2. Knowing Not What To Believe: Digital Space and Entanglement in *Life of Pi*, *Gravity*, and *Interstellar*

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**Abstract**

In this essay, I argue that *Life of Pi*, *Gravity*, and *Interstellar* exemplify a cinema of entanglement. I do this by analyzing how the films’ depictions of vast space are ‘sublime’, while also considering how these sublime moments are made using computer-generated imagery. This sublime is potentially paradoxical in that the images are computer-generated (i.e. ‘fake’), while film theorists have historically considered the awe inspired by cinema to depend upon the indexicality of the (analogue) image (i.e. cinematographic images depict something real, with that reality being separate from humans). However, drawing on Immanuel Kant’s ‘mathematical sublime’ and Gilles Deleuze’s ‘powers of the false’, I argue how these three films stage a sense not of sublime detachment but of sublime entanglement.

**Keywords:** CGI, mathematical sublime, powers of the false, Life of Pi, Gravity, Interstellar

In this essay, I wish to explore the way in which *Life of Pi* (Ang Lee, USA/Taiwan/UK/Canada/India, 2012), *Gravity* (Alfonso Cuarón, USA/UK, 2013), and *Interstellar* (Christopher Nolan, USA/UK, 2014) all use computer-generated imagery to depict the vast expanses of space. My aim is not to explain the filmmaking technologies involved but to explore from a more theoretical perspective our engagement as viewers with such digital depictions of space. That is, I shall argue that these moments, and the narratives of each film more generally, invite viewers to question the
reality of that which they see, thus bringing about a thinking—or intellectual—engagement or interaction with the films. This is not simply a rehashing of the passive-active spectator debate as represented respectively by Screen theorists in the 1970s and by subsequent cognitive film theorists. That is, the type of ‘thinking engagement’ or ‘interactivity’ that I wish to suggest here is not simply that viewers make cognitive inferences about how a character got from one place to another.\(^1\) Rather, it is that viewers are placed in a position of uncertainty regarding the reality of what they see, both in terms of not knowing where the CGI begins and ends and in terms of not knowing whether what we are seeing is ‘real’ within the films’ diegetic worlds. This uncertainty means that the viewer is encouraged intellectually to engage/interact with the films and thus to choose what to believe is true or real—as per Gilles Deleuze’s theorization of time-image cinema.\(^2\) I shall argue that this engagement/interaction and the subsequent process of choosing what to believe is linked to the supposedly non-indexical nature of the digital imagery that pervades these films. I also contend that the way in which these films ask us to consciously engage in the process of choosing to believe what is real/true reflects on how such choosing is not something limited to our appreciation of (certain) films, but that it is a part of our real-world existence. I shall do this by making reference to the concept of ‘entanglement’ as devised by feminist physicist Karen Barad.\(^3\) First, however, let us explore the nature of digital images by engaging with the established discourses surrounding the issue of indexicality.

### Indexicality

It is an oft-repeated argument that the digital image does not have the indexical relationship with the world that the analogue image does. By being a direct inscription of light (or rather, of reflected light) on celluloid or polyester film stock, the analogue image functions as evidence, or proof, of what was before the camera at the time of the image’s taking. The digital image, meanwhile, is composed of the 1s and 0s of the binary code that is the image’s fundament and thus supposedly does not have the same direct link

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\(^1\) For pioneering work along these lines, see Bordwell, *Narration in the Fiction Film*; Branigan, *Narrative Comprehension and Film*.

\(^2\) Deleuze, *Cinema 2*.

\(^3\) Barad, *Meeting the University Halfway*.
with reality, even if it is an image taken with a digital camera (as opposed to an image composed using graphics software).

There is a large body of scholarship on this distinction, not all of which I shall be able to discuss as a result of limited space. Readers might look at work by, inter alia, Mary Ann Doane, Laura Mulvey, and D.N. Rodowick as initial considerations from within the field of film studies of the indexical in relation—even if only implicitly—to digital images. To engage only with one example, Philip Rosen draws on Charles Sanders Peirce to argue that the index, or the image's referent (that which is in the image) is ‘an existent whose presence is required in the formation of the sign [here, the image]’. Rosen recounts how for many theorists digital images are, conversely, more like Peirce’s category of the icon: the digital exists ‘through pure ideals rather than impure actualities, things that will eventually be achieved, rather than an achieved state of things’.

For Rosen, there is an implied ‘futurity’ in the digital image, then, in that it does not refer back to a reality that happened and of which the analogue image functions as proof—with this idea of proof being key for understanding both André Bazin’s ‘ontology of the photographic image’ and Roland Barthes’ concept of the punctum. Instead, being proof of nothing that has existed, of nothing that was before the camera at the time of the image’s taking, the digital image asks us to relate to it in terms of a present, or a present-future fashion.

Now, Rosen is not unaware of the fact that ‘[i]t was, after all, possible to fake photographs before digitization’, a fact also discussed at some length by William J Mitchell. In comparison to the analogue image, however, the digital image possesses ‘infinite manipulability’ since it is not tied to the real world in the same way as an analogue image is via indexicality. This in turn supposedly lends to the digital image an ‘interactive’ quality,

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4 Doane, *The Emergence of Cinematic Time*; Mulvey, *Death 24 x a Second*; Rodowick, *The Virtual Life of Film*.
7 Bazin, *What is Cinema?*; Barthes, *Camera Lucida*. Although Bazin’s work on the ‘ontology of the photographic image’ discusses the direct link between the world and the image, it is perhaps important to point out that he does not use the term indexical, which was instead a concept introduced by Peter Wollen, *Signs and Meaning in the Cinema*, pp. 120-155. We might also note that Bazin’s understanding of cinema is more nuanced than simply believing film to be a direct copy of the world, as Tom Gunning and Daniel Morgan have more recently explained; see Gunning, ‘The World in its Own Image’; Morgan, ‘Rethinking Bazin’.
since one can literally change it or it is never fixed or finished. Rosen, however, challenges this idea of interactivity on two levels. Firstly, if the digital image is freed from its direct, indexical link to the world, then the fact that so many digital images aim to look like photographs, especially in terms of their realism, indicates that there is a fixed (sense, or perception, of) reality that does underpin even the digital image and in which, therefore, we are implicitly rooted. That is, the ‘infinity’ referenced in the term ‘infinite manipulability’ is somewhat small (and not infinite) if the image tends not to be manipulated beyond the already-existing conventions of cinematic representation. Secondly, since the viewer cannot interact with digital images in a particularly creative fashion (instead just copying the conventions of analogue cinema), Rosen asserts that ‘this means that there has never been any such thing as interactivity’. He says this because while it is all well and good to hypothesize an interactive cinema, this interactivity remains an ideal rather than a reality. Since this interactivity only exists in the realm of the ideal, it does not exist—and never has existed—in the ‘real’ world.

In that he tries to bring the idealist discourse surrounding the interactivity of digital images back into the ‘real’ world, there is much to admire about Rosen’s argument. In short, we can all dream of a digital utopia, but until disparities in technology, wealth, access, and education (among other things) are addressed and rectified—in addition to a transcendence of the all-too human capacity for both humans and human-designed machines to make mistakes (as revealed in the case of the latter by glitches)—that utopia remains simply an ideal, most likely an unworkable one. Nonetheless, I shall argue that there are grounds upon which to challenge Rosen, both in terms of a more ‘intellectual’ interactivity that can exist between film and viewer and via a shift in understanding about the real world. Rosen himself implies the former when he says of digital images that ‘[o]ne can...
never be certain that the image one is seeing at a specific time or point on the network has been definitively fixed or finalised', an uncertainty that does indeed ask for intellectual engagement/interaction along the lines outlined above.16

With regard to the latter, meanwhile, if digital images look like analogue images as a result of a fixed (sense or perception of) reality—if images that do not conform to the conventions of analogue photography are not ‘realistic’—then this suggests that reality itself is fixed/stable. However, if, as I shall argue, reality itself is not fixed/stable, then it is hard to measure anything against that reality as realistic or otherwise. I shall return to the relationship between indexicality and realism later, but for the time being I wish to comment on Rosen’s stated decision not to enter into a ‘debate over the fit or the lack of fit between discourses of the digital and some empirical reality’.17 That is, the framework of Rosen’s investigation of the digital is not realism (although I shall suggest that an underlying conception of realism sneaks into his work) but rather the discourse that surrounds it. However, it is precisely via a discussion of an ‘empirical reality’ that is not fixed but that always is changing, or becoming, that I shall suggest that the intellectual interactivity I wish to describe is matched on some levels by a more profound interactivity, or entanglement, of film and viewer and world. For the concept of entanglement, after Karen Barad, suggests not that interactivity has never existed (if such a twisting of Rosen’s words is permitted) but that, in terms of humans playing a role in the shaping of reality—and by extension of the films that are a part of that reality—that interactivity has always existed. In order to build this argument, let us look at how spectator responses to CGI effects have historically been theorized, starting with the concept of the sublime.

The Sublime

*Life of Pi* is about a man named Pi (played as an adult by Irrfan Khan), who recounts to a Canadian writer Yann Martel (Rafe Spall) an episode of his life from when he was a young man (Suraj Sharma). After his family decides to relocate with their zoo from Pondicherry, India to Canada, the Japanese cargo ship upon which they are travelling sinks, and Pi ends up stuck in a lifeboat with a Bengal tiger known as Richard Parker, a hyena,
a zebra, and an orangutan. The hyena kills the zebra and the orangutan, before in turn being killed by Richard Parker, with whom Pi establishes an uneasy coexistence. After 227 days at sea, Pi and Richard Parker hit land in Mexico (after a brief sojourn on a supposedly carnivorous and living island) and part company. Pi recounts his experiences to various insurance agents who are skeptical regarding the veracity of his story, before telling them the ‘true’ version of events, namely that the lifeboat in fact featured his mother, a Buddhist sailor with a broken leg and the ship’s cook. The cook killed the sailor and his mother before Pi killed the cook and survived by eating him. At the end of the film, Yann says that he prefers the story with the tiger to the potentially ‘true’ story of murder and cannibalism.

*Gravity*, meanwhile, sees astronauts Stone (Sandra Bullock) and Kowalski (George Clooney) try in almost real time to get from the Hubble Space Telescope that the former is helping to service to the International Space Station (ISS), which has been abandoned by the other astronauts on it. Kowalski sacrifices himself to help Stone get into the ISS, whence she uses a Russian Soyuz craft that cannot be used for re-entering Earth’s orbit (as a result of its parachute having already opened) to reach the Chinese *Tiangong* space station. As the *Tiangong* falls apart as a result of the same debris floating around Earth’s orbit (apparently caused by the Russians destroying a decommissioned satellite via a missile strike), Stone gets into a capsule that guides her back to Earth, where she lands in a lake, nearly drowns, but ultimately makes it to shore as fragments of the *Tiangong* also fall from orbit.

Finally, *Interstellar* takes place in a future when the Earth can no longer sustain its population as crops die and arable land turns to desert. Astronaut-turned-farmer Cooper (Matthew McConaughey) finds Morse code map coordinates written in dust on the bedroom floor of his daughter, Murphy (Mackenzie Foy). These lead him to a NASA base where astronauts, including Brand (Anne Hathaway), are planning to travel via a wormhole to find other inhabitable planets. Cooper joins their mission and goes through the wormhole to find two uninhabitable planets. After their ship is damaged, Cooper and a robot called TARS get sucked into a black hole in order to be able to send fellow-astronaut Brand to a third planet. Inside the black hole, Cooper finds himself within a strange space (referred to as a tesseract, and which I shall describe in more detail later) created by the invisible life forms that humans will become, and from which he can see and interact with Murphy’s bedroom at different moments in time. He creates the Morse code dust pattern on Murphy’s floor, thereby setting his own plot in motion,
while also sending via other clues a mathematical formula to his daughter (played as an adult by Jessica Chastain) that will allow humans to launch space stations big enough to serve as viable biospheres alternative to Earth. Released from the black hole, Cooper joins Murphy—now an old woman (played by Ellen Burstyn)—on one of the space stations that she helped to create and which is located in the orbit of Jupiter. Murphy sends Cooper off to find Brand on the third planet.

While the films vary in terms of how convoluted their plots are, what unites Life of Pi, Gravity, and Interstellar is their spectacular and computer-generated depictions of space. In the first film, we see an extreme long shot of Pi and Richard Parker on their lifeboat as a multitude of stars not only shine above them in the sky but also are reflected below them in the ocean’s surface—such that Pi, Richard Parker, and the boat seem to be the very nucleus of the universe. Gravity, meanwhile, opens with a long take that lasts more than 10 minutes as the film’s plot is set in motion. Not only do we see awe-inspiring views of the heavens and Earth from space but, as the camera circles the protagonists, the Hubble telescope, and the shuttle to which it is connected, the shot in its duration and complexity encourages viewers to marvel at its technological construction. Finally, Interstellar features mind-bending visuals of time seeming to move in one direction (‘backwards’) around the black hole, while at a slightly further remove from it Cooper and Brand’s spaceship, the Endurance, moves in the other direction (‘forwards’).
Rowan Wilken summarises that:

[t]he word ‘sublime’ rose to prominence at the beginning of the eighteenth century in order to capture the manner in which certain beautiful, vast, or grand things—especially landscapes—affect the mind with a sense of awe, deep reverence, or lofty emotion.  

Perhaps it is logical, then, that the term has been taken up by film scholars to describe shots of the heavens, including digital shots of the heavens like those described above. Scott Bukatman has clearly argued, for example, that moments in science fiction cinema such as the Stargate sequence from 2001: A Space Odyssey (Stanley Kubrick, USA/UK, 1968) or the arrival of the alien craft in Close Encounters of the Third Kind (Steven Spielberg, USA, 1977) can evoke a sublime response.  

Now, Greg Tuck has countered such claims by suggesting that digital moments designed to induce a sublime response cannot achieve as much, since digital images are quantified (as 1s and 0s), while the sublime is or should be unquantifiable. However, Tuck’s otherwise excellent argument perhaps overlooks the fact that Immanuel Kant, one of the earliest theorists of the sublime, describes ‘the encounter with extreme magnitude or vastness’ as the ‘mathematical sublime’. That is, one can apprehend magnitude (one can count it / it is mathematical), but one cannot comprehend it. I would add to this that while there is space for the ‘mathematical’ or quantification in the sublime experience, technology also plays a key role in giving us access to such views (looking at the heavens through a telescope; digitally constructed starscapes), with technology itself being linked to the sublime in that it, too, comes to escape our understanding/comprehension, even if we can apprehend it. Indeed, for Bukatman, ‘[n]ature [that which used to induce the sublime] is displaced by technology’, meaning that ‘[t]echnology permits a containment of nature’.

In relation to Interstellar, we can literally see this when the film ends with humans living on a space station in which a cylindrical atmosphere contains a kind of miniature version of Earth, suggesting that ‘the appearance of

19 Bukatman, Matters of Gravity, pp.81-110.
20 Tuck, ‘When more is less’.
22 Ibid., p. 195.
23 Bukatman, Matters of Gravity, p. 102.
nature has become little more than nostalgia for a pastoral ideal’. However, what is interesting about the sublime views in *Life of Pi*, *Gravity*, and *Interstellar* is that they are tied to the idea of a world that cannot be conquered or fully controlled/displaced by technology. In *Life of Pi*, technology repeatedly malfunctions: the Japanese cargo ship sinks, and Pi’s attempts to remain at a distance from Richard Parker are stymied when a whale crushes a raft that he has found and on which he keeps his supplies. In other words, nature continually crushes technology. The same is true in *Gravity*, which does not tell the story of humans conquering space but which rather tells of the smallness of humans in the face of space. Science fiction aficionados will have seen spaceships fly through debris and meteor showers in various films and television shows—but none is so inevitable and devastating as the debris that drifts towards Stone and Kowalski in *Gravity*. Furthermore, the film is really an exercise in what Sean Cubitt has termed, in relation to much contemporary cinema, ‘heroic problem solving’. Stone does not really do much except run through her options of survival; she is not setting out to conquer new worlds but to return to her own world—and while it is a Russian rocket (i.e. technology) that sets in motion the debris, it is the environment of space that poses the greatest threat to her. Finally, while *Interstellar* does on some level suggest that humanity via its technological prowess can contain nature on a space station orbiting Jupiter, it only does so because the one thing that humanity cannot control is nature on Earth. What is more, the first two planets that the astronauts visit on the far side of the wormhole may have a relatively stable atmosphere, but neither is inhabitable for humans. In other words, while the film may end with the somewhat muted and lonely image of Brand on a third, seemingly more hospitable planet beyond the wormhole, *Interstellar* does not tell a story of great heroism and the conquering of new/final frontiers. It is rather, as per *Gravity* and *Life of Pi*, a story of heroic problem solving—with technology allowing a small number of humans to escape Earth, although we are not told how many nor what has become of those left on the planet (presumably they have been left to die). In sum, then, it seems that technology does little to help the majority of humans, suggesting that the myth of technology as a form of liberation is, like the film’s ending, muted. Paradoxically, this is conveyed in part through the smallness of man in relation to the heavens, as shown in the sublime if digital shots evoked above. By glossing over the fact that humans have not been able to save the Earth, *Interstellar* may come.

24 Ibid.
closest to suggesting man’s technologized ability to control space and even
time, but if we acknowledge man’s inability to save the Earth, then all three
films can be seen as suggesting that humans are, in the end, dragged back
down to Earth by gravity. This is also suggested in Interstellar by the fact
that all events could be Cooper’s dream, as we shall explore below.

Non-Anthropocentrism

While the films’ stories suggest that humans come back down to Earth
or leave it because they cannot control it, the images that we see suggest
that cinema itself is not bounded in the same way. The ‘sublime’ moments
in all three films, as described above, suggest that while humans cannot
transcend themselves, cinema can—and in these instances does—transcend
humanity, thereby presenting to us a non-anthropocentric perspective.
What I am not proposing here is that movies are made by machines, even if
we must admit that movies are made with machines. Perhaps humans will
always have to be involved at some level in the making of movies. What I
am proposing, however, is that the ‘sublime’ moments in these films suggest
if not humanity’s mastery of space, then cinema’s.

It is significant that in the three key examples given above (Pi dwarfed
by the heavens, the opening shot of Gravity, the black hole sequence in
Interstellar), we do not see things through the eyes of any of the characters.
Compare this to the moments when we first see the dinosaurs in Jurassic
Park (Steven Spielberg, USA, 1993), when the T-1000 (Robert Patrick) passes
through metal bars in Terminator 2: Judgment Day (James Cameron, USA,
1991), and the first vista of the floating Hallelujah Mountains in Avatar
(James Cameron, USA, 2009). In each of these films, the would-be sublime is
linked to the perspective of one or several characters, who also cue audience
members about how to respond to these moments via shots of their jaws
dropping. In the three films that are the focus of this essay, the characters
either cannot see what the audience sees (Life of Pi), or they are too busy
going on with their work, which is surviving, in order to pay the similar
attention to them that the viewer can (Gravity, Interstellar). As a result, it is
the film, or cinema itself, that achieves the sublime via non-anthropocentric
perspectives, as opposed to via the points of view of certain characters.

Furthermore, I would add that these moments might also achieve a
greater, or at least a slightly more nuanced, sense of magnitude-and-vastness-
induced sublime, because, without a cue to tell us how to react (as happens
in Jurassic Park, Terminator 2, and Avatar), the viewer is invited to choose
for herself how to respond to these moments. While I shall be arguing that both an inability to tell where CGI begins and ends and a difficulty in telling dream from reality encourage an ‘interactive’ spectator, the fact that these films give space for the viewer to choose to marvel (rather than telling her to do so) suggests that they consciously encourage a more ‘interactive’ and less ‘didactic’ viewing position. In this way, these moments of the digital sublime take their place alongside a history of self-reflexive and other techniques, such as breaking the fourth wall and depth of field (especially in conjunction with the long take), which equally have been theorized as provoking ‘active’ viewers. As we shall see, these moments help, after Deleuze, to constitute a sort of digital time-image.

That the camera presents to us a non-anthropocentric perspective is made most clear in the opening shot of *Gravity*, as the camera swirls around Stone and Kowalski in a single, unbroken movement; no human can do this. Furthermore, when at the end of *Interstellar* Cooper finds himself inserted into the tesseract, he sees Murphy’s room back on Earth in a space in which various moments play out on numerous ‘screens’ that he can peruse at will. That is, Cooper moves backwards and forwards through Murphy’s life (or, more correctly, the life of her bedroom), with each moment in the room playing in what is presumably a loop on each ‘screen’ that the tesseract has provided for Cooper to see. The tesseract is, in other words, a metaphor for cinema, with its power deriving from its ability to offer to Cooper a non-anthropocentric perspective. That Cooper is able to interact with Murphy (knocking books from her shelf, fashioning Morse code patterns in the dust using gravity and light, and leaving a watch also with a Morse code message on it) also means that the tesseract functions as a metaphor for how we also interact with cinema, even if mentally/intellectually and not necessarily physically (humans cannot in real life reach into the screen and knock books off shelves in the film world). As I shall explore in more detail below, viewers—like Cooper—do not just watch but also help to constitute and realize the film.

26 I would like to thank the book’s editors for suggesting that the tesseract functions somewhat like the space stations in *Interstellar*. For while the space stations provide spatially miniaturized and inverted Earths (humans inhabit the inside and not the surface of the station), the tesseract provides a temporally miniaturized and inverted Earth (key moments from the life of the bedroom, seen from ‘inside’ rather than ‘on’ the ‘surface’ of time). Continuing with the idea of the tesseract as an allegory for cinema itself, this miniaturization may well suggest a weakness of cinema: it cannot capture reality, only ever a mini version of it (as made clear by the constant limit that is the frame). Nonetheless, cinema can still offer to us different perspectives, which in turn intellectually engage us and stimulate us both to thought and to change.
Virtual Camera

The non-anthropocentric perspective that the camera can achieve suggests the power of cinema to transcend human perspective (although it is not only through the camera that cinema can accomplish this; sound can also play a key role here, even if I do not presently investigate this). However, in the case of *Gravity*, much of what we see is from the perspective not of a physical camera but of a virtual one. That is, while actors Sandra Bullock and George Clooney might have been filmed with physical cameras, those images are nonetheless interpolated into a 3D digital ‘volume’ about which the camera can move as it wishes, precisely because it is a camera without a physical body (it is a virtual camera). This is made especially clear when, at a later point in *Gravity*, the camera passes from inside to outside of Stone’s space helmet, thus passing through solid matter as if it were thin air. Neither physical cameras nor humans can do this without smashing the helmet’s glass visor (killing Stone in the process).

Since the virtual camera has no physical existence, and since many of the images of deep space that we see in all three films are computer-generated, digital visual effects (to use the term employed by Stephen Prince), it perhaps seems counter-intuitive to say that these films can achieve a sense of the sublime and that they are somehow ‘interactive’: we know that what we are seeing is not real and that it was created by a computer; being intangible and precisely not an index of a pre-existing and physical/material reality, there is nothing with which we can interact (even if I am focusing primarily on intellectual, or mental, interaction). However, in spite of the images’ lack of indexicality, and not only in spite of but also because of their ‘virtual’, immaterial nature, these images can present non-anthropocentric perspectives all the more powerfully.

This is apparent in the very mobility of the virtual camera, especially its ability to pass through solid matter as if it were thin air. For the fact that the camera can move through solid matter suggests that all matter, be it solid, liquid or gas, exists on a continuum—and that these states are not necessarily separate from each other but also exist on a single continuum. The unbroken continuity of the space helmet visor shot and of the opening sequence of *Gravity* suggests, then, the continuity of space and all that it contains and with which it exists, including humans. If humans are part of the continuum of space as opposed to abstracted from the world, then not only can we conclude that such virtual camera movements convey the

enworlded nature of the human but that, being enworlded, humans are not
divorced from the world but thoroughly entangled and thus interacting
with it.\textsuperscript{28}

Such ‘impossible’ virtual camera movements reinforce the idea that
digital cinema can achieve the sublime. A shot of the heavens, especially
an analogue/‘documentary’ shot of the heavens, might be sublime. But the
impossible virtual camera movements of digital cinema suggest that cinema
is itself sublime rather than necessarily the contents of a particular image.
This sense of the sublime is partly predicated upon a traditional sense of
vastness, which is also linked to the non-anthropocentric perspectives
offered by a technology that, like the vast universe itself, we may be able
to apprehend but not necessarily comprehend. But more than this, our lack
of comprehension suggests not an absence, an abstraction, or a departure
from the world but precisely our enworlded or entangled nature. In other
words, the conquest of space by the virtual camera reinforces our own sense
of\textit{not} having conquered space, of not being able to control the planet, but
instead of being caught up and interacting with space.

Now, cinema has always been able to offer impossible perspectives, includ-
ing impossible camera moves that take us through solid objects. As per the
‘impossible’ view through the wall that is the perspective of Murphy’s room
offered to Cooper by the makers of the tesseract in \textit{Interstellar}, \textit{Funny Face}
(Stanley Donen, USA, 1957), for example, also features a shot from through/
behind a bookshelf in the shop where Jo Stockton (Audrey Hepburn) works
(the perspective is impossible because humans cannot see through walls).
Furthermore, in \textit{Citizen Kane} (Orson Welles, USA, 1941), the camera famously
passes through the sign of the El Rancho bar and down, via a dissolve,
through the skylight to find Susan Alexander (Dorothy Comingore) washed
up and down and out. However, such shots are unusual because they are
hard to achieve—with the quite visible dissolve in \textit{Kane} making clear that
the shot is specifically constructed. Furthermore, there is a long history
of the impossible camera movement in animation, including animation
mixed with live action. Leon Gurevitch writes, for example, about how a
short film like \textit{Down the Gasoline Trail} (Jam Handy Organization, USA, 1935)
uses animated sequences that at times are layered on to still photographs
of engine parts (and at other times entirely animated) in order to show
us the journey of a drop of gasoline as it travels through the inside of a
Chevrolet.\textsuperscript{29} The mastery of the camera is strongly implied since it accesses

\textsuperscript{28} See also Brown, \textit{Supercinema}, pp. 21-50.

\textsuperscript{29} Gurevitch, ‘The Transforming Face of Industrial Spectacle’. 
parts of the engine to which, we are told, even water cannot pass—e.g. via a photographic gauze that we see on screen, and through which the animated gasoline drop passes.

However, in the case of *Down the Gasoline Trail*, viewers can easily distinguish the animation from the live action because the animation is not photorealistic. Furthermore, much like the dissolve in *Kane*, the film in fact cuts as it approaches physical barriers like the gauze, marking the limitations of the camera. In other words, *Funny Face*, *Citizen Kane*, and *Down the Gasoline Trail* might also feature, or at least imply, impossible perspectives, but techniques like cuts and dissolves reveal their constructed nature. In *Gravity*, meanwhile, we cannot see the cuts as we pass from inside to outside of Stone's helmet, and in *Life of Pi*, *Gravity*, or *Interstellar* as well, we cannot tell where the computer-generated imagery begins and the non-animated footage ends.

Photorealism

It is at this point that the photo- and/or perspectival realism of the digital image becomes important. For while the digital image is not indexical, its realism and the seamless fashion in which it is composited with the analogue aspects of the image are important in several ways. To begin with, they are important because when our ability to clearly distinguish between the analogue and the digital is somewhat challenged, in the sense that I am not sure any longer what is ‘real’ and what is a digital animation, then we must choose what to believe.

To be clear, viewers tend to have a probabilistic, ‘instrumentalist’ approach to the images that they see; humans generally know that balrogs do not exist in the real world, and so they can be pretty certain that the balrog that they see in *Lord of the Rings: The Fellowship of the Ring* (Peter Jackson, New Zealand/USA, 2001) is a digital creation, while many of the other characters are played by humans who are not digital.30 When I thus say that we do not know where the digital begins and ends, I am not suggesting that humans believe that the monsters and impossible events that mainstream cinema churns out actually exist or take place. However, in the case of *Life of Pi*, *Gravity*, and *Interstellar*, there is a sense in which I am called upon to make a choice regarding what I believe to be real and what I do not. As explained, Rosen objects to digital cinema as not being particularly ‘infinite’ in its

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30 For more on this instrumentalist approach to digital images, see Minnis, ‘Digitalisation’.
manipulability nor particularly ‘interactive’ because the digital tries to look like the photographic. However, pace Rosen, it is precisely in looking like the photographic that the viewer’s uncertainty, and thus intellectual engagement, is solicited in that she must choose what to believe and what not to believe. I know that the infinite space that surrounds Pi, Richard Parker, Stone, Kowalski, Cooper, and Brand is digitally created. And yet I am incapable of discerning where that digital space begins and ends, much as I can apprehend but not really comprehend how the images are constructed. In this way, I know not what to believe.

To return, as promised, to the relationship between indexicality and realism, I wish to recap how Rosen suggests that the digital has not fully escaped indexicality because of its insistent return to the perspectively realistic. And yet, as we know from the fact that a footprint, which is an index of the human who stood in its place, bears little resemblance to that human, indexicality has little or nothing to do with realism. Indeed, Rosen’s charge that the digital unimaginatively pursues perspectival realism could as well be made of photography itself: why don’t photographers more often use lenses, filters, film stock, shutter speeds, and so on that completely distort/manipulate ‘infinitely’ what they are seeing? In either case—creating a ‘realistic’ or a ‘distorted’ image—the analogue photograph would still be indexical, while the digital image would not.\textit{31} As hinted earlier, the pursuit of photo-/perspectival realism thus has nothing to do with indexicality in the sense of the word that Rosen discusses and everything to do with the way in which perspectival realism solicits a particular response from the viewer. What is more, my suggestion here is that the response is along the lines mentioned above: to ask the viewer to choose what to believe in relation to what they are seeing. In other words, the indexical nature of the photographic image might well prove that something existed in the past, at the time of the image’s taking, but it does not prove the reality of the image’s content, and certainly not the veracity of any interpretation of that content. Like Cooper reaching back in time to communicate with Murphy, the digital perhaps sends a message back to analogue cinema: we never did really believe in it wholesale, just as we do not believe digital images wholesale. The sublime, photorealistic, and digital moments of these films, in which I am forced to choose what to believe (where the line between the digital and analogue is, if it exists

\textit{31} Marks, \textit{Touch}, pp. 161-176, has posited an interesting argument regarding how electronic (and, by extension, digital) images might well be indexical, even if not in quite the same way as an analogue image.
at all), draw out the way in which I am in fact choosing to believe by interpreting, engaging intellectually, or what I am terming interacting with all images at all times. While photorealistic digital images make clear the way in which we choose what to believe, this clarification modifies our understanding of not just digital but also analogue images: we interact with them, at least on an intellectual level. Contrary to Rosen, who believes that there has never been interactivity, my argument here is that film viewing has always been ‘interactive’—because we live in an entangled and hence ‘interactive’ universe, with cinema also being an entangled part of that universe, as I shall discuss below. First, however, I shall look at how the films’ plots also reflect this interaction, above and beyond the digitally constructed images analyzed above.

Powers of the False

Life of Pi is a film that thematically engages most obviously with the issue of choosing what to believe. Faced with the more plausible story about his mother, the Buddhist sailor, the cook, and Pi killing each other on the lifeboat, both Yann and the Japanese insurers seem to choose the story about a boy on a boat with a Bengal tiger. Whether or not the characters ‘truly’ believe the Bengal tiger version is hard to prove; we can easily suspect that deep down Yann and the insurers ‘know’ that Pi’s experience was one of murder and anthropophagy instead of interspecies pseudo-bonding—but they indulge his fantasy so that he does not have to properly recall his past. However, if we take the film at face value and assume that the characters truly choose to believe that Pi was on the boat with Richard Parker, then the film invites us to choose, too.

In a slightly more oblique fashion, Gravity might also be the product of Stone’s imagination. This is made most clear when Kowalski, having sacrificed himself for her as they try to enter the ISS, reappears in the Soyuz, persuading her not to give up and to try to reach the Tiangong. Kowalski is evidently the figment of Stone’s imagination, but he is presented to us as physically real by the film. It is not that we should believe Kowalski actually to have survived death; the issue becomes whether, if Stone can materialize Kowalski out of nowhere, how much of the rest of the film is ‘in her imagination’?

Finally, Interstellar also might be the product of Cooper’s imagination, not least after he enters the tesseract after having ostensibly been consumed by a black hole. Since not even light can exit a black hole, the power of
gravity is so strong there that all material life would be crushed down to an infinitesimal point.

The tesseract sequence could thus simply be Cooper’s dying fantasy. However, the fantasy moments might have started long before. At the film’s opening, we learn that Cooper is haunted by dreams of a test flight for NASA that nearly killed him; potentially he is already dead, hence the fantasy aspects of the future Earth that he is living on. This might furthermore explain why Cooper follows the dust-gravity coordinates and happens to end up in the new office of his old boss and the father of his fellow astronaut, Professor Brand (Michael Caine). Does the ‘real’ world involve such improbable coincidences? This might also explain how Cooper is able to leave the tesseract and be found by humans floating in space near Jupiter, before finally setting off to find the astronaut Brand: none of this is real.

There is a tradition of madness in space travel films in which it becomes hard to determine what is ‘real’ or otherwise. Andrei Tarkovsky’s Solaris (USSR, 1972) is a key film in this respect (remade by Steven Soderbergh in the USA in 2002, starring George Clooney, making it a clear intertext with Gravity). From this perspective, the differences between the films are not especially important. What is important is that in each film—in Life of Pi most specifically—the viewer is again asked to choose what to believe. This ‘choice’ brings to mind recent work by Patricia Pisters on what she terms the ‘neuro-image’, a contemporary form of cinema, strongly shaped by the digital, and which by its very name implies that the plot of a film might all be in a character’s head. Pisters develops a sophisticated argument concerning Gilles Deleuze’s notion of ‘the powers of the false’, suggesting that in a film like The Dark Knight (Christopher Nolan, USA/UK, 2008), the citizens of Gotham choose at the film’s end to believe that Batman is
evil because that is the fiction necessary for them at that time.\textsuperscript{32} However, while the citizens of Gotham might not know as much, \textit{The Dark Knight} does make clear to us, the viewers, that Batman is not evil but a hero. While the three films discussed here reflect in many respects Pisters’ concept of the powers of the false as it works in relation to the neuro-image, they also progress beyond \textit{The Dark Knight} and put the viewer in the position of having to choose what is ‘true’ rather than simply allegorizing as much in their narratives. Indeed, this is more in keeping with Deleuze’s own meaning of the powers of the false, which is, \textit{contra} Pisters, not about the belief in an untruth (the false as deception; Batman is evil) but something ‘beyond’ the true and the false, and which in particular disturbs fixed notions of the truth by exposing that the truth is contingent.\textsuperscript{33} That is, the truth is not fixed but changes, with that into which it changes being that which does not yet exist, i.e. the false. In a universe of becoming, the false is thus a crucial power. And in a universe with no fixed truth, to acknowledge consciously that one knows not what to believe but must therefore consciously choose what to believe (as opposed to unthinkingly accept what one is told as true) is to recognize one’s interaction with the universe as a result of our entanglement with it.

\textbf{Entanglement}

Karen Barad has powerfully argued that humans are ‘entangled’ in the universe. Drawing upon work by Niels Bohr and others (which I do not have space to explain in greater length here), Barad invites readers fully to engage with what it means to be a part of the nature that we seek to understand.\textsuperscript{34} To quote Barad more fully:

\begin{quote}
[H]umans do not merely assemble different apparatuses for satisfying particular knowledge projects; humans are part of the configuration or ongoing reconfiguring of the world— that is, they/we too are phenomena. In other words, humans (like other parts of nature) are of the world, not in the world, and surely not outside of it looking in. Humans are intra-actively (re)constituted as part of the world’s becoming.\textsuperscript{35}
\end{quote}

\textsuperscript{33} Ibid., p. 275.
\textsuperscript{34} Barad, \textit{Meeting the University Halfway}, p. 67.
\textsuperscript{35} Ibid., p. 206.
The important point to note here is Barad’s emphasis on change, or becoming: the world is consistently reconfiguring itself, and we are a part of that process, since we are of—or, perhaps better, with—the world.36

I have thus far confined the interaction of viewers with films to an ‘intellectual’ level, made clear in *Life of Pi*, *Gravity*, and *Interstellar* by images in which we cannot tell the computer-generated from the real and by plots that could all be in the imagination of the lead character. However, we can perhaps posit a deeper interaction via entanglement. If, as mentioned, Rosen did not want to enter into a ‘debate over the fit or the lack of fit between discourses of the digital and some empirical reality’, we nonetheless can by suggesting that the instability regarding the images and plots of these films reflects the instability of ‘empirical’ reality itself in a universe defined by becoming. The notion of an ‘empirical reality’ that one can observe in a detached and impartial manner is not supported by the very scientific investigations that sought to investigate such an empirical reality in the first place. That is, if humans are ‘entangled’ with nature, such that we and it are constantly reconstituting each other at any given moment in time, then we are, *contra* Rosen, always interacting with reality—or, in Barad’s terms, ‘intra-acting’ with it.37 Furthermore, if reality is not fixed in its being (or rather, if it has no ‘being’, since reality is only becoming), then determining what ‘is’ becomes an active choice that one undertakes at each and every moment of our existence, and not just when we watch films. In other words, we are constantly choosing what to believe. With regard to these films, they may make clear this process through their digital imagery and ambiguous plots; but this only points to the more general process of the entanglement of film and viewer such that the viewer and the film, like the human and the universe, mutually interact, thus constantly reconstituting each other, too.

Both *Life of Pi* and *Gravity* feature beach-landing moments, involving hand and footprints being left in the sand—an image that in each film reminds us of the index and of how the index is evidence of our interactive engagement with the world, changing it (leaving a footprint) as it sustains us. In *Gravity*, it is as if Stone chooses to believe in Earth after seeing the magnitude of space, her own insignificance, and yet her own continuity with—rather than separation from—the universe, as signaled by the opening, unbroken tracking shot. *Life of Pi* seems to offer a similar narrative, although in choosing to believe in Richard Parker rather than murder, one wonders whether the film endorses outright untruths as ‘the truth’ over

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37 Barad, *Meeting the University Halfway*, p. 33.
the more sophisticated ‘meta’-notion that there is no such thing as truth (the power of the false).

All ‘accepted truths’ can be doubted, since they are constructed, chosen, and transitory in a universe with which we are entangled and which is constantly changing. George Monbiot suggests that *Interstellar* speaks of humanity’s preference for science fiction fantasies of planetary escape over taking responsibility for our environment.\(^{38}\) In other words, the film ultimately suggests not entanglement but fantastical escapism. However, the tesseract and the film’s mind-bending digital special effects shots also suggest entanglement—perhaps in spite of the film’s otherwise anthropocentric fantasy of conquest, just as the image of the infinite universe and the uncertain narrative in *Life of Pi* also suggest entanglement, in spite of the choice to believe in Richard Parker. Sublime digital images might not be indexical, but they remind us of our entangled nature with the universe, a universe with which we are constantly changing and in which we choose to believe—not in the sense of choosing this or that thing (likely an untruth) as what to believe, but in the sense of choice being an ongoing process, precisely because of our entangled, interactive relationship with reality, which itself is not fixed or stable but always becoming.

**Bibliography**


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\(^{38}\) Monbiot, *Interstellar*. 


About the Author

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