



Figure 1 CDC Zombie apocalypse poster

Zombies: A Brief Natural History

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Books, newspapers, TV, websites, radio shows, social networks, and the Center for Disease Control have now managed to alert the entire country to the threat of a possible zombie apocalypse. Instead of creating mass panic, reports of the walking dead have evolved into immeasurably popular sources of entertainment and zombies themselves have displayed an amazing versatility as metaphors for such diverse elements as the evils of racism, consumerism, conformity, and vivisection; the Viet Nam war; social apathy; loss of individuality and identity; fascism; industrial dystopia, ecological disasters; immigration, diseases, plagues, and pandemics; spiritual bankruptcy; and the TEOTWAWKI (what “preppers” call “the end of the world as we know it”). Something about these moaning, brain-dead beings who move in swarms but don’t move right, act right, talk right, eat right, or behave right has captured the collective cultural imagination and generated endless speculation about their condition and the condition of the world in which they lumber.



Figure 2 Lumbering zombies

It might seem at first glance that these popular but unrealistic rotting roamers are just a recent product of postmodern subtexts, but a longer look unearths the fact that written accounts of reanimated corpses have been turning up since people first pushed wedge shapes into clay tablets. When the Sumerian goddess, Ishtar, didn't get her way, she threw an epic fit of anger and threatened to release the dead from the Netherworld to consume the living (ca. 911-612 B.C.E.). The Hebrew prophet, Ezekiel, stood by as a witness while his Sovereign Lord raised an entire army from dry bones that had been lying scattered in a valley (Ezekiel, 31, 1-14). From Osiris to Dionysus, Balder to Quetzalcoatl, mythology from around the world is rife with the motif of dying gods and goddesses who come back to life.



Figure 3 *Osiris, Anubis, and Horus, from a tomb painting.*

Not all of the resurrected come back to make nice. During the Middle Ages, particularly in France, zombies known as the *Revenant* (Returned) took the form of emaciated corpses and wandered around graveyards at night to hunt and haunt the living. Corpses of Viking warriors, called *Draugr* (Again-Walker) rose right out of their graves to attack the living with superhuman strength and devour them whole. The German *Nachtzehrer* (Night Eater) not only devoured its own living family members, but also ate parts of its own body.



Figure 4 Viking Draugr

The legends of native North American people prominent along the Atlantic coast (Cree, Ojibway, Powhatan, Naskapi, Saulteauz, Innu, Algonquin, Assin) held that certain grotesque, malevolent demons, the *Windigos* (an Anglicized form of the word) “gave off the strange and eerie odor of decay and decomposition, of death and corruption.” They were once human beings who had “transformed rapidly and irreversibly” into insatiable flesh-eating cannibals with

super-human strength (Brightman, 1988, p. 337 & 338). Wendigo Psychosis was a mental disorder especially prevalent during the winter and in times of famine.



Figure 5 *Remains of a Windigo attack*

Reanimated flesh-eaters are found in the collected cultural stories of India, China, Japan, Cambodia and Bali where they hop, shriek and scare their prey, drive people mad, feed on human victims at night, bite people's heads off, or plunge sharp teeth into their throats. Do you hear a ringing sound in your ears? Flee quickly, for that may be a sign that an undead creature is about to strike (Zombiepedia, 2014).



Figure 6 Jiangshi, China



Figure 7 Gashadokuro, Japan



Figure 8 *Krasue, Cambodia*

Conjecture about the etymology of the word “zombie” suggests the words “*nzombi*,” (West-African deity), “*zumbi*” (fetish) and “*jumbee*” (spirit demon), as possibilities. These are words from the languages of the kidnapped people of central Africa who were cruelly shipped to South America and the Caribbean to provide slave labor for burgeoning plantations.

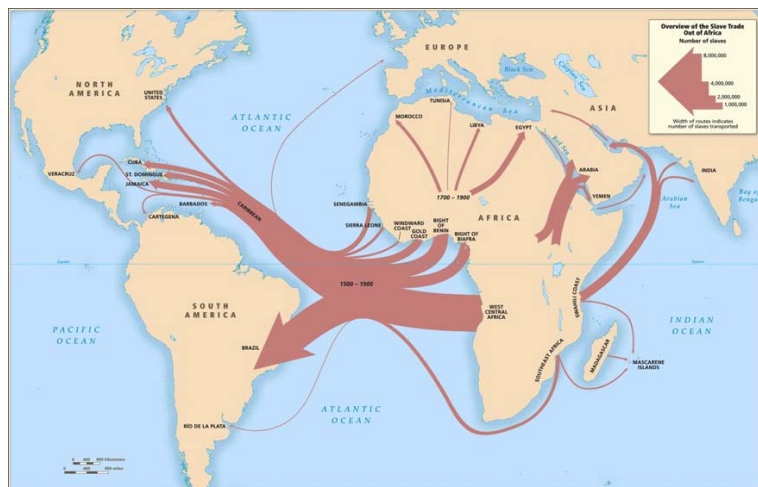


Figure 9 *Atlantic slave trade routes*



Figure 10 *Left – Bokor grating human bones/ cemetery materials
Right – Bokor preparing the poison: the mortar and pestle*

They brought with them a belief in the ability of a sorcerer (*bokor*) to control another person's soul with ritual, magic, and poison potions. In Haiti, once the largest slave colony in the world, "Zombie" came to mean a human being, poisoned to the point of appearing dead and then brought back to life as a slave of the *bokor*, but one who lacked self-awareness, intelligence, and a soul:

To become a zombie was the slave's worst nightmare: to be dead and still a slave, an eternal field hand. It is thought that slave drivers on the plantations, who were usually slaves themselves and sometimes Voodoo priests, used this fear of zombification to keep recalcitrant slaves in order

and to warn those who were despondent not to go too far. (Wilentz, 2012, para. 5)



Figure 11 *Zonbi* by Haitian artist Wilson Bigaud

America invaded, and occupied Haiti from 1915-1934, which created a growing interest in the Haitian zombie phenomenon. Seabrook's 1929 fictional travelogue, *The Magic Island*, is credited as the first major English-language work to use the word "zombie" as a term for the living dead. Haitian zombies began starring in American motion pictures shortly thereafter.



Figure 12 Voodoo practitioners as depicted in *The Magic Island*

The first feature-length zombie film, *White Zombie*, (1932), loosely based on Seabrook's book, used a Haitian setting, blank-eyed stares, voodoo drums, and zombies to set the hypnotic tone. In the film, a beautiful young woman is finally released from her zombie trance when the man who enslaved her, a rival of her fiancé, falls off a cliff. Theater owners showing this film were encouraged to display an enlarged copy of Article 249 (sic) of the Haitian Penal Code from 1883, in order to emphasize the threat of mind control:

Is also considered attempt on life by poisoning the use made against a person of substances which, without giving death, will cause a more-or-less prolonged state of lethargy, regardless of the manner in which these substances were used and regardless of the consequences. If the person was buried as a consequence of this state of lethargy, the attempt will be considered a murder.

(Guha & Boring, 2014, para. 4).

Cinematic zombies (AKA the living dead, the undead, walkers, ramblers, roamers, head biters, meat bags, rotters, etc.) became vehicles for social commentary during the 60's, beginning with the films of George Romero, and have since generated a five billion dollar industry spawning movies, TV shows, video games, novels, survival guides, toys, comic books, merchandise, and live action events.



Figure 13 *Ghouls from George Romero's Night of the Living Dead*

The BBC featured a show called *In the Flesh*, in which the pale, post-apocalyptic main character, Kieren Walker, is not only a recovering zombie thanks to the discovery of curative daily shots, but is also a gay suicide survivor, resurrected even though he wished to be dead. Diagnosed with Partially Deceased Syndrome (PDS), Kieren originally killed himself after losing his lover to the war in Afghanistan.



Figure 14 Kieren Walker from BBC's *In the Flesh*

Zombie lore revolves around story telling and one striking factor that stands out in the Zombies tradition is brain dysfunction. In 2009 Steven Schlozman couldn't sleep because his wife had just been diagnosed with breast cancer. To take his mind off his worries, he sat up late and watched Romero's classic film, *Night of the Living Dead*. Soon afterward, Schlozman, an assistant professor of psychiatry at Harvard, created a famous, fictional, unpublished medical paper on Zombies calling their condition *Ataxic Neurodegenerative Satiety Deficiency Syndrome* (ANS_D). The paper linked their lumbering gait, immense rage, and insatiable appetite to widespread brain damage caused by an imaginary virus (Gannon, 2013).



Figure 15 AMC's The Walking Dead

Verstynen and Voytek (2014) go into great detail about the collective set of behaviors and traits typically seen in pop-culture movie Zombies: impulsive stimulus-driven hyper-aggression, memory deficits, language disruption, movement dysfunction, attention problems, reduced impulse control, and visual recognition impairments; he called the collective set of symptoms *Consciousness Deficit Hypoactivity Disorder*, (CDHD). If we could look into Zombie brains, the authors explain, we would see regions of atrophy, whole areas decayed away, especially in the orbital frontal cortex, which regulates personality, behavior, and movement.



Figure 16 *Ghouls from Night of the Living Dead*

Diagnosis:

CDHD is an acquired syndrome whereby patients present with a lack of intentional control over their actions, lethargic and fatigued movements (akinesia), loss of pleasure (anhedonia), general language dysfunction (aphasia), memory impairments (amnesia), and an inability to suppress appetitive actions such as eating or aggressive “fight-or-flight” behaviors. Patients with CDHD often present with severe difficulty in recognizing familiar objects or individuals (agnosia) and persistent sleep disturbances reflected as chronic insomnia that results in a subsequent “waking delirium” state. CDHD patients also present antisocial behavior patterns (e.g., trying to bite or consume people) and these typically violent behaviors are strictly targeted at living humans. Indeed, a very strong pro-social behavior is expressed toward other infected individuals, as evidenced by the clustering and “swarm intelligence” of herds of infected individuals. (Verstynen & Voyteck, 2014, p. 203)

Although neuro-biological explanations of Zombie psychopathology are purely fictional accounts, Zombies themselves are only part myth. Some of the more interesting documented cases of live people inhabiting deadness are the result of brain dysfunction attributed to organic lesions of the non-dominant temporoparietal cortex, as well as to migraines, and side effects of certain drugs. Take the case of Graham, a patient in the U.K., who woke up after attempting suicide by electrocuting his bath water to discover that he was still not dead but was also no longer alive. “I lost my sense of smell and taste. I didn’t need to eat, or speak, or do anything,” Graham told an interviewer. “I ended up spending time in the graveyard because that was the closest I could get to death...I had no other option than to accept the fact that I had no way to die. (cited in Thompson, 2013).



Figure 17 *Graham K., suffered from Cotard's Syndrome*

Diagnosed with a rare neurological condition that bears the name of Dr. Jules Cotard (1840-1889), the Parisian neurologist who first wrote about an oddly self-certifiable set of delusions in which people consider themselves dead,

Graham's was the first case of Cotard's Syndrome that was monitored with Positron Emission Tomography. An initial PET scan of Graham's intact brain resembled that of a comatose patient.

Victims of Cotard's Syndrome, also known as Walking Corpse Syndrome, mistakenly believe that they are rotting; or missing blood, brains, internal organs, or other body parts. They may think they have lost their soul, or are already dead. Some stop eating and die of starvation. One such patient asked to be taken to the morgue so that she could be with the dead people where she rightfully belonged (Rumino & Mekinulov, 2008). The brain scans of patients diagnosed with this syndrome show frontal and parietal region activity low enough to be classified as vegetative, though they are walking, talking beings (Thompson, 2013).

Cotard's Syndrome is not death, since the patient is not really dead, but a dehumanized condition of deadness. The individual exists in a zombie state, deprived of self-agency and a meaningful existence when emotional life is suspended. It took nine years of psychotherapy, drug treatment, and support from family and professionals before Graham could say that he no longer felt brain dead.

Reis discusses the non-binary characteristics of the liminal space between life and death that zombies occupy:

The cultural trope of the zombie captures the experience of nonhuman, or depersonalized states in a manner different than discussing an individual's aliveness or deadness. In the popular imagination, zombies are neither fully alive nor simply dead. They are conceived as inhabiting a condition of living deadness, existing as mindless yet animated human forms without complex purpose or basic subjectivity. (2011, p. 277)

Zombie states may operate inconspicuously at subtle levels that are yet to be determined by science. Jaroslav Flegr suspected that the usually asymptomatic protozoan *T. gondii* that had invaded his brain, was manipulating his personality, causing him to act in strange and self-destructive ways (McAuliffe, 2012). The fact that he was an evolutionary biologist at Charles University in Prague allowed him to take his suspicions into the lab to conduct studies and analyze public health data, which gave some heft to his theories of mind-control by way of microscopic parasite. Results from his experiments showed that test subjects infected with the parasite had statistically significant delayed reaction times and gender-based changes in personality that were not evident in subjects who were not infected (McAuliffe, 2012). Behavioral data in subsequent studies confirmed the existence of an effect of latent toxoplasmosis on men and women's personality characteristics. Infection by this common parasite is linked to an increase in extraverted, risk-taking behaviors in men and the opposite behaviors in women, most likely influenced by cultural values and expectations of gender roles.

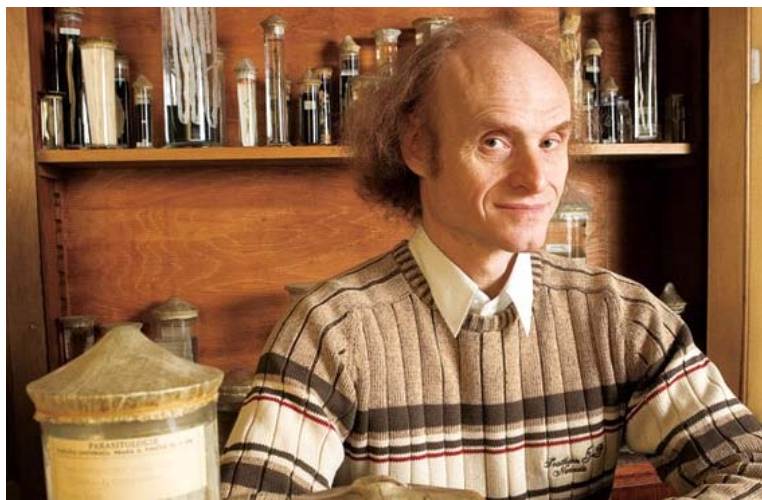


Figure 18 Jaroslav Flegr

Some Turkish studies have replicated some of Flegr's findings and Swedish scientists recently discovered that the *T. gondii* parasite hijacks white blood cells and causes them to produce a neurotransmitter that very cleverly reduces fear and anxiety in rats and makes them lose their natural aversion to cats (Lang, Gross, & Luder, 2007). This is quite a boon for a parasite whose primary host is animals from the feline family.

Flegr's claims of microorganism mind control seemed radical at first, but supporting evidence continues to accumulate. Gut-to-brain signaling by intestinal microorganisms has been determined to be involved in the regulation of mental health factors and shown to influence dynamics as diverse as obesity, depression, anxiety, cognition, and pain perception. Mind control and behavioral provocation is quite widespread in the natural world. A deeper understanding of the relationship between microbes and hosts is developing and may aid in the treatment of complex disorders in the not-so-distant future.



Figure 19 *A wasp larvae grows fat on the juices it sucks from its spider host.*

Behavioral provocation is not news to the *Polysphincta gutfrendi*, a parasitic wasp that zombifies orb spiders in order to create incubators for its eggs. Once hatched, chemicals from the wasp larvae prompt the spider to suspend its usual orb weaving behavior in order to create a special silk baby sling with a camouflage pattern designed to hide and protect the little creature from predators while it sucks out the spider's vital juices, much like a vampire feasting on Zombie blood (Barrat, 2010).

Zombification occurs around the globe at many levels. There are countless examples of parasites manipulating host behaviors. Over 400 species of aggressive Cordyceps fungi grow in the highlands of Tibet, Nepal, China, Japan,

and Bhutan and in the jungles of Vietnam and Thailand. They mostly attack and invade insects and other arthropods and command aberrant behaviors from specific species of ants or caterpillars that they are designed to control in order to further their own life cycles. There are also parasitic worms that zombify grasshoppers or snails, barnacles that turn crabs into mindless surrogate mothers, wasps that control live cockroaches and caterpillars, and single celled microorganisms and viruses that have mastered mind control and manipulate the behaviors of mammals and even humans (Gambino, 2011). Fossils suggest that zombification has been occurring for 48 million years.

Representations of zombies emerge from symbolic imagination in significant ways across time and region not accounted for by cross-cultural transmission. Zombification, possession states, death and rebirth states, loss of self-will and agency, are psychically present whether voluntarily sought (i.e. through sex, drugs, rock and roll, religious ritual...) or involuntarily imposed (i.e. rape, addiction, torture, trauma, illness). Zombies express the opposite of mindfulness, so of course they would capture cultural attention at a time when mindfulness is going mainstream.

As humans, we possess the painful ability to hold mental images of things that are not actually threatening at the moment. Mindfulness practice teaches us to let these images float along in the stream of consciousness....but when internal conflict is overwhelming, certain psychic contents take over. The body may go on moving in the land of the living while the mind slips into a Zombie-like state, under the control of a “shadow government.” Like the orb spider who spins for another, free will is disrupted and we are unwittingly used by archetypal energies.

The opposite of control is chaos, disorganization, lawlessness, and powerlessness, exactly what happens during a zombie apocalypse.

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Zombedia (2014)

Image Credits

Fig 1. CDC Zombie Poster

http://blogs.cdc.gov/publichealthmatters/files/2011/05/blogbanner_zombieprep_560x140.jpg

Fig. 2. Lumbering Zombies

<http://thezombieblog.net/2014/02/20/zombie-bite-attacks/>

Fig. 3. Osiris, Anubis, and Horus, from a tomb painting
[http://en.wikipedia.org/wiki/Osiris#mediaviewer/File:La Tombe de Horemheb cropped.jpg](http://en.wikipedia.org/wiki/Osiris#mediaviewer/File:La_Tombe_de_Horemheb_cropped.jpg)

Fig. 4. Draugr (Viking zombie)
[http://elderscrolls.wikia.com/wiki/File:Draugr Deathlord.jpg](http://elderscrolls.wikia.com/wiki/File:Draugr_Deathlord.jpg)

Fig. 5. Remains of cannibalism attributed to Wendigo Psychosis
<http://murderpedia.org/male.R/r/runner-swift.htm>

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<https://finaltransmission.wordpress.com/2012/11/10/dead-writings-world-zombies-jiang-shi/>

Fig. 7. Gashadokuro, Japan
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Fig. 8. Krasue, Cambodia
<http://en.wikipedia.org/wiki/Krasue>

Fig. 9. Atlantic slave trade routes
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Fig. 10. Bokor grating bones; preparing poison
<http://sites.duke.edu/ginalisgh323/zombification-process/>

Fig. 11. *Zonbi* by Haitian artist Wilson Bigaud
<http://www.umich.edu/~uncanny/zombies.html>

Fig. 12. Voodoo practitioners as depicted in *The Magic Island*
<http://www.tinhouse.com/blog/15872/lost-found-hugh-ryan-on-w-b-seabrook.html>

Fig. 13. Ghouls from *Night of the Living Dead*
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Fig. 14. Kieren from the BBC series *In the Flesh*
<http://www.ew.com/sites/default/files/i/2014/05/12/InTheFlesh-201-Full.jpg>

Fig. 15. Picture from AMC's *The Walking Dead*
<http://thezombieblog.net/2013/12/05/what-is-zombie/>

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http://drafthouse.com/movies/master_pancake_night_of_the_living_dead/australia

Fig. 17. Graham K., suffered from Cotard's Syndrome
<http://www.westernmorningnews.co.uk/Man-suffered-rare-zombie-condition-believed-dead/story-19136421-detail/story.html>

Fig. 18. Jaroslav Flegr
<http://www.theatlantic.com/magazine/archive/2012/03/how-your-cat-is-making-you-crazy/308873/>

Fig.19 Wasp larvae on spider host
<http://smithsonianscience.org/2010/01/drugged-spiders-web-spinning-may-hold-keys-to-determining-how-animal-behavior-is-controlled/>

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