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Going Berserk, Running Amok, and the Extraordinary Capabilities and Invulnerability of Battle Trance

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Battle trance, which evolved from instinctive defensive and offensive behaviors for close combat, involves socially transgressive processes like becoming-intense and becoming-animal that produce non-ordinary psychophysical states useful in fighting. *Berserkergang* (going berserk) is one of the best attested types of battle trance and the latest in a long history of Indo-European ecstatic warrior cults, but the state has been identified cross-culturally in consecrated holy *amok* warriors and in *juramentado*. Colonial interpretations for centuries have tended to denigrate such fighting styles, even though they involve discipline, spiritual dedication, and altruistic self-sacrifice, especially by falsely attributing such states to intoxication or insanity. The features of *berserkergang* are considered signs of spiritual attainment in various traditions up to the present day, and the techniques for achieving *berserkergang* remain in use in battle, spiritual disciplines, and martial arts. Research is validating even some of the most extraordinary features of battle trance, pointing to unrealized potentials with promising benefits for human performance and healing.

Keywords: *battle trance, berserk, berserker, fearlessness, invulnerability, shape-shifting, therianthropy, fire-walking, analgesia, amok, juramentado, rapid healing*

On November 7, 1944, U. S. Army Staff Sergeant William F. Leonard's platoon was almost wiped out by shelling and gunfire near St. Die, France (https://www.army.mil/medalofhonor/valor24/recipient/leonard/?f=recipient_lis). He led the only eight survivors in a charge over a hill continuously swept by automatic fire and killed two snipers. With multiple bullet wounds, he went on to destroy a machine-gun emplacement and its crew. After being stunned by a bazooka shell, he wiped out a second machine-gun nest and captured the roadblock objective.

Nepalese Gurkha Lachhiman Gurung on May 12-13, 1945, held off 200 advancing Japanese troops after his frontline position was attacked and all his companions were wounded or evacuated (<http://www.victoriacross.org.uk/bbgurunl.htm>). As he tried to throw back a Japanese grenade, it exploded in his hand, ripping off his fingers, shattering his arm and severely wounding his face, torso, and leg. He jammed his knife into the ground, declaring that no enemy would get past him, and none did.

He held the line by himself for four more hours, killing 31 and beating back the enemy assault.

On May 21, 1951, the U.S. Army's Company F was ordered to take high ground held by heavily fortified enemy forces in rugged terrain near Munye-ri, Korea ([https://www.moaa.org/content/about-moaa/scholarship-fund/faces-of-donorsFolder/Col--Joseph-C--Rodriguez,-USA-\(Ret\)/](https://www.moaa.org/content/about-moaa/scholarship-fund/faces-of-donorsFolder/Col--Joseph-C--Rodriguez,-USA-(Ret)/)). Three attempts had been repulsed by withering enemy gunfire and grenades from five emplacements facing and flanking the company. Private First Class Joseph C. Rodriguez on his own initiative leaped up and charged 60 yards up the hill while constantly under fire, tossed grenades into the first foxhole, ran in a loop, wiping out the guns and crews in all five enemy positions, killing 15, routing the foes, and securing the objective. When asked what made him do it, Roderiguez said, "I was very angry ... that they had all of our men pinned down. And I felt something had to be done. I didn't even think about it, just did it" (<https://memory.loc.gov/diglib/vhp-stories/loc.natlib.afc2001001.89773/transcript?ID=mv0001>).

Such feats are extraordinary, but they can be readily found in the wartime records of any country. Their distinguishing features—fearlessness in the face of overwhelming force, not being aware of pain, supernatural strength to keep on attacking even when gravely wounded, and sacrificing personal survival for the group and its goal—characterize a ubiquitous but virtually overlooked psychophysical altered state called *battle trance* (Jordania, 2011, 2014), part of the primordial human survival repertory demonstrated by both males and females. This state appears not only in combat, but adventitiously in everyday life triggered by sudden, horrific threat.

Today most such adventitious accounts are anecdotal but verified reports of superhuman strength and analgesia in life-or-death emergencies. In one instance, when motorist Robert Renning saw flames shooting underneath another car on the highway (Murphy, 2014), he signaled the driver, Michael Johannes, to pull off and followed him onto the verge. Automatic door locks, which would not release, trapped Johannes in the smoke-filled interior. Unable to open the doors from the outside, Renning could see Johannes trying but failing to kick out the passenger-side window as the blaze intensified. Renning grabbed the top of the car door frame, folded it in half until the glass shattered, and pulled Johannes to safety. The charred door frame showed Renning's bare handprints, but he sustained neither injuries nor burns. Most such reports involve people's lifting vehicles many times their body weight to free others pinned beneath them, such as two sisters, aged 14 and 16, who raised a 3,000-pound tractor off their father ("Oregon Man Pinned," 2013), and 72-year-old Cecil Stuckless who lifted a Jeep off his son-in-law ("72-year-old N. L. 'Superman,'" 2013). Scientists do not believe adrenaline acts quickly enough to account for such feats, and evidence for other likely physiological mechanisms, such as a rapid endorphin dump, remains scant (Holohan, 2012; Wise, 2009). Even trained athletes who, under special experimental conditions, demonstrate amazing strength and endurance, cannot match such efforts. For example, when a 300-pound man pulled a truck 85 times his weight 120 feet in 28 seconds (National Geographic,

2007), measurements showed that he was (only) exerting 500 pounds of force in rapid repetitions.

Aside from adventitious life-threatening situations, battle trance has been deliberately cultivated for combat since time immemorial to maximize innate survival mechanisms. According to Jordania (2011, 2014), battle trance is an evolutionary survival strategy that bonds the group with exhilaration and feelings of strength, unity, and immortality, perhaps through endorphins and oxytocin released in crisis as well as through the deliberate induction of a particular altered state. Battle trance comprises a cluster of extreme capabilities bridging evolutionarily ancient survival techniques and cross-cultural spiritual attainment that represent potentials for enhancing human performance and healing. Because battle trance is seldom encountered in everyday life today—and because it is both misunderstood and maligned—this paper introduces the reasons and methods for its cultivation in combat, its general decline as military technologies changed, the evidence substantiating the validity of its more extraordinary behaviors, and its evolutionary role with enormous potential to better the human condition off the battlefield through new applications.

The Need for Battle Trance

All amniotes, including humans, employ aggressive displays among their own kind to dominate a rival for an immediate goal, such as access to food, territory, or a mate, and such conflicts usually end short of killing the vanquished (e. g., MacLean, 1973, 1990). But for *Homo sapiens sapiens* conflict frequently involves the organized mass killing of fellow humans in warfare. Conspecific killing is not easy, though, for people in close combat, the only method possible before remote battle technology. For millennia, combatants fought face to face, hand to hand using bladed and blunt-force weapons in addition to short-range projectiles, such as spears and rocks thrown or slung. The closer fighters are physically, the greater their need to dissociate from their humanity (Grossman, 1996), using processes that put them into a liminal, socially transgressive state called *becoming-intense* and *becoming-animal* (Deleuze & Guattari, 2004, pp. 242-243; Roscoe,

2007). By dissociating from one's humanity and, therefore, society's norms, a warrior has no guilt over killing, so combatants cultivated this state prior to fighting, not relying completely on its adventitious evocation in the heat of battle. Indeed, many societies also developed rituals to restore fighters to their humanity after killing, as illustrated by two Native American examples Parsons (1916) recorded. When a Pima warrior slew a foe, he had to fast for sixteen days, eschewing meat and salt, keeping away from fire, speaking to no one, and refraining from touching his head or face. When a Natchez warrior took his first scalp, he was forbidden meat and sexual relations for six months.

Over time humans' instinctive defensive and aggressive survival behaviors developed into patterned activities universally found to promote the processes of becoming-intense and becoming-animal to achieve battle trance (Carlson, 2006; Miller, 1990; Miller, 2000; Lincoln, 1991; Roscoe, 2007). Ritual behaviors for combat include: 1) taunting the enemy to raise the fighters' anger before they physically engage; 2) rhythmic vocalizations, such as singing and the battle cry, to invoke the gods, inflame mood, unify the group, communicate determination, and intimidate the opponent; and 3) repetitive, rhythmic group movements, such as war-dancing, to invoke the gods, promote solidarity, and intimidate the opponent (Ehrenreich, 1997; Gibson, 2011; Jordania, 2011, 2014; Kogan, 1997; Nettle, 1961; Roscoe, 2007). A venerable current example is the Maori *peruperu haka* performed by the New Zealand All Blacks before a rugby game. It employs swaying, stamping, grimacing, tongue thrusting, eye widening, grunting, crying, and slapping to prepare the body for combat and frighten the foe. Traditionally it had to be performed in perfect unison to promote solidarity, entrain the group, and invoke victory from the god Tumatauenga. Such rituals evolved into the rhythmic drilling of troops, which provided a significant battlefield advantage over troops that did not drill (McNeill, 1995). But before regulated, massed combat styles were developed, warfare was more loosely organized, with individual fighters behaving fairly independently, often engaging in man-to-man challenges before or during group engagement. The Indo-Europeans retained an unregulated tradition

featuring individual champions seeking to outdo others in glorious deeds for two and a half millennia (Speidel, 2002; Znamenski, 2012). This heroic style of personal status-seeking through valiant combat occurs other cultures, too, such as the Native American Plains tribes (Lakota, Cheyenne, Blackfeet, Crow, and Comanche; Znamenski, 2012) and in Southeast Asia, notably Malaysia, Indonesia, and the Philippines (e.g., Barnes, 2007; Turbiville, 2012). Societies with the single-champion tradition produce the best descriptions of cultivated battle trance.

Ecstatic warriors appear in the *Rig Veda*, the *Iliad*, and Assyrian sources, among others (Burkert, 1992; Kershaw, 2000; Speidel, 2002, 2004). Greece and Rome had a strong single-combat, sacred warrior heritage (e.g., Cowan, 2007; Martino, 2008; Znamenski, 2012), but had largely abandoned it by their classical periods for regulated, massed fighting better adapted to changing technologic and political conditions (McNeill, 1995). By the sixth century CE, they dismissed battle trance as "barbarian" tactics only the "blond nations" practiced (Speidel, 2004, p. 194). Today the best attested battle trance is the northern European *berserker gang* (English rendering of Old Norse *berserksgangr*), which means *walking or moving like a berserker*, a characteristic way berserks carried themselves or perhaps fought (Dale, 2014), now commonly translated as *going berserk*, discussed below. Berserker gang per se died out during the Viking Age, but it and the practices for cultivating it are still seen in war today (e.g., Pieslak, 2009; Roscoe, 2007), in religious traditions and their associated martial arts, and elsewhere (e.g., Farrer, 2009; Gargenbert, 2000; Wilson, 2002). Berserker gang is a cult-specific form of battle trance characterized by animal transformation, fearlessness, ecstatic battle-madness, supernormal strength, invulnerability, and self-sacrifice. Owing to its greater documentation, berserker gang will be used to illustrate the universal capacity of battle trance.

Battle Trance as a Sacred Phenomenon

Battle trance cross-culturally seems to have been associated with spiritual attainment and the gods of war historically and even today in spiritual

martial arts traditions. Berserkerang represents the Northern European pagan tradition, already misunderstood by cultural outsiders. Berserkerang is known from northern European and Icelandic sources recorded centuries after it was practiced by Christians who mostly lacked combat experience and were hostile to pagan magic, so their reliability is questionable (e.g., Sigurðsson, 2004), but other contemporary sources provide triangulation. Christianity was mandated in Iceland in 1000 CE, and berserks were outlawed by 1015 in Norway and by the Grágás, the medieval Icelandic legal code. Berserk war-bands no longer existed by the early 13th century when Christian Snorri Sturluson (1987, 1990) recorded what he knew of the pagan oral tradition before it was entirely lost. The Christian recorders of the sagas wrote of events 200–500 years in the past, stereotyping berserks as either the elite troops of famous kings (Halbrooks, 2003; Price, 2002), in keeping with their traditional high status as holy champions (e.g., *Egils saga Skalla-grímsonnar*, *Vatnsdæla saga*, *Hrólfs saga kraka*), or as bullying outlaw thugs (e.g., *Grettis saga*, *Hervarar saga ok Heiðreks*). One thirteenth-century romance, *Barlaams ok Josaphats saga*, labels Jesus God's "young berserk" ("hinn vgni berserkr guðs") in the sense of God's champion, and the twelve disciples, Jesus's warband of berserks (197).

Berserks were assigned valued, dangerous roles in the vanguard (Duchesne, 2009; Reid, 1988; Speidel, 2002). A rare contemporary account by court poet Þorbjörn hornklofi reported Harald Hairfair's deployment of berserks as shock troops during his consolidation of Norway, using the device of a dialogue in which a Valkyrie battle goddess asks a raven, Odin's familiar and battlefield scavenger:

"Of the berserkers' lot would I ask thee,
thou who batten'st on corpses:
how fare the fighters
who rush forth to battle,
and stout-hearted stand 'gainst the foe?"

"Wolf-coats they are called,
the warriors unfleeing
who bear bloody shields in battle;
the darts redden

where they dash into battle
and shoulder to shoulder stand.
'Tis men tried and true only,
who can targes [shields] shatter,
whom the wise war-lord
wants in battle." (*Hrafnsmál*, 20–21)

The Icelandic sagas reflect the same roles for berserks in the field. "Then the king cried on his bearers [sic] for an onslaught, and they were called the Wolf-coats, for on them would no steel bite, and when they set on naught might withstand them" (*Grettis saga*, 2). Berserks were strategically deployed and fought in the disciplined ranks of the shieldwall (*Hrafnsmál*, 20), as well as more independently. When a war-band of berserks was ordered to eliminate enemy troops on a long ship,

[Kveldulf] then had a fit of shape-strength [i.e., went berserk, involving shapeshifting], as had also several of his comrades. They slew all that came in their way, the same did Skallagrim where he boarded the ship; nor did father and son stay hands till the ship was cleared. (*Egils saga Skalla-grímsonnar*, 27).

Berserks were the consecrated warrior-shamans of Odin, god of magic, battle, death, and poetry, the medium of heroic fame and immortality. They were initiated into ecstatic rites to win fame and everlasting life through heroic deeds before dying fighting, part of a long line of Indo-European sacred warriors distinguished from society by such means as ritually conspicuous grooming (Kershaw, 2000; Miller, 1998) and being forbidden to farm or own land (later confused with outlawry). Tacitus described such warriors' roles among the Chatti:

Every battle is begun by these men. They are always in the front rank, where they present a startling sight....None of them has a home, land or any occupation. To whatever host they choose to go, they get their keep from him...until old age leaves them without enough blood in their veins for such stern heroism. (*Germania*, 31)

Odin's name derives from Old Norse *óðr*, often glossed as *fury*, after missionary Adam of Bremen's

Gesta Hammaburgensis ecclesiae Pontificum (4.26), but *óðr* also means *mind*, *intelligence*, or *soul* as well as *poetry*, *eloquence*, and *inspiration* (**uat*; e.g., Davidson, 1988, 1990; Simek, 1993; Sturluson, 1987). Odin is the god of mental powers and spiritual awakening, highly suggestive of battle trance as an altered state. Thus, *berserkergang*, often simplistically rendered as *battle-fury* or *-madness*, means being possessed by Odin (e.g., Kershaw, 2000). Odin, like his berserkers, was viewed as an ambiguous god not always to be trusted; berserks in the later accounts were unable in their battle madness to distinguish friend from foe, sometimes killing civilians (e.g., *Egils saga Skalla-grímsonnar*, 40) and not being able to recall what they did when in battle trance, qualities noted by contemporary researchers (e.g., Geraty, 2015). (Interestingly, such negative reports of battle trance have tended to emerge as societies turned away from the single-combat champion style of fighting and began to stigmatize it [Colarusso, 2019] compared to massed engagements or when other values emerged, such as the Christianizing of pagan cultures.)

Odin determines the outcome of battles, and, with the Valkyries, selects the outstanding heroes among the slain who deserve glorious afterlife in Valhalla. On earth, heroes were immortalized through having their deeds sung in poetry so that their memories never perished, the highest aspiration of Indo-European and other sacred-warrior traditions (e.g., Duchesne, 2009; Fortson, 2010; Gurevich, 1995; Poliakoff, 1987; Speidel, 2004). Warriors engaged in conspicuous acts of bravery, laughing at danger and scorning to protect themselves—especially in conditions of certain death—to win everlasting fame. “Their excesses meant glory: Wolf-warriors, berserks...no doubt won the ‘unwilting glory’ held out by the *Iliad* and the *Rig-Veda*” (Speidel, 2004, p. 193).

Odin’s powers relevant to battle trance included: shapeshifting; clouding a warrior’s mind with fear and confusion, or the reverse, instilling courage and clarity; weakening or strengthening the body; magically constraining movement (“the fetters”); breaking or strengthening weapons and armor; and invulnerability magic. For example, Odin tells how he can blunt or turn aside weapons:

That third [spell] I know,
if my need be great
To fetter a foeman fell:
I can dull the swords
of deadly foes,
That nor wiles nor weapons avail....

That fifth [spell] I know,
if from foeman’s hand
I see a spear sped into throng,
Never so fast it flies
but its flight I can stay,
Once my eye lights on it.
(*Hávamál*, 148, 150; Hollander’s translation)

Odin’s magic was shared by his warrior-shamans:

In battle Odin could make his foes blind or deaf or terrified and their weapons were as nothing more than sticks; but his own men went about without armour and were mad like hounds or wolves, and bit their shields and were strong as bears or bulls; they slew men, but neither fire nor steel would deal with them. This was called a berserk’s-gang. (*Heimskringla*, *Ynglinga Saga*, 6)

Berserkergang reflected an older Indo-European war-magic heritage involving: shapeshifting, stunning the enemy with terror; scorning to wear armor; rendering enemy weapons harmless; and invulnerability to fire and blades. Formulaic language identifying berserks is “no iron would bite them” (*á þá bitu eigi járn*; e.g., *Egils saga Skalla-grímsonnar*, 9; *Grettis saga*, 2). According to Speidel (2002), the earliest description of such a battle trance appeared in a poem celebrating the Assyrian Tukulti-Ninurta’s warriors in 1228 BCE:

They are furious, raging, taking forms
strange as Anzu [a bird-god].
They charge forward furiously into the fray
without armor,
They had stripped off their breastplates,
discarded their clothing,
They tied up their hair and polished (?)
their...weapons,

The fierce heroic men danced with
sharpened weapons.
They blasted one another like struggling
lions, with eyes aflash (?),
While the fray, particles drawn in a
whirlwind, swirled around in combat.
(p. 255).

Techniques to Become Berserk

Berserks prepared for battle by shapeshifting into bears or wolves, hence one meaning of *berserk*. Scholarly debate (e.g., Price, 2002; Guðmundsdóttir, 2007) about whether *berserk* means *bear-shirt* (*sark*), for the donning of animal skins in a shamanic transformation rite, or *bare of shirt*, for fighting without armor or completely bare-chested, discussed below, remains unresolved. Odin's warriors were likened to bears and to wolves, Odin's totem animal (*úlfheðnar*, *wolf-skins*, often translated as *wolf-warriors*; e.g., Davidson, 1988, 1990; Price, 2002; Speidel, 2002, 2004). They were believed not just to resemble animals but to become them in the battle trance, just as Odin could assume any form he wished:

It was said that ... he [Odin] could change himself and appear in any form he would
Odin often changed himself; at those times his body lay as though he were asleep or dead, and he then became a bird or a beast, a fish or a dragon, and went in an instant to far-off lands on his own or other men's errands. (*Heimskringla*, *Ynglinga Saga*, 6–7)

Material finds throughout northern Europe depict the ritual wearing of animal skins and masks and war-dancing with weapons as a shapeshifting device (e.g., Davidson, 1990; Price, 2002; Speidel, 2004). Scandinavian, British, and German sites have yielded ornamental plates from armor showing naked, leaping warriors alongside warriors clad in animal skins brandishing weapons. For example, a die dated to about 600 CE from Torslunda shows a dancer, probably Odin, wearing only a horned helmet and sword-belt, waving a spear in each hand followed by a man covered by a wolf skin and mask except for his human feet and hands, which hold a spear and draw a sword from its scabbard. Transforming into beasts by wearing animal pelts and masks is well established

in Indo-European cultures (Cebrián, 2010; Kershaw, 2000; Price, 2002; Speidel, 2002, 2004).

Dancing, singing, howling, and wearing skins conferred the animal's strength and speed on shamans, identities inherent in the terms *berserk* and *úlfheðinn*, and in personal names containing the element *bear* and *wolf*, such as Gunbjorn, Thorbjorn, Wulfgang, and Hildulf, respectively. It also was part of becoming-animal, the process that removed their humanity in preparation for killing. Berserks were called shapeshifters, *eigi einhamr* (not of one shape) or *hamrammr* (shape-strong), with the root *hamr* closely associated with supernatural, magical powers and perhaps changed mental state (e.g., Perabo, 2017; Tolley, 2009). Ecstatic dancing in animal skins seems to have conferred supernatural feral qualities on berserks while remaining essentially human with two exceptions in the earlier, more legendary literature. The hero Sigmund and his son Sinfjotli ("Helgakviða Hundingsbana I", 36-37) found and donned magic wolf skins, but could not get them off, during which time they spoke the language of wolves and hunted like them (*Volsunga Saga*, 8), able to kill seven or more men alone. When, after some days, the skins came off, the heroes burned them and thereafter remained human but with increased lethal powers. The most famous bear warrior, known from multiple sources, was Boðvar Bjarki, who, like Odin, bilocated in a shapeshifting trance. His human body was observed sleeping in the hall while a giant bear fought in King Hrolf Kraki's bodyguard on the battlefield:

Then Hjorvard and his men [the enemy] see a huge bear going before the King Hrolf's men, always nearest to where the king was. He kills more men with his paw than any five of the king's other champions. Blows and missiles glance off him. But he bursts under him both men and horses of King Hjorvard's army; and everything that comes in his way, he crushes in his teeth, so that panic sweeps King Hjorvard's army. (*Hrólfs saga kraka*, 50).

When Boðvar was awakened from the trance, the bear disappeared. As a man, Boðvar fought in berserkergang, but less effectively than his bear persona. A Norwegian proverb still conveys the bear's combat superiority: "The bear has the strength of ten

men, and the wits of twelve (*björnen har ti manns styrke og tolv manns vett*;" Lindström, 2012, p. 11).

Warriors used classic precursors to battle trance, such as taunting to work up anger and courage, as Diodorus Siculus wrote of the Gauls:

It is also their custom, when they are formed for battle, to step out in front of the line and to challenge the most valiant men from among their opponents to single combat, brandishing their weapons in front of them to terrify their adversaries. And when any man accepts the challenge to battle, they then break forth into a song in praise of the valiant deeds of their ancestors and in boast of their own high achievements, reviling all the while and belittling their opponent, and trying, in a word, by such talk to strip him of his bold spirit before the combat. (*The Library of History*, 5.29)

In the sagas, Skaphedinn abused Skapti Porodsson's intelligence, courage, and appearance (*Brennu-njal's saga*, 118), and in *Beowulf*, Unferth sneered that Beowulf (Am-a-Wolf), who had lost a swimming contest, would fail if he fought the monster Grendel (*Beowulf*, ll. 506-528). Beowulf charged Unferth with ineptness, cowardice, and having murdered his own kin (ll. 582-601).

Ancient European warriors routinely used noise-making tactics alone or with dancing to bring on battle-trance and frighten opponents, per Livy's account of Celtic fighters: "[T]heir songs as they enter into battle, their war-whoops and dances, and the horrible clash of arms as they shake their shields in the way their fathers did before them—all these things are intended to terrify and appall" (*The History of Rome*, 38.17). Berserks howled like animals: "Now bearserks'-gang [*sic*] seized them, and they howled like dogs" (*Grettis saga*, 19). According to the earliest berserk account, which commemorated Harald Hairfair's victory at Hafursfjord around 872 CE:

The berserks bellowed
as the battle opened,
The wolf-coats shrieked loud
and shook their weapons.
(*Hrafnsmál*, 8; also cited in *Heimskringla*, The History of Harald Hairfair, 18)

Berserk-style Rus warriors (closely associated with Norse and Varangian peoples) unnerved seasoned Byzantine troops by "roaring like beasts and uttering strange and weird howls" (Leo, *History*, 8.4), and their leader Sviatoslav I of Kiev "charg[ed] the Romans in a frenzied [berserk] rage" (9.8). Germanic warriors sang before battle to "kindle their courage ... [and] terrify their foes What they particularly aim at is a harsh, intermittent roar; and they hold their shields in front of their mouths so that the sound is amplified into a deeper crescendo by the reverberation" (*Germania*, 3). Berserks bit on the iron rims of their shields to bring on battle trance. "And as he came forward on the field to the ground of combat, a fit of Berserk fury seized him; he began to bellow hideously, and bit his shield" (*Egils saga Skalla-grímsonnar*, 67). According to Speidel (2004), bears snort and clack their teeth when on the defensive, and berserks made the same sound by biting on their shields' metal rims.

The Berserk State as Battle Trance

In combat the berserk state was characterized by fearlessness, supernatural strength, and invulnerability. Stripping before or during battle signaled fearlessness (Kershaw, 2000; Speidel, 2002, 2004), hence *bare of shirt* for *berserkers*. Fighters would ostentatiously discard armor and even clothing to demonstrate courage, disdain for the opponent, love of glory, and invulnerability magic. According to Polybius, the Celts "calculated to inspire terror" among the legions by tossing their clothing away and moving into the front lines naked except for weapons (*Histories* 2.28). Diodorus Siculus said that Gallic warriors "despise death to such a degree that they enter the perils of battle without protective armour and with no more than a girdle about their loins" (*The Library of History*, 5.29). Norway's king Hákon was Christian, but when surprised and badly outnumbered, he took the berserk approach,

Flung off his war clothes,
Slipped off his byrnie,
Before he began.

The gladdest of fighters...

(*Heimskringla*, The History of Hacon the Good, 32)

Laughing at danger, like discarding armor, especially when death seemed inevitable, was a bid for Valhalla and fame, as were heroic deeds of strength and stamina. When Byrhtnoth, Anglo-Saxon leader of the battle of Maldon, was impaled by a spear, he pushed his shield against the shaft to break it off, leaving the point in his body, then slew his attacker with a spear-thrust through the neck and drove a spear through another foe's mail coat and into his heart:

The earl was the blither:
the brave man laughed then,
said thanks to Metod [Christian God]
for the day-work God gave him.
(*The Battle of Maldon*, ll. 146–148)

Warriors discarded their shields in battle or wore them on the back instead of carried defensively in front (Speidel, 2002, 2004). In the Viking version of the battle of Brunanburh,

Then Thorolf became so furious [berserk] that he cast his shield on his back, and, grasping his halberd with both hands, bounded forward dealing cut and thrust on either side. Men sprang away from him both ways, but he slew many.
(*Egils saga Skalla-grímsonnar*, 53)

Two-handed sword or spear work signifies that the warrior has thrown off his shield (Speidel, 2004). For example, Asmund went berserk and sang, "'Now without shield let us ply our warfare bare-breasted, with flashing blades....' When he had said this, he gripped his hilt with both hands, and, fearless of peril, swung his shield upon his back and slew many" (Saxo Grammaticus, *The Danish History*, 1). At Stamford Bridge, Harald Hardrade "grew so heated [berserk] that he rushed forth right out of the line and struck with both hands; then neither helm nor byrnie could stand against him" (*Heimskringla*, The History of Harald Hardrade, 92).

Even at a time when fighters routinely hacked one another to pieces, feats of superhuman strength stand out in the texts. Reported with odd details, these sources undoubtedly reflect eyewitness accounts of actual events, if not those ascribed to a particular actor. For example, Kveldulf "brandished high his battle-axe, and smote Hallvard

right through helm and head, so that the axe sank in even to the shaft; then he snatched it back towards him so forcibly that he whirled Hallvard aloft, and slung him overboard" (*Egils saga Skalla-grímsonnar*, 27). Thorolf, fighting without a shield,

slew the man who bore the earl's standard, and cut down the standard-pole. After that he lunged with his halberd at the earl's breast, driving it right through mail-coat and body, so that it came out at the shoulders; and he lifted him up on the halberd over his head, and planted the butt-end in the ground. There on the weapon the earl breathed out his life in sight of all, both friends and foes. Then Thorolf drew his sword and dealt blows on either side, his men also charging. (*Egils saga Skalla-grímsonnar*, 53)

When Anglo-Saxons surprised Viking invaders and began cutting them to pieces as they fled over Stamford Bridge, the Vikings sent a single berserk to hold the bridge and buy time. The bridge was wide enough for four abreast, yet the hero held it alone with his battle-axe for hours, slaughtering all comers, and inspiring his foes with awed admiration, as recorded by William of Malmesbury:

Yet, however reluctantly posterity may believe it, one single Norwegian for a long time delayed the triumph of so many, and such great men. For standing on the entrance of the bridge ... after having killed several of our party, he prevented the whole from passing over. Being invited to surrender, with the assurance that a man of such courage should experience the amplest clemency from the English, he derided those who entreated him; and immediately, with stern countenance, reproached the set of cowards who were unable to resist an individual. (1847, p. 256)

As bodies choked the bridge and knowing frontal assault was useless, one Anglo-Saxon maneuvered a boat underneath the bridge and jammed his spear up between its boards, killing the warrior who had "stayed the advance of the whole English army till the ninth hour," slaying forty and wounding countless others (Henry of Huntingdon, 1853, p. 209).

In battle trance, berserks were invulnerable to fire and blades. Sivald's sons "would roar savagely, bite their shields, swallow hot coals, and go through any fire that could be piled up..." (Saxo Grammaticus, *The Danish History*, 7). An Icelander wanted to kill two berserks who "walked barefoot on burning coals" (*Vatnsdæla saga*, 46). Invulnerability to bladed weapons was sometimes attributed to wearing animal skins (e.g., *Heimskringla*, The History of King Olav, 228), though it is often impossible to tell how berserks were clad. "When the roll of Harold's army was called, many were they that had fallen, and many were sore wounded....nor was there a man unwounded in the king's ship before the mast, except those whom iron bit not, to wit the Berserks" (*Egils saga Skalla-grímsonnar*, 9). In one epic battle two berserks Egil and Atli hacked each other's shield to pieces.

And when Atli's shield was of no use, then he cast it from him, and, grasping his sword with both hands, dealt blows as quickly as possible. Egil fetched him a blow on the shoulder, but the sword bit not. He dealt another, and a third. It was now easy to find parts in Atli that he could strike, since he had no cover; and Egil brandished and brought down his sword with all his might, yet it bit not, strike where he might. (*Egils saga Skalla-grímsonnar*, 68).

When berserks fought each other, they tried to bypass their opponent's invulnerability. On horseback and wearing an unfastened helmet, the berserker Snaekoll challenged an old farmer accompanied by another berserker named Grettir, who wounded Snaekoll early in the trance process and killed him.

[Snaekoll still on his horse] began to howl and to bite the rim of his shield. He held the shield up to his mouth and scowled over its upper edge like a madman. Grettir stepped quickly across the ground, and when he got even with the berserk's horse he kicked the shield with his foot from below with such force that it struck his [Snaekoll's] mouth, breaking the upper jaw, and the lower jaw fell down on to his chest. With the same movement he [Grettir] seized the viking's

helmet with his left hand and dragged him from his horse, while with his right hand he raised his axe and cut off the berserk's head. (*Grettis saga*, 40)

Beowulf and Grendel both seem to have been berserks (Sharma, 2005). "Not blade on earth, no blacksmith's art/Could ever damage" Grendel (*Beowulf*, ll. 801-802), so Beowulf tore off his arm, mortally wounding him (ll. 816-821). In the berserker duel above, when Egil's sword would not bite Atli, he threw it down "and bounding on Atli, gripped him with his hands.... Egil went down prone upon him and bit through his throat. There Atli died" (*Egils saga Skalla-grímsonnar*, 68).

Battle Trance in Other Sacred Traditions

The next best attested battle trance is Southeast Asia's ecstatic champion legacy *amok*, which, like berserkerang, has been misrepresented, degraded, and pathologized, coming to mean popularly a frenzied, senseless, destructive rage ("running amok" and "going berserk"), discussed below. "Amok, far from being an individual, disorganized and insane activity"—as now construed—was a "coordinated, group form of violence...unleashed through invulnerability rituals" (Farrer, cited in Reid, 1988, p. 125). It was originally a combat tactic used in India's Hindu states (Barnes, 2007; Kon, 1994) involving trance possession by war-gods, which enabled warriors to fight without pain or fear until they were slain or collapsed from exhaustion. India's colonizing of the Malay Archipelago during the fourth and fifth centuries CE spread this combat style, which became known as *amok*, probably derived from Sanskrit *amokshya*, *that which cannot be loosed* (Goldenberg, 2013) or *no freedom*, signifying either the warriors' unbreakable commitment to the gods, or, since *amok* was also used as a battle-cry, that no quarter would be given (Barnes, 2007).

Amok was originally understood to mean a fight to the death, either in a mass action by an army or by an individual in a duel (Charney, 2004). Amok warriors, unless they prevailed, expected to be killed but not before they had slaughtered as many foes as possible before being overcome by superior force.

Far from being out-of-control, crazed individuals, amok warriors were strategically deployed. The Javanese used an amok vanguard as shock troops to intimidate, scatter, and kill the enemy in the opening moves of a battle (Reid, 1988). During the siege of Madura in 1624, Sultan Agung of Mataram sustained a significant defeat when some 2,000 Madurese feigned retreat, then wheeled and “ran amuck” against the sultan’s 50,000 troops, killing 6,000, including 17 top commanders (Charney, 2004). Later Agung was defeated by 800 amoks using the same tactics. The Balinese, who preferred massed formations, led their attacks with amok troops. If they succeeded in killing the enemy leader, that often decided the battle before the regular troops engaged.

Amok warriors, after elaborate spiritual and martial rituals to create battle trance, charged slashing with blades. A rare seventeenth-century first-person account (Forbin, 1999) describes engaging a Makassar amok warrior reared “from childhood with the ‘point of honor’ never to submit to an enemy” (Charney, 2004, p. 11):

I plunged my lance into his stomach; nevertheless, the Makassar, as if he had no sense of feeling, advanced upon the weapon which I held fast in his body, and made incredible efforts to come at me in order to run me through; and he would infallibly have done it, if the hilt of the blade had not hindered him. I found that my best way was to retreat a little, still keeping the lance in his stomach, without venturing to repeat my thrust, till at length I was relieved by others of the lancement who laid him dead on the spot (Forbin, 1999, p. 105).

Documented more recently, elite Philippine troops, Muslim Moro swordsmen, employed suicide attacks called *juramentado* (from the Spanish, *one who takes an oath*; Tarling, 1992). Juramentado, like berserkerang and amok, involved ritual purification and religious preparations for a savage attack utilizing only blades. When sword-wielding Moro warriors proved unstoppable by the U.S. Army regulation sidearm, a .38 caliber revolver (e.g., Foreman, 1906) also issued to the Philippine Constabulary, they were given Colt .45 revolvers and shotguns. For

example, one juramentado warrior in Zamboango, hit by seven revolver shots, kept charging and got close enough to cut the leg off an American officer (Woolman, 2002). Hurley (1938/2011) reported an attack by a Moro who had been plowing when he saw constables shooting other Moros. Without time to ritually prepare, he grabbed a barong (curved sword) and attacked headlong. Four constables opened fire, but he kept advancing even after being struck by eleven bullets. Only when a 3-inch long, 30-40 caliber, 220-grain round-nosed Krag bullet pierced his spine at a distance of only ten feet did he fall (p. 327)—and still had enough stamina to hurl his sword at his attackers as he went down.

With the increasing use of artillery, this ancient close-quarters fighting style became ineffective. Japanese infantry had used such tactics derived from the Bushido honor code of suicide before capture in what came to be called the “banzai charge” (from the Japanese war cry, *tennōheika banzai*, *long live his majesty the emperor*; Edgerton, 1997) against poorly equipped and poorly trained Chinese troops around the turn of the twentieth century (e.g., Benedict, 1989; Best, 2015). In those engagements, the numerically inferior Japanese often prevailed using banzai attacks, but such tactics resulted in overwhelming casualties and minimal effectiveness against Allied troops in World War II. Nevertheless, as with the kamikaze pilots, such charges were often the last-ditch bid for honor in hopeless circumstances (Best, 2015).

Demonizing Battle Trance

Berserkerang has attracted a fair amount of scholarly attention—unfortunately most of it unsound—as people have tried to account for it in reductive terms that strip it of mystery, magic, and the sacred. Conventionally it has been attributed to the ingestion of psychotropic substances, for example, but those explanations do not hold up to scrutiny. The dominant theory, still seen today, is that berserkerang is produced by consuming the hallucinogenic mushroom *Amanita muscaria* (fly agaric), a speculation introduced in 1784 by Samuel Lorenzo Ödman on little evidence (Wasson, 1968) whose hardihood derives from its elaboration by Howard D. Fabing, who knew nothing about the

source literature, in a paper he gave at an American Psychiatric Association (APA) conference and later published (1956). The case for *Amanita muscaria* is hopelessly flawed (e.g., Geraty, 2015; Wade, 2016), but is still repeated (e.g., Dale, 2017; Ruck, 2016). A much more credible argument has recently been made for henbane (*Hyoscyamus niger*; Fatur, 2019), which the Gauls used to poison arrows, not, so far as is known, to strengthen warriors (Ott, 1996). Nevertheless, arguments for psychotropics to account for berserkerang are problematic (e.g., Fatur, 2019; Knight, 2011; Wernick, 1979) since most produce effects adverse to combat fitness. Today a condition called excited delirium syndrome (EDS; Benzer, Najad, & Flood, 2013; also known as lethal catatonia, acute exhaustive mania, and agitated delirium [Sztajnkrycer & Baez, 2005; Takeuchi, et al., 2011]) shares some features with battle trance, such as combativeness, extreme endurance and superhuman strength, but the resemblance is superficial since it also involves hallucinations (Gill, 2014; Mash, et al., 2009; Ross & Chan, 2006) and manufactured chemicals not available to historical battle-trance populations, such as phencyclidine (PCP) and amphetamines (Flosi, 2011; Gill, 2014; Sztajnkrycer & Baez, 2005), often in combination with alcohol, other street drugs, or excessive pharmaceutical drugs. Though the possibility of drugs cannot be dismissed, timing and dosage logistics as combat preparation would have been extremely difficult. Even if dosage could be titrated in an age lacking standardization of raw materials, preparation methods, and storage conditions or adjustment for body size, battles were fairly spontaneous events determined by the arrival of sufficient troops at a given place, something hard to predict with premodern communication and travel conditions. Moreover, the documented ability of warriors to deliberately or adventitiously go into battle trance during combat weakens any drug argument.

When not attributed to drugs, berserkerang has been pathologized as an involuntary mental condition—a kind of insanity rather than a useful, cultivated state. It has been compared to hypomania, one of a range of poorly understood manic states of exaggerated euphoric or aggressive activity

not requiring hospitalization nor declining into catatonia or death (Lee, et al., 2012). Hypomania is characterized by grandiosity, wakefulness, verbosity, distractibility, increased involvement in goal-directed activities, and elevated or irritable mood without hallucinations or delusions (APA, 1994). Other explanations have included self-induced hysteria, epilepsy, mental illness, or genetic flaws (Byock, 1995; Carlson, 2006; Foote & Wilson, 1970), but none accounts for more than a fraction of the berserker data, much less for historical accounts from different cultures with their goal-directed, prosocial behavior for the member group. Geraty (2015) likened berserk behavior to post-traumatic stress disorder (PTSD; p. 11), alleging that berserkers and traumatized modern-day veterans exhibited persistent hypervigilance and potential for explosive violence when no longer in battle. Passing over many problems with her argument, it contains flawed cross-cultural assumptions: given the unpredictable, ubiquitous violence of feudal societies, few people were spared scenes of gory mayhem, and physical threat was more or less constant. Aggressive hypervigilance, even for noncombatants, would have been highly adaptive.

The APA has conflated berserkerang and amok with equally poorly understood conditions from different cultures. Three recent *Diagnostic and Statistical Manuals* (DSMs; APA, 1980, 1994, 2013) equated a diagnosis called intermittent explosive disorder (IED) with berserkerang, amok, and other “culture-bound syndromes” (a category dropped from the DSM-V; APA, 1994, p. 845). IED, a disruptive impulse control and conduct disorder, is poorly defined (Ahmed et al., 2010; Parzen, 2003), and characterized by unpremeditated explosive outbursts of rage disproportionate to the situation (APA, 1980, 1994, 2013). The APA used what they considered to be an example of amok to illustrate IED involving a Filipino man who, upon learning that his wife was having an affair, killed her parents, injured her and their son, and then set her lover's brother's house on fire, which killed two children (Parzen, 2003, p. 142; cf., Schmidt, et al., 1977). IED and APA's related culturally-bound conditions have little in common with the sacred states cultivated by elite warriors for group survival, and the amok

literature shows how the field of psychology enabled the political interests of colonial powers to coopt and reduce these heroic states to intoxication and insanity.

A recent, unfortunate example comes from Auxemery (2015), who equated *devotio*, the ancient Roman warriors' contract with the gods for victory, to the contemporary mass murders of civilians by deranged individuals. *Devotio*, from which English *devotion* derives, was a deeply religious, prosocial act, constituting a holy vow of self-sacrifice that involved charging the enemy to slay as many as possible until the warrior himself was killed to secure victory for his people and the glory of the gods (e.g., Livy, *The History of Rome*, VIII.9.1-10), an exact parallel to Asian sacred warrior traditions like amok. Auxemery's equating *devotio* with the antisocial mass murder of noncombatants reflects widespread contemporary misunderstanding, as the title of just one article shows: "Murder-suicide: Bridging the Gap between Murder, Amok, and Suicide" (Hagan, et al., 2015; cf., Hatta, 1996; Hempel, et al., 2000; Imai, et al., 2019; Saint Martin, 1999).

Vilification of amok began with Captain Cook's late eighteenth-century descriptions of individuals behaving violently without apparent (to colonials) cause, including attributing "running amuck" to alcohol or opium intoxication or to rage over some shaming event (Charney, 2004), per the APA example above. Malays attributed a person's random outburst of frenzied violence to possession by an evil tiger spirit and tolerated such behavior because of its spiritual origins (e.g., Saint Martin, 1999), but they did not equate such episodes with a sacred, deliberate combat form. Colonials, on the other hand, confused and conflated the two, discounted their spirituality, and tried to criminalize them for their own advantage, perhaps deliberately using the same word for both. Amok occurred when colonials met with organized, violent resistance by the Asian populations they sold, worked to death, and exploited in indenture, "coolie" systems, and other coerced labor in the vast Indian Ocean slave trade (e.g., Condos, 2016; Saha, 2013; van Rossum, 2013; Vink, 2003). Balinese slaves being transported on a Dutch East India merchant ship, for example, revolted en masse when one of their members was

abused (van Rossum, 2013). He yelled, "Amok!," which the other slaves took up as a battle cry, and they violently took over the ship, an act repeated on other Dutch East Indiamen. This was not the act of "an enraged lone killer, but played a key role in mobilizing the group of mutineers. It functioned as a conscious call to arms, as a battle cry as well as a call for solidarity" (p. 130) in the amok fighting tradition. Condos (2016) presented a wealth of cross-cultural evidence showing how colonial powers have pathologized native resistance as fanaticism and disease since the Enlightenment:

In the colonial context, psychiatric and medicalized language was similarly [to "fanaticism"] used to discredit acts of resistance by colonized peoples. By reducing certain forms of undesirable behavior to pathologies, colonial authorities were able to render the statements and actions of their subjects 'unworthy' of serious consideration. (p. 731)

Condos (2016) drew particular attention to the Malay amok warriors, who had been sensationalized in the British press, and how amok became a term for any resistant behavior colonials did not like, eventuating in the APA's "culture-bound syndromes:"

Amok was a Malay word that entered into the English language to describe cases of indiscriminate and seemingly unmotivated violence directed by one individual against those around them (giving rise to the expression "to run amuck"). Although *amok* encompassed a much wider variety of meanings during the precolonial period, British and Dutch colonial officials stripped it of its political and social power by reducing it to a primitive variant of European psychiatric disorders. (Condos, 2016, p. 732).

Much of the current bigotry can be attributed to James R. Averill (1982), who correctly identified amok and berserker-gang as misunderstood warrior traditions, but nevertheless viewed both as pathological rage, an interpretation repeated as expert opinion in cross-cultural books on rage disorders (e.g., Mesquita & Frijda, 1992; Tanaka-

Matsumi, 1995; Thomas, 2006) and elsewhere (e.g., Protevi, 2009); Averill's ideas perpetuated colonial distortion (e.g., Condos, 2016; Saha, 2013). Other writers added to the contemptuous, frankly racist rhetoric associating amok with mental illness in Southeast Asian cultures (e.g., Carr, 1978; Carr & Tan, 1976; Okamura, 2010; Schmidt, et al., 1977; Tan & Carr, 1977). Congratulations are hardly in order for now applying it to Western societies by equating it to civilian mass killings, murder-suicide, and suicide-by-cop (e.g., Hatta, 1996; Hempel, et al., 2000; Imai, et al., 2019; Saint Martin, 1999). While it is true that battle trance is an emotional, nonrational state that can be adventitiously or deliberately evoked under a number of circumstances—which may indeed include the states associated with suicide bombers and civilian mass killers—only the former resemble the use of battle trance in most societies, and too little is known to equate recent diagnoses of pathology with ecstatic battle traditions.

The Evolutionary Trajectory and Promise of Battle Trance:

What Contemporary Research Reveals

Despite such misunderstandings and maligning of an evolutionarily useful survival mechanism and changes in military technology that render battle trance less useful in contemporary mass combat, understanding it, its qualities, and the conditions that create it holds immense promise to enhance performance and quality of life. The following examines research on the techniques for creating battle trance and on the validity for claims of its extraordinary qualities.

As noted, some of the practices for inducing battle trance—war dances, war songs, and the battle cry—are atavistic: the human musicality used in battle trance may be evolutionarily hundreds of millions of years old and exists in other vertebrates (Fitch, 2006). Musicality in this sense means *song* (complex, learned vocalizations for communication, such as bird song and whale song) and *instrumental music* (the use of body parts or other objects to produce structured, communicative acoustical signals; Fitch, 2006, p. 183). Human song probably evolved before or at the same time as speech, and instrumental music possibly dates to Neanderthal

times (Cross, 2003a, 2003b; Fitch, 2006). Human percussive signals and song are thought to have developed to advertise territoriality and defend against aggressors (Fitch, 2006; Jordania, 2011, 2014; Hagen & Hammerstein, 2009; Randall, 2001)—hence their association with combat—but they also served other forms of social interaction (e.g., Large & Gray, 2015). Human musicality includes synchronizing musical behavior with others by performing the same action at the same time or engaging in more complex forms of entrainment. (Interestingly, many languages do not distinguish song and dance; rather they form a single construct of human interaction comprising complex, communicative body movements and sound production in a multimodal display; Fitch, 2015.)

Music helps create group mind through hardwired rhythmic coordination among individuals in a collective (Jordania, 2011, 2014). According to Richards (2013), Durkheim observed that human gestures and cries tend to fall into rhythm and regularity, and from thence into dances, songs and related rituals. Music provides a sense of shared experience in a temporal framework, regulating emotions and motivational states and affecting action-readiness (Bispham, 2006), increasing the survival of hominid groups (Jordania, 2011, 2014; Kogan, 1997). Musical rhythms coordinate and entrain the movements and emotions of individuals in groups, a technique ultimately used in military drills and cadences (McNeill, 1995), but also central to religion. It is perhaps not surprising that combat and the sacred were paired when they shared essential techniques and tended to produce similar states of solidarity, exhilaration, ecstasy, and invincibility.

Durkheim's *collective effervescence*, identified in *The Elementary Forms of the Religious Life*, comes from observations in religious settings that amplify emotions and group entrainment in goal-oriented behavior (Olaveson, 2001) through processes like becoming-intense to the point that,

from every side there are nothing but wild movements, shouts, downright howls, and deafening noises of all kinds that further

intensify the state they are expressing. The effervescence often becomes so intense that it leads to outlandish behaviour....People are so far outside the ordinary conditions of life...that they feel...above and beyond ordinary morality. (Durkheim, 1915, pp. 217-8)

This type of intentional, ecstatic group entrainment and the characteristics of battle trance are now being validated by research, such as the discovery of mirror neurons in humans and certain other animals (Cross, 2003). Synchronous singing and dancing, like war songs, battle cries, and war dances, have been shown to produce high levels of solidarity and bonding (e.g., Fischer, et al., 2014; McNeill, 1982, 1995; Swann, et al., 2009; Xygalatas, et al., 2011), which promote group survival. These techniques are notably associated with the more extraordinary feats of battle trance and spiritual performance. Their psychophysical states occur naturally in group entrainment without ingesting drugs.

The fearlessness, will and stamina to keep pursuing the goal despite bodily injury seen in battle trance may be related to feelings of invincibility from group solidarity, even when facing overwhelming odds on the one hand, or, on the other, from rage at seeing one's fellows slaughtered and subsuming the personal survival drive in ecstatic suicide for them and/or personal glory. Analgesia, a noted feature of battle trance, feeds fearlessness, and vice versa: when intent on a goal and highly aroused, pain may not be felt.

The perception and tolerance of pain vary significantly by mental state, regardless of the seriousness of the injury (e.g., Kelley, 2007; Montgomery, et al., 2000; Simons, et al., 1988). Even in a normal state, people can experience serious injury without pain. In a study of alert, rational, coherent patients in an emergency room (Wall, 2000), 37% felt no pain at the time of injury. Of those with skin injuries, 53% were free of pain for a time, as were 28% of those with deep tissue injuries. The onset of pain occurred within an hour for the majority, but some felt no pain for many hours, which alone suggests how some badly wounded warriors can keep on fighting. One factor that affects pain

perception is group entrainment: rowing teams have demonstrated elevated pain tolerance (Cohen, et al., 2010; Wiltermuth & Heath, 2009), as have groups engaging in other synchronous behavior (Sullivan & Rickers, 2013; Sullivan, et al., 2014).

Although some kinds of analgesia are linked to pathological dissociation (e.g., Cardeña, 1999; Grahek, 2001; Miller, & Triggiano, 1992), many are not (e.g., Grahek, 2001; Melzack, 1998; Wall, 2000)—and some involve deliberate dissociation. For example, research on hypnotic analgesia showed that when participants imagined that their surgically wounded hand and arm were separate from their body, they experienced little pain and did not exhibit the cardiovascular effects of such stress (Casiglia, et al., 2017). Since people with dissociative identity disorder can respond physiologically with a range of reactions to a single stimulus, such that one personality may be allergic to a substance that produces no effect on other personalities occupying the same body, “it has been proposed that the neurophysiological underpinnings for both spontaneous dissociative and induced hypnotic reactions are similar” (Cardeña, 2018, p. 7). It may be that berserkers who “became” bears or wolves or amok warriors possessed by the gods during battle trance produced essentially the same effect. However, combat’s intense, in-the-moment survival demands are so all-consuming that serious wounds are, to some degree, not even noticed, and this “distraction” effect has experimental validation: burn patients engaged in immersive virtual reality entertainment while undergoing debridement exhibit less pain than controls (e.g., Hoffman, et al., 2011; Patterson, et al., 2006).

Deliberately induced trance produces even stronger analgesic results. Randomized controlled trials have shown that hypnosis for acute pain gives greater relief than other treatments (Patterson & Jensen, 2003, p. 516; cf., Patterson, et al., 2006; Weichman-Askay, & Patterson, 2007). A metaanalysis of hypnosis studies (Montgomery, et al., 2002) showed medium to strong effects in pain reduction; hypnosis reliably, significantly reduces acute procedural pain as well as chronic pain in clinical situations (Patterson & Jensen, 2003). Minimal training in self-hypnosis can reduce the perception

of acute wound pain, with concomitant accelerated healing (e.g., Garland, et al., 2017; Ginandes, et al., 2003; Patterson & Jensen, 2003).

Closely related to analgesia is the berserkers' invulnerability to blades and fire, feats well documented today from self-induced states often supported by group entrainment of song and dance, especially as a form of spiritual performance, such as the body piercing, suspension, and endurance ordeals of the Sun Dance ceremony and the Salish Spirit Dance in North America (Jilek, 1982). Imperviousness to blades features in numerous contemporary spiritual performances, such as *tangka*, a kind of war magic practiced by the Minnan people who now comprise the major proportion of ethnic Chinese living throughout southeast Asia (Chan, 2014). Practitioners, acting as warrior exorcists and trance mediums incarnating the warrior gods battling demon hordes, protect their communities by processing through the streets during festivals. Their preparations involve going to a temple to enlist as a general leading troops in the celestial army. There they obtain an official certificate of their commission, magic flag, seal of office, and ritual sword. Dancing to drums and gongs, especially with repetitive head shaking, induces a deep trance before they (or others) drive swords, rods, and other implements through their flesh to demonstrate their invulnerability and imbue their bodies with the spirit-power of the items impaling them. Often their cheeks are pierced by a sword after which another object, such as a halberd, modified bicycle frame, ceiling fan, or fluorescent light tube, is thrust through the wound (Farrer, 2009; Hamilton, 2008). At the Thaisam festival in Singapore, devotees pierce the skin of the forehead, tongue, and cheeks, and wear frameworks of metal rods (*kavandis*) that penetrate deeper into their flesh the longer they are worn (Belle, 2017; cf., Collins & Ramanathan, 2014; Stirn, 2003). They experience little pain and minimal bleeding. Yet at other times, they deliberately shed their blood, apparently without pain, on special papers to make charms and talismans. The blood shedding rites usually involve repeatedly cutting their tongue, head, or back with swords, axes, or maces. Still other Asian adepts climb barefoot unscathed up ladders made of knives (e.g., Farrer, 2009; Hamilton, 2008). Some rend their flesh

with broken glass, spikes, skewers, knives, swords, and hooks (often used to pull weights or suspend the body) with little pain or bleeding (e.g., Ambos, & Sax, 2013; David, 2009; Hall, 2001, 2004, 2011; Kaarsholm, 2014).

Certain Islamic sects engage in similar performances. North African Isawiyya Moslems are noted for "eating fire and cutting themselves in ecstasy" (Brett, 1988, p. 38). Adherents give public displays of trance-dancing in which they slash their torsos or heads (Crapanzano, 1973). Followers demonstrate instantaneous healing of deliberately caused bodily damage, such as jamming spikes and skewers into their torsos and hammering daggers into their skulls and clavicles (Brett, 1988; Crapanzano, 1973). According to Hall (2001, 2004, 2011), adepts of the Sufi Tariqa Casnazaniyyah school, who pierce their bodies with spikes, blades, glass, and the like, have such complete control over pain, bleeding, and infection that their wounds heal within 4-10 seconds. Hall, trained in the practice himself, has reproduced it reliably in laboratory conditions (2004, 2011; Hall, et al., 2001), though with slower results. In one case, a Sufi inserted an unsterilized metal skewer through his cheeks while radiological, immunological, and electroencephalograph (EEG) recordings were made. The left facial puncture healed within two minutes, whereas the one on the right was three-quarters healed after 8 hours. Hall averred that, based on EEG readings during this experiment (which involved no trance-induction methods), these phenomena were not related to "hypnosis, realization, altered states of consciousness, or trance states" (2004, p. 93; 2001, 2011). The invulnerability is alleged to be a remote transmission from the sect leader (cf., Heath, 2011). Demonstrations had to be planned in order to succeed, suggesting some mental preparation was required; if adepts were wounded accidentally, they did not heal rapidly.

In a series of case studies, a Japanese yogi in laboratory conditions endured tongue piercing without pain, bleeding or subsequent infection; EEG readings showed a self-induced lowering of brain activity to a state resembling trance (Peper et al., 2006). The same rapid healing phenomena have been observed among Brazilian trance surgeons'

patients (Don & Moura, 2000; Hall, 2004) and have been claimed as part of traditional shamanic healing among the Sámi peoples (Sexton, & Stabbursvik, 2010).

Invulnerability to fire, typically in the form of fire-walking, has figured as a sign of spiritual attainment and/or invulnerability magic for centuries (Kane, 1982), among such diverse peoples as Fijians (Pigliasco, 2010), Bedouin Arabs (Al-Krenawi, & Graham, 1999), Greeks (Danforth, 1989; Xygalatas, 2012), Japanese (Winfield, 2009), and Sri Lankans (Ambos & Sax, 2013). Today it is a popular activity at Western self-development seminars bolstered by intense group bonding, singing, and dancing. It involves collective rituals characterized by shared, synchronous arousal among participants as well as observers (Konvalinka et al., 2011; Xygalatas et al., 2011). Fire-walking involves a particular psychophysiological state that otherwise appears normal (Hillig, & Holroyd, 1997/1998; Pekala, 2015; Pekala, & Ersek, 1992). Religious practitioners have demonstrated the capacity to withstand other dangerous sources of heat by rolling in hot sand (Ambos, & Sax, 2013), dipping hands into boiling oil or molten metals (Farrer, 2009; Hamilton, 2008; Waterson, 1995), passing hot skewers through the tongue, and licking boiling liquids or red-hot metal without harm (Al-Krenawi, & Graham, 1999). Some adepts use other “burning” media, such as washing in sulfuric acid (Wilson, 2002).

Many such proofs of invulnerability are ritually practiced in a blended spiritual and martial context common in Asia. Buddhism has a long history of monks using war magic against enemies, including sometimes physical fighting (e.g., Dalton, 2011; Keyes, 1978; Moyar, 2004; Schober, 2007; Yu, 2005), like the Shaolin tradition. Virtually all of the Chinese martial arts, however spiritual their philosophy or mystical their practices, remain effective methods of violence (Allen, 2014). Perhaps one of the most elaborated spiritual-martial forms of invulnerability magic comes from the Malay-Indonesian archipelago, where the predominant martial art *silat* includes *dabus*, a ritual performance of invulnerability, and *daboih*, a trance that was the fundamental combat preparation during the war against the Dutch (Gargenbert, 2000). *Silat* public

displays include withstanding blows from iron spikes, washing in sulfuric acid, slicing the tongue with machetes and regurgitating live bats without harm (Wilson, 2002, p. 265). Significantly, the elaborate preparations for *silat* comprise almost everything *but* the ingestion of psychotropic drugs: talismans, amulets, magic weapons, breathing techniques, skin implants, chanting, prayer, meditation, sexual abstinence, sleep deprivation, special diets, fasting, animal sacrifice, visiting sacred sites, retreats, secret mantras, magic strengthening oils, hypnotism, and training in sensory and extrasensory perception (Nilan, et al., 2014).

Two culturally specific aspects of berserkergang, shapeshifting and bilocation, have not been systematically studied, although both are widespread in legendary accounts and anecdotally attested in actual cases. Shapeshifting is part of the Indo-European cultural heritage (Cebrián, 2010), as well as many other shamanic traditions (e.g., Howard, 2014; Vélez, 2015; Winkelman, 2010), typically as a kind of war or hunting magic. Therianthropic figures that combine human and animal elements appear frequently in paleolithic petroglyphs. Scholarly debate has raged for decades about whether and to what degree such images represent altered states brought on by hallucinogens or trance in shamanic rites (e.g., Helvenston, & Bahn, 2003; Hodgson, 2006; Lewis-Williams, 1997, 2002; Lewis-Williams, & Dowson, 1988; Lewis-Williams, & Pearce, 2012; McClenon, 2002; McGranahan, & Challis, 2016; Solomon, 2013). The archeological evidence is ambiguous at best (e.g., Hodgson, 2006), but so is that from recent societies. For example, the culture of the ritually-empowered Bali Leopard-men of the northeast Congo in the late nineteenth and first half of the twentieth century did not actually involve belief in animal transmogrification (Van Bockhaven, 2018), showing the need for caution when attempting to understand shapeshifting accounts. Ingesting certain hallucinogens produces animal and therianthropic imagery, even among modern urban-dwellers whose involvement with animals is minimal (e.g., Hodgson, 2006; Kjellgren, & Norlander, 2000-2001), though whether it also produces the subjective sense of being an animal is not established (Blom, 2014). Other forms of trance,

notably trance-dancing and rough sex, do seem to promote that subjective sense (Lindstrøm, 2012; McClenon, 2002; McGranahan, & Challis, 2016; Wade, 2004).

Belief in the ability to turn into an animal was prevalent in the ancient world, and in Europe seems to have reached a peak at about the time of the Inquisition and emergence of scientific thinking, with 30,000 recorded cases from 1520 to 1630 in France alone (Farson & Hall, 1975). Of course, many of these were likely attributed to the religious, political, and personal persecution of an oppressed minority rather than people's subjective sense of shapeshifting: cases of clinical lycanthropy (originally the delusion of having become a wolf or more broadly another animal) dwindled to virtually nothing in the last two centuries (Blom, 2014). But the belief in, and practice of, shapeshifting remained current in some cultures (Helander-Renvall, 2010; Vélez, 2015), such as accounts of Sufi Rama Hari, who reportedly could transform into a black panther (de Grave, 2016), and this source on north African devotees:

[O]ne of the Tunisian soldiers ... seized a sword and began to lacerate his stomach. The blood flowed freely, and he imitated all the time the cries and movements of the camel. We soon had a wolf, a bear, a hyena, a jackal, a leopard, and a lion.... A large bottle was broken up and eagerly devoured.... Twenty different tortures were going on in twenty different parts of the hall. (Littell & Littell, 1882, p. 424).

According to Lindstrøm (2012) and Rossano (2009), shapeshifting—or the state of mind that conduced to animal identification—produced a survival advantage. Moreover, identification with animals may possibly be innate for some people. “Modern therianthropy” is an emergent trend with online communities of people who believe they have human bodies but were born with a subjective animal identity that is an integral part of who they are:

The majority of Therians are private about their non-human identity and keep more animal-like behavior under control while in public. The

ability of Therianthropes to control their action during shifts, when they feel and act more instinctual and animal-like, is what sets Modern Therianthropy apart from mental disorders such as clinical lycanthropy. (“Therianthropy,” 2010, n.p.).

Therianthropes eclectically combine a variety of metaphysical, mythical, archetypal animal identities with a liminal sense of self that partakes of “tribal shamans, magic-workers, and superhuman warriors, who fully embodied the power of animals in the mythical past” (Robertson, 2013, p. 24) in a way that might be viewed as a new religious movement, since these identifications involve a kind of spirituality. Their animal identification is purportedly involuntary and innate, (“Therianthropy,” 2010), not learned, cultivated, nor chosen; indeed therianthropes speculate that this quality may come from some atypical neurological condition. Thus, their sense of being an animal, while not technically an altered state, may not represent the phenomenology of normal consciousness in the mainstream population.

Berserker bilocation remains anecdotal, but it also appears in many cultures as a power demonstrated by spiritually important people, such as Muslim, Hindu, and Christian mystics and saints or other inspirational figures, such as Aristeas and Pythagoras (Zhud, 2016). Bilocation is defined in the paranormal literature by the following: one person's subjective awareness is in two bodies in different physical locations at the same time; each embodiment performs physical acts; witnesses perceive themselves to be interacting with a real person; and the act of being in two places at once happens instantly, so that the individual has no awareness of having left one body to go into another; and the duration of being in two bodies at once lasts longer than most out-of-body experiences (Heath, 2011). Among the numerous Christian saints alleged to have bilocated are Maria of Ágreda, Alphonsus Mary de Liguori, Gerard Megella, Paul of the Cross, Joseph of Cupertino, and quite recently Padre Pio (“The Voice of Padre Pio,” 1998). The Vatican archives eyewitness testimony by reliable sources as part of the official record to verify qualifications

for sanctification. Bilocation also appears in the silat folklore, including techniques that allow fighters to attack from afar using energy without physically touching the opponent (Farrer, 2009), a feat some modern athletes profess (M. Murphy, personal communication, October 8, 2015). Bilocation accounts have been collected by paranormal researchers (Auerbach, 1996; Barclay, 1973; Inglis, 1992; Rogo, 1982), but so far, no reports of any research studies on the phenomenon exist.

The discipline of paranormal studies recognizes the validity of phenomena associated with battle trance and supports the notion that such capabilities are an innate, persistent, universal, human capacity (Daniels, 2005; Kripal, 2014; Targ et al., 2000). The branch associated with invulnerability magic and battle trance is psychokinesis (PK), any form of mind-matter interaction not explicable in conventional scientific terms (J. B. Rhine, 1934; cited in Rock, et al., 2013). Although most PK research has focused on mentally influencing objects, such as dice and random number generators (e.g., Iqbal, 2013), other studies involve biological targets (e.g., Alvarado, 2018; Braud & Schlitz, 1983; Schmidt, 2015). The effects are small but consistent and not owing to statistical error (Radin, et al., 2006). PK may very well be involved in fire and blade immunity, rapid healing, extraordinary feats of strength and speed, and bilocation (Heath, 2011). It has yet to be connected with shapeshifting or therianthropy.

Conclusion

Thus, considerable direct evidence from contemporary research on perception, motivation, attention, and specific mental states—often entrained with those of others in synchronous activity or a synchronous state of mind—plus known spiritual and martial arts practices indicate that the extraordinary feats associated with battle trance and attested in historical records for berserkerang, amok, and juramentado are an inherent part of the human repertory. Drugs are not necessary to produce them, nor are these states signs of mental illness even though they may, at times, be accompanied by rage.

As research increasingly assesses legendary and anecdotal abilities associated with seemingly superhuman feats, it is likely that most, if not all

of the battle-trance phenomena will be verified as universal human capacities, existing to a greater or lesser degree across individuals, but potentially subject to development through cultivation, not just adventitiously evoked. Already some of the most incredible—the ability to withstand fire and blades—have academic backing as previously unrecognized human capacities (c.f., Murphy, 1992; Kelley, 2007).

Originally developed from instinctive offensive and defensive behaviors and refined over millennia, battle trance was still seen through the twentieth century, but close combat is increasingly rare in war. Today, when soldiers are more likely to die from long-range missiles and incendiary devices, hidden explosives, drone strikes, and other remote killing technologies without ever closing with enemy fighters, battle trance is of limited avail; technology has rendered these evolutionary survival methods largely neutral in warfare. It is much more likely that warriors in modern-technology combat, like civilians, feel like helpless victims of unreachable, overwhelming, random violence, however directly it may be aimed at them, and this may be a reason for the increase in cases of post-traumatic stress disorder. When they can, soldiers today still employ some battle-trance techniques, relying on heavy metal music played at deafening volume inside tanks, for example, to amplify their fighting spirit (Pieslak, 2009; Roscoe, 2007), or in revving up the will of lone suicidal terrorists who attack unsuspecting civilians rather than enemy combatants. Battle trance, adaptive for millennia, may finally have reached the terminus of its usefulness in war.

However, techniques like berserkerang that produce such extraordinary abilities point the way to different applications, especially the capacity for self-induced analgesia with the concomitant ability to allay the psychophysiological stress that accompanies pain, and the mental ability to control bleeding, mitigate infection, and accelerate healing. With increasing validation by modern research methods, measurement techniques, and biofeedback processes, these abilities can be fully realized as the natural potential of the human body to tolerate pain and heal in response to trauma. Brain-imaging, biofield assessment, galvanic skin response, and

other sophisticated feedback techniques can be used to assess, map, and cultivate such states. The identification and refinement of battle trance features through studying contemporary spiritual and martial arts practitioners can further document the extremes of human psychophysiological potential and the ability of naturally-occurring mental states to produce and enhance those faculties intentionally. Some features of battle trance, such as fearlessness and extraordinary strength and speed, are undoubtedly already being used deliberately in sport (Murphy, 1992; Kelley, 2007); others, such as the analgesic effects of trance and body transmutation, and the inability to be burned or penetrated, can be useful in healing modalities. Battle trance has the potential to reduce rather than inflict suffering, to improve quality of life, and to extend the horizons of embodiment.

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