The Tinnitus Trope: Acoustic Trauma in Narrative Film

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“\textit{You know that ringing in your ears? That eeeeee? That's the sound of the ear cells dying, like their swan song. Once it's gone you'll never hear that frequency again. Enjoy it while it lasts.}"

In Alfonso Cuarón’s \textit{Children of Men} (2006), this otological lesson is delivered to protagonist Theo Faron (Clive Owen) after his narrow escape from a coffee shop bombing. The speaker is Theo’s ex-wife Julian (Julianne Moore), the leader of an underground militia group. The audio-visual perspective is Theo’s. Julian stands in an abandoned rail station with a high, vaulted ceiling, addressing the camera/Theo as her men drag him away. As Julian recedes from view, her voice recedes into its own reflections in the empty, reverberant space—its attenuation only amplifying her prediction of oncoming hearing loss.

As one might guess, Julian’s cold and poetic diagnosis is great cinema but sketchy otology. In the acoustic trauma associated with a powerful impulse such as an explosion, hearing loss and tinnitus are directly related, but separate, phenomena. Rather than dying during the ensuing days, the affected hair cells of the cochlea undergo an \textit{immediate} reduction in their ability to transduce and amplify sound. The attendant sound of tinnitus comes not from the affected hair cells themselves, but from maladaptive neuronal activity, as the auditory system attempts to compensate for reduced input in the affected sound frequencies. The bad news for Theo is that he has
hearing loss now. The good news is that, in the coming hours and days, he may regain much of that loss, which could, in turn, allow the tinnitus to subside. [1]

Julian, however, casts the sound of Theo’s acoustic trauma as the dying screams of his biological apparatus. In her monologue, tinnitus is the tragic signal of an unrecoverable loss, a loss that must be borne by the listener alone. Taking in the long Hollywood history of “steel eardrums” and consequence-free explosions, it might seem odd that even a sophisticated [2] action-oriented film would pause to consider the lingering damage from a single and comparatively unspectacular bombing. But as many moviegoers will have noticed over the past decade-plus, the sound of tinnitus as a representation of acoustic trauma has become commonplace—arguably to the point of cliché. [3]

By charting the form and history of the tinnitus effect, we can begin to examine why a mixture of piercing and muffled sound has lately become so useful and salient in narrative film, a question that gives entry to broader issues of cinematic subjectivity and its cultural-historical context. If film audiences share something like Julian’s interpretation of acoustic trauma, it may be that cinematic tinnitus successfully sonifies contemporary feelings of loss and unease around politics and selfhood.

The Anatomy of a Trope
Children of Men’s opening bombing scene displays the usual characteristics of the tinnitus trope. When the coffee shop explodes shortly after Theo’s exit, the soundtrack evokes his damaged auditory perspective through a ringing sound and a reduction of the ambient sound of the city street. A handheld camera visually reinforces this point-of-audition (POA) sound with Theo’s unsteady point of view (POV), moving toward the debris and carnage of the bombing and coming to rest on a staggering woman holding her own severed arm. [4] However, sound and vision soon diverge, as the tinnitus effect continues through the subsequent title credit and the next scene, in which the traumatized Theo is shown entering his workplace. Such a schism between aural and visual perspective, which allows us to both inhabit and objectify the protagonist, is common in the cinematic representation of acoustic trauma. As Robert Walker has pointed out in his study, “Cinematic Tinnitus,” this audio-visual effect presents both the sound of tinnitus and an outside view of its effects on the sufferer, allowing filmmakers to situate affective states such as pain, shock, dislocation, and alienation into their narratives. In the case of Theo, “his character arc is from an apathetic disillusionment to reluctant hero and eventual saviour,” Walker writes, “and the tinnitus is an important part in underlining his initial detachment from society.” [5]

In sum, Cuarón’s film displays elements that have since become standard in the tinnitus trope: keening tinnital sound(s), low-pass filtration to muffle and reduce ambient diatetic sound, a POA-POV split, and the deployment of these formal elements in the service of manifesting a character’s affective state and its outward effects. The only thing unusual about the use of tinnitus in Children of Men is that the film reflexively refers to the effect when Julian anticipates and comments upon the tinnitus of Theo.

A Tinnital Timeline
When did these formal elements emerge and find their codification as acoustic trauma? Since the facts around the appearance of the tinnitus trope have yet to be systematically detailed, I have been assembling a timeline by crowdsourcing examples
online and screening suggested films for verification. As the timeline shows, although Arthur Hiller's *The Out of Towners* utilized the effect as early as 1970, onscreen ears remained mostly silent for the rest of the 20th century. [6] The exceptions are few, but include important instances. The archetypal example of attenuated, tinnital sound deployed to represent wartime trauma occurs in Elem Klimov’s *Come and See* (1985), after the child-soldier protagonist survives an artillery barrage in a forest. *Come and See* is often mentioned as an influence on Steven Spielberg’s *Saving Private Ryan* (1998), which uses low-pass POA sound in its first major battle and the tinnitus effect in the last. But while *Saving Private Ryan* is often mentioned as the early exemplar of this effect in American film, James Mangold’s *Cop Land* (1997), not only precedes it, but actually pivots psychologically and narratively on hearing loss and the sound of tinnitus.

Nevertheless, it is not until 2003 that the tinnitus trope explodes, appearing in at least two or three movies a year from then on. And although tinnitus can be caused by rather banal factors such as medications, illness (as in 2013’s *Dallas Buyers Club*), and age-related hearing loss, it is mainly used in these films as described above, to represent the aural and psychological effects of violence-induced acoustic trauma.

**Noise Reduction and Production—Spectral Analysis**

So, why has cinematic tinnitus spiked only recently? First, we must address a possible technical barrier proposed in Robert Walker’s piece. While Walker states that both technical and cultural contingencies occasioned the representation of tinnitus, his only specific claim about the advent of the effect credits the adoption of Dolby noise reduction in the mid-1970s. This technology allowed sound designers to utilize frequencies above 5-8kHz, which were previously “rolled off” by noise-fighting Academy Curve equalization. “This also happens to be the frequency range of most tinnitus effects,” he writes, “thus making them almost technically impossible prior to 1975,” because audiences would not “be able to accurately distinguish the intentional noise of a tinnitus effect from poor system performance.” [7]

However, while advances in audio fidelity may have expanded the palate of sounds for the representation of tinnitus, history and spectral analysis do not support the idea that Dolby NR made such representation possible. The Academy Curve was no barrier to Hiller playing tinnitus for laughs in the pre-Dolby NR *The Out of Towners* (1970). When Jack Lemmon’s George is temporarily deafened by an exploding manhole cover, a pair of tones at 1.6 kHz and 2.3kHz, mixed with the sound of wind, supplant the street sounds of Manhattan. Combined with a shot of a slack-jawed Lemmon shaking his
head, these sounds leave no doubt that we are auditing George’s blasted aural perspective. And while a clip of Theo’s tinnitus in *Children of Men* contains some faint energy above 8kHz, its primary frequencies are approximately 3.9 kHz, easily reproducible in the Academy Curve days, and 5.1kHz, which might have been somewhat affected, but not rendered inaudible, by the curve.

![Fig 2: Tinnitus spectrograph](image)

As one member of a sound design web forum told me, the most common approach to representing acoustic trauma today is “to apply a low pass filter to any background audio (the muffled effect) and add a sine wave at about 3khz for the duration of the effect (the tinnitus effect).” While the details vary from film to film, this shorthand for acoustic trauma “works” and has long been technologically achievable, indicating cultural factors behind the trope’s recent prominence.

**9/11 and the Sound of the Neurological Self**

Convincingly accounting for the rather sudden and protracted case of tinnitus in film since 2003 would require a much larger study, one that would widen its scope to connect cinema with the cultural history of acoustic trauma and its articulation with changing notions of subjectivity. While I have not conducted such a study, my own ethnographic and historical research on the prevalence, treatment, and experience of tinnitus indicates some questions for future investigation.

First, how—if at all—do increasing or changing representations of acoustic trauma articulate with changing notions of nation, security, and warfare? Tinnitus is the top disability in American troops returning from Iraq and Afghanistan and untold numbers of westerners have experienced it after terrorist attacks in New York, Madrid, London, and Boston. It does seem plausible that consequence-free cinematic explosions began to strain credulity (not to mention morality) after such attacks, even for those who have not directly experienced acoustic trauma. Tinnitus offers an economical representation of trauma in films that aspire to some level of realism and empathy—and in fact, researchers view tinnitus and PTSD as related. Could a nation’s trauma be sounding in the ears of its onscreen heroes?
Second, this matter of traumatized brains raises what is for me a more interesting
question about subjectivity: could cinematic tinnitus be signaling a historical
contradiction between an ascendant neurological self and the unconscious self of
psychoanalysis? As understandings and experiences of self are culturally informed and
historically contingent, we would expect that the internal sounds of the filmic subject
would change over time. The sound of the individual portrayed onscreen—or internal
diegetic sound—includes both sounds of body (which Michel Chion calls “objective-
internal sounds”) and sounds of mind (“subjective-internal sounds”). Chion defines
subjective-internal sounds as “mental voices, memories, and so on.” [8] The voice holds
a special place among sounds suited to the expression of the conflicts and repressions
of psychoanalytic theory. Indeed, remembered voices and voiceover narration are
hallmarks of the psychoanalytically influenced film noir, often used to construct a
tormented male subjectivity in the post-World War II era. [9] In the cinematic interior
monologue, Mary Ann Doane notes, the voice signifies “the ‘inner life’ of the character,”
and is “the privileged mark of interiority, turning the body ‘inside-out.’” [10] However
discordant or nonsensical it may become, the internal voice is recognizably human.

But what is the sound of the self as a neuronal network? The proliferation of brain scan
technology and targeted psychotropic drugs in recent decades has encouraged a
neurological understanding of self, one that has been uneasy embraced by laypeople
while never reconciled with conflicting beliefs in a soul or an underlying, inner self. [11]
In the screech of tinnitus, the body displaces the privileged voice and undermines the
coherence of the self the voice represents, blurring Chion’s categories of objective and
subjective internal sound. The raw affect of tinnitus has gained cinematic salience in
parallel with film and other humanities scholars’ increased interest in affect theory, flat
ontology, and other affronts to subjectivity as (we think) we’ve known it.

Does tinnitus express alarm at the contingency and fragility of the self that science has
shown us? Julian’s speech in Children of Men would seem to suggest as much. The
noir-ish Theo, she indicates, is damaged goods, estranged from himself and others,
doomed to lose contact with whatever sounds the world has to offer at 3.9 and 5.1kHz.
If his hearing loss is meant to suggest his social isolation, his self-alienation is
suggested by a phantom sound of the body, the wordless signal of a short-circuiting
neurological subject. We would have heard the voice of Theo’s mind in the 1940s—now
we just hear the sound of his brain.

Link to film clip in criticalcommons.org: “Julian’s Monologue about Tinnitus from CHILDREN OF MEN”
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Notes


[3] The trope is already earning its parodies. For example, in a scene from the Comedy Central sitcom Broad City, a character momentarily develops tinnitus and vertigo upon realizing she has failed to sign for an eagerly anticipated package.


[6] I assembled this admittedly unscientific timeline through Google searches and by querying academics, sound designers, and other netizens in social media and online forums. A less comprehensive list can be found in the TV Tropes entry “Shell-Shock Silence.” http://tvtropes.org/pmwiki/pmwiki.php/Main/ShellShockSilence Accessed 12/31/2014. I have excluded films such as There Will Be Blood (Anderson, 2007), which sonically represents sudden hearing loss, but not tinnitus, and Blackhawk Down (Scott, 2001), which makes no attempt to represent combat-related hearing loss from a first-person perspective.


