Metaphysics in a Black Hole: Technology and the Unfathomable

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Abstract:

Voltaire stated in 1764 that "almost everything is imitation", a line of thinking which would endure throughout philosophy. Over 200 years later, a similar sentiment was made by Guy Debord in *The Society of the Spectacle* in 1967, by which time imitation had, for Debord, become reality: "all that was once directly lived has become mere representation". The intermediary role that technology plays in our relationship with reality has been the focus of many philosophers, including Martin Heidegger, Don Ihde, Hubert Dreyfus and Albert Borgmann, all of whom are discussed in this paper. While scientific discourse often treats technology as a pillar of precision that promises greater access to an essential reality—as evidenced by the first image of a black hole in 2019—philosophers remain anxious about technology's alienating effects. From Galileo's telescope and the desire to replace the human eye, to the "appification" of everyday life, this paper explores the metaphysical tensions that plague science and technology as instruments for retrieving a "lost" reality, and the limits of depicting the world—and the universe—through technology.

Keywords: metaphysics, reality, technology, astronomy, black holes, photography, augmented reality, virtual reality, apps

"Fathomless dark creation"

On April 10, 2019, NASA made history by capturing the first ever photograph of a black hole, located in the Messier 87 galaxy, approximately 53.49 million light years from earth (Figure 1). Using a network of eight telescopes around the world—known collectively as the Event Horizon Telescope—the image revealed the distorted, fiery components of the black hole and its event horizon—the point at which light cannot escape. Many onlookers joked that the black hole resembled the Eye of Sauron from *The Lord of the Rings*. While it has no official name, language professor Larry Kimura bequeathed the supermassive black hole a Hawaiian name—*Powehi*—meaning "the adorned fathomless dark creation." The name has been welcomed by many scientists, especially since two of the project's telescopes were in Hawaii.

Although efforts had previously been made to capture the black hole (and indirect images of black holes did exist, such as the ones from Chandra X-Ray Observatory) the instruments to do so were not strong enough to produce a clear enough image. The Event Horizon Telescope,

however, gave a much clearer (and more disconcerting) image. Astrophysicist Andrew Strominger tellingly described the upgrade of technology: "It's like going from a cheap smartphone camera to a high definition IMAX cinema" (cited in Chen, 2019).

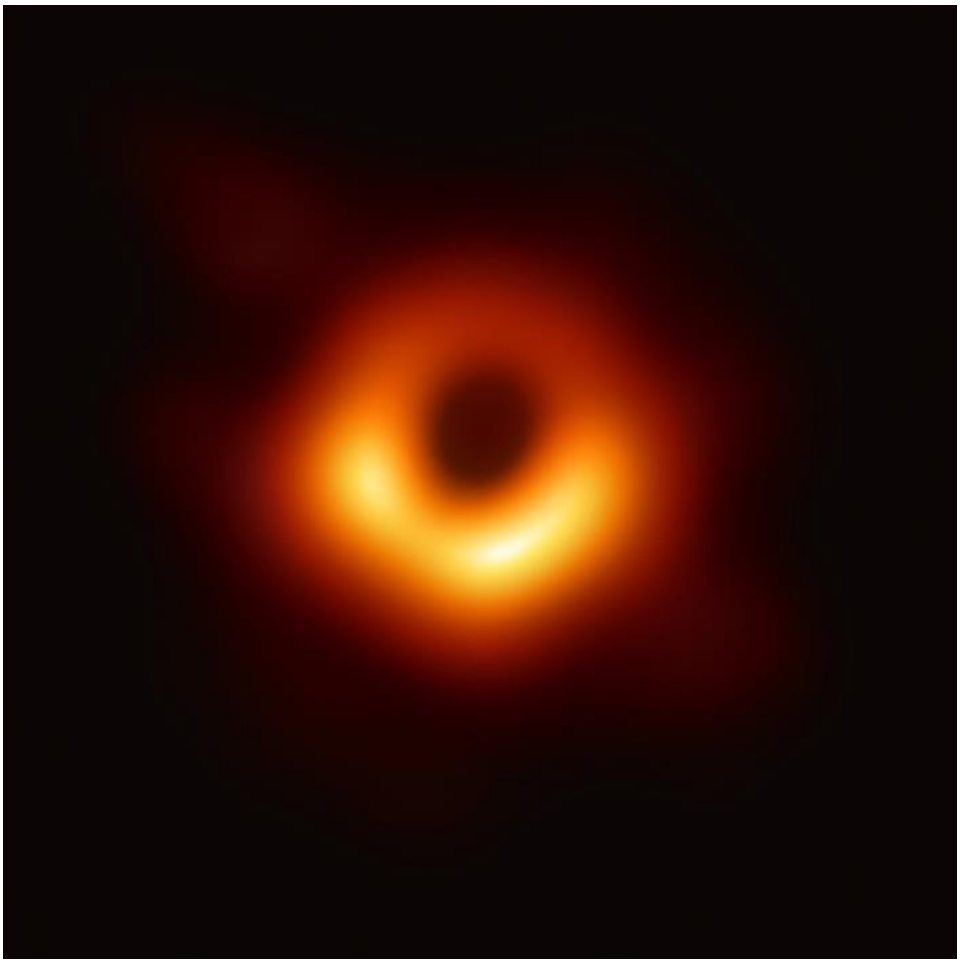

Figure 1: Black hole – Messier 87 (CC BY 4.0)

The image completes a holy trinity of monumental scientific images that includes Pale Blue Dot and Earthrise. Collectively, these images are more intrinsically metaphysical than they are strictly scientific; they tell us of our place in the universe, as well as the ultimate fate of the universe and the apparent fate of humanity. They serve to communicate our insignificance, while also reminding us of the fragility of being.

But the image captured of the black hole differs in a significant way from the other two photographs. Not only is it not a picture of earth from a unique viewpoint, but it is the image of something never before seen, something that logic states *cannot be seen*. Einstein hinted at the possibility of black holes in his work, but it took decades of research before their existence could be proven. Unlike stars and the moon, which we can see even without the aid of technology, black holes are fundamentally unseeable.

Sheperd Doeleman, the director of the Event Horizon Telescope, called the black hole "a one-way door from our universe" (cited in Reuell, 2019). He also claims that we are "entering the

era of precision, horizon-scale observations of black holes. We've never had that before, so we're now able to ask a bunch of questions we couldn't even conceive of before."

But this "era of precision" nevertheless opens up a perplexity of interpretation. The revelatory detail that such a photograph is said to provide ignores what precision cannot reveal, and forces us to ask questions that go beyond science. What is the actual purpose behind capturing an image of a black hole? Does such an image accentuate or demote our appreciation of its fearsome magnitude? For many, the picture solidifies what is, in effect, an impossible object. As with many flawed assumptions about photography, the image denotes a kind of infallibility, and there is a tendency to view photographs as impartial, completely accurate reproductions of reality. Beyond technical flaws, there are other representational issues with photography. As Fricke and Baker note: "Technically perfect photos may not show what is required and they may even be misleading" (2001, 277). There are, they contend, representational "distortions" (258) in photographs. Greg Siegel also writes that "photography's 'obvious advantages' can, on this view, be a dangerous lure [...] the positive efficiencies of mechanical reproduction are reduced to magical distractions, inutile perversions. Technological ease becomes an enticement to waywardness, an inducement to indolence" (2014, 207).

But Sebastien Smee reminds us that we are not, in effect, dealing with a photograph: "it's worth noting that this image isn't really a photograph. It is information recovered and transposed into visual data with the help of various "calibration and imaging schemes." Jeffrey West Kirkwood (2019) similarly notes that "the fuzzy orange donut that supposedly depicts the super massive black hole at the center of the Messier Galaxy 87 is certainly beautiful to look at. But what does it mean to create a picture *of* a black hole?" (39). He elaborates:

> Data collected from these many telescopes were algorithmically sorted and synchronized, after which a visual representation that could be called a "picture" was ultimately assembled. This is an image of a vast series of protocols, not an object. And appropriately, as if a brilliant bit of NASA-funded metacritical media theory, the celestial object to which the image corresponds is definitionally *impossible to depict* (39).

The desire to capture that which is impossible to depict, particularly something as infamously evasive as a black hole, appears to be a response to what Umberto Eco called society's fear of infinity. For Eco, we use lists to impose order on that which is infinite. Lingel et al, writing in 2016, three years before the M87 photograph, note that "black holes are certainly confrontations with the infinite" (5684). They are also "confrontations with narrative, articulating the boundaries of the explicable." They explain:

> Black holes and wormholes offer a lens for thinking about our relationship to technology and imagining the future in terms of metaphysical silence. Or perhaps, as portals of silence and transit, black holes and wormholes are instances of metatechnological silences — gaps that articulate what science fiction refuses to imagine (5685).

Yet the M87 image is understood as something that can alleviate the burden of imagination, specifically through the aid of technology. For Lingel et al, black holes "*refuse narration*" (5686). The M87 image is certainly an attempt to offer a particular narrative, but it is ultimately unclear what the actual nature of this narrative is, whether it is about achieving some kind of objective precision that alleviates the threat of infinity, or whether it is simply there to communicate the apparent progress of cosmological technology, a way of communicating humanity's triumph over the bewildering evasiveness that black holes and the cosmos at large pose.

The narrative that such an image advocates is one that Marshall McLuhan theorised decades earlier, that is, that the medium, the technology, is the message itself. It is not merely the content that is of interest to us (although the M87 image is certainly of interest for its disconcerting content), but the fact that this hitherto "impossible" object, what Timothy Morton might call a "hyperobject", has, at last, been "validated" through technology. Technology is, once more, the instrument that is understood as providing a conduit between the human mind and reality. The Event Horizon Telescope project is, in effect, an effort to demystify and force that which is unknown into the realm of human language and comprehensibility, to remove its dreaded ambiguity. By photographing a black hole, we not only declare humanity's triumph over nature, but are also imposing a narrative on that which, as Lingel et al notes, fundamentally refuses narration. Black holes have, for half a century, represented the fundamental hurdle of not only encountering but of *communicating* the inexplicable. For Smee, "what we're seeing—fittingly, given what we know about black holes—is not so much a presence as an absence. A dark space defined by an asymmetrical outline, an 'emission ring.'" In this sense, black holes constitute a metaphysics of *absence*, in contrast to Martin Heidegger and Jacques Derrida's notion of a metaphysics of *presence*. Smee reminds us that "at a fundamental level, the image is telling us more about what we still don't know than what we do know."

Galileo's Worldview

The relationship between science and reality is often predicated on the notion that scientific instruments can effectively and conclusively capture enigmatic celestial objects. The invention of the telescope in the 1600s, for example, ushered in a new method of observing the universe that fundamentally restructured what it meant to possess knowledge of the world and the cosmos. Jovana Đurović explains that Galileo saw his telescope as a profound and uninterrupted way of viewing the universe that was based on reason and which contributed to the science of empiricism: "In 1610, a decade after introducing the telescope, Galileo writes instructions for its use, in which he ascribes the instrument a very radical status: namely, that it does not assist or improve the human eye—*it replaces it*" (2014, 20). She observes that Kepler and Galileo "introduced abstract, mathematical language as another mediator of nature" (20). The telescope, she explains, was understood as displacing the eye, and thereby theoretically dispenses with human interpretation (20).

The notion of replacing the human eye with technology accords with McLuhan's belief that technology eventually becomes an "extension of man." Indeed, he too describes the telescope as an extension of the eye in *Understanding Media*. To this end, such developments raise inevitable questions about the nature of our reality with respect to the tools that mediate the world for us: is knowledge of the world *always* mediated? What would it mean to experience the world *without* these intrusions? Can a meaningful relationship with reality be conceivable without these instruments? Is an uninterrupted experience of reality something that we ought to covet in the first place? And if an experience of the world is made possible only through technology, is our experience of reality irrevocably inferior, and does this insight invalidate our understanding of the world?

For Tyler and Evans, "our experience of the world is *always* mediated via our uniquely human perceptual system, physiology and neural architecture" (2003, 23). Just as it may be impossible to experience the world outside of the purview of human culture, technology performs a necessary and somewhat inescapable role in our understanding of the world. As Verkerk et al argue, "scholars up to now draw a picture in which technology is something we cannot escape" (2015, 344). Anthony Miccoli (2010) describes this particular anxiety as "posthuman suffering", stemming from the inescapable grasp of technology in our metaphysical relations with the world. He writes: "The posthuman concedes that without the supplement of technology, the human is limited in its physicality. Thus, the only way to achieve a greater compatibility with information (both the information that constitutes the human itself and the world we inhabit) is through more advanced technological systems" (57). He writes that "intrinsically *knowing* the self is contingent upon the supplement of the technological other. We cannot know ourselves—nor can we reach our full embodied, human potential—without some kind of technological other to help us 're-connect' with ourselves." Indeed, posthuman suffering extends to the limits of observing the physical world; the human cannot perceive the intricate craters of the moon or the fiery event horizon of a black hole *without* the aid of the telescope. Posthuman suffering, therefore, is the recognition of one's inadequacy when it comes to knowledge of the world. Technology becomes necessary and, therefore, inescapable.

Miccoli's view alerts us to the inevitable role that technology plays in mediating and portraying aspects of reality. A metaphysics of humanity, then, becomes one that is dependent on technology to exist. But philosophers have long been concerned about *the extent* to which we rely on technology to perform reality for us. As Verkerk et al put it, philosophers such as Martin Heidegger and Don Ihde (1990) believed that humans "inhabit a world with which they are in contact *through* technology" (344). Heidegger, they note, "was very pessimistic about the intermediary role of technology because, according to him, technology causes us to see our social environment solely as something that still has to be cultivated. The intrinsic value of reality completely eludes us" (344).

In an interview with *Der Spiegel* magazine in 1966, and published five years after Heidegger's

death at his request (due to its controversial content on his involvement with the Nazi party) Heidegger argued that "technology tears men loose from the earth and uproots them" (cited in Wolin, 105). He explains how he was frightened when he "saw pictures coming from the moon to the earth", before claiming: "The uprooting of man has already taken place. The only thing we have left is purely technological relationships. This is no longer the earth on which man lives" (105-106). Ihde had similar misgivings about the particular use of technology in regards to metaphysics: "To see the moon through a telescope is to see it close up but also to lose it in its position in the sky. Lens technology transforms the very sense of space that I experience, in a significant modification of both bodily and world space" (50).

For both Heidegger and Ihde, the idea that telescopes offer an "authentic" view of celestial objects is illusory, since the instruments which claim to offer objectivity are ultimately marred not by what they show, but by what they do not or *cannot* reveal. Although such instruments have been embraced as infallible tools of truth based on "precision", in many ways they hinder our understanding of the essential nature of impossible objects. As Ihde explains:

> The spectrographic picture of a star no longer "resembles" the star at all. There is no point of light, no disk size, no spatial isomorphism at all merely a band of differently colored rainbow stripes. The naïve reader would not know that this was a picture of a star at all – the reader would have to know the language, the alphabet, that has coded the star (91).

Ihde's observation leads us to ask what, exactly, does it even mean to really *behold* a star, to truly experience a celestial object? For many scientists and astronomers, the artistic or philosophical view of the world is metaphysically imprecise and presents an existential want; scientific data is understood as possessing the numerical certainty that speculative philosophy and imagination lacks. But it is not enough to say that these scientific renderings bring us closer to reality, because such claims reduce an authentic experience of the world to its mathematical components. If truth is merely reducible to data, then science does indeed hold the answer to truth, but such distorted images are as insufficient as the familiar, exaggerated stars that are illustrated in children's books.

From Disenchantment to Disengagement

Although Ihde identifies essential errors in the link between technology and truth, he also observes that "not all optical technologies *mediate* such perceptions" (90). He reminds us that technology itself corrects an already-diminished view of reality: "Imagine using spectacles to correct vision [...] What is wanted is to return vision as closely as possible to ordinary perception, not to distort or modify it." However, he also notes that lenses are today modified to reduce glare or enhance colour. The ability to enhance, not merely *correct*, reality, illustrates a significant shift that explains much of the contemporary inclination to *enhance* reality beyond a certain existential threshold. These enhancements are not based on correcting a diminished view of reality, but instead are there to *accessorise* reality, as if reality had become a product itself in need of add-ons and

accoutrements to "repair" reality. Indeed, what is interesting about the world of virtual reality is that is does not necessarily take place in ultra-phantastic worlds. Instead, the virtual expands upon a recognisable reality, enhancing what is already known and familiar.

Hubert Dreyfus, whose works on Heidegger led to him being dubbed "Dreydegger", was particularly sceptical about the amount of time we spend in virtual worlds, as well as the capabilities of computers. In *Being-in-the-World*, which serves as an analysis of Heidegger's *Being and Time*, Dreyfus writes: "As we enter the final stage of technology, we experience everything including ourselves as resources to be enhanced, transformed, and ordered simply for the sake of greater and greater efficiency" (338).

Dreyfus's concerns about technology are also addressed in his book *On the Internet*. Originally published in 2001, before smart phones and social media had become ubiquitous, *On the Internet* looks at early virtual reality worlds such as Second Life which, he writes, should provoke concern amongst philosophers: "Second Life also offers the possibility of spending one's time in a virtual world that may be more exciting than the real one. That raises the question of how much of one's life should be spent enjoying an admittedly unreal world" (95). Dreyfus was particularly concerned about the preference for virtual worlds: "The ever-increasing number of people who spend an average of four hours a day in Second Life don't seem to be tempted to return more than is necessary to their everyday lives" (96).

"The drawbacks of our world are obvious", he writes. Virtual worlds, he writes, offer the kind of invulnerability that doesn't exist in reality, and they furthermore insulate us from the threat of banality. We gravitate towards diversion and away from confrontation:

> We now face a clear choice between a captivating life of diversion, which existential philosophers like Pascal consider empty and inauthentic, and the authentic life they favour in which one is called to face up to the vulnerability of all one cares about and yet, at the same time, find something meaningful to which to dedicate one's life (97).

Dreyfus also observes that such worlds are seen by many as a means to recover a sense of enchantment. Dreyfus discusses Max Weber's notion of "disenchantment" (*Entzauberung*) to illustrate the appeal of virtual worlds, which are seen by some as an appropriate remedy to the mass disenchantment that modern science wrought. For Weber, science replaced religion as the paradigm of reality, ridding the world of its mystical qualities and causing feelings of disenchantment. Dreyfus sees virtual worlds as potential methods to "re-enchant" the world.

But while Second Life may fulfil a certain need to regain a sense of enchantment, games like Pokémon Go illustrate that augmented realities are arguably more popular than virtual ones, since they enhance reality in a way that is appeasing and not as disorienting as virtual reality, since it is enmeshed around the known, familiar world. Through the use of a smart phone, users can decorate reality rather than escape it entirely. Users are not wholly immersed in a virtual reality, but, importantly, use technology to enhance aspects of reality much like the telescope did in the

1600s. As Graham et al put it: "Real but not quite real, virtual but contextualized, *augmented realities mediate reality*. This mediation is not limited to games and SF; it will permeate day-to-day" (187). Indeed, we are not simply witnessing a culture addicted to gaming, an anxiety which was prominent in the 1980s and '90s, but are instead witnessing the appification of everyday life, so that even the most menial experiences are enhanced by technology in such a way that does not resemble gaming at all, but which is there to make reality tolerable for a tech-raised generation. As Amber Case puts it: "The appification of everything seems to be a response to the pervasiveness of smartphones – as if the only way to create a satisfying user experience is to integrate it with the iPhone as much as possible" (The Appification of Everything). The smart phone has become a device through which not only do we mediate reality, but increasingly experience reality: the smart phone interface *is* reality, in the sense that the realities that matter most to us appear to take place in the augmented worlds of apps and social media. We do not merely retreat into our devices for entertainment value, as we did in the '80s and '90s, but turn to our devices to fulfil every single task, monotonous or otherwise.

An iPhone commercial from 2009 popularised the phrase "There's an app for that", a phrase which suggests that apps, like the telescope, are being used to *replace* the human eye. Apps like SkyView and Star Walk, for instance, enable users to view constellations and celestial objects through the cameras on their phone, even when the user is inside. SkyView® Lite advertises itself as "a beautiful and intuitive stargazing app that uses your camera to precisely spot and identify celestial objects in sky, day or night." With the aid of augmented reality technology, users can use their phones to identify galaxies, constellations and satellites, even when they are not visible to the naked eye. Star Walk, meanwhile, promotes itself with the tagline: "Explore the sky like you've never done before."

These apps accessorise the sky with enlarged 3D graphics of planets, satellites and completed constellations which users could not see with the naked eye. In other words, these apps perform the night sky for us, filling in the details that we cannot possibly see. This gives users the impression of completion, giving the sky an added theatrical dimension that suggests the naked sky itself is lacking.

Chris Maxcer, in his review of Skyview, calls the app "pretty freaking cool", and promotes the app as a novel way to view the sky. Yet he also observes:

> When you're in the forest, for example, far away from the light of cities, the night sky can come alive all on its own. I'm pretty sure the next time I'm out, I'll spend more time looking at it without SkyView, but I also know I'll pull out the app and augment my reality a bit. Especially if I see a satellite zooming across the sky. I'd definitely like to catch one of those fast ones with SkyView (Maxcer 2011).

Maxcer's point about augmenting his reality attests to the preoccupation we have with augmenting the mundane. But while augmented reality is used to accessorise reality, virtual reality sees the complete immersion of the user in a virtual world.

Discussing virtual space apps, Damjanov and Crouch (2019) argue that "while travel in outer space means surrounding yourself in a 'bubble' of mediating technologies, touring in VR is an immersion in a technologically created digital environment. In this sense, VR technology could be a suitable substitute for real space travel" (123). However, they also note that "VR space tours are nevertheless consistently concerned with their own presentation of performance of a 'real' experience." Space apps like Hello Mars—a VR simulation of a Mars landing—alongside Discovering Space 2, are all "marketed as in some way 'realistic' experiences". But "this authenticity", they note, "is produced through their design – the hardware and software that they rely upon becoming a necessary part of the equation, influencing questions of perception, imitation, and reality" (123).

Such apps tell us that imitation is increasingly acceptable not as a mere substitute for the real, but as the *preferred method of experiencing reality*. Damjanov and Crouch argue that "these mimetic environments are increasing in sophistication, becoming more precise, more accurate, but also more able to trick the eyes and the mind, and at the same time, they are becoming more accepted as legitimate sites of social practice and authentic interaction."

Indeed, reality is increasingly understood as falling short of our appetites for curated splendour, whetted by the dazzling accoutrements of our devices which are now being used to fill in for that with which we cannot realistically engage. Albert Borgmann (1984) calls this particular condition a form of "disengagement", claiming: "It is clear that the further technological liberation from the duress of daily life is only leading to more disengagement from skilled and bodily commerce with reality" (151). Borgmann's critique of technology focuses on what he calls the "device paradigm", wherein we lose touch with reality due to our reliance on our devices, which mediate reality.

Like Heidegger, Borgmann sees technology as offering a diminished or secondary experience of reality. He claims that such technologies fail to illuminate our lives and will only signify the "atrophy of our capacities." Although Borgmann's views on gaming—that it is used only for the "spread of pornography"—are particularly antiquated, his views on the intermediary role that technology plays in our day-to-day engagement with life are widely shared by philosophers and writers.

Will Self (2018), for instance, described our preoccupation with screens as the "tyranny of the virtual", arguing: "It strikes me that we're now suffering collectively from a 'tyranny of the virtual,' since we find ourselves unable to look away from the *screens* that mediate not just print but, increasingly, reality itself" . The smart phone screen inspires the same kind of revelatory frenzy as the telescope lens, except it does not presume to offer an objective view of reality in the way that the telescope does. In fact, it provides just the opposite. Users of Skyview, Star Walk and Hello Mars are perfectly aware that these augmented and virtual technologies *recreate* space. They are not in any way "deceived" by the technology into mistaking it for reality, and nor are they under any illusion that these apps bring them closer to reality. While philosophers

like Dreyfus and Borgmann were concerned with the extent to which users were "fooled" or duped by virtual realities, a more concerning development has emerged that sees users willingly adapting to a curated reality—through their devices—*that they know is false*. The more insidious threat appears to be a world in which the desire for a more "authentic" connection to reality is not merely illusory, but is simply dismissed as redundant in favour of these distractions that take us further from reality, provoking not only disengagement, but an estrangement from one's reality. Social media has already shown us that we have come to prioritise and cultivate our virtual lives over our real ones.

Hidden Realities and Unfathomable Objects

Juliet Mitchell writes that "there is no such thing as a simple response to reality" (1974, 12). "External reality", she writes, "has to be 'acquired'. To deny that there is anything other than external reality gets us back to the same proposition: it is a denial of the unconscious" (12).

There are various metaphysical theories predicated on the notion that reality is always in some measure *hidden* from us, on either a quantum or spiritual level, and for many, science proves the most reliable method to uncover these hidden realities. As Heidegger observes: "Something *other* reigns. But this other conceals itself from us so long as we give ourselves up to the ordinary notions about science. The other is a state of affairs that holds sway throughout all the sciences, but that remains *hidden* to the sciences themselves" (1977, 156).

Plato is perhaps the philosopher most associated with an ideal reality. Throughout his works he frequently referred to an abstract world of perfection, what he called the ideal world of Forms. In contrast to Aristotle, who believed our senses communicate a sound reality, Plato distinguished between appearance and reality, and claimed that the people, objects and sensations we encounter every day are but mere shadows of the real entities in the ideal world of forms. It was here that unchanging, universal truths could be found. For Plato, the ideal world of forms is not accessible externally, but can only be truly grasped internally, via the mind, leading to true knowledge of reality. As Plato writes in *Theaetetus*: "the mind in itself is its own instrument for contemplating the common terms that apply to everything" (2003, 104).

Similarly, in *Phenomenology of Spirit*, Hegel addresses the fundamental issues of cognition as an instrument, and an "absolute" truth: "For, if cognition is the instrument for getting hold of absolute being, it is obvious that the use of an instrument on a thing certainly does not let it be what it is for itself, but rather sets out to reshape and alter it" (1977, 46). Hegel also observes that cognition itself exists as an intermediary: "If, on the other hand, cognition is not an instrument of our activity but a more or less passive medium through which the light of truth reaches us, then again we do not receive the truth as it is in itself, but only as it exists through and in this medium." Hegel, in this sense, shares Plato's view of reality being an imitation of an ultimately inaccessible truth. To this end, Hegel believed that science could only take us so far in dismantling the rubric of reality. Science, he argues, "is itself an appearance" (48). It exists alongside other modes of

knowledge. He insists that "science must liberate itself from this semblance", and that "when confronted with a knowledge that is without truth, science can neither merely reject it as an ordinary way of looking at things, while assuring us that its science is a quite different sort of cognition for which that ordinary knowledge is of no account whatever" (48-49).

For Nietzsche, both science and religion served only to further separate humanity from reality. In *The Birth of Tragedy*, Nietzsche writes: "Is the resolve to be so scientific about everything perhaps a kind of fear of, an escape from, pessimism? A subtle last resort against—*truth?* And, morally speaking, a sort of cowardice and falseness?" (1967, 18). In *Beyond Good and Evil*, however, Nietzsche, like Aristotle, makes the unconvincing claim that "all credibility, all good conscience, all evidence of truth come only from the senses" (1989, 88), a line of thinking which fails to acknowledge the limits of sensorial accuracy, as Tyler and Evans previously noted. They remind us that our experience of the world is *always* mediated by the limits of human perception.

Much current scientific discourse operates on the assumption that greater precision in our technological instruments will automatically bestow a greater authenticity onto the subject of enquiry. But Hegel insisted that no one discipline has a monopoly on reality, and that reality and truth cannot be found through science alone. There are those phenomena and ideas that science cannot grasp and that technology cannot represent sufficiently enough to completely demystify the cosmos.

The M87 black hole is an imitation of that *which cannot be represented*. The black hole eludes scientific capture, and however "sophisticated" these technologies prove to be, ultimately the black hole remains an incomprehensible object, forcing us to abandon the illusion that unfathomable objects can always eventually be exposed through technology.

For Voltaire, almost everything is imitation, but the image of the black hole dispels the illusion of a perfect image. The image is as precise as it is unclear, and no amount of precision will solidify the existential palpability of the black hole. Indeed, while the image of the black hole has been described as "beautiful" by many journalists, possessing notable artistic attributes of colour and abstractness, both Smee and Kirkwood remind us that it is less an artistic rendering of an elusive object and more a final product based on an assemblage of data that, if anything, takes us *further* from its essential form. The black hole resists any form of expression that we possess, scientific, artistic or otherwise.

The preoccupation with "infallible" data, moreover, dismantles one's metaphysical arsenal to the extent that we come to understand reality as a mere extension of technology and scientific imaging, further distancing us from the thing-in-itself. As Mustapha Khayati put it: "The fetishism of facts masks the essential category, the mass of details obscures the totality" (2006, 408). The black hole is not merely a scientific object composed of facts that are reproducible in data. Science can tell us *what* a black hole is, and technology can offer useful insights into the cosmological nature of a black hole, but its metaphysical magnitude is not reducible to any one system of knowledge, and nor is it rendered knowable through technology.

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