

***Three requiems and a dream: The language of electroacoustic sound in film***

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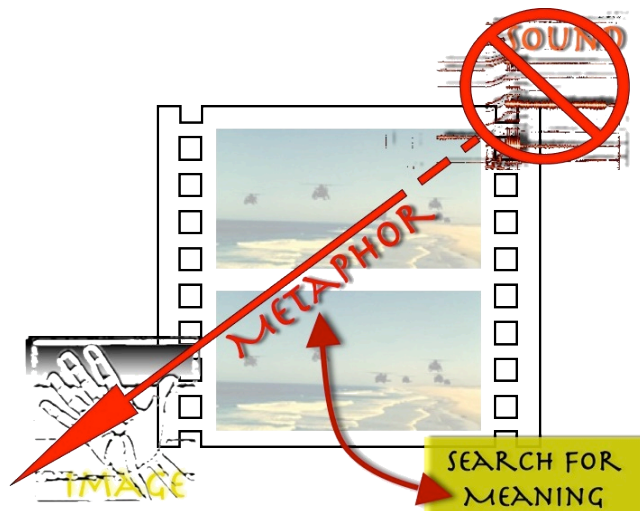
[Rudyp@umkc.edu](mailto:Rudyp@umkc.edu)[www.paulrudy.com](http://www.paulrudy.com)**Abstract**

In the perception of an audiovisual scenario and context our ears are informed by our eyes, just as our eyes can be redirected by our ears. Perception becomes the grounds on which film artists manipulate sonic/visual relationships to create meaning beyond the surface of the narrative. As tools and techniques of electroacoustic sound become more available, timbre plays an increasing role across all segments of our sonic culture-especially in film. As a result, the irresistible syncretic weld between sound and image (Chion) has reached a sophistication exploited by a growing number of filmmakers. Diegetic attack/release transients initiate morphological development into an ever-increasing abstraction of sonic material. Diegetic sound is abstracted into non-diegetic usage and vice-versa: the line between diegetic/non-diegetic disintegrates. Abstract diegesis and abstracted non-diegesis bound a continuum on which sound opens up deeper potentialities in the expression of film. The resultant perceptual vacuum, filled by a this growing language of electroacoustics in film will be discussed with examples from the film repertoire.

**1. Introduction: Symbol**

This paper draws connections between the perceptual nature of sonic phenomenon in a work of sonic art and in the filmic context of sound and image. Acousmatic sound (used here broadly to mean any sound removed from its source), is a visual sensory experience for many reasons: because our inner eyes are engaged when a sound reminds us of something, because we have expectations about how things should (might...could) sound or look (feel or smell, etc.) even when the experience is missing direct sensory data. Because our senses ALL work in tandem and inter[activate] each other in any sensory situation there is little difference between a pure sonic experience, and one with visuals in terms of how we read the sonic surface or the combination of sound and image. The sonic experience, then, is rich with multi-sensory interactions and is especially well suited for symbolic and metaphoric exploitation in film. Mandler describes a cognitive theory, Chion calls it synchresis, Smalley calls it trans-sensory, Murch calls it the perceptual vacuum, and film criticism calls it diegetics, but all share the common notion that audiovisual scenes engage our mind in a pan-sensory experience that speaks to us in many ways at differing levels of consciousness whether listening to electroacoustic music or watching a film.

In film, the perceptual vacuum is created through juxtaposing sound and image on a continuum from diegetic (part of the scene) to non-diegetic (sound for added value-traditionally music added for emotional impact). Increasingly these perceptual cracks are being filled with electroacoustic sound and techniques stemming directly from the acousmatic assumption of removing a sound from its source, and using that sound for its abstract qualities in order to create a richer field of possibilities and sub-text: an invitation for the viewer to look deeper than what is on the surface. An image combined with a sound placed in a context, none of which matches expectations creates a metaphor and invites an individual search for meaning at a physical, emotional and psychological level (in that order).

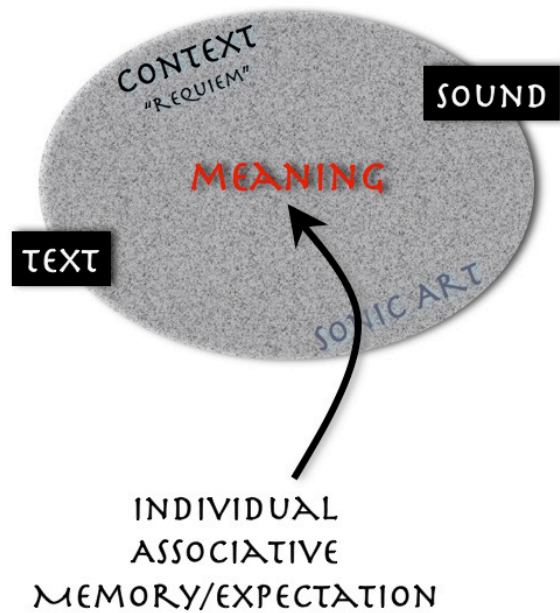


**Figure 1: Perceptual vacuum in the filmic context**

Mandler says that in these situations, we actually experience a biological arousal (heart rate increase, squirming in our seats, etc.) because we perceive that something has gone wrong. (Dowling & Harwood, 214) That "something has gone wrong" (i.e. "does not conform to our known experience") is not a negative thing, but rather is the poetic foundation on which metaphor and symbol is built in a work (whether musical, visual or otherwise), and is the ground on which those who seek to create ambiguity, multi-dimensionality and inference in art stand! This paper looks at the diegetic discourse common in film, and identifies new possibilities of Pan and Inter-diegetics made possible by the juxtaposition of sound, removed from its source, and manipulated electroacoustically, and image.

## **2. Requiem 1: Symbol in Acousmatic work**

Cole & Jakimik showed that "...it is not only what we hear that tells us what we know; what we know tells us what we hear." (Howard and Ballas, 1980, p. 432). In other words, we do more than just gather information with our ears to understand a sonic situation or environment. How we perceive that information, how we interpret it and how we decide what it means, all takes prior experience as its starting point: we filter that audiovisual experience through our known (previously learned) understanding of the world. Michele Chion's Requiem provides a clear example. In the context of "requiem" (in this case a fixed medium two-channel work) he presents the text, with sounds that access listener associations through memory and experience (i.e. the mass text, its setting in a cathedral and our personal experiences with both), in different ways than we expect for a requiem mass. Through these incongruities between our learned experiences (prior history) with the mass and the specific sounds he chooses to use, and because of our individual experiences with the mass, he creates is a work that serves up unique associations, and therefore meaning for each individual.



**Figure 2: Diagram of an acousmatic work, Chion's requiem**

Nowhere is this more evident than his ironic setting of the Sanctus text. The evil sounding creatures uttering the word "Sanctus" (holy) does not jive with what we expect to hear in ANY sort of a Requiem, let alone this specific text. His focus on and exaggeration of sibilants, pitch shifting, interference of noise, etc. (naive children-contrasted with harsh sibilants) all contradict the notion of reverence that we expect in this movement forcing our minds to be directed in other ways than we expect, and inviting (if not forcing!) us to unpack what we hear.

Furthermore, his notion of synchresis:

(a word I forged by combining synchronism and synthesis) is the spontaneous and irresistible weld produced between a particular auditory phenomenon and visual phenomenon when they occur at the same time. This join results independently of any rational logic." (Chion, 1990, p. 63)

developed as an analytical notion for describing filmic situations, is fully activated here without the presence of any actual image. We are forced to watch through our ears the torture of another human in an aurally gruesome and wholly unexpected setting of the Sanctus text. The saturated ambiguity and potential meaning is compelling here: complacent listening is NOT an option-and because we cannot close our ears to the sounds, we cannot close our inner eyes as well. Indeed, what we hear tells us what we see, which does not fit what we know, and so the search for how we understand this setting of the Sanctus deepens, and what we "know" is expanded through aurally activated visual sound.

### 3. Requiem 2: Electroacoustic sound in film

*"...the metaphoric use of sound is one of the most fruitful, flexible, and inexpensive means..." [to achieve the illusion of "completeness"] ...by choosing carefully what to eliminate, and then re-associating different sounds that seem at first hearing to be somewhat at odds with the accompanying image, the filmmaker can open up a perceptual vacuum into which the mind of the audience must inevitably rush." (Murch 1994, xx)*

The opening of Daren Aranofsky's *Requiem for a Dream* provides a perfect example of the perceptual vacuum described in the acousmatic context of Chion's *Requiem*, and that Murch describes in film. To a split screen of a mother/son argument, we hear an orchestra tuning. Further, the orchestra just can't seem to get tuned and at times sounds like it is un-tuning. A conductor's tap signifies the end of the introduction before the opening credits. What are we to make of this? To be sure, the tuning/un-tuning orchestra adds tension to the already divided image (and the argument between mother and son) as non-diegetic "emotive" music since it does not emanate from the scene itself. With the conductor's baton tap, however, a "diegetic" association is created through acousmatic sound (acousmatic sound used here in the most broad sense of "source unseen"). Our attention is drawn to the concert hall and we visualize a tandem scene, through our ears, of an orchestra preparing for performance.

What is interesting about his example is that the orchestra clearly has simultaneous, or parallel functions in acoustmatic and soundscape modes of association: the quality of the orchestra tuning, sound for its sonic qualities divorced from source, adds an emotive layer to the split screen (acousmatic listening) and simultaneously we make the association to the context of "orchestra" and even concert hall location (soundscape listening). We may even go so far as to connect the orchestra tuning with the traditional requiem (in this case for dead dreams), further delineating its soundscape associations. This electroacoustic sound usage turns non-diegetic sound on its head creating a rich minefield of associations and plays with a source in both the acoustmatic and soundscape modes of listening. The twin function of sound removed from its source abolishes the dualistic division of acousmatic and soundscape contexts, and reveals that they are two fruitful sides of the same coin, and applied together can create a richer minefield of possibilities in film, as well as in electroacoustic music.

#### **4. Requiem 3: Death of a helicopter and diegetic boundaries**

##### **A. Source, morphology, objectification and diegesis**

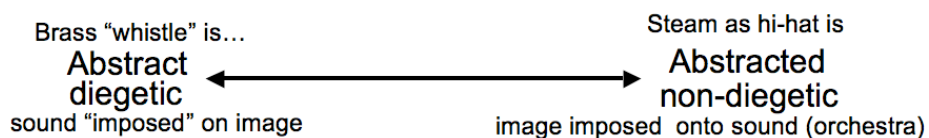
Examples of a dual function of sound in film can also be found in Hollywood pre-dating Pierre Schaeffer's *Etudes Bruits* of 1948. In *The Harvey Girls* (1946, Turner), two instances show the use of abstract sounds in diegetic substitutions, and abstracting sounds for non-diegetic purposes.<sup>1</sup> In the train arrival scene (00.16:20), the orchestral music provides the sound effects for camera shots of the locomotive (rather than actual recordings of the train). At 00.16:42 we see the train whistle blowing, but orchestral brass provide the sound. To be sure, the pitch content of the orchestra brass matches that of a real train whistle, but the sound source has nothing to do with the whistle. This is common in early film and shows the power of Chion's notion of synchresis: we hear orchestra brass (abstract sound completely unrelated to the image), but apply it to the train whistle (concrete image), and in our perceptual mind-we force it to conform to our know repertoire of experience. In this case, there is no "added meaning" but rather a simple situation of substitution. We can call this usage *abstract diegetic* sound because the unrelated sound source is replacing the real sound that would be heard if we were in the scene.

At 00.22:46 we see and hear steam shooting from the side of the train (as it should be!). But, the train steam also provides the musical off-beats (resembling a half closed hi-hat), to brass section on-beats within the orchestra. There is an integration of sound effects into the orchestral music. Further, the mix weighs the

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<sup>1</sup> The use of abstract and abstracted here follows Emmerson (1986).

brass more prominently as the scene progresses in a rudimentary timbral morphology between the train steam and brass chords. The sound designers were already beginning to think not only in terms of sound effects as instruments and vice-versa, but also in shaping that sound morphologically through mixing. The usage of “non-musical” sounds in a musical context approaches Schaeffer’s notion of objectification, where a sound is used for its spectral qualities, divorced from its source (*i.e.* the train steam as percussion instrument). We can say then that the train steam is abstracted out of the audio-visual scene (*i.e.* extrapolated from the visual source) but that it is used as non-diegetic sound (functioning within the orchestra as “music”). This creates a curious set of ironic relationships between abstract/abstracted source material and its diegetic/non-diegetic application within the audiovisual experience. We can even go so far as to say that the brass as train whistle is sound imposed on an image, and that train steam as hi-hat imposes the image onto the sound! The former is an abstract usage of sound forced onto the image, while the latter is sound abstracted from the image.



**Figure 3: Aesthetic framework of electroacoustic sound in film**

### **B. Abstract Sound with Image**

In the *Harvey Girls*, we accept the orchestra substitute for the train, or the train steam as a percussion instrument because they are related morphologically, musically or experientially within the context of the audiovisual scenes they are making up. But what if sound applied to a film scenario cannot be forced into an understandable correlate either morphologically or experientially? Tati exploits this abstract diegesis quite profoundly in *Mon Oncle*, creating metaphoric meaning rather than a simple substitution. At 00.03:45, when we meet Mr. and Mrs. Arpel, and are introduced to the antiseptic environment of their home, we hear unusual sounds.

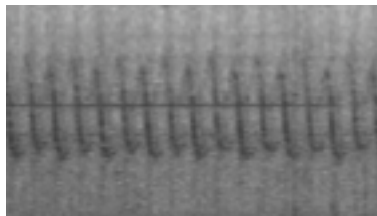


**Figure 4: Mr. and Mrs. Arpel in Tati’s Mon Oncle**

First, the narrative dialogue is replaced with a poetic dialogue of Foley sounds. Mr. Arpel's footsteps resemble the teacup he has been drinking from, while Mrs. Arpel's resemble clip-clops of the horse heard earlier in the scene during the credits. Further, Mr. Arpel makes no other sounds (he scoffs but we don't hear it), while Mrs. Arpel makes noisy rustling sounds with her tent-like dress. Many interpretations are possible such as the fragility of their "perfect" existence, the absurdity of our voyeuristic desires to get into these people's lives, or gender issues/stereotypes, social, interpersonal, relational, medial (issues of the medium) or possibly a commentary on the nature of film itself (i.e. going beyond operatic tradition-film as new art form). The aesthetic potential lies in the juxtaposition of miss-applied sounds for diegetic purposes (the tea cup and horse sounds are diegetic and come from within the scenes, but are re-applied). This ironic circumstance is what invites the viewer into their own fantastical interpretation of the scenes they witness. The sounds, as they relate to the image are abstract (i.e. have nothing to do with the source we see), even though they originate from objects within the scene. The point is, Tati's use of abstract diegetic (in this case Foley) sounds invites (even forces!) us to get deeper into the messages of the film to make sense of it all.

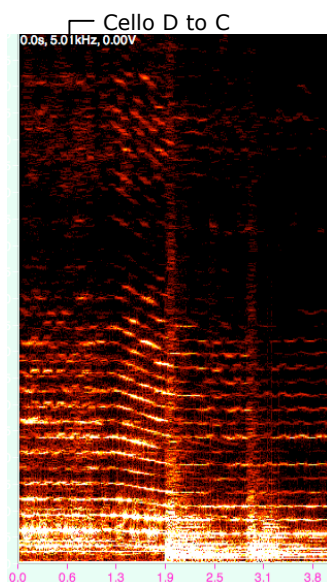
### **C. Abstracted Sound with Image**

On the other side of the continuum lies the abstraction of sound from a source (visual or aural) and hijacking it for non-diegetic usage. The helicopter sound in *Black Hawk Down* is a perfect case in point: it provides a micro-genetic source that is mapped onto the meso and macro scales throughout the film. Figure 5 shows the micro-glissando structure of the helicopter sound from the Doppler shift of each blade rotation (each rotation is approximately 200 milliseconds in duration):



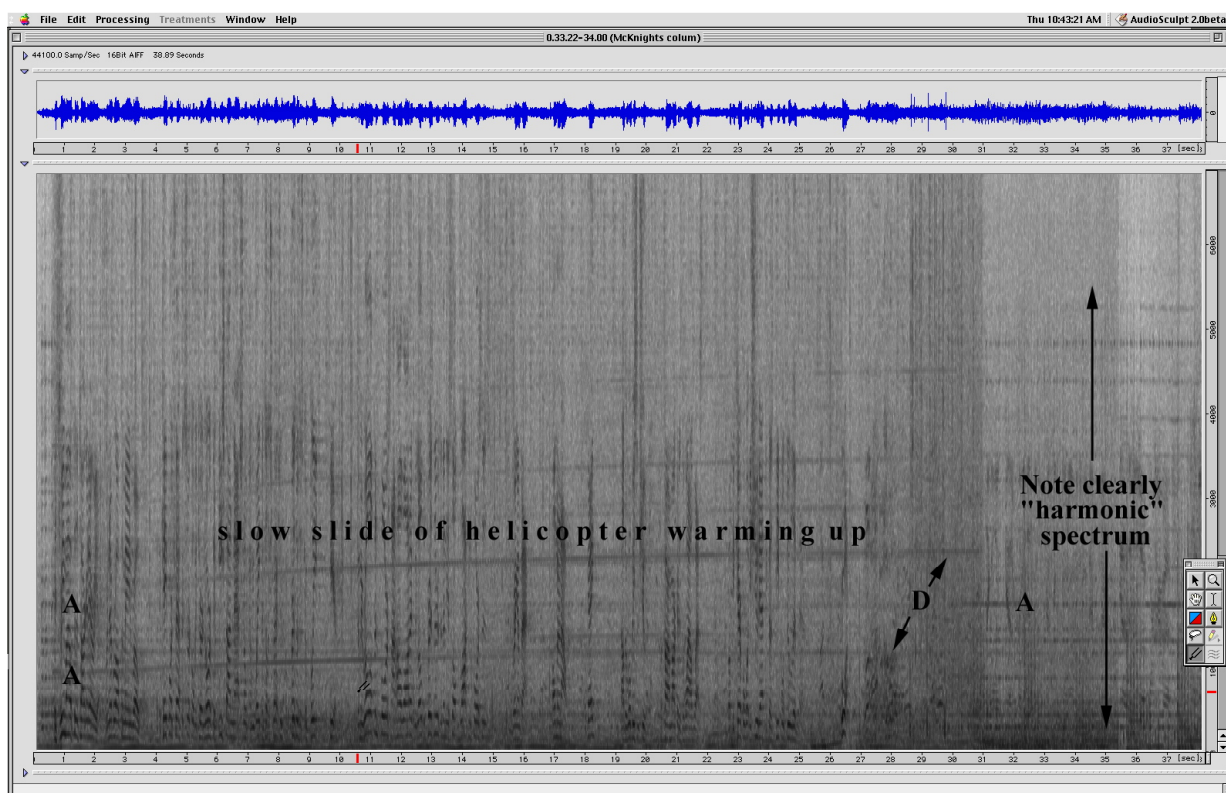
**Figure 5: Sonogram of Doppler shift of each Black Hawk rotor rotation**

This sound example comes from a diegetic setting of the helicopter sound as a "real" part of the scene from which it is extracted. The glissando effect is also mapped out in meso-structure of sound through orchestration of a cello (cello approximately 1 second in duration).



**Figure 6: Cello glissando from D to C (00.02:53-00.03:55)**

The sonic context here is non-diegetic ("music") and the glissando is abstracted from the Doppler shift of the helicopter sound. And finally, the macro-scale glissando is used in a combination of abstract and abstracted, diegetic and non-diegetic (approximately 30 seconds in duration):

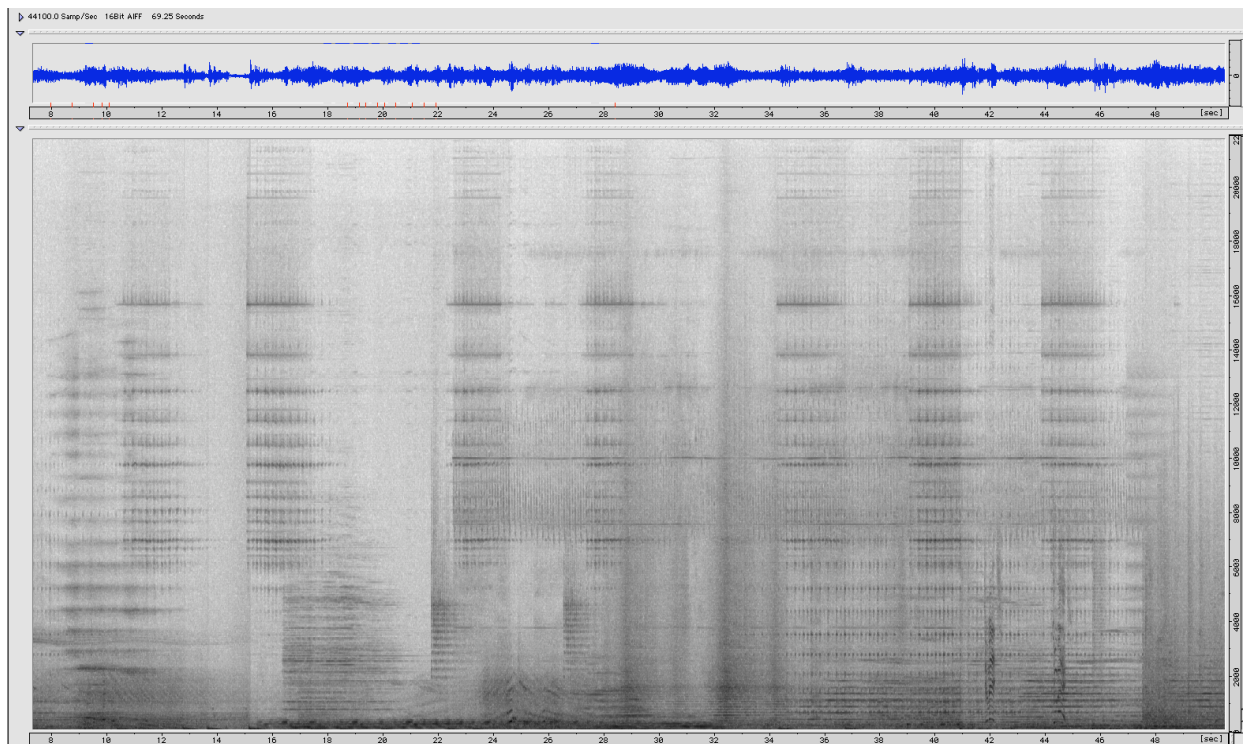


**Figure 7: McKnight's column briefing (00.33:22-00.34:00)**

This example combines a diegetic usage (we see helicopters in the background, not running, and associate the high-pitched whine with their warming up), and yet the pitch content is clearly created to match the harmonic structure of the non-diegetic music-embedding it with a dual function in the diegetic/non-diegetic function, and also a dual abstract/abstracted discourse.

#### D. Meta-diegesis

The abstraction of the helicopter sound reaches maximal effect, when at 00.38:00 into the film, the non-diegetic sound score is made almost exclusively of abstracted properties of the helicopter sound: the glissandi, the pulsed modulation, and the metallic orchestration (all of which can be seen on the sonogram).



**Figure 8: Objectification scene, 00.38.07-00.38.48**

The function of the Doppler principle (glissando) continually moves between diegetic and non-diegetic "music" throughout the film. In this particular case the sounds that are abstracted from the helicopter and its sonic properties are used to make up the non-diegetic music to create a meta-diegetic sonic world inside the head of the actors.<sup>2</sup> Another very clear example of this meta-diegetic sound is in *The Stepford Wives* (Dreamworks, 2004) when Joanna (Nicole Kidman) finds out she's been fired. Her internal tension is carefully and completely orchestrated with chorus (voices in her head?) (00.09:45).

<sup>2</sup>Please see Paulus and McMaster (1999) for a discussion of meta-diegesis in Kieslowski's "Three Colors: Blue."

## 5. Expanding diegetics further

"What we hear tells us what we see/what we see also tells us what we hear..."

### A. Pan-diegesis

We can take this even further to define a concept of pan-diegesis-where real, and imaginary vacillate between abstract diegetic and abstracted non-diegetic. In *Errand Boy* (1961, Paramount Pictures), Jerry Lewis choreographs the music in a fantastical imaginary monologue: non-diegetic sound (big band music) articulates an imaginary narrative with a complete absence of diegetic Foley. Instead of perceiving the diegetic text, we interpret the movement in conjunction with the music as a boss berating his staff: we get the emotional and textual gist by the combined effect of the choreographed motion and the music. We are left wondering tho, is this music actually playing in the room? Is it playing in his head? It is there for both his ears and our benefit, creating a curious and slippery pan-diegesis.



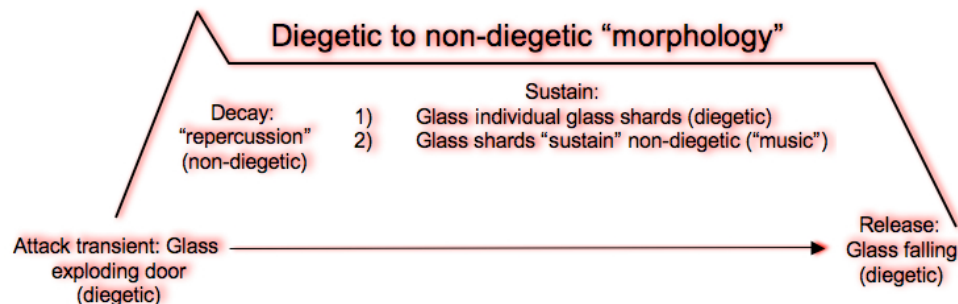
**Figure 9: Jerry Lewis in the Errand Boy, 01.15:00**

Other examples of Pan-diegesis, music which functions as fantastical but believable cross diegesis, include *Moulin Rouge* (20<sup>th</sup> Century Fox, 2001) and the *Stepford Wives*.

### B. Inter-diegesis

The electroacoustic manipulation of sound in current practice, is used to create diegetic windows into, or frames around, non-diegetic fantasy. In *Constantine* (Warner Brothers, 2005) an audiovisual phrase at 01.42:50 with Lucifer is initiated with the diegetic sound of a door exploding followed by the glass shards suspending (in both space and sound) and continues with a morphology between sustained

glass sounds and voices (a symbolic extension of the glass sounds). This phrase is closed with the visual and diegetic sound of the glass shards falling to the ground in real-time. The transformation between diegetic and musical provides an inter-diegetic transportation from the real to the fantastical in a completely seamless fashion.



**Figure 10: Inter-diegetic sound in Constantine, 01.42:50**

Similarly to the Aranofsky Requiem, we are asked to simultaneously enter a soundscape world (the glass is real, even though it does not function according to Newtonian laws of physics by falling directly to the ground) that transforms into an acousmatic world through the morphological manipulation of sound, and inter-diegesis is the mechanism by which this occurs. These transformations (soundscape to acousmatic and vice-versa) are common in electroacoustic music, but only recently have become common in film.

## 6. Conclusion: Diegetics and the transmodal experience

"Although acousmatic music may be received via a single sensory mode, this does not mean that the other senses lie dormant; in fact they spill over into sonic experience." "Transmodal linking occurs automatically when the sonic materials seem to evoke what we imagine to be the experience of the world outside the music..." (Smalley, 2007)

All sound in film is choreographic in nature: designed to create a dance between sound, image and motion, with real and unreal scenarios that invite us to explore sub-messages in a layer-cake of ambiguity. Inter-diegesis in film creates fantastical worlds beyond our known physical reality, and this perceptual process in turn invites inter-modal perception-engaging multiple senses simultaneously to explore in the mind of each listener the feel, smell and sound/vision that the film-makers have created. The artistic risk involved in inter-diegesis is considerable. Too much sonic manipulation can lead to prescription of meaning (Black Hawk Down treads this danger) and not enough leads to abstraction (disengagement of the viewer). The perfect balance lies in the film-makers ability to invite the viewer to subscribe to the possibilities and the potential yield of trans-sensory experience is well worth the risk! For film to skirt prescription, perhaps it can learn from acousmatic and soundscape composition where individual and personal readings of scenes (rather than hidden agenda) are the norm. In all of these instances, the plasticity of sound, the separation of source and function, the morphology of one sound into another, is largely the mechanism by which ambiguity is achieved.

Inter-diegetic sound is the technique by which film-makers engage our trans-sensory journey. In Errand Boy, we smell the cigar smoke of the board room and

jazz club (enjoying the mixed metaphor of work and play)...we feel the anxiety of the silent berating...In *Black Hawk Down* we smell the sweat, feel the anxiety of the soldiers going into combat and possibly become aware of our own bodily functions (such as increased heart rate) through sound and vision that do not correlate directly to known experience. In other cases, morphology activates our imagination. In *Constantine*, we feel the anticipation, the suspension of time, as Lucifer walks through the shards of glass. Inter-diegetics, with its basis in morphological sound transformation, with its summons to inter-modal listening strategies (whether conscious or subconscious) and its syncretic idiosyncrasies, is the stained glass window through which film poetically engages the imagination of the viewer to play at will in fixed medium, and electroacoustic sound manipulation is at the heart of it all.

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