SOUND DESIGN FOR NON-FICTION FILM AND VIDEO:

A DISCUSSION OF METHODOLOGY, PERCEPTION, AND ETHICS

by

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ABSTRACT

Traditional documentary films, particularly science and natural history works, presume to authentically *or legitimately* convey accurate representations of historical events that actually occurred at a prior time. Factual and convincing representations are not necessarily congruent, and a film's merit of authenticity is often based on the perceived validity of the visual content represented. While visual imagery dominates a presentation's general delivery, a film's sound design is a fundamental structural element that is often overlooked or less scrutinized with regard to factual or accurate recounting of these same historical events.

The purpose of this thesis is to examine methodologies of sound acquisition and reproduction and to discuss how various acoustic contents are perceived in relation to associated visual elements. While discerning viewers may notice critical discrepancies in picture contents that may invalidate a film's credibility, a complex matrix of sonic elements does not lend itself to deconstruction as easily.

Thorough analysis of a science and natural history film must include an examination of its complete sound design. Consideration must be given to the ethical implications of using *any* synthesized or borrowed audio tracks if such a work is to be considered as "factual" documentary. The standards of acceptance or rejection should be no different than those associated with fabricating unnatural or contrived visual contents, no matter how compelling may be the end product.

INTRODUCTION

This thesis is intended as a practical discussion concerning the use of modern technology and sound design concepts in the making of documentary film and video productions. Specific consideration is given to those works that fall within the broad category characteristically defined as the "science and natural history" genre.

The differences in structure between most fictional and non-fictional works are many, but one important distinction for the purpose of this discussion is that non-fictional documentaries may be considered as vehicles deliberately constructed to educate viewers through rhetorical development and/or the recounting of historical events, which more accurately represent reality than the classic Hollywood studio model. The focus for this discussion in relation to science and natural history films is based upon the presupposition that films classified within this genre are generally considered to be factual in content.

Furthermore, they are supposedly produced with intent to accurately recount events that actually occur and have occurred at a previous time. They are typically constructed with concern and respect for their educational merit rather than simply being artful compositions crafted primarily for entertainment or creative expression. Such latter works are often devised entirely from the individual's or creative team's imagination and are not held to factual verification or empirical truth. Based on the best knowledge of the filmmaker(s) and/or a reasonable consensus at the time of production, a truthful representation of historical events is paramount in the science and natural history genre.

Consequently, it may be inferred that if an ethical standard is to exist concerning the truthful representation of a visual reality, similar emphasis should be considered regarding the multifarious aural components represented concurrently with such visual content.

METHODOLOGY

<u>Visual Content versus The Soundtrack</u>

When we think of the term "soundtrack" as it is most often incorporated into *factual* science and natural history productions, rarely is serious viewer consideration given to the magnitude of influence imparted by this distinctly unique structural component. Rather, attention principally focuses on the more prominent visual content, the general storyline, the authenticity or interpretation of specific animal behavior, scientific validity of visual material presented, unusual camera techniques or other mechanical conventions. The specifics of style and form that provide editorial structure for the visuals may also dominate the viewer's attention.

Picture is primary in science and natural history films. The same predominance of picture holds for fictional films as well. There is little argument against this as we are a visually oriented society.[1] We are forced to look at images in a way that we are not forced to hear sounds. (Kenny 1993). The motion picture camera was developed in the 1880s to investigate the physiology of animal motion, and by the early 1900s it had become associated with entertainment as much as science. (Mitman 1999).

The soundtrack as observed or experienced by a lay audience typically is subliminal, an invisible sonic matrix that couples, defines, or emphasizes the visual elements in the production. Because of the priorities of the brain, the audio channels are

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[1] We face an interesting paradox when one considers that, historically, the accepted generic term for combined delivery of visual and aural content was not originally rooted as visual-audio rather than the opposite, although the term "video" is a reasonable step forward toward establishing a meaningful hierarchy of predominance.

suppressed relative to the visual channels. We attend first to the visual and then augment that with sound. (Murch 1993). Traditionally, and still more often than not, the soundtrack as used in science and natural history documentary is a dense composite of synchronous sound and dialog, natural ambience and effects, musical score, and voiceover narration. (Nichols 1991). All of the above are standard sound design elements in what herein may be collectively referred to as the documentary soundtrack regardless of specific non-fictional genre (science and natural history, direct cinema, social documentary, historical documentary, etc.) Synthetic or artificially fabricated sound effects are commonplace in fictional works and find their way into documentary as well. However, for purposes of this discussion, we will not consider them as standard in documentary structure. Although one may argue sagaciously that a long history exists concerning the use of borrowed or fabricated sounds in documentary, especially in blue-chip science and natural history productions, the scope of this paper is to examine the validity of such practices in ostensibly "factual" works.

Budgetary Constraints

The idea of complex sound design as it is employed in high-budget theatrical productions does not readily come to mind when considering these relatively low-budget nonfiction projects. For comparison's sake, we may note that overall budgets for many blockbuster action films often exceed $100M and involve extremely sophisticated sound designs whereas a typical primetime natural history production for Discovery Channel averages significantly less than $0.5M per commercial hour. Higher budgets for natural

history programming certainly exist, but such blue-chip projects are not the norm. (Meditch 2002).

Creative aptitude coupled with technical resources influence the development of a soundtrack. Although it is common enough to acknowledge the sound editor, it is not the de facto standard to see credits for "Foley artist", "special effects editor", or "sound designer" associated with most science and natural history productions. There are exceptions of course, especially with higher budget blue-chip shows. This is not to say, however, that artificially created sound elements do not find their way into some of the lower budget productions too. The use of manufactured or borrowed sounds occurs quite frequently but leaves one to consider the ethical implications of such practices. Can an animal sound created by a voice artist or the mixing of multiple discrete sounds be considered "authentic" even if the end result sounds much like the original animal or natural soundscape?

Possibly less dramatic than incorporating Foley or other artificial techniques, yet still worth consideration, is the use of bona fide animal or other natural sounds acquired from stock libraries. This is an extremely common practice with blue-chip natural history productions, for which quality sound libraries are readily available. Mainstream access to stock audio also permits greater flexibility during production, prioritizing fieldwork around camera requirements and acquisition of visual material. Use of prerecorded stock facilitates the sourcing of certain "natural" sounds in a far more affordable manner as opposed to original acquisition being contracted on a film-by-film basis.

Turbulent winds, loud (high-speed) film cameras, or other menacing noises, hopeless subject-to-microphone distances (due to the use of long lenses, wary animals, etc.,) hostile environments, and a myriad of other technical issues often thwart all reasonable efforts to record synchronous sound in proper perspective during the filming of otherwise usable visual elements.

Irrespective of budgetary constraints, technical boundaries, or other limitations, the term nonfiction implies a matter of fact. If an ethic is established to deliver authentic visual imagery, which supposedly represents an accurate account of reality, it follows that the same ethical standard should hold true for associated acoustic imagery.

Sound Supporting Plot Development

Another distinction between fictional works and documentary involves the concept of plot development. Even though a storyline may be developed in either type of production as a tool for assisting the viewer in progressing forward through the presentation, it may be suggested that in fictional works plot development is fundamental to driving the story. Technical exploitation within the development of a creative and powerful sound design is expected and applauded. In documentary filmmaking, on the other hand, historical and/or "factual" evidence remains paramount. It is the evidence used by the filmmaker, which is presented to the audience "jury," that essentially makes a case or builds a supportive rhetorical base for defending an argument. The essential structural elements and developmental strategies may often be similar between fiction

and non-fiction works (act structure for example,) but they are distinct with respect to their motives, and the bases for their uses differ. (Nichols 1991).

Plot elements in a fictional work are conceived and organized to support the internal story text around which the overall structure of the work develops. In either case, whether developing a plot or supporting an argument, the structural elements help guide the viewer through the material presented in a logical order or progression. Image and sound become intertwined, facilitating greater emotional dimension and influencing the plot development of a fictional piece, or providing further evidentiary power for supporting an argument presented in a documentary.

The Narrator as A Design Element

Selection of the specific narrator(s) for a documentary plays an important role in the general sound design structure of the work. The relative age, gender, and characteristic accent or tone of the narrator, or whether the narrator's voice is easily recognized as that of a public figure all influence the perception, interpretation, and general acceptance or credibility of the work as a whole. Some noted narrators, Sir David Attenborough for example, qualify a work among a certain audience demographic as being credible by his reputation alone. Morgan Freeman, David McCullough, and Sam Waterston are all popular narrators who tend to impart a sense of wisdom and credibility through distinguished and recognizable voices. A major example can be found in Ken Burns' highly celebrated series, *The Civil War,* in which a cast of well-known celebrity voices is skillfully employed to conjure the somber mood and urgency of the period.

A popular cartoon character's voice, noted politician, or a hip-hop star may provide for similar celebrity within completely different demographic targets. The point to be made is that narrator selection is a critical subjective decision, which greatly influences the style and general effectiveness of a film's sound design.

<u>Musical Scores</u>

Since the beginning of motion picture production, music has been widely used as a tool to enhance and guide the emotional involvement of the audience. Prior to the introduction of cinema sound in the late 1920s through the early 1930s, and the advent of "talkies," music was often performed live, evoking a sense of comedy, danger, elation, rhythm, and a host of other fundamental human sensations or emotions. In more modern times, music continues to provide the same role. The classic foreshadowing of an attack and the sense of terror imparted by the now iconic "thump-thump" of John Williams' score for *Jaws* is a good example. With increasingly sophisticated technology available to musicians, composers, and sound designers, all coupled with highly sophisticated means of surround audio presentation in theaters or even through consumer-level home entertainment systems, greater emotional responses may be evoked with the audience, often without being discernibly detected by the viewer/listener as such an intentional and directed emotional manipulation. Sometimes it may be that, if skillfully utilized within the greater architecture of the overall design, the most powerful sound of all is silence.

Historical Considerations

The choice of sound designer is often a crucial production decision that can have great impact on a work's general acceptance and credibility. The term "sound designer" in large theatrical productions is a relatively new one. It was coined originally by a group of former UCLA and USC filmmakers, including Francis Coppola and Walter Murch, who migrated from L.A. to Northern California in an effort to work independently from the traditional Hollywood model.

The term "sound designer" first saw screen credit with the release of *Apocalypse Now*, where film editor and sound designer Walter Murch, along with a formidably sized staff, painstakingly created a soundtrack of such complexity for its time that its creation alone warranted special acknowledgement. The initial concept, technical means, and the potential influence of that level of sophistication in multi-track layering were then born and are here now and forever to stay. (Thom 1993).

One may suspect the reasons contributing to less attention being given to structural soundtrack elements before this historical period were multi-fold. Although audio technology progressed steadily after the initial introduction of synchronous sound in movies, and there is no denying that creative minds were ever expanding the envelope of sound design along the way, even unbounded talent has its limits. The revolution that drives current design methodology came with the first twenty-four track recorders being utilized for film purposes. Suitable noise suppression technology and advanced quadraphonic theater presentation were introduced at about the same time, allowing for vastly greater density of a growing number of sound layers to be constructed and

reproduced for the audience. Although many accomplishments were made prior to this in creating complex soundtracks beyond the relative standards of the day, it was only then, in the early 1970s, that momentous efforts were realized to elevate the increasingly complex task of designing the soundtrack of a movie to its rightful place beside picture. (Coppola 1993).

The technical resources simply did not exist before then, which allowed for such a quantum step, not only for practical and affordable incorporation of more creative and sophisticated layering and sound effects, but a myriad of other new manipulation technologies were also created and still continue to evolve. With the advent of digital audio technology, new breakthroughs have been made with great advances in noise suppression, dynamic range expansion, sophisticated bandwidth filtering, frequency and pitch alteration and other powerful manipulation techniques, which allow waveform editing at the near-microsecond sample level,

There have been very significant advances in audio synthesis and playback, and even discrete manipulation of sound wave directionality is now possible. With such advanced technology now available, artificial soundtrack elements may be synthesized or natural sounds altered, which cannot readily be differentiated from the organic original, even by trained and scrutinizing ears.

PERCEPTION

<u>Playback Delivery Systems</u>

"Use of sound" is somewhat vague in the context of this discussion as there is an

ever-expanding pool of technical resources and creative techniques available for

capturing and reproducing various pressure wave phenomena, during initial acquisition,

sound-track fabrication, and the subsequent playback of the material. In most cases, the

end product is developed and produced for presentation to the audience via an apparatus

of reasonably advanced design, ranging from sophisticated computer designed and laser

aligned auditorium systems to stereo or surround sound home theaters. These

technologically advanced playback systems allow for multifaceted acoustic information

to be delivered and experienced by the viewer as never before, approaching an analog of

the filmmaker's own sense of hearing.

An audio playback construct of at least two separate stereo channels (Lt-Rt) and

up to six discrete channels typifies the state of broadcast engineering at the time of this

writing. (5.1 Surround consists of five localization channels plus one Low Frequency

Effects channel.)[2] This is not to say that such media are not regularly experienced by end-

users via older audio-visual equipment with low-fidelity dual channel or even monaural

output. This state of audio transmission and playback is significant in that today's multi-

channel mass-market formats must be also mono compatible in so much that if all audio

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[2] Up to 7.1 surround systems currently exist, as with the popular IMAX or Blue Ray
formats, but broadcast signal transmission technology has not yet evolved to support
more than six discrete channels coupled with Lt-Rt in the same frequency bandwidth.
(Sahara 2007).

information is collapsed to a single output channel various phase canceling or comb filtering phenomena do not occur, thereby nullifying important components within the sound image.

For purposes of this discussion, we are more concerned with the technical state-of-the-art. As technological advancement progresses, however, "truthful" representation of reality or delivery of such representation, while potentially becoming more convincing and emotionally potent, increasingly faces the risk of being reduced to a new classification of "based-on-fact" or even altogether fictional audio. The very nature of most wildlife filming, often shot without synchronous sound due to constraints of remote field conditions and regular use of long lenses, lends itself to greater audio manipulation after-the-fact than typically does direct documentary. (Bousé 2000).

<u>Localizing The Sound Stage</u>

Modern sound reproduction and reinforcement methodology takes those physical factors affecting sound propagation and the biomechanical processing of such into consideration. By incorporating pan and sound delay circuitry, at least in the higher-level product lines, systems can be fine-tuned for a specific local environment. Deleterious noise in the form of distortion, reverb or echo may be audibly minimized or virtually eliminated in larger enclosures such as movie theaters, auditoriums, or even home living rooms by ensuring that identical acoustic information originating or reflected from multiple sources arrives at the specified target (listener's ear) at the same time. This is accomplished in large public venues by utilizing directional laser focusing and

sophisticated sound meters. The ultimate goal is to expand the "sweet spot" to include

most every seat in the house. (Martin 2005).

Noise-canceling headphones, the type quite popular with air travelers, harness

offensive noise itself, such as the high-frequency hum of a jet engine, and use it to cancel

the same. By utilizing signal delay circuitry, the unwanted noise is reproduced and

introduced to the headphone speakers at the same frequency and amplitude as the

original, but 180 degrees out of phase. The result is that of destructive interference and

the two signals in effect cancel one another. Similar principles may be applied in

postproduction where the sound editor will slip multiple audio tracks forward or

backward in order to mute undesirable background noise. This is one of the main

purposes for recording room tone at a specific location - to provide a clean source of local

noise.

Multi-channel or surround arrays use these same characteristics of acoustic

physics as powerful tools used to trick the listener's mind into thinking sounds originate

from completely phantom points in space-time. Increasing the audio gain (volume) while

a visual sequence depicts an approaching subject also greatly reinforces the illusion that

the subject is actually moving through the soundscape. The effect can be duplicated for

an object moving from any given point to any other point. Another common technique

used by sound designers is to subtly lower the audio gain leading into a graphic sequence

and then increase the gain abruptly as the decisive visual moment arrives. This

discontinuity in the soundtrack shocks the viewer and provides more emotional impact to

the scene. A good example of the latter can be found in the IMAX production of

Yellowstone. As a camera-mounted ultra-light aircraft gracefully soars downstream, a sense of tranquility is presented to the viewer. Just as it crests the lip of the precipitous Lower Yellowstone Falls, however, the sound explodes to startle the viewer nearly out of his or her seat. This is a very effective technique indeed!

Biomechanical Principles

When considering the overall potential for sonic influences attributed to advanced sound design techniques, we must consider some facts about the biomechanical and psycho-neurological mechanisms involved with the signal processing of acoustic information as compared with the similar processing of visual imagery data in the brain. Processing a given sound wave stimulus involves approximately four times the number of biological signal processing substations than the number required for the processing of visual data prior to cognitive recognition, yet the rate of signal through-put for audio processing is on the order of four times faster than that for visual data, approximately fifteen milliseconds from target (ear) stimulation to brain recognition as compared with sixty to seventy milliseconds for the equivalent signal processing involved with visual acuity. (Snider 2004).

The implications of this comparison regarding signal processing rates become significant if one considers that at very close-range, or as a near-field monitoring situation approaches zero distance, the associated sound, which is coupled with pictorial elements, will be processed more rapidly. If one could be assured of simultaneous target stimulation, this theoretically would provide for a slight yet most likely unperceivable

audio lead or foreshadowing of the trailing visual data to be processed by the viewer's brain. As one recedes from the audio source however, the time delay inherent to the slower propagation of sound waves through air, as compared to the velocity of light, reverses the target impact sequence, resulting in visual information being processed prior to audio information.

The significantly slower velocity of sound waves versus light energy ($\sim3.5\times10^2$ m/s for sound waves compared to $\sim3.0\times10^8$ m/s for light, at STP)[3] implies that under most practical viewing environments, the visual information is assimilated earlier or at approximately the same time as the audio information. (Martin 2005). An interesting side note is that sound energy, unlike light or radio frequency energy, propagates via compression waves. In order for sound to be heard, a medium of some density must be available to allow for these pressure waves to travel between the source and the target. This means that in outer space or under other conditions of complete vacuum, sound cannot travel any effective distance. Theoretically, a film viewed under these conditions will be altogether a silent movie. Although the highly crafted and dynamic sound effects as those presented to an audience during the classic inter-galactic spaceship battle make for entertaining and dramatic viewing, the reality is that no sound pressure waves would propagate through outer space in such a cosmic conflict.

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[3] Temperature, relative humidity, atmospheric pressure, and other physical parameters significantly influence the velocity of sound. Therefore, relative signal transmission rates will vary in any realistic application based on the magnitude of influencing physical factors.

Psychoacoustic Influences

Prefacing or foreshadowing a shot by pre-rolling sound can reveal much to the audience. This common technique can be used to stimulate the viewer's imagination. The result is either to prepare or shock the audience with the following images. In this writer's production of *Picante! The Power of Peppers*, a critical interview took place inside a University of Washington research greenhouse. Loud and distracting air handlers could not be shutdown as they were required for a number of ongoing experiments. The background noise was insidious, rendering the entire interview as virtually unusable. During the editing process however, this scene was prefaced with an establishing shot of a greenhouse fan, filmed not on the UW campus, but rather at New Mexico State University. The sound associated with the fan shot, however, came from recorded "room tone" at the actual interview site. In the final cut, when the visual image dissolves from the fan to the interview subject, the background noise becomes much less distracting. In essence, the sound of the fan becomes more acceptable to the viewer by means of deliberate psychoacoustic conditioning. A similar technique was used in the same production to set up a noisy interview filmed inside a pepper spray manufacturing plant.

If the soundtrack alludes to one thing and the picture follows to contradict the sound, the audience becomes confused or shocked by the "reality" of the image. The opposite manipulation technique can be harnessed by the filmmaker in order to direct another type of inference with the audience. If we consider a sequence in which a lion is chasing a gazelle, the filmmaker might cut back and forth between the advancing predator and the fleeing prey, possibly including a two-shot thereby authenticating or

adding further credibility to the chase scene. If the picture cuts, but the soundtrack continues with a sudden thump followed by squeals and flailing commotion of a struggle, the audience is left to believe that the cat succeeded in catching its quarry. But did it really? If it in fact did not, would such a scene be considered as an unethical display of emotional manipulation? Lions kill gazelles all the time. The filmmaker recorded actual footage of a chase, which factually displayed behavior typical of both animals in such a conflict, a context we are all familiar with. If the filmmaker was using a long lens and the last shot in the scene was that of the lion chasing its prey directly toward the camera, cutting the picture and inserting the subsequent death cries could have the audience believe the finale occurred directly in front of the camera, or even perceived as occurring right in the viewer's lap!

Sonic elements are invisible yet one cannot hide from sound as one can from images; sound is ubiquitous. In our daily lives, we constantly are bombarded with an infinite montage of sounds. Our brain, however, has the amazing capacity to selectively filter out extraneous and impertinent sounds, which we generically refer to as "noise." Even if consciously overlooked or psychoacoustically muted this noise nevertheless exists. It may not be at the front of our attention, but we still hear it. While sitting in a theater, a viewer can close his or her eyes and shut out a visual scene, but with volume levels hovering at 95 decibels in most modern theaters, it becomes difficult if not impossible to shut out all sound. (Atkinson 1995) Even when we sleep our eyes may be closed, but our ears are wide open, excepting for the use of earplugs or some other mechanical means of effectively attenuating or muting sound energy.

Channel crossover, phase shifting, pitch and gain control, and/or time delay can all play upon those components of our biomechanical and psycho-neurological faculties, which are specific to sound perception and localization. The generally accepted emphasis, which is primarily directed toward the visual elements in most all film productions may be undermining the very roots of the psycho-physiological matrix, which plays a significant part in the specific interactions defining the viewer-subject relationship. The apparatus by which this complex couples the viewer with the viewed becomes fundamental in deciphering the relationship between them.

Recent advancements in acoustic engineering have provided for various techniques in multi-dimensional audio delivery or surround-sound schemes, which afford the viewer (listener) a more intimate and even participatory relationship with the on-screen story and subjects. This geometric audio (re)expansion may provide for a completely different or altered sensory response to whatever imagery is rolling concurrently on-screen, irrespective of whether or not such sound wave energy was native to the actual moment documented.

Also common to all current surround-sound methodologies is the incorporation of a Low Frequency Effects (LFE) channel, which allows for filtering of specific frequencies below a given threshold and sending this information into another discrete channel for signal processing and infrasonic generation. Such low-end acoustic information, which falls below the lower threshold of human hearing (approximately 20Hz), can add dramatic intensity to a scene for which little or no impression would be otherwise experienced. By introducing a sub-audible yet physically detectable low

frequency vibration into the sound mix, the psycho-physiological interpretation becomes that of a very high-energy impulse or low-end bass response. Even though such low frequency effects cannot actually be "heard" by the human ear, they can adversely affect how we perceive the local environment in conjunction with our primary mechanisms of hearing.

ETHICAL CONSIDERATIONS

A fundamental question must be asked: at what point does the application of advanced sound design techniques create such a perceptual shift with the audience, relative to the realism of the actual moment experienced by the documentary filmmaker, that an ethical compromise is made, which discounts truthful historical representation? A similar argument holds for the fabrication of sophisticated visual effects such as compu-generated imaging. Furthermore, where is the threshold, if any, for which beyond it the addition (or subtraction) of sound elements will render the documented event as non-factual? This critical issue needs for all practicality to be examined on a case-by-case basis and may subjectively range anywhere from being always present to never existing, depending on the intention and interpretation of the work and the relationship developed between the filmmaker(s) and the audience.

Simply expressed, the transformational process of recording material, then rearranging or editing the recorded elements, and finally "re-presenting" a selective set of those elements taken from most any real and historical event fails as a truly factual analog of such an event. This is fundamentally due to a combination of the incongruent character of the apparatus, selective personal biases and inherent subjectivity of the filmmaker and the editor, and the relative space-time separating the audience from the organic nature of the actual event in its original and native form.

Presentation of the recorded material may be on some level representative of the event, evoking similar emotions within the viewer as those felt by the recording party during the actual witnessing of the event, but that may be the closest achievable level of

true "re-presentation." That is to say, if a documentary filmmaker can record an event that he or she has actually witnessed, and through a transformational process represent that event to a third party whereby the human experience and emotions perceived by the individual(s) originally present are accurately conveyed or transposed upon the audience, then one has achieved the pinnacle of the film craft's story telling potential.

Most (but not all) events occur within a three-dimensional environment and happen over a fixed period of time. The process of compressing a representation of such an event onto a two-dimensional planar surface such as a monitor or movie screen removes depth perspective from the original geometric structuring of the event. Skillful and creative sound design however, although not directly able to restore visual depth, can in fact recreate some physical depth and geometric proportion. Using modern audio engineering technology, the sound designer can approach the realm of recreating for the audience over time the perception of an experiential dimension from the filmmaker's original perspective. This can be a powerful aid in storytelling.

There is, however a distinction here. Storytelling is not necessarily directly or even indirectly related to the accurate rendering of factual information. It lives in the imagination. Individual perceptions and interpretations are at play, those of the filmmaker as well as the viewer. Quite possibly more relevant for this discussion, however, are the intentions of the filmmaker and whether or not he or she is predisposed to provoke a definable set of responses with the viewer, both qualitatively and quantitatively. Although it may be readily apparent when visuals are manipulated, it may be completely transparent to the viewer when acoustic material is changed, even to a significant degree.

When acclaimed filmmakers Mark Deeble and Victoria Stone produced and directed *Mzima: Haunt of the Riverhorse*, they took on an enormous undertaking, which required them to camp on-location in Africa for two full years with their young children. Over such an extended period, the filmmakers had unprecedented opportunity to intimately observe and record an impressive variety of animal behavior, including a singular case of hippopotamus infanticide. This graphic event was later depicted as a pivotal scene in the finished production. It was filmed MOS (without synchronous sound) and the visual record stands alone as factual testament to this rare and shocking animal behavior. For purposes of more persuasive and powerful storytelling, however, and in order to evoke a more emotionally charged response from the viewing audience, they did not display the footage as preserved in its original silent state. Nor did they simply lay down an appropriately emotional music bed to add drama to the scene.

Watching this scene, the audience hears vividly disturbing death-squeals as it witnesses a defenseless infant hippopotamus being viciously attacked and killed by an aggressively hostile male adolescent. The scene, silent in its originally recorded form, was much more powerfully "re-presented" by combining the heart-wrenching footage with the equally shocking sounds of a baby pig's squeals and screams, which were added later in the editorial process.

The filmmakers won several prestigious awards for their efforts with this production and the infanticide scene sparked a controversy that still rumbles in some circles to this day. It is interesting to note that although consensus among the natural history filmmaking community acknowledged that the scene was spectacular, emotionally

charged, and thoroughly documented a particularly rare moment of animal behavior, it was not until after word had gotten out about the addition of the pig sound effects that anything was heard about a controversy involving the filmmakers' ethics. Had they crossed an invisible line of ethical conduct by matching porcine sounds with hippopotamus footage? The answer to this question depends heavily on considering the intentions of the filmmakers themselves and on the perceptible emotional impact experienced by the audience. After all, the filmmakers were there during the incident and undoubtedly heard the actual cries originating from the baby hippo. The fact that they were unable to record the actual sound wave information while simultaneously recording the visual information does not negate the reasonable assumption that they heard the actual hippo's squeals during filming. It would have been inconceivable to abandon their cameras and record the audio information at the time, only attempting later to match it to a convincing visual recreation. They chose to do the reverse. Do their creative efforts intended to evoke a more emotional response within the audience degrade the remainder of or the overall factual information presented? Did they not reasonably document and portray this particularly rare infanticide behavior? There is no clear-cut answer to this question for it is only to be found through the subjective interpretation of concerned parties; i.e., the filmmakers, the audience, and, possibly, experts within the greater biological or natural history communities.

Historically, wildlife films have, in most instances, escaped the sort of scrutiny targeted toward direct documentary regarding the matching of picture with synchronous sound recordings. The editorial process is strongly influenced by aesthetic decisions

pertaining to visual imagery, not real-time representation of historical events. (Mitman

1999). It is this writer's opinion that, under the circumstances surrounding *Mzima*, all

available options would have been compromises of varying degrees, some greater or

lesser than others. Selectively framed, subjectively composed MOS footage is in itself a

compromise of sorts and deviates from one's experiential reality considering the pretense

of the filmmakers' attempt to plausibly represent reality through the limited apparatus of

the lens.

When matched with a subjective selection of shots, the soundtrack influences our

perception and interpretation of those images. A given set of pictures can be reinforced

with completely separate soundtracks and we will experience vastly different responses

to the differing combinations. In this way sound becomes a powerful ally of the

filmmaker attempting to persuade his or her audience. (Murch 1993).

In the original IMAX production of *Coral Reef,* produced and directed by

respected filmmakers, Howard and Michelle Hall, one underwater scene documents a

relatively common form of mutualism, the symbiotic relationship that exists between a

banded cleaner shrimp and a goby. The shrimp excavates a hole in which the goby later

lives, in turn affording sentry protection for the shrimp. In this particular scene of *Coral

Reef*, dramatic music is supplemented by exaggerated bulldozing sounds as the shrimp

furiously excavates a volume of sand. The associated digging sounds were obviously not

recorded during the filming of that particular event. To the casual viewer, these sound

effects may add strength (and quite possibly an element of humor) to the scene, but for an

experienced diver or marine biologist who has probably witnessed such or similar events

many times, these added sound effects may cheapen the overall impression of the scene, as one would never hear such grandiose sounds being made by such a small animal in an otherwise noisy reef environment. Is such an editorial tactic as this to be considered unethical? Does it in any way discount or diminish the factual evidence being presented in the visual component? Again, there is no clear-cut answer to this question for it is only to be found through subjective interpretation of the filmmakers and viewers alike.

In another example involving *Blue Planet: Open Ocean*, a scene is presented where a net-load of fish is dumped onto the deck of a fishing boat. During the filming of this event, high winds and other problem noises impeded efforts to record good synchronous sound, resulting in audio quality less than ideal for inclusion. What creative solution did the filmmakers find to make this scene work? They recorded the sounds of spaghetti poured from a colander, falling with a "plop" to the kitchen counter. Ambient audio was recorded on the fishing boat at another time and was used as a sound bed. With a little audio layering, the scene becomes very convincing. Is this a case for ethical concern? Is there really any empirical difference between the fabricated sounds of a net-full of fish hitting the deck and a baby hippo's last cries for life? In both cases the visual information is merely supported with a believable audio presentation. The fact that the audio element is contrived does not lessen the emotional impact of the scene in either case. If anything, the skillful application of advanced sound design techniques elevates such an emotional response. No huge controversy revolved around the fishnet scene however, but then a net of fish is not a baby hippo. Does, or should, the emotional gravity of a given event

influence or even dictate a hierarchy of editorial freedom when considering viable

creative methods for re-presentation of such events?

CONCLUSION

Implicit in the definition of nonfiction is a reference to factual information rather than works of the imagination. Sounds support images, which in documentary works are considered to be evidentiary structural elements. Associated sounds therefore are treated as such evidence by association and typically are accepted as truth, rather than as simply design elements inserted intentionally to add impact to a scene for plot development purposes, as would often be the case in fictional films.

The differences between factual and fictional films are many, but fundamental to the comparative definitions are that one holds truth as a priority where the other does not. Documentary's charge is to recount rather than dramatize and the soundtrack holds an aura of truth. It is no different from the value of the actual image or the perceived authority that one has over the other. In the end, it is still left to the filmmaker to decide what selective material should be presented and how. Possibly of most importance to this discussion is the end objective of the filmmaker. Whatever the objective, it is only to be realized through a sequence of visceral decisions that must be made about how one most effectively achieves one's ultimate intentions.

The harsh reality, however, is that commercial filmmaking is a business, in many respects similar to any other, driven by client specifications and market demands. Quality productions, by any standards, are not cheap enterprises and rarely funded independently by filmmakers themselves. From the many hours of research and recorded footage that comprise the totality of subject material, what ends up on the screen after the final edit often is influenced or directly dictated by other factors: network policies or directives,

target demographics, broadcast ratings, advertising dollars, and other commercial interests.

To educate or to entertain, what is the essential role of science and natural history filmmaking? Should there even exist an ethical pretense to represent absolute truth? It is this writer's opinion that we as filmmakers are simply storytellers, no matter where we may set the bar for representing an authentic reality; to inspire an audience is a more worthy motive. Consideration for the veil separating fact from fiction provides an advantage for personal measure, but no film, being an artifact of conscious manipulation, can ever truly convey an objective reality. However, a skillfully crafted production can certainly provide means to both entertain *and* educate. Irrespective of whether *all* visual or acoustic elements are real or fabricated, native or borrowed, artful storytelling can be a powerful conduit for inspiration. Inspiration seeds motivation for self-discovery and personal growth. We each see (and hear) the world differently and to become inspired to learn more of the life we all share, is to seek a higher awareness…and awareness is the first step toward discovering real truth.

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