

Can Evolution Make Sense of Fear? Lessons from Bonhoeffer and Darwin

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In thoughts from the visions of the night, when deep sleep falleth on men, fear came upon me, and trembling, which made all my bones to shake. Then a spirit passed before my face; the hair of my flesh stood up. It stood still, but I could not discern the form thereof: an image was before my eyes, there was silence, and I heard a voice, saying, Shall mortal man be more just than God? Shall a man be more pure than his Maker?" (The book of Job iv. 13).

—quoted by Charles Darwin in *The Expression of the Emotions in Man and Animals* (Darwin, 1872, p. 291)

Introduction

In the dark days of 1933 Germany, Dietrich Bonhoeffer's delivered his famous sermon on "overcoming fear" at a vespers service in Berlin. Using lessons from the Bible, he pointed out that fear can be an immensely destructive force, undermining courage and confidence, making people shy away from facing up to (or facing down) impending dangers, and allowing evil forces to rise to the ascendancy—in his case with devastating results for Europe and the world.

Bonhoeffer's remarkable sermon deserves to be praised, and remains a striking motivational piece for our own times of social and political challenges. Yet how reasonable is it to expect that fear can, with words, be tamed? Or, at least, how easy or hard is it to do? More generally, by what pathways might people be directed to overcome their fears? Bonhoeffer was surely right about the moral failures of Germany in the 1930s. Here we explore how applying an

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evolutionary lens to fear can reveal how the message of Bonhoeffer's sermon might be even more effectively channelled to combat fear's destructive political embodiments.

Our argument will be as follows: Humans are far from calculating, rational actors that weigh up and respond to events in an even-handed way. Instead, we rely on a myriad of evolved physiological and psychological dispositions that help us to make the many complex judgments, decisions, actions and interactions with others needed to survive and thrive in life. Across the animal kingdom, *emotional states* in particular evolved as a powerful way to regulate organisms' behaviours. Yet, emotional states proved something of an enigma in biology. As Darwin observed, it is puzzling that the *inward* motivational states of emotions are accompanied by *outward* emotional expressions. Such a puzzle is particularly acute in the case of fear. Why would an animal under threat project fear to its audience, including its menace? Here, we draw on Bonhoeffer's reflections about the debilitating effects of fear in 1930s Germany, to consider how evolutionary principles shed new light on some long-standing questions about the role of fear in social and political organisation. These insights are important because they reveal an unexpected role for how fear—in the right contexts—may have been (and can still be) channelled to produce social benefit rather than social ruin.

Darwin's evolutionary puzzle of emotions

Why did fear evolve? From an evolutionary standpoint, that organisms feel strong aversion is hardly surprising. Fear prompts an organism to avoid biological hazards—perhaps the single most important imperative for the survival and persistence of any animal (Blumstein, 2020). However, fear is more than aversion. Like other strong emotional states fear is typically accompanied by dramatic emotional expressions. With fear, one discloses one's motivational cards in a high-stakes poker game of life. Among his numerous astute observations, Charles Darwin considered three perplexing facets of strong emotions such as fear.

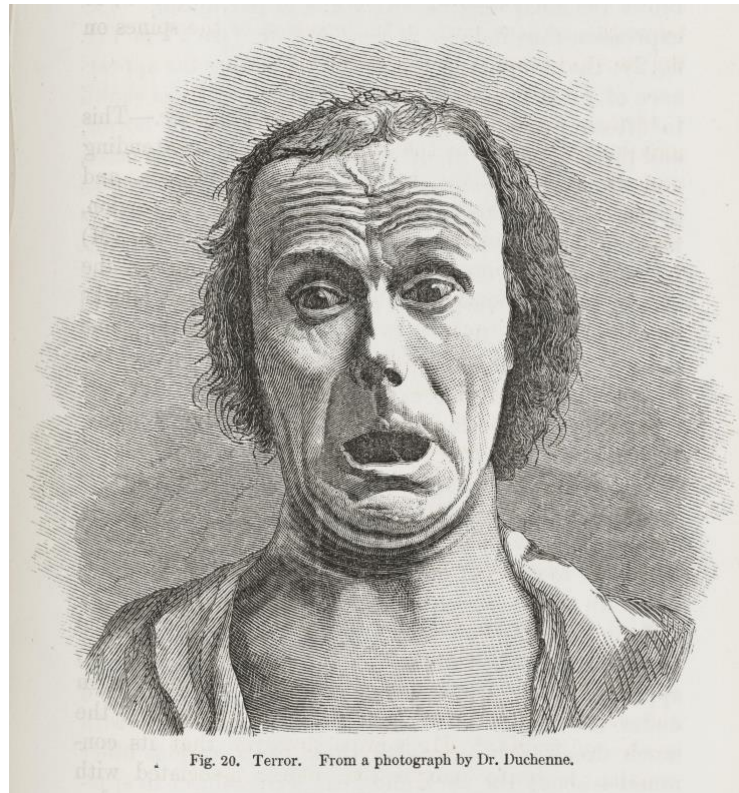


Figure 1. Image in Darwin's *The Expression of the Emotions in Man and Animals*, from Duchenne's experiments revealing the contraction of the platysma muscle as "the muscle of fright" (Darwin, 1872, p. 299).²

First, strong emotions typically produce *involuntary* physical responses:

"... certain actions which we recognize as expressive of certain states of the mind, are the direct result of the constitution of the nervous system... Of course every movement which we make is determined by the constitution of the nervous system; but actions performed in obedience to the will, or through habit, or through the principle of antithesis, are here as far as possible excluded. Our present subject is very obscure, but, from its importance, must be discussed at some little length; and it is always advisable to perceive clearly our ignorance.... [consider] ... trembling of the muscles, which is common to man and to many, or most, of the lower

² Image source:

https://commons.wikimedia.org/wiki/File:Terror,_from_Darwin%27s_Expression_of_Emotions_in_Man...._Wellcome_L0049512.jpg

animals. Trembling is of no service, often of much disservice, and cannot have been at first acquired through the will, and then rendered habitual in association with any emotion. Trembling is excited in different individuals in very different degrees, and by the most diversified causes,—by cold to the surface, before fever-fits, although the temperature of the body is then above the normal standard; in blood-poisoning, delirium tremens, and other diseases; by general failure of power in old age; by exhaustion after excessive fatigue... Of all emotions, fear notoriously is the most apt to induce trembling” (Darwin, 1872, pp. 66–67).

Darwin noticed that on the face of it (so to speak) such automated expressions are “are of no service, often of much disservice, and cannot have been acquired by the will” (Darwin, 1872, pp. 66–67).

The second perplexing feature of emotional expressions that Darwin noticed is that these automated responses are *readily interpreted by observers as indicators of inward motivation*. Darwin reports the following description from an informant:

“Mr. Bell [...] described [...] an agony of terror and of despair, which he witnessed in a murderer, whilst carried to the place of execution in Turin. "On each side of the car the officiating priests were seated; and in the centre sat the criminal himself. It was impossible to witness the condition of this unhappy wretch without terror; and yet, as if impelled by some strange infatuation, it was equally impossible not to gaze upon an object so wild, so full of horror. He seemed about thirty-five years of age; of large and muscular form; his countenance marked by strong and savage features; half naked, pale as death, agonized with terror, every limb strained in anguish, his hands clenched convulsively, the sweat breaking out on his bent and contracted brow, he kissed incessantly the figure of our Saviour, painted on the flag which was suspended before him; but with an agony of wildness and

despair, of which nothing ever exhibited on the stage can give the slightest conception" (Darwin, 1872, p. 293).

What Darwin called "the instinctive recognition of expression" (Darwin, 1872, p. 347) is perplexing because, in humans, so much communication relies on culturally acquired languages.

"... from the earliest days and throughout life quite beyond our control; for instance, the relaxation of the arteries of the skin in blushing, and the increased action of the heart in anger. We may see children, only two or three years old, and even those born blind, blushing from shame; and the naked scalp of a very young infant reddens from passion. Infants scream from pain directly after birth, and all their features then assume the same form as during subsequent years. These facts alone suffice to show that many of our most important expressions have not been learnt" (Darwin, 1872, pp. 352–353).

The third perplexing feature of emotional expressions that Darwin noticed—which is related to the first and second puzzling features, of automation and interpretability—is that emotional expressions are *culturally ubiquitous*:

"I have endeavoured to show in considerable detail that all the chief expressions exhibited by man are the same throughout the world. This fact is interesting, as it affords a new argument in favour of the several races being descended from a single parent-stock, which must have been almost completely human in structure, and to a large extent in mind, before the period at which the races diverged from each other" (Darwin, 1872, p. 359).

We can condense these three perplexing features of emotional expression into a single riddle: how might emotional expressions have evolved to benefit

organisms through involuntary, reflexive, circuits that by-passes willful effort when such expressions—“are of no service, often of much disservice” to the strongly emoting organism? For example, what biological function could be served by shuddering in the face of some manifest threat?

Darwin closed *The Emotional Expressions* as follows:

“We have also seen that expression in itself, or the language of the emotions, as it has sometimes been called, is certainly of importance for the welfare of mankind. To understand, as far as possible, the source or origin of the various expressions which may be hourly seen on the faces of the men around us, not to mention our domesticated animals, ought to possess much interest for us. From these several causes, we may conclude that the philosophy of our subject has well deserved the attention which it has already received from several excellent observers, and that it deserves still further attention, especially from any able physiologist” (Darwin, 1872, p. 366).

Darwin recognised the importance of a biological account of emotion “for the welfare of mankind” but did not directly speculate about functions. One of Darwin’s major achievements, however, was to show that emotions are not merely internal psychological states. They are an evolved system for social communication. But to what end?

The evolutionary logic of cooperation and punishment

An evolutionary approach to fear must clarify how its automated, manifest, and culturally ubiquitous properties communicate in ways different to language. This task requires understanding that communication evolved—at least in large part—for the purposes of coordination and cooperation. As we shall see, the challenges of aligning our behaviour with others raise evolutionary problems for which automated expressions afford some remarkable solutions.

Consider, for example, the quintessential problem of ensuring cooperative interactions: how can we be sure others will be loyal and return our own efforts or favors, especially in hard times? This is difficult enough in one-on-one interactions (witness the prisoner's dilemma and the many other forms of cooperation problems in everyday social life). These problems, which are tricky even at the scale of familiar neighbours, became magnified as soon as human groups expanded from the small-scale kin groups of our evolutionary past to larger, settled groups of anonymous strangers. Studies of collective action have long found that, left unchecked, cooperation among self-interested agents dwindles over time (Fehr & Gächter, 2002; Kagel & Roth, 1995; Olson, 1965). There are just too many incentives to free-ride and too much uncertainty about if or how much others will pull their weight, especially when the stakes are high and people must take risks to help others. In an environment in which cooperation is hard to achieve, what special conditions are available to enable cooperation to stabilise and endure (Ostrom, 1990)? Notice that in a cooperation dilemma, conventional language will not necessarily resolve it. "Trust me," "The check is in the mail," "My word is my bond," and similar locutions are not always effective predictors of behaviour. We seek actual bonds.

Generally, cooperation can be induced and sustained only via some other factor, but that "some other factor" typically has to be added in order to avert the otherwise relentless undermining or failure of cooperation. One simple but powerful factor is *punishment*, and the opportunity to establish rules that render punishment predictable and reliable (Ostrom et al., 1992). If people are (and anticipate) being punished for flouting the rules when everyone else is towing the line, then the price of non-cooperation can be raised above the costs of cooperation. Cheating or shirking becomes costly in itself and, thereby, cooperation can be attained. (Of course, if it is possible to *avoid* punishment, then one can potentially still reap the spoils of everyone else cooperating without contributing anything oneself, but the point is that this becomes harder and rarer wherever punishment is possible).

Solving the cooperation problem was especially important because we didn't necessarily choose to live with groups of strangers. Rather, we had to.

Biologist Richard Alexander noted that, across the animal kingdom, forming into groups is a common adaptation to defend against predation (Alexander, 1987). Exactly the same problem faced humans as well, he argued, the only difference being that the predators were not sabre-toothed tigers or packs of hyenas—they were *other human groups*. Within-group cooperation thus became essential for effective inter-group competition and defense. Members of early human groups would have been highly dependent on each other for collective survival (Gat, 2006; Keeley, 1996; Wrangham & Glowacki, 2012). Empirical analyses of 186 historical societies around the globe bear out Alexander’s hypothesis: societies with a higher incidence of inter-group warfare tended to grow to larger group sizes, and were more likely to have moralizing codes of practice that promote in-group cooperation (Roes & Raymond, 2003).

In-group cooperation, and banding together against out-groups, appears to have been a fundamental tool of survival. And, perhaps most notably, *religions*—with their panoply of norm-inducing beliefs and practices—appear to have provided an important and recurrent means of achieving it. It is religious ideas and religious rituals that often appear to provide the strongest social glue binding groups together in common purpose and actions. Whatever else it does, religion functions to bind people together. But why is it so effective a method?

Religion as a “complex adaptive system” promoting cooperative regulation and prediction

Beginning in the 1990s, economists (Iannaccone, 1994) and behavioral ecologists (Irons, 1996; Richard Sosis, 2000) theorized that religious systems evolved as *human communication systems* that function as a co-ordinated cooperative exchange through “costly” behaviours. The core of the idea is that religious behaviour evolved (or was co-opted) to *authenticate* cooperative acts and responses among exchange partners (Irons, 2001)—a way of guaranteeing loyalty and the future return of favours with costly and “hard to fake” signals of commitment. Of course, religion cannot be reduced to a single thing, and indeed modern evolutionary approaches explicitly recognize it as a “complex adaptive system” (defined as “a set of interacting or interdependent elements that form an

integrated whole,” such that a change in one element has multiple knock-on effects on the wider system; it is “adaptive” because the system adjusts to prevailing conditions (Sosis, 2019, p. 423). Sosis refers to religious systems as “an exquisite, complex adaptation that serves to support extensive human cooperation and coordination, and social life as we know it” Sosis, 2019, p. 422).

Thus, while religions themselves represent complex *cultural* systems (Alcorta & Sosis, 2005; McCullough et al., 2016), (one of) the effects of these cultural systems is to tap into the *biological* strata of the individual human beings that participate within them. Complex cultural ideas, practices, and beliefs are perceived, experienced by, and ultimately change the behaviour of adherents, and thus influence and are influenced by their biology. Examples of this cultural reach into our biological mechanisms range from endocrine responses to ritual participation to neurological changes in religious contemplation (McNamara, 2006; Schjoedt, 2009). However sophisticated and “social” a phenomenon religion may be, its effects are made on biological organisms, and it is biological organisms that exhibit them. Signalling theorists note that religious behaviours possess the following properties:

1. Religious behaviours are “hard-to-fake” (for example, a non-believer cannot readily send credible signals of belief to those in the know).
2. Religious behaviours are markers of specific group loyalties (e.g., observing a Muslim hafiz recite the Koran reveals a commitment to Islam, not Roman Catholicism).
3. The groups to which religious persons belong are moral communities in which explicit norms guide behaviour (e.g., in understanding someone’s commitment to a religion we understand, among other things, their commitment to a moral system).

Signaling theories of religion have become widely supported (both theoretically and empirically), and the signals and their responses appear to be central to the effectiveness of religion in numerous aspects of promoting social coordination,

cooperation, and organization (Chen, 2009; Lynn et al., 2015; McCullough et al., 2016; Soler, 2010; R. Sosis et al., 2007; Sosis & Alcorta, 2003; Uro, 2010).

However, we need to push the question deeper. Why should *religious* communities be more effective moral communities than other cultural or linguistic groupings? Behavioural ecologists assume that psychological and physiological processes underpin behaviour, but they are “largely agnostic with regard to the mechanisms, both psychological and physiological, that produce adaptive responses” (Sosis & Bulbulia, 2011, p. 344). Instead, behavioural ecologists reverse engineer behaviour using the tools of optimality modelling. By describing the optimal use of resources, energy expenditure, foraging, sheltering, mating, parenting, helping, and so on, behavioural ecologists are able to explain otherwise baffling qualities of behaviour as adaptations to address core biological problems (often, the benefits are indirect, delayed in time, or accrue to genetic relatives). Though religious practices can look manifestly wasteful in their heavy commitment of time or resources, or as Irons puts it, “crazy” (Irons, 2008), the argument is that religious behaviours evolved to signal group commitment. If so, increasing the cost of such practices can merely be the price of sending a stronger signal (although, of course, there will be some optimal level, beyond which exorbitant costs will drive group members away instead of offering incentives to remain) (Sosis & Bressler, 2003, p. 234).

That’s the general argument, but what about the detail? We might want to understand why, for example, recurring features of religions propagate, such as beliefs in gods, ancestors, taboos, and afterlives rather than say, a given origin story or a sporting affiliation, and occupy nearly every terrestrial corner of the planet occupied by humans. One of the means by which religions communicate so well, it seems, is by individuals’ emotional expressions (Bulbulia, 2004). The automatic, interpretable, and reliable qualities of emotions that Darwin recognized in identifying motivational states enabled people to predict what others would do. Moreover, experiences of fear—*trembling, which made all my bones to shake*—are particularly effective modalities of cooperative prediction because fear is such a powerful and important motivator and, not least, so clearly

broadcast to everyone else as well. We next consider how fear, in a devotional setting, fosters cooperation.

The Logic of Fear in Religious Cultural Systems

A recurring feature in religious systems is a fear of punishment not from other fellow humans, but from supernatural agents or agency (Johnson, 2011; Johnson, 2005; Roes & Raymond, 2003). The form and details vary greatly, but the wrath of the gods or spirits crops up in numerous and potent ways across cultures and religions. Broad surveys of religions suggest that the role of punishment is by no means a special case of a few ancient, indigenous, or modern religions. Rather, it is common across the world's cultures and throughout history (Johnson, 2016; Norenzayan, 2013; Purzycki et al., 2016; Earhart, 1992). For example, in a purpose-built database of 116 Pacific religious cultures, all but one culture had a tradition of supernatural punishment beliefs (Watts et al., 2015).³

The pattern appears to hold globally. In the 1940s, George Murdock catalogued the common features that existed across several hundred indigenous societies around the world (Murdock, 1968). This dataset has since been used to look explicitly at whether there is any empirical evidence that societies with gods that were more “moralizing” were also more cooperative (Johnson, 2005). Moralizing gods were defined, following previous research in anthropology, as spiritual beings who are present and active in human affairs, and specifically supportive of human morality (Swanson, 1960). Across the whole sample, moralizing gods were significantly more frequent among societies that were larger, more norm compliant (in some tests), loan and use abstract money, are centrally sanctioned, policed, and pay taxes. Inasmuch as moralizing gods are more likely to threaten negative consequences for those who disregard the norms of the community, this study provided support for the notion that supernatural punishment may indeed be an important promoter of cooperation among human societies. It certainly suggests that something is going on here in the link between religion and cooperation. Theories that hold that religion is an

³ For an interactive map of the distributions of Pacific religions, see: <https://pulotu.shh.mpg.de/compare/>.

arbitrary by-product of big brains or culture do not predict any relationship between indices of cooperation and whether moralizing gods are present or not. More recent empirical studies corroborate a link between beliefs in supernatural punishment and levels of behavioural cooperation (Purzycki et al., 2016; Shariff & Norenzayan, 2011; Shariff, Norenzayan, & Henrich, 2009).

Arguably, we should not be surprised by the recurrence of punishment, and the fear that punishment instils, in the numerous cultural systems and religions across the world and across time. As we have argued above, of the many signals humans (and other animals) send and receive, perhaps the most powerful and the most important for survival and reproduction is fear (Blumstein, 2020). Fear keeps us alive. It is critical to an organism's persistence in the face of competition and predation. Indeed, psychologists have identified a powerful psychological principle known as the "negativity bias," which describes people's greater sensitivity to bad than good events (even if otherwise equivalent in magnitude). A wide-ranging review by Roy Baumeister and colleagues characterized the negativity bias as "one of the most basic and far-reaching psychological principles" (Baumeister et al., 2001, p. 357). An independent review by Rozin and Royzman similarly argued the negativity bias was a "general principle" that "holds across a wide range of domains" (Rozin & Royzman, 2001, p. 297). A large number of experimental studies have confirmed and replicated the phenomenon of negativity bias in carefully controlled laboratory conditions, where positive and negative stimuli can be manipulated to be identical in frequency and magnitude, and other factors ruled out. Furthermore, neuroscientists have observed the brain reacting more strongly to negative stimuli than equivalent positive stimuli, again under experimentally controlled conditions (Ito et al., 1998; Smith et al., 2003). Negative experiences have a special power over human thinking and behaviour.

The negativity bias is evident across a wide range of contexts. At perhaps the most fundamental level (harking back to Darwin's puzzle at the start), it is particularly notable among the six basic emotions that are universally displayed by all humans across cultures—happiness, surprise, disgust, sadness, fear, and anger. Only one is positive, whereas four are negative (the remaining one,

surprise, can be either)(Brown, 1991). Other studies find that stress and a lack of social support can cause immune suppression, but positive alternatives (such as relaxation therapies and social support) do not provide equivalent benefits (Baumeister et al., 2001, p. 343). Meanwhile, phobias can arise after a single negative learning experience, but there is no comparable effect for positive experiences. More generally, among journalists and scholars of communication, “it is considered common knowledge that bad events are more newsworthy and attract more reader attention” (Baumeister et al., 2001, p. 343) “Over and over,” as psychologist Jonathan Haidt summarized this school of research, “the mind reacts to bad things more quickly, strongly and persistently than to equivalent good things” (Schwartz, 2013).⁴

But *why* do people have a negativity bias and how does this play out in connection with religion? Psychologists believe that this dominance of bad over good emerged as an adaptive trait to avoid lethal dangers in evolutionary history (Baumeister et al., 2001, p. 343). At first glance, a systematic misperception of the world seems to be counterproductive. However, fixating on bad things—in both perception and behavior—is likely to have helped survival and reproductive success in ancestral environments. All organisms experience a fundamental asymmetry in which opportunities (positive events) may be welcome but are rarely vital, whereas dangers (negative events) can be a matter of life and death (Kahneman & Patrick, 2011). In an important sense, therefore, negative events are more important than positive events. Consequently, we would expect natural selection to favor dispositions that steer organisms away from peril (Haselton & Nettle, 2006).

This is precisely what we observe. A hair-trigger sensitivity to threat and the “fight or flight” response are widely evident across all mammals as well as other taxonomic groups, and arise in humans via the release of adrenaline even before people fully perceive the source of the stimulus (McDermott, 2004, pp. 292–293). Fear is a deeply entrenched part of human nature. But in fact it is way deeper than that—comprising biological mechanisms that we share with many

⁴ Tony Schwartz, “Overcoming Your Negativity Bias,” *New York Times*, June 14, 2013, <https://dealbook.nytimes.com/2013/06/14/overcoming-your-negativity-bias/>.

other organisms stretching back far into our history. As Dan Blumstein put it, “Over millions of years fear has kept our ancestors alive—not only our human ancestors but our nonhuman ancestors too” (Blumstein, 2020, p. 343). Fear has evidently been a key trait of the survivors. What is critical is to recognize that, over evolutionary time, many *social* phenomena have developed to harness these same underlying *somatic* responses. “When social threats arise,” as Blumstein explains, “they engage some of the same physiological and psychological systems that previously ensured safety from predators” (Blumstein, 2020, p. 343).

Let us return to the question we posed at the outset: What is it about religious expression that religious commitment communicates, in a manner that is automatic and hard to fake? The answer is that religious behavior communicates a motivational response to an authority that is higher than oneself. As Job asked: *Shall mortal man be more just than God? Shall a man be more pure than his Maker?* Job’s fear and trembling reveals that he is humbled before a higher power. Though not all religions adopt a terrifying image of the gods, most religions evoke experiences of reverence and piety directed to a restraining power (Johnson, 2016; Lenfesty & Morgan, 2019; Norenzayan, 2013). And the ethnographic and psychological evidence above reveal that commitment to a morally “policing” (or at least interested) authority is commonplace. It is through a person’s morphological expressions that we learn something important to our own interests about Job’s psychological and motivational state: Job is humbled before God. And once we understand Job’s psychological and motivational states we can predict his actions (with mutual benefits to all actors). Job will likely restrain himself in accordance with his beliefs in God’s justice. Such predictability only works, however, if Job’s emotions are automated, readily interpretable to strangers, and reliably linked to his psychological and motivational states in a manner that is not under Job’s control. That is what natural selection deemed effective as well.

Cultures of Fear: Part of the Problem and Part of the Solution

To summarise the story so far, we have seen that emotions evolved not merely as internal springs and restraints on action, but as prophets that broadcast

emotional states to an audience of others in a manner that cannot easily be feigned. Emotions are prophetic because they predict behaviours. They are reliable prophets because their expression is automatic and hard to fake. Whereas language is arbitrary, one can say “the check is in the mail” even when it is not, emotions are indexical and reflexive. When fear overwhelms, we shudder. Others may even shudder too, not necessarily because they see what we fear themselves, but because they fear whatever it is that we evidently fear. Communication evolved to be indexical because cooperative dilemmas can only effectively be solved when organisms are somewhat predictable and do not lie.⁵

There is an emerging consensus that among humans, religious beliefs and behaviours developed at least in part because such beliefs enabled religious agents to predict each other’s cooperative behaviours—and better than they could do so without those religious commitments and signals (Sterelny, 2018). Because incentives to cheat arise throughout the myriad forms of social interaction, emotions triggered by religious beliefs, and in particular fear invoked by beliefs about religious agents and imperatives, serve as social expressions that are hard to fake and are imprinted on the faces and behaviours of believers.

Religions are one powerful catalyst for such emotional expressions—sometimes explicitly in public settings. There is much more to say about the evolution of emotions such as fear, and how this was manifested in, and captured by, religions and their rituals, practices, and belief systems. With the emergence of large scale societies in particular, religion became transformed. It was no longer sufficient to observe the piety of individuals because humans in large societies regularly transact with strangers (Bulbulia, 2012). Was this stranger wearing a cross a true believer and norm follower? More public acts of commitment and ritual participation would be needed to advertise and verify group belonging and loyalty. However, our point here has been a simpler one, to clarify that emotions such as fear have adaptive functions, and that the mechanisms of such emotions, fear in particular, have been leveraged for

⁵ For a discussion of how communication evolves in predator prey interactions and this connection to religion see: (J. Bulbulia, 2004).)

cooperation. The evolutionary logic of fear reveals a pathway not only to social cooperation but also to a broader social justice, something that did not feature in Bonhoeffer's sermon, and is indeed readily overlooked. In political theater, fear is part of the problem, rather than a guarantor of social harmony. For one thing, most obviously, it can easily be manipulated for nefarious ends, however useful its intended function may have been in evolution's eye. However, in many other instances of *religious* theater, when fear is channelled through piety, reverence, and devotion, fear can be part of the solution—an engine that drives up levels of cooperation and group cohesion to levels that would scarcely be possible without it (Lenfesty & Morgan, 2019). As society scaled up, however, and politics rose above and ultimately divorced from church, the efficacy or stability of fear's good effects have often become stretched very thin.

Before concluding, it might be objected that Bonhoeffer was interested in cultures in a state of “chronic” fear and anxiety, rather than sudden hair raising experiences of “acute” fear, such as encountering an SS officer. However, the two are linked. Darwin introduced the passage from Job in our epigraph by writing, “Of vague fear there is a well-known and grand description in Job:— ‘In thoughts from the visions of the night’...” (Darwin 1872, p. 291). Darwin's *Expression of Emotions* hoped to describe “diversified expressions of fear, in its gradations from mere attention to a start of surprise, into extreme terror and horror (Darwin, 1872, p. 307).” Although we focused on Darwin's discussion of extreme fear states, his *Expression of Emotions* is committed to a continuity of embodied affective states in a variety of manifestations. The passage from Job illustrates that the continuum of emotional states are not fixed. A culture of chronic fear is one in which bodies are primed to act, or become sensitized to act, in accordance with basic emotions. Where the culture is widespread, responses become predictable, precisely because of the underlying biological triggers and reactions. In more “natural” settings where emotions effectively help to regulate pro-social behaviour, the effects of such cultures may be mutually benefiting. We might wish to live in a culture in which people fear breaching good relations with

divinity, because in such a culture, where divine ideals align with justice, people will be (or should approximate to being) predictably just.⁶

Conclusions

In his speech in Berlin in 1933, Bonhoeffer chided people not to be fearful of the political turmoil and rise of the Nazis. He told stories from the Bible to illustrate how fear can often be unfounded as well as debilitating in the face of danger and uncertainty, and that we must cast fear aside and be faithful instead. Only this could avert disaster. Facing up to the source of our fear can help us to eliminate it rather than suffer it.

Bonhoeffer made an vitally important observation. Maybe if people had been less fearful—citizens and opinion leaders in Germany as well as political leaders abroad—Hitler could have been stopped earlier. But on the other hand, given what was to come and the lack of other people shedding their fear themselves, maybe fear was for many the only recourse and guide for action, at least for individuals who would have suffered lethal consequences (for themselves and others) of standing up to a brutal regime.

So how do we make sense of when fear helps or hurts us in such complex social phenomena? It clearly cuts both ways. First of all, an evolutionary point of view reminds us that fear is not necessarily a detriment or barrier that undermines our wellbeing. Instead, it is at its most fundamental level an adaptive trait that tells us when to run, hide, or avoid drawing attention—even or especially when our rational brains might want us to do the opposite. Fear is a powerful and important strategic instinct that is often desirable and sometimes essential, and maybe even saves us from actions that might lead to disaster. That is, after all, why evolution found it necessary to wire up our bodies specifically to

⁶ Of course, there are differences in some conditions brought about by acute and chronic experiences of fear. For example, psychologists have found that, when both animals and people suffer ongoing punishment yet they have no control over their situation, they fall into a state of “learned helplessness” in which they become depressed and unresponsive—even missing opportunities to help themselves out of the situation (Seligman, 1972). Trauma and post-traumatic stress disorder can similarly lead to states of chronically depressed mood. These normally occur after recurrent and/or sustained exposure to a source of fear.

overwhelm our normal, calm and calculating selves, literally bypassing our brains to enable rapid fight, flight, or freezing mechanisms when they are needed.

This adaptive advantage of fear is hardly unique to humans, but rather universally recurrent across a wide range of taxonomic groups in the animal kingdom, speaking to its power and success. Indeed, the negativity bias suggests that fear even has a special leverage over positive events of a similar magnitude, meaning that we should expect fear and other negative emotions to play a greater role than “nicer” emotions and events in many social phenomena of importance.

Even amidst the great complexity of religion, where Bonhoeffer started, fear turns out to have a critical theoretical and empirical role in promoting compliance and cooperation—precisely because it taps into such a deep seated human biology associated with fear and its responses. But in addition, fear works its magic even at the level of social problems. In several recent empirical studies, punishment (and supernatural punishment in particular) appears to be remarkably effective at deterring cheats and free-riders (Hartberg, Cox, & Villamayor-Tomas, 2016). When it comes to instances of social discord and human evil, fear and elite manipulation of fear has not infrequently been part of the problem, but they have also been, and may still yet be, an important part of the solution.

The evolutionary logic of fear stresses that it is automatic. It cannot be willed away. However, it can be supplemented or supplanted by awe. The evolutionary logic of *religion* reveals that the cultivation of reverence of sacred authority—though often anchored in the hair-raising experiences of a sublime creator deity—was among the innovations that transformed humans into supercooperators (Lenfesty & Morgan, 2019).

To end, while Bonhoeffer warned us of the dangers of fear, we suggest that in broader context fear can also be seen as a highly adaptive evolutionary trait. It is of course contingent, sometimes arising in ways that hurt us instead of helping us, and often benefiting those who exploit it rather than those who experience it. But, either way, like hunger and love, it is an instinct that helps us

make important life choices. The tragedy is that, given the pitfalls of “evolutionary mismatch,” where our evolved behaviors become victims to evolutionarily novel circumstances and scales of political organization for which we were never prepared, fear can lead to spectacular disasters, not least clearing the way for Hitler’s willing executioners. Bonhoeffer stands out because, unlike so many others, he was not afraid to speak out.

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