Being There

The Creative Use of Location and Post-production Sound in Documentaries
By Jean Martin

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> *Images without sound they end up with a feeling of being remote, because you don't feel that you are there. The sense of being somewhere - that is in the sound.*
> Wayne Derrick, documentary film director, 2009

This chapter focuses on location sound recording and postproduction approaches in documentary film making. Location sound recording is analytical in the sense, that it isolates sounds important for a film from the general ambience. Postproduction sound is synthetic, because it re-synthesizes the particular location sound recordings into a full sonic environment, which creates the audiovisual reality of the film for the viewer.

There appears to be a wide gulf between theories of film sound and its practice by professionals. This chapter starts by providing some theoretical context. However, most of it explores and explaines the practice of documentary film sound. Detailed technical and operational questions are not discussed here, because they are comprehensively explored in specialised books[1] and on websites[2].

Introduction

Documentary film strives to be closer to reality than feature film, closer to the object of its observation. Feature films also portray realities through story telling. As in any film form sound is crucial for creating a sense of reality for the viewer, the sense of „being there". Sophisticated sound technology and approaches are used in contemporary documentaries, matching those in feature films. Well recorded original location sound is crucial in documentary films, more so than in feature films where ADR[3] techniques are regulary used. But contrary to the ideology of authentic, untampered and original location sound, the acoustic reality of a documentary film is carefully synthesised through conscious choices by the location sound recordist and postproduction mixer.

Modern multitrack postproduction techniques used in documentary films have narrowed the gap to mainstream feature films (e.g. in docudramas). These techniques have also exposed the concepts of cinéma vérité or 'fly on the wall' documentary as ideologies.

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[1] Sonnenschein 2001, Holman 2002, Holman 2005, Rose 2008,

[2] I can recommend the informative texts on the websites of the Danish firm DPA or the German firm Schoeps (see weblinks in the bibliography)

[3] Automated dialogue replacement: location dialogue is recreated in the studio and replaces the original sound

Digital techniques of sound post-synchronisation make it possible to completely reconstruct a soundtrack from scratch in a realistic and convincing way. Chion termed it "foleyed cinema" (Chion 2009: 141).This opens ethical questions of authenticity and originality comparable to the moral issues posed by digital image manipulation through Photoshop. For example, in David Attenborough's film about the Australian Lyre Bird[4] the question remains, whether technology is imitating nature or vice versa. In many of his films Attenborough's camera men achieved astonishing close-up shots of animals through cleverly positioned micro-cameras. But when it comes to sound, many sound events would have to be re-created by a Foley artist in the studio. In the film *The Great Salmon Run* - Salmon vs bear (Episode 2)[5] about Grizzly bears hunting salmon the roar of the mountain river would mask any detail sound in a wall of white noise. Yet in Attenbourough's film we can hear water pleasantly gurgling, salmon splashing into water or hitting bolders and even a bear. These sounds have been created by a Foley artist.

There are aesthetic differences between documentary and feature films. At a first glance, the difference lies in the documentary portrayal of social and environmental realities, whereas feature films tell subjective stories. However in normal film practice this distinction is constantly blurred: documentary films use story telling techniques and feature films often implicitly document realities of life style, taste, architecture or community. Both left the studio in favour of real life settings.

Texts about documentary film sound

The scope of texts about film sound ranges from basic introductions on technical and practical issues (Prince 2009) to aesthetic reflections exploring the meaning of mediated sound perception in film (Williams 1980). The middle ground, and the most useful texts in the context of this book, is represented by writers who put (documentary) film examples at the centre of their exploration (Ruoff 1993, Chion 2009). Only very few articles are written explicitly about documentary sound.

The academic debate of (documentary) film sound circles around a cluster of themes: realism, authenticity, aesthetic impact of technological change, narrative. What makes the discussion complex is the seemingly trivial fact that the soundtrack cannot be analysed in isolation. As Michel Chion (Chion 2009: 226) provocatively put it: there is no soundtrack. What he means is, that sound and moving images are perceived in a dynamic relationship mutually influencing each other.

Sound itself is an ephemeral phenomenon. Even as a recording on film it disappears when the film stops: there is silence, whereas visually we can continue to study the still image. Walter J. Ong (1982, 2002: 32) poetically describes the nature of sound:

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[4] http://www.youtube.com/watch?v=VjE0Kdfos4Y   [viewed 19 Sept 09]

[5] http://www.bbc.co.uk/naturesgreatevents/salmon_grizzlycatch.shtml [viewed 19 Sept 09]

All sensation takes place in time, but sound has a special relationship to time unlike that of the other fields that register in human sensation. Sound exists only when it is going out of existence. It is not simply perishable but essentially evanescent. When I pronounce the word 'permanence', by the time I get to the '-pence', the 'perm-' is gone, and has to be gone.

With digital audio technology sound can actually be frozen, graphically displayed and analysed. But these analytical methods can only approximate the perceptual complexities of hearing sound and seeing moving images simultaneously. We have to rely on our aesthetic judgment to understand a film.

The question of realism and truth in documentary films is central to the use of sound in documentaries. A simple exercise demonstrates the constructed and selective nature of our perception. When a person walks down a street s/he will be aware of the acoustic ambience, but which specific sounds s/he perceives can vary greatly even from day to day, e.g. when we are in thoughts. If we, to contrast this, take a microphone and put on headphones and listen in this way while walking down the same street, we will be surprised about the great variety of sounds we haven't noticed before. So is the natural way of perceiving "reality" less real than perceiving it through a sound recording device? Or to put it differently: how can we assess whether what we hear is meaningless noise or a significant sound event?

From time to time feature film directors try to reduce the artificiality of films by reducing them to straight story telling. The ‚Dogme 95' movement in the 1990s around Lars von Trier is here to mention, but also the French Nouvelle Vague (new wave) directors in the 1960s. Godard, for example plays with the notion of wrong usage of sound in an artistic way and thus creates awareness of the filmic apparatus in sometimes irritating ways. For example he placed an omni-directional microphone in a Parisian Café to record all sounds „democratically", i.e., speech is not priviledged compared to traffic noise, pinball machines, radio, etc. This was confusing and provoking for the average feature film viewer.

Alan Williams (1980) tries to resolve the problem of realism in film by comparing sound recording to language in the sense, that both construct realities instead of literally reproducing them. Williams rejects the idea that a sound recording is an objective, exact copy of a real sonic event. Instead he describes sound recording as a signifying practice (Williams 1980: 55) by stressing the importance of the listening subject for the construction of the audio reality in a film, i.e. the sound recordist.

My contention is that in sound recording, as in image recording, the apparatus performs a significant perceptual work for us – isolating, intensifying, *analysing* sonic and visual material. (Williams 1980:58)

If one accepts the intrinsic analytical nature of sound recording then the disctinction between feature and documentary film becomes purely semantic. In an interview with James Marsh, the director of the docudrama *Man on Wire*, the journalist Guy Lodge observes that Marsh

does not recognise much difference between the processes of making a narrative feature and a documentary, claiming that both forms ultimately come down to storytelling. Marsh:

> There are different skill sets involved, of course, but at the end of the day, it's just filmmaking ... My job is to put on a good show, whether it's a documentary or a feature."[6]

The idea of sound (and image) recording as an analytical tool used by the director and sound recordist to focus the listener's attention becomes clear when small, insignificant sounds with a low volume are emphasised by being amplified: for example the lighting of a cigarette or taking a breath. As soon as the sound recordist captures a sound he makes a selective choice. He has to analyse the general ambience and decide which sound is best suited to support and enhance the moving images.

A good example is the film *Touch the Sound*[7] about the percussionist Evelyn Glennie. The director tried to recreate Glennie's acute sense of perceiving sounds through her body (she is almost deaf). She is shown walking through New York. The sound designer recreated her way of perceiving by highlighting detailed sounds of the city: the rhythm of footsteps, machines and events. The sounds, isolated and recorded in surround, develop a musical quality with their complex rhythms. Instead of taking the eternal city ambience as homogenous noise, the sound designer and director analytically broke down this noise wall into discrete, captivating audio events. The quality of the recordings, the editing, arrangement and mixing are outstanding.

The visual close-up has its exact equivalent in the aural close-up achieved by varying the microphone distance to the object. But in contrast to the two-dimensional image, sound, whether natural or as a recorded reproduction, is by nature three-dimensional. Instead of remaining at the level of a simple audio-visual parallelism, the soundtrack has the potential of constructing highly differentiated three-dimensional sonic spaces independently.

Synchronising sound and moving images

Synchronising analogue reel-to-reel tapes of sound and moving images has been a core problem in film making. When it was first technically achieved, audiences were amazed. In particular directors of animation films exploited the new possiblities to the extreme. In *Silly Symphonies* (1929-39) Walt Disney celebrates audiovisual synchronicity by having animated animals performing instruments.

But making documentaries with sound was still a problem. The sound equipment was cumbersome and intrusive. Huge microphones and heavy, noisy recorders made outdoor

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[6] Interview by Guy Lodge (May 2009) about *Man on Wire*: http://incontention.com/?p=3439 [viewed 7.6.09]

[7] *Touch the Sound. A Sound Journey with Evelyn Glennie* (2004) film by Thomas Riedelsheimer

location recording very difficult and expensive. Documentary films focus on real live events, which often cannot be repeated. Synchronising sound and images reliably is crucial.

1960: a revolution for documentary film making

The invention of the Nagra, a light, portable sound recording machine by the Polish engineer Stefan Kudelski in the late 1950s fundamentally changed documentary film making. The Nagra quickly became the industry standard for professional film makers. The reduction to a minimum crew of a director/camera man and a sound recordist encouraged new approaches to documentary filming. Small, portable technical equipment was the precondition to get as close as possible to the evolving, often unexpected life events. In France this new technology inspired the Cinéma vérité movement (cinema of truth), a term coined by Jean Rouch in connection with his film *Chronique d'un été* (1960). It was meant as a tribute to the Russian Dziga Vertov's „cinema prawda". Today though, digital sound design puts the notion of authentic, orginal location sound into question.

The demand for flexible, unintrusive recording equipment had already been expressed in the late 1950s by the American documentary film makers Pennebaker and Leacock. Only after the invention of the Nagra became their aesthetic of „direct cinema" or „fly on the wall" documentary feasible.

Even after the invention of the portable Nagra recorder in the late 1950s initially camera and tape recorder were connected by a cable to synchronise images and sound. This had obvious drawbacks, since camera man and sound recordist were literally tied together. One of the biggest complaints about the coming of sound to film in the late 1920s was that the camera man had lost his ability to move around freely to capture the best images. Many critics and directors considered the sound revolution as the death of silent film art, the only film art they thought there was.

Synchronisation of an independently running tape recorder was reliably achieved by recording a pilot tone generated by a quartz pulse on to the tape. During the transfer from ¼ inch tape to 16mm magnetic film tape the playback speed of the Nagra was controlled by the recorded pilot tone. The start point was indicated by the clapper board. This guaranteed perfect synchronisation in the alignment of the audio tape with the film clip in each take. Documentary film makers like Alan Raymond, who made the widely acclaimed *An American Family* (1973), enthusiastically embraced this invention:

> There was no physical, umbilical connnection between the two of us [the camera man and sound recordist]. This is absolutely crucial to *Cinéma vérité* shooting. ... it totally frees the camera/sound team to move as they wish, independently of one another. Camera placement need not be sacrificed to sound position and vice versa.... the camera/sound team must develop a kind of choreography where both parties are aware

of each other all the time. The cameraman must listen to the dialogue and the sound recordist must watch what the cameraman is shooting. (Raymond, 1973: 604-605)[8]

In postproduction the use of multiple, synchronised sound tracks was soon introduced, first on optical, then on 16mm sprocket magnetic film. Synchronisation was first achieved mechanically and later electronically.

Time Code Synchronisation

In 1967 the Society of Motion Picture and Television Engineers[9] introduced SMPTE time code, a time reference standard for synchronising sound and images. It was rapidly accepted in the film industry. Time code made the synchronisation of independently running tape recorders and film recording/ playback machines reliable and convenient. Instead of having to start a synchronisation with the clapperboard signal, time code – synchronised machines can be locked together at any point in time. The machines will „know" where they are on the timeline.

The music industry also found time code useful to extend the number of audio tracks by linking for example two 24-track tape machines. Multitrack tape recorders were also increasingly used in film sound postproduction and dubbing, because it was much cheaper compared to magnetic sprocket film.

The separation of synchronised sound and moving images during the production process was a great achievement. This approach allowed and encouraged a much more flexible and analytical use of sound. Not only could the camera man and the sound recordist move independently from each other during a shoot. After a scene was shot a good sound recordist would always continue to capture useful and interesting sounds and atmospheres on and around a specific location. The rich world of off-screen sound could be analytically explored and recorded. This increased the choice and the creative options during the postproduction and allowed the enrichment and completion of the reducing effect of the camera framing through sound.

The invention of the digital video camera jeopardised this achievement. The combined recording of sound and moving images on one tape makes the independent capture of sound and images impossible. Although convenient, the DV camcorder is aesthetically a step backward, because it encourages a simple, one-to-one audio-visual duplication: what you see is what you hear. On the other hand, digital audio workstations made the post-synchronisation of sound and image flexible and fast. Digital sound postproduction can therefore compensate some of these shortcomings.

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[8] Ruoff (1993) discusses Raymond's approach

[9] http://www.smpte.org [viewed Dec 2009]

The practice of location sound recording

A sound recordist working on location has to deal mostly with practical problems: weather conditions of extreme heat or arctic cold; making sure the equipment works reliably (microphones, cables, connectors, batteries, mixer, storage media). His core task is to analyse the acoustic environment and make clear judgments which sounds to select so they match and support the captured moving images.

A location sound recordist normally uses three types of microphones: miniature lavalier, which can be hidden on a hat or on the chest of a person. The signal is usually transmitted wirelessly. A shotgun or hyper cardioid microphone has a very narrow focus. It is operated on a boom and has the advantage of excluding unwanted noise from the signal. It needs careful handling, because a minimal movement to the side from the signal, e.g a voice, will rapidly diminish the signal strenght.
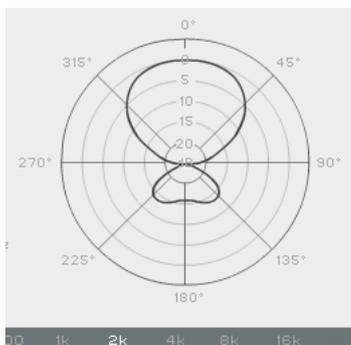
The diagram of the frequency characterists of a Neuman[10] KMR 82i shotgun microphone at 2000 Hertz. If the sound source is at an angle of 90º it will have lost 20dB compared to the frontal position at 0º.

Stereo microphones with a MS (mid-side) characteristic or surround microphones are used to record voices and general ambiences either in a stereo field or in five discrete channels.

Sound recording knowledge and how to acquire it

There are two methods of learning to become a film sound engineer: First, by apprenticeship with an experienced practitioner, in other words through learning by doing under professional supervision. The second way is through formal training in an institution, although many of these institutions tend to focus mainly on the operational aspects of complex postproduction studios.

On location some specific skills, like limiting the volume of acoustic events to prevent a recording from being distorted, have been automated by sophisticated software tools. In computer based postproduction studios even more tasks can be automated: volume control, equalisation and panning of sound events in the surround field, in effect the whole mixing process can be recorded, recalled and changed at any time. These tools become ever more sophisticated. The advantage, and sometimes burden, of digital postproduction is the ability to

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[10] http://www.neumann.com/?lang=en&id=current_microphones&cid=kmr82i_data   [viewed 25 Aug 09]

make changes from the micro level of a single sound, to the level of sub-mixes (e.g. music) to the overall balance between dialogue, sound ambiences/ effects and music up to the last moment.

Location sound recordists rarely write about their practice. A good exception is an on-line text by Dan Brockett, a film and video director, who seems to care about film sound and has worked as a location sound recordist. Apart from discussing devices, microphones and practical tips about how to use them, Brockett tries to articulate aesthetic insights into sound practice in a colloquial style directly addressing the reader. One of his central statements is that „audio conveys almost all of the emotional impact in the visual medium." This is confirmed by director Wayne Derrick in an interview with the author (see below). To achieve impact, Brockett demands from sound to be „transparent": „Your sound is largely what will determine if your project is entertaining to your audience."

One of the paradoxes of good film sound is its – metaphorically speaking – invisibility. Brockett:

> If your location sound is recorded correctly, the easier it will be to work with the basic audio during the post-production process. The better job you do with the sound during video and audio editing, the less the audience will notice it. The only sound that is noticed in a visual medium is usually poorly executed. Great sound works on a subconscious level with the viewer by drawing them into what they are viewing. Great sound supports and enhances the stories you are trying to tell.[11]

Brockett warns against the illusion, that a single operator of a Digital Videocamera (DV) can produce good sound. Despite the democratising effect of affordable digital production tools, division of labour as well as skill and experience are still required to produce good film sound. A sound recordist always listens to the sound on closed headphones while recording. If the quality deteriorates, for example through the intrusion of environmental noise, he can come closer to the speaker with the directional microphone on a boom to separate the signal from the unwanted noise. This alertness of the sound recordist will guarantee well recorded speech and location sound, which is crucial for the enjoyment of a documentary film.

An interview[12] with the location sound recordist Paul Oberle, a Berlin based location sound recordist with many years of professional experience[13], provided more insight into contemporary documentary sound practice. In documentaries planned for cinema and DVD-release, surround sound is standard practice today. Oberle uses a combination of different microphones: lavalier, shotgun, MS stereo, including a surround sound microphone. Only dialogue films, where the main focus is on the conversation between two protagonists are

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[11] http://www.kenstone.net/fcp_homepage/location_sound.html (viewed 24.8.09)

[12] Interview by the author with Oberle by telephone on 3 Sept 2009

[13] Paul Oberle films http://www.imdb.com/name/nm0643276/ [viewed 9 Sept 09]

usually made in stereo, e.g. Derrick's *Horse People* (2009). Equally TV productions mostly use stereo sound today.

In terms of sound, documentary film is often more complex than feature film, Oberle claims, mainly because of the unpredictibility of the evolving live events. Oberle stresses the importance of the preparatory communication between director and sound recordist ahead of a recording session. In a music documentary about the Venezuelian conductor Gustavo Dudamel[14] the director had failed to mention to the sound recordist that there would be a chamber orchestra playing in one of the rooms. During the shoot Dudamel moved from room to room. Oberle, who was following the action with a boom, lost the sound of the chamber orchestra after they passed to the next room. After Oberle protested the scene had to be filmed again with four wireless stationary microphones for the orchestra and a stereo microphone on a boom to follow Dudamel. Oberle recorded the six discrete channels of audio simultaneously on a portable digital multitrack recorder.

For a defined protagonist Oberle uses a wireless lavalier microphone. He always uses lavalier microphones in combination with an additional boom operated stereo or surround microphone to produce sound perspectives indicating the distance of the point of audition from the sound source, which can be added in the mix. The stereo or surround microphone always has to follow the perspective of the camera frame, in order not to confuse the viewer about the spatial references.

Oberle uses an advanced system which, as opposed to regular documentary productions, records moving images and sound independently on different machines. In the late 1960s the French engineer Jean-Pierre Beauviala[15] had the idea to improve synchronisation by simultaneously time marking the audio tape and the film stock with time code. This made the alignment of the audio and visual material in the editing process much quicker, more accurate and reliable.

The recording of sound and images on location separately has two advantages: first, the sound recordist and camera man can move freely and independently from each other; second, the sound recordist can continue recording even when the camera has stopped. In this way additional, rich off-screen sound can be captured and used in postproduction.

These so called wild tracks, i.e. audio recordings which are not synchronised to images, are very important to provide the viewer with a sense of being there. Wild tracks can be recorded, whenever the camera is not capturing dialogue or other verbal statements from protagonists. For example the camera man manages to capture a panoramic sweep over a landscape, which is visually stunning, but acoustically spoiled by a passing airplane. The sound can be replaced during postproduction and enriched by more interesting soundscapes

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[14] *The Promise of Music* (2008) documentary by Enrique Sánchez Lansch about the conductor Dudamel
[15] http://www.aaton.com/about/history.php#_top [viewed Dec 2009]. Beauviala had links to the Nouvelle Vague directors.

recorded by the sound engineer at a different time. Good location sound recordists will spend time to listen and search for useful or unusual sounds and atmospheres indepedently. Analysing and isolating certain sound events can musicalise them. Through sampling techniques of looping and layering they can be organised into soundscapes that can heighten the aesthetic experience of a film scene, as Darren Aronofsky for example has successfully demonstrated in his film soundtracks.

Synchronisation is achieved by a timecode generator which is started in the morning on the day of shooting. The continuous time code (TC) signal is transmitted wirelessly and recorded on a separate track of the audio and image recorder whenever a machine is recording. Clapper boards are not necessary anymore. Oberle always makes sure to record a pre-roll of 30 seconds before the action starts to provide more flexibility for editing.
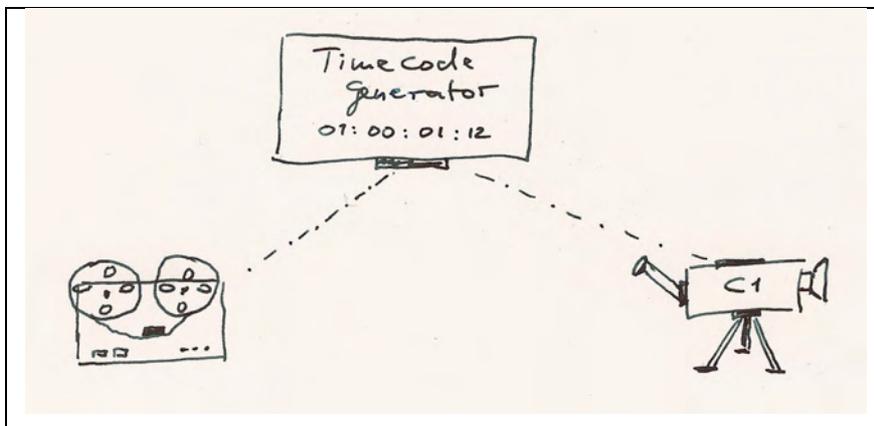
In some recording systems automatic production reports are generated during the shoots, which can be completed with additional information by the sound recordist in the evening during the backup-process, e.g. files can be marked as synchronous or as wild track with a few additional notes. This makes the handling of the files during postproduction very transparent (see appendix Fig.1).

In contrast to the myriads of studio production courses training in location sound recording is difficult to find. Oberle mentions the Film & Television Academy (HFF) "Konrad Wolf" in Potsdam[16] as an institution which provides excellent location recording courses.

Practical Tips

The list provides some recommendations for location sound recording:
- use the best possible microphones
- Use various microphone types: stereo and surround, mono shotgun, lavalier

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[16] HFF Potsdam http://www.hff-potsdam.de/_english/startpage.html   [viewed 9.9.09]

(wireless)
- separate sound sources
- record with great care to produce quality sound: clean, clear, natural (even shaky films like The *Blair Witch Project* have good sound!)
- record additional general ambiences as unsynchronised wild tracks in stereo or surround
- use the limiter subtly and be aware of limiter pumping or automatic gain control
- listen while you record through headphones so you can judge the quality and usability of the recording. One-man crews rarely produce good sound!
- use multitrack location sound if possible to keep all recorded sounds separate, which makes the synthesising of the film sound track more flexible
- use pre-rolls and post-rolls, before the visual action starts and after it stops. This makes editing easier
- record room tones, i.e. ambient sound when nobody speaks
- avoid reverberant spaces, which create a stressful listening environment
- pay attention to background noises: creaking floorboards, people talking, air conditioning, fridge, airplanes. This will reduce problems during editing
- switch off mobile phones. They radiate signals which interfere with microphones
- be aware of microphone noises: (usually lavalieres) rubbing on skin or clothing. Stomach rumbles. Heavy breathing. Mouth sounds (clicking or sticky mouth); certain fabrics, e.g. silk are noisy, wind noises. This can be remedied by using a microphone with a boom and a windshield
- the camera man frames, whatever s/he is about to film. The sound engineer has to know how far the frame of the captured images goes. He wants to get as close with the boom to the sound source as possible without showing the microphone in the image.
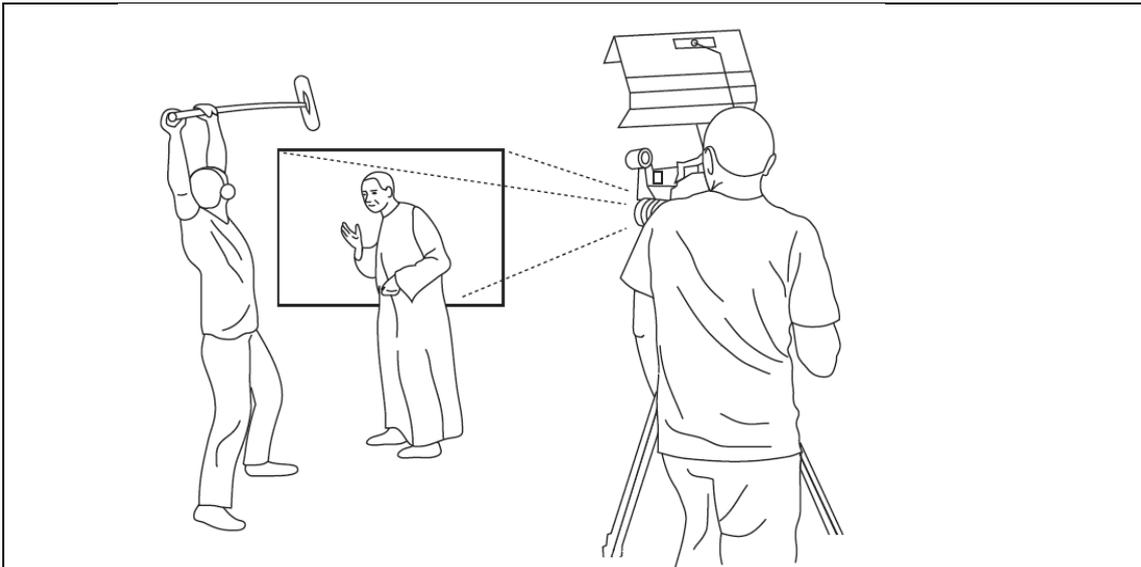
Image by Anne-Claire Martin

- be aware that speech has priority in most documentary films. During postproduction it is important to be mindful of the core frequency range of the human voice (male: 100-150 Hz, Female: 160-250 Hz; for both the harmonic spectrum around 2 -3 KHz are important for clarity) and not mask it with sounds of similar frequency range, e.g. music

Ear training – creating awareness about environmental sound

Since the early 20th century sound recording and reproduction has continually improved. Audio technology has perfected the ability to imitate the natural human audio perception in recording and reproduction. What still remains a challenge is to train our ears.

Various artistic and aesthetic movements in the second half of the 20th Century tried to raise awareness of the complexities of sound and its impact on humans.

For example Murray R Schafer initiated the World Soundscape Project[17] (WSP), together with Barry Truax and others in the late 1960s at Simon Fraser University in Vancouver. Their aim was to create awareness about the quality of the sonic environment by documenting contemporary and vanishing environmental soundscapes all over the world. A major concern was the increasing noise pollution, but the celebration of the beauty of complex soundscapes was equally strong.

Similarly the World Forum for Acoustic Ecology (WFAE)[18], founded in 1993, is an international association of organizations and individuals, who share a common concern with the state of the world's soundscapes. Researchers focus on the multi-disciplinary study of the social, cultural and ecological aspects of the sonic environment.

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[17] http://www.sfu.ca/~truax/wsp.html [viewed 28.8.09]

[18] http://interact.uoregon.edu/MediaLit/WFAE/home/ [viewed 28.8.09]

Since the 1960s visual artists have increasingly become interested in sound. Sound artists – a new category of art practitioners, try to explore sound phenomena in an artistic way, combining sculpture, architectural space and electroacoustic technology. Practitioners and theoreticians of this new art form became very active in the 1990s, particularly in Germany.

The ideas of acoustic ecology and soundart have disseminated into more general sound practice. A documentary film sound specialist, who has absorbed some of these ideas is the UK wildlife sound recordist Chris Watson.[19] On his CD *Weather Report* (Touch 2003) Watson mixed pristine nature recordings from different continents into dramatic sound tracks.

Consuming documentary films: how is sound affected?

The way documentaries are viewed has changed over time. The composer and writer Norbert Jürgen Schneider (1989) stressed the importance of public television for commissioning and distributing documentary films. Wilhelm Roth, a documentary film theorist and editor of the German film magazine *epd Film*, went even further when he defined television as „the documentary medium par excellence, even before or below the level of the designed documentary film." (Schneider 1989:53). One only has to think of the live-broadcast of the destruction of the Twin towers in New York, or more profane, of the Big Brother series. Now TV channels like Discovery or History Channel, wholly dedicated to documentaries have become commercially viable.

Few documentary films are screened in commercial cinemas. Some, e.g. *Etre et Avoir* (France 2002) and *Touching the Void* (UK 2003), or two recent films, James Marsh's *Man on Wire* (2008) and Gideon Koppel's personal view of life in Wales, *Sleep Furiously* (2008), have had considerable success with a wider cinema audience. However, most documentary films are still shown on television. And they seem to remain predominantely on the small screen: there are predictions that the internet will soon be the preferred platform for documentary film distribution[20].

The TV or small screen setting has compromised the sound quality of documentary films. Soundtrack mixes of films for DVD or television release have a reduced dynamic range compared to the cinema version. This flattens the definition of dynamic depth between loud foreground (speech and special sound events), middle- and background. In a home setting films cannot be played at high sound levels without disturbing neighbours. Also in most cases the loudspeakers don't have the capacity to reproduce large dynamic levels. This put great constraints on any subtle use of sounds and atmospheres. All sound events - speech, environmental sounds and music - compete for a place 'in the front row'. It is not surprising that most documentary soundtracks are therefore dominated by speech and music. Koppel's

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[19] http://www.chriswatson.net/ [viewed 28.8.09]

[20] Vicente, Ana (2008: 271-277)

film would lose most of its quality – visually and acoustically – in a TV screening. Despite the above limitations television has paradoxically a strong focus on sound, in particular on the spoken word. Images often only illustrate what is said. TV films do not usually narrate in visual terms. The small screen makes this impossible, although flat screen technology with much larger screens has partly remedied this problem. The emotional and experiential power of sound becomes obvious if one uses a good external sound system, instead of the poor standard TV loudspeakers. The increased depth and definition of sound quality seem to expand the small screen images. In this way one can recreate some of the sensuousness of the medium film in a domestic environment.

POSTPRODUCTION

In postproduction the audiovisual raw material is edited and assembled. Special care is taken over editing dialogue, which has priority in most films. There are striking similarities between the audio and visual film techniques: the close up has its equivalent in the acoustic close-up, amplifying normally inaudible, small sounds; the point of view finds it equivalent in the point of audition; the cut is applied both visually and sonically, although sounds have to be treated more carefully so they maintain their identity; synchronicity confirms the mutual influence of the audio and visual signals. But there are major structural differences as well: moving images are two-dimensional and linear, sequential. Sound is three-dimensional, multilayered and simultaneous. Independent sound events can be discretly distributed through a multichannel soundsystem.

Postproduction of film sound has changed fundamentally since the digitisation of the audio studio. A complete vertical intergration of controlling sound from the micro-level of the sample to the overall mix of the various sound layers has been achieved. The workflow is still divided into distinct tasks – voice and dialogue editing, foley sound and special effects and music. The difference to the analogue world is, that processes of volume control, panning and equalisation can be automatically recorded and changed at any time to the last stage during the final mix. Even the arrangement of the sound events in the timeline can easily be adjusted.

The creative selection of special sound effects and synthetic sounds, the integration of archive sounds, the condensing of time through editing – all these techiques have become easier to handle through digital sound technology in the postproduction process. As a result many documentary films have aesthetically moved much closer toward feature film. A carefully designed film will always be more powerful than filmed „reality", an assembly of unedited, original images and sound material.

Structuring time is one of the important tasks during postproduction. Sound is crucial for achieving this. Sound always indicates forward moving time. Pictures can be easily reversed without the audience noticing it: for example a panoramic sweep of a landscape. Sound – wind, birds, rustling of tree leaves will indicate the normal forward moving flow of

time. As Stephen Prince summarises: „Sound temporalizes images." (Prince, 2009:212) Sound can be reversed as well, but this changes its nature fundamentally.

Sound also creates continuity of place and time. Even when the images are cut in unusual ways, continuous sound ill indicate to the viewer, that a scene is still in the same place and time.

The frequency of edits in contemporary film has increased substantially. On TV a sequence of images is cut every 2-3 seconds on average. The implications for sound are serious. If the soundtrack followed at a similar pace the viewer would be bombarded with a barrage of incoherent sounds and get highly confused. It is telling that a mock-documentary film like *The Blair Witch Project*, while indulging in shaky camera work and rough, „unprofessional" images, used perfectly recorded and mixed sound.

Sounds need time to evolve and decay. Environmental sounds cannot be cut as easily and arbitrarily as images. Sounds and music have their own durations and rhythms: the cry of a bird, a car driving by, foot steps, church bells etc. Film, like music, is a time-based art. The way time is organised in a film is crucial for the construction of the filmic reality. A sound designer has to be acutely aware of the rhythm of the cuts. The way a film is edited and the sequences are put together in a montage is directly related to the content of the section: fast, short edits suggest movement, action, speed, whereas long shots with few cuts support a more contemplative, quiet, reflective atmosphere or way of being.

The montage can be driven alternatingly by sound or by the images. Sergio Leone has exploited this in his spaghetti westerns. For example, in *Once upon the Time in the West,* visually there is not much to explore in the desert during the opening title scene. This scene is driven wholly by the *sonic* exploration of the lonely railway station. When the name of the editor is mentioned, a jump cut forces the sound into abrupt loudness. Towards the end of the film the final shoot down is staged like an opera scene: the music by Morricone was composed first and the images edited to the music. In many B-movies the music takes over when the structure of the narrative becomes weak.

How can a film maker recreate the experience for the audience within one hour, when the presenter, the camera man and sound recordist have spent six weeks with some people in a remote location? For the BAFTA award-winning director Wayne Derrick[21] sound has the potential and power to achieve this by providing the viewer with a sense of „being there". Images are more abstract compared with sound. Derrick:

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[21] http://www.bafta.org/awards-database.html?sq=Wayne+Derrick+ [viewed Jan 2010]

Commercially available documentary films by Wayne Derrick are e.g. *Blizzard*: Race to the Pole (2006), *Tribe* : Complete BBC Series (2007) presented by Bruce Parry; *Horse People* with Alexandra Tolstoy (2009); *Being Neil Armstrong* (2009)

In my series about horse people what struck me was the amazing power and strength of some of the horses. Particularly in Spain the horses just had incredible physical ability. What I felt was you look at them and they look beautiful. But what gave you a sense of their power and strenght was the sound of their running and the hoofs against the ground as they turn. The same is also true in Montana with the cowboys and the quarter horses how they were twisting and turning and accelerating and stopping and turning. The image looked good, but you didn't get the same intensity of the strength and power without the sound.[22]

Whereas location sound recording is analytical focussing on distinct, separate sound events, sound design and sound mixing in the postproduction has a synthesising function. Its aim is to create for the viewer the possibility of a subjective, emotional experience of the story. Given the pressure of ratings of TV stations documentary films have had to become more entertaining to attract larger audiences, who are not necessarily interested in a particular subject. The focus in these documentaries is often on the presenter and the interaction with people in unusual circumstances. Like in feature films, an important goal of the postproduction process is to hide the filmic apparatus and suspend disbelief through strong story telling.

Music

The reluctance to use music has been quite common among „fly on the wall" film makers and Cinéma vérité purists. Some feature film directors have adopted a similar approach, as Ingmar Bergman put it in an interview with Ulrich Gregor:

Music plays an important role in my life: it is perhaps the highest artistic form of expression. I love Bartok, Schoenberg, Stravinsky, Schumann ...and above all Johann Sebastian Bach. But in my films I hardly use music at all, with the exception in a functional manner, when my actors themselves listen to music. I find, that a film is music itself when it is accomplished." (Gregor 1966:106 – quoted from Schneider 1989:38 in my translation).

Most average documentary films shown on TV nevertheless use music to increase emotional impact and make the film more „entertaining". Wayne Derrick describes his change from a cinéma vérité approach with no film music at all to a more flexible attitude towards music. While filming for the series *The Real LAPD* Derrick travelled around with a police officer in LA. One day he filmed the arrest of a gang, who had just killed a rival gang member – a terrifying experience, where he feared for his life. When he showed the footage in the postproduction studio, the producers and secretaries just laughed, because at one point the officer shouted at the gang members, who were hiding in their car: „I wanna see some hands!" and all these hands came up. The editing sound designer then put a dark drone under the scene, which re-created the sense of danger for the viewer. It became clear to Derrick that a camera and

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[22] Interview by the author with Wayne Derrick by telephone on 16 July 2009

sound device cannot record the emotions somebody had during the event. In a film these emotions may have to be artificially recreated.

Sound and music are the primary tools for recreating an experiential reality. In Wayne Derrick's docudrama *Blizzard. Race to the Pole* (2006), a restaging of the race to the south pole by Scott and Amundsen the composer Barry Adamson and Howard Davidson created distinct timbral flavours for the contemporary crew and the original footage of Scott and Amundsen. For the latter they used much darker timbres.

Unfortunately most TV documentary producers don't seem to trust the power of well recorded location sound. Like many other TV documentaries Derrick's series *Horse People* (2009) focuses mainly on presenter Alexandra Tolstoy, on screen and as the off-screen narrator, as well as on music, which tends to be overused. The motivation to do this comes from the perceived pressure to have to entertain the broadest possible audiences.
As a compromise many film composers have adopted the „convergent" film music model, a term coined by Stephen Deutsch.[23] Music and sound design blend seamlessly together, partly because they use the same sound material. The Hollywood composer Mark Isham uses a similar approach in feature films. The sound designers of *Touch the Sound* musicalised environmental sounds, e.g. rhythmic sounds of our mechanised world – sound of an escalator, tyres on different surfaces, a cable car and foot steps – to connect them to the percussive sound world of Glennie.

The referentiality of most environmental sounds to their sources (a bell ringing, a door slamming, wind howling etc.) has the potential for expanding the visual frame. This can be exploited to liberate the image track from having to show everything. Spaces and other information can be implied purely by sound. However, this materiality requires careful placement of the sounds, i.e. synchronisation in order not to disturb the audiovisual balance and unity. Separating or obscuring sounds from their originating causes is a core method in electroacoustic music and musique concréte. The resulting ambiguity is also widely used in film sound design, where images can define sounds, and sounds can influence the perception of images in complex, fluid ways.

Voice
It has always been in the interest of documentarists to capture and document the immense richness of human speech and its expressive power, often as pure sound recordings.[24] Frederick Wiseman for example recorded the many accents of the American language.

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[23] Deutsch, S. (2009). ‚A Concise History of Western Music for Film-makers' ,
   The Soundtrack 2: 1, pp. 35

[24] The National Sound Archive in the UK and the Library of Congress in the US have stored thousands of recordings creating an oral history of the changing usage of human speech

This makes the understanding for non-natives problematic and sometimes impossible. Subtitling is one solution, but this kind of observational filmmaking is often limited to national or even regional boundries.

The voice-over is one of the most common tools used in documentary films – if not the key feature to tell a story. Whereas location sound recording has little control over the quality of sound events, voice-over recordings of a commenting narrator allows for maximum control in terms of logical structure, tone of voice and sound quality. In *Blizzard* the narrator Simon MacCorkindale tells the story of the unfolding drama in an elegant, smooth tone, which is in stark contrast to the hardship and dangers the explorers had to endure.

Sara Kozloff on the other hand claims, that in Hollywood cinema voice-over is still considered „the last resort of the incompetent", a stark viewpoint according to Ruoff, but shared by many observational documentary filmmakers. (Ruoff 1993:31). Some documentaries, e.g. Touch the Sound (2004) avoid a narrating voice altogether and instead use the silent film technique of the intertitle or title card to explain a new setting or chapter.

Interestingly Ruoff mentions that feature film directors adopted and used documentary film techniques, e.g. Orson Wells in the „News on the March" episode in *Citizen Kane* (1941). The tone of the commenting voice conveys many implicit meanings. A skillful voice artist or actor can create a sense of authority, calm detachment, irony, emotional agitation or sadness, as can be obeserved in more recent films, for example *Godfellas (1990), The Usual Suspects (1995),* or *American Beauty (1999)* or the voice of computer Hal in *2001: A Space Odyssey* (1968)*.*

Mixing

The purpose of mixing the soundtrack is to balance all sonic events in a meaningful way and to hide the filmic apparatus (e.g. synchronisation mistakes are striking to even the most unaware film viewer). The dubbing mixer is a highly skilled engineer, who needs technical knowledge to use a complex studio and also a fine ear to make appropriate aesthetic judgments about the balance between all sound events and their relation to the moving images.

Point of audition

Image and sound have to match each other. Usually the point of view of the camera provides clues about the distance of the object from the camera and the microphone, which both mechanically simulate the position of the cinema spectator. The correct volume is crucial for for creating the filmic illusion for the spectator. The greater the distance the weaker is the intensity of the lower frequencies in particular. This simple technique can also be used for off-screen sounds to create a rich, layered three-dimensional sound field.

There is an ongoing debate whether localization or spatiousness is more important for recreating a sense of space in the filmic reality. The possibility to localise a sound event is

more important on a large cinema screen, whereas a general sense of sonic spatiousness is sufficient for the small screen.

The hierarchy between the sounds varies throughout the film: sometimes the commenting voice is dominant, then detailed environmental sounds or music. At emotional or dramatic moments directors often add music and remove ambient sounds completely to increase the intensity of the filmic experience, as for example in Joe Wright's film *The Soloist* (2009).

Summary of postproduction

The first step is tracklaying, i.e. putting all the fim images and the location sound on a timeline in a digital workstation and giving it a rough structure. At this point the director will have developed a draft text for the narrative. After editing and defining the total lenght, a commenting voice is recorded. Further effects and Foley sound is added. At a late stage specially composed music is added. Through mixing automation detailed sub-mixes for the effects, music, or voice-over can be built up. In the final mix all audio elements, speech, sound effects and music are balanced in a meaningful relation to the moving images.

Keypoints of chapter

Most people don't notice environmental sound, only subconsciously. In contrast a location sound recordist has to *analyse* the ambience and select specific sounds creating a differentiated, rich catalogue of discrete sounds, which add value to the images. Dialogue has priority.

Postproduction sound is the synthesis of all the elements and materials recorded during the location shoot, edited and completed through additional recordings in the studio. Sound design, i.e. the careful placement of music, ambiences and specially mixed and created sounds, temporalizes the image track and gives it pace and rhythm. It can also take over many tasks from the image track, i.e. creating continuity, defining a space etc. The aim is to create are convincing audiovisual filmic reality, a three-dimensional acoustic space, which gives the viewer the feeling of "being there".

Exercises

This section aims to inspire greater awareness of sound through a series of practical activities. Most examples can be adapted to the current circumstances of the sound researcher. Doing these exercises will increase your practical skills as a sound recordist and sound designer.

Soundwalk

Select a path through an environment (city, nature, factory …) and register with acute listening awareness all the sounds which are there. Take notes about them to remind yourself

later. The separation of sounds can be increased by listening through headphones with a directional microphone. The sounds don't have to be recorded.

Environmental sound without vision

Close your eyes (with a blind) and listen to your surrounding for 10 minutes. Write down or discuss what you have noticed, as the director Wayne Derrick did:

> *Years ago, the initial time when I was in London I went out with a stills camera to take some photographs of what I thought would someone make feel London. I went by Westminster, I went by all the classic places in London. It didn't really feel like London. It looked like London, but it didn't feel like London. I closed my eyes for a moment and I heard a taxi screetching to a halt and I thought: that is London. It is the sounds of London that really make you feel that you are there. It is not the images, it is the sound! The images are images, but it is the sound that you actually feel you are there and really make you feel the presence of things.[25]*

Sense of space and/or place

Explore the spatial audio signatures of a space: the reverberation times, direct sound reflections, the emotional quality of reverberant timbres, e.g. in a bathroom or in a cathedral. Explore acoustic identities of places: a pub, a shopping mall, a market, a high street, a forest, a small town, a village etc.

Synchronisation

Explore the effect and the power of synchronising audio and visual elements. If one combines any sound with a film clip, we synthesise these elements into a new unit. Chion calls it synchresis (synchronisation plus synthesis).

Re-design an existing soundtrack with your own sounds, e.g. for the Honda Cog (2003) car advertising film.

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[25] Interview by the author with Wayne Derrick by telephone on 16 July 2009

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Word count: ~ 8460

Fig. 1

Director: Detlef Buck	Title: Same same but different	Location: PP
Prod: Boje/Buck	TC fps: 25.00	Page: 1 / 7
Sound mixer: Paul Oberle	Media: DVD	Format: S 16/35
Cantar # 537	Type: Mono	Date: 2008-11-24

CANTAR SOUND REPORT

Filetag	Scene	Take	TC start	TC end	TC slate A	T1	T2	T3	T4	T5	T6	T7	T8	Duration	Size
RU3323	36 / 1	t 1	08:01:24	08:02:18:22	08:01:31:03	M front m-s	S	rear	boom			# mix l	# mix r	00:00:54	7 MB
Notes : Sourround, Richtmikro auf track 4 fuer Vordergrund															
RU3324		t 2	08:06:02	08:07:02:20	08:06:12:14	M front m-s	S	rear	boom			# mix l	# mix r	00:01:00	8 MB
Notes : Sourround															
RU3325		t 3	08:09:56	08:11:02:16	08:10:07:08	M front m-s	S	rear	boom			# mix l	# mix r	00:01:06	9 MB
Notes : Sourroundv															
RU3326	36 / 2	t 1	08:17:28	08:18:13:19	08:18:05:07	M front m-s	S	rear	boom			# mix l	# mix r	00:00:45	6 MB
Notes : Sourround															
RU3327		t 2	08:20:19	08:21:11:13	08:21:03:16	M front m-s	S	rear	boom			# mix l	# mix r	00:00:52	7 MB
Notes : Sourround															
RU3328		t 2	08:23:23	08:24:12:16	08:24:02:18	M front m-s	S	rear	boom			# mix l	# mix r	00:00:49	6 MB
Notes : Sourround															
RU3329		w 3	08:26:10	08:33:41:16	08:26:40:20	M front m-s	S	rear				# mix l	# mix r	00:05:31	45 MB
Notes : Sourround, Atmo Strasse															
RU3330	37 / 1	t 1	09:04:46	09:05:56:19	09:05:01:22	M front						# mix l	# mix r	00:01:10	9 MB