bird-David’s New Animism might not be as new as she claims it is. Old Animism need not be construed as a belief system that comes before any actions that embody animistic beliefs. Bird-David mainly gives an account of how animistic beliefs emerge and how they function within a community. She makes a plausible case that animists gradually develop animistic beliefs through partaking in animistic practices. Very likely, they (partly) learn how to engage in these practices by socialization and imitating elders. This account is compatible with my reading of Tylor’s account of animism above.

Bird-David could, however, be making a stronger claim. She might be arguing that a majority of animists *never* form clear animistic beliefs. Most might leave it at practices and never end up with a full-blown belief system that goes along with them. This, however, need not signal that animists do not attribute abilities 1–3 to object, plants or animals. A comparison to interpersonal practices is, again, helpful. I noted above that animistic interaction without clear beliefs can be compared to how most people interact with fellow humans. To be able to interact with others, one need not have clear beliefs about minds or cognitive abilities. Interaction does imply that one accepts that others can be interacted with. When people talk with another, they assume that the other can hear them and can respond. They also assume that the other is similar in at least some respects. These assumptions distinguish interaction with humans from (playful) interaction with computers or cars. While many people will, on occasion, talk or shout to their computers or cars, they do not

assume that they will talk back or understand what they are saying. Most people know that there is a clear difference between such pretend interactions and the real thing, even though the practices are highly similar. Grasping the difference would be impossible without tacit assumptions about the similarity between humans and human abilities.

In a similar way, animistic practices are incomprehensible without some underlying assumptions. It is possible that animists do not regard objects, plants or animals as similar to humans, and engage objects, plants and animals as such in an ironic fashion. The fact that animistic rituals and practices are central to animists' lives and often take up considerable effort and resources renders this unlikely. A tacitly held belief that (some) objects and animals are similar to humans better explains animistic behavior. The similarity probably lies in the three abilities I discussed above.

When animists attribute the ability to communicate, reflect or act intentionally to objects, animals or plants, be it tacit or not, they do so in a straightforward matter. When a member of the Nayakama tribe talks to the stone, she does so in a matter similar to how she speaks to fellow humans. When animists hold that animals can think, they also appear to attribute to them a high level of rationality. The agency of spirited objects and plants is also regarded as similar to that of humans.

Animists, therefore, appear to attribute a robust view¹¹ of the three abilities to (some) objects, animals and plants. The abilities are attributed to them in a way that is similar to how humans have those abilities. Spirited objects, plants or animals do not have them to a lesser extent or in some defunct way. The same holds for the spiritual or divine core. The souls of humans are not regarded as superior or more perfect than the spiritual cores of spirited objects, plants or animals.

3. The First Conflict: Different Views of Objects, Animals and Plants

Animism is sometimes regarded as the earliest form of religiosity, and many ancient religions at least bear traces of animism. Animism is very rare in the contemporary West. Traces of animism can be found in immigrant populations and neo-pagan communities. The vast majority of inhabitants of the West does not subscribe to the central animist claim that (some) objects, plants and animals are agential.

I noted how Tylor regarded animism as a backward form of religiosity that gave way as society advanced. Tylor does not provide details as to what caused the advance. Some point to modern science as the reason for why the West has moved away from animism. Given that animism had already been replaced with various forms of monotheism and dualism long before the advent of modern science, this claim seems doubtful. However, there does seem to be a different claim in the background, that the modern scientific picture of the world is incompatible with animism. I take a look at this alleged conflict in this section.¹²

The argument for a conflict between modern science and animism can be stated as follows:

- (1) According to animism, (some) objects, plants and animals are reflective, communicative agents.
- (2) No object, plant or animal is a reflective agent.
- (3) Therefore, animism is false.

The first premise states the central claim of animism (see Section 2). I distinguished three abilities (ability to communicate, ability to reflect and ability to intentionally act). All three are marks of reflective agents. Agency is usually taken to mean the capacity for intentional action (Schlosser 2015). By adding "reflective" and "communicative", the class of agents is restricted to those capable of reflection and communication.

The focus on the communicative, reflective and agential abilities may obscure other conflicts. For example, some animists attribute healing powers to certain plants. Scientific inquiry may validate the healing abilities of some plants, but may also deny it or deem them harmful instead. Such alleged conflicts fall outside of the scope of this paper.

The second premise states the denial of the central claims of animism. Since contradictions cannot be true, one of both has to yield. According to the argument defended herein, the first must yield because the second is supported by science. Science would indeed show that objects, plants and animals are not as animists claim they are. Support would be gained from contemporary physics with regard to objects or matter, and from contemporary biology with regard to plants and animals.

We noted above that, according to animists, objects, plants and animals are believed to have certain properties in common with humans. We discussed having a soul, having the ability to communicate, having the ability to reflect and having the ability to intentionally act. Contemporary science is often said to provide grounds to deny that objects, plants and animals have these abilities. A summary view of the scientific outlook would look like this (Table 1):

Table 1. Properties of humans, animals, plants and objects according to science.

	Soul	Intentional Action	Reflection	Communication
Human	? ¹³	Yes	Yes	Yes
Animal	No	(Yes)	No	No
Plant	No	(Yes)	No	No
Object	No	No	No	No

Before discussing the summary in more detail, it is worth noting that objects, plants and animals are not all that different with regard to the three abilities discussed in Section 2. The only difference pertains to “intentional action”, which is attributed to animals. For the remainder, science appears to support a rather wide gap between humans and non-humans.

Let us begin with objects and matter. Often, a distinction is made between “inert matter” and “living matter” (e.g., Longo and Montévil 2012). Unlike living matter, inert matter does not have the inherent ability to act for reasons or any causal powers. It has no inherent power to escape increasing entropy. Most solid matter that makes up the earth would be such inert matter, including metals, rocks, ice and minerals.

The rocks in our examples of animistic practices above (Section 2) clearly fall within the category of inert matter. Not having any abilities to move or any causal powers is clearly at odds with the behavior exhibited towards the rocks by the Nayaka and Naamiwam. In both cases, rocks are addressed as if they have at least some capacity for intentional action. Therefore, if physics shows that rocks are indeed examples of inert matter, the claim appears to conflict with animism.

Physics also seems to deny the presence of an ability for communication and reflection in matter. Inert matter tends to be regarded as a more or less coincidental constellation of elementary particles without any advanced abilities. As David Chavalarias notes, advanced abilities are generally believed to require a level of complex organization, which is only exemplified in living systems (Chavalarias 2020). This view seems to preclude any attribution of communication or reflection to inert matter.

Things are more complex for animals and plants. Unlike rocks, animals and plants are made up of living matter and, therefore, are not inert. They have the ability to move and have causal powers. Biologists do seem to accept that animals and plants can move towards meeting goals, such as finding food or growing. All of this seemingly suffices to attribute the ability for intentional action to plants and animals.

Nonetheless, the image of plants and animals held by a scientific worldview is starkly different than that held by animists. While plants and animals can act intentionally, their abilities is severely limited. Animals can act to fulfill some goals, but they are limited to those tied to survival or procreation. Depending on what is needed to meet those goals, their abilities can be greater or weaker. Predators can act to hunt and kill prey. The intentional abilities of prey are more limited to hiding from predators and group organization to

deflect predatory attacks. The abilities of plants are even more limited, almost to the point of nothing. Plants' abilities are limited to growing and being able to process water and sunlight. In all cases, these intentional abilities are far below what humans can achieve and what is attributed to objects, plants and animals by animists. Therefore, while some level of ability to intentionally act can be attributed to animals, it is rather different than that of humans.

Contemporary biologists suggest an even stronger divergence from animism with regard to the rational and communicative powers of plants and animals. Animals do have the ability to produce sounds that serve as signals to peers, but do not have a system with symbolic representation or an extensive vocabulary as humans do. Plants do not even possess the signaling ability that animals do.

The rational capacities of animals and plants are severely limited as well. Animals are able to navigate their environment in order to find prey or other kinds of food, but cannot reason using abstract concepts. Some more cognitively developed species, such as chimpanzees, dolphins and corvids, are said to have more advanced rational capacities, but they still only reach a level well below that of humans. The rational capacities of plants are nearly non-existent. Reasoning is usually reserved for organisms with a central nervous system, which plants do not have.

The picture upheld by science thus seems to contrast starkly with that of animism. According to contemporary physics, and biology in particular, objects, plants and animals appear to lack certain abilities which are attributed to them according to animism.

4. Responses to the First Conflict

I discuss two replies to the first conflict: one more popular, but unsuccessful, and one more convincing.

4.1. Reply 1: Deflationism

The first reply is arguably more common than the second, described below (be it in different form). Some scholars have made advanced defenses of animism. They point to how science does support a view in which nature is alive and animals have agency. They mainly do so by proposing non-standard accounts of "being alive" and "agency".¹⁴ The new accounts allow for the attribution of intentional action to matter, and, perhaps, for the attribution of rational and communicative capacities to plants and animals.

Similarly to before, I start with objects and matter. According to adherents of a fairly new movement in philosophy called "new materialism"¹⁵, matter and the material world can be regarded as agential. Alaimo and Hekman write: "Nature is agentic—it acts, and those actions have consequences for both the human and nonhuman world." (Alaimo and Hekman 2008, p. 1). They note the "ongoing transformative power" of the material world and the "myriad intra-actions" between pieces of matter. Nature is seen as an agentic force that interacts with all beings, including humans. Nature "punches back" at humans, and even machines, on occasion, act in ways we cannot predict (Alaimo and Hekman 2008).

It is not clear whether all abilities discussed by Alaimo and Hekman apply to individual pieces of matter or to the system of nature as a whole. If the latter is true, the account seems more a defense of pantheism than animism. In any case, Alaimo and Hekman appear to see the agency of matter as its ability to bring about change in other entities or the general environment, and its ability to interact with other entities. If "agency" is defined in this way, it can be attributed to humans, animals, plants and objects alike. All have some transformative powers in the sense that they can bring about change in their environments. Therefore, new materialism brings us closer to parity between all four classes of entities, and, therefore, closer to animism.

In a similar fashion, deflationary accounts of "communication", "reason" and "intentional action" can be advanced. If "communication" is defined as the ability to convey rudimentary messages (such as making noises or sending chemical signals), it could easily encompass animals and, perhaps, plants. If "reason" is defined as processing information

and “intentional action” as acting to meet set goals (such as survival or finding food), this could be applied to other species as well.

While new materialism and related deflationary accounts have been regarded as congenial to animism, problems arise for traditional accounts of animism. Conceptualizing “agency” as a mere capacity to bring about change or to transform is a far stretch from the agency that is usually attributed to spirited objects, plants and animals by animists. I noted that animists seem to attribute abilities in a robust way, similarly to those attributed to humans. Since human agency encompasses much more than merely being able to bring about change, the capability for agency discussed by Alaimo and Hekman does not suffice. More advanced abilities, such as symbolic communication and advanced reasoning, are required. The same holds for deflationary accounts of communication or reason.

4.2. Reply 2: *The Limits of a Scientific Outlook*

A second reply denies premise 2 by arguing that the scientific view of objects, plants and animals is inherently limited. Noting animistic abilities of objects, plants or animals is prevented by the way in which scientists study all three.

Gottfried Leibniz famously noted that thoughts cannot be observed by looking at brain properties or processes. A close investigation of human brain processes would be analogous to visiting a mill. While the mill consists of various pieces of technology that push into one another, it will never reveal why humans can perceive intelligible things (cf. Cummins 2010). Leibniz’s argument is often regarded as arguing for a gap between immaterial thought and material bodily processes.¹⁶ It, however, also highlights a different problem. Using the tools of neuroscience to look for intelligible, perhaps colorful images that guide our thoughts is roughly misguided. The tools of neuroscience are not suited for this purpose. They are far better suited to looking at the internal mechanics of the human brain. The tools of neuroscience (i.e., images from scans and data from experiments) only provide a limited picture and, therefore, do not allow for strong conclusions to be drawn about the totality.

The example shows that a strict scientific look at an entity or phenomenon can lead to distorted, or at least limited, views. Some have referred to such a view as “reductive” or “reductionistic”. By limiting the data on any phenomenon to what science (or a specific scientific discipline) can explain, the threat of reductionism would loom.

While such claims are not far removed from the reply I develop below, some words on terminology are in order. The term “reduction” or “reductionism” takes on a different meaning in the philosophy of science. As Van Riel and Van Gulick note, the term goes back to the Latin term “reducere”, meaning to bring back (Van Riel and Van Gulick 2014). When scientists or philosophers aim to reduce any given phenomenon, they aim to bring it back to more basic building blocks. For example, reducing mental phenomena (beliefs, hopes, emotions, etc.) to neural activity brings psychological phenomena back to neural phenomena. Reducing phenomena such as voting patterns to individual choices and behavior brings phenomena at a societal level back to the individual level. Such “bringing back” is not at work in the example by Leibniz, and is not the reason why a scientific outlook is limited. Instead, the example reveals a certain focus in some kinds of study.

What is this focus? It is fairly uncontroversial that scientists “look” at, or study, phenomena in a special way. Much has been written about what constitutes “the scientific method”. Various proposals have been put forward, but most fall prey to counterexamples.¹⁷ There remains, however, a shared idea that scientific observation involves more rigor, use of hypotheses and repeated testing than ordinary observation. Scientific observation is also more fueled by skepticism.

While this remains rather vague, looking more closely at methods in specific disciplines shows a clearer picture. Above, we focused on physics and biology, as physics mainly focuses on matter and biology on plants and animals. The methods of physics are numerous. They include statistical analyses, use of algorithms and highly complex mathematical reasoning. Observations in physics involve the use of microscopes, but also the use of

colliders and other objects, such as double slits. The latter are used to gauge the reaction of elementary particles to contact with those objects. Experiments with such objects, therefore, do not yield observations, but note certain behaviors of elementary particles. A famous example is the wave function of elementary particles, revealed by an experiment using a double slit.

The methods of biology are numerous as well. Biologists make use of methods far removed from common sense, such as statistical analyses and genome analyses. Many of the methods in their work seems to draw from common sense more closely. Biologists study animal behavior in the wild. They also conduct careful studies of animal and plant physiology. This may or may not involve microscopes or scans.

The brief, necessarily incomplete overview of (observational) methods used by physicists and biologists is relevant, because it points to differences between those methods and observations by animists. I noted that animists have experiences of object, plant or animal agency and intelligence in day-to-day interactions. Siberian hunters note animal behavior while hunting, and Nayama animists encounter nature as agential in their daily activities. I did note that some encounters occur in a specific ritual setting, where subjects may enter into trance states.

Both ways in which animists encounter objects, plants and animals (daily activities, ritual settings) are rather different from observations by physicists or biologists. Neither involves the rigor or the often artificial setting in which physicists and biologists perform their studies. Animistic encounters are also embedded in a different setting. Animists look at entities in a holistic fashion (as part of a broader whole), whereas scientists tend to regard them in an atomistic fashion. Animists' encounters are embedded in a network of relations (as new animists note), whereas scientists tend to look at entities in isolation. The differences in procedures and focus may account for why animists note different aspects of objects, plants and animals than scientists do.

Both ways of looking (scientific and animistic) imply a specific focus, and are, therefore, necessarily incomplete. Just as an animistic outlook does not yield knowledge about the physical structure of matter and the internal anatomy of animals, a scientific outlook does not yield knowledge about the various abilities of objects, animals and plants.

A defender of the conflicting argument could argue that animistic ways of looking at the world are fundamentally misguided, and that scientific observations provide the only reliable means of gaining knowledge about the abilities of objects, plants and animals. Such a view closely resembles epistemological scientism, the thesis that only scientific methods are reliable means of knowledge.¹⁸ Epistemological scientism is a philosophical marginal position, and suffers from severe problems.¹⁹ A more modest objection could argue that animistic ways of looking at objects, plants or animals are unreliable, whereas most other (common-sensical) ways are not. Such a claim would require additional arguments.²⁰

A second objection to my objection states that scientific inquiry could have noted the proposed animistic abilities of objects, plants and animals, and would have done so if they were there. Physicists could note certain traces of agency in matter and biologists could note traces of rational reflection and abstract communication. The fact that no such traces have been documented by physicists and biologists could signal that there is not really anything like it. In response, I note that it is not at all clear that the proposed animistic abilities have been studied in settings resembling animistic encounters. Such a study likely would require thorough immersion in an animistic lifestyle and observations in an ecologically valid setting. Furthermore, non-observation of animistic abilities by scientists does not signal that they are not there. After all, absence of evidence is not evidence of absence.

5. The Real Conflict

Having argued that one conflict between science and animism can be defused, I now turn to a different conflict. Whereas the previous conflict was one between conflicting claims, the second concerns methods or ways in which objects, plants and animals are

approached. I argue that where animism dictates an attitude of respect or reverence, science at least encourages an attitude of instrumentalization. Both are fundamentally at odds.

In Section 2, I gave some hints as to how nature is approached by animists. I noted how animists approach (some) objects, animals and plants as they would approach humans. They talk to rocks, approach animals gently and pay homage to plants. Such behavior is usually deemed appropriate behavior towards humans in the ontologies of most non-animists as well.

When non-animists approach fellow humans, their behavior implies a form of intrinsic value. It is generally believed that humans ought not to be approached without respect or as mere means. The reason is that humans have value in themselves. A well-known argument was put forward by Immanuel Kant that humans ought not be treated as a mere mean, but always as an end in themselves, because they have infinite inherent value.

For animists, intrinsic value is not the sole prerogative of humans. As noted in Section 2, animists hold that (some) objects, plants and animals have similar abilities to those which humans have, and have a spiritual or even divine essence. All of this implies that objects, plants and animals merit the same (or higher) respect as humans do. As a result, objects, plants and animals ought be treated in the same fashion as humans are.

Animists do, on occasion, instrumentalize objects, plants and animals. Like all humans, animists need matter for shelter and vegetables and meat for food. Therefore, animists do make use of nature's resources. This, however, does not imply that nature is treated without respect. Siberian hunters give thanks to their prey and its spirit after killing it for food. Some cultures ask permission to the land and all on it before starting the construction of houses. Animistic views also put severe constraints on when and how objects, plants and animals may be instrumentalized.

Scientific practice, by contrast, does instrumentalize and often shows little respect. Scientific research into matter regularly involves digging or drilling, and, sometimes, even destroying matter. For example, most experiments with hadron colliders involve launching bits of matter into one another. Matter is also often carved up, burned or destroyed in some other fashion. Usually, little reverence or respect is exhibited towards the studied matter. The same holds for scientific research into plants or animals. Plants are regularly harvested or grown in artificial conditions. Developing new vegetable species often occurs with limited resources for plants and with little concern for whether the new species will be viable or not. Like in the case of matter, the scientific study of plants often involves their destruction, for example, when plants are dissected or dried for preservation.

Instrumentalization is most striking in scientific research on animals. Animals are often taken from their natural habitats and confined in small cages. Sometimes, animals are subject to invasive testing, such as neuroscientific experiments on rats or experimental surgery on apes. Rarely do scientists show reverence or respect for the studied objects, plants or animals.

The second conflict pertains to the differences in how animists and scientists approach and engage with objects, plants and animals rather than to claims about their abilities. Nonetheless, the conflict points to practices that appear to be inherent in animistic and scientific practice, and are fundamentally at odds.

One could object that the ways in which objects, plants and animals are often treated in scientific research are not essential for scientific practice. Proposals for an alternative "animistic science" have been put forward. Stephan Hardin wrote:

As animistic scientists, we bring the four functions [thinking sensing, intuition and feeling] together through sensory experience, visualisation and contemplation. We go into the woods and immerse ourselves experientially in the semiotic communicative web of our animate Earth. We realise that everything is language—the call of the birds as much as the sounds and sights of the wind in the trees (. . .). Then, sitting on a boulder perhaps, we (. . .) turn inwards, using our scientific knowledge to carefully build up a step by step visualisation—like that of a plant growing from a seed—of Gaia's long evolutionary journey. We see the planet

coalescing from a disc of gas some four and half thousand million years ago, we see her crust solidifying and see her global ocean, some three and half thousand million years ago suddenly populated by green photosynthesising bacteria. We see the first continents appearing some two and a half thousand million years ago and witness the birth of the long-term carbon cycle as the first bacteria on land begin the weathering of silicate rocks. We sense oxygen slowly building up in the atmosphere, and we experience the huge explosion of multicellular life some 600 million years ago that quickened Gaia's intelligence, making her ever more adroit at regulating her temperature. Then, if we are lucky, we might be granted a powerful intuitive experience of being Gaia'ed—of the palpable sacred reality of the huge, round sentient personhood (beyond concepts—beyond description) of our breathing, turning world in whom we deeply and joyfully participate. Once again we witness the return of hermeticists' animating spirits of the world in a manner consistent with modern science relevant for our times. With this comes a spontaneous ethical feeling of wanting to act to benefit all beings who inhabit the Earth—from rocks to humans—an ethics in which we feel that all beings have intrinsic value simply because they exist (. . .). We have come home to Gaia, and now, with this inspiration, we can get down to the work of finding our peaceful and rightful place within her turning lustrous body. (Harding 2014, p. 382)

Harding's proposal is more in line with pantheism than animism.²¹ His proposal can be adapted for animistic purposes as well. As scientists are called to show reverence to nature and contemplate its beauty, scientists could be called to show the same reverence to each individual object, plant or animal. Such reverence could create a mindset that alters the ways in which scientists conduct research.

Some also note that (some) scientists do show great respect, and even love, for the animals or objects they study. Biologists often go to great efforts to protect the wildlife they study. Physicists also sometimes show respect for the matter used in their experiments.

Questions can be raised as to whether a change in mindset in all or the majority of scientists is possible. More importantly, though, it appears that an altered, animistic mindset would lead to a different kind of science than that which we have now. Scientists could express their thanks and reverence to plants or animals used in testing in line with Harding's proposal. Acting in line with robust forms of animism, however, would impose very stark limitations on what scientists are allowed to do. The animist hunter only takes animal lives to ensure his survival. His behavior suggests that taking animal lives is a necessary evil that can only be pursued to provide for basic needs. Much of scientific practice does not serve such basic needs.²² One classic goal of scientific inquiry is achieving knowledge for knowledge's sake. Biologists dissect animals to gain knowledge about their internal anatomy. Botanists pick and dry plants to find out their internal properties and functions. Physicists collect and often destroy matter to learn about its constituents and how it may be used. Such common examples of scientific practice do not serve basic human needs for survival.

An animistic form of science could refrain from invasive methods (such as dissecting and destroying matter). This would, however, only leave scientists with methods such as observation and a priori reasoning. Observation of animals would also be severely limited because observation would easily intrude on animals' natural habitats. It is very doubtful whether such a limited way of conducting science would be acceptable to a majority of scientists.²³ It also remains highly doubtful whether a limited, animistic form of science would fit well with governments' and people's expectations of science.

6. Conclusions

I discussed two conflicts between animism and science. The first conflict is that animists and scientists make conflicting claims regarding the abilities of objects, plants and animals. I argued that both views present an incomplete, yet compatible, view of objects, plants and animals. Therefore, no conflict arose.

A second, real conflict did arise. Whereas animists see objects, plants and animals as endowed with intrinsic value and believe that they ought to be treated with respect, scientific practice tends to instrumentalize. While instrumentalizing could involve some level of respect, true respect would imply not using objects, plants or animals for the mere advancement of knowledge. The latter is difficult, if not impossible, to abandon for science.

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Notes

- 1 Exceptions are the contributions to Tiddy Smith's "Animism and Philosophy of Religion" (Smith 2023).
- 2 Much of this section was previously published in a slightly different form in (Van Eyghen 2023). Reprinted with permission.
- 3 For a more detailed account, see also: (Van Eyghen 2023).
- 4 This form of Spiritism gained popularity near the end of the nineteenth century. Adherents held séances in which they invoked spirits or tried to communicate with spirits through material means (e.g., Ouija boards). Notable figures in the spiritist movement were Allan Kardec, Frans Mesmer and the Leah sisters.
- 5 See: (Hornborg 2006; Stanford and Jong 2019) for examples.
- 6 A considerable number of animists do hold that a spirit can be disentangled from its body. Nonetheless, they are usually embodied.
- 7 Regarding animals or objects as *spirited* can be regarded as analogous to Platonist accounts wherein souls are the essence of persons and are separable from bodies. They can also be regarded as analogous to Aristotelian accounts wherein body and soul jointly make out personhood and are not separable.
- 8 New Animism has been defended by a number of authors (see: Hallowell 2010; Harvey 2014). Viveiros de Castro defends a similar position he calls "perspectivist cosmology" (De Castro 1998).
- 9 Bird-David objects to calling the performances rituals, but calls them "practices" instead (Bird-David 1999).
- 10 Bird-David uses the Nayaka term "Devaru" to designate spirits.
- 11 This robust view of animism resembles what Graham Oppy calls "hard cases" or "ontological animism" (Oppy 2023).
- 12 Graham Oppy defends a similar argument, though not closely tied to science (Oppy 2023).
- 13 The existence of a human soul, from a scientific perspective, is a topic of debate, with some arguing that there is no scientific evidence for its existence. As this discussion falls outside the scope of this paper, I chose to leave the topic open-ended.
- 14 See, for example: (Schmertz 1994; Rose 2013; Harvey 2006).
- 15 The movement has roots in feminist and deconstructionist strands of philosophy. A thorough discussion of these backgrounds lies beyond the scope of this paper. See (Alaimo and Hekman 2008) for more on these backgrounds.
- 16 The argument is also regarded as highlighting the problem of how immaterial thought and bodily processes can interact.
- 17 The discussion is known as "the demarcation problem". Larry Laudan famously argued that demarcating science from non-science had failed (Laudan 1983). New proposals were put forward and criticized after Laudan (see: Pigliucci and Boudry 2013).
- 18 A variant of epistemological scientism was defended by Alexander Rosenberg (Rosenberg 2011).
- 19 Key problems are that scientism is self-referentially incoherent and rules out many cases of obvious knowledge. For criticisms, see (De Ridder et al. 2018).
- 20 For a criticism of some proposals to deny the reliability of animistic experiences, see (Van Eyghen 2013).
- 21 Harding draws heavily on Lovelock's Gaia-Hypothesis in his defense of animistic science. Lovelock argues that all living matter on earth can be regarded as one living superorganism endowed with agency (Lovelock 2016). While Lovelock's approach fits well with some accounts of New Animism, it resembles pantheism (the thesis that the whole universe is one living, divine being) more closely.
- 22 Some scientific research does serve basic survival needs, such as curing diseases or preventing disasters. Much of science, however, does not serve these goals.
- 23 To my knowledge, no sociological data on scientists' views on this matter exist.

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