

---

# SCIENCE AND THE SERPENT

## WHAT EVOLUTION TELLS US ABOUT MORALITY

Alfred Kracher<sup>\*</sup>

*Iowa State University, Ames Laboratory, Ames, IA 50011, USA*

(Received 26 July 2019)

---

### Abstract

Humans are moral beings, uniquely among earthly life. The only reason we are aware of this is that sometimes we do not act morally. It is therefore a central aspect of being human to try to account for moral failure. I argue that, given what we know today about the genealogy of *Homo sapiens*, that moral failure has two conceptually separable roots. One is due to our evolutionary heritage. Conflicts that call for making a choice can arise in higher animals as well as humans. But in humans moral responsibility can attach to some choices, and a person may fail to make the correct one. This kind of imperfection must be distinguished from purposely choosing evil. Sometimes a wrong choice is not just lack of wisdom; sometimes we chose with malice. And we therefore have to consider two separable aspects of moral failure. As long as all moral failure is ascribed to a single source or event, for example the Fall from Paradise, this kind of distinction is obscured. Recognizing that there are two separable aspects of moral failure enables us to distinguish between imperfections and evil. Denying this distinction tends to trivialize evil. That all of us are subject to occasional failures does not suspend our ability of moral judgment, nor the obligation to exercise it when called for. If moral failure would automatically put us all on the same footing, it would lead to moral paralysis. Trying to prevent this is what gives the distinction that I advocate here its importance and urgency.

*Keywords:* animal behavior, evil, fall, imperfection, moral conduct

---

### 1. Introduction

Questions surrounding moral conduct and moral failure are as old as humanity. The oldest myths we know of appear to be concerned with what we would today call moral commandments and the origin of evil [1]. Often there is some kind of genealogical narrative that traces these fundamentals to a particular story. Humans seem to have a universal desire to have a single explanation underlying all instances of immoral conduct. In this paper I argue that we must revise this picture, because there are two distinct roots of moral failure that are conceptually separable. This conclusion is a consequence of the interaction between the evolutionary descent of our species and our uniqueness as moral

---

<sup>\*</sup>Retired, home address: 15837 Garden View Dr, Apple Valley, MN 55124-7006, USA;  
e-mail: akracher1945@gmail.com; tel.: 001 515 451 6745

beings. On the one side, our evolutionary heritage can sometimes occasion moral lapses, but on the other there are also immoral acts that appear to be rooted in human freedom and do not have an obvious evolutionary genealogy.

Starting with a simple illustration, the paper discusses how our understanding of the distinction between these separate aspects arose from recognizing the process of evolution and what I mean by conceptually separable. I argue that the distinction is of practical importance, and that it has previously been intuitively suspected, though not fully recognized because of the desire for a unitary explanation. Making the distinction advocated here also suggests that not all kinds of moral failures deserve the label of moral evil, and therefore the meaning of the term *evil* will also be discussed. This is primarily a theoretical analysis, and practical applications can only be briefly mentioned. The analysis as such is in its early stages, and much more work needs to be done on the genealogy of moral failure in light of the ideas presented here.

## 2. A foretaste of the problem

Let us begin with a very simple, perhaps even childish example. Consider a cake cut into two unequal pieces offered to two persons. Let us stipulate that the moral thing is clearly for the first person to choose the smaller piece. Imagine two scenarios in which this person fails to do the moral thing. In the first scenario he takes the bigger piece and leaves the smaller one to the second chooser. The second scenario also begins with the person choosing first taking the larger piece, but then he grabs the smaller piece and throws it in the trash, because he does not want the second person to have anything. Both scenarios describe moral failure. The central argument of this paper is that there is a difference in kind, not just in degree between these two types of moral failure. We will later deal with more complex contemporary examples.

Several observations can be made about the difference between the two scenarios. First, example two seems on the face of it the more serious moral failure. I will later argue, however, that this does not always mark the distinction at the core of my argument. It may be usually the case, but I will suggest that sometimes moral failures with very serious consequences can be more like the first scenario rather than the second.

A second, more important difference concerns intelligibility. Everyone can probably understand a person who takes the bigger piece of cake even when the other person is hungrier. Even if we do not approve, the behaviour is intelligible as an act of egoism. Until we have more information about the actor, we do not know whether he is habitually greedy or whether this was a momentary lapse of moral judgment, but neither alternative poses any problem for understanding.

What someone with normal moral sensibilities cannot readily understand is throwing the smaller piece away so that the other person gets nothing. Rather than simple egoism, this seems like an act of pure malice. But unlike the label of greed in the first example, calling the second case malice does not advance our

understanding. Malice is largely mysterious, even when we find it in ourselves. Whereas in an egoistic act, like the first example, it is usually clear what benefit the actor derives from it, acts of malice do not always benefit the actor in an obvious, practical way. We will later see in what sense malicious acts are ego-driven, and how a religious metaphor helps us to describe this.

A third aspect of these two examples is related to the central role of evolution in my argument. As the next section will discuss in more detail, we can see analogies between the first of the above scenarios and food sharing in other primate species. But the behaviour from the second scenario does not seem to have a close analogy; it is exclusively human.

### 3. The role of Evolution

Human morality has roots in the sociality of higher animals. This was already noted by Charles Darwin, whose words to that effect are quoted by Frans de Waal in *The Age of Empathy* [2]. Apes do not engage in moral reflection, as de Waal explicitly acknowledges [2, 3], but the way they act often reflects what Konrad Lorenz called *moral-analogue behaviour* [4]. In the following I will make a distinction between *behaviour*, which is what can be outwardly observed, in animals as well as humans, and moral *conduct*. Talking about conduct attributes to the observed action a component of conscious motivation and potentially also deliberation. In the case of human action a judgment in this respect is possible, because it relies on a shared human nature. We intuitively and automatically attribute motives to observed action, but we can also rationally analyse another person's reasons for acting. It follows from this terminological usage that the phrase 'moral behaviour' is an oxymoron and is therefore avoided.

Biologically humans are primates, and most primate species live in structured societies. Their social behaviour is relevant, in a way that bees or ants are not, to analysing human sociality. Observations of primate behaviour recognize issues of individuality, cooperation, negotiation, and sophisticated conflict resolution. Of course, this may not always work in optimal ways, just as it does not in human society. But there is an additional dimension of deliberation, both in foresight and retrospective analysis, in human action, and this is why we consider humans morally responsible for their conduct. The moral reflection on our natural, i.e. evolution-related, impulses applies not only to our own actions, but also allows us to understand those of others. We intuitively assume that the impulses of other humans, and perhaps even those of closely related species, are not too different from our own. Our shared human nature allows making moral judgments on the basis of this intuition about the conduct of fellow humans, whether they are about things going wrong or going right.

In this way the first example of cake division becomes intelligible. But what about the second? It seems inappropriate to ascribe malice to an animal. Malice in the above sense is exclusively human. Evolution has not provided us with the intuition that would make an act like the second scenario *prima facie*

intelligible. Philippa Foot makes this point tersely: “while no animal can be said to ‘know the better and choose the worse’, it makes sense to describe a human being as doing this” [5]. In other words, the freedom that has emerged with becoming human raises the possibility that we can act worse than animals. There is a specifically human way of badness that our evolutionary heritage cannot explain.

There are then two distinctive roots to human moral failure, one inherited via our evolutionary descent from social animals, the other that did not come into existence until the emergence of uniquely human faculties. One may think of them as separate genealogies of immorality. Of course, not every individual act can be attributed to either one or the other root; in most cases of moral failure there will be contributions from both. This is the reason for describing the two genealogies as *conceptually* separable. There are empirical reasons for associating each with different concepts, but the acts they lead to may have roots in both lineages. The remainder of this paper will attempt to clarify this distinction, look for historical evidence, and explain its practical importance.

#### 4. The notion of evil

Since it is not *prima facie* understandable, a malicious act calls for an explanation. We may look for signs of hatred or anger, and if we find them we will further inquire what has caused these emotions. But if we don’t find them, if it is done for example with a sneer, that is the point when the word ‘evil’ will probably enter our mind. What prompts this label is exactly the lack of intelligibility, the aspect that makes this act mysterious to us. Susan Neiman thus writes that “the problem of evil... is fundamentally a problem about the intelligibility of the world...” [6] Hence the notion of a mystery of evil.

Unlike Neiman, however, the discussion in this paper is confined to *moral* evil and ignores the cluster of phenomena that are often called *natural* evil. I agree with authors such as Christopher Southgate [7] and Bethany Sollereder [8] who reject ‘natural evil’ as an appropriate term to describe suffering that is not due to moral failure. Since evil is unavoidably a moral term, these and other authors have replaced it with the concept of ‘disvalue’. Sollereder provides a careful explanation of the distinction [8, p. 5] with further references. It must be acknowledged that a particular event may in this regard be ambiguous to an outside observer, for example, when a person’s moral judgment is impaired by a brain defect. However, this ambiguity is due to limitations regarding the knowledge of the observer. If the observer were omniscient, the distinction between moral evil and natural disvalue would be perfectly clear.

Even if we confine ourselves to human conduct that is obviously intentional, our everyday language does not label all clearly immoral acts as evil. We do not generally include things like briefly losing one’s temper, or an insincere compliment to a host under this description. In most cases when some act or situation is described as evil, it is because it: (a) involves a serious matter and (b) there is something incomprehensible or at least puzzling about it. Not all

moral failures are incomprehensible, even when they are serious. Consider the case of murder out of jealousy versus someone setting a cat on fire just for sport. The former would appear more serious, because it involves the death of a human being rather than an animal. And yet, at least to some people the judgment of evil will probably come to mind more readily in the second case because it is so incomprehensible. The fundamental connection between evil and unintelligibility is a central aspect of the distinction between the two kinds of moral failure under discussion.

However, intelligibility cannot be considered a fool-proof criterion for making the distinction that I am talking about. We may actually understand an act of evil because we have been tempted to do the same thing. And conversely someone's emotional endowment may be sufficiently different from ours that we do not understand that person's acts, whether they have anything to do with evil or not. But on the whole, the fact that we find some moral failures understandable and others not are an indication that we should look for more than a single genealogy for all of them.

Two more aspects about the notion of evil need to be considered, although in this brief, preliminary presentation I cannot give them the detailed treatment they would deserve. The first of these is the question whether all moral failure can be ultimately traced to selfishness, to our "fat relentless ego" [9] getting in the way of our quest for goodness. If selfishness in this context implies an obvious, tangible benefit to the actor, then the answer is clearly no. Dean Cocking and Jeroen van den Hoven give a chilling example [10]. In 2008 hackers hijacked a link of the Epilepsy Foundation of America to a website with a flashing display, deliberately designed to trigger epileptic seizures. The point is that not only is there no tangible benefit to the hackers in causing unknown epileptics to have a seizure, but they could not even be aware whether their scheme had succeeded. They simply want to hurt vulnerable people.

One must assume that some kind of satisfaction accrues to the perpetrator of this kind of evil. But if we stretch the definition of selfishness to include this hypothetical feeling of satisfaction, the argument becomes circular. If we see no obvious benefit to the actor nor find any other intelligible reason for an evil act, then simply assuming the self-satisfaction because the action is actually performed does not explain anything. Such an act is clearly *not* selfishness in the ordinary sense of the word. And the pointlessness is part of what makes such malicious acts unintelligible. We will later get help from classical theology for identifying the payoff in situations of this kind.

The second issue is whether minor moral failures can, when consistently indulged, rise to the level of evil. Making a habit out of transgressions constitutes what is commonly called vice. In the introductory cake scenarios I have implicitly pointed to this issue by saying that we cannot be sure that taking the bigger piece comes from greed or is a momentary lapse. Greed is a classic vice (*avaritia*), a habit of doing the wrong thing. Surely such a habit is a manifestation of evil. The notion that there might be a slippery slope from minor transgression to the evil of vice may be thought to invalidate the distinction I

made between the two scenarios. But this would be a wrong conclusion. Extending the metaphor of a slippery slope, it is not the slope itself, but the stepping onto it that is the problem. The individual transgression is intelligible, but it is much harder to understand why someone would make a habit out of acts that are obviously wrong. Of course, individual histories vary, and a great number of phenomena like addiction, social environment, etc., play a role when some kind of repeated action becomes a habit. As we will see in the subsequent sections, it is the importance of the distinction proposed here that will help us to avoid going down the slippery slope.

## 5. What a single ‘origin of evil’ gets wrong

Most of us have an intuitive preference for simple, linear explanations. With the awareness that we sometimes do not behave morally comes a search for a single, simple explanation why this is so. This is not just a feature of ancient, ‘primitive’ mythology, but continues, as we will see, into the age of Science. On the other hand, it is also due to the scientific insights into the process of evolution that we have gained an awareness of the need to make the distinction I am arguing for.

Many mythical cosmogonies tend to present us with a cosmos that was *meant to be* regular, predictable, perfect, but that became disturbed by some signal event that marks the beginning of moral failure [1; A. Kracher, *The Cosmos Considered as a Moral Institution*, in *Nature and Beyond: Transcendence and Immanence in Science and Religion*, M. Fuller, D. Evers, A. Runehov, K.W. Saether & B. Michollet (eds.), Springer International Publishing, Switzerland, in press]. In Navajo mythology it is Coyote the trickster, in Genesis 3 the serpent, in Greek mythology Pandora, who cause evil to enter the world. In some of these narratives it is not entirely clear whether suffering and perhaps some kind of misbehaviour existed even before the mythic events. But at least Genesis is explicit that all moral failure and all suffering are due to the transgression of Adam and Eve. That at least is how the story in *Genesis* 2–3 is commonly understood. It is not my purpose here to argue whether this is indeed the intent of the Eden narrative (see Andreas Benk [11] for an argument that it is not), only to point out that this is the way it has traditionally been interpreted. In C. S. Lewis’ fairy tale retelling *The Magician’s Nephew*, Jadis, the bringer of evil, is literally dropped from outside into the world of Narnia as it is created [12]. This notion that the world is not how it is supposed to be, that evil is somehow *unnatural* to it, is important for evaluating this strand of thinking about evil in light of evolution. We might call this the *supernaturalization* of evil.

Turning from mythic traditions to contemporary science, it too has its specific narratives, including explanations for the origin of evil. If the explanation is to stay within the boundaries of science, this narrative has to be based on a *naturalization* of evil. Beginning with theories about the self-perpetuation of genes as proposed by sociobiology [13] and its popularization as

the “selfish gene” [14], human selfishness was proposed as the inevitable result of evolution. For some time this took the form of an implicit assumption that the selfish gene must underlie all forms of moral failure. As Frans de Waal noted [3, p. 38-42], in the end the prevailing negativity about our genetic inheritance came to be rejected due to the insight that many mammals, particularly primates, have evolved complex forms of cooperation, empathy, mutual aid, etc. These features are just as much part of human evolutionary heritage as selfishness.

Either of the two narratives gets something right, but by itself either is also incomplete. The metaphor of a source of evil outside the world resonates with the mysterious nature of evil. But it ignores that a vast amount of misbehaviour does in fact have an evolutionary explanation and thus is built into how the world works right from its beginning. There can never have been the kind of world postulated by traditional interpretations of Eden. A world without disvalue (natural evil) is so far from our experience that it cannot even be imagined. We owe this insight to science fiction authors, some of whom have tried and failed to do just that [12].

On the other side, a naturalization of evil in the ‘selfish gene’ sense is entirely unable to account for the fact that there is not only prosocial, but also antisocial human conduct that any analogy with animal behaviour fails to explain. It may be possible to construct evolutionary just-so stories around observed human acts, but as observed before, in cases like malice they become unconvincing. For example, one critic has argued that the malicious cake-destroyer in my introductory example may want to gain an evolutionary advantage by letting his opponent starve to death. But this is grasping at straws. Studies of food sharing in primates [2] show that they simply do not behave in this way, even when serious disputes about rank are at issue. Prosocial motivations are too strong, and ostracism from other group members would defeat the purpose of this kind of cruelty. Humans on the other hand can often get away with being malicious, especially if particular social circumstances shield them from ostracism.

## **6. Historical aspects**

I have argued that our knowledge of evolution prompts us to distinguish moral failures due to evolutionary imperfections from cases of evil like malice. The scientific insights that underlie this piece of moral philosophy became clear only during the late 20<sup>th</sup> century. Nonetheless it may be asked whether in earlier ages farsighted thinkers had some kind of intuitive awareness that such a distinction would have to be made.

A recent analysis of relevant parts of the works of Thomas Aquinas (1225–1274) by Jennifer A. Frey [15] suggests that Aquinas was in fact thinking along similar lines. What I refer to as moral failure overlaps only partially with his category of sin, but within the range common to both concepts he distinguishes sins of passion from sins of malice, the latter being in his view the more serious kind. To what extent is this an antecedent of the distinction

proposed in this paper? The boundary is perhaps not drawn in quite the same place as here, and one must be careful when translating words like *passio* and *malitia* into modern language. Nonetheless the distinction that Aquinas draws is similar to the one proposed here in two important ways. First, although animals cannot commit ‘sins of passion’, they do pursue goals in common with our own, some of them passionately. In this respect it is not the passionate pursuit *per se*, but its selfish indulgence that constitutes a moral failure in humans.

The second aspect needs a more complex explanation, but it is more important to the current argument. In addition to human failings, Frey also discusses Aquinas’ opinion on the sin of Satan. This is significant, because Satan is pure spirit and yet sins. From our modern point of view his moral failure cannot be linked to evolution because he has no body. We may no longer believe in the reality of Satan, but the point that moral failure can be purely ‘in the spirit’, disconnected from corporeality, is worth noting. Translated into the terminology used in this paper, Aquinas identifies a kind of moral failure that is related solely to human faculties and cannot be traced to an evolutionary genealogy. Although he could not have known the evolutionary underpinning of the argument, I think he was right about this.

For Aquinas all sin is due to inordinate self-love. In light of what we know today about evolution, we realize that there is a difference in how this applies respectively to passion and malice. Passion as generally understood is directed toward a goal that we can recognize as an objective good. We can indulge it to the detriment of fellow beings, and then it becomes moral failure. This is ordinary selfishness. But in Aquinas’ Satan self-love expresses itself as “pleasure in his own power” [16, p. 75], in other words a private satisfaction that has no objective standard.

Even though there is not complete congruence between Aquinas’ passion/malice distinction and the separate genealogies of moral failure proposed here, we can see how the idea of being in love with one’s own power helps understanding malice. The love of power in question is not the desire of a chimp to become alpha male or of a sled dog to become pack leader. That is, it is not something with an evolutionary explanation. One might say it is *spiritual* power, and in the case of malice it is used to destroy. The hackers who intended to hurt epileptics had no ambition for leadership, simply for destruction.

Aquinas’ distinction is based on common sense as much as on Aristotle’s ethics, but there is a problem. As long as a single genealogical narrative for all moral failure, ‘the Fall’, is taken for granted, the distinction is unstable. If God is perfect and intended perfection, then it could be argued that any violation of this perfection really is as bad as any other. In other words, we humans may make a distinction between some minor failing and truly evil acts, but as far as offending God goes, they are of the same kind. To take this view of the matter leads to a strict rigorism that defies attempts at making distinctions in the severity acts and their particular circumstances. It is a position that gained considerable influence in the 16<sup>th</sup> and 17<sup>th</sup> centuries, particularly among



Calvinists, but also the Jansenist movement within the Catholic Church [16]. The disastrous effects that this has had are the subject of the following section.

## **7. The trivialization of evil**

Living as social beings we necessarily have to make moral judgments about others. We do this constantly, even at times when we are unaware of doing it [17]. And since nobody is perfect, we regularly overlook, forgive, or compensate for the imperfections in our fellow humans. This is a necessity in human relationships, but it is also necessary to know when we should *not* do this. Whether it is in private relationships, at work, or other parts of social life, we need to know whom to trust, how to avoid being taken advantage of, and not least recognizing who needs our help. Importantly, such an awareness is also part of our duties as citizens: “We have to distinguish between imperfect leaders and corrupt ones, and we need the vocabulary to do so” (Peter Wehner in *The New York Times*, 25 August 2018). If in this quote ‘corrupt’ means not just financial malfeasance, but refers to moral corruption, then this is exactly what the present paper is about.

We need to develop the ability to judge both the severity and the intelligibility of immoral acts. These are, as I have argued, not the same thing. We can only make allowance for what we can understand. It is not helpful in this context to point out that we are all sinners. Maybe so, but not equally so. There are differences in both intent and severity that do matter. Being a sinner does not suspend the ability of moral judgment, nor the obligation to exercise it when called for. Someone who puts up with just anything will quickly end up in what Cocking and van den Hoven call a ‘moral fog’ where a person becomes incapable to resist evil and perhaps even participates in it [10, p. 82-118].

Sound judgment is not just a necessity in interpersonal relations, but equally so with regard to institutions and other social entities. Our age has seen acts of radical evil on an unprecedented scale. We also encounter smaller instances of pointless malice all around us. To treat all our failings as if they were quasi embryonic precursors to such radical evil is not only implausible, but morally wrong. Not only does it not help us in any way to become better humans, but instead it trivializes this kind of evil.

I believe that most of us are intuitively aware of the difference. We may at some time commit something that we judge in our own conscience to be an act of evil, and understand that this is different from common imperfections. When this happens, we normally feel compelled to ask forgiveness or seek some kind of atonement. And when we find such repentance missing in another person, it must not be excused by some implausible notion that all moral failures are ultimately on the same plane. To do so compounds injustice.

In addition to the social aspect there is also a psychological objection to treating all deviations from perfection as equally serious, or almost so. Martha Nussbaum, in an extensive study of emotions writes about moral development in childhood: “Any strong emphasis on the badness of human imperfection...

through the image of a perfect and intolerant parent, may exacerbate the child's moral crisis to the point of producing moral death" [18]. Learning the naturalness of imperfection is an important part of moral development. When we follow Nussbaum's diagnosis into adulthood, we find that rigidity inhibits the development of *moral intelligence*. The latter is in large part the ability to distinguish between imperfection and evil. Where this is missing, it is often replaced by mindless rule-following that pays no attention to the needs of actual human beings and their circumstances [16, p. 272]. Sometimes this is reinforced, even in moral guidance for adults, by inculcating guilt for any kind of rule breaking. Developing moral intelligence involves giving up on moral advice that does this and leaving its purveyors behind [18, p. 224-237].

Applying moral intelligence to the distinction between imperfection and evil requires what might be called *discernment*. The word is traditional in Christian spiritual literature, but it fits the present context well even without its religious connotation. As spiritual tradition tells us, discernment can be learned, but to learn it needs effort. To avoid this work is in itself a moral failure. In today's world we might be tempted to outsource, as it were, this necessary work to social media, pundit commentary, and the like. This is a form of *acedia*, a vice usually translated as sloth, but literally 'without care', or as we would say with a modern phrase without due diligence. In this case *moral* diligence, which we owe our fellow humans and our standing as responsible citizens.

## 8. Conclusions

What has been said so far can be summarized as suggesting that there are two separable genealogies of moral failure. One is associated with choices among options that are ultimately 'natural' in the sense that they concern situations that animals, perhaps in a simpler form, may face as well. For humans such situations may be more complex and culturally overprinted, but they are still linked to our evolutionary history as animals. Handling anger in a morally responsible way is a good example. Transgressions of this kind are often, though certainly not always, less severe, because there is usually a balance between the prosocial and egotistic impulses in our evolutionary heritage that limits how far impulsive antisocial conduct will go.

The other genealogy, however, is uniquely human, because it is a consequence of the emergence of moral freedom. That humans are moral beings I take to be an empirical fact [A. Kracher, *The Cosmos Considered as a Moral Institution*, in press], without entering into debates about the human uniqueness of particular traits. Humans have evolved a capacity to be more prosocial than their animal ancestors. And also to be less so. In this paper I cannot go into a detailed defence of this view. I think it will be obvious to the majority of readers. But I do want to defend the view that the capacity itself is a consequence of the natural process of evolution. Poetic narratives that put the responsibility on supernatural beings or events are sometimes (although not always) helpful, but their subject should not be considered to be physical or metaphysical reality.

In connection with the first kind I have used, in a rather loose way, the term natural, as for example by talking about the naturalness of imperfection. To avoid misunderstanding, a brief clarification is in order. There is an ordinary way of speaking according to which a mountain is natural, but a New York skyscraper is not [19]. ‘Power politics’ in social animals can be complex and sometimes vicious [2, p. 44-45], but it is always possible to identify an evolutionary function. Humans would not feel pleasure in their own power, like Aquinas’ Satan, if there were no underlying emotional impulse that had been formed by evolution. But the malicious application, satisfying this impulse to do pointless harm even without any benefit to the actor is not pre-formed. In that sense it is not natural, just like our ability to build computers is not merely a natural extension of animal tool use.

The understanding of evolution that we have reached today allows us to see which aspects of moral failures are related to our evolutionary heritage, and which are characteristically human. This is a valuable insight. But it also necessitates a new evaluation of the kind of narratives by which we anchor our moral precepts in history and in nature. Given the dangers in ignoring the distinct genealogies of moral failure that are alluded to in this work, it appears important to get such an evaluation under way.

## References

- [1] R. Brague, *The Wisdom of the World*, University of Chicago Press, Chicago, 2003.
- [2] B.M. Frans de Waal, *The Age of Empathy*, Random House, New York, 2009, 8.
- [3] B.M. Frans de Waal, *The Bonobo and the Atheist*, W.W. Norton, New York, 2013, 17.
- [4] K. Lorenz, *On Aggression*, Harcourt, Brace & World, New York, 1966.
- [5] P. Foot, *Natural Goodness*, Clarendon Press, Oxford, 2001, 56.
- [6] S. Neiman, *Evil in Modern Thought*, Princeton University Press, Princeton, 2002, 7–8.
- [7] C. Southgate, *The Groaning of Creation*, Westminster John Knox Press, Louisville, 2008.
- [8] B. Sollereeder, *God, Evolution, and Animal Suffering*, Routledge, London, 2019.
- [9] I. Murdoch, *On God and Good (1969)*, reprinted in: *Existentialists and Mystics*, Chatto and Windus, London, 1997, 337–362.
- [10] D. Cocking and J. van den Hoven, *Evil Online*, Wiley Blackwell, Oxford, 2018, 1–9.
- [11] A. Benk, *Schöpfung - eine Vision von Gerechtigkeit: Was niemals war, doch möglich ist*, Mathias Grünewald Verlag, Ostfildern, 2016.
- [12] A. Kracher, *Zygon*, **41**(2) (2006) 329-346.
- [13] E.O. Wilson, *Sociobiology - The New Synthesis*, Harvard University Press, Cambridge, 1975.
- [14] R. Dawkins, *The Selfish Gene*, Oxford University Press, Oxford, 1976.
- [15] J.A. Frey, *Aquinas on Sin, Self-Love, and Self-Transcendence*, in *Self-Transcendence and Virtue: Perspectives from Philosophy, Psychology, and Theology*, J.A. Frey & C. Vogler (eds.), Routledge, London, 2018, 62-83.
- [16] A.A. Jonsen and S. Toulmin, *The Abuse of Casuistry*, University of California Press, Berkeley, 1988, 231-249.

- [17] M. Midgley, *Can't We Make Moral Judgments?*, The Bristol Press, Bristol, 1991.
- [18] M. Nussbaum, *Upheavals of Thought*, Cambridge University Press, Cambridge, 2001, 219.
- [19] A. Kracher, *The Diversity of Environments: Nature and Technology as Competing Myths*, in *Creation's Diversity: Voices from Theology and Science*, W.B. Drees, H. Meisinger & T.A. Smedes (eds.), T&T Clark, London, 2008, 78-88.