

Heroism and Prestige in Two Popular War Films

Richard T. McClelland

Nanaimo, British Columbia

This essay focuses primarily on *Fury* (2014) and to a lesser extent on *Saving Private Ryan* (1998), two popular war films. I suggest cognitive mechanisms that make the actions of main characters biologically plausible and intelligible. The principal ones have to do with social status and especially prestige, which is based on certain kinds of competence, especially in heroic leaders. Prestige is understood to be co-created by leaders and followers together. Heroism is understood to be depicted in these films as effective leadership in extreme circumstances so as to solve collective action problems. Heroic qualities are signaled (honestly) by means of wounds and scars. These signals are received and understood (both in the films and in their viewers) by means of social learning and social comparison judgments that track prestige. Group cohesion is also explored, especially in *Fury*, in terms of shared emotions, mimicry, rituals, and commitment to a common task. Hatred of morally defined out-groups is also seen at work. I conclude that these films posit warfare as one of a small number of “biologically possible arrangements” that accomplish a rare concatenation of fitness promoting goals. Some consideration is also given to what makes consilience between empirical science and cinematic imagination possible.

Keywords: war, heroism, prestige

Fury (2014), written and directed by David Ayer, joins a rich company of films treating various aspects of American involvement in World War II. It has so far received very little in the way of critical analysis and evaluation. But, like many other films of its ilk, it brings all the vividness and emotional excitement of the cinematic medium to a treatment of armored warfare that is nearly unique in modern film history. Like other films it also serves to underscore some of the issues pertaining to the moral psychology of human warfare. Indeed, I contend that it explores (often in spite of itself) many of the fundamental cognitive mechanisms that undergird human behavior in war. Those cognitive mechanisms, in turn, furnish proximate explanations for the behaviors in question.

The author thanks Dr. Raymond Russ and two anonymous reviewers for helpful comments on an earlier draft of this essay. Thanks to the Interlibrary Loan staff of Foley Library, Gonzaga University, Spokane, Washington, whose assistance helped make this research possible. Correspondence concerning this article should be addressed to Prof. Richard T. McClelland, Ph.D., 730 Drake Street, Nanaimo, BC, V9S 2T1, Canada. Email: richmcc999@gmail.com

Such explanations are to be distinguished from evolutionarily ultimate explanations that “are concerned with the fitness consequences of a trait or behavior and whether it is (or is not) selected” (Scott–Phillips, Dickins, and West, 2011, p. 38). That is, ultimate explanations claim that a trait or behavior promotes reproductive success, and notably inclusive fitness (that is, enhanced fitness consequences for a target individual and all other individuals suitably related to that target). By contrast, proximate explanations “are concerned with the mechanisms that underpin the trait or behavior — that is, how it works” (Scott–Phillips et al., 2011, p. 38; for the wider subject, including doubts as to the adequacy of this dichotomy, see Laland, 2015; Uller and Laland, 2019). Proximate mechanisms that generate a trait or behavior can be quite various. Here I am mainly concerned with cognitive mechanisms and especially those that pertain to dynamics of social status. Films, after all, make a poor medium for displaying ultimate fitness consequences. But they can both display, instantiate, and trade on more proximate mechanisms quite well (and ultimate explanations do not stand without proximate mechanisms: Sterelny, 2013).

Fury is not, however, without its flaws, even serious ones. It begins by displaying a set of five historical statements all of which are either clearly or at least arguably false. These have particularly to do with the performance of the American M4 medium tank (the “Sherman” as it came to be known). Here the film-maker is in the grip of Belton Cooper’s egregiously misleading book on the Sherman tank (Cooper, 2003). The Sherman was in fact a far better weapon system than Cooper allows, as the empirical evidence shows. It was not out-gunned or out-armored by German tanks, and neither was it the “death trap” Cooper makes it out to be, due to fire, especially at this late stage of the war (only 5–10% of these tanks burned out completely once the ammunition for the main gun was stored more appropriately). Some 50,000 men served in the American tank corps in Europe, and just over 1400 of them were killed in combat (or died of wounds), for a death rate of 2.8%, which is virtually the overall average for all American forces in World War II. The statements also include a mistake about the use of the phrase “total war” by German authorities (it goes back at least to Ludendorff’s 1935 memoir of World War I, with different but equivalent expressions going back to the eighteenth century). The whole set of five claims establishes the basic, allegedly realistic, context for the film story (some critics, e.g., Jacob, 2015, accept these statements quite uncritically). The film makers also commit serious errors about military tactics and strategy, both American (no such commander would send out a single tank into enemy territory without supporting ground troops, artillery and/or air support) and German (no German commander at this late stage of the war would march a battalion of troops right down the middle of a road in close order ranks, especially where their enemy controlled the air; neither would he attack a stationary tank head-on). Furthermore, the effects of weapons on human flesh are often portrayed falsely, some of which will concern us further.

In all of these respects, this film pretends to a type and degree of historical realism that cannot be substantiated.

There is a wide range of other issues that *Fury* raises, not least in the context of contemporary critical discussions of war films in general. Almost all of these issues merit much more detailed and lengthy treatment than can be given in this essay. Heroism in war will concern us closely, and it in turn invites treatment of models of masculinity in war films (e.g., Gates, 2005; Jeffords, 1990; Stegall, 2014). Similarly, war films always have an underlying attitude towards war, one that is often foundational for the structure of their narratives. For many of them, the notion of “the just war” is deeply encoded in their narrative structures (Finlay, 2017). Indeed, *Fury*, *Saving Private Ryan* (1998), and many other war films, can plausibly be taken to be “enchanted” with war (the term is coined by Cole, 2009). So powerful is the attraction of war and the tendency to idealize it, that it is plausible even to argue that there are no genuinely anti-war films on our cinematic horizon (Mieszkowski, 2009; cf. Eide, 2007; Nouzeilles, 2016). In short, “these films *love* war” (Gates, 2005, p. 307). The hyper-graphic violence depicted in the combat sequences of films like *Saving Private Ryan* and *Fury*, has been characterized as “combat voyeurism” (Monnet, 2016; Peebles, 2009; Tatar, 2019) and while this will concern us further, it deserves a separate study of its own. *Fury* engages with the presence in war of children, in a variety of roles, but this, too, will be largely passed over in silence (it is noted but not pursued by Monnet, 2016, p. 411). And, finally, though some “leveling” effects will be noted in what follows, the thesis that *Fury* deliberately strikes a “moral equivalence” between American and German soldiers (Finlay, 2017; Summers, 2015) runs into a decisive objection that will also be noted later. But a full treatment of this issue will also lie outside the bounds of this essay. All of these issues warrant the claim that *Fury* is a reversion to an older type of triumphalist World War II film. (Such triumphalism may be a kind of didacticism in films: for a discussion of such didacticism see Plantinga, 2018, pp. 35–54.)

My main concern is with the notion of war heroism, its relationship to social status, and the cognitive mechanisms that make such status possible. My contention will be that these mechanisms comprise a suite of cognitive capacities that furnish a deep structure for this film, one lying beneath its more superficial features of event and depiction, and certainly deeper than the framework set by its opening (and misleading) claims. It is that deep structure, in turn, that gives this film its value as an exploration of the moral psychology of war, quite in despite of its manifest, and even egregious, flaws. I will begin with a general outline of social status and the role in it of prestige.

Social Status and Prestige Dynamics

Humans are hyper-social animals. Our brains and intelligence are finely honed to function in some of the most complex social environments found on the planet.

Some have argued that primate evolution has delivered our type of brain precisely because of the computational demands of our highly complex social environments, especially the dynamics of in-group social life (Adolphs, 2009; Dunbar, 2009; but for dissent see Ashton, Kennedy, and Radford, 2020; DeCasien, Williams, and Higham, 2017; Lockwood, Apps, and Chang, 2020; Rosati, 2017). One significant aspect of those environments is the notion of social status. Status has to do with power and the “standing” within a social group that goes with such power, especially the power to influence others. It is customary to assert that there are broadly two ways in which humans establish status: dominance or prestige (Cheng, Tracy, Foulsham, Kingstone, and Henrich, 2013; Cheng, Tracy, and Henrich, 2010; Henrich, 2016). Dominance is, roughly speaking, the exercise of coercive physical force, while prestige has more to do with expertise in skills or knowledge over matters of high value to the relevant social group. Dominance is sometimes held to be supported by one form of pride (hubristic pride) while prestige is supported by another (authentic pride). Both higher dominance and higher prestige are correlated with greater access to contested resources and ultimately with higher fertility or reproductive success (Henrich and Gil-White, 2001; Ketterman and Maner, 2021; Von Rueden, Gurven, and Kaplan, 2011). However, Bernard Chapais has argued for a more unified model of social status (Chapais, 2015). The key to this argument is the role of competence. It is competence in skills and/or knowledge over locally valued domains that gives rise to prestige and the respect or deference of others that goes with it. But even those seeking status by means of dominance must also exercise competence, in, for example, the use of weapons, the timing of the application of force, recruiting of allies, controlling fear, controlling information and resources affecting the welfare of others. On this view, the boundary between dominance and prestige is a fuzzy one. Moreover, there is good reason to think that competence is the root of all social status. Thus, those who exercise dominance successfully are likely to garner prestige (Von Rueden et al., 2011 recognize that many dominant men are also prestigious). Behavior undertaken to protect or defend status against the deprivations of others may well take the form of competition or out-performing, but even here competence is the key to success: “... it is unlikely that bullies acquire status through intimidation alone — i.e., without prestige” (Chapais, 2015, p. 164). It also appears that pure dominance is a stable strategy for cooperation only in the short term, while prestige is better suited to the long-term in cooperative social relationships (Cheng, 2020; Henrich, Chudek, and Boyd, 2015; Redhead, Cheng, Driver, Foulsham, and O’Gorman, 2019), which explains well why there are so few purely dominant social hierarchies among humans. It is thus better to recognize two motivational domains or components of status, one competitive (supported by hubristic pride) and the other cooperative (supported by authentic pride), rather than two distinct “ways to the top.” But, social status among humans has little value apart from the regard, respect, and deference conferred by others

on those with higher status than theirs. For without respect there is little prospect of dominant individuals achieving important coalitional goals (e.g., support in war, support in group politics, dispute resolution, marriage). And without these there can be little gain to inclusive fitness due to the exercise of mere brute force. Respect and deference, in their turn, are repaid by the exercise of expertise/competence on behalf of the community, often by either lateral (within a generation) or vertical (across multiple generations) transmission of vital social knowledge. “Social status may be viewed less as the trait of an individual than as the behavior produced by others’ perception of that individual,” as one recent investigation puts it (Von Rueden et al., 2011, p. 2224).¹ Lower-status group members *confer* status on the group’s experts (Chapais, 2015, p. 164). The experts, in turn, because of the asymmetries between their knowledge or skill and that of the other group members, will possess “dependence-based power” or “leverage” as some have called it (Chapais, 2015, p. 167; Lewis, 2002). This whole process is a complex dynamic form of social exchange (Price and Van Vugt, 2014). Its foundation lies in the psychology of admiration that motivates respect/deference for prestigious individuals, a psychology probably present in our closest primate relatives (Fessler and Gervais, 2010). This latter point raises the issue of the phylogenetic history of prestige.

It seems reasonably clear that rudimentary forms of prestige operate among chimpanzees, one of our closest primate relatives (Horner, Proctor, Bonnie, Whiten, and De Waal, 2010; Kendal, Hopper, Whiten, Brosnan, Lambeth, Schapiro, and Hoppitt, 2015; King and Sueur, 2011; Smith, Gavrilets, Mulder, Hooper, El Mouden, Nettle et al., 2016; Vermande and Sterck, 2020; Watson, Reamer, Mareno, Vale, Harrison, Lambeth et al., 2017). As such, human prestige is probably homologous with chimpanzee prestige, i.e., a trait derived from our common ancestor and thus more than six million years old. There is also evidence for prestige dynamics among elephants (McComb, Moss, Durant, Baker, and Sayialel, 2001; McComb, Shannon, Durant, Sayialel, Slotow, Poole, and Moss, 2011; Mutinda, Poole, and Moss, 2011; TenHouton, 2017), corvids (Fraser and Bugnyar, 2011; Kulahci, Rubenstein, Bugnyar, Hoppitt, Mikus, and Schwab, 2016) and perhaps even cetaceans (Janik, 2014; King and Janik, 2013). These species are phylogenetically distant from one another, so prestige here would probably arise from convergent (or parallel) evolution, rather than by common ancestry. It is not surprising that similarly social animals might converge on similar cognitive strategies and mechanisms for solving recurrent adaptive problems (Arbilly and

¹Status, in men at least, can confer advantages in reproductive success (RS): Von Rueden and Jaeggi, 2016. It is notable here, however, that the relationship between status and RS is much weaker in humans ($r=0.19$) than it is in non-human primates ($r=0.80$).

Laland, 2017; Plotnik and Clayton, 2015). And high on the list of such problems for social animals will be securing cooperation within groups and effective forms of leadership for cooperative groups.

I shall also suppose that heroism is a specialized form of prestige, both from the side of the heroic agent and from the side of the observers (or judges) who confer respect and deference upon them.² Most forms of human sociality imply a certain level of expected altruistic action on the part of its members, expectations set by patterns of kinship, reciprocity, avoidance of punishment, and vested interests (Batson, 2011; Boehm, 2012; Hare and Woods, 2020; Tomasello, 2016; Wrangham, 2019). To go well beyond what is expected on these grounds is to act heroically. Heroism is, then, a form of generosity (and not merely accompanied by generosity), the willingness to risk great loss or damage in exchange for doing great good for others. It is a form of altruistic action, “an unambiguous good. In the absence of war, it does no harm to the individual or group, but in the event of war it can be decisive for victory” (Smirnov, Arrow, Kennett, and Orbell, 2007, p. 934; cf. Franco, Blau, and Zimbardo, 2011; Johnson, 2016; Kafashan, Sparks, Rotella, and Barclay, 2017; Rusch, 2014, 2022; Rusch and Löscher, 2013; Rusch and Störmer, 2015). War, of course, presents many circumstances which are themselves extreme, and which thereby defeat ordinary expectations for altruistic action. To take the lead by decisive action that benefits others in such circumstances is to act heroically (Rand and Epstein, 2014). Such heroism is virtually bound to secure considerable prestige for the heroic agent. But for prestigious heroism to occur and such respect to be conferred, it must be possible to recognize heroic actions (and persons) as such. With the issue of recognition we can return to our films.

Signaling War Heroism

In *Saving Private Ryan* and *Fury*, we are shown many explicit effects of the weapons of war on human bodies. We see men eviscerated, with their limbs blown off, decapitated, shot through the body, missing whole sections of their heads and faces, burning to death, crushed flat by armored vehicles. We see something of the sheer confusion of combat, the noise, and the randomness of wounding and death. The opening sequence of *Ryan* is notable in all of these respects and can be emotionally overwhelming for the viewer (who, however, takes no action corresponding to those emotions). Probably no other film

²Our films, in keeping with many cultural stereotypes, designate only male heroes, and this, as we know, is highly misleading. In some important contexts, women are more commonly heroic than men. But, given the nature of combat in WWII, the stereotype is virtually bound to ensue. On the whole issue see Becker and Eagly, 2004; Cohn, 1993; Gottschall, 2005, pp. 212–213, Table 2; Schwarz, 2016.

conveys as effectively the sheer terror and brutality of modern warfare. In *Fury* and *Ryan*, also, we see the carnage wrought by modern weapons and tactics: heaps of dead bodies in trucks, being bulldozed into mass graves, the terrible suffering of the wounded in aid stations. By such means we come to as near a visceral reckoning with the lethality of war, as may be possible to a mere onlooker.³ A man in the thick of combat for long periods is unlikely to emerge without evidence of past wounds. And here we encounter a powerful indicator of war heroism, one that *Fury* trades on heavily.

Scars indicate past wounds, and wounds received in war are often (though not always) taken to be indicative of heroism. Wounds and scars thus can be *signals* to others of the qualities that belong to heroes. These qualities may include physical strength and stamina, mental toughness, capacities for effective leadership, ability to accurately assess risks and a rich capacity for problem-solving by means of bold and decisive action. Heroic properties may also include elements of personality, including trustworthiness, honesty, obedience to authority, cooperation, and especially a willingness to subordinate one's own interests to those of the larger group. Similarly, they may include emotional qualities of personality: the capacity reliably and appropriately to display fear, empathy, compassion, even murderous rage, and emotional resilience. In sum, "... intergroup conflict offers an arena for men (but not for women) to show off their physical strength, courage, and leadership skills both to same sex rivals (intra-sexual selection) as well as to members of the opposite sex (inter-sexual selection)" [Rusch, Leunissen, and Van Vugt, 2015, p. 367]. Heroic actions, then, may act as honest signals of these properties, and these signals may expose those traits to the force of sexual selection (cf. Mayr, 2001, p. 138). Hard empirical evidence for this view is difficult to come by, but not entirely absent. In one study carried out in a South American tribal population, men who had participated as leaders in war raids and who had achieved a certain measure of seniority and leadership authority in the tribe proved to have more reproductive success than others, as the theory of sexual selection predicts (Glowacki and Wrangham, 2015; Nawata, 2020; Rusch and Störmer, 2015; Zefferman and Matthew, 2015; the study of Meriam turtle-hunters by Smith, Bird and Bird, 2003 shows similar effects of heroism). In a study of surviving American Medal of Honor (MOH) winners from World War II, it was found that Medal winners had, on average 3.18 children, where more regular soldiers who were their peers had on average 2.72 children, a difference of approximately 17% (Rusch, Leunissen, and Van Vugt, 2015, p. 369; cf. Rusch and Störmer, 2015). A related study of MOH winners from World War I was inconclusive as regards children of MOH winners, but has suggestive parallel results when it comes to

³ However, as Monnet, 2016, p. 409 notes, "... combat on film, no matter how hard it tries to create a reality-effect, can never be anything but safe, vicarious play." Such safety has something to do with "decoupling," a phenomenon I will discuss later.

differential rates of marriage of MOH winners (Dingle, 2006, pp. 66–67). These findings suggest a higher degree of reproductive success among the Medal winners than among other soldiers. That females may have a marked preference for “heroic qualities” in prospective mates was also the finding of Kelly and Dunbar, 2001 (their sample size, however, is small).

There is another side to this coin. Hunter–gatherer groups are well known to punish individuals who display cowardice in war (Matthew and Boyd, 2011, 2014; Wiessner, 2005). Although we cannot simply read off of such behavior the parallel phenomena in our ancient human and hominin ancestors, it is customary to suppose that patterns of behavior found in modern hunter–gatherers at least suggest similar patterns in the early period of human adaptation. Our tendency, then, to prefer heroes to cowards, to distinguish between mere incompetence in war and actual cowardice, and the like, may well be part of our ancient evolutionary heritage. This is in keeping with the role of punishments in sustaining cooperation, especially among large groups of non-kin.⁴ It is notable in this regard that such punishment is especially effective when it is coordinated among several punishing agents and is costly to the punishing agents themselves (Bowles, Boyd, Matthew, and Richerson, 2012; Hauert, Traulsen, Brandt, Nowak, and Sigmund, 2007; Krasnow, Cosmides, Pedersen, and Tooby, 2012; Raihani, Thornton, and Bshary, 2012; Sääksvuori, Mappes, and Puurtinen, 2011). Such punishment also makes stable social niches possible for primates like us, and these effects are intensified in periods of war (Flack, Girven, De Waal, and Krakauer, 2006; Gneezy and Fessler, 2012). It is little wonder, then, that we as a species have evolved marked preferences for rewarding heroism, especially heroism in war. The same mechanisms operate in all of us, making us deeply susceptible to fictive depictions of war heroism such as we find in *Fury* and *Ryan*. Our phylogenetic heritage virtually dictates the form the narrative is likely to take, how heroism will be indicated or signaled, and how heroism will be perceived and rewarded, both within the context of the film itself and by its viewers.

All kinds of animals engage in the creation and deployment of many kinds of signals, ranging from automatic forms of behavior to various kinds of voluntary communication (Owren, Rendall, and Ryan, 2010; Pentland, 2008; Searcy and Nowicki, 2005; Smith and Harper, 2003; Tomasello, 2010, pp. 13–55). One key for animal survival is to learn how to detect honest signals and distinguish them from false and misleading signals. And, of course, it is also important to learn how to fabricate and deploy honest signals. What makes signals honest is much debated among biologists today. I shall suppose here that one way to insure honesty in

⁴ The ontogeny of third-party punishment in humans is very early, with elements detectable at one year of age: Redhead, Dhaliwal and Cheng, 2021; Ting, He, and Baillargeon, 2019; Yang, Choi, Misch, Yang, and Dunham, 2018; Yudkin, Van Bavel, and Rhodes, 2020. Early ontogeny is often one indication that the behavior in question is adaptive.

signaling is to attach some cost to the signaler: costly signals are more likely than cheap ones to be honest indicators of the properties in question (Bird, Smith and Bird, 2001; Gintis, Smith, and Bowles, 2001; Semple and Higham, 2013; Zahavi and Zahavi, 1997). Moreover, often a cost is attached to dishonest signaling (as in the hunter-gatherers groups noted above; and cf. Higham, 2014). When Sgt. Collier (Brad Pitt) shows us his burn scars, in the long scene in the apartment of Irma (Anamaria Marinca) and her young cousin Emma (Alicia von Rittberg), we understand that he has earned his place as a leader, his status as a heroic figure. A fresh wound above Captain Waggoner's eye (Jason Isaacs) likewise is a costly signal that this man, too, has been in the forefront of battle and has (so far) prevailed. The psychological wounds and scars borne by the entirety of *Fury's* crew (some of them rehearsed for us in the apartment) similarly signal to us, their audience, that these are tough men who have prevailed in extraordinarily dangerous conditions. Wounds and scars from old wounds are honest signals in so far as they are costly and very hard to fake. Moreover, if they are faked, the cost to the faker can be very high indeed: an enduring and pervasive loss of status.

Wounds and scars are not universally taken to be signals of heroism. There have been in the past cultures in which wounds received in battle (especially wounds to the face or head) were understood to be signals of shame or guilt, not of heroism at all (Evans, 1999; Skinner, 2015). It is thus evident that cultural conditions also play a role in how signals are received, and how they might be crafted and transmitted in any given society. Even today, disfiguring wounds received in war or by "first responders" — especially those to the face — are often treated as shameful (when they should not be). Those who bear such wounds often feel forced to hide from the rest of us. This, too, is a matter of culture and more or less settled manners of acting widespread or dominant in a given culture. The close association of wounds/scars with heroism remains, nonetheless, as one prominent cultural thread among many, one that is available to the film-makers to exploit. For we, the audience, also share this cultural deposit, by virtue of our common biology, and learn from it how to respond to these signals.

It is notable that Collier displays his burn scars and though he is aware that Irma, Emma, and Norman Ellison (Logan Lerman) all see them clearly, he makes no explicit comment about them (a perfectly unbelievable back-story for these scars originally included in the script was, wisely, dropped). We take it that the scars are from an earlier tank fire. Given the context in the film, no other explanation occurs to us. The confluence of Collier's "credibility enhancing display" (Henrich, 2009; Kraft-Todd, Bollinger, Gillingham, Lamp, and Rand, 2018; Kraft-Todd and Rand, 2021) and the cultural thread connecting scars with heroism is enough to elicit that explanation. It is a deft touch by the film-maker to keep Collier silent on the matter, allowing us the viewers to supply the missing explanation (here also may be an instance of what Plantinga, 2018 treats as the "influence" of films on their viewers, though one driven neither by transfer nor emotion).

It is perhaps all the more odd to find both *Fury* and *Ryan* sometimes squeamish about the same issue. Thus, in *Ryan* the two most heroic figures, Sgt. Mike Horvath (Tom Sizemore) and Capt. John Miller (Tom Hanks) die with hardly a mark on them. Instead, all around them men are wounded and bear the (often grotesque) marks of their wounds. By such indirect indicators, we see what lethal environments Horvath and Miller have survived. But when they themselves are killed, death is caused in such a way as to leave their physical appearance virtually unchanged. And when Sgt. Collier is killed in *Fury*, he, too, is largely unmarked by his fatal wounds. He is shot through the upper torso three times by a German sniper at close range, but not yet killed (indeed, is still able to lever his body back into the tank).⁵ Later, he is actually killed by having two German grenades detonate at his feet inside that very turret. But when we see his body after this, there is not a mark on his face, hands, or head. Real German grenades exploding in the confines of a tank turret would have shredded his body. There seems to be a cinematic rule operating here: the hero can be marked up in a variety of ways, and can be surrounded by other dead or wounded men (indicative of a dangerous environment), but must not be seen to be grievously torn to pieces in his moment of death. Or perhaps the film-makers also share that other cultural thread which makes war wounds, and especially wounds to the face, shameful.

It is well, then, that there are other (more credible) ways of signaling heroic traits and status. This is especially clear in the case of Sgt. Collier. He is shown to be a man to whom other equally experienced soldiers pay considerable deference, especially his fellow tank commanders. Even his superior officers do so. When the hapless Lt. Parker (Xavier Samuel) is killed, there is no question that Collier will lead the tank platoon. He directs them successfully in battle. In Irma's apartment, when it becomes necessary, he can dominate his crew, asserting his authority (albeit an authority based on his competence). All of this is readily apparent to Norman Ellison, the "new guy" in the *Fury* crew. Similarly, in *Ryan*, Captain Miller is chosen by his own superior officer, Lt. Col. Anderson (Dennis Farina) to carry out a variety of missions because he is the best small-unit commander he has. The choice of him and his squad to search for Private Ryan (Matt Damon) is based on this record of competence (a reputation effect). And we see him lead other men, even those not originally under his command, in battle, notably on D-Day itself at Omaha Beach where he and Sgt. Horvath round up a rag-tag bunch of men who have survived the initial crossing of the beach itself and forge them into an effective fighting unit. His decision to help defend the bridge, after finding Private Ryan, though somewhat forced on him, also shows his competence, for without him the small unit guarding the bridge when Miller's group arrives would have

⁵The standard German sniper rifle during World War 2 was the bolt-action Mauser Kar98k, with various types of scopes and chambered for the 7.92 mm cartridge (roughly equivalent to .30 caliber). It was capable of kills at distances up to 1.1 km. See detailed discussion in Senich, 1982, pp. 159–280.

been overwhelmed very soon by the attacking Germans. In both cases, Miller exerts “exemplary leadership,” which is commonly construed as a characteristic of war heroes (Efthimiou and Franco, 2017; Franco, 2017; Johnson, 2016; Kafashan, Sparks, Rotella, and Barclay, 2017; Kohen, Langdon, and Riches, 2019; Rusch, 2022). Both Collier and Miller are the quintessentially effective leaders in combat. Norman is told twice (once by Fury’s crew, and once by Collier himself) that Collier has been with these men since 1942 and has kept most of them alive until now. Corporal Upham (Jeremy Davies), the new guy in *Ryan*, knows that Miller and Sergeant Horvath have been together for some time and that the squad has survived repeated lethal encounters with the enemy. (We, the audience, also get a brief glimpse of the small tins of dirt that Sgt. Horvath has collected from earlier amphibious landings in North Africa and Sicily, also an effective credibility-enhancing display.) All of this, together with the prestige it earns these leaders, is readily visible to Ellison and Upham, as also to us. They could hardly fail to draw the obvious conclusion: in Sgt. Collier and in Captain Miller they see men of very high prestige, prestige based on competence in war-making. Apart from that prestige, they would not be the heroic figures we are presented with.

It is no good making signals of heroism and prestige if they are not received and understood. The person who most needs to receive these signals is the newcomer, and his problem is not a simple one. I will concentrate on Ellison.

Recognizing Heroism by Tracking Prestige

Norman Ellison’s problem is acute. He is wholly untrained for fighting war from inside a tank. He was trained as a clerk-typist, and now finds himself in a bizarre and alien environment. What is essential is that he learn rapidly what it is that he needs to know. But what is it that he needs to know? First, and foremost, he needs to learn the most basic reality of his situation. Collier takes him to a captured German soldier and says to Norman, “He’s here to kill you; you’re here to kill him.” And, when Norman claims he cannot kill in cold blood, Collier forces him to kill that German. Later Collier shows Norman a room full of Nazi grandees and their wives, all of whom have committed suicide (some by gunshot) rather than be captured alive. And, of course, Norman also sees Lt. Parker die horribly (and the rest of his crew) when his tank is attacked by a very young German soldier and destroyed by fire. In war, it is kill or be killed. In learning to kill, Norman must also find within himself a capacity for lethal violence.⁶ There is excellent reason

⁶ Both we, the viewers, and Norman are hereby invited to perform an act of practical reasoning: given that action A or B *must* be undertaken and that action A is absolutely undesirable, practical reason tells him to take the alternative. This is almost a perfect example of the phenomenon discussed by Turvey, 2019. Like Turvey, I seriously doubt Plantinga’s theory of the primacy of emotions in effecting influence on viewers by films. Practical reasoning of the kind here displayed is at least as important. Further reasons for doubting this part of Plantinga’s main theory in his recent book will appear in due course.

to think that all humans are hardwired for such violence. This is why we resort to homicide to solve certain well-known adaptive problems and under highly predictable circumstances (Buss, 2005; Duntley and Buss, 2008, 2011). We also know that human lethal violence has a long and distinguished phylogeny. A recent analysis of that long history across mammalian species concludes that "... humans have phylogenetically inherited their propensity for violence" (Gomez, Verdu, Gonzalez-Megias, and Mendez, 2016, p. 235; cf. Wrangham, 2019, pp. 248–272). But it is his own capacity for lethal violence that Norman urgently needs to discover and own. We see him do so in a series of combat situations. The actions of Sgt. Collier and the other members of Fury's crew serve as his template, sponsoring his self-discovery (see Corcoran, Crusius, and Mussweiler, 2011; Corcoran and Mussweiler, 2010; Mussweiler and Rüter, 2003 on social comparison generally; and for the linkage of self-discovery with it see Diel, Grelle, and Hofmann, 2021; Strickhouser and Zell, 2015). Full ownership of that capacity emerges when Norman slaughters the Germans who are escaping from their wrecked Tiger tank, pre-empting even the action of Sgt. Collier. Earlier, it was Collier who tracked down and killed the young soldiers who attacked Lt. Parker's tank. Now the student has taken the teacher's place. In *Ryan* we see Corporal Upham "graduate" to the same self-understanding when he executes Steamboat Willie (Jörg Stadler) towards the end of the film. Both Ellison and Upham need to find and harness their own capacities for killing, and both succeed in doing so, making use of the examples they have already seen. (We may therefore also add to the concept in Allison, Goethals, Marrinan, Parker, Spyrou, and Stein [2019] of the "metamorphosis of the hero," the further concept of the metamorphosis of the *latent* hero; such metamorphosis bearing also some relationship to Joseph Campbell's idea of the hero's journey: see Efthimiou and Franco, 2017; Vogler, 2017.) This implies solutions to two further problems.

To engage in almost any form of "social learning," such as Ellison and Upham undergo, it is necessary to solve two other problems: identifying "who" to learn from and "how" to learn from that person (for these as characteristic of social learning, see Jimenez and Masoudi, 2019; Kirby, 2007; Tomasello, 2019, pp. 45–90; Van Schaik, Graber, Schuppli, and Burkart, 2017; and for social learning as a cognitive mechanism widely found across the animal world, including fish, see Laland, Atton, and Webster, 2011; for primates see Canteloup, Hoppitt, and Van de Waal, 2020; Whiten and Van de Waal, 2018).⁷ In their situations it is natural for them to look to their heroic leaders, and both do so. Moreover, both men display behavior that is typical of lower-status individuals in a prestige hierarchy: they approach their prospective mentors, maintain an attitude of open deference

⁷ Here, again, we have to do with early ontogeny in humans. Indeed, there is good evidence for certain forms of social learning even in human fetuses: see James, 2010; Krueger and Garvan, 2014; Partanen, Kujala, Näätänen, Liitola, Sambeth, and Huotilainen, 2013.

towards them, engage with them, pay close attention to what their models say and do, maintain an open bodily stance (as opposed to the cringing fearfulness of men trying to avoid dominants), and allow their admiration of their models to blossom (for this pattern see Henrich, 2016, p. 128). “Selection also favors attending to, learning from, and respecting the senior members of one’s community when they are likely to possess valuable cultural information,” as Henrich puts it (2016, p. 137; cf. Laland, 2007, p. 4: “... copying others indiscriminately is not adaptive;” with which remark compare his discussion of high-fidelity transmission of cultural knowledge in Laland, 2017, pp. 150–174). In the case of Norman, in particular, we see the dynamics of admiration reach their most acute point when he decides to stay at the cross-roads with Sgt. Collier and the tank. Here Norman takes the lead over the other members of the crew, who in turn follow *his* lead and make a similar decision, even though it will eventually cost them their lives. When Collier is killed, we see Norman treat his dead body with respect and affection, just as Collier had earlier treated the dead body of “Red” Connolly, his previous bow gunner, whose position Norman has assumed, with respect and affection. The student now models the behaviors of the teacher. And the last thing we hear at the end of the film is someone else calling Norman a hero. Howsoever unconvincing and even clumsy that final scene may be, it makes the point: heroism can breed heroism in those who are receptive to its patterns of behavior, motivation, and affect.⁸ Apart from the cognitive significance of prestige it would be much harder than it would otherwise be for such transmission of cultural values to occur. And it would also be much harder for young, untried soldiers to survive their initial exposure to the rigors of combat.

War Heroism and Collective Action Problems

One earmark of both human aggression and human cooperation is that they extend to large groups of non-kin. There can be little doubt that ancient patterns of kinship underlie them (Chapais, 2008). But humans cooperate and aggress over scales vastly in excess of what primitive kinship dynamics will support. And it is here that a particular kind of social problem arises: the problem of collective action, i.e., how to get individuals who have no kinship relationship to one another to cooperate effectively to solve other common problems (Willems, Hellriegel, and Van Schaik, 2013; Willems, Jean, Arseneau, Schleuning, and Van Schaik, 2015). The problem becomes especially acute in warfare: “A war party faces the problem of altruism *par excellence*. Every member has an incentive to cheat by keeping himself out of harm’s way and exposing others to greater risk” (Pinker, 1997, p. 626).

⁸ It also illustrates well the point Kafashan et al., 2017 emphasizes: the critical role played by those who *judge* that someone is a hero or has acted heroically. Deference is a major signal of such judgments.

Both *Fury* and *Saving Private Ryan* capture especially well the sheer unalloyed urgency of their respective problems of collective action *versus* free-riding. In *Ryan* this is notable in the opening extended combat sequence during the D-Day invasion. Here a whole crowd of American soldiers stands to perish on the beach if John Miller and Mike Horvath fail to rally them effectively. In *Fury*, of course, we have a different situation, one in which it is much more difficult (given the size of the average Sherman tank crew) to shirk the task of collective action, but in which it is still possible to do so, even though it is either “pull together” or be lost separately. I shall focus mainly on *Fury* for what follows regarding the internal dynamics of solving the collective action problem (CAP). The solution implicates both leadership and followership in small groups.

What saves the lives of the crew of *Fury* (for as long as they do live), and even many of those whom they save in the field (e.g., other tank crews and their supporting infantry) is the leadership of Sgt. Collier. Films are excellent vehicles for displaying the qualities of such leadership. Collier, more particularly, displays exceptional capacities for initiative, application of practical intelligence (though not “timeless *phronesis*” as Franco, Efthimiou and Zimbardo, 2016, p. 337 would have it; on the contrary, Collier’s practical wisdom is very much of a piece with his time and place) and good timing, to enable his men (and others associated with them) to successfully invade a small German town, to defeat a larger, heavier German tank (a Tiger), and eventually to defend the vital crossroads successfully against a much more powerful enemy force. John Miller and Mike Horvath display similar capacities in the combat sequences of *Ryan*, notably on Omaha Beach during D-Day, later in overcoming the German machine-gun nest at the radar site, and eventually in defending the bridge where they both die. Decisive judgments and good timing save the day in nearly every instance. Effective choreographing of action, use of associated CGI technology, film editing, and film music all combine to convey the value of such judgments to us, the audience.⁹ With it our admiration of these heroic figures is aroused, by means of the same psychology of admiration that operates on both sides of the fictive fourth wall (and elsewhere in the phylogeny of human heroism). We also see that Collier and Miller, especially, are trustworthy characters, and trustworthiness is also a sign of effective leadership in small groups. A readiness to engage in uncalculating cooperation is one way to communicate such trustworthiness to one’s followers (Jordan, Hoffman, Nowak, and Rand, 2016). The confluence of interests between leaders and followers, especially in the extreme circumstances of combat, may also explain the effectiveness of such signals and their coordinated reception by followers (Higham, 2014). Moreover, from the point of view of followers, such leadership solves many coordination problems that otherwise would threaten their welfare (Hooper, Kaplan, and Boone, 2010). Throughout these scenes

⁹ See Shimamura, Cohn–Sheehy, Pogue, and Shimamura, 2015 on the role of edits in directing attention. For a wider perspective see Carroll and Seeley, 2013.

we see the sheer competence and boldness of these leaders, and the resulting prestige that they carry.

But, as I have stressed earlier, prestige is co-created by leaders and followers together. That leadership and followership are likewise co-created is a fundamental feature of both, as recent empirical investigations show (Glowacki and Von Rueden, 2015; Kelly, Zuroff, Leybman, and Martin, 2011; Leroy, Anseel, Gardner, and Sels, 2012; Uhl-Bien and Carsten, 2018; Uhl-Bien, Riggio, Lowe, and Carsten, 2014; Van Vugt, 2006). Such coordination belongs to the dynamics of prestige, for prestige is conferred on high-status individuals by lower-status individuals and can (and will) be withdrawn in appropriate conditions. This deep coordination of leadership with followership is the key, in my view, to their joint capacity to solve collective action problems (cf. Gavrillets, 2015; Gavrillets and Fortunato, 2014). For well-coordinated leaders and followers are already predisposed, cognitively, motivationally, and affectively, to solve them in a cooperative fashion. The social construction approach to leadership–followership predicts that disrespectful followers of beneficial leaders will be subjected to punitive affects and actions by other group members (Price and Van Vugt, 2014). We see several brilliant instances of this in *Fury* when the hapless Norman Ellison is first introduced to the crew and a little later when he is forced to kill his first German, and in *Ryan* when Private Reiben (Edward Burns) mutinies against Miller's commands at the radar site (and very nearly gets shot for it by Sgt. Horvath). As we have already noted, both Private Ellison and Corporal Upham are merely naïve and incompetent, having had no combat experience previously to being assigned to their respective new units. Both punishment and instruction also fall under the purview of leadership and followership (Harcourt, Ang, Sweetman, Johnstone, and Manica, 2009; Judge and Bono 2000; Price and Van Vugt, 2014; Van Vugt and Ronay, 2014).

Fury is especially instructive about what constitutes good followership. For the crew of *Fury* itself is, as we see repeatedly in the combat sequences, a well-functioning unit (once Ellison gets up to speed). Their obedience to authority is (usually) immediate and unquestioning. Their extreme circumstances require this, and here is an extension of the respect/deference that belongs to prestige dynamics. They are also well-trained (most of which training, of course, has taken place in the past and out of viewers' awareness), as we see especially in their defeat of the German Tiger tank. Driver, commander, loader, gunner and even the bow machine-gunner, here function smoothly, accurately, and quickly.¹⁰ Compare the skills displayed by Miller's sniper, Private Jackson (Barry Pepper), and also in the

¹⁰ This is also historically accurate: field tests showed that Sherman tanks were quite capable of defeating German Tiger tanks, especially when equipped with the 76mm gun and high-velocity armor piercing rounds: Mendes, 2019; Samsonov, 2013. Shermans were also much faster and more maneuverable than the heavier Tigers, facts the film capitalizes on.

fire-and-movement of the rest of that squad. Good followers may preserve their own capacity for self-determination (Leroy et al., 2012), but are also able to subordinate self-determination to the needs of the larger group. Among those needs is acceptance of leadership when it is most needed.

Sgt. Collier also displays another signal feature of leadership in small groups, though it is easily overlooked in the heat of combat. This is his generosity. We see it in his readiness to praise the performances of his crew, his looking after their physical welfare (making sure Ellison gets fed, for example), the lengths he goes to teach Ellison what he most needs to learn, and his empathy with the crew over the death of Red Connolly. His generosity also extends to his treatment of escaping civilians, surrendering young soldiers, his deference to the old man who gets shot by a German sniper, his punishing the SS officer who hanged the children. And perhaps most startling is his sharing his precious fresh eggs in Irma's apartment. Even his surprising Boyd "Bible" Swan (Shia LaBeouf) with his own knowledge of scripture is another mark of generosity. And, of course, the jokes, always the jokes. Generosity is a mark of prestige-based leadership (Boehm, 1993, p. 233; Chapais, 2015, pp. 179–180; Henrich, 2016, p. 130). It is not, therefore, surprising to find it in a heroic character like Sgt. Collier. It is the underlying dynamics of prestige, I contend, that account for this.

Well-led groups practicing good followership require internal cohesion if they are to succeed (Reiben's offense, in *Ryan*, is to threaten irremediable damage to that cohesion). The practices that help secure such cohesion will concern us next.

Group Cohesion and Newcomer Dynamics

According to some social scientists, smaller groups of humans (e.g., 3–5 members as compared with 8–20 members) can be more cohesive than larger ones, and the same rule seems to apply across primate species (Lehmann, Korstjens, and Dunbar, 2007; Wakefield, 2013; Wiszniewski, Allen, and Möller, 2009). A further notable and relevant feature of group cohesion is that it is most effectively based on commitment to the same goals or tasks, rather than on how the members of the group feel about one another. It is not personal attraction or affection that matters (though these may rise very high in any given cohesive group) but commitment to the common task and a similarly high valuation of that task by all the members of the group. This is particularly so in the case of the military: "All of the evidence indicates that military performance depends on whether service members are committed to the same professional goals, not whether they like one another" (MacCoun, Kier, and Belkia, 2006, p. 652; cf. Castaño, Watts, Tekleab, and Amanuel, 2013; Evans and Dion, 2012; Griffith, 1988; Gully, Devine, and Whitney, 2012). This helps us to understand what otherwise may be missed in *Fury* (e.g., by Gates, 2005), in particular; namely, the emphasis on doing "the job."

“I need you to perform,” says Sgt. Collier to Norman. “Do your job! Do what you’re here for!” The tank’s primary driver, Trini “Gordo” Garcia (Michael Peña) tells Norman peremptorily: “Do your job!” And when Norman finally finds it within himself to fire his machine gun at the enemy, the response is “Good job, Norman. Welcome to the Army.” The crew makes a joke about it, one in which Norman is finally included. They repeat their mantra: “Best job I ever had.” Sometimes this is initiated by the commander and sometimes from other members of the crew. It is one of several rituals that this crew has, and it is a very revealing one. They have a job to do and that is why they are in this tank together. It is up to them to do that job together. If Norman does not pull his weight as the bow gunner, the entire crew is in danger of failing to do their job too. Similarly, John Miller is singled out by his commander, Lt. Col. Anderson, for difficult “assignments,” because he and his men are effective at solving the collective action problems those jobs entail.¹¹ They can be relied upon and so they are, again and again and again, until finally their last job overwhelms (most of) them. Soldiers forge strong emotional ties with one another, to be sure, especially soldiers who have gone through extensive combat together, and we see this in our films. But most often, the evidence shows, those affective ties do not survive the end of the war. Moreover, ties of affection do not correlate well with unit effectiveness or performance. What holds the military units together more strongly than affection is commitment to their common tasks and the values entailed by their achievement. It is of special note here that those values are held in common, for it is these standards that allow for judging adequate performance on “the job.” Communally held standards also lie behind judgments of relative prestige. Indeed, there is no such thing as prestige apart from at least locally agreed-upon standards, for it is against these that (always relative) prestige is measured.

The whole verbal play on “the job,” especially in *Fury*, is also a case of mimicry, for each member of the crew mimics the others. We know that mimicry tends to promote affiliation and can thus contribute to the cohesion of small groups (Chartrand and Lakin, 2013; Fischer and Hess, 2017; Hess, 2021; Lakin and Chartrand, 2003; Manrique, Marin, Nieto–Aleman, Read, Hernandez–Jaramillo, Garcia–Palacios, and Zeidler, 2021). Rituals can have similar effects on groups, and can also function as signals of common commitments to joint tasks and common valuation of the goals they represent. “Simply by attending and participating one has publically indicated one’s inclusion in the community ... ritual actions create social realities that result in largely shared sacred values” (Sosis and Shaver, 2016, pp. 77–78). In *Fury* we have the ritual of “The best job I ever

¹¹ We are seeing here the emergence of a kind of professionalism (the profession of arms). If this film influences its viewers at all, that influence may be partly due to the model of professionalism that is offered to our imaginations by the film. This has relatively little to do with emotion.

had.” But we also have at least two others rituals. Each member of the tank crew has been “christened” and given a war name: Sgt. Collier is “Wardaddy,” Boyd Swan, the gunner, is “Bible,” Grady Travis, the loader, is “Coon Ass,” the dead bow gunner was “Red” Conley, and the tank’s driver is “Gordo.” For the most part we never learn how these names came to be attached to these men. But, as a mark that he has finally been accepted as a full member of the crew, someone who has been blooded in combat and who has succeeded in learning to “do his job,” the hapless Norman Ellison is christened “Machine,” by his commander. Collier even uses the appropriate speech-act: “I christen thee ‘Machine.’” The other ritual has to do with passing on of important knowledge to Norman, and this brings us to one of the more savage aspects of *Fury*. The learning of knowledge vital to the well-functioning of a group is a form of ritual, “learning secret knowledge,” the acquisition of beliefs essential to group identity and ritual meaning (Sosis, 2006, pp. 72–77; Whitehouse, 2021, pp. 82–105). We may thus consider the education (and eventual assimilation) of Norman Ellison and Corporal Upham a form of ritual. Not for nothing, after all, do we commonly say that soldiers have been “baptized by fire.” Exposure to actual combat makes them members of the in-group.

Rituals aid group cohesion, leadership aids group cohesion, and commitment to common tasks promotes that same cohesion. Without these devices, solutions to the problems of collective action are much less likely to emerge in groups. Moreover, solutions to the collective action problem at the level of small groups is probably critical to their solution in much larger groups (Centola, 2013), which helps to explain why military forces place so much emphasis on small unit training. In *Fury* we see this in so far as the crew of the tank *Fury* has a marked influence on the functioning of the larger platoon of tanks that they are briefly part of. We also see here that small unit cohesion has a durable influence on the functioning of that unit over time. Cohesion thus has the power to propagate over social space and time both. Indeed, one obvious advantage to a group of solving the CAP effectively at one time is that it then becomes more likely that this same group can solve novel collective action problems that arise at later times and in different settings. Well-trained military units can be relied upon to function effectively in novel circumstances. In this way, “the distinctive character of human social life depends on the accumulation, preservation, and intergenerational transmission of cognitive capital” (Sterelny, 2012, p. 65; cf. Gavrillets and Shrestha, 2021; Gavrillets and Richerson, 2017; Perry, Shrestha, Vose, and Gavrillets, 2018; Tomasello, 2019, pp. 134–160).¹² In *Ryan* John Miller’s squad is

¹²Such transmission is not to be confused with Plantinga’s “transfer” hypothesis (2018, pp. 55–74). Plantinga’s “transfer” has more to do with alleged processes whereby someone acquires cognitive skills (or related material) in one setting and is later able to apply those same skills in quite a different setting far removed from the original (philosophers, for example, often hold that analytical, argumentative, and representational skills acquired in philosophy courses transfer to other disciplines).

called upon to solve new problems as they arise precisely because they have been effective in doing so in the recent past and in contexts closely similar to the new ones. Wardaddy's commanding officer calls upon him and his crew precisely because he knows they are likely to get "the job" done. Both groups thus exhibit a distinctive culture of competence: of reliably and effectively solving collective action problems, in large measure due to their well-functioning as a group. Both groups also exude a sense of pride in their competence, the same "authentic pride" that characteristically goes with relatively high prestige. Their swagger is well-deserved and reflects their prestige relative to other, and especially untried or inexperienced, units.

Finally, it is worth noting in this connection that emotions also play a direct role in group cohesiveness. In units like Miller's squad and Collier's tank crew, especially undergoing the rigors of protracted combat, there are bound to be a wide range of emotions in evidence: fear, disgust, contempt, anger, pride, affection, hatred, desire for approval, shame, guilt, the need to belong, self-esteem, loyalty, empathy, jealousy, *Schadenfreude*, amusement, excitement, among others. So-called "moral emotions," such as guilt, shame, disgust and the like, are particularly important as they tend to motivate actions that sustain social relatedness (Fiske, 2002; Keltner and Haidt, 1999; Rai and Fiske, 2011). It is pretty easy to see how positive emotions might serve in this way. But what is perhaps more remarkable is that sometimes even very negative emotions can also serve to enhance the cohesiveness of small groups and their capacities to perform their tasks well (Barsade and Knight, 2015; Knight and Eisenkraft, 2015; Yang and Kelly, 2016). Film is an excellent medium for displaying emotions, given that it makes use of multiple sensory modalities, makes possible close-ups of the face, mouth, and eyes (for emotional faces see Landi, Viswanathan, Serene, and Freiwald, 2021; Mavratzakis, Herbert, and Walla, 2016; Montag and Panksepp, 2016; Muukkonen, Ölander, Numminen, and Salmela, 2020; Ruba, Meltzoff, and Repacholi, 2020) and allows for movement of the body (and thus emotional body language, for which see Botta, Lagravinese, Bove, Avenante, and Avanzino, 2021; De Gelder, 2009; Ferrari, Circugno, Urgesi, and Cattaneo, 2022; Keck, Zabicki, Bachmann, Munzert, and Krüger, 2022).¹³ Combining these modalities

A major problem for Plantinga's theory is that the best recent scientific evidence indicates that "far" transfer (the kind he needs) probably does not exist or if it does exist is rare: see Luniewska, Chyl, Debska, Kacprzak, Plewko, Szczerbinski et al., 2018; Sala and Gobet, 2017a, 2017b, 2017c; and Sala, Aksayli, Tatlidil, Tatsuma, Gondo, and Gobet, 2019.

¹³The situation is, of course, very complex. We detect emotions from voices and also from gait: on voices see Bryant, 2021; Nussbaum, Von Eiff, Skuk, and Schweinberger, 2022; Woodward, Plate, Morningstar, Wood, and Pollak, 2021; and on gait see Halovic and Kroos, 2018; Schneider, Christensen, Häussinger, Fallgatter, Giese, and Ehlis, 2014. We have also to deal with the integration of these inputs, on which see Schelenz, Klasen, Reese, Regenbogen, Wolf, Kato, and Mathiak, 2013.

is one of the most effective means of nonverbal expression of emotion (Stins, Roelofs, Villan, Kooijman, Hagens, and Beek, 2011).¹⁴

This casts an interesting light on what is otherwise a rather discordant and disturbing sequence in *Fury*. When the crew of *Fury* rehearse for Norman the story about killing the horses that had been wounded when American forces surrounded and forced the surrender of a German army, it is clear that this was a very traumatic event for these men. “Gordo” turns to Norman at the end of this recounting and says “But you weren’t there.” He thus marks out Norman as the odd man out. In telling the story, some of its horrific emotional freight gets discharged. And clearly those negative emotions had bound the members of this crew more tightly together than they were before those events. The evidence for this is the immediate exclusion of the new guy from that bond simply because he has had no share in that traumatic experience and its consequences (cf. Sunar, Cesur, Piyale, Tepe, Biten, Hill, and Koc, 2021). It is the recall of a common experience and the common horror that it evoked that motivates Gordo’s exclusionary comment to Norman. Here the point made by Knight and Eisenkraft in their study of the positive effects on groups of negative emotions is brought to life. The film even captures their point that a significant condition for negative emotions having positive effects on groups is that the source of those emotions be external to the group. So also here: the shared horror is all due to events external to the crew and forced on them by the specific demands of the war at that time and place. (I am not presupposing that these effects in the film are the product of a neuro-scientifically well-informed design; rather, they are the results of good artistic intuitions that coincide with our best relevant science. It is a further issue as to what makes such “consilience” possible, an issue I will return to in the concluding section.)

But groups cannot remain sealed off from newcomers, especially military units in combat. There has to be a way for them to incorporate new members, if only to replace lost members. It now seems likely that many forms of social cognition, especially in the complex arena of between-group and within-group dynamics, are the product of a coalitional psychology that is itself the product

¹⁴Close-up views of the human face are sometimes believed to evoke empathy in film viewers (Plantinga, 1999), but good empirical evidence for this is surprisingly difficult to produce. Choi and Watanuki, 2014; Lankhuizen, Balint, Savardi, Konijn, Bartsch, and Benini, 2020; McCrackin and Itier, 2021, all sought to show a causal relationship between perception of the face, as such, and empathic response, but failed to do so. Plantinga’s view must also face the impressive critique in Barrett, Adolphs, Marcella, Martinez, and Pollak, 2019, according to which our ability to infer particular emotions from movement of facial muscles are not as impressive as we once thought them to be (cf. Carroll and Russell, 1996; Holland, O’Donnell, and Dziobek, 2021 for similar critiques). For those who hold that empathy is a good that should be enhanced by all means available, the critique in Bloom (2016) has also to be dealt with (and cf. Kanske, Böckler, and Singer, 2015; Lamm and Majdandzic, 2015; Singer and Klimecki, 2014).

of natural selection in our ancient evolutionary past. Such is especially likely in the case of inter/intra-group conflict, including warfare (Boyer, Firat, and Van Leeuwen, 2015; Cikara, 2021; Delton and Sell, 2014; Tooby and Cosmides, 2010; Winegard, Kirsch, Vonash, Winegard, and Geary, 2020). Among these cognitive “modules” is one that deals with encounters with newcomers. This module constitutes a suite of cognitive sub-routines to guide evaluation of newcomers and their potential impact on an existing coalition. Newcomers, after all, are largely unknown as regards the costs and benefits they may bring to a coalitional group. Newcomers also often require intensive instruction into the purposes, values, goals, and methods of the coalition, their relative ignorance serving otherwise to erode the coordination and effective performance of the group. They may also compete for status in the group (e.g., Private Reiben’s mutiny), and their willingness to subordinate their own interests to those of the group has to be tested, usually repeatedly. The behavior of established groups towards newcomers, then, tends to follow a fixed constellation of events. Newcomers are often subjected to a period of explicit evaluation, during which they have only limited access to group benefits. They may undergo explicit rituals or other processes of initiation (hazing, rather as Norman undergoes when he faces the overt hostility of the rest of *Fury*’s crew when he first meets them).¹⁵ They will be less trusted than established members; they will be considered more worthy of punishment, especially when they contravene the mores of the group. They are likely to be judged less competent than existing members in a variety of domains (Cimino and Delton, 2010; Delton and Cimino, 2010; Delton, Nemirow, Robertson, Cimino, and Cosmides, 2013). All this should sound familiar. For both Corporal Upham in *Saving Private Ryan* and Private Ellison in *Fury* pass through this sequence of events, only eventually to be fully integrated into their respective groups (though Upham’s group is much reduced). The upshot is a major change in their status within these groups. In the case of Norman Ellison we see this acceptance marked by a ritual: the conferring of a war name. In the case of Corporal Upham there is no such ritual, but we realize that his transformation is complete when he executes Steam Boat Willie, the survivor of their assault on the German radar site whom Miller had let go earlier in the film and who is himself responsible for killing Miller. Upham and Ellison are virtually textbook cases of the functioning of the cognitive module we are considering.

¹⁵It seems likely that human ritualistic behavior derives from our last common ancestor with chimpanzees, if not before (see Peoples, Duda, and Marlowe, 2016; Rossano, 2010, pp. 131–138; Rossano, 2015; and Winkelman, 2020). One shortcoming of Whitehouse (2021) is his overlooking of the primate background of ritualistic behavior, perhaps due to his view that ritual is an evolutionary by-product of language rather than an adaptation in its own right.

A related development is Wardaddy's specific hatred for the SS. Early in the film he says to Norman: "He's an SS. They're real assholes. I kill every SS I can. You'd seen what I seen, you would too." We later see evidence of SS brutality when the bodies of young children who have been hanged for alleged disloyalty to the regime are displayed in a town Fury enters. Identifying the SS officer who had these children hanged, Wardaddy orders his summary execution. There is some historical realism here, in so far as the primary function of the actual SS was to shore up the authority and power of the regime, together with its moralistic racism. They were not primarily combat troops at all, though some formations (the so-called *Waffen SS*) certainly were intended for combat from the beginning. In sum, the SS were the terror police responsible for detecting, controlling, and punishing the enemies of the Nazi ideology itself. Moreover, their mission, their very identity and training, were all derived from Nazi race theory and the morality that it generated (Gilbert, 2019; Weale, 2012). In common with the higher Nazi political establishment, the SS saw themselves as engaged in a great moralistic crusade against international Judaism and Bolshevism. What social scientists have discovered is that where groups draw strongly on a moral foundation for their identity, relationships between them and other groups who do not share that foundation can be especially rife with intolerance, enmity, and hatred, all of which often spills over into overt aggression against them. The more at odds the in-group is with the foundational morality of the out-group, the stronger is the enmity of one to the other: "... disagreement on matters of morality are accompanied by strong emotions, intolerance, a desire for social/physical distance, lack of goodwill, and little regard for procedural safeguards" (Weisel and Böhm, 2015, p. 112; cf. Parker and Janoff-Bulman, 2013). Among those deep emotions is contempt, and nothing characterizes Collier's hatred for the SS better than contempt. This emotion signals that he regards the SS as on the other side of a deep divide in values, as individuals and a group that fail utterly to uphold the values he holds and shares with his men (Gervais and Fessler, 2017; Mason, 2003). The SS possesses zero prestige, in Collier's view; indeed, what they merit is the very antithesis of prestige or status. Collier's contempt for them thus signals a kind of anti-prestige. (This is also the main objection, in my view, to the thesis of Summers [2015] and Finlay [2017] that *Fury* strikes a moral equivalence between American and German soldiers. As between prestige, of howsoever low a degree, and an absolute negation of prestige, there cannot be any equivalence, other indications in the film of moral "leveling" between the two sides notwithstanding.)

Conclusion: Deep Structure

I hope to have shown that *Fury* (and to some extent also *Saving Private Ryan*) is suffused with the dynamics of prestige and that the film rests upon cognitive

mechanisms that underlie prestige. Such mechanisms belong to our coalitionary psychology, which in turn is closely tied to the human kinship system and its fundamental principle of exogamy. For exogamous kinship requires that humans be able to (a) recognize who is their kin and who is not kin (Chapais, 2008, pp. 93–131; Green, Holmes, Davidson, Paterson, Stockley, Beynon, and Hurst, 2015; Mateo, 2015; Rendall, 2004); (b) extend appropriate altruistic behavior to varying degrees of kin; and (c) extend similarly altruistic behavior (e.g., alliance formation) to non-kin. That third thing is capable of further extensions by way of the notion of “fictive kin,” which is highly relevant to soldiers in war who are often regarded in a more than merely metaphorical sense as “bands of brothers” (for fictive kin see Abou-Abdullah, Kashima, and Harb, 2016; Funk, 2022; Kuparinen, 2016; Leyton, 2018; Qirko, 2011). These cognitions, in turn, rest on more fundamental mechanisms of memory that make all kinds of familiarity possible (Deffler, Brown, and Marsh, 2015; Frithsen and Miller, 2014; Gilmore, Nelson, and McDermott, 2015). But we cannot explore these matters further here. Since coalition building and the psychology that makes this possible is itself considerably older than our own species, we may expect such kinship dynamics to similarly predate the emergence of humans approximately 300,000–400,000 years ago.

I hope also to have given reasons to think that while the five statements shown at the beginning of *Fury* may provide the superficial structure of the film, it is these underlying mechanisms that provide the film with its “deep structure.” There is thus a sense in which *Fury* and *Ryan* are studies in prestige dynamics. Such dynamics inform how heroism is portrayed, how leadership matters in small-unit combat, how unit cohesion is achieved, and how new members are incorporated into small units. Raymond Tsur once said:

I argue that “cultural programs” have solid cognitive foundations and are shaped and constrained by the natural capacities and constraints of the human brain, resulting in certain significant regularities ... the generation of culture is governed by adaptation devices exploited for cultural and aesthetic ends. (Tsur, 2002, p. 64; cf. Richardson and Steen, 2002)

I concur in this judgment and seek to draw into its ambit war films like *Fury* and *Ryan*. These, too, are the products of a “cultural program” and are similarly constrained and structured. I will go further and suggest that just as cognitive mechanisms are themselves products of natural selection, so also are such cultural products (albeit at a greater remove) themselves products of the underlying biology of human animals, in these cases as they are poised in a certain kind of extreme social environment, namely war. That environment makes various affordances available to those animals in response to which the individual humans

(and the groups they form) craft their emotions, motivations, and behavior.¹⁶ The task of the dramaturge is to craft a story that captures as much of this deep structure as his or her craft and medium allows them to do. It is thus human biology (in a wide sense of that term) that may account for the consilience I posit in this study between cinematic imagination and empirical science. I have moved freely back and forth between the language of science and the language of cinematic craftsmanship precisely to suggest that we do not have here to deal with “two cultures,” as C. P. Snow (1961), once famously described them, but rather with two imaginative windows on the realities known both to the dramaturge and the scientist. I have ventured onto this ground before (see McClelland, 1993, 2014a, 2014b, 2016a, 2016b, 2016c, and 2018) and expect to again. Exactly what epistemic powers and metaphysical grounds are implied by the success of these experiments remains to be elaborated elsewhere.¹⁷

But it seems to me that *Fury* goes further still. In a recent study of the biological foundations of religion, Richard Sosis draws this conclusion:

By an unimaginably large margin, most biologically possible arrangements cannot unite unrelated organisms under common purpose, achieve extraordinary self-sacrifice, and motivate large-scale cooperation and coordination (Sosis, 2009, pp. 328–329; cf. Norenzayan, Shariff, Gervais, Willard, McNamara, Slingerland, and Henrich, 2016).

Sosis goes on to argue that religion is one of the few such “arrangements” that has the power to do these things. *Fury* and *Ryan* posit that war is another such

¹⁶It is doubtful that films influence their viewers’ actions as Plantinga holds them to do (2018, pp. 55–74; cf. Carroll, 2014). A major reason for thinking so is given by Tooby and Cosmides: “... fictional worlds engage emotion systems while *disengaging* action systems (just as dreams do)” [2001, p. 8]. Such “decoupling” is essential to successful film viewership and all goal-directed behavior, but undermines Plantinga’s thesis. Without decoupling we could not tolerate the often intense emotions that films arouse in us. See further: Carroll and Seeley, 2013, p. 54; Friedman and Leslie, 2007; Leslie, 1987; Turner, 2016; Werner, 2020. The underlying neurobiology of decoupling is increasingly well-understood, engaging especially circuits of the prefrontal cortex and elements of the basal ganglia and amygdala: see Dilgen, Tejada, and O’Donnell, 2013; Guo, Schmitz, Mur, Ferreira, and Anderson, 2018; Hannah and Aron, 2021; Li, Nguyen, Ma, and Dan, 2020; Sagaspe, Schwartz, and Vuillenmier, 2011; Sebastian, Konken, Schaum, Lieb, Tüscher, and Jung, 2021; Vitale, Monti, Padron, Avenanti, and De Vega, 2022. For such influence on viewers’ actions in the real world that films may exert, the work of imagination on a film’s affordances may suffice, thus dispensing with Plantinga’s “transfer and cultivation” model. For affordances see: Bin, 2016; Chemero, 2003; Gibson, 1977; Rucinska, 2017. On imagination see (in the representational and meta-representational traditions): Gilmore, 2019; Harris, 2000, 2022; Oatley, 2011, 2013, 2016, 2022; Oatley, Dunbar, and Budelmann, 2018; Zunshine, 2003, 2006, 2009, 2017. For enactivist approaches to imagination see: Caracciolo, 2013; Medina, 2013; Ravenscroft, 2017; Weichold and Rucinska, 2021. Neither should the role of reasoning be overlooked: Bloom, 2016; Friend, 2010, 2016; Turvey, 2019.

¹⁷However, it will be difficult to avoid reference to some conception of human nature, for help with which see Bird, 2007 and Ellis, 2001. These explorations, however, go well beyond the remit of the current project.

“biologically possible” arrangement. For war also has the power to draw biologically unrelated organisms into a common purpose, to achieve extraordinary self-sacrifices to achieve that common purpose, and to motivate large-scale cooperation and coordination, as we have seen. Prestige dynamics play their part in creating such arrangements and the cultural products they make possible. This idea should be of great interest to students of moral psychology. For, given what we know about the phylogeny of human lethal violence, war is by far the older formation (relative to religion), reaching back at least as far as our last common ancestor with chimpanzees (Gomez et al., 2016; Little, Shackelford, and Weekes–Shackelford, 2012). And, given what we know about the ontogeny of aggressive behavior in humans, emerging as it does by two years of age if not sooner, lethal violence is also likely to be the more deeply psychologically rooted capacity than is religious devotion and worship (Card, Sawalani, Stucky, and Little, 2008; McCullough, Kurzban, and Tabak, 2013; Tremblay, Nagin, Seguin, Zoccolillo, Zelazo, Boivin et al., 2004). Religion among humans is thought to have emerged between 30,000 and 80,000 years ago (Dickson, 1990; Rossano, 2010; Winkelman, 2020). War is thus easily two orders of magnitude older, in the order of phylogeny, than is religion. This may help explain why religion is so often brought into the service of human warfare, but relatively rarely does anything to mitigate our lethal violence, whether on an individual basis or in groups. Whether war or other forms of lethal violence are ineluctable features of human affairs is beyond my ken. What is clear is that we already know something of the conditions under which these are both less and more likely to occur. What is far from clear is that we have the capacity as a species to insure the reliable realization of those conditions.

References

- Abou–Abdullah, M., Kashima, Y., and Harb, C. (2016). “Brothers” in arms: Does metaphorizing kinship increase approval of parochial altruism? *Journal of Cognition and Culture*, 16, 37–49.
- Adolphs, R. (2009). The social brain: Neural basis of social knowledge. *Annual Review of Psychology*, 60, 693–716.
- Allison, S., Goethals, G., Marrinan, A., Parker, O., Spyrou, S., and Stein, M. (2019). The metamorphosis of the hero: Principles, processes, and purpose. *Frontiers in Psychology*, 10, Article 606.
- Arbilly, M., and Laland, K. (2017). The magnitude of innovation and its evolution in social animals. *Proceedings of the Royal Society B*, 284, Article 20162385.
- Ashton, B., Kennedy, P., and Radford, A. (2020). Interactions with conspecific outsiders as drivers of cognitive evolution. *Nature Communications*, 11, Article 4937.
- Barrett, L., Adolphs, R., Marcella, S., Martinez, A., and Pollak, S. (2019). Emotional expressions reconsidered: Challenges to inferring emotion from human facial movements. *Psychological Science in the Public Interest*, 20, 1–68.
- Barsade, S., and Knight, A. (2015). Group affect. *Annual Review of Organizational Psychology and Organizational Behavior*, 2, 21–46.
- Batson, C. (2011). *Altruism in humans*. New York: Oxford University Press.
- Becker, S., and Eagly, A. (2004). The heroism of women and men. *American Psychologist*, 59, 163–178.

- Bin, F. (2016). The theory of affordances. In C. Caws and M.-J. Hamel (Eds.), *Language-learner computer interactions: Theory, methodology and CALL applications* (pp. 41–64). Amsterdam: John Benjamins.
- Bird, A. (2007). *Nature's metaphysics: Laws and properties*. New York: Cambridge University Press.
- Bird, R., Smith, E., and Bird, D. (2001). The hunting handicap: Costly signaling in human foraging strategies. *Behavior, Ecology and Sociobiology*, 50, 9–19.
- Bloom, P. (2016). *Against empathy: The case for rational compassion*. New York: Harper Collins.
- Boehm, C. (1993). Egalitarian society and reverse dominance hierarchy. *Current Anthropology*, 34, 227–254.
- Boehm, C. (2012). *Moral origins: The evolution of virtue, altruism, and shame*. New York: Basic Books.
- Botta, A., Lagravinese, G., Bove, M., Avenante, A., and Avanzino, L. (2021). Modulation of response times during processing of emotional body language. *Frontiers in Psychology*, 12, Article 616995.
- Bowles, S., Boyd, R., Mathew, S., and Richerson, P. (2012). The punishment that sustains cooperation is often coordinated and costly. *Behavioral and Brain Sciences*, 35, 20–21.
- Boyer, P., Firat, R., and Van Leeuwen, F. (2015). Safety, threat, and stress in intergroup relations: A coalitional index model. *Perspectives on Psychological Science*, 10, 434–450.
- Bryant, G. (2021). The evolution of human vocal emotion. *Emotion Review*, 13, 25–33.
- Buss, D. (2005). *The murderer next door: Why the mind is designed to kill*. New York: Penguin.
- Canteloup, C., Hoppitt, W., and Van de Waal, E. (2020). Wild primates copy higher-ranked individuals in a social transmission experiment. *Nature Communications*, 11, Article 459.
- Caracciolo, M. (2013). Blindreading: Toward an enactivist theory of the reader's imagination. In L. Bernaerts, D. De Geest, L. Herman, and B. Vervaeck (Eds.), *Stories and minds: Cognitive approaches to literary narrative* (pp. 81–106). Lincoln, Nebraska: University of Nebraska Press.
- Card, N., Sawalani, G., Stucky, B., and Little, T. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, inter-correlations and relations to maladjustment. *Child Development*, 79, 1185–1229.
- Carroll, J., and Russell, J. (1996). Do facial expressions signal specific emotions? Judging emotion from the face in context. *Journal of Personality and Social Psychology* 70, 205–218.
- Carroll, N. (2014). Moral change: Fiction, film, and family. In J. Choi and M. Frey (Eds.), *Cine-ethics: Ethical dimensions of film theory, practice, and spectatorship* (pp. 43–56). New York: Routledge.
- Carroll, N., and Seeley, W. (2013). Cognitivism, psychology, and neuroscience: Movies as attentional engines. In A. Shimamura (Ed.), *Psychocinematics: Exploring cognition at the movies* (pp. 53–75). Oxford: Oxford University Press.
- Castaño, N., Watts, T., Tekleab, A., and Amanuel, G. (2013). A re-examination of the cohesion–performance relationship meta-analyses: A comprehensive approach. *Group Dynamics: Theory, Research, and Practice*, 17, 207–231.
- Centola, D. (2013). Homophily, networks, and critical mass: Solving the start-up problem in large group collective action. *Rationality and Society*, 25, 3–40.
- Chapais, B. (2008). *Primeval kinship: How pair-bonding gave birth to human society*. Cambridge, Massachusetts: Harvard University Press.
- Chapais, B. (2015). Competence and the evolutionary origins of status and power in humans. *Human Nature*, 26, 161–183.
- Chartrand, T., and Lakin, J. (2013). The antecedents and consequences of human behavioral mimicry. *Annual Review of Psychology*, 64, 285–308.
- Chemero, A. (2003). An outline of a theory of affordances. *Ecological Psychology*, 15, 181–195.
- Cheng, J. (2020). Dominance, prestige, and the role of leveling in human social hierarchy and equality. *Current Opinion in Psychology*, 33, 238–244.
- Cheng, J., Tracy, J., Foulsham, T., Kingstone, A., and Henrich, J. (2013). Two ways to the top: Evidence that dominance and prestige are distinct yet viable avenues to social rank and influence. *Journal of Personality and Social Psychology*, 104, 103–125.
- Cheng, J., Tracy, J., and Henrich, J. (2010). Pride, personality, and the evolutionary foundations of human social status. *Evolution Human Behavior*, 31, 334–347.
- Choi, D., and Watanuki, S. (2014). Effect of empathy trait on attention to faces: An event-related potential (ERP) study. *Journal of Physiological Anthropology*, 33, 1–8.
- Cikara, M. (2021). Causes and consequences of coalitional cognition. *Advances in Experimental Social Psychology*, 64, 65–128.

- Cimino, A., and Delton, A. (2010). On the perception of newcomers: Toward an evolved psychology of intergenerational coalitions. *Human Nature*, 21, 186–202.
- Cohn, C. (1993). Wars, wimps, and women: Talking gender and thinking war. In M. Cooke and A. Wool-lacott (Eds.), *Gendering war talk* (pp. 227–246). Princeton, New Jersey: Princeton University Press.
- Cole, S. (2009). Enchantment, disenchantment, war, literature. *PMLA*, 124, 1632–1647.
- Cooper, B. (2003). *Death traps: The survival of an American armored division in World War II*. New York: Presidio Press.
- Corcoran, K., Crusius, J., and Mussweiler, T. (2011). Social comparison: Motives, standards, and mechanisms. In D. Chadee (Ed.), *Theories in social psychology* (pp. 119–139). Oxford: Wiley–Blackwell.
- Corcoran, K., and Mussweiler, T. (2010). The cognitive miser's perspective: Social comparison as a heuristic in self-judgements. *European Review of Social Psychology*, 21, 78–113.
- DeCasien, A., Williams, S., and Higham, J. (2017). Primate brain size is predicted by diet but not sociality. *Nature Ecology and Evolution*, 1, Article 0112.
- Deffler, S., Brown, A., and Marsh, E. (2015). Judging the familiarity of strangers: Does the context matter? *Psychonomic Bulletin and Review*, 22, 1041–1047.
- De Gelder, B. (2009). Why bodies? Twelve reasons for including bodily expressions in affective neuroscience. *Philosophical Transactions of the Royal Society B*, 364, 3475–3484.
- Delton, A., and Cimino, A. (2010). Exploring the evolved concept of NEWCOMER: Experimental tests of a cognitive model. *Evolutionary Psychology*, 8, 317–335.
- Delton, A., Nemirow, J., Robertson, T., Cimino, A., and Cosmides, L. (2013). Merely opting out of a public good is moralized: An error management approach to cooperation. *Journal of Personality and Social Psychology*, 105, 621–638.
- Delton, A., and Sell, A. (2014). The co-evolution of concepts and motivation. *Current Directions in Psychological Science*, 23, 115–120.
- Dickson, D. (1990). *The dawn of belief: Religion in the upper Paleolithic of southwestern Europe*. Tucson, Arizona: University of Arizona Press.
- Diel, K., Grelle, S., and Hofmann, W. (2021). A motivational framework of social comparison. *Journal of Personality and Social Psychology*, 120, 1415–1430.
- Dilgen, J., Tejada, H., and O'Donnell, P. (2013). Amygdala inputs drive feed-forward inhibition in the medial prefrontal cortex. *Journal of Neurophysiology*, 110, 221–229.
- Dingle, G. (2006). The reproductive success of war heroes. In *Altruism as a signal of status* (pp. 49–69). [Master's thesis, McMaster University.] Retrieved from <http://hdl.handle.net/11375/21128>.
- Dunbar, R. (2009). The social brain hypothesis and its implications for social evolution. *Annals of Human Biology*, 36, 562–572.
- Duntley, J., and Buss, D. (2008). The origins of homicide. In J. Duntley and T. Shackelford (Eds.), *Evolutionary forensic psychology: Darwinian foundations of crime and law* (pp. 41–64). New York: Oxford University Press.
- Duntley, J., and Buss, D. (2011). Homicide adaptations. *Aggression and Violent Behavior*, 16, 399–410.
- Eide, M. (2007). Witnessing and trophy hunting: Writing violence from the Great War trenches. *Criticism*, 49, 85–104.
- Efthimiou, O., and Franco, Z. (2017). Heroic intelligence: The hero's journey as an evolutionary and existential blueprint. *Journal of Genius and Eminence*, 2, 33–44.
- Ellis, B. (2001). *Scientific essentialism*. New York: Cambridge University Press.
- Evans, C., and Dion, K. (2012). Group cohesion and performance: A meta-analysis. *Small Group Research*, 43, 690–701.
- Evans R. (1999). Displaying honourable scars a Roman gimmick. *Acta Classica*, 42, 77–94.
- Ferrari, C., Ciricugno, A., Urgesi, C., and Cattaneo, Z. (2022). Cerebellar contributions to emotional body language perception: A TMS study. *Social, Cognitive, and Affective Neuroscience*, 17, 81–90.
- Fessler, D., and Gervais, M. (2010). From whence the captains of our lives: Ultimate and phylogenetic perspectives on emotions in humans and other primates. In P. Kappeler and J. Silk (Eds.), *Mind the gap: Tracing the origins of human universals* (pp. 261–280). Berlin: Springer.
- Finlay, C. (2017). Bastards, brothers, and unjust warriors: Enmity and ethics in just war cinema. *Review of International Studies*, 43, 73–94.
- Fischer, A., and Hess, U. (2017). Mimicking emotions. *Current Opinion in Psychology*, 17, 151–155.
- Fiske, A. (2002). Socio-moral emotions motivate action to sustain relationships. *Self and Identity*, 1, 169–175.

- Flack, J., Girven, M., De Waal, F., and Krakauer, D. (2006). Policing stabilizes construction of social niches in primates. *Nature*, 439, 426–429.
- Franco, Z. (2017). Heroism in times of crisis: Understanding leadership during extreme events. In S. Allison, G. Goethals, and R. Kramer (Eds.), *Handbook of heroism and heroic leadership* (pp. 185–202). New York: Routledge.
- Franco, Z., Blau, K., and Zimbardo, P. (2011). Heroism: A conceptual analysis and differentiation between heroic action and altruism. *Review of General Psychology*, 15, 99–113.
- Franco, Z., Efthimiou, O., and Zimbardo, P. (2016). Heroism and eudaimonia: Sublime actualization through the embodiment of virtue. In J. Vitterso (Ed.), *Handbook of eudaimonic well-being* (pp. 337–348). Cham, Switzerland: Springer.
- Fraser, O., and Bugnyar, T. (2011). The quality of social relationships in ravens. *Animal Behaviour*, 79, 927–933.
- Friedman, O., and Leslie, A. (2007). The conceptual underpinnings of pretense: Pretending is not 'behaving-as-if.' *Cognition*, 105, 103–124.
- Friend, S. (2010). Getting carried away: Evaluating the emotional influence of fiction film. *Midwest Studies in Philosophy*, 34, 77–105.
- Friend, S. (2016). Fiction and emotion. In A. Kind (Ed.), *The Routledge handbook of philosophy of imagination* (pp. 215–230). New York: Routledge.
- Frithsen, A., and Miller, M. (2014). The posterior parietal cortex: Comparing remember/know and source memory tests of recollection and familiarity. *Neuropsychologia*, 61, 31–44.
- Funk, L. (2022). Fictive kin. In D. Gu and M. Dupre (Eds.), *Encyclopedia of gerontology and population aging* (pp. 1837–1839). Cham, Switzerland: Springer.
- Fury*. (2014). Directed by S. Spielberg. USA: Columbia Pictures, DVD.
- Gates, P. (2005). "Fighting the good fight:" The real and the moral in the contemporary Hollywood combat film. *Quarterly Review of Film and Video*, 22, 297–310.
- Gavrilets, S. (2015). Collective action problem in heterogeneous groups. *Philosophical Transactions of the Royal Society B*, 370, Article 20150016.
- Gavrilets, S., and Fortunato, L. (2014). A solution to the collective action problem in between-group conflict with within-group inequality. *Nature Communications*, 5, Article 3526.
- Gavrilets, S., and Richerson, P. (2017). Collective action and the evolution of social norm internalization. *Proceedings of the National Academy of Sciences*, 114, 6068–6073.
- Gavrilets, S., and Shrestha, M. (2021). Evolving institutions for collective action by selective imitation and self-interested design. *Evolution and Human Behaviour*, 42, 1–11.
- Gervais, M., and Fessler, D. (2017). On the deep structure of social affect: Attitudes, emotions, sentiments, and the case of 'contempt.' *Behavioral and Brain Sciences*, 40, Article e225.
- Gibson, J. (1977). The theory of affordances. In R. Shaw and J. Bransford (Eds.), *Perceiving, acting, and knowing: Toward an ecological psychology* (pp. 67–82). Hillsdale, New Jersey: Erlbaum Associates.
- Gilbert, A. (2019). *Waffen-SS: Hitler's army at war*. Boston, Massachusetts: Da Capo Press.
- Gilmore, A., Nelson, S., and McDermott, K. (2015). A parietal memory network revealed by multiple magnetic resonance imaging methods. *Trends in the Cognitive Sciences*, 19, 534–543.
- Gilmore, J. (2019). Imagination and film. In N. Carroll, L. Di Summa, and S. Lohr (Eds.), *The Palgrave handbook of the philosophy of film* (pp. 845–863). Cham, Switzerland: Palgrave Macmillan.
- Gintis, H., Smith, E., and Bowles, S. (2001). Costly signaling and cooperation. *Journal of Theoretical Biology*, 213, 103–119.
- Glowacki, L., and Von Rueden, C. (2015). Leadership solves collective action problems in small-scale societies. *Philosophical Transactions of the Royal Society B*, 370, Article 20150010.
- Glowacki, L., and Wrangham, R. (2015). Warfare and reproductive success in a tribal population. *Proceedings of the National Academy of Sciences*, 112, 348–353.
- Gneezy, A., and Fessler, D. (2012). Conflict, stick and carrots: War increases prosocial punishments and rewards. *Proceedings of the Royal Society B*, 279, 219–233.
- Gomez, J., Verdu, M., Gonzalez-Megias, A., and Mendez, M. (2016). The phylogenetic roots of human lethal violence. *Nature*, 538, 233–237.
- Gottschall, J. (2005). Quantitative literary study: A modest manifesto and testing the hypotheses of feminist fairy tale studies. In J. Gottschall and D. Wilson (Eds.), *The literary animal: Evolution and the nature of narrative* (pp. 199–224). Evanston, Illinois: Northwestern University Press.

- Green, J., Holmes, A., Davidson A., Paterson, S., Stockley, P., Beynon, R., and Hurst, J. (2015). The genetic basis of kin recognition in a cooperatively breeding mammal. *Current Biology*, 25, 2631–2641.
- Griffith, J. (1988). Measurement of group cohesion in U.S. Army units. *Basic and Applied Social Psychology*, 9, 149–171.
- Gully, S., Devine, D., and Whitney, D. (2012). A meta-analysis of cohesion and performance: Effects of level of analysis and task interdependence. *Small Group Research*, 43, 702–725.
- Guo, Y., Schmitz, T., Mur, M., Ferreira, C., and Anderson, M. (2018). A supramodal role of the basal ganglia in memory and motor inhibition: Meta-analytic evidence. *Neuropsychologia*, 108, 117–134.
- Halovic, S., and Kroos, C. (2018). Not all is noticed: Kinematic cues of emotion-specific gait. *Human Movement Science*, 57, 478–488.
- Hannah, R., and Aron, A. (2021). Towards real-world generalizability of a circuit for action-stopping. *Nature Reviews Neuroscience*, 22, 538–552.
- Harcourt, J., Ang, T., Sweetman, G., Johnstone, R., and Manica, A. (2009). Social feedback and the emergence of leaders and followers. *Current Biology*, 19, 248–252.
- Hare, B., and Woods, V. (2020). *Survival of the friendliest: Understanding our origins and rediscovering our common humanity*. New York: Random House.
- Harris, P. (2000). *The work of the imagination*. Malden, Massachusetts: Wiley.
- Harris, P. (2022). *Children's imagination*. New York: Cambridge University Press.
- Hauert, C., Traulsen, A., Brandt, H., Nowak, M., and Sigmund, K. (2007). Via freedom to coercion: The emergence of costly punishment. *Science*, 316, 1905–1907.
- Henrich, J. (2009). The evolution of costly displays, cooperation, and religion: Credibility enhancing displays and their implications for cultural selection. *Evolution and Human Behavior*, 30, 244–260.
- Henrich, J. (2016). *The secret of our success: How culture is driving human evolution, domesticating our species, and making us smarter*. Princeton, New Jersey: Princeton University Press.
- Henrich, J., Chudek, M., and Boyd, P. (2015). The Big Man Mechanism: How prestige fosters cooperation and creates prosocial leaders. *Philosophical Transactions of the Royal Society B*, 370, Article 20150013.
- Henrich, J., and Gil-White, F. (2001). The evolution of prestige: Freely conferred deference as a mechanism for enhancing benefits of cultural transmission. *Evolution and Human Behavior*, 22, 165–196.
- Hess, U. (2021). Who to whom and why: The social nature of emotional mimicry. *Psychophysiology*, 58, Article e13675.
- Higham, J. (2014). How does honest signaling work? *Behavioral Ecology*, 25, 8–11.
- Holland, A., O'Donnell, G., and Dziobek, I. (2021). Facial mimicry, empathy, and emotion recognition: A meta-analysis of correlates. *Cognition and Emotion*, 35, 150–168.
- Hooper, P., Kaplan, H., and Boone, J. (2010). A theory of leadership in human cooperative groups. *Journal of Theoretical Biology*, 265, 633–646.
- Horner, V., Proctor, D., Bonnie, K., Whiten, A., and De Waal, F. (2010). Prestige affects cultural learning in chimpanzees. *PLoS One*, 5, Article e10625.
- Jacob, F. (2015). Hollywood's image of the Second World War: David Ayer's *Fury* (2014) and the depiction of violence in war. CUNY Academic Works. Retrieved from http://academicworks.cuny.edu/qb_pubs/14.
- James, D. (2010). Fetal learning: A critical review. *Infant and Child Development*, 19, 45–54.
- Janik, V. (2014). Cetacean vocal learning and communication. *Current Opinion in Neurobiology*, 28, 60–65.
- Jeffords, S. (1990). Reproducing fathers: Gender and the Vietnam war in U.S. culture. In L. Dittmar and G. Michaud (Eds.), *From Hanoi to Hollywood: The Vietnam war in American film* (pp. 203–216). New Brunswick, New Jersey: Rutgers University Press.
- Jimenez, A., and Masoudi, A. (2019). Prestige-based social learning: Current evidence and outstanding questions. *Palgrave Communications*, 5, Article 20.
- Johnson, D. (2016). Leadership in war: Evolution, cognition, and the military intelligence hypothesis. In D. Buss (Ed.), *The handbook of evolutionary psychology, vol. 2: Integrations* (pp. 722–743). Hoboken, New Jersey: John Wiley.
- Jordan, J., Hoffman, M., Nowak, M., and Rand, D. (2016). Uncalculated cooperation is used to signal trustworthiness. *Proceedings of the National Academy of Sciences*, 113, 8658–8663.

- Judge, T., and Bono, J. (2000). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology*, 85, 751–765.
- Kafashan, S., Sparks, A., Rotella, A., and Barclay, P. (2017). Why heroism exists: Evolutionary perspectives on extreme helping. In S. Allison, G. Goethals, and R. Kramer (Eds.), *Handbook of heroism and heroic leadership* (pp. 36–57). New York: Routledge.
- Kanske, P., Böckler, A., and Singer, T. (2015). Models, mechanisms, and moderators dissociating empathy and theory of mind. *Current Topics in Behavioral Neuroscience*, 30, 193–206.
- Keck, J., Zabicki, A., Bachmann, J., Munzert, J., and Krüger, B. (2022). Decoding spatiotemporal features of emotional body language in social interactions. *Scientific Reports*, 12, Article 15088.
- Kelly, A., Zuroff, D., Leybman, M., and Martin, A. (2011). Leaders' and followers' social rank styles interact to predict group performance. *Social Behavior and Personality*, 39, 963–978.
- Kelly, S. and Dunbar, R. (2001). Who dares, wins: Heroism versus altruism in women's mate choice. *Human Nature*, 12, 89–105.
- Keltner, D., and Haidt, J. (1999). Social functions of emotions at four levels of analysis. *Cognition and Emotion*, 13, 505–521.
- Kendal, R., Hopper, L., Whiten, A., Brosnan, S., Lambeth, S., Schapiro, S., and Hoppitt, W. (2015). Chimpanzees copy dominant and knowledgeable individuals: Implications for cultural diversity. *Evolution and Human Behavior*, 36, 65–72.
- Ketterman, A., and J. Maner. (2021). Complaisant or coercive? The role of dominance and prestige in social influence. *Personality and Individual Differences*, 177, Article 110814.
- King, A., and Sueur, C. (2011). Where next? Group coordination and collective decision making by primates. *International Journal of Primatology*, 32, 1245–1267.
- King, S., and Janik, V. (2013). Bottlenose dolphins can use learned vocal labels to address each other. *Proceedings of the National Academy of Sciences*, 110, 13216–13227.
- Kirby, S. (2007). The evolution of language. In R. Dunbar and L. Barrett (Eds.), *Oxford handbook of evolutionary psychology* (pp. 669–681). Oxford: Oxford University Press.
- Knight, A., and Eisenkraft, N. (2015). Positive is usually good, negative is not always bad: The effects of group affect on social integration and task performance. *Journal of Applied Psychology*, 100, 1214–1221.
- Kohen, A., Langdon, M., and Riches, B. (2019). The making of a hero: Cultivating empathy, altruism, and heroic imagination. *Journal of Humanistic Psychology*, 59, 617–633.
- Kraft-Todd, G., Bollinger, B., Gillingham, K., Lamp, S., and Rand, D. (2018). Credibility-enhancing displays promote the provision of non-normative public goods. *Nature*, 563, 245–248.
- Kraft-Todd, G., and Rand, D. (2021). Practice what you preach: Credibility-enhancing displays and the growth of open science. *Organizational Behavior and Human Decision Processes*, 164, 1–10.
- Krasnow, M., Cosmides, L., Pedersen, E., and Tooby, J. (2012). What are punishment and reputation for? *PLoS One*, 7, Article e45662.
- Krueger, C., and Garvan, C. (2014). Emergence and retention of learning in early fetal development. *Infant Behavior and Development*, 37, 162–173.
- Kulahci, I., Rubenstein, D., Bugnyar, T., Hoppitt, W., Mikus, N., and Schwab, C. (2016). Social networks predict selective observation and information spread in ravens. *Royal Society Open Science*, 3, 160256.
- Kuparinen, J. (2016). *Increased self-sacrificing behavior in favor of fictive kin compared to non-kin.* [Master's thesis, Abo Akademi University.] Retrieved from <https://doria.fi/handle/10024/130882>.
- Lakin, J., and Chartrand, T. (2003). Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychological Science*, 14, 334–339.
- Laland, K. (2007). Social learning strategies. *Learning and Behavior*, 32, 4–14.
- Laland, K. (2015). On evolutionary causes and evolutionary processes. *Behavioural Processes*, 117, 97–104.
- Laland, K. (2017). *Darwin's unfinished symphony: How culture made the human mind*. Princeton, New Jersey: Princeton University Press.
- Laland, K., Atton, N., and Webster, M. (2011). From fish to fashion: Experimental and theoretical insights into the evolution of culture. *Philosophical Transactions of the Royal Society B*, 366, 958–968.
- Lamm, C., and Majdandzic, J. (2015). The role of shared neural activations, mirror neurons, and morality in empathy — a critical comment. *Neuroscience Research*, 90, 15–24.
- Landi, S., Viswanathan, P., Serene, S., and Freiwald, W. (2021). A fast link between face perception and memory in the temporal lobe. *Science*, 373, 581–585.

- Lankhuizen, T., Balint, K., Savardi, M., Konijn, E., Bartsch, A., and Benini, S. (2020). Shaping film: A quantitative formal analysis of contemporary empathy-eliciting Hollywood cinema. *Psychology of Aesthetics, Creativity, and the Arts*, 16, 704–718.
- Lehmann, J., Korstjens, A., and Dunbar, R. (2007). Fission–fusion social systems as a strategy for coping with ecological constraints: A primate case. *Evolutionary Ecology*, 21, 613–634.
- Leroy, H., Anseel, F., Gardner, W., and Sels, L. (2012). Authentic leadership, authentic followership, basic need satisfaction, and work role performance: A cross-level study. *Journal of Management*, 41, 1677–1697.
- Leslie, A. (1987). Pretense and representation: The origins of theory of mind. *Psychological Review*, 94, 412–426.
- Lewis, R. (2002). Beyond dominance: The importance of leverage. *Quarterly Review of Biology*, 77, 149–164.
- Leyton, C. (2018). Ritual and fictive kinship. In H. Callan (Ed.), *The international encyclopedia of anthropology*. Hoboken, New Jersey: John Wiley. doi: 10.1002/9781118924396.wbiea1442.
- Li, B., Nguyen, T., Ma, C., and Dan, Y. (2020). Inhibition of impulsive action by projection-defined prefrontal pyramidal neurons. *Proceedings of the National Academy of Sciences*, 117, 17278–17287.
- Liddle, J., Shackelford, T., and Weekes–Shackelford, V. (2012). Why can't we all just get along? Evolutionary perspectives on violence, homicide, and war. *Review of General Psychology*, 16, 24–36.
- Lockwood, P., Apps, M., and Chang, S. (2020). Is there a 'social' brain? Implementations and algorithms. *Trends in the Cognitive Sciences*, 24, 802–813.
- Luniewska, M., Chyl, K., Debska, A., Kacprzak, A., Plewko, J., Szczerbinski, M. et al. (2018). Neither action nor phonological video games make dyslexic children read better. *Scientific Reports*, 8, Article 549.
- MacCoun, R., Kier, E., and Belkia, A. (2006). Does social cohesion determine motivation in combat? *Armed Forces and Society*, 32, 646–654.
- Manrique, H., Marin, A., Nieto–Aleman, P., Read, D., Hernandez–Jaramillo, J., Garcia–Palacios, A., and Zeidler, H. (2021). Behavioural mimicry as an indicator of affiliation. *PLoS One*, 16, Article e0250105.
- Mason, M. (2003). Contempt as a moral attitude. *Ethics*, 113, 234–272.
- Mateo, J. (2015). Perspectives. Hamilton's legacy: Mechanisms of kin recognition in humans. *Ethology*, 121, 419–427.
- Mathew, S., and Boyd, R. (2011). Punishment sustains large-scale cooperation in prestate warfare. *Proceedings of the National Academy of Sciences*, 108, 11375–11380.
- Mathew, S., and Boyd, R. (2014). The cost of cowardice: Punitive sentiments towards free riders in Turkana raids. *Evolution and Human Behavior*, 35, 58–64.
- Mavratzakis, A., Herbert, C., and Walla, P. (2016). Emotional facial expressions evoke faster orienting responses but weaker emotional responses at neural and behavioural levels compared to scenes: A simultaneous EEG and facial EMG study. *NeuroImage*, 124, 931–946.
- Mayr, E. (2001). *What evolution is*. New York: Basic Books.
- McClelland, R. (1993). Autistic space. *Psychoanalysis and Contemporary Thought*, 16, 197–231.
- McClelland, R. (2014a). The use of silence in *Hereafter*: A study in neuro-cinematics. In R. McClelland and B. Clayton (Eds.), *The philosophy of Clint Eastwood* (pp. 175–190). Lexington, Kentucky: University Press of Kentucky.
- McClelland, R. (2014b). The mortal hero: Two inductions on the meaning of loss. In R. McClelland and B. Clayton (Eds.), *The philosophy of Clint Eastwood* (pp. 191–212). Lexington, Kentucky: University Press of Kentucky.
- McClelland, R. (2016a). Robotic alloparenting: A new solution to an old problem? *Journal of Mind and Behavior*, 37, 71–98.
- McClelland, R. (2016b). Psychopaths, outlaws and us. In J. Westfall (Ed.), *Hannibal Lecter and philosophy: The heart of the matter* (pp. 85–97). Chicago: Open Court.
- McClelland, R. (2016c). Doctor, heal thyself. In J. Westfall (Ed.), *Hannibal Lecter and philosophy: The heart of the matter* (pp. 229–240). Chicago: Open Court.
- McClelland, R. (2018). Shamelessness in Jane Austen: The case of Lady Susan. *Journal of Mind and Behavior*, 39, 229–250.
- McComb, K., Moss, C., Durant, S., Baker, L., and Sayialel, S. (2001). Matriarchs act as repositories of social knowledge in African elephants. *Science*, 292, 491–494.

- McComb, K., Shannon, G., Durant, S., Sayialel, K., Slotow, R., Poole, J., and Moss, C. (2011). Leadership in elephants: The adaptive value of age. *Proceedings of the Royal Society B*, 278, 3270–3276.
- McCrackin, S., and Itier, R. (2021). Feeling another's eyes: Perceived gaze direction impacts ERP and behavioural measures of positive and negative affective empathy. *NeuroImage*, 226, Article 117605.
- McCullough, M., Kurzban, R., and Tabak, B. (2013). Cognitive systems for revenge and forgiveness. *Behavior and Brain Sciences*, 36, 1–58.
- Medina, J. (2013). An enactivist approach to the imagination: Embodied enactments and “fictional emotions.” *American Philosophical Quarterly*, 50, 317–335.
- Mendes, C. (2019). Differing by just 1mm the US 76mm guns were so more effective than the 75mm guns. Retrieved from www.warhistoryonline.com/instantarticles/76mm-viable-75mm-cannons.html?chrome=1.
- Mieszkowski, J. (2009). Watching war. *PMLA*, 124, 1648–1661.
- Monnet, A. (2016). Is there such a thing as an antiwar film? In D. Cunningham and J. Nelson (Eds.), *A companion to the war film* (pp. 404–421). Malden, Massachusetts: John Wiley.
- Montag, C., and Panksepp, J. (2016). Primal emotional–affective expressive foundations of human facial expression. *Motivation and Emotion*, 40, 760–766.
- Mussweiler, T., and Rüter, K. (2003). What are friends for! The use of routine standards in social comparison. *Journal of Personality and Social Psychology*, 85, 467–481.
- Mutinda, H., Poole, J., and Moss, C. (2011). Decision making and leadership in using the ecosystem. In C. Moss, H. Croze, and P. Lee (Eds.), *The Amboseli elephants: A long-term perspective on a long-lived mammal* (pp. 246–259). Chicago: University of Chicago Press.
- Muukkonen, I., Ölander, K., Numminen, J. and Salmela, V. (2020). Spatio-temporal dynamics of face perception. *NeuroImage*, 209, Article 116531.
- Nawata, K. (2020). A glorious warrior in war: Cross-cultural evidence of honor culture, social rewards for warriors, and intergroup conflict. *Group Processes and Intergroup Relations*, 23, 598–611.
- Norenzayan, A., Shariff, A., Gervais, W., Willard, A., McNamara, R., Slingerland, E., and Henrich, J. (2016). The cultural evolution of prosocial religions. *Behavioral and Brain Sciences*, 39, Article e1.
- Nouzeilles, G. (2016). Theaters of pain: Violence and photography. *PMLA*, 131, 711–721.
- Nussbaum, C., Von Eiff, C., Skuk, V., and Schweinberger, S. (2022). Vocal emotion adaptation after effects within and across speaker genders: Roles of timbre and fundamental frequency. *Cognition*, 219, Article 104967.
- Oatley, K. (2011). *Such stuff as dreams: The psychology of fiction*. Malden, Massachusetts: Wiley–Blackwell.
- Oatley, K. (2013). Worlds of the possible: Abstraction, imagination, consciousness. *Pragmatics and Cognition*, 21, 448–468.
- Oatley, K. (2016). Fiction: Simulation of social worlds. *Trends in Cognitive Sciences*, 20, 618–628.
- Oatley, K. (2022). Imaginative creativity in the writing and reading of stories. In S. Russ, J. Hoffmann, and J. Kaufman (Eds.), *The Cambridge handbook of lifespan development of creativity* (pp. 351–367). New York: Cambridge University Press.
- Oatley, K., Dunbar, R., and F. Budelmann. (2018). Imagining possible worlds. *Review of General Psychology*, 22, 121–124.
- Owren, M., Rendall, D., and Ryan, M. (2010). Redefining animal signaling: Influence versus information in communication. *Biology and Philosophy*, 25, 755–780.
- Parker, M., and Janoff-Bulman, R. (2013). Lessons from morality-based social identity: The power of outgroup “hate,” not just ingroup “love.” *Social Justice Research*, 26, 81–96.
- Partanen, E., Kujala, T., Näätänen, R., Liitola, A., Sambeth, A., and Huotilainen, M. (2013). Learning induced neural plasticity of speech processing before birth. *Proceedings of the National Academy of Sciences*, 110, 15145–15150.
- Peebles, S. (2009). Lines of sight: Watching war in *Jarhead* and *My War: Killing Time in Iraq*. *PMLA*, 124, 1662–1676.
- Pentland, A. (2008). *Honest signals: How they shape our world*. Cambridge, Massachusetts: MIT Press.
- Peoples, H., Duda, P., and Marlowe, F. (2016). Hunter–gatherers and the origins of religion. *Human Nature*, 27, 261–282.
- Perry, L., Shrestha, M., Vose, M., and Gavrilts, S. (2018). Collective action problems in heterogeneous groups with punishment and foresight. *Journal of Statistical Physics*, 172, 293–312.
- Pinker, S. (1997). *How the mind works*. New York: Norton.

- Plantinga, C. (1999). The scene of empathy and the human face on film. In C. Plantinga and G. Smith (Eds.), *Passionate views: Film, cognition, and emotion* (pp. 239–255). Baltimore, Maryland: The Johns Hopkins University Press.
- Plantinga, C. (2018). *Screen stories: Emotion and the ethics of engagement*. New York: Oxford University Press.
- Plotnik, J., and Clayton, N. (2015). Convergent cognitive evolution across animal taxa: Comparisons of chimpanzees, corvids, and elephants. In E. Margolis and S. Laurence (Eds.), *The conceptual mind: New directions in the study of concepts* (pp. 29–56). Cambridge, Massachusetts: MIT Press.
- Price, M., and Van Vugt, M. (2014). The evolution of leader–follower reciprocity: The theory of service-for-prestige. *Frontiers of Human Neuroscience*, 8, Article 363.
- Qirko, H. (2011). Fictive kinship and induced altruism. In C. Salmon and T. Shackelford (Eds.), *The Oxford handbook of evolutionary family psychology* (pp. 310–328). New York: Oxford University Press.
- Rai, T., and Fiske, A. (2011). Moral psychology is relationship regulation: Moral motives for unity, hierarchy, equality, and proportionality. *Psychological Review*, 118, 57–75.wv
- Raihani, N., Thornton, A., and Bshary, R. (2012). Punishment and cooperation in nature. *Trends in Ecology and Evolution*, 27, 288–295.
- Rand, D., and Epstein, Z. (2014). Risking your life without a second thought: Intuitive decision-making and extreme altruism. *PLoS One*, 9, Article e109687.
- Ravenscroft, I. (2017). Engaging the world: Writing, imagination, and enactivism. *Philosophy and Literature*, 41, 45–54.
- Redhead, D., Cheng, J., Driver, C., Foulsham, T., and O’Gorman, R. (2019). On the dynamics of social hierarchy: A longitudinal investigation of the rise and fall of prestige, dominance and social rank in naturalistic task groups. *Evolution and Human Behaviour*, 40, 222–234.
- Redhead, D., Dhaliwal, N., and Cheng, J. (2021). Taking charge and stepping in: Individuals who punish are rewarded with prestige and dominance. *Social and Personality Psychology Compass*, 15, Article e12581.
- Rendall, D. (2004). Recognizing kin: Mechanisms, media, minds, modules and muddles. In B. Chapais and C. Berman (Eds.), *Kinship and behavior in primates* (pp. 295–316). New York: Oxford University Press.
- Richardson, A., and Steen, F. (2002). Literature and the cognitive revolution: An introduction. *Poetics Today*, 23, 1–8.
- Rosati, A. (2017). Foraging cognition: Reviving the ecological intelligence hypothesis. *Trends in the Cognitive Sciences*, 21, 691–702.
- Rossano, M. (2010). *Supernatural selection: How religion evolved*. New York: Oxford University Press.
- Rossano, M. (2015). The evolutionary emergence of costly rituals. *Paleoanthropology*, 2015, 78–100.
- Ruba, A., Meltzoff, A. and Repacholi, B. (2020). The development of negative event-emotion matching in infancy: Implications for theories of affective science. *Affective Science*, 1, 4–19.
- Rucinska, Z. (2017). The role of affordances in pretend play. In C. Durt, T. Fuchs, and C. Tewes (Eds.), *Embodiment, enaction, and culture: Investigating the constitution of the shared world* (pp. 257–277). Cambridge, Massachusetts: MIT Press.
- Rusch, H. (2014). The evolutionary interplay of intergroup conflict and altruism in humans: A review of parochial altruism theory and prospects for its extension. *Proceedings of the Royal Society B*, 281, 20141539.
- Rusch, H. (2022). Heroic behavior: A review of the literature on high-stakes altruism in the wild. *Current Opinion in Psychology*, 43, 238–243.
- Rusch, H., Leunissen, J., and Van Vugt, M. (2015). Historical and experimental evidence for sexual selection for war heroism. *Evolution and Human Behavior*, 36, 367–373.
- Rusch, H., and Löscher, P. (2013). Asymmetries in altruistic behavior during violent intergroup conflict. *Evolutionary Psychology*, 11, 973–993.
- Rusch, H., and Störmer, C. (2015). An evolutionary perspective on war heroism. *Militaire Spectator*, 184, 140–150.
- Sääksvuori, L., Mappes, T., and Puurtinen, M. (2011). Costly punishment prevails in intergroup conflict. *Proceedings of the Royal Society B*, 278, 3428–3436.
- Sagaspe, P., Schwartz, S., and Vuilleumier, P. (2011). Fear and stop: A role for the amygdala in motor inhibition by emotional signals. *NeuroImage*, 55, 1825–1835.

- Sala, G., Aksayli, N., Tatlidil, K., Tatsumi, T., Gondo, Y., and Gobet, F. (2019). Near and far transfer in cognitive training: A second-order meta-analysis. *Collabra: Psychology*, 5, Article 18.
- Sala, G., and Gobet, F. (2017a). Does far transfer exist? Negative evidence from chess, music, and working memory training. *Current Directions in Psychological Science*, 26, 515–520.
- Sala, G., and Gobet, F. (2017b). When the music's over: Does music skill transfer to children and young adolescents' cognitive and academic skills? A meta-analysis. *Educational Research Review*, 20, 55–67.
- Sala, G., and Gobet, F. (2017c). Working memory training in typically developing children: A meta-analysis of the available evidence. *Developmental Psychology*, 53, 671–685.
- Samsonov, P. (2013). *Sherman vs Tiger*. Retrieved from www.tankarchives.ca/2013/03/sherman-vs-tiger.html.
- Saving Private Ryan*. (1998). Directed by S. Spielberg. USA: Dreamworks and Paramount Pictures, DVD.
- Schelenz, P., Klasen, M., Reese, B., Regenbogen, C., Wolf, D., Kato, Y. and Mathiak, K. (2013). Multi-sensory integration of dynamic emotional faces and voices: Method for simultaneous EEG–fMRI measurements. *Frontiers in Human Neuroscience*, 7, Article 729.
- Schneider, S., Christensen, A., Häussinger, F., Fallgatter, A., Giese, M. and Ehlis, A-C. (2014). Show me how you walk and I tell you how you feel — a functional near-infrared spectroscopy study on emotion perception based on human gait. *NeuroImage*, 85, 380–390.
- Schwarz, C. (2016). Saving a bit of beauty for the world: Retelling the story of Rose Valland. *Confluence*, 22, 11–20.
- Scott–Phillips, T., Dickens, T., and West, S. (2011). Evolutionary theory and the ultimate–proximate distinction in the human behavioral sciences. *Perspectives on Psychological Science*, 6, 38–47.
- Searcy, W., and Nowicki, S. (2005). *The evolution of animal communication: Reliability and deception in signaling systems*. Princeton, New Jersey: Princeton University Press.
- Sebastian, A., Konken, A., Schaum, M., Lieb, K., Tüscher, O., and Jung, P. (2021). Surprise: Unexpected action execution and unexpected inhibition recruit the same fronto-basal ganglia network. *Journal of Neuroscience*, 41, 2447–2456.
- Semple, S., and Higham, J. (2013). Primate signals: Current issues and perspectives. *American Journal of Primatology*, 75, 613–620.
- Senich, P. (1982). *The German sniper, 1914–1945*. Boulder, Colorado: Paladin Press.
- Shimamura, A., Cohn–Sheehy, B., Pogue, B., and Shimamura, T. (2015). How attention is driven by film edits: A multimodal experience. *Psychology of Aesthetics, Creativity and the Arts*, 9, 417–422.
- Singer, T., and Klimecki, O. (2014). Empathy and compassion. *Current Biology*, 24, R875–R878.
- Skinner, P. (2015). Visible powers? Reading men's head and face wounds in early medieval Europe to 1000CE. In L. Tracy and K. DeVries (Eds.), *Wounds and wound repair in medieval culture* (pp. 81–101). Leiden, Netherlands: Brill.
- Smirnov, O., Arrow, H., Kennett, D., and Orbell, J. (2007). Ancestral war and the evolutionary origins of “heroism.” *Journal of Politics*, 69, 927–940.
- Smith, E., Bird, and Bird, D. (2003). The benefits of costly signaling: Meriam turtle hunters. *Behavioral Ecology*, 14, 116–126.
- Smith, Jennifer, Gavrilets, S., Mulder, M., Hooper, P., El Mouden, C., Nettle, D. et al. (2016). Leadership in mammalian societies: Emergence, distribution, power, and payoff. *Trends in Ecology and Evolution*, 31, 54–66.
- Smith, John, and Harper, D. (2003). *Animal signals*. New York: Oxford University Press.
- Snow, C. P. (1961). *The two cultures and the scientific revolution*. Cambridge: Cambridge University Press.
- Sosis, R. (2006). Religious behaviors, badges, and bans: Signaling theory and the evolution of religion. In P. McNamara (Ed.), *Where God and man meet: Evolution, genes, and the religious brain* (pp. 61–86). Westport, Connecticut: Praeger Publishers.
- Sosis, R. (2009). The adaptationist–by product debate on the evolution of religion: Five misunderstandings of the adaptationist program. *Journal of Cognition and Culture*, 9, 315–332.
- Sosis, R., and Shaver, J. (2016). How rituals elicit shared sacred values. In G. Hartung and M. Hergren (Eds.), *Interdisziplinäre anthropologie, Jahrbuch 3/2015: Religion und ritual* (pp. 75–81). Wiesbaden, Germany: Springer.
- Stegall, E. (2014). *Ideological, dystopic, and anti-mythopoeic formations of masculinity in the Vietnam War film*. [Doctoral dissertation, Florida State University.] Retrieved from https://purl.fvc.org/fsu/fd/FSU_migr_etd-9251.
- Sterelny, K. (2012). *The evolved apprentice: How evolution made humans unique*. Cambridge, Massachusetts: MIT Press.

- Sterelny, K. (2013). Cooperation in a complex world: The role of proximate factors in ultimate explanations. *Biological Theory*, 7, 358–367.
- Stins, J., Roelofs, K., Villan, J., Kooijman, K., Hagenaars, M., and Beek, P. (2011). Walk to me when I smile, step back when I'm angry: Emotional faces modulate whole-body approach–avoidance behaviors. *Experimental Brain Research*, 212, 603–611.
- Strickhouser, J., and Zell, E. (2015). Self-evaluative effects of dimensional and social comparison. *Journal of Experimental Social Psychology*, 59, 60–66.
- Summers, C. (2015). Coming in from the cold: *Fury* and the perception of enemies. In J. Torn (Ed.), *Crafting media personas* (no page numbers). Oxford, United Kingdom: Inter-Disciplinary Press. (EBook)
- Sunar, D., Cesur, S., Piyale, Z., Tepe, B., Biten, A., Hill, C., and Koc, Y. (2021). People respond with different moral emotions to violations in different relational models: A cross-cultural comparison. *Emotion*, 21, 693–706.
- Tatar, M. (2019). The poetics of the combat zone: Erich Maria Remarque's *Im Westen nichts Neues*. *The German Quarterly*, 92, 1–18.
- TenHouton, W. (2017). Social dominance hierarchy and the pride–shame system. *Journal of Political Power*, 10, 94–114.
- Ting, F., He, Z., and Baillargeon, R. (2019). Toddlers and infants expect individuals to refrain from helping an ingroup victim's aggressor. *Proceedings of the National Academy of Sciences*, 116, 6025–6034.
- Tomasello, M. (2010). *Origins of human communication*. Cambridge, Massachusetts: MIT Press.
- Tomasello, M. (2016). *A natural history of human morality*. Cambridge, Massachusetts: Harvard University Press.
- Tomasello, M. (2019). *Becoming human: A theory of ontogeny*. Cambridge, Massachusetts: Harvard University Press.
- Tooby, J., and Cosmides, L. (2001). Does beauty build adapted minds? Toward an evolutionary theory of aesthetics, fiction, and the arts. *SubStance*, 94/95, 6–27.
- Tooby, J., and Cosmides, L. (2010). Groups in mind: The coalitional roots of war and morality. In H. Høgh–Olesen (Ed.), *Human morality and sociality: Evolutionary and comparative perspectives* (pp. 91–234). New York: Palgrave Macmillan.
- Tremblay, R., Nagin, D., Seguin, J., Zoccolillo, M., Zelazo, P., Boivin, M. et al. (2004). Physical aggression during early childhood: Trajectories and predictors. *Pediatrics*, 114, e43–e50.
- Tsur, R. (2002). Some cognitive foundations of 'cultural programs'. *Poetics Today*, 23, 63–89.
- Turner, P. (2016). Presence: Is it just pretending? *Artificial Intelligence and Society*, 31, 147–156.
- Turvey, M. (2019). Screen stories, ethics and practical reason. *Projections*, 13, 97–104.
- Uhl–Bien, M., and Carsten, M. (2018). Reversing the lens in leadership: Positioning followership in the leadership construct. In I. Katz, G. Eilam–Shamir, R. Kark, and Y. Berson (Eds.), *Leadership now: Reflections on the legacy of Boas Shamir* (pp. 195–222). Bingley, United Kingdom: Emerald Publishing.
- Uhl–Bien, M., Riggio, R., Lowe, K., and Carsten, M. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly*, 25, 83–104.
- Uller, T., and Laland, K. (2019). *Evolutionary causation: Biological and philosophical reflections*. Cambridge, Massachusetts: MIT Press.
- Van Schaik, C., Graber, S., Schuppli, C., and Burkart, J. (2017). The ecology of social learning in animals and its link with intelligence. *The Spanish Journal of Psychology*, 19, 1–12.
- Van Vugt, M. (2006). Evolutionary origins of leadership and followership. *Personality and Social Psychology Review*, 10, 354–371.
- Van Vugt, M., and Ronay, R. (2014). The evolutionary psychology of leadership: Theory, review, and roadmap. *Organizational Psychology Review*, 4, 74–95.
- Vermande, M., and Sterck, E. (2020). How to get the biggest slice of the cake: A comparative view of social behaviours and resource access in human children and nonhuman primates. *Frontiers in Psychology*, 11, Article 584815.
- Vitale, F., Monti, I., Padron, I., Avenanti, A., and De Vega, M. (2022). The neural inhibition network is causally involved in the disembodiment effect of linguistic negation. *Cortex*, 147, 72–82.
- Vogler, C. (2017). Joseph Campbell goes to the movies: The influence of the hero's journey in film narrative. *Journal of Genius and Eminence*, 2, 9–23.

- Von Rueden, C., Gurven, M., and Kaplan, H. (2011). Why do men seek status? Fitness payoffs to dominance and prestige. *Proceedings of the Royal Society B*, 278, 2223–2232.
- Von Rueden, C., and Jaeggi, A. (2016). Men's status and reproductive success in 33 non-industrial societies: Effects of subsistence, marriage system, and reproductive strategy. *Proceedings of the National Academic of Sciences*, 113, 10824–10829.
- Wakefield, M. (2013). Social dynamics among females and their influence on social structure in an East African chimpanzee community. *Animal Behaviour*, 85, 1303–1313.
- Watson, S., Reamer, L., Mareno, M., Vale, G., Harrison, R., Lambeth, S., Schapiro, S., and Whiten, A. (2017). Socially transmitted diffusion of a novel behavior from subordinate chimpanzees. *American Journal of Primatology*, 79, Article e22642.
- Weale, A. (2012). *Army of evil: A history of the SS*. New York: Penguin.
- Weichold, M., and Rucinska, Z. (2021). Pretense as alternative sense-making: A praxeological enactivist account. *Phenomenology and the Cognitive Sciences*, 21, 1131–1156.
- Weisel, O., and Böhm, R. (2015). “Ingroup love” and “outgroup hate” in intergroup conflict between natural groups. *Journal of Experimental Social Psychology*, 60, 110–120.
- Werner, C. (2020). Emotions, action, and inclinations to act. *Erkenntnis*, 87, 2571–2588.
- Whitehouse, H. (2021). *The ritual animal: Imitation and cohesion in the evolution of social complexity*. Oxford: Oxford University Press.
- Whiten, A., and Van de Waal, E. (2018). The pervasive role of social learning in primate lifetime development. *Behavioral Ecology and Sociobiology*, 72, Article 80.
- Wiessner, P. (2005). Norm enforcement among the Ju/'hoansi Bushmen. *Human Nature*, 16, 115–145.
- Willems, E., Hellriegel, B., and Van Schaik, C. (2013). The collective action problem in primate territory economics. *Proceedings of the Royal Society B*, 280, Article 20130081.
- Willems, E., Jean, T., Arseneau, M., Schleuning, X., and Van Schaik, C. (2015). Communal range defence in primates as a public goods dilemma. *Philosophical Transactions of the Royal Society B*, 370, Article 2015003.
- Winegard, Bo, Kirsch, A., Vonash, A., Winegard, Ben, and Geary, D. (2020). Coalitional value theory: An evolutionary approach. *Evolutionary Psychological Science*, 6, 301–318.
- Winkelman, M. (2020). The evolutionary origins of the supernatural in ritual behaviours. In P. Graffert, J. Baker, and M. Winkelman (Eds.), *The supernatural after the neuro-turn* (pp. 48–67). London: Routledge.
- Wiszniewski, J., Allen, S., and Möller, L. (2009). Social cohesion in a hierarchically structured embayment population of Indo-Pacific bottlenose dolphins. *Animal Behaviour*, 77, 1449–1457.
- Woodward, K., Plate, R., Morningstar, M., Wood, A., and Pollak, S. (2021). Categorization of vocal emotion cues depends on distributions of input. *Affective Science*, 2, 301–310.
- Wrangham, R. (2019). *The goodness paradox: The strange relationship between virtue and violence in human evolution*. New York: Pantheon Books.
- Yang, F., Choi, Y-J., Misch, A., Yang, X., and Dunham, Y. (2018). In defense of the commons: Young children negatively evaluate and sanction free riders. *Psychological Science*, 29, 1598–1611.
- Yang, I., and Kelly, A. (2016). The positive outcomes of ‘social shared negative emotions’ in workteams: A conceptual exploration. *European Management Journal*, 34, 172–181.
- Yudkin, D., Van Bavel, J., and Rhodes, M. (2020). Young children police group members at personal cost. *Journal of Experimental Psychology: General*, 149, 182–191.
- Zahavi, Amotz, and Zahavi, Avishag. (1997). *The handicap principle: A missing piece of Darwin's puzzle*. New York: Oxford University Press.
- Zefferman, M., and Matthew, S. (2015). An evolutionary theory of large-scale human warfare: Group-structured cultural selection. *Evolutionary Anthropology*, 24, 50–61.
- Zunshine, L. (2003). Theory of mind and experimental representations of fictional consciousness. *Narrative*, 11, 270–291.
- Zunshine, L. (2006). *Why we read fiction: Theory of mind and the novel*. Columbus, Ohio: The Ohio State University Press.
- Zunshine, L. (2009). Mind plus: Socio-cognitive pleasures of Jane Austen's novels. *Studies in the Literary Imagination*, 42, 103–123.
- Zunshine, L. (2017). Bakhtin, theory of mind, and pedagogy: Cognitive construction of social class. *Eighteenth-Century Fiction*, 30, 109–126.