

Acknowledgments

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Medusa's Gaze — and — Vampire's Bite

the Science of Monsters.

By Matt Kaplan.

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Hauntings—Demons, Ghosts, Spirits

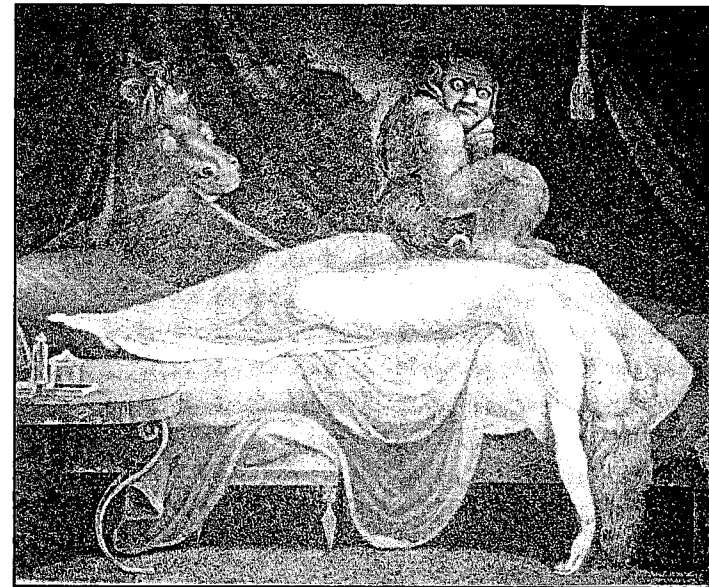
"Are you the Keymaster?"

—Dana Barrett/Zuul, *Ghostbusters*

Without a doubt, one of the most disturbing paintings of the 1700s is by the Swiss artist Johann Füssli. The work depicts a beautiful woman lying asleep on a bed. Sitting upon her chest is a demonic creature, staring at her with wicked intent. It was a day and age when monster movies and horror films didn't exist, but with a work of art as unsettling as *The Nightmare*, who needs Hollywood? The painting tells a story, and a creepy one at that.

The woman in the painting is widely thought to have been Füssli's beloved Anna Landolt. He and Landolt wanted to marry, but her parents had refused to allow it. Without the ability to sleep in her lover's arms, Landolt's lustful feelings draw the attention of a demon that comes to feed on her sexual energy as she rests. Some art historians argue that the painting is, in effect, a warning to parents, presenting the dangers of creating an impediment to love. Others suggest it is

simply making a more general argument that dangerous things can come as the result of dreams. Either way, *The Nightmare* makes one thing very clear: A fear of dreams was present in Europe during the 1700s and it manifested itself in the shape of demons.*



The Nightmare, by Johann Heinrich Füssli. Oil on canvas, 1781. Detroit Institute of Fine Arts/Marc Charnet.

This is very different from the way things once were. The origin of the word "demon" is the ancient Greek word *daimôn*, which comes from the verb *daïein*, meaning "to distribute." It was sometimes used during the days of Homer as a synonym for "god" but, more often than not, was associated with entities that distributed people's destinies. Unlike the gods on Mount Olympus, *daimônes* were not actively worshipped. They were just poorly defined supernatural beings that

*The horse in the background is thought to be a visual pun on the word "nightmare" and was not part of the original chalk sketch of the work.

were neither really good nor really bad. Hesiod describes them as the watchers of Zeus who spy on mortals and as assistants to the gods. He also suggests that some people became *daimōnes* when they died. Plato theorizes that they were intermediaries between gods and men that were not gods themselves. They were sometimes associated with bringing dreams to people but were not specifically responsible for nightmares.

The appearance of Satan in mythology changed the role of *daimōnes* such that they started being viewed in a more negative way. Satan, or Ha-Satan, as he is known in the Hebrew Bible, is initially tasked by God to put the righteous believer Job through hardship to test whether he will prove faithful only during times of health and prosperity or at all times. Ha-Satan makes Job suffer terribly, but all of this suffering is brought about by Ha-Satan's powers alone; there are no servants working for him. However, with the rise of Christianity, Ha-Satan ceased to be an angel who tested the faith of humanity under the instruction of God and transformed into Satan, an enemy of God who commanded legions of twisted minions.

The once neutral *daimōnes* of the world came to be known as demons and started to function as an army of darkness that Satan could command to corrupt mortals in his war. People who were thought to be working with Satan came to be known as witches and wizards, and it was widely believed demons were sent to aid these villainous individuals in their work. These assistant demons, or imps, as they were called, often took mundane animal forms. They could appear as toads, rats, owls, goats, and cats so they could help witches and wizards without being too easily noticed by neighbors.*

By the late Middle Ages, demonology and the myths surrounding it were extremely rich and fears were surging. Like animals, demons of different sorts were treated as species that specialized in tormenting people in various ways, and those that came to be among the best

*This is where the concept of wizards having familiars comes from and why Harry Potter has an owl, Hermione a cat, Ron a rat, and Neville a toad.

known were the demons fueling feelings of lust: the succubus and the incubus.

The succubus was a she-demon intent on bending men to her will and siphoning away their souls through sex. The incubus was her male counterpart, a monster capable of corrupting young women, like Landolt in *The Nightmare*, and led these ladies to lives of debauchery. Both names derive from the sexual positions that these demons were thought to take. Succubus stems from the Latin word *succubare*, meaning "to lie under." Incubus stems from the Latin *incubare* for "to lie on top."

However, while *The Nightmare* makes it obvious that sexual demons were well known during the 1700s, they had actually been around for hundreds of years. A quick return to Geoffrey of Monmouth's *Kings of Britain* and Merlin's first meeting with the king Vortigern reveals the presence of sexual demons. After Merlin is collected by Vortigern's scouts, but before he makes his prophecy about dragons dwelling underground, his mother is grilled about how exactly she came to give birth to a child without a father. She responds:

As my soul liveth and thine, O my lord the King, none know I that was his father. One thing only I know, that on a time whenas I and the damsels that were about my person were in our chambers, one appeared unto me in the shape of a right comely youth and embracing me full straitly in his arms did kiss me, and after that he had abided with me some little time did as suddenly vanish away so that nought more did I see of him. Natheless, many a time and oft did he speak unto me when that I was sitting alone, albeit that never once did I catch sight of him. But after that he had thus haunted me of a long time I did conceive and bear a child.

Similar to a claim of immaculate conception, Merlin's mother argues that a phantom lover kissed her, spoke to her, and eventually impregnated her. Vortigern is shocked by this, calls for an adviser

named Maugantius, and asks if he believes Merlin's mother's story. Maugantius responds: "In the books of our wise men and in many histories have I found that many men have been born into the world on this wise. For, as Apuleius in writing as touching the god of Socrates doth make report, certain spirits there be betwixt the moon and the earth, the which we do call incubus daemons." And Geoffrey of Monmouth wrote more than 500 years before *The Nightmare* was painted.

Seven hundred years before Geoffrey, the evolution of sexual demons from more neutral *daimônes* is seen in St. Augustine's *De Civitate Dei* (*City of God*): "It is a widespread belief that sylfens and fauns [nature spirits], commonly called incubi, have frequently molested women, sought and obtained coitus from them." St. Augustine's writings are about the earliest that we find mentioning the threats presented by the succubus and incubus, but the odd thing about this medieval rise of sexual demons is that they seem to represent a fear of sexual seduction that could hardly have been new.

Siren song

In the *Odyssey*, Odysseus runs into numerous temptations and threats of seduction. The Lotus-Eaters try to lure him into a life of eternal flower eating, and the beautiful witch Circe does her best to convince Odysseus his place is to be forever by her side, but these threats are nothing compared to that presented by the Sirens. As Odysseus prepares to leave Circe, she sternly warns him, "First you will come to the Sirens, who enchant every single man who comes to them. If anyone draws near to them in ignorance and hears their voices, there is no homecoming . . . instead he is enchanted by the clear, sweet song of the Sirens who sit in a meadow, surrounded by a great heap of rotting men, skeletons with shreds of shrivelling skin on them."

Remarkably, when Odysseus reaches the Sirens, the text gives absolutely no physical description of these monsters while describing their song in considerable detail: "Come here, illustrious Odysseus, great glory of Greece, beach your ship, so you can listen to

our voices. For nobody has ever sailed by on his black ship without listening to the honeyed words on our lips."

Depictions of Sirens in art and literature made many years after Homer show these monsters as bird-women, presumably because birds sing and because many birds are, in fact, carnivorous and sit in nests surrounded by skeletons and rotting flesh. Yet Homer's decision to not describe the Sirens' bodies is worth noting, since so many other monsters in his stories are described in great detail.

Intriguingly, even the gender of the Sirens is concealed. They have honeyed words on their lips and they are specifically mentioned by Circe as attracting men, so they are often assumed to have been female, but Homer does not actually state that they are. One reason for the gender and physical ambiguity in the *Odyssey* could be that the Sirens were so well known that everyone hearing the story was expected to know what they looked like. Given the extensive descriptions of so many other monsters, however, it seems more likely that Homer simply wanted to have a monster in his story that represented the fears associated with the temptations of the flesh. By presenting the Sirens without physical form, he effectively left which temptations they represented up to the listener.

There are obvious similarities between these Greek monsters and the demons that appear so much later in history. All of them seduce, but there is a key difference between the Sirens and the demons found later in *Kings of Britain* and *The Nightmare*—sleep.

Sweet dreams

People who were forced to face the Sirens did so awake. If they fell prey to them, it was because of their own conscious folly. In *The Nightmare*, it is sleep that is the distinctly new element mixed with sexual seduction to create the monster. In *Kings of Britain*, the situation for Merlin's mother is less obvious. The text hints that she does ultimately sleep with the demon, since it leads her to conceive a child. Moreover, it is described as coming to her "chambers," sug-

gesting these were nocturnal visits since time spent in chambers would most often be at night when she was getting ready for bed or sleeping. Even so, it is not entirely clear if her interactions with the demon took place when she was awake or dreaming. Yet there is a progression present that suggests that the evolution of the incubus demon from *daimōnes* and monsters like the Sirens was not anxiety over sex but rather a rising fear of sexual thoughts taking place during sleep. This is strange because studies of ancient human communities hint that, historically, people have had no problem with sexual thoughts during sleep.

The Hadza in northern Tanzania have had limited exposure to the ways of the outside world, and their traditions are much the same today as they were thousands of years ago. They don't mix with other tribes, rarely paid attention to Europeans who tried to make contact, and their language, which involves a number of click sounds, is a challenge for Westerners to learn. They are thus rather well isolated from many of the ideas floating around in the rest of society.

As for how they handle the matter of sexual dreams, the Hadza have treated a girl's first menstruation as a joyous occasion for generations. The girl is adorned with beads and a celebration is thrown in her honor. Intriguingly, when Hadza boys ejaculate in their sleep for the first time (an event that is often associated with dreams of sexual activity) they too are adorned with beads and given a celebration. The sexual dream is not something to be ashamed of but something joyous.

Even so, the Hadza are not a perfect window into the past. Some of their traditions may have evolved with time, and their treatment of girls and boys as they make their journey into adulthood may have altered somewhat from what it was a few thousand years ago. However, it is hard to imagine the celebratory behaviors that anthropologists see in the Hadza today stemming from behaviors that were once associated with any sense of shame. Minor changes would be understandable, but a dramatic change in overall tone seems unlikely.

Other relatively isolated tribes, like the Umeda of Papua New Guinea, show similar tendencies. It is not uncommon for hunters,

on the night before a major hunt, to sleep on top of specially scented sacks that lead them to have erotic dreams and orgasms. Experiencing nocturnal ejaculations was considered to be a good omen, since sex between hunters and women usually followed a successful hunt and dreams of sex hinted that sex would come for real in the near future.*

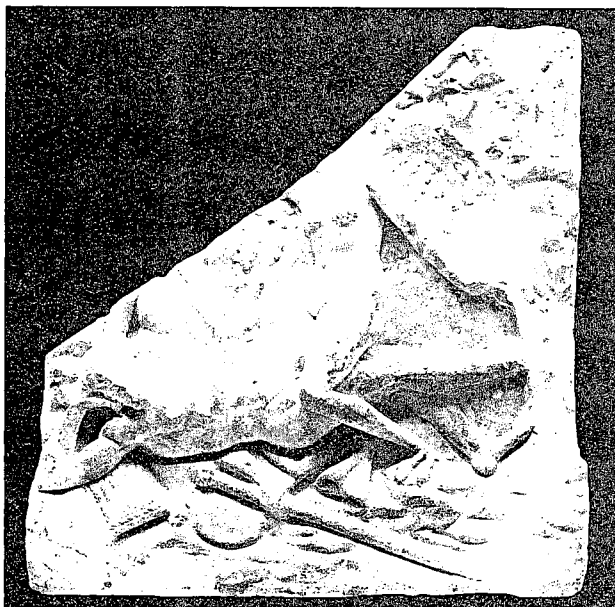
So if the Hadza and Umeda can be seen as models of how people have historically responded to sexual dreams, this suggests that the ancient human condition embraced rather than feared sexual dreams. Somewhere along the way, during the evolution of society, the wheels came off the wagon and sexual dreams became something to dread. Can we blame the Greeks or Romans for this?

In ancient Greece, sexual dreams appear to have also been a cause for joy. It was common for dreams to be interpreted, and Herodotus wrote about the Greek traitor Hippias, who helped the Persians during their invasion when they landed at Marathon. Hippias had a dream of sleeping with his mother: "He dreamt of lying in his mother's arms, and conjectured the dream to mean that he would be restored to Athens, recover the power which he had lost, and afterwards live to a good old age in his native country. Such was the sense in which he interpreted the vision." This led him to believe he would one day return to his motherland of Athens in a position of power.

Similarly, Artemidorus, a Roman dream interpreter who lived in the third century AD, wrote that having sexual dreams involving one's mother were good for people working in politics, since such dreams represented the love one felt for one's motherland and were a sign of deep-seated patriotism. Yet Artemidorus was doing his work at a time when sexual dream interpretation was changing, and according to the anthropologist Charles Stewart at University College London, who wrote extensively on nightmares in the *Journal of the Royal Anthropological Institute* in 2002, incubi in very early forms started to leak into his writings.

*This is actually remarkably similar to behavior seen in numerous primates where there is a dramatic surge in sexual activity shortly after securing a major food source.

In his *Interpretation of Dreams*, Artemidorus makes a connection between the playful god Pan, who was known for engaging in dream mischief, and an entity who is mysteriously named Ephialtes. According to Stewart, Ephialtes etymologically seems to mean "to jump on top of," which is not much different from "to lie on top." More specifically, he points out that Artemidorus writes, "Ephialtes is identified with Pan but he has a different meaning. If he oppresses or weighs a man down without speaking, it signifies tribulations and distress." Although the word "incubus" is not specifically used, there are some uncanny similarities between Ephialtes and the monster appearing in Füssli's *The Nightmare*.



Old Man and a Siren. Roman marble relief, fragment, second century AD. Museum of Fine Arts, Boston. Bridgeman Art Library.

Artwork supports the idea that AD 200 was a time when sleep demons were beginning to become more widely feared. In a marble

relief at the Museum of Fine Arts in Boston, a sleeping shepherd is straddled by a voluptuous winged woman with webbed feet. Unfortunately, the relief is fragmentary and the head of the woman has been lost to the ravages of time. For this reason we cannot determine how human she actually is or get a sense of whether she wishes the sleeping shepherd sweet dreams or sexual nightmares. Even so, many argue that the woman is, in effect, a Roman representation of one of Homer's Sirens. This has led to the relief being named *Old Man and a Siren*.

The timing of this transformation of Sirens into sleep demons, like the incubus and succubus, almost perfectly aligns with when Christianity was spreading rapidly throughout the classical world. As Christians came to blame many misfortunes on evil spirits, the neutral *daimōnes* of ancient Greek lore were transforming into Satan's fiendish minions. When people ate too much, they fell prey to the demon of gluttony. If they didn't do enough work, they were plagued by the demon of sloth.

Demons associated with behaviors that people could control with effort were frightening, but demons of nocturnal sexual thoughts must have been dreadful because (in spite of what many believed) there was nothing anyone could do to control his or her dreams. By identifying dreams as potentially sinful, Christianity effectively led people to fear what their own minds subconsciously conjured. Upon waking, they would be forced to struggle with powerful feelings of guilt, corruption, and the terror of eternal damnation. Both the dreamers themselves and the clergy whom they sometimes confessed to could not or would not accept that such dreams were naturally generated by the minds of good people all on their own. Something, or some things, had to be responsible. Thus the incubus and succubus evolved from their less overtly sexual relatives the Sirens and the less malevolent *daimōnes*.

Lingering in limbo

Even if Christianity was responsible for the transformation of sirens and *daimônes* into sleep demons, there are still elements of their evolution as monsters that raise questions. The most perplexing of these is the strikingly different forms they take. In the marble relief *Old Man and a Siren*, the monster is standing over the man. In *Kings of Britain*, the demon merely visits Merlin's mother at night. In contrast, Artemidorus describes Ephialtes as a creature that is "jumping on top" and "weighing a man down," and in *The Nightmare*, the demon is literally perched on the center of the woman's chest.

If only a fear of sexual dreams was responsible for the formation of sleep demons, one would expect their forms to be reasonably consistent, but this is not what we find. Some sleep demons tend to be associated with chest pressure while others only suggest sexual arousal. This could be because people were trying to come to grips with more than just dreams of sex.

As the body enters the stage of sleep when dreaming takes place, known as rapid eye movement or REM sleep, the brain effectively initiates a safety mechanism that tells almost all muscles in the body to stop acting. For example, if a dream emerges that leads you to believe you are walking, you do not literally start walking while in bed. The same is true with more violent activities. If you dream about punching someone in the nose, your body, because of the safety mechanism, does not act upon this impulse.* Yet the safety signal that the brain sends out does not always work as well as it should.

In some situations, for reasons that are not entirely understood, muscles still take action even though they have been commanded by the brain to remain motionless. Under such a condition, known as REM sleep behavior disorder, people act out their dreams physically. This is why sleepwalking and, in a few noteworthy cases, even sleep-

*A good thing for people whose partners have particularly vivid imaginations.

driving, take place. This obviously dangerous disorder needs close monitoring.

A reverse condition, which is nowhere near as hazardous but often far more frightening, is sleep atonia, or sleep paralysis. In this situation, the safety signal works too well. When the person wakes, his brain ends its dream state and he becomes aware of reality, but his muscles continue to obey the "don't move" command that they were sent when REM sleep began. As a result, the waking person cannot move. He is literally frozen in place.

Sleep atonia sounds like the sort of thing that would be rare, but the medical literature indicates the opposite. According to the American Sleep Disorder Association's *Diagnostic and Coding Manual*,* between 40 and 50 percent of the human population experiences sleep atonia at some point. More important, the manual explains that the condition is frequently associated with hallucinations.

As the mind shifts between the dream state and the waking state, it is common for it to notice things that aren't actually there. Sometimes noises are heard that belong to a dream rather than reality; sometimes the presence of other people, who existed in the dream, are sensed by the waking dreamer. These are hallucinations, and they are entirely normal and benign for most people, but when combined with sleep atonia, they can become truly awful.

One particularly frequent hallucination that seems to run hand in hand with sleep atonia is believing a creature of some sort is present in the room with the waking dreamer. Commonly, this entity is described as seated on the waking dreamer's chest, holding them in place or standing over them. In the Western world, this combination of hallucinations and sleep atonia takes place often enough for it to have a name: Old Hag Syndrome.

The name stems from an area in northeastern Newfoundland where a mix of hallucinations and sleep atonia appears to be remark-

*Suffer from insomnia? Try reading the ASDA *Diagnostic and Coding Manual*; it'll knock you out faster than Ambien.

ably prevalent, and people often refer to the hag or *ag* coming to terrorize them. According to the medical sociologist Robert Ness at Augusta State University in Georgia who reported on the condition in a Newfoundland community during the 1970s, people in the region commonly believed that the traumatizing sleep experiences were the result of being cursed by an old hag who came to them during the night to sit on their chest.

Observations of this condition are not unique to the English-speaking world. The Chinese tell tales of the *gui ya shen*, which literally means "phantom that presses on the body"; the islanders of St. Lucia in the Caribbean tell of the *kokma*, which is the spirit of a dead baby that haunts an area and attacks people in their beds by jumping on their chests and clutching at their throats; and the people of Thailand speak of the *Phi um*, an enveloping ghost that holds people in their beds as they wake up. When these legends are considered in combination with Artemidorus's description of Ephialtes jumping on chests, it seems that fear of sleep atonia has been present in communities around the world for centuries and long taken the form of something spectral dwelling half in the waking world and half in a world of dreams.

Evil evolved

So it would seem that at some point around AD 200, the terror presented by sleep atonia started to merge with the fear of sexual dreams induced by Christianity. The two fears became one and ultimately developed into the incubus presented in *The Nightmare*. And the fear has not gone away.

Modern films like James Watkins's *The Woman in Black* (which is an equally terrifying stage play) and Oren Peli's *Paranormal Activity* and television series like *The X-Files* gain much of their fear factor from the concept of creatures lurking in the realm between the seen and the unseen. Even though these creatures can be playful, like the succubus that comes to the heroes as they are sleeping in Ivan Reit-

man's comedy *Ghostbusters*,* more often than not they are truly terrifying, like the demons in Tobe Hooper's thriller *Poltergeist*, which upon emerging from the family's television caused the child Carol Anne to utter the immortal words "They're here."

An intriguing element of many stories about ghosts and demons is that they usually take place in hot spots for spectral activity. This is certainly the case in *Ghostbusters*, where Egon Spengler says, "It's not the girl, Peter, it's the building," when he defends the lead character's love interest, Dana Barrett, who is possessed not because she is inherently evil but because the building she lives in was built by a demon-worshipping lunatic. This is equally true of Mary Lambert's version of Stephen King's novel *Pet Semetary*, where there is much talk of "sour" land; *Poltergeist*; Stanley Kubrick's presentation of King's *The Shining*; and countless other phantasmal thrillers. Haunted places have a long history, and this leads to the natural question of whether there are certain environmental conditions, which could be present in a specific location, that can induce a combination of sleep atonia and hallucinations. A search through the dream disorder literature indicates there definitely are conditions, like jet lag, alcohol abuse, depression, and chronic anxiety, that can increase a person's chances of having a sleep atonia episode. However, none of these can reasonably be tethered to a location. So it would seem that there must be something else that makes locations haunted.

While most people suffer sleep atonia only once during their lives, a very small percentage of the population suffers regularly from the dreaded experience. Most important, this chronic version of the disorder is genetic; meaning parents who have it can pass it along to

*The title of this film is a terrible misnomer. The demon Zuul is the creature that possesses the body of Dana Barrett; the doglike demon Vinz Clortho takes over the body of Dana's neighbor Lewis Tully; and Gozer is the shape-shifting demon that initially appears as a red-eyed human and later transforms into the Stay Puft Marshmallow Man that the heroes do battle with during the climax of the film. While it probably would have driven away audience members by the thousands, *Demonbusters* would have been a more accurate title.

their children. This inherited version of sleep atonia may not seem especially relevant today, when children break away from their parents as young adults and tend to live in distant locations, but historically it was common for houses to pass from one family member to another over the generations. For this reason, it is possible that the concept of the haunted house emerged as a result of a family with the genes for chronic sleep atonia moving in and passing the home along to other family members who also carried the genes for chronic sleep atonia. Ironically, if this were true, it was not houses that were cursed but the families dwelling in them who were cursed with bad genes.

All hauntings and modern ghost stories aside, there are few recent monsters that are more true to the demonic history of mixing fears of uncontrolled sleep behaviors and sexual activity than Freddy Krueger from the 1984 film *Nightmare on Elm Street*.

In Wes Craven's film, a group of sexually inquisitive teenagers begin experiencing terrible dreams. They find themselves in a boiler room being chased by a disfigured man whose right hand is covered in a glove with wicked blades attached to every finger. Dreams and reality merge as the teenagers begin to find five-fingered blade marks in their clothes and sheets when they wake up, hinting that they could die from their dreams. This ultimately happens when one girl, Tina, is slashed to death in the night after sleeping with her young boyfriend.

Tina's murder, while entirely spectral in nature, carries sexual overtones. Later in the film, when Krueger's bladed glove appears in the bathtub between another teenage girl's legs, it is hard to not think of some sort of deadly phallus. The horrifying combination of the vulnerability of sleep and sexual violation links Krueger to the fears of the incubus.

Yet the film backs away from presenting Freddy Krueger as anything more than a deformed killer. Even after being disfigured by fire, he is still recognizable as having once been human. This is likely the result of the film's creators not wanting to stray too far from reality. If Krueger had been an utterly inhuman demon, he would have been less real, less believable, and, in the end, less scary.

And if Krueger is an evolved form of the incubus, so too are the many aliens that "abduct" humans. Charles Stewart convincingly argues that people who claim to have been abducted and sexually assaulted by aliens during their sleep are really just doing their best to rationalize experiences of sleep atonia, hallucinations, and sexual dreams. This makes perfect sense, particularly if people suffering from these sleep disorders no longer find demons believable but do consider the existence of extraterrestrials a possibility. The monster is being created by the same core fear, but believability is forcing the form of the monster to change.

7

Cursed by a Bite—Vampires, Zombies, Werewolves

"You're intoxicated by my very presence."

—Edward Cullen, *Twilight*

Slinking through the shadows of night, they come to feed on the innocent. Seemingly human in appearance, the threat that they pose becomes apparent only as needle-sharp fangs pierce the throat of their intended victim and blood is sucked away. When every last drop of this precious life essence is consumed, prey becomes predator, seeking out blood to fuel its own newly acquired supernatural hunger. Vampires are among the world's most celebrated and popular monsters, and they have an extremely complex history and biology surrounding them, supported by a long line of books and movies featuring them as both villains and heroes. Yet working out exactly which fears drove the rise of vampires is a tricky question to answer because they are such multifaceted monsters with no clear point of origin.

On the face of it, they are predators like lions and play upon the

terror of being killed by a nocturnal hunter. With such a basic fear, one would expect vampires to be present during ancient times when fears of beasts lurking in the night were at their height, yet vampires as we know them today arrived on the scene only in the eighteenth century. Even so, earlier reports of creatures resembling these monsters do exist.

In the *Odyssey*, Odysseus is forced to travel to the land of the dead and confront the ghosts of people he once knew in order to gain information to aid him on his quest. The witch Circe advises that he must allow the ghosts to feed on blood freshly spilled from the body of an animal to gain their trust and knowledge. At first he is highly protective of the pool of blood that he spills on the ground, allowing only the ghost of the wise man, Teiresias, to feed and answer his questions. But then the ghost of Odysseus's mother appears and fails to recognize him as her own son. Odysseus turns to Teiresias for answers: "Tell me and tell me true, I see my poor mother's ghost close by us; she is sitting by the blood without saying a word, and though I am her own son she does not remember me and speak to me; tell me, Sir, how I can make her know me." Teiresias replies, "Any ghost that you let taste of the blood will talk with you like a reasonable being, but if you do not let them have any blood they will go away again." Odysseus then allows the ghost of his mother to feed on the blood, and her memories of him come flooding back.

For Homer, blood is clearly a link between the dead and the living, even if it has to be spilled from an animal's body onto the ground to have this effect. However, while the spirits in the *Odyssey* are a tantalizing ancestor to the modern vampire, they are still very different, and it is not until nearly two thousand years after Homer, during the late 1100s, that creatures more like the vampires of modern fiction appear in Europe. The person who documents these monsters is William of Newburgh, an English historian who is widely thought to have had a network of trustworthy informants who helped him report on historic events that took place between the days of William the Conqueror in 1066 and those of Richard the Lionheart in 1198. In

his *Historia rerum Anglicarum*, amid information about royalty and political events, he tells the tale of an evil man who dies from a fall shortly after discovering his wife is having an affair:

A Christian burial, indeed, he received, though unworthy of it; but it did not much benefit him: for issuing, by the handiwork of Satan, from his grave at night-time, and pursued by a pack of dogs with horrible barkings, he wandered through the courts and around the houses while all men made fast their doors, and did not dare to go abroad on any errand whatever from the beginning of the night until the sunrise, for fear of meeting and being beaten black and blue by this vagrant monster. But those precautions were of no avail; for the atmosphere, poisoned by the vagaries of this foul carcass, filled every house with disease and death by its pestiferous breath.

Death comes to many people after the evil man's burial, and desperate to bring the monster's curse to an end, two brothers take action:

Two young men, who had lost their father by this plague, mutually encouraging one another, said, "This monster has already destroyed our father, and will speedily destroy us also, unless we take steps to prevent it. Let us, therefore, do some bold action which will at once ensure our own safety and revenge our father's death. There is no one to hinder us; for in the priest's house a feast is in progress, and the whole town is as silent as if deserted. Let us dig up this baneful pest, and burn it with fire." Thereupon snatching up a spade of but indifferent sharpness of edge, and hastening to the cemetery, they began to dig; and whilst they were thinking that they would have to dig to a greater depth, they suddenly, before much of the earth had been removed, laid bare the corpse, swollen to an enormous corpulence, with its countenance beyond measure

turgid and suffused with blood; while the napkin in which it had been wrapped appeared nearly torn to pieces. The young men, however, spurred on by wrath, feared not, and inflicted a wound upon the senseless carcass, out of which incontinently flowed such a stream of blood, that it might have been taken for a leech filled with the blood of many persons. Then, dragging it beyond the village, they speedily constructed a funeral pile; and upon one of them saying that the pestilential body would not burn unless its heart were torn out, the other laid open its side by repeated blows of the blunted spade, and, thrusting in his hand, dragged out the accursed heart. This being torn piecemeal, and the body now consigned to the flames, it was announced to the guests what was going on, who, running thither, enabled themselves to testify henceforth to the circumstances. When that infernal hell-hound had thus been destroyed, the pestilence which was rife among the people ceased, as if the air, which had been corrupted by the contagious motions of the dreadful corpse, were already purified by the fire which had consumed it.

The monster is never called "vampire," but the connections to the creatures we know as vampires today are strong. He was "issuing, by the handiwork of Satan, from his grave at night-time" and responsible for the deaths of many people in the surrounding area. Then, when the brothers attack him, William states that they "inflicted a wound upon the senseless carcass, out of which incontinently flowed such a stream of blood, that it might have been taken for a leech filled with the blood of many persons." A leech is a bloodsucking creature, but this passage steers clear of actually saying this was a bloodsucking monster.

However, a return to the original Latin hints that there is more: "*Nec terribili juvenes, quos ira stimulabat, vulnus exanimi corpori intulerunt: ex quo tantus continuo sanguis effluxit ut intelligeretur sanguisuga fuisse multorum.*" This can be translated as, "The brave young men, excited by wrath, struck a wound on the lifeless corpse, from

which so much blood then flowed that it was understood that he had been the bloodsucker of many.”*

Like Homer’s ghosts, we again find a connection between the undead and a thirst for blood. The difference this time is that the undead creature in this story is definitely malevolent and bringing harm to people in the real world, whereas the ghosts in the *Odyssey* are not harming anyone.

William of Newburgh told many similar stories of the dead rising from the grave, and he had much company. In 1591, in the town of Breslau (now the Polish city of Wrocław), a shoemaker who killed himself by putting a knife through his neck, came back to haunt those around him by pressing against their necks in the night. He was ultimately found in his grave with the wound in his neck just as fresh and red as it had been when he died. In 1746, the French abbot Augustin Calmet reported, “A new scene is offered to our eyes. People who have been dead for several years, or at least several months, have been seen to return, to talk, to walk, to infest the villages, to maltreat people and animals, to suck the blood of their close ones, making them become ill and eventually die.”

The solution to the undead threat that locals turned to was exactly what William of Newburgh described. They dug up the graves of the offending monsters to destroy them and found that recently buried corpses often had blood on their lips, bloated stomachs that looked as if they had just fed, blood still flowing inside their bodies, fresh-looking organs, clawlike fingernails, and elongated canine teeth. Terrified by these sights, people chopped off heads, drove stakes through hearts, and jammed bricks into decaying mouths to keep the monsters from biting anything more. It must have been dreadful business, but there are no reports of the mon-

*The Latin word *sanguisuga* literally means “blood” (*sanguis*) “sucker” (*suga*). It is understandable that the original translation used the word “leech” in place of “bloodsucker” since “bloodsucker” is not really a word typically thrown around in scholarly English . . . unless, of course, you happen to be writing a book about monsters.

sters ever fighting back. They are always just corpses in graves taking a beating.

Finally, after hundreds of years of terrorizing Europe, all these walking corpses and ghosts earn the name “vampire” in the second edition of the *Oxford English Dictionary* in 1745. It was described as “a preternatural being of a malignant nature (in the original and usual form of the belief, a reanimated corpse), supposed to seek nourishment, or do harm, by sucking the blood of sleeping persons.” People must have been scared out of their socks.

Mortifying misunderstanding

With so many traits and behaviors being associated with these early vampires, it is likely there were several fears merging together to form these monsters. As such, it seems best to start with the most concrete details being described: Vampires had bloody mouths, bloated stomachs, fresh blood in their bodies, and, sometimes, claws and fangs.

The Europeans who were initially digging up corpses were probably not exaggerating. After people die, bacteria living within the body often continue to be productive and generate gases that collect inside. The gas production leads to an effect that morticians refer to as “postmortem bloat,” and while it has nothing to do with diet or recent feeding, it can make the belly look swollen and lead people to conclude that the corpse has recently eaten.

In addition, gas buildup inside the body can cause blood to get pushed up from the lungs, passed through the trachea, and out of the mouth so that it stains the teeth and lips. This likely created the illusion that the bloated stomach was not simply full, but full of blood that the corpse had recently consumed, logically leading to the idea that the monster fed on blood.

Furthering the idea of the animated corpse, under certain circumstances bacteria-created gases can move past the vocal cords and create sound. This often occurs when bodies are handled or

meddled with after death, causing corpses to make noises as if they are groaning or, in rare cases, speaking.*

As for elongated canines and clawlike fingernails, there is a medical explanation for this too. After death, tissues die and waste away; the skin begins to shrink, and this leads it to be pulled back along both the nail beds and the gum line. As a result, the nails and teeth become more prominently exposed than they were at the time of burial. Of course, this is an illusion, but to early vampire hunters who had worked themselves into a lather over the perceived plague of the undead, these were fangs and claws indicative of a vampiric transformation.

All of these natural processes can explain the descriptions of early vampires and can even account for why Homer, way back in ancient Greece, suggested that the dead liked to feed on blood. But one thing that is not immediately clear is why the belief of the dead leaving their graves to attack the living gained such popularity during the 1100s when William of Newburgh was writing but not during the days of Homer. One possibility worth considering is that people being buried during William's time were not actually dead.

Today there are a lot of tools available, like blood pressure cuffs, stethoscopes, and heart monitors, that help doctors determine whether someone is alive or dead. Yet even with these devices, patients with very weak or infrequent heartbeats can easily be declared dead by mistake. As an example, in Jan Bondeson's book *Buried Alive*, which goes into great detail on how accidental burials happened (and still do), the tale is told of a Frenchman named Angelo Hays who suffered a brutal motorcycle accident in 1937. At the hospital he was not breathing, had no detectable pulse, and had a serious head injury. The doctor, using a stethoscope, could not hear anything, and Hays was sent to the morgue. Three days later, as he was buried, an insurance company realized Hays had been covered by a policy for up to 200,000 francs and sent an inspector out

*Driving a stake through a corpse's chest counts as meddling at the highest level.

to investigate the accident before paying up. The inspector ordered the body exhumed to look at the injuries and to confirm the cause of death. Remarkably, the doctor in charge found the corpse to still be warm.* Hays returned to the land of the living and is thought to have survived his near-death ordeal by being buried in loose soil that allowed some flow of oxygen to the coffin and by needing very little oxygen in the first place as the result of his head injury reducing all metabolic activities in the body. Bondeson relates a few more similar stories and argues that if we see such cases now, they probably were taking place somewhat more often in the past when vital sign monitoring tools were not available. Could such events of still-living but "geologically challenged" patients have been feeding into undead mythology?

Rising from the grave

In 1938, the author, folklorist, and anthropologist Zora Neale Hurston, then a student of the noted anthropologist Franz Boas at Columbia University, proposed there might be some material basis for the stories told in Haiti of individuals being raised from their graves by voodoo masters. These raised people, or zombies, legends said, were robbed of their identities, enslaved, and forced to work indefinitely on plantations. Hurston was not believed. For decades, the wider research community ignored her suggestions and in some cases actively ridiculed her, but this attitude eventually changed.

In May 1962, a man spitting up blood and sick with fever and body aches sought help at the Albert Schweitzer Hospital, a facility operated in Haiti by an American charity. Two doctors, one of whom was an American, did their best to save him, but to no avail. The

*"Buy our life insurance and we promise that our greed will ensure you are most certainly dead before we pay." Not exactly an advertisement that any company is likely to use today, but let's face it, they saved Hays's life.

man's condition deteriorated and he was declared dead shortly after his arrival. At the time of his death, he was diagnosed as suffering from critically low blood pressure, hypothermia, respiratory failure, and numerous digestive problems. What exactly caused such systemwide problems remained a mystery. The man's sister was called in to identify his body and stamped her thumbprint to the death certificate to confirm he was her brother and that he was, indeed, dead. Eight hours later he was buried in a small cemetery near his village, and ten days later a large stone memorial slab was laid over his grave.

In 1981, the sister was approached by a man at her village market who introduced himself to her using the boyhood name of the dead brother. It was a name that only she and a handful of other family members knew, so he seemed real enough. The man explained that he had been made into a zombie and forced to work on a sugar plantation with many other zombies until their master died and the zombies were freed. The media went crazy with the story, particularly in Haiti, and Lamarck Douyon, the director of the Psychiatric Institute in Port-au-Prince, made up his mind to test whether this zombie tale could possibly be true.

Douyon knew that digging up the grave would prove nothing; if the man and his zombie story were fraudulent, it would have been easy for the deceivers to remove remains from a rural village cemetery. Instead, Douyon collaborated with the family to construct the ultimate identity test. He would ask the man a series of questions that only the brother would know all the answers to. The man passed the test, and later, when the sister's thumbprint and the thumbprint on the death certificate were confirmed by Scotland Yard to be identical, Douyon concluded the man's story was likely true. There had to be something real about the zombie mythology of the island.

All of the evidence pointed to the idea that some sort of a poison had been used to make the man appear dead after making him quite ill. Then, after he was buried, he had been exhumed by his poisoner so he could be enslaved. Realizing that this was a matter for a biochemist rather than a psychologist, Douyon and other doctors

in Haiti asked the Harvard ethnobiologist Edmund Wade Davis to get involved.

Davis conducted several expeditions to Haiti and collected five zombie poison recipes from four different locations. All the poisons varied in the number of tarantulas, lizards, millipedes, and nonvenomous snakes added to the brew, but there were a handful of similarities that caught Davis's attention. All recipes contained a species of ocean-dwelling worm (*Hermodice carunculata*), a specific tree frog (*Osteopilus dominicensis*), a certain toad (*Bufo marinus*), and one of several puffer fish (also known as blowfish in some regions).

Since these organisms appeared in all the different zombie poisons, Davis focused his attention on them. He found that the worm had bristles on its body that could paralyze people, and the tree frog was closely related to a frog species that released toxins on its body that could cause blindness in those who touched it. Furthermore, the toad, he learned, was a chemical nightmare. Some of the compounds in its body functioned as anesthetics, some as muscle relaxants, and some as hallucinogens. He noted that earlier studies conducted with the toad compounds had discovered they induced a rage similar to the berserker rages found in Norse legends, and these studies suggested that compounds of closely related toads had once been consumed by ancient barbarians as they charged with reckless courage into battle and shrugged off all but the most lethal attacks.* But by far the most interesting ingredients in the zombie poisons were the puffer fish.

Puffer fish, which are well known for their deadly nerve toxins, are said to be tasty. Eating them comes with the serious risk of being poisoned, but this doesn't put off the Japanese. Called fugu in Japan, puffer fish is something of a dining adventure that popularly leaves

*In some tales, these berserking warriors are said to have transformed into bears to maul their enemies. Whether the drugs they were taking led the warriors to view themselves as werebears or whether the sight of them charging in a bestial fury covered in animal furs led their foes to believe they had become animals is difficult to determine. Either way, it seems the toad was involved.

consumers with feelings of body warmth, euphoria, and mild numbness around the mouth. Of course, if the chef gets fugu preparation wrong, diners end up in the hospital. Because the fish is so popular, hospitalization occurs with relative frequency and, as a result, there is a lot of medical literature on what fugu poisoning looks like.

Common symptoms include malaise, dizziness, nausea, vomiting, very low blood pressure, headache, and initial numbness around the lips and mouth that spreads to the rest of the body and often becomes severe. Eyes become glassy, and patients who survive the experience say it felt as if their bodies were floating while they could not move. They remained fully aware of their surroundings and alert during the poisoning experience. In one dramatic account, a fourteen-year-old boy in Australia, who accidentally ate puffer fish while on a camping trip with his family, recalled his family talking in the car as he was taken to the hospital, the nurses wishing him good morning and good night, and the doctors speaking their medical mumblings all while entirely paralyzed and feeling "light."

Davis found this intriguing because when he interviewed the man who claimed to have been made a zombie, he learned that he had remained conscious the entire time, heard his sister weeping when she was told that he had died, and had the sensation of floating above the grave. These descriptions, in combination with the medical reports filed when the man had been in the hospital on the night of his "death," suggested that puffer fish poison had been at work.

Upon further investigation, Davis learned that zombie makers created their poisons and exposed victims to these toxins by releasing them in the air near where the person lived or by putting them in places where the person was likely to make contact, such as on door handles or window latches. Lacing food with the poison was never done, because zombie makers believed it would kill the victim too completely.

After burial, zombie makers had their assistants pull victims out of their graves and then beat them fiercely to drive their old spirit away. This was followed by binding the exhumed person to a cross, baptizing them with a new zombie name, and force-feeding them

with a paste made from sweet potato, cane syrup, and *Datura stramonium*, one of the most hallucinogenic plants known.

Davis suggested in the *Journal of Ethnopharmacology* in 1983 that these ghastly experiences, combined with the potent initial poisoning, created a state of psychosis that literally transformed people into zombies who would do anything they were told by their masters. This, he argued, explained why voodoo magic was widely perceived as raising the dead and why Hurston was right. People literally were being buried alive and then dragged back to the living world as zombies.

Undead plague

But what of vampires? The early stories about these monsters do not support the "buried alive" theory very strongly, and there are no indications of poisons or zombie makers being involved with vampire creation. The vampire historian Paul Barber points out in his book *Vampires, Burial, and Death* that none of the early vampiric accounts actually describe vampires digging themselves out of graves, a fact that William of Newburgh's stories support. The protovampires just tend to emerge from the grave. This hints that early proponents of the vampire myth might have been making up this element of vampire behavior to explain something they were seeing in the world around them.

Today, if a person in a family falls ill with a contagious and potentially lethal disease, doctors usually have the knowledge to identify it, prescribe treatment, and suggest quarantine measures if they are needed. In the days before modern medicine, when understanding of infectious disease transmission was rudimentary, people exposed to lethally contagious individuals had a good chance of following their friends to the grave. But they would not have done so immediately. Viruses and bacteria take time to spread through the body before having noticeable negative effects. This delay, which is known in the medical community as the incubation period, varies with the

disease and can range from hours for some gut and respiratory infections to years for viruses like HIV. In most cases, though, incubation for diseases is a matter of days.

Imagine what people in those days saw after a loved one died from a highly lethal and contagious disease, like tuberculosis or a nasty strain of influenza. First, those who had lived with the diseased individual would fall ill upon the completion of the incubation period and run a high risk of dying. Then, those who had tended to these diseased individuals would also fall ill and transmit the disease before dying. One death would follow another in a dominolike progression. In a morbid sense, these patients were literally killing their friends and relatives, but from their deathbeds rather than from the hereafter. However, because of the incubation period, it wasn't clear to anyone how the disease was being passed along.

Driven into a panic by plagues of contagious diseases, people desperately sought an explanation. This search for answers even appears in William of Newburgh's story: The monster "filled every house with disease and death by its pestiferous breath." People were already somewhat aware of what was going on, but rather than pointing the finger at microscopic pathogens (which would have been impossible since microscopes were not even in use until the mid-1600s), they came up with the idea of the dead returning to kill off their friends and family. This led someone at some point to open up a grave and have a look. Shocked by the discovery of a bloody-mouthed corpse with a bloated belly, claws, and fangs, a connection was likely made between this horrific sight and the plague of death spreading throughout the community.

This seems logical, but it raises a question about timing. Why does the fear of vampires begin during the 1100s, when William of Newburgh was writing? Highly lethal and contagious diseases were hardly new things. In fact, Ian Barnes at Royal Holloway, University of London, published a study in the journal *Evolution* in 2011 revealing that infectious disease has played a key role in human evolution for centuries. Remarkably, this study found that humans who have been dwelling in places where population densities have been high for a long time carry genes that are particularly good at granting resis-

tance to certain contagious diseases. This makes sense since places with higher population densities would have more humans available (and living in closer proximity) for diseases to infect and thus tend to be reservoirs where the infections could linger for long periods.* People who carried genes that coded for immune systems strong enough for them to survive this pathogenic onslaught proliferated while those who did not, died out. The study specifically notes that people from Anatolia in Turkey, where dense settlements have been around for nearly eight thousand years, carry a gene granting an innate resistance to tuberculosis, a disease that wreaked havoc in ancient cities. In contrast, people with almost no history of dense urban living, like the Saami from northern Scandinavia and the Malawians in Africa, do not show similar genetic resistance.

So it seems unreasonable to argue that people started digging up graves and inventing vampires as monsters only to explain the spread of contagious disease. If this were the whole story, vampires would be expected to have emerged as monsters much earlier. There had to have been other factors associated with the rise of the modern vampire, and clues to what these might have been can be found in one of the stranger vampire traits.

The sweet smell of garlic

According to some folktales, vampires are repelled by garlic, and for the most part this idea has remained tethered to the monsters for

*From a survival perspective, a bacterium or virus is in serious trouble if it finds itself in a small and isolated population. The disease will either kill off everyone and then die too when no hosts are left to infect or, under sunnier circumstances, everyone in the population will catch the disease, survive, and develop resistance to the disease so they never catch it again, a situation that also often destroys the disease. Pathogens depend upon having large numbers of people available to move through. This is why international travel is as much a boon to the diseases of the world as it is to economic development.

centuries. While modern enthusiasts of Gothic horror accept this trait as simply part of what vampires are, if you stop to think about it, being repelled by garlic is a rather bizarre quality to associate with a monster. The threat of sunlight makes the most sense. Evil things tend to be active in the dark and thus sunlight should naturally harm them. However, early vampire lore does not present sunlight as a threat. It is garlic that gets mentioned.

Garlic has a history of being used to protect the innocent from the forces of evil. The Egyptians believed that it could repel ghosts, and in Asia, garlic has long been smeared on the bodies of people to prevent them from being targeted by the spells of witches and wizards. Is there logic to this?

Some studies have shown that garlic fights infection, reduces blood pressure, and lowers cholesterol. For this reason, you could argue that any monster conjured up to explain inexplicable diseases, including vampires, came to be viewed as "fended off" by garlic because it was helping to boost immune system function. However, there is a problem. The scientific community is nowhere near any sort of consensus on the powers of garlic because its effects are, at best, weak. So one has to wonder: If modern researchers testing garlic's potential in controlled laboratory settings are having trouble determining if it really grants substantial benefits, were ancient people able to detect benefits at all? Or was there something else going on?

Foul odors created by corpses were often covered up by powerful smells like that produced by garlic, and there is some literature suggesting that, along with strong-smelling flowers, garlic was used at funerals where the corpse was getting a bit stinky. This may have been how it came to be connected with protecting people from the evil and the walking dead. Yet a most intriguing explanation for garlic being associated with vampires stems from the field of neurology.

During the 1600s, many Romanians believed that rubbing garlic around the outside of the house could keep the undead away, that holy water would burn them like boiling oil, and that throwing a vam-

pire's sock into a river would cause the menace to enter the water searching for the sock and be destroyed.* Intriguingly, Juan Gómez-Alonso, a neurologist at the Hospital Xeral in Vigo, Spain, points out that these three things all have a connection to rabies.

In a report published in the journal *Neurology* in 1998, Gómez-Alonso explains that while the rabies virus can cause animals to become increasingly paralyzed as it spreads, in afflicted humans it can have a frightening effect on the mind leading to a condition known among medical practitioners as furious rabies. As the virus attacks their nervous system, patients become restless; some leave their beds and wander the surrounding area. They have trouble swallowing, frequently drool bloody saliva, become fiercely dehydrated and very thirsty. Worse, they often suffer from persistent feelings of terror and have a tendency to become angry and aggressive. Most important, furious rabies frequently attacks the section of the brain controlling how the body manages emergency respiratory activities like coughing and gasping.

Nerve cells in the lining of the nose, throat, larynx, and windpipe become extremely sensitive to noxious fumes and liquids. For this reason, patients with furious rabies suffer from spasms and extreme fear when they are forced to endure exposure to pungent odors (like that of garlic) or are presented with water (remember, they are desperately thirsty but cannot swallow). What do these spasms look like? When confronted, rabies patients tend to make hoarse gasping noises, clench their teeth, and retract their lips like animals.

Rabies has another connection to vampires based upon the way it is transmitted. Unlike, for example, influenza and tuberculosis, which are spread invisibly by particles in the air, rabies is primarily transmitted through bites. Most infections in people occur when a

*Romania is of course home to Transylvania and thus the epicenter of all things vampiric. At least, that is what the tourism industry would have you believe. Historically, though, there is nothing that connects Romania any more tightly to the origins of vampires than England, Belgium, or Hungary. It just happens to be the place that Bram Stoker chose as Dracula's homeland.

rabid animal breaks human flesh with its teeth and contaminates the wound with the infected saliva. The animals that most commonly spread rabies to humans in this way are dogs, wolves, and bats, all of which have a history in legends of being associated with vampires (bats are more recent than dogs and wolves, but all have been connected to the monsters for a while). Human-to-human transmission of rabies is all but unheard of today; however, historical accounts of people being bitten by rabid individuals do exist, and it seems likely that incidents of authorities or doctors being bitten while trying to subdue or capture rabid patients have taken place. In this case, the bite wound would heal as the rabies virus incubated inside the newly infected person's body. The individual who made the bite would die, but in time a new monster would be born.*

Rabies is spread not only through bites. It can also be spread through sexual activity. Furious rabies can cause hypersexuality and leave people with powerful feelings of sexual excitement. Men with the condition can develop erections that last for several days, and one individual is documented as having had sexual intercourse thirty times in a twenty-four-hour period before the disease claimed him.† With such powerful sexual stimulation at work and with patients so severely mentally compromised, it is hardly surprising the rabies literature reports violent rape attempts being common.

However, as tempting as it might seem to make a direct connection between rabies and vampires, rabies is very much a disease of the living and does not suggest that anything is returning from the grave. This does not disqualify rabies from being involved with the evolution of vampires. The virus probably did inspire the concept of vampirism spreading via bite and then merged with the perception that vampires were bloodsuckers. It is the undead element of vampires that rabies does not resolve, but, as mentioned earlier, there are

*Sounds almost like something out of a horror movie. Oh wait . . .

†In case you are curious, the sources that document this do not specify whether this was with one partner or many.

many contagious diseases, like tuberculosis and influenza, that could explain how people came to believe that the dead were returning from the grave to claim their loved ones.

In the end, the fears that ultimately led to the rise of vampires as they are known today may have come from people trying to make sense of two disease epidemics that took place roughly simultaneously. Tuberculosis was at epidemic levels in Europe throughout much of the 1700s just as a major rabies epidemic struck the wild dogs and wolves of the region. In one case, in 1739, a rabid wolf in France bit seventy people, and in another case, in 1764, forty people were bitten. To what extent these bites led to cases of rabid people biting one another is unknown, but if such a situation did develop at the same time as a town was suffering a tuberculosis epidemic, fears from each medical condition could have become intertwined. Even so, the idea of a curse turning man into a monster appeared long before vampires.

Bestial origins

Rabies, like influenza and tuberculosis, is well known to have been around since the dawn of humanity. Studies analyzing the evolutionary history of the virus show that it has existed in its present form for thousands of years. And before it came to be associated with vampires, the virus probably was part of the werewolf myth. The suggestion that vampires might have actually evolved from werewolves will certainly irk the fans of the *Underworld* and *Twilight* stories, where vampires and werewolves are mortal enemies, but a close look at the earliest literary descriptions of werewolves makes it tantalizing to consider a connection.

The *Satyricon*, believed to have been written by the Roman Petronius around AD 64, contains one of the earliest descriptions of a werewolf transformation. The tale is told by a man named Niceros traveling along a road with a soldier he has recently met. Along the way they stop in a graveyard at night. "We set out about cock-crow,

the moon was shining as bright as midday, and came to where the tombstones are. My man stepped aside amongst them, but I sat down, singing, and commenced to count them up. When I looked around for my companion, he had stripped himself and piled his clothes by the side of the road. My heart was in my mouth, and I sat there while he pissed a ring around them and was suddenly turned into a wolf! Now don't think I'm joking, I wouldn't lie for any amount of money, but as I was saying, he commenced to howl after he was turned into a wolf, and ran away into the forest." Not long after, Niceros finds that all of the sheep at a nearby farm have been slaughtered by a wolf. Later, the soldier, now transformed again into a human, is discovered unconscious and under the care of a doctor.

So, a man strips naked, pees in a circle around his clothes under the light of the full moon, and transforms into a wolf. Was this a real wolf? Or was the man just snarling and howling as he lost some sort of mental control? The latter seems more likely in the event of a rabies infection, but the mention of a ferocious wolf attack could easily have been the work of a rabid wolf in the area. That the man is later found in bed under a doctor's care suggests he is actually ill. This hints that the werewolf as a monster may be a simplified version of the vampire before the fear of rabies became blended with the fear of other diseases.*

There is another side to all of this, though. In poor regions, where bodies were buried without caskets in shallow graves, it was not uncommon for wolves, which act as both predators and scavengers, to dig up the graves. They would eat human remains and, if caught during their feast, be thought by terrified witnesses to be

*Rabies is not the only condition that could have led the soldier to behave in this way. There are numerous drugs that can make people act like beasts and then fall ill. There is also a condition known as "excited delirium" that is starting to be recognized by medical communities. Sufferers strip out of their clothes, snarl and grunt like animals, lose control of their actions, become resistant to pain, and struggle fiercely when confronted. What causes the disorder is, to date, unknown but, like drug overdoses, it does not appear to be transmitted by a bite.

the exhumed person transformed into a creature of the night. This might, in fact, be why some early vampire stories describe the monsters as being able to take wolf form, and why, during the 1100s, William of Newburgh specifically mentions a pack of dogs following the monster as it spread death around town. Although, in some cases, and this will no doubt warm the hearts of the previously irked *Underworld* and *Twilight* fans, these wolf-scavenging activities also led to the creation of folktales suggesting that wolves were the sworn enemies of vampires and stayed near cemeteries to attack them as they tried to rise from the grave.*

The fears behind vampires and werewolves are very much the same. With both monsters there is the transformation of a relatively mundane human into a killer. On the face of it, this fear of a human becoming a predator is similar to the fears behind the Nemean lion, but it is taken a step further. In ancient Greece, lions were nocturnal hunters often not seen until it was too late. However, they were not common in towns, and people often felt safer near their homes. Werewolves and vampires made the monster human and, to a reasonable extent, allowed it to move among us disguised as a mortal. So it seems plausible that werewolf and vampire fears stemmed from more than just the threats presented by wild animals. They might also have come from fear of other humans.

Murder is as old as humanity itself. While Western audiences are most familiar with the biblical tale of Cain and Abel, this story is far from an isolated one. Tales of murder are central to the ancient myths of all societies; the fear of being murdered was very much a reality for many people in ancient communities. So were early werewolf stories a way of expressing this fear? In the tale of Lycaon, in Ovid's *Metamorphoses*, the connection seems obvious.

Lycaon, in an attempt to challenge the gods, presents Zeus with

*Yes, the antagonistic relationship between the werewolf Jacob and the vampire Edward in *Twilight* has a potentially scientific basis surrounding the scavenging behaviors of wolves in graveyards.

a platter of the chopped-up entrails of a person he has murdered. He doesn't tell Zeus this, though. Instead, he lies and declares it animal meat. Of course, with Zeus being a god, the ruse is detected. In a fury, the god slays Lycaon's sons with thunderbolts and curses Lycaon as he flees. Ovid writes, "Terror struck he took to flight, and on the silent plains is howling in his vain attempts to speak; he raves and rages and his greedy jaws, desiring their accustomed slaughter, turn against the sheep—still eager for their blood. His vesture separates in shaggy hair, his arms are changed to legs; and as a wolf he has the same grey locks, the same hard face, the same bright eyes, the same ferocious look."

As tightly linked as murderous behavior is to the werewolf in Ovid's story, there is a question of timing. Ovid was born in 43 BC and is thought to have died in AD 17 or 18. Murder, needless to say, existed before then. It is possible that, because of relatively low population densities, the unique mix of fears associated with rabies and violence did not merge until this time. However, it seems more likely that these fears and the horrible tales they inspired were just not written down and preserved until *Metamorphoses* and *Satyricon*. Certainly, the Mesopotamian *Epic of Gilgamesh*, written more than seven hundred years earlier than these two works, relates a transformation, initiated by the gods, of a man into a wolf. This might be early evidence of a fearful awareness that people in the community could, under certain circumstances, become as dangerous as predatory beasts.

Dawn of a new day

Regardless of their origins, vampires took a distinctly new form in Bram Stoker's *Dracula* in 1897. Passages from the book, like those found in Mina Murray's journal about her ill friend Lucy, show a connection between vampires and disease to still be present: "Lucy seems to be growing weaker, whilst her mother's hours are numbing to a close. I do not understand Lucy's fading away as she is

doing. She eats well and sleeps well, and enjoys the fresh air, but all the time the roses in her cheeks are fading, and she gets weaker and more languid day by day. At night I hear her gasping as if for air."

Dracula, with his cruel, cunning, and elusive ways, took vampire fears far beyond those associated with disease. By linking Dracula to a coffin rather than a grave, Stoker made him remarkably mobile and thus capable of migrating from distant lands to places that were very familiar to his readers, like London. By being made fiercely intelligent and wealthy, he was very different from early vampires that were crawling out of graves. Dracula could buy whatever he wanted and manipulate those around him in the most subtle of ways. The vampire no longer had to scavenge like a ghoul; he could seduce the beautiful young women of the upper class. Instead of a mindless zombielike creature rising from the cemetery in a far-off land, the threat came in the form of a ruthless and brilliant murderer mingling with all classes of the city. It is a concept that must have been acutely terrifying to Victorians who were uncomfortably familiar with serial killers.

Yet above all else, Stoker made Dracula a charmer. He was eloquent, aristocratic, and exceptionally good at winning over women. This element of Stoker's monster may well have had a connection to the hypersexuality associated with rabies, may have stemmed from fears of rapists, or may have simply been an attempt to play upon societal fears of innocents becoming sexually corrupted in cities through manipulation. Regardless, the result was the construction of a monster that chilled readers to the bone.

Today, werewolves, vampires, and zombies still hold a deep fascination for society on the whole. Books like Stephen King's *Salem's Lot* and movies like *Zombieland*, *Lost Boys*, and *The Wolfman* (among many others) tie into the ancient fears of deadly corruption being contagious. Although rabies is no longer as much of a threat to the Western world as it once was, contagious disease certainly is. With the SARS, swine flu, and avian flu threats that have struck society in recent years, fear of disease is very high. Anyone can be a carrier . . . the plumber, the cabdriver, the waitress at the coffeehouse,

a spouse, a child. They mean no harm, but in this modern age of emerging diseases, everyone is a threat, bringing us very close to the concept of the innocent who has become infected with vampirism. This could be the reason for the continued appearance of vampires and vampire-like monsters that spread their curse as an infection.

But there is more. Diseases have appeared in recent decades that, because of their ability to make people lose control of their minds, are somewhat similar to rabies and the poisons used by zombie makers. Dementia and the hardening of the arteries in the brain are well known to cause mental malfunction, but among the most dreaded is Alzheimer's disease, where the mind is slowly attacked, memories are destroyed, and identity is stripped away. Worse, Alzheimer's causes people to forget not only their friends and family but also social rules. Indeed, it is common for sufferers of the disease to lose their inhibitions, make rude comments, and exhibit sexually inappropriate behaviors.

Admittedly, Alzheimer's and other disorders that lead to mental degradation are not caused by a bite or even airborne particles, but the fact that they are becoming ever more common makes the fear of losing control of oneself a very real threat. Fears associated with these diseases are likely leading to a certain level of modern vampire evolution.

In the novel *Harry Potter and the Prisoner of Azkaban*, the Dementors, which guard the wizard prison Azkaban, are ghostly creatures that cast a chill over all that surrounds them and attack by feeding on happy thoughts. They do not bite with fangs or drain blood; rather, they drain away their victims' happiness. Alfonso Cuarón's cinematic portrayal of them is distinctly vampiric in nature—they make sucking noises as they hover over their victims and siphon off happy memories.

While Dementors seem somewhat undead in nature, what is scary about them is not so much that they might have returned from the grave but that they can damage the mind to the point where a person is left with nothing but his or her worst experiences. They leave their victims as husks of their former selves, tainted individu-

als who will never again be truly human. This is not much different from what happens to the victims of vampires who lose their humanity as they rise up as undead themselves, hinting that although the Dementor appears to be an entirely new monster, to some degree it is the vampire adapted to play upon the fears of today's audiences.

Twilight years

Much of the discussion of how modern vampires terrify people leaves out a huge chunk of modern vampiric representation that is as popular as ever—the role of vampires as heroes. *Twilight*, *Buffy the Vampire Slayer*, *True Blood*, *Blade*, and *Interview with the Vampire*, to name just a few, all contain vampires that are partially or entirely good. Why establish a reversal from monster to hero? Nobody is putting Medusa, Chimera, or the Minotaur in the role of hero today. Why vampires? Part of the answer may be related to an ever increasing awareness of how easily corrupted we are that is leading us to be fascinated by heroes who must relentlessly fight their inner demons.

Unethical human behaviors are scientifically better understood today than ever before, and it is becoming increasingly obvious that there are not bad people and good people in society. There are just people who can, under specific conditions, be driven bad. As a zoological example, researchers can look at the behaviors of other species and predict what sorts of circumstances might make a typically helpful and devoted member of a couple give up on family responsibilities. Some marvelous work by Judith Morales and Alberto Velandó at the University of Vigo in Spain and Roxana Torres of the National Autonomous University in Mexico looked at blue-footed booby males and worked out the precise conditions under which some males stayed to help look after the eggs and chicks that they fathered and others left the females to do all the chick rearing on their own.

The degree to which a male booby involves itself in family life depends upon two factors: how blue the feet of the female are and

how large and colorful the eggs are. Females with very blue feet are deemed healthy because vibrant blue means they are eating well and not particularly stressed. Large and colorful eggs are also considered a positive sign of health. You'd think males would stick around with healthy females raising healthy chicks, but you would be wrong. Males give up on family participation under these conditions, presumably because they know they are leaving behind a family situation that can manage itself. However, males also give up when they discover that their mates have inadequate foot coloration and have laid poorly colored eggs, presumably because they figure the chicks are doomed and there is no way for them to make a difference. So when do males actually help? When things are bad, but not too bad, meaning the mother has poorly colored feet *or* the eggs are unhealthy-looking, but not both.* Something about this mix of stimuli triggers a damage control mechanism in the male's head that leads him to stick around and do what he can to look after the young. And it isn't crazy to consider that fatherly behavior in humans might be somewhat similar. The deadbeat dad phenomenon could very easily be a simple matter of some fathers being exposed to specific conditions that trigger a difficult-to-control evolutionary response.

Psychologists are also conducting studies to determine what sorts of conditions must be present for a normally law-abiding member of a community to engage in criminal activity. Rather remarkably, a 2008 study led by Kees Keizer at the University of Groningen and published in the journal *Science* found that people littered and trespassed far more often if they were placed in an environment where garbage and graffiti were present than if they were in a clean environment. Yet the effects generated by the filthy environment were not limited to these minor transgressions. During one part of the study, Keizer's team secretly monitored people who discovered an envelope

with cash visible inside it (there was a small window in the envelope) that the researchers had placed sticking out of either a tidy and clean mailbox or a mailbox covered in graffiti and surrounded by litter. The envelope was stolen only 13 percent of the time when it was in a clean mailbox, but that figure rose to 27 percent in the filthy conditions. And these findings are not alone. A 2010 study led by Chen-Bo Zhong at the University of Toronto revealed that people are much more likely to behave selfishly when it is dark and they are unlikely to be seen. Similarly, a 2012 study led by Shaul Shalvi of the University of Amsterdam found that when people are asked questions, they are far more likely to lie if they must answer quickly than if they are given ample time to think things over. Indeed, just as the booby equivalent of deadbeat dad behavior is triggered by simple stimuli, it is becoming increasingly obvious that people tend to behave badly when specific conditions are present. In short, we are becoming sensitized to the idea that we are often in no more control of our lives than animals. And if a filthy alley can lead a person who would not otherwise steal to engage in acts of theft, and the wrong foot and egg colors can lead booby males to abandon their families, what conditions need to be present in a marriage to lead a husband or wife to enter an extramarital affair or resort to domestic violence?

Is a rising awareness of just how easy it is for good people to go bad increasing our interest in heroes who are battling their own bestial natures in a very visible way? Vampires, it seems, display this beautifully. Certainly Edward Cullen in the *Twilight* saga fits this mold by choosing to feed only on the blood of animals and to befriend, rather than eat, Bella, the girl he finds so fascinating. Bill in *True Blood* behaves similarly in the first episodes of the series by spilling his own blood to save the life of Sookie. Angel, the love interest in the *Buffy the Vampire Slayer* television series, is in the same position, passionately kissing a woman whose protective crucifix burns his flesh. Even vampires who are sort of confusing to place as decidedly good or bad, like Louis in *Interview with the Vampire*, who refuses to take human life and chooses to feed on the blood of sewer rats for the first half of the story, endure this struggle. Moreover, many of these vampires

*How do booby researchers test this stuff? They kidnap females when the males aren't looking and use crayons to color their feet gray. Seriously, folks, this is cutting-edge science in action.

experience pivotal moments where they are forced to duel with the monsters they truly are. To save Bella after she is attacked by another vampire, Edward must drink her blood and siphon away just enough of the evil vampire's essence to keep her from being corrupted but not drink so much that she dies. Similarly, Louis fights his desire to feed on the servants of his plantation, trying—and failing—to protect human lives from his own nature.

An explanation of why vampires are being viewed more positively over time could also be similar to the reason why snakes turn up in mythology as both monsters and godlike creatures of creation and fertility. As discussed with dragons, in spite of their long history of killing people, snakes have sometimes been viewed as something akin to divine because they seemingly survive off of no food and appear to stay perpetually young by shedding their skins. It is possible that the element of immortality that has woven its way into the modern vampire myth is causing perceptions of vampires to function in a similar way. They evolved from a long history of fear of contagious disease but have now attained a form in the human imagination that possesses a trait many today covet. Just as snakes historically have been both feared as monsters and worshipped as symbols of fertility, the vampires' role in society is changing as fear of them turns to enthrallment with their status as undying creatures. Could a key reason why vampires are now viewed as sexually attractive heroes be that they are presented as lovers who know no pain and who will be eternally young? It seems plausible, but there might be another element at work.

Vampires, as they have been known for so long, might now be entering their twilight years as the result of increasing scientific awareness. People knew next to nothing about communicable diseases when vampires first emerged as monsters, but this is no longer the case. When swine flu broke out, epidemiologists were quick to spot where the disease was appearing, how it was spreading, and, most important, how to contain it. Avian flu is an even better example. Researchers around the world are aware that the virus can, under rare circumstances, leap from birds to people and that some

strains of avian flu inflict high mortality. This is why the disease is getting so much attention and why monitoring stations have been set up worldwide to keep track of how the disease is behaving (and evolving) in other animals.* So fear of contagious disease is as present as ever, just as it was with the rise of vampires, but there is now a major difference: The vast majority of the population understands where the true monster resides.

Thrillers like *The Andromeda Strain*, *Outbreak*, *The Hot Zone*, and *Contagion* all give audiences a white-knuckle ride through the panic that could realistically strike if a horrific disease were to emerge. There is no question that the monster in these films is the disease, but this fact raises an intriguing question. Are these disease monsters merely a new form that the fears responsible for the rise of vampires are starting to take as scientific understanding spreads?

In *Interview with the Vampire*, the ancient vampire Armand comments, "The world changes, we do not. Therein lies the irony that finally kills us." The point is that a vampire's inability to cope with the ever-changing human world eventually leads to the vampire's destruction. However, when taken in the context of vampires and their life span in society as monsters, the statement could not be more true. The world is changing, and vampires as they have been known for so long may soon no longer find a place in it. Their only choice seems to be to evolve into heroes that feed on animal blood, like the Cullens in *Twilight*, or on artificial blood, like Bill in *True Blood*. To do otherwise may be to face extinction.

*One of the coolest monitoring systems is in zoos in the United States. Because zoos have a wide variety of animals that are very closely watched by veterinarians, and because these animals have good access to wild birds (think pigeons and ducks), if a virus evolves that is capable of jumping from birds to other animals, it is likely to be spotted first in a zoo, where experts are now watching.