AURAL LANDSCAPES: 
Designing a sound environment for screen

Damian Candusso

Abstract

Cinematic environments are created through image, dialogue, music and sound, but the craft involved in creating an environmental soundtrack often goes unnoticed by the film viewer. Soundscapes are rarely just background: they are powerful storytelling vehicles in their own right, of equal importance to the visuals. This article examines the process of creating an environmental soundtrack for cinema from the perspective of a sound designer. Particular attention is given to how sound is created and layered to enhance, embellish and produce the film’s narrative.

Using contemporary Australian films, notably Australia (Baz Luhrmann, 2008) and Happy Feet (George Miller, 2006), the article examines the different challenges in creating an environmental soundscape for both an animation and a live action film. The films Avatar (James Cameron, 2009), Little Fish (Rowan Woods, 2005) and The Magician (Scott Ryan, 2005) are also cited to highlight various approaches to environmental representation in film sound. While both Australia and Happy Feet rely on the landscape and environment as integral storytelling components, the approach to creating their respective soundscapes requires not only natural recordings, but also the creation of many previously unheard sounds using synthetic sound design.

Keywords

Sound design, Australian film, soundscape, environmental representation, animation

Introduction

Soundscapes have the ability to transcend the social and cultural barriers that sometimes thwart language and even music. Creating an environmental soundtrack for cinema is as much a technical craft as it is an aesthetic art form. Often overlooked by the audience, the sounds of the environment in many contemporary films are based on the synthetic design and recreation of many settings. Environmental soundscapes are some of the most intricate to create. The combination of image, dialogue, music and sound help create the overall soundtrack, however the film viewer is often unaware of the intricacies and craftwork used in the creation of these aural environments. Furthermore, the
narrative of the film is carefully considered in the creation of these environmental soundtrack elements.

This article examines the process of creating an environmental soundtrack for cinema from the perspective of a sound designer who has worked in the Australian film industry for over 15 years (Fig 1). The article’s focus is on the use of environmental recordings and sound effects to create a landscape, as opposed to the use of dialogue and music in the soundtrack. Using two contemporary Australian films, *Happy Feet* (George Miller, 2006) and *Australia* (Baz Luhrmann, 2008), this article examines the different creative process used for an environmental soundscape for an animation and a live action feature film.

![Figure 1: The author at work at Australian Clay Target Association, Wagga Gun Club, Wagga Wagga, Australia. (Photo courtesy of Tony Turner.)](image)

**Soundscape Design**

From earliest societies to contemporary musicians, sound has been an integral communication component to convey messages, express emotion and to tell a story. Communication through the use of sound has been significant to human social evolution. Although spoken language is the predominant form of sonic communication in our society, other oral and aural methods include rhythm, melody, percussion, humming, the mimicking of sounds through vocalisations and, in the modern era, by the recording and creation of music and sounds through the use of technology. As David Sonnenschein states, “[by] giving meaning to noise, sound becomes communication” (2001, p. xix). Through the use of recorded sounds and the creation of new sounds, the art of sound design has become an important approach to screen based storytelling.

Although landscapes appear to be ‘natural’, creative liberty is often given to the aural representation of these settings as required by the film narrative. While both *Happy Feet* and *Australia* rely on the landscape and environment as integral storytelling components, the approach to creating their respective soundscapes
requires not only ‘natural’ recordings, but also synthetic sound design and creation. Whether natural or synthetic, neither approach is less significant than the other. In this paper my definition of ‘natural’ recordings pertains to sounds that are created organically through such elements as winds, ice, land mass, water, animals, vegetation and various other sounds naturally occurring without evidence of human or industrial influence or activity.

Difficulties such as accessibility and noise pollution make our most pristine locations increasingly difficult to capture sonically. Although not always the preferred method, synthetic aural environmental design will continue to develop as a necessary addition to assist in crafting the aural illusion of cinematic environments. Using a recent trip to Mount Kosciusko as an example (Fig 2), I was surprised at the amount of noise pollution tainting the sound recordings within the National Park. Many of these sounds were distant sounds, including small planes and agricultural sprinklers: however they still managed to appear faintly in the background of some of the recordings. When used in the context of a film these edited recordings appear to be ‘natural’ when first listened to by an audience, but they are unaware of the use of equalisation, filtering techniques, frequency band compression and other such technological solutions in eradicating this noise. This processing of the original recordings in turn transforms these ‘natural’ recordings to new artificially designed ‘pseudo natural’ sounding environments.

When the sound designer commences production on a film, they study the environmental landscape, location and the period in which the film is set. This becomes the foundational building block of the soundtrack and determines the approach to creating the overall narrative for the film through sound. In the film medium, sound design purposefully communicates to an audience through recorded and created sounds that augment the onscreen visuals. In contemporary cinema, dialogue is the primary auditory component used to convey a story, however the sound ecology of the landscape and the sound effects are of equal importance. Sound design does not merely replicate what is happening on screen, it is an additional storytelling component. An example of this occurs in Australia
(Baz Luhrmann, 2008), in the scene where we first learn of the impending attack on Darwin by the Japanese. Here for the first time a soft, almost whispering of wind is heard. The plane approach has no engine sounds, only the sounds of the wings slicing through the air. This was a brief from the director who wanted the first plane to replicate a shark surfacing with only the fin piercing the water surface. It is not until the plane is revealed and peels off to the right of screen that we start to hear the sound of an actual engine, the roar of danger, the sound of an advancing Zero threat. The sound does not give away the shot before we see the plane, in fact it adds to the curiosity. The sound of the wind makes the scene even more menacing and, in this instance, the sound has foreshadowed the action on an emotional level before the visuals have presented it.

In cinema history, advances in sound technology have given filmmakers the opportunity to take advantage of the creativity of sound and allow it to play an equally important role as the visuals in storytelling. As George Lucas has noted, “Sound is 50 percent of the movie going experience” (2004: online). Hollywood has increasingly relied on sound to contribute to the contemporary film viewing experience. Audience expectations of sound place greater emphasis on the craft of sound design.

Approaching the Task of Environmental Sound Creation

With many factors contributing to the use of ‘authentic’ sound recordings (including budget, availability of personnel, deadlines etc.), often sounds need to be fabricated. These sounds may make up the entire soundtrack, or they may only make up elements of the soundtrack that blend with other recordings of actual environmental sound. If the soundtrack is created well, it will not appear to be out of place and the audience will not be aware of any disparities. It is only when the soundtrack jars that the audience is alerted to the sound and may question the legitimacy or integrity of the sound sources. A fictitious alien landscape scene, for example, containing recognisable sounds from our world may elicit a sense of disbelief.

When we see a storm onscreen, we routinely hear thunder; when we see a dog, it often barks; a door usually creaks; a car might skid when stopping; and explosions may shake the room. There are many sound clichés consistently used in the contemporary soundtrack. Through developments in cinema sound technology, many Hollywood film soundtracks are created to deliver what an audience expects to hear, rather than represent the ‘actual sounds’ of the real world. Also sounds are pared back from all of those that might be in a specific setting to emphasise those most relevant to the narrative. With the use of high quality speakers with a wide frequency response, the introduction of the various surround sound formats and powerful computers with an array of software options, technology is allowing for greater creativity and flexibility in the soundtrack.

The sound designer needs to balance between telling the story using the available tools, and delivering a soundtrack that is credible for the story and setting. While the overall soundtrack needs to be treated with careful consideration, so too should the individual sound components that contribute to it. It is not uncommon for the sound designer and editors to research the authenticity of various elements within the film to provide a guide as to the legitimacy of the sounds and the sound sets required. For example, if we see a shot of the Statue of Liberty, New York and, in
place of the sound of pigeons, the only birds we hear are kookaburras, the
audience will be distracted from the story, and continuity of the film will be
disrupted.

In both *Happy Feet* and *Australia*, extensive research was conducted into the
environments and locations of both film settings prior to the editing of any sound.
Particular attention was given to the study of the wildlife, especially birds and
insects, and the seasons. Other research investigated the locations on a larger
scale including the weather of Antarctica—which notably does not develop thunder.
Careful sound choice allows the audience to be situated within the depicted
environment.

At the commencement of sound post-production, one of the most important
preparatory steps is to read the script or to watch an edit of the film in its entirety.
Depending on the film, the sound team may have the luxury of reading a script
during the film pre-production phase or in other instances a rough edit may be
given to the sound team to view almost immediately after shooting has completed.
In some instances they may be given both. Providing either a script or an early edit
of the film allows for the planning of the dramatic journey of the film, and the
mapping of the narrative dynamics through sound. This can be in the form of
physically drawing a chart or a graph mapping the drama and dynamics of the film
over time. This allows careful designing of sounds to build up to the climactic
scenes in the film, and then to use quiet moments to increase dramatic impact.
Having a graphic representation of the film allows for the nuanced planning of the
soundtrack, which will follow and often assist the onscreen narrative. Depending
on the director’s approach to the film, this method can also be helpful for creating
juxtaposition between the onscreen drama and the aural drama. Sound has the
power to emphasise or soften a story depending on the director’s decisions. *Happy
Feet* has a scene depicting a leopard seal chasing the central protagonist, Mumble,
underwater. Due to the visual size and menacing teeth of the leopard seal the
original sounds edited for the scene had to be re-crafted to suit the targeted
audience of children. Many of the original growls were replaced by less aggressive
grunts, and more breaths were added to soften the chase and viciousness of the
antagonist.

Every film has its own challenges and requires its own approach to the sound
design. Some films are created to imitate reality and often contain sounds of
‘actual’ location sound recordings of what the audience is seeing on screen,
recorded on set from the filmed locations. In the films *Little Fish* (Rowan Woods,
2005) and *The Magician* (Scott Ryan, 2010) for which I was a sound effects editor,
sound designer Sam Petty aimed to recreate the actual ‘real’ sound of the locations
in both films. Petty retraced the shots of *The Magician* and recorded the film
locations throughout Melbourne. On *Little Fish* I retraced and recorded many of the
film location environments including several locations in Cabramatta, Sydney (Fig
3). Both the Cabramatta train station and the featured shopping mall are central to
establishing the locations within this film. Having to recreate these locations from
either library sounds or unauthentic recordings would have been very time
consuming, and still may not provide the desired authenticity.
It is important to note that the shooting schedule does not generally allow enough time for the location sound crew to capture many sounds of locations during filming. The primary concern of the location sound recordist and crew is to capture the dialogue and the actor performances. The audio post-production crew then need to seek permissions to re-record after initial filming, which requires further time and funding that are rarely included in the budget.

In contrast to films like *The Magician* and *Little Fish*, many films require the use of exotic, rare and even previously unheard or fabricated environmental sounds. With the increase in films based around visual effects, films can be located in fictional lands with entirely contrived characters and creatures.

Depending on the context of the film, an audience will have preconceived ideas of what the sounds should be for particular scenes. This is the case even for animated films that are set in entirely contrived locales. James Cameron’s *Avatar* (2009) is a well-cited contemporary example. No one has physically experienced this mythical land of *Pandora*, although we have some sense of what we would ‘expect to hear’, for example, by associating the forest with familiar rainforest, or by the appearance of certain creatures. The environmental sounds alone comprise many previously unheard insects, specific and unusual animals, other background animal vocalisations, and types of vegetation.

On occasions such as this it may be necessary to create entirely new sounds for these new worlds. These original sounds may start their incarnation from the recordings of sounds from our own world or they may be completely synthesised. What is important is to keep these new sounds ‘identifiable’ according to our current expectations. Some designing techniques for these new sounds may include the following:

- transforming existing sounds through the use of pitch changing, equalisation, or any number of filtering processes
- using specific recordings of rare or unusual sounds
• pitching or modifying electronics, machinery or vehicles
• pitching and combining various animal vocalisations
• using synthesis to create new sounds, and others.

Although budget constraints will influence the approach to film sound design, so too does the availability and existence of—and access to—required sounds. When creating a sonic environment or landscape for a film, wherever it is set, it is important to consider what is ‘real’ to the location, what seems real, and what sounds the audience expects to hear. In summary, factors determining the approach to the creation of the environments include whether the location exists in the ‘real’ world, whether environmental recordings were made during on-location filming, whether the storyline is located in a contemporary setting, and whether funds and safety allow the recording of the location.

This leads to a discussion of two contemporary feature films from the perspective of a sound effects editor.1 Produced on relatively big budgets for Australian feature films,2 both Happy Feet and Australia included a dedicated ‘atmosphere sound editor’ as part of the sound team. This role is often absorbed by the sound effects editor on smaller productions and lower budget projects. In both films, my sound effect creation and editing drove the use of the environment as an integral story component and, as such, I worked very closely with the atmosphere editors. What distinguished my role from that of the atmosphere editor was that my contribution treated the landscape as a character. Working in sound effects, I specifically designed many sounds for both films with integrated and often highlighted story elements associated with the environments.

These films differ quite considerably and provide contrasting examples of sonic environment creation. The films are set in remarkable and distinctive locations; Happy Feet is an animated film set in Antarctica, while Australia is a live action film set in the Northern Territory, Australia.3 Both films pose varying degrees of complexity in terms of their sonic environmental depictions on screen.

Creating a Sound Environment

As with the visuals, the sound for an animated film differs from live action film. With no actual filming on location, all characters are created, all sets are rendered, and all visuals are designed by animation artists. There is no cinematographer filming actors at an actual geographical location as with a live action film (although voice acting is recorded for the animators). Sound recordings of the film set locations are not captured as there is no filming on location.4 Therefore all sound environments need to be recorded and/or created from the ground up.

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1 In this article I focus on the environmental sounds, and a consideration of spot effects is a topic for a further study.

2 According to the International Movie Database (IMDB.com) the budget for Happy Feet was $100,000,000 (http://www.imdb.com/title/tt0366548/) and $130,000,000 for Australia (http://www.imdb.com/title/tt0455824/).

3 Some scenes were shot in various locations in Northern Territory, northern Queensland and Sydney’s Fox Studios.

4 However some animators, notably Australian Yoram Gross, have used filmed bush background for the drawn characters. See Dot and the Kangaroo (1977) and other work.
**Happy Feet**

Miller’s Academy Award winning *Happy Feet* tells the story of Mumble, an emperor penguin who, instead of being able to sing, tap dances. The characters of the film also included many animated Antarctic animals, primarily penguins. The combination of an animated remote environment (Antarctica) and animated animals meant that every sound for this film had to be created.

Through the use of detailed ‘layers of sound’, sound design is about creating a level of believability. It is not just a matter of placing a single sound into a scene and hoping that the audience believes it. Ambiences in our everyday life are complex, with chaotic and sometimes even choreographed symphonies, with the land, the wind, animals, birds and vegetation all playing their tunes within a given space. In addition to these individual sounds, these acoustic spaces are important in representing the onscreen landscape spaces.

The challenge of creating such an unpolluted, isolated and dangerous atmosphere meant that the sound design had to be precise and untainted by unwanted background noises. As the budget didn’t allow for a sound team to travel and record actual Antarctic locations, climatic conditions and animal activities, we had to rely on pre-existing sound recordings of Antarctica or recordings made in more accessible locations such as Thredbo ski resort in Australia and from some locations in New Zealand’s South Island.

With many shots depicting the rugged landscape of Antarctica, often the detail within the sound design can pass unnoticed. If we look specifically at ‘Lovelace’s Pile’ (Fig 4) the sounds can be unpacked to reveal far more detail than what is initially heard.

Figure 4: ‘Lovelace’s Pile’ from *Happy Feet*.

Analysis of the sound design reveals the following landscape sounds (Table 1):
### Basic element | Breakdown of sounds
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**Winds** | • Close up winds (flurries of snow)  
• Distant winds to give sense of space  
• Wind howling through icicles

**Snow** | • Movements on snow by penguins  
• Melting snow  
• Snow falling off cliffs in the background

**Ice-land Mass (subtle)** | • Movements of ice  
• Ice cracks and creaks  
• Ice thumps

**Animals** | • Background penguin vocals near and far  
• Background penguin movement

Table 1: Landscape sounds in ‘Lovelace’s Pile’ scene in Happy Feet

From this list the sound editor has 11 possible sets of sounds that may be deployed to create the environmental backdrop for this scene. This excludes any character or action related sounds; it is only the ambient background.

Without access to record authentic atmospheres, many of the sounds were recorded or sourced from other locations in order to imitate the film set. These would then be reconstructed as the sounds could vary entirely. We were fortunate that we had some ‘actual’ recordings of Antarctica for the film. During production, supervising sound editor and sound designer, Wayne Pashley, sent a mini-disc recorder to the Antarctic and asked scientists to record sounds whilst doing their field studies. Unfortunately, the recording quality was not always film worthy as the scientists are not trained sound recordists. Happy Feet did contain some actual sounds from Antarctica, although a high percentage of sounds were either non-Antarctic recordings or studio recordings created specifically for the film.

The ‘animal’ recordings from Antarctica were used where possible to create an underlying realistic bed for the film. Some of the successful recorded sounds used included those of elephant seals, adélie penguins, emperor penguins and even skua birds. These beds of animal noises gave the background environment a sense of reality upon which to layer the main characters. The main and featured animals were often recreated using studio recordings and other sources of sound recordings.

Some of the successful Antarctic ‘environmental’ recordings included iceberg movements, ice winds, and slushy icy water. These were also edited and used where possible alongside additional created sounds. Again, these realistic environmental sounds were primarily employed to evoke a believable background ambience. To emphasise the size and weight of several of the large icebergs, controlled recording and studio techniques helped create such large masses. This included close microphone techniques and using ‘dry-ice’ (liquid nitrogen) to freeze large objects that we could then record being dragged across the floor. With the realistic Antarctic recordings serving as our bed, these additional recreated sounds became the embellishments and the dramatic highlights.

As storytellers in our own right, creative liberty allowed for the reappropriation of these sounds. At times these sounds would be used only as a bed and then additional snow, ice and wind elements would be created and embellished to better
represent the onscreen visuals and the unfolding drama. Some of these sounds came from our own original Foley studio recording sessions using props to design sounds to be used to highlight onscreen action. An example of the studio recordings included creating snow for the feet close-ups where the characters dance on the snow. As we did not have access to snow, we recorded crushed ice, salt, cereal, sugar, sand and several other props to mimic the sound of snow.

Recording in a studio allowed us to create our sounds specifically for the particular scene. Throughout the film, the seasons changed over a one-year cycle and we wanted to represent this as best we could through the changing environment sounds. We had allocated recording days where we could record specific sounds in a very clean, precise manner. If we needed more grit in our snow we could just change the elements we were recording, or if we needed the snow to sound more wet we could just mix in some more water when required. We were not dictated by natural resources. The other advantage of having these studio recording days was that we could record sounds specifically for the big screen. What I mean by this is that we could record sounds specifically for the surround sound speakers. Using the close-up of feet on snow as an example, if a character flicked his/her flipper/foot in close-up, we could record different snow elements for the left, centre and right hand side of the flipper and have the debris snow crumbles pan back into the surrounds. This would have been impossible to record with such precision as an actual performance in ‘real’ life. By having control of individual sound elements, we were able to creatively challenge the cinema and screen space to highlight the environmental immersion.

*Australia*

Set during the Second World War, *Australia*’s storyline centres on a cattle drive in the rugged terrain of northern Australia, as an English aristocrat travels across harsh environments with her stock. From the opening moments, even before the first visual images, sound is used to position the audience of *Australia*. From the initial fade in from black we begin to hear ethereal singing, native birds, insects, winds and the gradual swell of string instruments (Fig 5).
In these opening scenes, the sounds of different winds, animals and insects intertwine with an emotional journey across an environmental backdrop that transforms, as the audience witness the death of Lord Ashley, from above ground and into the muffled and mysterious murky underwater drones and whale song. Playing in slow-motion the images show King George (David Gulpilil) telling Nullah (Brandon Walters) to ‘make yourself invisible’ as the ‘white fellas’ are herding cattle across the river onto the Carney property. Although music is also playing concurrently with the sound effects, the effects design specifically aims to make reference to Aboriginal dreamtime. As Lord Ashley is killed and falls to the water above Nullah with a spear through his chest, the water turns crimson, the sound hints that Lord Ashley has been killed by the people moving the cattle, the same people Nullah is also hiding from. Visually it isn’t until we see the snakeskin boot of Neil Fletcher (David Wenham) that we realise that he is the killer.

Although the sounds chosen for this sequence are simple environmental recordings, what is important is the way in which they have been reappropriated to form part of the narrative. Through transformation, including pitch and other manipulation techniques of the original recordings, these evolve into new, unheard-of sounds that yet seem familiar.

When designing such delicate sounds, much time was spent experimenting with the creation of sounds that morph unnoticeably from one sound into another throughout the opening sequence. Tonal frequencies, recording quality and mixing techniques were constantly balanced and adjusted to create a single fluid flow of environmental sounds. At the same time, although continually transforming, the sounds needed to contain characteristics of the original sound sources, allowing the audience to connect the aural with the visual. Throughout Australia, designed sounds are used very subtly. Overall the film uses actual location and natural sounds to convey the Australian landscape, with the designed sounds being reserved for scenes with Nullah, the death of Daisy and for King George, as these relate to the dreamtime and spirituality.
With vast landscapes of Australia’s Northern Territory depicted through cinematography, natural sounds are needed to convey the impact of the environment. Supervising sound editor and sound designer, Wayne Pashley, retraced many of the original locations in the film during the sound post-production phase. Using a Soundfield ST350 ambisonic microphone, Pashley was able to record in surround sound an entire three-dimensional landscape on location. Until recently, creating film surround sound was only possible during the post-production process, but this particular technology allowed for a pristine, natural recording of the environment. These recordings in surround were then decoded, edited and used as beds for the atmosphere tracks of the film. Pashley observed:

_We also wanted to be true to the landscape of Australia. So often in big productions like this, the sound design guys just reach for ‘Bush Atmosphere Number Three’ [library effect] or whatever, and everything comes out sounding the same. Also, what you hear is usually completely unrelated to the environment you see on the screen. We wanted this to be different. Australia is, I think, the first movie that sounds correct, that gives a true sense of how this country sounds._ (cited in Soundfield, 2008: online)

With many scenes depicting broad vistas, having the atmospheres recorded in surround from the outset allows the sounds to reflect the vastness of the actual locations. In sound editing, the atmosphere tracks are often edited from existing stereo recordings, thus limiting the detail within the acoustic space. In most instances, artificial reverb is introduced to make the sounds appear to be wider within the acoustic space. Recording in surround sound reduces the need for and use of these contrived techniques.

All animal sounds for _Australia_ were purposely recorded for the film. Working remotely and living in regional New South Wales, I was able to record many of the animal vocalisations of cows and horses for the film at locales situated near where I live. The cows were particularly challenging to record as they are often difficult to get close to without them running away. Having the livestock saleyards proved to be a very convenient way to record cows at close proximity. Also having so many cows in such a small space allowed the recording of mass group cows to be used in many of the backgrounds. Situated within a livestock pen meant that the beasts were particularly vocal, which allowed for high quality recording and performance and, later, for flexibility in editing their bellows.

**Conclusion**

Often overshadowed by dialogue and music, the environmental atmospheric sounds of a film are often overlooked by audiences. These aural landscapes comprise either actual recordings or synthetic recordings constructed to acoustically represent the onscreen locations. Both _Happy Feet_ and _Australia_ rely on the aural landscape environment as essential storytelling characters within each film. Based on very distinct locations, the films differed notably in the approaches to their environmental landscape sound design. In a general comparison _Happy Feet_ featured far more ‘inauthentic’ and synthetic environmental sounds as opposed to _Australia_, which contained many more environmental recordings from accessible locations.
When comparing these approaches to contemporary film sound, neither one is better or worse than the other. Factors such as accessibility, money and time budgets, and the noise pollution of locations through human activity determine the practicality and possibilities for acquiring and recording existing and authentic location ambiences. Through authentic recordings or through synthetic sound design, what remains important is that the sound design and production follow the film narrative and immerse the audience into the onscreen locations.

References


Filmography


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