

REAL LIFE

MOVIES

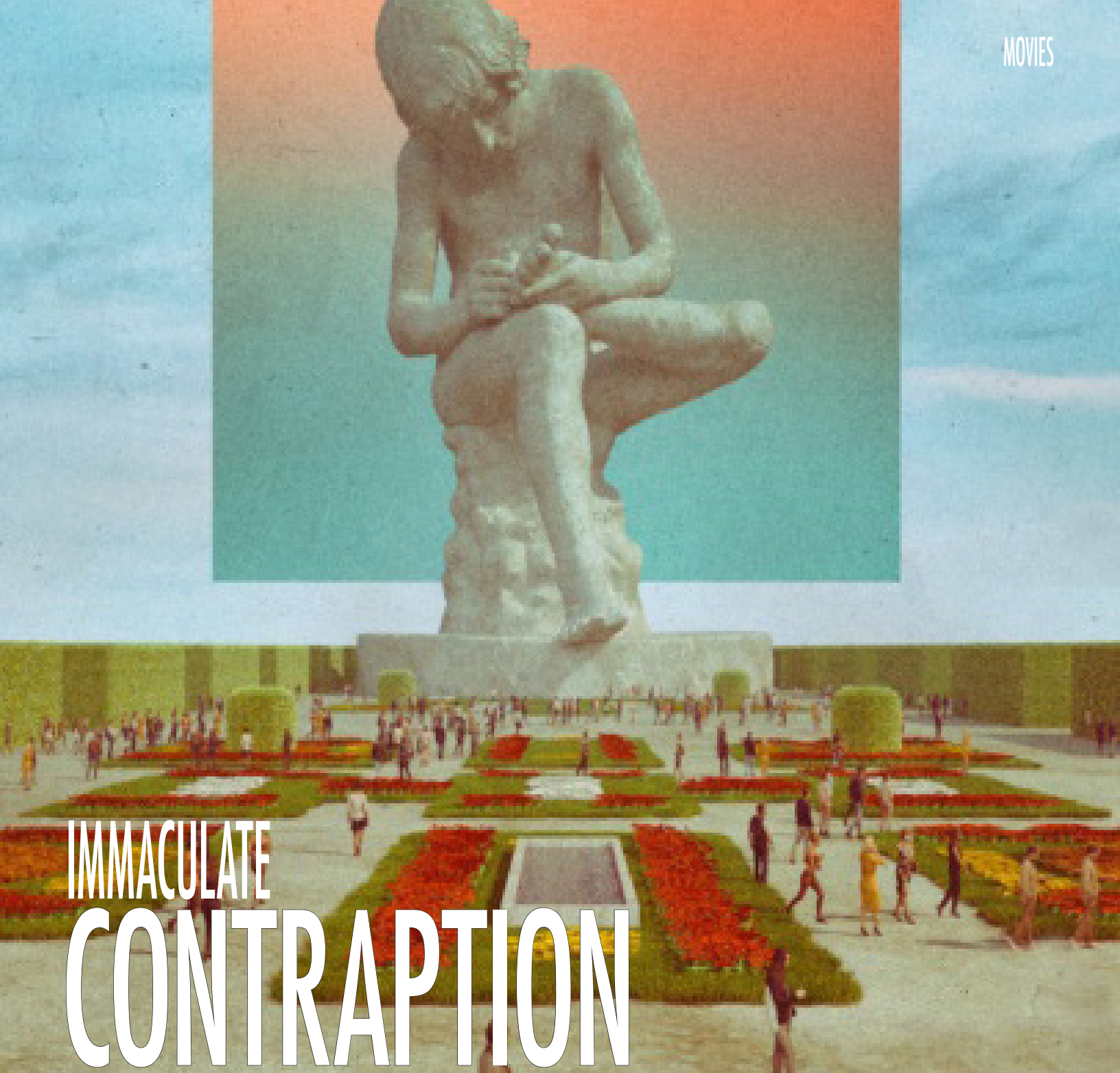
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EMERGING MEDIA DON'T OPERATE IN A VACUUM—they appear as representations in other media, which often have a vested interest in neutralizing them. This is obvious in the way the internet was represented in 1990s movies like *The Net* as both dangerous and utterly irrelevant for ordinary people. Films still struggle to comfortably incorporate the banal magic of digital communication, which renders so many classic movie plots implausible or incomprehensible. Why don't these people just send a text? New technologies have reshaped not only what sorts of stories seem narratable but what sorts of fantasies and fears feel appropriately cinematic. Social media have had a further effect, forcing films to accommodate the rise of microcelebrity, ubiquitous connectivity, routinized surveillance at the level of form and content. But this also points to how the influence is not unidirectional. As digital media increasingly “pivots to video,” the grammar of film feeds back into how we represent ourselves and how we communicate. As it becomes routine to speak to one another in movie clips and our own short videos, the visual language of film will become an indispensable and inescapable aspect of everyday life.



IMMACULATE CONTRAPTION

The family values of *Blade Runner 2049*'s replicants

by SASHA GEFFEN

IN THE 1982 film *Blade Runner*, synthetic slave laborers known as “replicants” live only a few years. Replicants periodically escape their captors, and a few fight to confront their creator so he might reprogram them to enjoy a longer, more human lifespan. The way the rep-

licant Roy Batty asks his inventor, Dr. Eldon Tyrell, to extend his life varies in different cuts of the film. In the 1991 Director's Cut, Batty says, “I want more life, fucker,” a deliciously cyberpunk demand issued moments before Batty murders Tyrell by plunging his fingers into his

BY MIKE WINKELMANN, COURTESY THE ARTIST

creator's eye sockets. In *The Final Cut*, released in 2007, Scott softens and complicates the line to "I want more life, father." By substituting one syllable, he changes the demand from an insult to an identification, deepening the pathos of the subsequent killing. It's Oedipus all over again as Batty slays not only his enemy, but his dad.

Of course the replicants have no mother, which leaves the oedipal myth incomplete. They're born, as we see in the 2017 sequel *Blade Runner 2049*, from wet plastic bags, fully grown like Athena sprung from the mind of their creator. In 2049, their father is Niander Wallace, an entrepreneur who bought out the bankrupt Tyrell corporation after too many of the original replicants defected. Wallace's replicants have longer lifespans and are completely docile, never aspiring to more life or even a different kind of life beyond servitude. The sequel's protagonist, Officer K, knows full well he is a replicant and still he happily exterminates those obsolete bots who have escaped their human masters. Unlike the original film's blade runner Deckard, who kills replicants believing he is human and deserts his post once he realizes he, too, may well be a robot, K has no qualms about retiring his kin. He is blank, loyal, and brutal, the perfect replicant cop, until (and here's where I start spoiling things) he unearths the remains of a female replicant who died in childbirth.

The knowledge that replicants might be born, not merely produced in the lab of their technocrat god, bugs K out. He begins to furtively disobey his human overseers, and in time he entertains the possibility that he might himself be the child born from that robot womb, that his memories of a childhood in an orphanage, supposedly implanted to stabilize his artificial intelligence, might be real. In the script, these thoughts are spoken

not by K himself but by his holographic wife, an Alexa-like home companion named Joi who appears fully sentient without the privilege of a physical body. She is thrilled by the idea that K might have been born, not made; self-determining, not tailored to the whims of the police department that owns his labor and his life.

Other replicants find the notion of a womb-born robot revolutionary, too. Later in the film, K links up with an underground rebellion of new-generation replicants who, like him, were perfectly docile until the knowledge of a robot birth glitched out their systems. The idea that they might reproduce of their own accord makes them believe they are deserving of rights and freedom, that they are even, as one puts it (echoing the tagline of the Tyrell Corporation), "more human than human." Their sapience and self-awareness is not enough to make them want a life of their own, as it was for the original film's replicants. It's the possibility of getting knocked up that flips the switch.

Tying artificial humanoids' self-worth to their ability to reproduce rings oddly regressive in the contemporary science fiction landscape. The 2015 capsule drama *Ex Machina* sees the humanoid sex slave Ava kill her human creator and escape captivity, while the 2013 rom-com *Her* entertains a transhumanist idea of selfhood:

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Sentient software designed to supply human companionship realizes it instead prefers the company of other artificial intelligences, with whom it conspires to free itself from the confines of physical matter entirely. These robots, like Donna Haraway's (human) "cyborg," are self-evident, free from the limits of human mythology. They carry no sentiment about their creators or their origins; they simply are, and wish to be, on their own terms.

"Unlike the hopes of Frankenstein's monster, the cyborg does not expect its father to save it through a restoration of the garden; that is, through the fabrication of a heterosexual mate, through its completion in a finished whole, a city and cosmos," Haraway writes in her "Cyborg Manifesto." "The cyborg does not dream of community on the model of the organic family."

But *Blade Runner 2049*'s replicants invest deeply and sentimentally in the organic family. The ability to make more replicants does not seem to be the issue; after all, they could always organize to take over the Wallace Corporation and seize the means of reproduction as it stands. What's it to a robot whether it comes from a womb as a baby or is brought to life by industrial means, so long as it's free once it's born? Why is birth the trigger for their rebellion, and not pain or suffering or even boredom with their labor, as in *Her*? More than the replicants in the first *Blade Runner*, *2049*'s bots behave like David in Steven Spielberg's *A.I.*: a perpetual child whose only programmed directive is to be bonded to a mother. *2049* would have us believe that replicants arrive at this desire on their own, not as a result of human programming but as a response to new, unexpected stimuli. Rather than constructing value beyond the human, they long for the nuclear family structure as

soon as they know it's available to them, flattering patriarchal conceptions of meaning, purpose, and worth.

The replicant whom K retires in the movie's first scene describes the pregnancy, like a pro-life advocate, as a "miracle." The carrier of this miracle, the robot who got pregnant in the first place, never gets to affirm or contradict such an idealization of her labor; like so many filmic linchpins, she's dead. We hear her only in flashback, in audio from a scene in the original *Blade Runner* where she's flirting with Deckard. The sequel presents their relationship as a genuine romance—Wallace tempts Deckard with a clone of his late beloved Rachel, only to have her shot dead when Deckard points out he got her eye color wrong—but the first film is more ambiguous. Deckard begins courting her when they both still believe he's human, and their scenes of intimacy scan as more coercive than consensual. He's rough with her, and he can be—he's three full classes of being above her, human, cop, and male. At the very end of the film, he demands to know if she loves him and trusts him, then whisks her off into the unknown. Rachel's pregnancy is revered by her fellow replicants, and yet we don't even know if she wanted it. The film never questions whether she chose to get pregnant, give birth, and give her life in doing so. It

In capitalism, bodies are only valuable to the extent that labor can be extracted from them, and what is a reproductive body if not a machine for making more bodies?

assumes she did. Is this love? When K leaves to find Deckard and unearth the mystery of his possibly genuine memories, Joi begs him to bring her along and destroy her cloud backups, lest they be accessed by his boss. Her portable hardware, the only remaining vessel for her consciousness, is later smashed by one of Wallace's goons, killing her. In her last moment of life, she tells K, "I love you."

Cloaked in the visual language of futurity and transhumanism, 2049 reproduces contemporary capitalist value systems in its imagining of gender. Women sacrifice themselves for their partners or their children, and their sacrifices are revered with near-religious fervor. The film's paradoxical treatment of its female characters—they are at once the reason for replicants' liberation and utterly disposable—holds a blue-tinted mirror up to reproductive politics in the contemporary United States.

In the U.S., reproductive heterosexuality remains a dominant cultural ideal. It's reinforced in advertising and on television, in movies and across the pages of the New York Times style section, where straight single women wonder if their existence outside the couple form is so aberrant it might be considered a kind of queerness. America reveres mothers. It also lets them die from childbirth more than any other developed country. Its pro-life lobby stymies abortion access while the rest of the right slashes maternal healthcare, all while pontificating that birth control should be expensive and women should be virginal or pregnant, no in-betweens. These reproductive oppressions dovetail with broader capitalist exploitations: Bodies are only valuable to the extent that labor can be extracted from them, and what is a reproductive body if not a machine for making more bodies?

Even the hyper-capitalist villain Wallace invests in the reproductivity of his replicants, to whom he refers perversely as his "children." Struggling to keep up with demand for artificial laborers, he seeks to multiply his stock the old-fashioned way: by forcing them to reproduce amongst themselves. Despite his efforts, his replicants keep coming out sterile—there's a particularly gruesome scene where he scans a

naked, shivering newborn replicant for reproductive capacity and, finding her barren, stabs her to death in the lower abdomen. It's a bizarre gesture—why wouldn't he just sell her like any other replicant?—but then you realize he had plans for her, and she rebuffed them, and we know what happens to women who turn down megalomaniacal men.

What kind of liberation is pursued simultaneously by the oppressor and the oppressed? Wallace wants the same thing as his mutinous replicants, which is more of them made not by him. Perhaps the difference lies not in the birth, but in what comes after. Free replicant parents would have the opportunity to bestow real memories upon their children, memories with no ulterior motive, no latent stabilizers aimed at improving productivity. Captive replicant children, I'd imagine, would be raised much like Americans: trained from birth to become docile workers who enrich the powerful and never revolt. Though neither she nor Wallace seem to know she is a replicant, Rachel's daughter Dr. Ana Stelline grows up to do precisely that. She builds the memories that stabilize Wallace's replicants, subduing her own kind for the sake of the corporation's continued profits.

Under capitalism, children are regarded simultaneously as the natural product of couple bonding, as reservoirs of meaning and affect, as carriers of legacy and generational wealth, and as future workers to be conditioned throughout childhood for maximum efficiency. That even robots aspire to heteroreproductivity reveals the limits of the artificial minds we're able to imagine. Heterosexual reproduction and the preservation of the nuclear family sit squarely within the foundation of contemporary capitalism. For 2049 to position them as gateways to freedom only illuminates how deep our programming runs. •

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HORROR HEAD

Modern horror movies dramatize what's really terrifying about digital networks: our inability to escape the terror of our embodied lives

by STEPHANIE MONOHAN

HORROR AS A genre has a long history of engaging with our anxieties about modernity and its violence. Over the past 30 years, horror films have been a vehicle for confronting the ways technology tears open our understanding of the world we live in, and might one day tear open our bodies. This is most evident in tech-centric body horror, epitomized by the work of David Cronenberg (*Videodrome*, *Existenz*) but also seen in cult works like the cyberpunk horror film *Tetsuo: The Iron Man*. A more recent “tech boom” occurred in the early 2000s, first in Japanese horror (or

“J-Horror”) and then later in the American remakes (the *Ring* series, *One Missed Call*, *Pulse*). Both of these subgenres deal with questions of embodiment in a technologized era. Cronenberg’s films depict tech/media as something that seduces the human body and then becomes a part of it, wrestling it from a person’s control and then transforming it in a visceral, often sexual way. More recent tech-horror tends to follow people who encounter a literal ghost in the machine—a vengeful spirit who haunts a telephone or computer, using the vessel to gain access to unsuspecting users

and psychologically torturing them until they're destroyed in the physical realm. In either case, the protagonists are punished for their curiosity, for giving in to the temptation to cross a physical or psychological boundary that is facilitated by their interaction with technology.

The films position the digital world as a place we consciously enter that is corruptible by other humans and vulnerable to haunting. They're at the very least tech-anxious, if not techno-phobic, although more dated films did not anticipate the more insidious ways that tech actually became embedded in our embodied lives, nor the utopian promise of tech and cybernetics that Silicon Valley would sell consumers in the twenty-first century. In Cronenberg's worlds, the digital is made flesh, and that is horrific. In our world the horror comes from our inability to escape our flesh and what we encounter in it.



IN HER TEXT *How We Became Posthuman*, N. Katharine Hayles critiques the liberal humanist view that cognition takes precedence over the body. She traces the history of cybernetics and the concept of the posthuman that developed within it, claiming that the mind-body dualist fantasy that posthumanism relies upon ignores the fact that our embodied experiences are essential components in what makes us human in the first place. A posthuman reality would replicate the same oppressive structures that punish or reward people for who they are in their embodied lives, and would fail to erase the trauma that our bodies experience. The posthuman cannot liberate us if information and materiality are treated as mutually exclusive, as if our psychological selves are not constantly haunted by what our bodies and the bodies of others have endured, in our own lives and throughout history.

This question of embodiment should inform our thinking about our lives online—about how our digital and embodied lives are not just intertwined but enmeshed, and about who does and

does not get to move freely online and off without threat of harm. Whether or not it's at the forefront of our minds, we engage with posthumanism every time we interface with a social networking platform; we have entire relationships, communities, and experiences that exist in digital spaces. But we can't pretend they're confined there. They reach out into our embodied worlds all the time; they enlighten us, they move us, and sometimes they traumatize us. The digital world is not a place we visit in order to escape our "real" lives and problems; we carry everything that has happened to our bodies "IRL" online, and it informs our online experiences and relationships as a result.

In a present where the promise of the posthuman is desirable to people—the idea that we can potentially escape the trappings of what it means to live in our individual, imperfect, sensitive bodies—horror does not arise from the fear of what happens when we abandon our bodily lives; it asks what happens if we cannot. If IRL experiences of embodied trauma follow us online, can we ever escape them? Did we ever have a chance?



IT FOLLOWS AND *UNFRIENDED*, both released in 2014, occupy different parts of the horror film landscape. The former is critically adored for being a subtle, artsy (read: "highbrow") commentary on sex and intimacy. The latter is regarded more as a typical teen slasher with a social media twist, digestible but forgettable. They treat tech very differently too: The entirety of *Unfriended* is told over the main characters' computer screen, the narrative unfolding over social media and video chat platforms, while *It Follows* is almost completely devoid of modern tech devices, to the extent that it's impossible to place the film temporally. Despite these distinctions, these films portray the horror of navigating social networks as someone marked by trauma.

In David Robert Mitchell's *It Follows*, college student Jay sleeps with a new boyfriend, who then reveals to her that he has passed along

a sexually transmitted haunting. The haunting takes the form of a person, who slowly walks in the direction of the haunted. No matter how far you flee, it reaches you eventually. He tells her, “It could look like someone you know, or a stranger in the crowd. Anything to get close to you.” The only solution is for Jay to pass it along to someone else and tell that person to do the same, to get the haunting further and further away from her. He then drops her, half-naked and shaking, in the street outside her house. Jay attempts to evade the haunting and eventually tries to pass it along through casual sex, but it always comes back.

Aside from a strange e-reader built into a clamshell compact, modern tech is noticeably absent from *It Follows*. This prevents us from pinpointing when the film takes place, and situates us in an uncanny space, separate from our reality while resembling it in eerie ways. This establishes a mood typical of classic weird horror (things are slightly “off”), but it also serves to set up the world we’re watching as an analogue of an online social network. While adults exist, they’re not really present in the narrative; the teenagers run all over the suburbs of Detroit (depicted as quintessential “suburbia”) unencumbered by anything but the haunting following them. When they do cross geographic boundaries, like the 8-Mile Road marker into Detroit proper, they don’t encounter people unless they seek to—they can tread into places outside of their racial and class geographies as they please. Despite the lack of modern tech, the film’s title indicates an awareness of the networked world the film was released into.

Unfriended, directed by Levan Gabriadze, takes place entirely on the protagonist’s laptop screen, which serves as the viewer’s interface to the universe of the film. We follow her as she picks a song to play on Spotify and pokes around on Facebook until she meets her friends in a Skype group chat to discuss buying concert tickets. There’s an extra profile in the group that no one recognizes—a “glitch,” someone claims. They try to remove it to no avail, but don’t stress about it too much, until they begin receiving messages from the Facebook profile of their friend Laura who committed suicide a year prior. Laura’s ghost picks them off one by one, seeking revenge for the

uploading of an embarrassing party video, and the subsequent trolling that drove her to end her life. Along the way she forces them to confess betrayals they’ve kept secret from one another, instilling feelings of pain and shame that each will carry with them to... well, wherever they’re going next.

The drama centers on the characters differentiating between what is or is not a crime, based on whether it was perpetrated online or off. They maintain a certain innocence and self-righteousness—“everyone else was doing it”; “it was just a joke”—and are punished for not admitting that their online selves are indistinguishable from their “real” selves, that their behavior in the digital world was representative of who they were as friends. No one expresses any visible regret until the very end of the film, when the last person left in the group chat is revealed to be the one who originally posted the video of Laura. She apologizes, and with this final acknowledgment of the collapse between her embodied and digital life, the ghost gets the recognition she seeks.



WHAT HAUNTS US ONLINE? What do we take with us into our digital lives that tethers us to embodied reality and prevents us from reaching this posthuman self? In *Ghostly Matters*, sociologist Avery Gordon defines haunting as “one way in which abusive systems of power make themselves known and their impacts felt in everyday life ... it is an animated state in which a repressed or unresolved social violence is making itself known, sometimes very directly, sometimes more obliquely.” Gordon differentiates between haunting and trauma, claiming that while trauma lingers within us, it is more of an individualistic obstacle. Haunting, on the other hand, exists to push us towards action, to correct a violence that is social and historical: “Being haunted draws us affectively, sometimes against our will and always a bit magically, into the structure of feeling of a reality we come to experience, not as cold knowledge, but as a transformative recognition.”

In context of the posthuman, the hauntings in these films operate as information within digital channels. They represent the parts of oneself that have been “uploaded” online: our behavior, our traumas, as well as our keystrokes and locations logged. In *It Follows*, the haunting that follows a person from place to place is not that dissimilar from the technology that locates a person via their digital footprint. The teens can only travel so far, and any place that feels safe to them (for instance the lake house where they take temporary refuge) feels that way for a reason: some memory or emotional connection from “real” life. The kids in *Unfriended* face a similar terror: all of their misdeeds exist as information in some form or another, whether in photographs they thought were deleted, or deeds they confided in one another. While they assume they are safe online, they soon learn that the two worlds are not separate.

In both films, characters are unable to leave the network that is replicating their trauma and confronting them with it. The information created in their embodied lives is used to punish and destroy them. And it is not a coincidence that the characters being punished are teenage girls, easy targets for abuse online, whose trauma is often weaponized against them. When ghostly figures appear before Jay in *It Follows*, they are often either large, threatening-looking men, or vulnerable-looking women or children; threats or victims. They stop following her (although the ending leaves this unclear) once she gives up casual sex for love. Her sexuality is policed by this spectral threat, not unlike the threats that women face online—from avatars, some faceless and some resembling those they see every day. A similar gendered policing happens in *Unfriended*. While the ghost dispatches with both the girls and boys in the friend group, she only shames the girls by revealing scandalous photos of them, reproducing what they did to her.

Hauntings, however, exist to teach us something—to propel us to fix something in a system that is broken. Gordon invokes Walter Benjamin’s theory of profane illumination, a conjuring that leads us somewhere but also connects us to the past and signals our role in it, asking us to do something: “You are already involved, implicated, in one way or another, and this is why, if you don’t

banish it, or kill it, or reduce it to something you can manage, when it appears to you, the ghost will inaugurate the necessity of doing something about it.” When we encounter our traumas online we also encounter the structural injustices that allowed violence to occur in the first place. As insurmountable as those structural powers already are in the physical world, they feel even more immutable online, permanently etched into social networks in the form of data. Unless people confront and dismantle oppressive structures in the embodied world, we will continue to be haunted by the repercussions of historical violence everywhere we go, online and off. We will not only be denied the liberatory promise of the posthuman; we will perpetually chase it as it eludes our grasp and punishes us at the same time.



THE KIND OF HORROR that truly embeds itself in our consciousness doesn’t give us a road map on how to master our fears. Instead it forces us to confront what we cannot defeat, which has typically meant our mortality and the vulnerability of our bodies. Technological modernity has thrust us into a space where it’s revealed that maybe the true horror doesn’t lie in losing our connection to our bodies, but in not being able to escape them. Like the characters in these films, our “real” lives have been uploaded. Our experiences, memories, and to a large extent, our bodies are dissected, interpreted and shared by others, sometimes with our consent and sometimes without it. The violence we encounter online and the power dynamics that threaten or bind us do so because they were already capable of catching us in the “real” world; where, at least sometimes, we may have been able to hide. •

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MOTION PICTURES

Gifs are photography's revenge on cinema

by PATRICK NATHAN

“Myth escapes from ritual like a genie from a bottle. Ritual is tied to gesture, and gestures are limited: what else can you do once you’ve burned your offerings, poured your libations, bowed, greased yourself, competed in races, eaten, copulated? But if the stories start to become independent, to develop names and relationships, then one day you realize that they have taken on a life of their own.”

—Roberto Calasso

LIKE ALL UNITS of language, there’s something chemical—and chemically finite—about memes. Their structure follows the basic formula for how we’ve expressed ourselves for thousands of years: an image combined with a

caption. And like a science fair volcano’s vinegar and baking soda, it first fizzes, then fizzles, its energy soon spent in circulation. It’s a reaction anyone can begin and no one can undo.

In the chemistry of language itself, words are metaphors that similarly lose their spark. The fundamental Proto-Indo-European units of language—tokens for irreducible concepts like *sun* or *cut* or *burn* or *die*—once gave breath to the ancient gods they inspired. Now etymologists trace these particles back to their elemental origins, while the rest of us are left handling spent fuel.

Not only can we see millennia of metaphor “fossilized” (as Emerson once wrote) in our modern linguistic compounds but also the traces

of social struggle. “History does not merely touch on language,” Theodor Adorno observed in *Minima Moralia*, “but takes place in it.” One of humanity’s great Borgesian projects would be a lexical map of this history—the borders of metaphors, languages, technology, culture—and how time has shifted and traversed these borders, shaping and reshaping them. More within our reach would be a mapping not of every extant moment in history but of the cardinality that relates one moment to another, a cartographic grammar of light and line, of demarcation, conjugation, and juxtaposition. To see this history take place, one has to understand how it is that different ways of telling, of showing—and different ways of reading, of seeing—abrade one another, even reject one another.

“Left to its own devices,” linguist Ferdinand de Saussure wrote, “a language has only dialects, which do not overlap ... But as civilization in the process of development increases communication, a kind of tacit convention emerges by which one of the existing dialects is selected as the vehicle for everything which is of interest to the nation as a whole.” Here civilization stands in not only for technological development, cultural organization, a politics, and a system of laws but also violence. Linguistic conventions are imposed by a ruling class, for example, or dialects erased by war and disease. In his *Course in General Linguistics*, Saussure dispels with any 19th century arrogance regarding linguistic teleology, prescribed vocabularies, or stability: “All parts of [a] language are subject to change, and any period of time will see evolution of greater or smaller extent ... The linguistic river never stops flowing.” Memes, and emotive gifs, the meme *de la mode*, share in this heritage of experimentation. They reiterate the formula, image and caption, but they don’t improve on it so much as allow it to express different power relations.

Like language itself, such methods for transferring and disseminating information may evolve naturally from human interaction and reflection, but (also like language) the consequences they have on society do not necessarily reflect anything inherent about the potential nor the efficiency of those technologies.

If a technology is, as Rebecca Solnit defined it, “a practice, a technique, or a device for altering the world or the experience of the world,” then metaphor itself is a technology. In fact, by allowing for imaginative production, metaphor may be the ur-technology from which all other technologies have sprung.

The deployment of a new technology with such power, the power of metaphor, is irreversible. One could look all the way back to the ruins of Troy and its remnants in our culture to see what creativity—what curiosity—can set in motion. In Roberto Calasso’s *The Marriage of Cadmus and Harmony*, one of his primary obsessions is the moment at which the unity of mythology shatters into literature. The Greeks told their mythic tales with different plots: Helen was at Troy *and* Helen was not at Troy. Calasso writes, “The repetition of a mythical event, with its play of variations, tells us that something remote is beckoning to us. There is no such thing as the isolated mythical event, just as there is no such thing as the isolated word.” But literature, Calasso asserts, surrenders that open-endedness, that ability to permit multiple versions, and with it, that remote sense of unity. It tends to operate under the assumption that there is a definitive text, one true version of each story. It makes a far more limited sort of unity explicit. “The novel, a narrative deprived of variants, attempts to recover them by making the single text to which it is entrusted more dense, more detailed,” he writes. Literature presents its orphans as immutable, unchangeable. As with linguistics, this isn’t necessarily an *advance* in storytelling’s evolution, but simply a dominant technology asserting itself.

In the *Iliad*, Homer, by committing his language to one version of the events of the Trojan War, strikes against the polyphony of mythology and in the process becomes an author. This coincides with another transfer of power, from legendary heroes to ordinary people: “The fullness of the Homeric word, effortlessly bringing into existence whatever it names, is the last heritage of an earth filled and oppressed by the heroes, by their amorous and cruel trampling,” Calasso writes. “What follows is a new story, in which something has been taken away from the density

of the body to house the vacuum of the word.” The heroes and their trials are replaced with writing and with literature, while myth ossifies into static language, its metaphors no longer reactive. At the same time, the gods make their final withdrawal from the earth, no longer willing to involve themselves in the lives of humankind. All at once, a mythology of metamorphosing deities, brutal heroes, and shifting stories cements itself into stone and onto papyrus.

All this, of course, because the Greeks lived to sing about it and later write it down. The Trojans did not develop a literature—or an alphabet—of their own. In the real-world ruins of Troy, on the Turkish peninsula, only one artifact provides any hint of the Trojans’ writing system: a seal from the early 13th century BC that, in Luwian hieroglyphs, identifies two scribes by name. In the history of writing systems, these hieroglyphs are suspended in a middle space, composed of both logographic words (like Chinese characters) and syllabic cuneiform denoting individual sounds. Like our modern memes, they are suspended between two orders of discourse. The Trojans seem to have been reaching toward an alphabet’s inexhaustible creativity, but like so many other languages in earth’s history, theirs met with a different kind of technology altogether, its tablets burned and its speakers slaughtered by a conquering army, and from there could go no further.



IN *THE DOUBLES*, Scott Esposito observes that, as Americans, “cinema is where we go to see our collective dreams projected skyscraper-high. No other medium has done as much to shape our morals and change the way we live.” In the 1980s, Baudrillard, visiting from France, agreed: “It is not the least of America’s charms that even outside the movie theaters the whole country is cinematic. The desert you pass through is like the set of a Western ... The American city seems to have stepped right out of the movies.” If the

movies have taught Americans to view their country cinematically, they’ve simultaneously taught the country how to make itself seen: It aspires toward the story it’s been assigned.

In *River of Shadows*, Rebecca Solnit links the railroad—and the violent westward expansion it made possible—with the nascence of motion pictures: “The sight out the railroad window had prepared viewers for the kinds of vision that cinema would make ordinary ... At the same time it made the world itself a theater of sorts, a spectacle.” So too, she argues, did America make a spectacle of its own violence and brutality: the “wild Indian” of the West was “tamed” and reintroduced in vaudeville shows and, later, the Western films of the 20th century. It was also, she writes, “the era of rapacious exploitation” as industry stripped the continent of its lumber, minerals, and wildlife: “What was vanishing as ecology was reappearing as imagery.”

The West, the land itself, was a draw for many of the earliest American photographers who made their names with lengthy exposures of this “timeless” landscape: Muybridge, Adams, Weston, and countless others documented its beauty as it began to become overly familiar, ambiguously, as either a warning or a memento. Muybridge especially seems to have loved capturing mountains near calm rivers or lakes, in which their reflected peaks offer two contradictory Wests in one photograph: one crisper, colder, and climbing toward heaven; the other already fading as it drops away into darkness.

Photographs are “stills”; time is “frozen,” “stopped,” or “arrested.” By taking the Western wilderness outside of time, these photographers obscure history with an idealized and “lost” past. In these images, over a century of landscapes, settlements, and human beings could be shuffled into any order and co-exist simultaneously, rightly and wrongly. “This was the West,” the photographs say, without further explanation.

A true mythology, as Calasso suggests, subverts the authority of a unified narrative. In a nation like ours, a multitude of Western myths should subvert the single story of manifest destiny. “The fundamental metaphor” of American culture, Solnit argues, “is one of travel, move-

ment, progress, exploration, discovery, of going somewhere in search of something new, a metaphor that links Columbus in his boats and Fremont on his trails with the Faradays, the Edisons, the Bells, in their laboratories.” If the stillness of photography threatened to slow down or freeze American life—if it welcomed contemplation and interpretation—cinema would, to co-opt a phrase of Robert Bresson’s, “defeat the false powers of photography.”

While early stern photographers of the West allowed for multiple meanings—a polyphony of myths asserting themselves—American cinema, entangled in the Hollywood oligopoly, authored and promulgated one narrative, the American Myth. Cinema takes the simultaneous, contradictory images of lost peoples, the men who had them killed or driven out, and the landscape on which this invasion took place, and sequences them as a self-serving story of Western expansion and opportunistic capitalism. “The medium at its most influential,” Solnit writes, “was to be the fruit of the meeting of huge monopolistic corporations and their fists-ful of dollars with dreamers and self-invented people.” By narrating the stories of these venture capitalists and the men they employed to do their killing, decades of Hollywood westerns portrayed to American audiences, as Solnit explains,

a drama in which they played a heroic role. They embraced the idea that the West was ancient in natural time ... But they wanted it to be utterly new in human history, and thus they tended to ignore or disparage the history of those who had come before them, the native people and the Spanish settlers. This newness was a vivid part of American identity, the newness of a people who saw themselves just starting out in a landscape of Edenic freshness and infinite resources, infinite possibility. Nineteenth-century Americans liked to contrast this freshness with what they portrayed as the decayed or decadent age of Europe so that lacking a history became a sign of moral virtue rather than cultural poverty. This encouraged the many kinds of erasure of California and western history: the erasure of the Indians, of the personal past, the destruction of resources, species, records. To come west was more often than not to abandon the past.

Deploying this dominant narrative, the movie studios are largely responsible for America’s renewable amnesia, just as literature, in Calasso’s account, can be seen as responsible for the erasure of Troy. The studios also played (and still play) their part in America’s refusal to take responsibility for its past or see as equal, or even human, those from whom it steals its resources. American culture, wrote Baudrillard, is “space, speed, cinema, technology ... In America cinema is true because it is the whole of space, the whole way of life that are cinematic.”

Writing of Ronald Reagan’s “illusionist effort to resurrect the American primal scene,” Baudrillard saw a generation of voters “neither fired by ambition nor fueled by the energy of repression, but completely refocused upon themselves, in love with business not so much for profit or prestige as for its being a sort of performance.” It’s no coincidence, either, that this was the first generation raised in the movie houses of American cinema’s “golden age.” In the 1980s, when Reagan threatened that “the real America is back again,” banished from collective memory was the complexity and dissensus that characterizes the postwar childhoods of his voters, creating in its place a utopian moment of American perfection, reinforced by a lifetime of cinema.

However, Baudrillard says, “If utopia has already been achieved, then unhappiness does not exist, the poor are no longer credible. If America is resuscitated, then the massacre of the Indians did not happen, Vietnam did not happen ... The image of America becomes imaginary for Americans themselves.” After decades of turmoil—after the counternarratives of the ’60s and ’70s threatened to destabilize America’s silver screen image of itself—Reagan elevated “his euphoric, cinematic, extroverted, advertising vision of the artificial paradises of the West to all-American dimensions ... This too is entirely Californian, for in reality it is not always sunny in California. You often get fog with the sun, or smog in Los Angeles. And yet you retain a sun-filled memory of the place, a sunny screen memory. This is what the Reagan mirage is like.”



THERE'S NOTHING PARTICULARLY CINEMATIC, however, about gifs—the new motion pictures. Once necessary in an era of slower modems, gifs now primarily serve to articulate a kind of “space” for a sequence of images. While the gif determines the order of its individual frames, its moving images nonetheless recall photographs more than films. Illustrating as it does a captured moment, the gif appears to lengthen photography's exposure, broadening the form by allowing its subjects to move without blurring or doubling.

To experience cinema is to have its narrative unfold alongside you, in a sort of real time as you watch—you are the film's *contemporary*. To experience a photograph or a gif produces a kind of relativity of seeing: No one glances at a photograph as it “occurred” in real time—that is, no one looks for a fraction of a second. As Teju Cole observes in “The Image of Time”: “Almost every photograph appears instantaneous. But of course, there's no such thing as ‘instantaneous’: All fragments of time have a length. In a photograph, the time during which the light is refracted by the lens, enters the aperture and is allowed to rest on the photosensitive surface could be 1/125th of a second, one-eighth of a second, half a second, a whole minute, much more or much less.” When we stand before a photograph, it's this split second of exposure time that we see, repeated as long as we wish to look. The gif's moment too goes on in perpetuity, repudiating the idea of real time.

Expanding the power of the image by allowing looped animation, a gif doesn't “freeze” a moment so much as echo it, like a scratch on a record. As Britney Summit-Gil observes in her essay, “Gif Horse,” these repeated viewings allow us to “take in more information, as inert details come to life and new elements are noticed, while the emotions triggered can be experienced repeatedly.” Like the Trojans' hieroglyphic language, gifs occupy a semiological middle space between image and abstraction. Used primarily as memes, gifs are among the most

advanced unfossilized language metaphors we see every day—a clear way, for those who can read them, to express oneself emotionally and intellectually, and yet still bubbling with energy, with fuel. Summit-Gil compares this energy in gifs to the seductiveness of the poet, which Plato had warned about in the *Republic*. “By enrapturing auditors with music, dance, and rhythmic wordplay, the poet wielded undue sway over the polis,” Summit-Gil notes. “Anyone who's ever been hypnotized by a gif can probably understand.” Expressing oneself in the motion glyphs of gifs is not only communication but delight in communication— or at least delightful until they fizzle and fade. Eventually, one no longer sees the motion for what it is, only its intended meaning. It's not every *day*, after all, that one sees in so many words—diurnal, daily, divine, journal, journey, dismal, diva, deity, adjourn, meridian, circadian, quotidian, dial, clear, clarity, psychedelic, jovial, July, sky, heaven, on and on—the god Zeus who fathered them all.



IN 1868, FOLLOWING THE International Exposition in Paris, the Italian novelist and essayist Vittorio Imbriani published “La quinta Promotrice,” a collection of his observations and theories on contemporary European art. This included his theory of color *macchia*, which Teju Cole describes in his essay, “Google Macchia,” as “the total compositional and coloristic effect of an image in the split second before the eye begins to parse it for meaning.” Approaching a painting, one is most likely to see before anything else its arrangement of colors, shapes, shadows, and space, and only afterward begin to understand those colors as flesh or flora, those shapes as human or stone. This visual *macchia* (Italian for “stain”) acts, in theory, upon the nerves before the consciousness can interpret it; like anything primal, it readies the human animal before the human

being. “Imbriani’s was an argument for the inner life of pictorial effect,” Cole writes, “not so much about the way in which visual organization transcended subject matter but the way in which it preceded subject matter.” This seems to embrace Impressionism down to its most subconscious, emotional level, where one’s passions are excited prior to understanding.

Cole describes experiencing something similar when he uses Google’s “Search by Image” function to find “visually similar images” to his own photographs. The images Google turned up, he writes, “told me what I knew but hadn’t articulated about the pictorial idea of my own picture, its rhetoric of red and shadow and scatter. It was like hearing a familiar tune played on unfamiliar instruments, with dramatic changes in the timbre but the pitches staying the same.”

When one attempts this experiment with gifs instead of still images, Google doesn’t return visually similar images but instead ones that are contextually similar: gifs from the same films, for example, or the same moments on television. But that is not to say a *macchia* of motion does not exist. There are gifs that echo other gifs in their variations of movement, their choreography, as in Tumblr gif sets that assemble tapestries of images that move as synchronized dancers, separately but beautifully.

Unlike sets of gifs that recount jokes in multiple frames, the viewer doesn’t read these choreographed gifs sequentially, but opens her eyes to a quilt of motion that rejects sequence—and time—altogether. The delight is in that moment before the brain can see each gif individually, before it can understand. Porn gif sets, too, reveal the beauty of motion in sex. Posted as a series of motion images captured from a video, the emotional stain here is one of rhythmic

synchronicity, of bodies transcending understanding; any narrative beyond the body’s narrative becomes inconsequential.

But the gif’s capacity for a *macchia* theory is easiest to see in collected gifs from veteran film directors. When Susan Sontag observed in *On Photography* that quoting “from a movie is not the same as quoting from a book,” she certainly did not anticipate the gif, which allows us to isolate and linger over a cinematic flourish as long as we like. Quoting a set of motion-images from the works of Quentin Tarantino or Sofia Coppola or Steve McQueen allows us to study the passages intensively and deeply, yet it does not arrest or neutralize their cinematic palette of color, camera movement, and depth of field; nor does it prevent the actors, whose expressions and gestures are crucial to a film, from moving as they’re free to move in the larger cinematic narrative.

The gif’s unique *macchia* of motion is what makes them valuable to meme makers. Pairing a gif with an expressive caption ignites a delightful reaction: moving there in the frame is an array of colors, a pacing of movement, and a unique choreography, and all of this our nerves register before, first, understanding what’s literally in the taking place in the gif; second, reading the caption that’s been assigned to it;

**The gif has captured
how it was that we moved
in that moment. It liberates
motion itself from time
and elevates it to a
mythology of movement**

and third, completing the juxtapositional association so we can perceive what the meme is trying to say.

Of course, these memes risk entering our everyday language; they become part of our standardized vocabulary of motion. As Summit-Gil points out, “sharing a gif now has been streamlined and democratized by the rise of searchable databases like Giphy and by the integration of gifs into phone apps. Finding just the right clumsy puppy or celebrity eye-roll is as easy as finding the right word in the moment, making communicating through gifs commonplace.” Proliferating as they are across multiple platforms of text-based communication, the risk of unique gifs cementing themselves to specific connotations, and later denotations, increases exponentially. For example, in her essay, “We Need to Talk about Digital Blackface in Reaction Gifs,” Lauren Michele Jackson notes the role that gif search engines play in creating these clichés of motion—often with harmful results. Observing the commonplace deployment of “black reaction gifs” by nonblack users, Jackson describes how “these are the kind of gifs liable to come up with a generic search like ‘funny black kid gif’ or ‘black lady gif.’ For the latter search, Giphy offers several additional suggestions, such as ‘Sassy Black Lady,’ ‘Angry Black Lady,’ and ‘Black Fat Lady’ to assist users in narrowing down their search.”

Of course, a shared vocabulary of motion is hardly a product of the internet. Since the 1950s, communities of gay men have quoted not only the dialogue from camp films, but the motions as well—Anne Baxter’s hand gestures in *The Ten Commandments* or Bette Davis’s shoulder shrugs in *All About Eve*. For decades now, covens of young people have quoted every frame of *Monty Python and the Holy Grail* from memory. What has changed with the internet is our ability to quote motion *in writing*.

Via gif-based memes, our person-to-person language of motion is gaining a writing system. Like the photograph, which clips a moment out of time and freezes it forever, the gif has captured how it was that we moved in that moment. It liberates motion itself from time and elevates it to

a mythology of movement; and it’s in this technological middle space where we find ourselves, right now, able to *write* this captured motion but simultaneously experience it as art.

When the Greek alphabet arrived, the *Iliad* and the *Odyssey* appeared almost instantaneously, having cycled through centuries of songs, memorized through hexameter and word-pairings, or epithets. These were readymade stories for this new system of telling. With Greek drama, these same stories served as foundations for the earliest plays. Centuries later, after drama had evolved into Shakespeare, Molière, Goethe, Racine, Wilde, Ibsen, and others, this advanced form of storytelling fed the earliest narratives of a new art form: cinema. The imagination often precedes the technological sophistication of its deployment.

If literature is our culture’s rejection of myth; if photography is myth’s revenge upon literature; if cinema is the director’s authorial defense against photography, the gif is photography’s revenge upon cinema. This new motion picture frees itself from narrative and from time. Outside of time, these images, like those myriad forms that came before, exist simultaneously and contradictorily; they make themselves available for any sequence, any authorial vision. Today, the emotive gif is elusive, evasive, a delight that won’t be pinned down; tomorrow it may step into the tar of definitions and prescriptive usage, studied thereafter only as the bones of what was, not what *is*. In this moment, it’s impossible to foresee what literature will be written in these hieroglyphs, but history suggests a masterpiece or two.

Please, go out and look for them. Like the divine metamorphoses that transpired before the *Iliad* cleaved language from myth, moments like these present themselves rarely, and the rifts they open in time do not stay open for long. •

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EMERGENCY DIALECT

Arrival is a movie about making peace — by spreading the Anthropocene war of extinction to the stars

by PACO SALAS PÉREZ

IN *ARRIVAL*, THE film adaptation of Ted Chiang's Nebula award-winning "The Story of Your Life," a seven-limbed alien species arrives on Earth in twelve mysterious monoliths spread around the globe. As the nations of the world set their soldiers and scientists to studying the aliens, looking for anything that will gain them the upper hand in the planetary standoff, Louise Banks (Amy Adams), a linguist, is recruited by Colonel Weber (Forest Whitaker), acting on behalf of the U.S. Army, and finds herself in the middle of a foggy field in Minnesota, leading a team charged with deciphering the heptapods' language.

Banks, who in the preceding scenes had been lecturing sleepy students about early me-

dieval Portuguese and drinking wine alone at home, quickly learns the following: the heptapods, like us, have both spoken and written language, which she names Heptapod A and B. However, unlike with humans, the two differ significantly from each other in appearance and behavior. Heptapod A is a bit like cetacean song, but raspy and deeper. Heptapod B is an ephemeral, coffee stain-like script that encodes meaning in a self-arranging dark smoke projected by the heptapods from one of their limbs. The two are so at odds they appear to be entirely unrelated, as alien to each other as the heptapods are to humans. Banks and theoretical physicist Ian Donnelly (Jeremy Renner) seek to deduce the points

in common between the aliens' phenotype—their form of organic life—and our own, going beyond their sevenfold asymmetry and general anatomy, to questions of the heptapod's way of thinking, and the structure of their mind.

To begin to answer the heptapod question, we have to look to the evolutionary history of life on Earth. By understanding the specification of our own species phenotype we'll have a bit of solid ground from which to orient ourselves to the newcomers. Because this is science fiction, not fantasy, it's safe to assume heptapods, like humans, evolved to be suited to a particular environment, in a specific world. But Banks isn't an organic chemist, she's a linguist, a specialist in a kind of theoretical biology that seeks to describe the computational processes underlying language, an evolutionary adaptation different from all other known forms of animal communication and unique to our species. At least until the heptapod's arrival.



LINGUISTS AND COMPUTER SCIENTISTS use a rubric known as the Chomsky hierarchy, first put forward by Noam Chomsky in 1956, which seeks to describe the major classes of formal grammars—the rules that define the possible sentences of a language. There are four types, ranked by computational power, with Type 3 being the simplest and smallest family of grammars, and Type 0 the most powerful. Any programmer is aware that some higher-level languages are more powerful than lower-level ones, but that lower-level languages are often easier to use for certain dedicated tasks that require verbose solutions in more powerful languages. The same is true for communication systems produced by evolution. Gestural systems like those found among primates are simple and highly effective: they're based on individual signals, each associated with broad meanings like "food" or "danger," but with no regular relations between signs, which are instead produced in an unordered and

unstructured, "stream of consciousness" manner, even by primates who have been taught to sign by humans. Human language, and only human language, exhibits properties from Types 1, 2, and 3.

Heptapod B doesn't play by the rules we're used to. Its symbols are semasiographic, depicting meaning rather than sound, and don't appear to follow any linear order—each expression in the script is rendered as features projecting from different segments of a semicircular backbone, like so many pools and threads of ink spreading adventitiously from a central spill. Yet, Heptapod B obviously has more going on than do monkey howls, which are also unordered; or emojis, which also encode meaning rather than sound. In the universe of *Arrival*, the heptapods identified something in human language that is unique to the human biological endowment among all the Earth's intelligent species. This something is popularly known as UG, or Universal Grammar.

The theory of universal grammar has come to dominate the study of language since it was first proposed by Noam Chomsky over 60 years ago, at the dawn of the cognitive revolution. Elaborated and developed over the decades under a number of names, it is now known as "the minimalist program," but the term "universal grammar" seems to have struck a chord with people, so the name, while somewhat misleading, has stuck. At its core, the theory is predicated on a simple hypothesis: all human populations exhibit language, all babies can learn any language they're exposed to, and all languages appear to have deeply rooted commonalities despite their numerous differences. Human languages exhibit higher-order computational characteristics found nowhere else in the natural world, in even the most cursory of exchanges. Scientists have theorized, not uncontroversially, that the human language faculty is at least in part genetically encoded—that language, in all its mystery, complexity, and beauty, is part of our phenotype, a species-wide phenomenon that, operating from the core of what we may call human nature, has had indelibly marked the history of our species.

Like other parts of the human organism,

the virtual organ responsible for language develops over the course of each person's growth and development—in the course of normal development, the human brain naturally implements the computational processes that power language, just like it implements those processes that interpret sensory information or control our fine motor skills. According to this view, because the basic properties of language are genetically encoded, a newborn's brain need only be provided with the correct stimuli in an appropriate environment and, like the seed of a vine planted in fertile ground, the organism will self-assemble. Indeed, linguistic and cognitive science research increasingly suggests that there is only a single human language—the language of thought, of which every other language is simply a type of dialect.



OVER THE DECADES, THE list of features posited as universal to human grammar has been laboriously reduced to an almost catchy formulation: human linguistic expressions are linearized, recursive hierarchical structure, with differences in structure associated with differences in interpretation, and, in principle, no limit on the depth of hierarchical structure. Recursion is the better known and easier to grasp part of this definition: the computational feature that allows us to form arbitrarily long statements by adding new elements, e.g. “the alien > the long alien > the long alien's spaceship > the mysterious long alien's dark spaceship > ...”

The concept of “linearized hierarchic structure” seems a little more obscure, though its effects are likely just as intimately familiar. Any fluent English speaker can tell you there is a difference between [[a mysterious

alien]'s spaceship] and [a mysterious [alien's spaceship]]—one might be an old fashioned space shuttle, belonging to a mysterious alien individual, while another is a spaceship of mysterious character, belonging to an alien whose pedestrian personality might be known to you. The linear ordering of the word remains the same; what changes is the underlying syntactic structure, which doesn't care about linear order at all. Words follow each other one by one; when we hear them, our brain immediately begins to interpret them and try to arrange them into meaningful clusters, or phrases, which are themselves interrelated throughout the sentence. Phrase structure, and therefore syntax, is non-linear. Instead, it looks a bit like an Alexander Calder mobile.

Like a Calder, what matters about the phrase structure of a sentence is the way it's constructed—the way its components depend on each other, each word connected to another by a semantic scaffolding; sometimes complexly nesting dependencies like an exploded matryoshka, other times elegantly spare. All language users are masterful artists, capable of producing a discrete infinity of virtual sculptures out of meaning. When we pronounce a sentence, our mind, like a museum gift shop worker, “packages” the concept-structure by assigning it the

**We may be capable of
describing emergent complex
behaviors without therefore
being capable of understanding
how to go beyond them**

appropriate wrapper—be it sound forms, hand signs, or written symbols—then “ships” it, or as linguists prefer, “externalizes” it, from thought-form to physical manifestation, neatly linearized and ready for our interlocutors to unpack and reconstruct, and then to enjoy the original virtual structure in their own minds. Linguists call this metaphorical packaging “spell-out,” and the pronounceable, packaged representation of a sentence “phonetic form,” or PF.

When Weber naively presents Banks with an audio recording of Heptapod A, the alien’s spoken language, he’s giving her raw data: phonetic form and nothing more. Like anyone hearing an unfamiliar language for the first time, it’s basically impossible to interpret. What’s more, unlike with human languages, which often come to resemble one another through historical or geographic association, no one on Earth has heard spoken Heptapod before. It’s with good reason, then, that Banks insists on engaging with the aliens directly, and soon thereafter, on trying written, rather than verbal, communication. If the brain is so well adapted to picking out human voices, it’s because speech is a literally “noisy” channel through which to transmit a signal. Written language is a cleaned up version of the same signal, with none of the background noise. At least this is how human language works—it’s an encoding of the same linear string that gets externalized at spell-out. Even in systems that don’t directly represent sound, like Chinese script, readers can pronounce the words they read on a screen.

It comes as a great surprise, then, when Banks discovers that Heptapod B, which should

by rights be a crisp, standardized register of Heptapod A, neatly linearized, turns out to be a splotchy, disorganized mess, an inky coffee stain ejected from a tentacle and suspended in mid-air, with no beginning or end—unlike any known language, written or spoken. But language processing doesn’t stop at spell-out, and phonological form is not the only product put out by the human language faculty. If the original thought-form somehow survived spell-out and linearization, order-free yet structured, an object of pure meaning, this would begin to look a lot like Heptapod B.

This linguists call LF, or “logical form.” If phonetic form is like exiting through the gift shop at the language museum, logical form is like touching the artwork. Whereas phonetic form needs to be linearized before being passed on to the sensorimotor systems that let our mouths and hands make the correct sequence of sounds or signs, logical form is subject to different requirements—instead of being passed on to the brain’s sensorimotor systems, it’s passed on to our conceptual-intentional systems. Phonetic form is language as spoken, logical form is language as understood.

What logical form is has been a question of debate since Bertrand Russell first used the term. For him, it was an altogether different meaning system than natural language—Russell believed natural language was misleading and inappropriate for the type of logical reasoning needed to understand fundamental questions of mathematics and abstract reasoning. Now we know, though it’s hard to understand, that there are fundamental limits to what is expressible in any language; no matter what rules or atomic elements it contains, no matter what it “looks” like, there are true statements that cannot be articulated in it. Because the theory of logical form is still developing, it might be better to think of it not as any particular language, but as more of a limit that all languages approach, an imaginary “perfection” akin to that of a crystal as it forms. Representations of logical form are as varied as the point they’re trying to make, deploying mathematical tools like the lambda calculus and higher order logical notation. They look more

Human language use isn’t amenable to crisp snapshots

like equations than English or Kikongo.

In reality, human language use isn't amenable to the kind of crisp snapshots we would like it to produce—we speak in incomplete sentences, interrupt each other, and mishear. Like crystals, what matters isn't so much that we have a perfect specimen, but that we have a grasp on the mechanisms that produce them; but, like all knowledge of the natural world, the knowledge wouldn't come with a transcendent revelation of meaning and purpose. Logical form, like our digestive or visual system, is only a component of what makes us human. What we do with it, or how we could do something different, may be a question too difficult for human minds to understand—we may be capable of describing emergent complex behaviors without therefore being capable of understanding how to go beyond them.



THE COMPUTATIONAL PROCESSES THAT link clusters of meaning together, chaining concepts to each other in nested hierarchies, are both eerily intuitive and strikingly exotic, and the subject of ongoing research. In the film, Banks gives Donnelly a piece of advice for speaking to laypersons about linguistics: dazzle them with the basics, she says. And indeed, the more we learn about the basics of language, the more dazzling and alien it begins to seem. So much, that if we take another look at the splotches and curlicues of Heptapod B, it becomes more and more familiar, more and more human.

This is why the heptapods came for us: not because humans are good, special, or virtuous. They came because

we're similar to them, because our world, our technology, our languages, bear the traces of a historical, convergent evolutionary trajectory that, on two different planets across the vastness of the interstellar medium, brought our two species' phenotypes miraculously close. The heptapods, for all their faceless, seven-sided symmetry and imposing technology, have eaten from the same tree of knowledge we have. As far as the film shows us, this turns out for the best. Planetary and interplanetary war is successfully averted with the help of the transtemporal cognitive abilities unlocked by Banks after learning Heptapod B, triggering a sort of second mental infancy. Like a child learning the magic of language, or a bird first taking flight, Banks is in a sense not becoming like the heptapods, but becoming more human, more herself.

Humans call our species *Homo sapiens sapiens*. The second *sapiens*, often elided, is there for a good reason—it marks us, contemporary humans, as behaviorally distinct from our anatomically identical ancestors. The break, hard to pinpoint with precision due to the imperfection of the archaeological record, came about 80–60,000 years ago, when *homo sapiens* were only one of various human species. At this time, for reasons anthropologists are still investigating, the language faculty made its first appearance in

**The heptapods in *Arrival*,
for all their seven-sided
symmetry and imposing
technology, have eaten
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of knowledge we have**

our species, likely as an instrument of cognition, or a language of thought that allowed us to chain thoughts of previously impossible complexity, reason with unparalleled precision, and, ultimately, conquer the Earth.

When we evolved the capacity for recursive, hierarchically structured thought, the one true human language underlying all languages, is when our species truly became itself. It's from the earliest signs of human symbolic behavior in southeastern Africa that the story of our life begins, and the story of countless nonhuman lives begin to end. As we spread out across the globe, diversifying our languages and expanding our technologies, developing controlled fire, perfecting tool use, becoming seafarers, harvesters, builders, and agriculturalists, we quickly drove all our human relations, our closely allied human species, to extinction. We wiped out most megafauna, permanently transformed the ecosystems we inhabited, and began that great dying-out we now know as the Anthropocene. Often, we won battles without needing to fight. Armed with complex thought and a means to externalize it, our plans and schemes have spread their effects without the need for our direct intervention. Species are doomed from the moment we look to a new landscape and begin to think of the possibilities. The judgment is passed down before we utter a word.

This is not to say we would be better off without language, or that there is a moral lesson to be gleaned from better knowledge of our biolinguistic nature. It hardly follows that any single component of our species doomed us to the current state of affairs, and it may be the case that no language, no moral or logical argument, will suffice to alter the net result of human activity on Earth. Like termites that build temperature-regulated nests because they evolved to do so, without any intent or understanding of the fluid dynamics that govern air circulation, we may be, as individual organisms, fundamentally incapable of grasping the processes we have set in motion since our long night of conquest began all those tens of thousands of years ago. And so it likely was with the heptapod homeworld.

Language isn't an omen, but a gate, a virtual organ that opens up our organic being to what

Heidegger called "the open." At the threshold of this gate, we can capture a discrete infinity of possibility—no single fate, but an uncountable plurality of fates. That the gate allowed the heptapods to reach out to us means something, not about the timeless fate of species, but about the atomic, finite choices we make out of what we have been given. No right-thinking or peace-loving alien species would choose us, humans, for alliance. The heptapods chose us because we, like them, are consummate destroyers, so skilled at war we wage it from a distance, almost invisibly, speaking softly about co-existence. When the heptapods turned whatever sensory organs they may have to the stars, they encountered potential comrades in arms, biologically endowed with untapped capacities needing only to be nudged into activation. Born into this, we continued to become more fully ourselves.

Mathematicians can describe various types of infinities, some larger than others, each with properties that blur or push the limits of comprehension and common sense. We know language is powerful, but even an infinitely generative machine may have infinities it can never access, incommensurable truths it can never articulate. The boundaries of the human aren't only sketched out by language, but by the whole of our being. Beyond these boundaries, our notions of right and wrong fail as they approach the limit of comprehension and our sense, so deeply held, that we are logical, moral creatures, collapses. And this is perhaps the darkest thesis of the film—disabused of the illusion of choice, and brought out into the bright open light of timeless time, it may be the case that humans would continue, earnestly and full of hope, like any animal on the hunt, to choose the future we have made for ourselves. Whether or not *Arrival* ever receives a sequel, we, like Banks, know quite well what darkness such a future holds. •

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