

The Anatomy of the Zombie: A Bio-Psychological Look at the Undead Other

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The modern zombie is the *nec plus ultra* in repulsiveness: an undead person – it could be your colleague, your neighbor, your grandmother – whose sole purpose is to eat you, alive. The aim of this paper is to investigate why the modern zombie is such a successful literary figure, a character that thrives in the cultural meme pool, as exemplified recently by the success of Max Brooks' cult bestseller *World War Z* (Brooks 2007; hereafter WWZ).

The flesh-hungry undead are escaping the soil of niche horror fiction, clutching at the lucrative daylight of commercial mass entertainment. In recent years, modern zombies – 'reanimated corpses with a voracious appetite for human flesh and brains,' in Stefan Dziemianowicz' definition (2009, 20) – have been gaining popularity and visibility in the culture at large. George A. Romero's classic low-budget masterpiece *Night of the Living Dead* from 1968 forced the zombie on the pop-cultural collective psyche, and the new millennium has seen a steady rise in zombie films, zombie literature, and interactive zombie-related entertainment produced for mass audiences. As Dziemianowicz notes, 'the zombie has gone mainstream' (ibid.).

The modern zombie figure famously has its roots in Haitian folklore and superstition (Pulliam 2007), but during the twentieth century, the zombie of popular fiction has evolved from 'the mindless and relatively nonthreatening automaton of traditional occult fiction to a vicious self-motivated eating machine' (Dziemianowicz 2009, 22). Zombie films especially have been pouring out from production companies, maybe because so much of the zombie's power comes from its visual, literal repulsiveness. The modern zombie really is very nasty, and

that nastiness is easier to communicate via the visual medium. Also, zombies are rather dull creatures and ‘difficult to make interesting in prose,’ as John Clute and David R. Langford point out (Langford 1999, 1048). A vast and approaching horde of the undead probably looks more impressive than it sounds.

The zombie’s more sophisticated cousin, the vampire, has also seen a surge in popularity in recent decades. Its latest, most showy incarnations – such as in *True Blood*, *Twilight*, and *The Vampire Diaries* – have exacerbated the Byronic or even sexy aspect of the blood-sucking undead which first gained prominence in Romantic and later Victorian vampires, it’s true, but they are still vampires, still undead. Surely there is something in the anatomy of the undead that resonates with a fundamental element of the human mind to make them such efficient, paradoxically viable creatures.

Anatomy of the Zombie, I: Disgusting Predators

The modern zombie is instantaneously recognizable. My six-year-old son draws stick figures that are colored sickly-green and have triangles of flesh falling off of them: those are zombies. As the horror editor Don D’Auria says, ‘even nonhorror fans know what a zombie is, at least on some level’ (qtd in Dziemianowicz 2009, 20). That level would be the visceral one: the perceptual level that precedes higher cognition, the level where an object in the world is matched to a perceptual template in a quick-and-dirty process of low-cognition perception, engendering, in this case, an aversive psycho-physiological response. In other words, you instinctively know to run like hell when you see a zombie.



Caption: Image from Land of the Dead (2005) (permission to reproduce granted by Universal Pictures).

People instinctively know to avoid the kind of toxic substances that over evolutionary time constituted a lethal threat to our ancestors, such as rotting meat. That's because natural selection has fine-tuned our perceptual apparatus to be on alert for such substances: those of our ancestors who cried yuck at the sight of decomposing flesh were more likely to propagate their genes than the ones who dug in happily. Over time, the rot-lovers became extinct, and the human population today is united in its innate aversion to spoiled meat. This is an experiment you can do at home: purchase a packet of steaks, let it sit on the kitchen counter for a week and a half, and then open it and smell the roses. If your response is less than enthusiastic, that's natural selection protecting your genetic material from a potent threat, right there.

Dead human bodies are ‘biological objects in a process of decomposition,’ as the anthropologist Pascal Boyer points out (Boyer 2001, 244), and they smell no better than the T-bones on your kitchen counter. As deceased Lazarus’ sister sensibly points out as Jesus is about to open Lazarus’ grave, ‘But, Lord [...] by this time there is a bad odor, for he has been there four days’ (John 11:39). In Boyer’s words:

Dead people, like vegetables, can be pickled or preserved. You can also abandon them to the beasts of the field, burn them like rubbish or bury them like treasure. From embalming to cremation, all sorts of techniques are used to do something with the corpse. But the point is, *something must be done*. This is constant and has been so for a very long time [...] from the Palaeolithic onwards (Boyer 2001, 232).

And why must something be done? Because dead people are insalubrious. Funerals, according to Boyer, are centrally about the disposal of corpses. Corpses cause a variety of strong emotions in the living: corpses look like normal, living people, yet they fail to behave like ones. We understand that the dead cannot move, but sometimes our ‘mind-reading’ machinery is activated by corpses, leading to ideas of souls, ghosts, and an afterlife. This mind-reading apparatus (also known as ‘Theory of Mind’) is part and parcel of human cognitive architecture, and operates on the intuitive understanding that other people have minds – that they have desires, motives, and perspectives that can differ from our own. Theory of Mind runs on dedicated wetware or neural machinery, a fact that is made plain by certain neurological defects that inhibit its functioning. The capacity of corpses to trigger a variety of conflicting inferences is probably what makes them salient and interesting, and the fact that a dead human being can also imply a successful act of predation may make corpses scary by implication.

Zombies, then, are even more interesting *per se* in that they violate our intuitive understanding of death as the cessation of self-propelled motion and agency, as well as death as an irreversible event. And most zombies of popular

culture have no higher-level cognitive capacities, divorcing them further from what we expect of beings that appear to be human. Finally, zombies are very disgusting. That is also something that humans are primed to react to, and strongly.

Disgust is one of the basic emotions, along with anger, fear, joy, sadness, and surprise, and has deep roots in our species' biology. Each of the basic emotions is expressed by a distinct alignment of facial muscles, and facial expressions of emotions are recognizable across cultures. Darwin offered an evolutionary underpinning for the expression of the emotions (1872), and the psychologist Paul Ekman has since corroborated Darwin's work (Ekman 1992). Disgust is obviously an adaptive defense mechanism, in that it protects the organism from harmful agents, and it has its roots in basic taste preferences, as the word itself reveals; in phylogeny and in ontogeny the disgust response expands from a rejection of bitter food in infants, for example, to encompassing moral disgust at heinous criminals and their deeds. As the psychologist Paul Rozin has shown (Rozin, et al. 1999), the disgust system has a range of characteristics which are generalized to all objects of disgust, whether rotten meat or mass murders, even as the facial expression of disgust serves the functions of ejecting bad food (protruding tongue) and limiting exposure to noxious odors (wrinkled nose). Thus, people in Western cultures are reluctant to wear a perfectly clean sweater, just because they are told that it used to belong to an amputee or a Nazi war criminal. They don't like to eat soup that has been stirred with a brand-new toilet brush, and they are loath to drink tap water in which a carefully disinfected cockroach has been dipped ever so briefly.

What's more, the things that disgust people around the world fall into five broad categories, as Val Curtis and her colleagues have demonstrated. These categories are:

- 1) Bodily excretions and body parts
- 2) Decay and spoiled food
- 3) Particular living creatures
- 4) Certain categories of 'other people'
- 5) Violations of morality or social norms

Based on their cross-cultural research, Curtis and Biran conclude that 'bodily secretions are the most widely reported elicitors of the disgust emotion.' Furthermore: 'Body parts, such as nail clippings, cut hair, intestines, and wounds, evoke disgust, as do dead bodies.' With regards to category 4), it includes those persons 'who are perceived as being either in poor health, of lower social status, contaminated by contact with a disgusting substance, or immoral in their behavior' (Curtis & Biran 2001, 21). Curtis builds on the evolutionary perspective introduced by Darwin and elaborated by Ekman, and claims that disgust evolved to protect organisms from pathogens and was then co-opted to deal with unsavory others and immoral acts, from incest to rape, from crooked politicians to products of the imagination such as zombies.¹

The psychology of disgust is readily applicable to horror fiction. That the monsters of horror fiction are frequently disgusting or do disgusting things is a commonplace. This is a trait that seems to have been intensified in recent times; the monsters of Gothic romances are not as physically revolting as many modern monsters, although Matthew 'The Monk' Lewis certainly knew how to disgust his readers. Noël Carroll emphasizes the disgusting aspects of monsters, noting that you usually would want to 'avoid the touch' of them (Carroll 1990, 27). John Clute concisely points out that what 'generates the *frisson* of horror is an overwhelming sense that the invaders are obscenely, transgressively impure'

¹ That disgust is programmed into the human genome does not mean that it is fixed and inflexible; like other so-called 'innate' mechanisms, the disgust system requires massive socialization and environmental input to function properly, that is, adaptively. Small children are not born with the knowledge that feces is bad for them, but they usually acquire that information via their parents, and they acquire it fairly easily because they're factory-equipped to do so; try teaching your kid that chocolate is disgusting, and I wish you good luck.

(1999, 478), and Stephen King notes that if he cannot terrify or even horrify his readers, he'll settle for the 'gross-out' (1983, 25).

The modern, Romero-era zombie is probably the most disgusting of monsters. Take a couple of examples from *WWZ*: in this first scene, a zombie is trapped under a heap of rubble. Its moving hand protrudes, and an unwitting soldier tries to help: '[f]irst the arm came free, then the head, the torn face, wide eyes and gray lips, then the other hand [...] then came the shoulders. I fell back, the thing's top half coming with me. The waist down was still jammed under the rocks, still connected to the upper torso by a line of entrails. It was still moving, still clawing me...' (Brooks 2007, 20). The image is vivid and wholly disgusting. In another scene, a zombie who has been infected via a transplanted heart 'turned to me, bits of bloody meat falling from his open mouth. I saw that his steel sutures had been partially pried open and a thick, black, gelatinous fluid oozed through the incision' (Brooks 2007, 25). Clearly, the zombies are visually disgusting, ruined and decomposing as they are; what they do (eat live human tissue) is disgusting, viscerally as well as morally. The latter behavior puts them in the same category as cannibals, except zombies are driven by their monomaniacal urges, not perversity or even, exactly, circumstance. They are compelled by 'zombie nature.' In that respect, zombies are as excusable as the leopard that has learned how easy it is to rasp the flesh off human bones and in the process acquired a real taste for *Homo sapiens au naturel*.

A corpse, then, causes aversion in people partly because it's a highly noxious and toxic biological object, partly because it may imply predation. Humans are ever on the look-out for causal chains (chains that sometimes clank away into the mists of delusion); something *must* have killed the person, whether a ferocious beast, a hostile human, an invisible microorganism, or plain senescence. And as we saw, people do well to avoid rotten meat, even more so when A) it's mobile, and B) it wants to eat *you*. People also do well to avoid

openly violent persons. No news there, either; hostile or even homicidal conspecifics have for millions of years been part of the environments in which we evolved. It would be odd if selection hadn't provided us with some sort of defense or means of handling such recurrent threats, and experimental evidence in fact shows that we very quickly, even subliminally, detect and respond to angry faces, even highly schematic ones (angry 'smileys') or ones that are masked (i.e., not perceived consciously). An angry face is quickly detected among an array of neutral or happy ones – faster than happy or neutral faces are detected amongst angry ones, in fact. This is known as the 'face in the crowd'-effect, and the same effect applies to other stimuli that have posed a threat prolonged and significant enough to have exerted selection pressure on the evolution of our species (Fox et al, 2000; Öhman & Mineka, 2001).



Caption: Snake by Joshua Hoffine, www.joshuahoffine.com (permission to reproduce granted by the artist).

The zombie taps into deep-rooted, ancient fears that extend far back into our hominid lineage and beyond: notably the fear of contagion and the fear of predation. Humans are equipped with ‘elementary feature detectors geared to respond to biologically relevant threats,’ as Arne Öhman has spent a life of research demonstrating (2000, 587), and we react strongly and predictably to features that seem to represent ancestral dangers, even when the source is only a

fleeting shadow in the twilight, flickering images on the silver screen, or indeed mental images procured by ink on paper. Both the fear of contagion and the fear of predation are hard-wired into the human central nervous system (Öhman & Mineka 2001; Curtis, et al. 2004), and a Kaspar Hauser or a Mowgli would presumably be susceptible to both. In other words, these are the cross-cultural, 'instinctive,' pre-cognitive and pre-linguistic buttons that the modern zombie pushes. Put a Yanomamö tribesman, a New Yorker, an Inuit, and a Chinese peasant into a room, shove a zombie in there, and watch. You could even do a controlled experiment and measure levels of skin conductance, heart rate and blood flow in the brain, and compare responses across your four test subjects.

Even as the fear of predation and the fear of contagion are coded into the human genome, they require environmental input: we need to learn exactly what kinds of animals are dangerous in our environment, what kind of substances to avoid. But some things are much easier to learn than others because natural selection has paved the way: learning to fear leopards and snakes, or to avoid ingesting feces and other bodily products, is much easier than learning to fear the number pi or to avoid glucose. This is known as 'prepared learning,' a concept introduced by the psychologist Martin Seligman in 1971. The fear of predation, a central part of the 'mammalian fear module' described by Öhman and Mineka (2001), underpins much horror fiction: from *Dracula* to *Jaws*, from *Salem's Lot* to *The Blair Witch Project*. It is a fear that seems oddly atavistic in that virtually nobody in industrialized society is truly in danger of being eaten by a fast-moving felid (although fellow humans can still be very dangerous), but it makes perfect sense considering the millions of years that our ancestors have had to deal with predators – we would expect that kind of dangerous existence to have left a mark on the DNA of the organism. There is plenty of experimental evidence that humans perceive possible dangers in the environment quickly and subconsciously, and that we are prone to erring on the side of caution, glimpsing monsters in

shadows and hearing whispers in the wind (Marks & Nesse 1994). It's part of what makes us human, and part of the explanation for the zombie's popularity.

Anatomy of the Zombie, II: Taxonomic Anomalies

The zombie works not just on the visceral levels described above. It also has a cognitive dimension, something that jars higher-level intellectual sensibilities, in that it is an impossibility. Zombies as presented in modern horror fictions do not and cannot exist.² Many zombie stories feature some sort of putative rationalization or cognitive validation for the appearance of zombies, to be sure, such as the radiation from Venus in Romero's *Night of the Living Dead*, the biological accident in *The Crazies*, the digitally transmitted 'pulse' in Stephen King's *Cell*, the outbreak of a virus in *28 Days Later* and in Brooks' *WWZ*. Some sort of extraordinary event is usually the cause of zombie outbreaks; even Christ had supernormal powers when he raised first Lazarus and later Himself from the dead. Be that as it may, a decomposed corpse cannot be revived. And for that very reason, an animated corpse is an interesting and unsettling idea.

Agents that violate ontological expectations are perceived as salient and are likely to be culturally transmitted, especially if they provide explanations for otherwise baffling events or phenomena. The psychologist Justin Barrett has introduced the concept of the 'Minimally Counterintuitive,' or MCI, agent to explain the prevalence of ontologically anomalous creatures in religion. MCI agents are those concepts that 'largely match intuitive assumptions about their own group of things but have a small number of tweaks that make them particularly interesting and memorable' (Barrett 2004, 23), and the MCI concept has become a standard for culturally successful supernatural units. Experimental study has shown MCI agents to be salient, more likely to be faithfully recalled and transmitted than ordinary, non-ontology-violating concepts or bizarre ones with

² By 'modern horror' I refer to horror fiction from the 1950s onwards.

many anomalous features (Barrett 2004, 24; Boyer 2001, 92). Showing that this analysis pertains to cultural narratives other than religion, Ara Norenzayan and his colleagues have demonstrated how those of the Brothers Grimm's tales that feature MCI agents are more culturally successful than those that don't. The zombie, however rationalized, is such an ontological hybrid or MCI agent, squatting over the border between alive and dead, and in many cases also the distinction between human and animal or even human and machine.

The zombie, then, attacks its audience on different levels, and we can lay down a taxonomy of zombie audience responses according to type of attack or threat, the emotional response they engender, and the causes of these responses. As we can see, these responses range from low-cognition, fight-or-flight type responses to intellectual, reflective ones:

Table 1: Taxonomy of Projected Audience Response to Zombies

Type of Threat	Emotional Component	Cause
Violence	Fear	The zombie is a predator, an aggressive organism that wants to and is able to harm you
Contagion	Disgust + Fear	The zombie is contagious and can easily infect you
Cognitive Dissonance	Awe -> Curiosity -> Anxiety -> Terror	The zombie is an impossible concept and potentially threatens your world-view

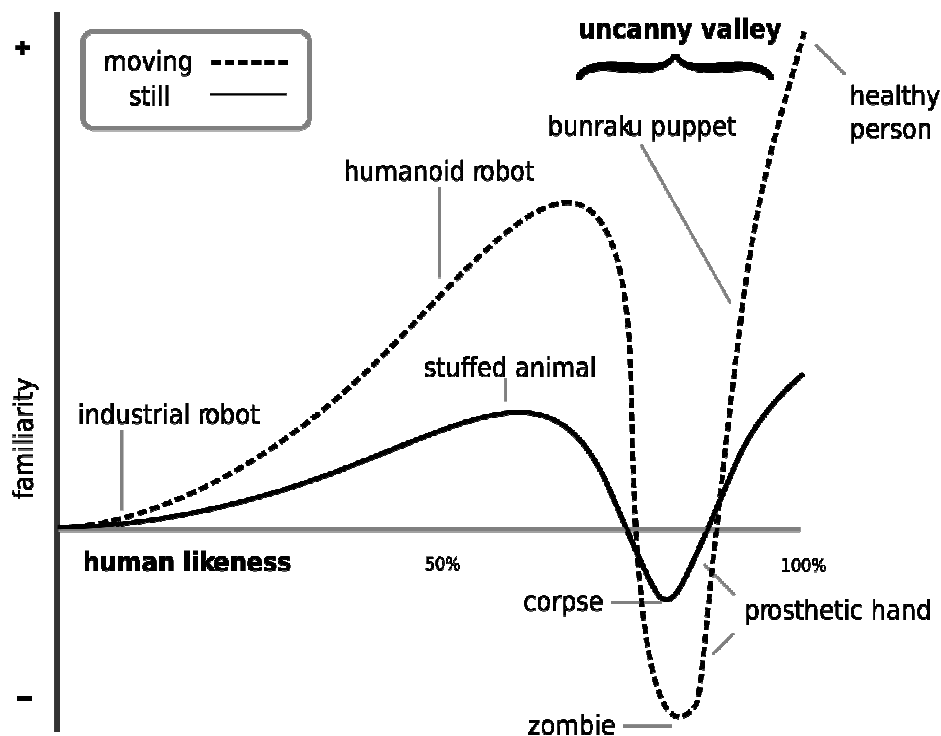
The emotional response to the ontological breach represented by the zombie can fall on a continuum from religious awe to full-blown terror, that is, on a spectrum ranging from positive to negative emotion. The biblical story of Jesus' resurrection of Lazarus (John 11), for example, is cause for awe and religious faith to those who accept it. (As the evil Pharisees astutely observe, if Jesus doesn't shut down his travelling one-man miracle show, everybody will soon believe in him, and then where will we be? [John 11:47-48]). The notion of a zombie, abstractly or featured safely in a fictional story, causes curiosity and mild disgust and, if it's a well-told horror story, fear or anxiety, as well. The idea that there *could* be real flesh-eating zombies somewhere in the real world would probably cause anxiety. And the sight of an actual zombie in your basement would likely throw you into a fit of terror.

In *WWZ*, the initial zombie infestation is followed by three months of panic, confusion, denial and cover-ups, a period known as the 'Great Panic.' One of the mini-narratives follows the recollections of a young soldier who was engaged in a disastrous military operation designed to dispatch a large number of zombies. The army sets up elaborate and heavily armed defenses, but what should have been a simple operation proves a spectacular fiasco; the zombies 'survive' attacks with technologically advanced weaponry and keep approaching, ruined, moaning, hungry. At the sight of the massive zombie army, the soldiers experience something akin to cognitive dissonance. They should have been able to wipe out the many zombies easily, but as the informant soldier retorts, 'You think that [...] after living through three months of the Great Panic and watching everything you knew as reality be eaten alive by an enemy that wasn't even supposed to exist that you're gonna keep a cool fucking head and a steady fucking trigger finger?' (Brooks 2007, 100).

Anatomy of the Zombie, III: The Uncanny Valley

The zombie engenders a small variety of different affective and cognitive reactions in its audience, from flat-out fear to cognitive dissonance and detached interest. A way to explain the same phenomenon in a different framework would be to invoke the *uncanny valley*, the curiously negative affect engendered by not-quite-realistic humanoids.

The uncanny valley was first pitched by the Japanese roboticist Masahiro Mori in a 1970 article. Mori observed that the more human-like automatons become, the more positive affect they inspire – but only up to a point, where the affect drops steeply and becomes negative. The emotional valence rises again as we approach perfect human likeness, however. The drop in affect is what is known as the uncanny valley:



Caption: The uncanny valley, image from Wikimedia Commons, http://en.wikipedia.org/wiki/File:Mori_Uncanny_Valley.svg

Thus, if it looks like a human, walks like a human, and grunts like a human – but it *isn't* quite human – then it is uncanny. It is creepy. Mori's observation has been heeded by designers in robotics and the entertainment business: it seems to pay to avoid unintentionally uncanny characters in CG-dependent filmmaking and interactive entertainment. There is plenty of empirical data to support the existence of the uncanny valley response, even if there is no consensus on its causes yet. Several Darwinian explanations have been offered, for example, that people are hard-wired to avoid persons who look sick (a response to parasites and pathogens) and that visual criteria for mate selection underlie the uncanny valley (uncanny humanoids make poor mates: physical beauty is correlated with genetic quality, so a very ugly human probably carries poor genes) (Green, et al. 2008). These have remained largely speculative or circumstantial, of no greater scientific soundness than the Freudian contention that it all harks back to repressed castration anxiety. A recent experiment changed that, however, when psychologists Ghazanfar and Steckenfinger (2009) demonstrated that long-tailed macaque monkeys also exhibit the uncanny valley response when exposed to 'macaque zombies,' that is, computer-generated macaque images that were close to realistic. The monkeys did not exhibit a similar aversive response to photorealistic macaques or unrealistic ones. In other words, the uncanny valley response does indeed appear to rest on a biological substrate, as an evolved defense or decision mechanism.

Mori thought to plot the zombie at the very depths of the uncanny valley, and we find there several others from the customary monster lineup of horror fiction. Body snatchers and Stepford wives, for example, are rather uncanny, as are other humanoid monsters. Likewise, the possessed Regan of *The Exorcist* looks supremely sick; she even projectile-vomits green pea soup into hapless Father Karras's face and sports open, oozing sores.

The uncanny valley provides a neat conceptual framework for understanding zombies, or rather, the psychological response that zombies cause. The cause of the uncanny valley response, in turn, resides in primate psychology and probably consists in a few simple epigenetic rules of thumb: avoid contact with contagious substances; avoid contact with agents that look like conspecifics but are clearly not. Other than that, and apart from uncanny valley responses, avoid violent conflicts with aggressive strangers, especially if they outnumber you. In other words, if you're faced with a zombie, the way to preserve your genetic legacy is to incapacitate or evade it.

Anatomy of the Zombie, IV: A Contestant in the Struggle for Cultural Survival

The zombie is a good idea. To a prey species with evolved faculties for threat detection and avoidance, the notion of a highly aggressive, highly contagious predator is salient, even fiercely attention-demanding. To a species that has a tendency to view the world in binary terms, e.g. alive/dead, the notion of an undead creature is interesting. In a narrative perspective, zombies make for good dramatic material – as long as they don't take up center stage for too long. The behavior of your average zombie is too boring for it to make an interesting protagonist. Usually, zombies act as catalysts for human dramas as well as science fiction-extrapolations: apocalyptic zombie narratives in particular pique our *what if*-capacities, our species' ability to and penchant for imagining non-factual states of affairs (or, technically, our capacity for decoupled cognition). Zombie stories all but pop out from vast number of more mundane narratives that engage with 'parlours and shades of manner and still-born niceties of motive,' in Robert Louis Stevenson's evocative phrase (Stevenson 2009, 102).

As Stephen King has pointed out on numerous occasions, horror fiction is so often about ordinary people trapped in extraordinary circumstances, and about

their efforts to cope. Humans care supremely about humans, and the motives and thoughts of other people is an ever-lasting well of interest to most of us. Just witness the prevalence of gossip anywhere, or the contents of most fiction throughout the ages (Vermeule 2010). It's all about what makes people tick, about human nature. Zombie stories, too; zombies are attention-grabbing and salient in themselves, to be sure, but concerns and speculations regarding human nature usually make up the bulk of the thematic structure of zombie stories. It's hard to imagine a story pitting zombies against squirrels or groundhogs being much of a blockbuster or bestseller (not to mention zombies vs. polyatomic ions, or the *Zombie War on the Fibonacci Sequence*). People are interested in the human element – thus, *WWZ* is concerned with exactly that, 'the human factor' (Brooks 2007, 2).

WWZ consists of a large number of thematically linked but independent narratives that focus on various human beings and their struggles during and after the world war on zombies; narratives that have purportedly been excised from the UN Postwar Commission Report that the reporter-narrator of the novel has composed. One of the most harrowing sequences in the novel portrays the flight of a young girl and her parents during the Great Panic to Canada where the harsh winter will literally freeze the undead. The passage is fraught with human drama (a grateful hitch-hiker who must soon be thrown from the car when it becomes clear that she is infected, instances of cannibalism – the 'steaming hot soup' was 'so good! Mom told me not to eat too fast. She fed me in little spoonfuls' (Brooks 2007, 129) – and scarcity of food and patience among survivors) and strikingly lacking in zombies. What we witness is the social and psychological consequences of the zombie infestation.

We have seen how the zombie targets evolved features of the human mind: threat avoidance and handling, cognitive schema for understanding and predicting objects in the world, and also the human thirst for social information (even

fictional social information). The zombie also seems to be an apt vehicle for more culturally contingent anxieties. This, the focus on how monsters and monstrous narratives reflect the anxieties of their times, has been a commonplace in horror study for a long time. Many scholars and critics have seen horror stories as fairly clear-cut reflections of salient cultural anxieties (King 1983; Botting 1996; Skal 2001), and several scholars have addressed the rise of the modern zombie figure concurrent with the Vietnam War, or tied it to concerns over consumerism and capitalism, the Cold War threat, or the spirit of rebelliousness that characterized the late sixties, and so on (Pulliam 2007; Jancovich 1992, 89-92; Johansen 2010).

What is lacking from the historicist or contextualist account of zombies is an accurate understanding of the psychology that underlies the fascination and repulsion that zombies engender. All cultural concepts are engaged in a struggle for survival, but that struggle is not fought in some disembodied ether – it's fought in people's minds. What's on people's minds is determined by their experience and their culture, certainly, but also constrained and, in the first place, enabled by genetics. People are disposed to be interested in a limited range of things, to be afraid of a limited number of things. Cognitive architecture determines what kind of cultural concepts become widespread, as Pascal Boyer and others have demonstrated.

The success of a cultural concept, then, really hinges on whether it is perceived to be relevant to people. The zombie satisfies this criterion of relevance: it connects solidly with evolved features of human mental make-up, and it seems to be finely suited to representing salient cultural anxieties. A zombie can symbolize anything from the nameless Other, to the mindless consumer of late capitalism. As D'Auria points out, zombies 'may have become so popular in the mainstream because they're so basic they're almost a blank slate [...] You can read so much into them' (Dziemianowicz 2009, 20). A zombie provides punches to the viscera as well as food for thought. It's up to the viewer, really, whether to

view *Night of the Living Dead* as mindless hack-and-slash entertainment or profound social commentary in fantastic guise.

It could be that the rise of the zombie figure in popular entertainment from Romero and onwards is a function of increased nuance in moral sensibility, which in turn could be a function of globalization and media saturation. We are entering highly speculative waters, but bearing in mind the fact that the Vietnam War saw an unprecedented level of public resistance and dissatisfaction with US military engagement abroad, it could be that the zombie figure reflects the gradual, by all means incomplete dissolution of us-versus-them morality in monochrome, a population-level schizophrenia or ambivalence toward war and the enemy. ‘The enemy,’ from Viet Cong soldiers to suicide bombers, has become increasingly humanized, it has become painted in grey shades. What we are fighting in the world on terror, for example, is not monsters, but *human* monsters – like those quiet men in a San Diego apartment building who suddenly crashed a plane into the Pentagon. A zombie can be like that: somebody you knew (your colleague, your neighbor, your grandmother), suddenly transformed into a monster. It’s them, but not them; an enemy who is us, and not-us.³

It could be, then, that the modern zombie figure puts rotting flesh on the abstract skeleton that is ambivalence toward the global Other, that this is why the figure resonates loudly in many minds in this age of conflict and suffering broadcast globally and in HD. In this analysis, the zombie probably confirms the moral suspicion that most monsters are, or were, actually human. But simultaneously, the zombie in its utter repulsiveness panders to a more disturbing, base tendency to think in terms of us versus them, and it must be terminated with

³ Possibly, this development can be traced further back to the beginning of the Cold War: for Americans, the Red Enemy was a kind of human monster, a mass of zombie-like minions, which may have fuelled such zombie-related American fictions as Finney’s *Invasion of the Body Snatchers* (1954) and Matheson’s *I Am Legend* (1954) – both novels feature human-like monsters straight out of the depths of the uncanny valley, and the latter in fact served as direct inspiration for Romero’s *Night of the Living Dead*. (On *I Am Legend* as a product of evolved dispositions and Cold War anxieties, see Clasen 2010.)

extreme prejudice. It might have been ‘us’ at some point, but certainly is no more. On this view, the current viability of the zombie is an outgrowth of a tension between increased moral complexity in the postmodern world on the one hand and on the other a dark, primeval urge to destroy the Other.

Allure of the Zombie: Conclusions

The allure of the zombie has many facets, like the allure of any other monster. Probably the pleasure of imagining how you, the reader or viewer, would yourself perform in hostile environments is part of it. Would you survive? Would you kill your mom if she turned green and flesh-hungry? What would be left of society after the apocalypse, and how would you cope with it? In this sense, zombie stories greatly reduce the complexity of existence; they boil life down to black-and-white kill-or-be-eaten scenarios, to simple yet appealing moral dilemmas, to clear-cut narratives of conflict and escape. There is, to many people, a perverse pleasure in imagining the apocalypse, a pleasure that goes back to Romanticism and beyond (see Lord Byron’s short 1816 poem ‘Darkness’); in fact, to the Bible and probably beyond that.

Zombie stories, like all fiction, are experiments in the lab of the mind, ways to run through chains of inference and causality in decoupled mode. Thus, fiction is analogous to running software simulations on the hardware of the central nervous system. And that seems to be one of the primary functions of horror fiction: it allows you to live through the worst, with all the concurrent benefits and thrills of being threatened by hostile creatures or forces, but without the risks. Many probably feel the allure of pushing the outside of the envelope in the perfect safety of one’s own imagination. There is a certain appeal, maybe especially to teenagers – boundary-testing and thrill-seeking as they tend to be – in fictions that

let them vicariously try out various survival strategies in intensely adverse environments.⁴

At the foundation of the zombie phenomenon in pop culture is the way that natural selection has designed the human capacity for creative imagination. Of course, the brain was not built for imagining the zombie apocalypse as such. It was built for imagining, however, so telling (or listening to) the story of the zombie apocalypse is a way of making good of what Mother Nature has given us – kind of like using the bike that you got for your birthday not just for transportation, but for making flashy stunts on a ramp.

In conclusion, the zombie figure is successful at this point in history because it seems salient and relevant to many people – oddly so, since zombies *do not exist* outside of brains, books, and various other storage mediums. Nevertheless zombies strike viscerally, by sinking their teeth into evolved features of human cognitive-affective machinery, and cerebrally, by embodying salient cultural concerns and anxieties. They are monsters well-suited for anxiety-fraught existence in the global village – a village that may have displaced the darkness of night with electric light, but which has not yet managed to displace the ghosts of our species' deep past.

⁴ In fact, zombie fans may even be better equipped to deal with the zombie apocalypse, should it ever occur. In this case, all those hours wasted on vintage Romero flicks, *Resident Evil*, and online MMORPGs would, in biological fact, be adaptive.

Bibliography

- Barrett, J. L. 2004. *Why Would Anyone Believe in God?* Walnut Creek, CA: Altamira Press.
- Botting, F. 1996. *Gothic*. London: Routledge.
- Boyer, P. 2001. *Religion Explained*. London: Vintage.
- Brooks, M. 2007. *World War Z*. London: Duckworth.
- Carroll, N. 1990. *The Philosophy of Horror*. New York: Routledge.
- Clasen, M. 2010. 'Vampire Apocalypse: A Biocultural Critique of Richard Matheson's *I Am Legend*.' *Philosophy and Literature* 34(2), pp. 313-328.
- Clute, J. 1999. 'HORROR.' In J. Clute & J. Grant, eds. *The Encyclopedia of Fantasy*. 2nd ed. London: Orbit, p. 478.
- Clute, J. & Langford, D. R. 1999. 'ZOMBIES.' In J. Clute & J. Grant, eds. *The Encyclopedia of Fantasy*. 2nd ed. London: Orbit, p. 1048.
- Curtis, V. & Biran, A. 2001. 'Dirt, Disgust, and Disease: Is Hygiene in Our Genes?' *Perspectives in Biology and Medicine* 44(1), pp. 17-31.
- Curtis, V., Aunger, R. & Rabie, T., 2004. 'Evidence that Disgust Evolved to Protect from Risk of Disease.' *Proceedings of the Royal Society B* (Biological Sciences) 271 (suppl. 4, May 2004), pp. S131-S133.
- Darwin, C. 1998. *The Expression of the Emotions in Man and Animals*. 3rd ed. Ed. P. Ekman. Oxford: Oxford UP.
- Dziemianowicz, S. 2009. 'Might of the Living Dead.' *Publishers Weekly*, July 13, pp. 20-24.
- Ekman, P. 1992. 'An Argument for Basic Emotions.' *Cognition and Emotion* 6(3/4), pp. 169-200.
- Fox, E., et al. 2000. 'Facial Expressions of Emotion: Are Angry Faces Detected More Efficiently?' *Cognition & Emotion* 14(1) pp. 61-92.
- Green, R. D. MacDorman, K. F., Ho, C., Vasudevan, S., 2008. 'Sensitivity to the proportions of faces that vary in human likeness.' *Computers in Human Behavior* 24, pp. 2456-2474.

- Jancovich, M. 1992. *Horror*. London: B. T. Batsford Ltd.
- Johansen, I. 2010. 'Eat Your Neighbour.' *16:9*, 37. <http://www.16-9.dk/2010-06/side11_inenglish.htm> Accessed 13 August 2010.
- King, S. 1983. *Danse Macabre*. New York: Berkley Books.
- Marks, I. M. & Nesse, R. M. 1994. 'Fear and Fitness: An Evolutionary Analysis of Anxiety Disorders.' *Ethology and Sociobiology* 15(5/6), pp. 247-261.
- Mori, M. 2005. 'The Uncanny Valley.' Translated by K.F. MacDorman & Takashi Minato. <<http://tinyurl.com/25r65y>>. Accessed 14 August 2010.
- Night of the Living Dead*, 1968. Directed by George A. Romero. USA: Image Ten/Laurel.
- Norenzayan, A., Atran, S., Faulkner, J., Schaller, M. 2006. 'Memory and Mystery: The Cultural Selection of Minimally Counterintuitive Narratives.' *Cognitive Science* 30(3), pp. 531-553.
- Pulliam, J. 2007. 'The Zombie.' In S. T. Joshi, ed. *Icons of Horror and the Supernatural* 2. Westport, CT: Greenwood Press, pp. 723-753.
- Rozin, P. Haidt, J. & McCauley, C., 1999. 'Disgust: the Body and Soul Emotion.' In T. Dalgliesh & M. Power, eds. *Handbook of Cognition and Emotion*. Chichester: Wiley, pp. 429-445.
- Seligman, M. E. P. 1971. 'Phobias and Preparedness.' *Behavior Therapy* 2, pp. 307-320.
- Skal, D. J. 2001. *The Monster Show*. Rev. ed. New York: Faber and Faber.
- Steckenfinger, S. A. & Ghazanfar, A. A. 2009. 'Monkey Visual Behavior Falls into the Uncanny Valley.' *PNAS* 146(43), pp. 18362-18366.
- Stevenson, R. L. 2009. *Memories and Portraits*. Charleston, SC: BiblioLife, LCC.
- Vermeule, B. 2010. *Why Do We Care about Literary Characters?* Baltimore: Johns Hopkins University Press.
- Öhman, A. 2000. 'Fear and Anxiety: Evolutionary, Cognitive, and Clinical Perspectives.' In M. Lewis & J. M. Haviland-Jones, eds. *Handbook of Emotions*. 2nd ed. New York: Guilford Press, pp. 573-593.
- Öhman, A. & Mineka, S. 2001. 'Fears, Phobias, and Preparedness: Toward an Evolved Module of Fear and Fear Learning.' *Psychological Review* 108.3, pp. 483-522.