"There is Nothing to Carry Sound": Defamiliarization and Reported Realism in *Gravity*

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Although it is arguably unrealistic, one of the conventions of science fiction cinema is the presence of sound in the vacuum of space, for instance the commonly used low drone as the audible accompaniment to a large spaceship moving past the camera or the high-pitched whine which is apparently emitted from a small fighter craft as it whizzes into an attack position. According to William Whittington, the decision by the *Star Wars* (1977) filmmakers “to render this space with sound would colour the sound tracks of almost every subsequent science fiction film from *Star Trek—The Motion Picture* (1979) to *The Matrix Revolutions* (2003)”. (1) This observation certainly holds true for a number of more recent space films, such as Duncan Jones’ *Moon* (2009) which presents the sound of the moon harvesters spitting out rocks after processing them for Helium 3, and Joseph Kasinsky’s *Oblivion* (2013) which features the
digital beeps and swivelling sounds of drones inspecting Jack Harper's podcraft as it enters the giant space-station the Tet.

Against this background Alfonso Cuaron’s *Gravity* (2013) stands in stark contrast with its apparently realistic portrayal of sound in outer space. Following an opening title card announcing that “At 372 miles above the Earth there is nothing to carry sound,” the film plunges the audience into pure silence over an extreme long shot of the earth seen from outer space. This silence feels exaggerated by its suddenness in relation to the shrill score which rushes higher in pitch throughout the previous title cards and which abruptly drops out upon the cut to the long shot.

The sounds we hear during this opening 13 minute shot are noticeably sparse: communications chatter from NASA, the lead characters’ dialogue filtered through their own radio transmitters and muted sounds of the vibration of objects the characters touch. At one point the camera passes inside the helmet of Dr Ryan Stone (Sandra Bullock) and the sound track fills out significantly: her voice is clearer, her breathing is louder. According to *Gravity’s* sound designer Glenn Freemantle, the filmmakers “decided to do the sound design from the perspective of touch through vibration, and contact […] you hear things from the inside”. (2)

Breaking such a strongly established convention of science-fiction in this way risks disorienting the audience as a result of its unusualness—regardless of whether or not there is any realistic, scientific basis for the technique. As Whittington argues, audiences generally accept the “artificial” sounds commonly associated with the science fiction genre because they have a degree of familiarity, for instance:

[In *Star Wars*] the images of a model of a spacecraft shot with motion control apparatus are fused with the multichannel sounds of low rumbles, which are actually air conditioner noises (manipulated in terms of speed and “sweet-
ened” with overdubbing). This juxtaposition is accepted within the narrative context of Star Wars, offering us a future that is constructed out of familiar, though highly manipulated, sound materials. (3)

Aside from a number of internet voices that criticise the veracity of Gravity’s key plot points, the film has generally received very strong praise for its immersion and realism. (4) One critic writes:

I have to say that it was spectacular. I was sucked into the environment and for an hour and a half, was fully transported into space: on a shuttle, in orbit. It was as close to real as I could ever imagine a film on a screen to be. (5)

This faith in the film’s realism is echoed by a number of other critics, many drawing upon astronaut Buzz Aldrin’s brief positive comments on the film’s portrayal of zero-gravity. (6) Much has also been written in the industry press about the visual effects, particularly the LED “light box” (see image below) which enabled the actors to see rough approximations of the pre-visualized (“previz”) computer generated environments in which they were performing. (7) The narrative of the film is of course highly conventional: a rookie astronaut lost in space imitates the confidence of her mentor in order to overcome her inner doubts and save herself. On the one hand, such a banal narrative betrays elements of the simulacra in the accoutrement of digital technology associated with its production. (8) However, on the other hand the film itself as a spectacle has been praised as a worthwhile theatrical “experience”. (9) Significantly, real audiences do regard—or report—the film as appearing to be realistic. I believe there is an argument to be made that the unique sound design of the film is responsible to a large degree for this reported realism associated with Gravity.
This article develops the analytical concept of "reported realism" which my recent research has advanced as a means of understanding the critical and public discourse which emerges in response to stylistic devices that may or may not be factually accurate to real life but which are taken to be realistic representations nonetheless. (10) From this viewpoint, realism is most clearly understood as an effect that is bound up very tightly with the cinematic immersion associated with rich detail. Paradoxically, it is Gravity's absence of conventional diegetic sound that I believe focuses the audience's attention onto the rich detail of the few very specific sounds that have been incorporated into the mix. For example, as Ryan Stone unscrews the bolts on the Hubble telescope she is repairing we hear the tool's motor reproduced as a very low-pitched rumble recorded by the sound team in postproduction using "transducer" microphones which pick up "vibrations rather than regular airborne audio". (11) The audience's awareness of this phenomenon is enhanced by the absence of sound when an object touches the telescope but does not make contact with Stone. I regard the cause of this awareness to be an effect of what a Neoformalist analysis would describe as "defamiliarization" created by the film's unusual sound mixing. (12) While certainly there is a valid "realistic motivation" for the presence of this muted sound design, the significantly different nature of its remoteness encourages the audience to reconsider "space travel" and its cinematic representation from a fresh, unfamiliar perspective. (13)
This sequence, and its treatment of the diegetic sound, quite obviously recalls Stanley Kubrick's *2001: A Space Odyssey* (1968). Indeed, Kubrick takes an approach to sound that is even more rarefied than Cuarón's: whenever the camera's view is positioned from outside the spaceship there is absolutely no diegetic sound other than the characters' breathing which can be heard over their communication system. For example, when Dr Dave Bowman (Keir Dullea) ventures outside in a pod to remove the faulty radio component the pod's repair arm does not make any sound which is audible to the viewer. Remarkably, there is no diegetic sound even when Bowman improvises re-entry to the spacecraft by using the pod's explosive bolts to get inside the airlock. At this point, presumably the airlock is in a vacuum state and would not transmit any sound. It is not until the airlock doors are closed that we hear the sound effect of the hydraulic pipes restoring air-pressure. Unsurprisingly however, *2001*'s approach to such “silent” sound design is quite complex. For instance, although the audience hears diegetic sound once the airlock is closed, this vanishes on the cross dissolve to the next scene where Bowman —again in space-suit—stalks the corridors to shut down HAL. We hear his breathing inside the helmet but not the sound of his footsteps on the floor or the ladder. Of course, it is conceivable that HAL may have jettisoned all air from the spaceship in an attempt to suffocate Bowman (motivating his return to the space-suit) however this is purely inference. It is just as likely that such a stylistic choice is an artistic device to emphasise the sound of Bowman's breathing and create a hypnotic tension as the scene develops to the “Daisy” sequence.

While there are undoubtedly a number of aspects to *2001* which function to create defamiliarizing effects, in the following argument I am concerned with how Alfonso Cuarón's film extends these and uses contemporary technology to provide textual cues that prompt claims of realism from the audience. According to the Neoformalist position—and its Russian Formalist origin—defamiliarization should not be read simply as a technique which makes something strange, weird or bizarre. Rather, defamiliarization is an effect of artistic devices used by the work—not a technique in itself. (14) From this perspective, as an artistic work *Gravity* may be regarded as refreshing our cinematic experi-
ence, our expectations of outer space represen-
tations, and even our understanding of space. Cer-
tainly there are also defamiliarizing aspects to other aspects of the film's style such as its use of long-takes and stereoscopic (3D) composition. In tandem with the soundtrack, these attributes may function to renew some audience members' interest in stereoscopic (3D) cinema as an artistic medium, as it did for one filmmaker, Jason Diamond in a podcast review of the film's visual effects: "I think it's the only movie you have to see in 3d [...] and I don't like 3d unless it's like animated kids' movies". (15)

Much more extreme examples of defamiliarizing sound techniques occur during the violent moment in which the space shuttle is first impacted by the debris field. As the astronaut Shariff (Phaldut Sharma) is struck first by a piece of debris in the background of the shot the only diegetic sound is a grunt from the character heard over the astronauts' two-way radio. The deadly impact itself is startlingly inaudible, and this shocking disassociation of conventional sound and image enhances the affective impression of the violent event.

The debris field continues its assault, dislocating Stone's character from the Hubble Telescope and spinning her away as the shuttle explodes forcefully in the background. With no air resistance and in zero-gravity, the blasted particles scatter in all directions but most noticeably there are no accompanying sound effects since—according to the film's own logic—none of the characters are touching anything that is being ripped to pieces. The lack of explosion sounds is so radically unusual that it defamiliarizes the common science fiction spectacle of a spaceship disaster. Certainly the piercing shriek of the musical crescendo creates a strong dynamic tension during this sequence but that is a conventional device, however that too has been created and mixed in an unusual way which also contributes to the defamiliarizing effect of the film. (16)
Techniques which defamiliarize a film's soundtrack can be effective devices that create a disturbing, unsettling sensation for the audience that “shocks” them in an “immediate” way. (17) The absence of explosion sounds for instance is not shocking merely because it is unconventional, but also because the defamiliarizing effect encourages the audience to focus on the disintegrating debris which in an ordinary film might escape such close attention as it would be in one sense just an embedded part of the overall *mise-en-scene*. By stripping away the expected explosion sounds *Gravity* demands more crucial apprehension of its visual details—just as the remote sound of the contact microphone recordings of Stone’s tools in the opening sequence focus the audience’s attention onto the exceptionally photorealistic virtual space environment.

From a cognitivist perspective, viewers understand films by using their imaginative capacities to run an “offline mental simulation” of the narrative events depicted. (18) This is not to suggest that humans are somehow naturally inclined to watch films. Rather, cognitivists would argue that the human capacity for imagination evolved for various purposes which just happen to facilitate film watching. (19) For instance, Henry Bacon suggests that the human imagination “has tremendous evolutionary advantage” in that it enables humans to mentally rehearse for potential future situations as well as predict behaviours of animals during hunting. (20) It is therefore a contingent development that we are able to use this capacity to comprehend cinematic texts. As I have illustrated in the context of the World War 2 combat genre, films with greater density of audio-visual detail and information are often regarded as bearing a greater sense of realism. (21) I argue that this is because high levels of cinematic detail enable audiences to run much more vivid mental simulations of the fiction, which affords a stronger feeling of immersion, presence and therefore realism. In the case of *Gravity* for example, most...
viewers do not have any real-world reference of using tools in zero-gravity or the silence of the vacuum of outer space in order to evaluate the veracity of the screen depiction. However, as indicated above there are a large number of critics reporting that the film looks, sounds and feels realistic. Drawing on the field of cognitivist screen studies, it can be argued that the defamiliarizing sound techniques focus the audience's attention strongly onto the rich details of this particular film's diegesis and thus enable the viewer's imagination to create vivid mental simulations of the fiction they're viewing. (22)

Of course, this is not to suggest that space films that do use conventional sound design do not achieve realistic effects. Rather, this argument adopts the approach of a poetics of cinema in order to analyse and describe how films create particular artistic effects on their audiences. (23) For David Bordwell, poetics examines film as a “creative” art in which the analyst attempts “to find out the craft traditions—the work processes, the technologies, etc.—that give artists the menus they work with”. (24) Other films may or may not use similar items from the stylistic “menu” as *Gravity*, although I believe it currently stands as a non-normative example of this kind of defamiliarizing sound in the science fiction genre. For instance, Ron Howard's *Apollo 13* (1995) primarily stays inside the space craft, however when the crew engage thrusters to adjust their trajectory the exterior shots of the craft's thruster burning are accompanied by blasting sounds. According to the logic of *Gravity* this sound would be impossible to hear in outer-space, however that does not prevent *Apollo 13* from receiving reviews praising the documentary realism and apparent authenticity of its images. (25) (Undoubtedly, *Apollo 13*'s footage of actors Tom Hanks and Kevin Bacon floating in actual zero-gravity thanks to NASA's "vomit comet" also creates a strongly defamiliarizing effect.) (26)

More significantly, it does not seem that these details need necessarily be objectively accurate
Gravity furnishes us with excellent examples of this. After all, how many viewers know from real-world experience that sound does not travel in a vacuum? In fact—regardless of the truth of this concept—the filmmakers admit they did not strictly adhere to the “science” of sound in space, particularly in terms of the “futzing” or distortion of the characters’ voices when speaking over their radio communications system. As sound designer Skip Lievsay explains:

We kind of, split the difference there basically, in terms of the science of it [...] The more futzed the voices became, the more kind of realistic that is. But the less emotion is transmitted to the audience. Some of those sounds are crucial to conveying the depth of the emotion. So we were constantly twiddling the futz. Trying to make it less futzed or more futzed based on what was happening on screen. (27)

This audio “futz” seems to be an additional textual detail that supplies vivid information for the audience’s mental simulation of what they are watching. The emotional characteristics of the actors’ voices described by Lievsay are also most certainly a detail that enables audiences to imagine the fiction. Sandra Bullock’s voice performance, for instance, is marked by a breathlessness and occasional stuttering as she desperately attempts to make contact with either the Explorer astronauts or Houston Control:

Explorer, do you ... do you copy? Houston, do you copy? Houston, this is ... Mission Specialist Dr Ryan Stone. I am ... off structure and I am drifting. Do you copy? Anyone? Anybody? Do you copy? Please copy. Please.

(Gravity problematises the concept of cinematic realism in interesting ways. While there are certainly an extreme minority of real-life astronauts who have direct experience of outer-space—and some of them have praised the veracity of the film’s imagery—the vast majority of audience members only have prior texts to use
as a gauge for the film's realism. Many reviewers of Gravity claim the film feels realistic, while science buffs on the other hand tend to object to many aspects of the plot such as the absurdly close proximity of the space stations. (28) A Neoformalist approach, derived from the Russian Formalist tradition, would argue that the “realistic motivation” for the presence of a cinematic device such as the lack of sound in space is really “an appeal to ideas about reality,” rather than whether or not this is a valid “imitation” of reality. (29) As a result, it is unsurprising that many of the accounts critiquing the nonsensical aspects of the film's storyline tend to confess that the representation of space itself feels realistic. For instance, self-admitted “science geek” Corey S. Powell claims that “The scenes of laborious work on the Hubble telescope while the Earth looms overhead—all sense of up and down totally scrambled—are lovely and realistic”. (30)

In this article I have outlined the contribution played by the film's sound design in cueing claims of realism—reports of realism—by the popular press and everyday film viewers. Future analysis of the film could examine the impact of the stereoscopic cinematography as well as the long-takes which are also likely to create associated defamiliarizing effects. I have chosen to focus here on the sound design because of its central significance to the film's sense of realism. Although Gravity's narrative, character development, and even the emphatic and euphoric score during the climax are arguably highly conventional devices, there are significant aspects of the film's audio-visual style which function to defamiliarize the audience's expectations of space and its cinematic representation. As a pure example of the significance of this effect, consider astronaut Tom Jones' comments praising the “peacefulness” shown in some of the film's moments of silent contemplation of the Earth from orbit. Jones proposes: “Watch Gravity and you'll know why astronauts eagerly sign up for the next launch”.

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This article has been peer reviewed.

Endnotes


3. Whittington, Sound Design & Science Fiction: 120.


13. Ibid.


17. Bender, *Film Style and the World War II Combat Genre*, 139.


21. Bender, *Film Style and the World War II Combat Genre*.


27. Skip Lievsay, interviewed in Soundworks Collection, “The Sound of Gravity.”


31. Tom Jones, cited in Knight, *One Small Step For a Critic*. 

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