STORYBOARD ASSIGNMENTS – DESIGN AND DOCUMENTARY

Storyboard Assignments

Design and Documentary

Design Storyboard

Idea/Problem:

In addition to understanding the ways of selecting and ordering images that are based on content such as "subject" as in documentary or "story" as in narrative, the media designer must learn how to SEE in shooting and how to ASSEMBLE in editing what are known as "elements of design."

Understanding and controlling visual design elements is critical in building any kind of visual presentation including film, video, computer graphics, etc. This assignment is designed to help you discover and explore these formal elements of design and how to apply them in image making and editing.

Process:

Software – Power Point or Microsoft Office 2007 version of Word, or graphic design software of your choice

Using Google Images, or ask.com, or any other search engine that supplies visual material – find images that demonstrate any of the design principles listed below.

Make sure the images you choose to build your storyboard are abstract (DO NOT contain any recognizable imagery).

Import 12 to 15 images that relate to each other visually, onto your blank page in the LANDSCAPE format. Use a 3x4 aspect ratio for each frame. Each frame MUST be the same exact size.

Move them around until you have created a SEQUENCE of images that relate to each other in linear order. Edit down to 12 images and set them up in three rows of four frames each. Remember that each individual frame must relate in a "formal" way to the frame preceding it and the frame following it. Please note that the first and last images DO NOT have to relate. You are creating a progression and evolution that will allow the image relationships to evolve.

Formal Elements of Design:

- **Composition of the total picture**
- **Color**
- **Shape of the central part of the image**
- **Framing**
- **Strong directional forces (vectors)**
- **Use of light & shadow**
- **Texture**
- **Contrast**
- **Feeling of movement**
- **Figure/Ground**

Documentary Storyboard

Idea/Problem:

A documentary is not simply "reportage." It is a work (photographic series, film, or video, etc.) that conveys its quality and meaning partly by the careful selection of material and partly by the imaginative and creative way in which this material is selected and edited. A documentary can also be commonly understood as a work presenting political, social, or historical subject matter in a factual and informative manner and often consisting of actual news films or interviews accompanied by narration.

Producing a documentary is a complex craft and just as any other creative endeavor, it demands several layers and a focus on the overall intent.

Since the camera was invented individuals have used it to record actuality, to preserve a moment in history, or to reveal the tragedies and delights of the world around us. As film became a more popular mode of representation, the purpose became not only to record reality, but to promote certain ideals of what was real, how the world should be viewed, and what social changes were necessary for the good of mankind. The camera was used to explore and analyze events and people, to inquire about meanings, to make the audience question their reality. Finally, documentary can be used AESTHETICALLY to express how the director sees the world through the camera lens.

Process:

Software – Power Point or Microsoft Office 2007 version of Word, or graphic design software of your choice

Select a "topic" about which you will create your storyboard. The subject should be relatively broad so you will have no problem finding visual material. Examples of topic ideas are, water pollution, global warming, hunger, racial discrimination, substance abuse, workers rights, war, etc.

Using Google Images, or ask.com, or any other search engine that supplies visual material – begin to gather images about your topic. Import 12 to 15 images that relate to each other visually, onto your blank page in the LANDSCAPE format. Edit down to 12 images and set them up in three rows of four frames each. Use a 3x4 aspect ratio for each frame. Each frame MUST be the same exact size.

Then, from studying the pictures you have chosen, experiment with different ways to order them so they relay a point of view. Try to find patterns through which you can group your images together to convey your story. Consider issues of where to use an establishing shot, medium shot, close-up.

Remember that even in this storyboard, each frame must relate in a visually "FORMAL" way to the picture preceding it and the picture following it. Design elements MUST be considered.

Presentation Requirements: Each storyboard must be printed in color on glossy stock. Paper will be provided by your instructor.

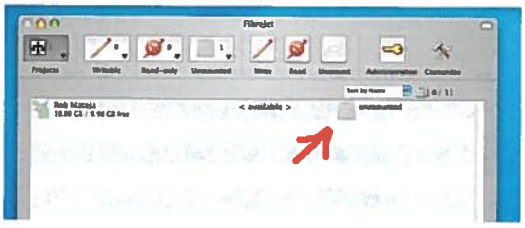
HOW TO USE FIBREJET

How To Use FibreJet

1.To login to FibreJet, first click the airplane icon at the bottom of the screen once.

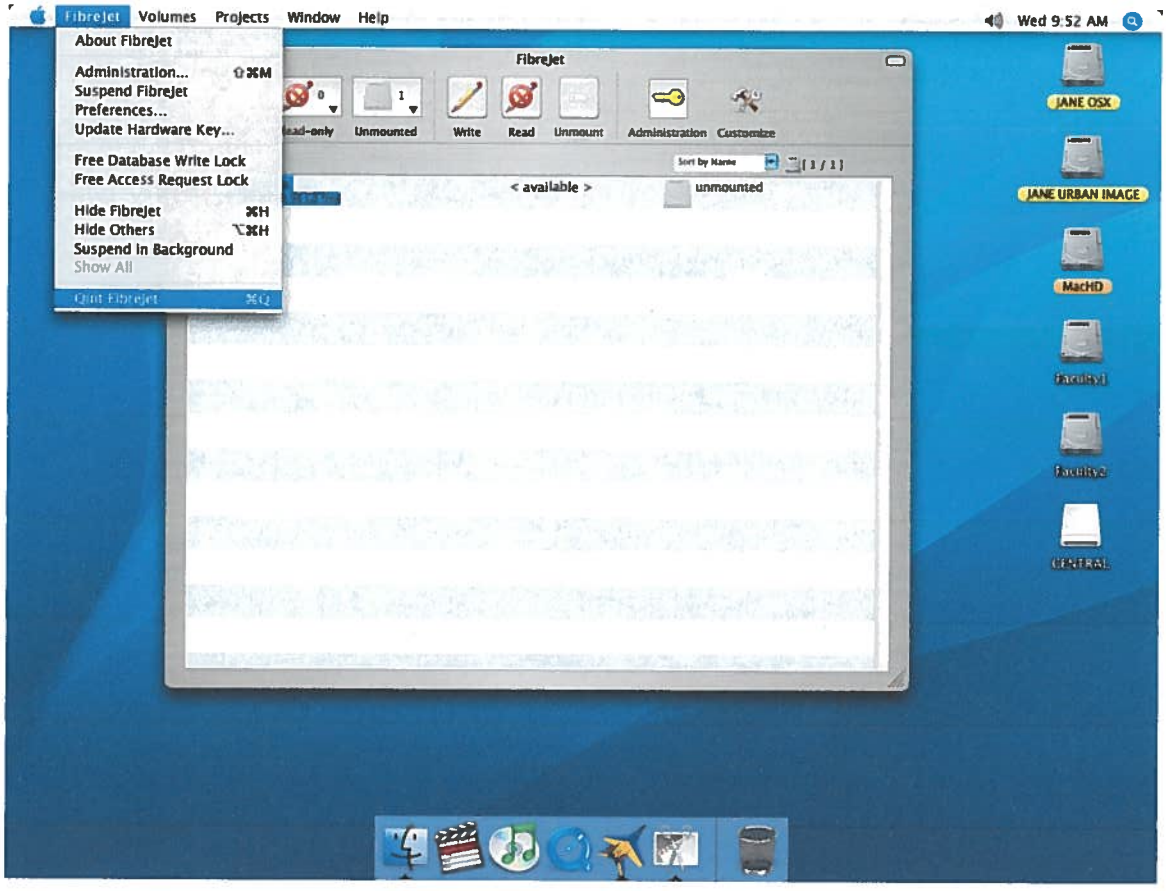
2.Once FibreJet starts up, login in with your name (by either choosing your name in the drop-down menu at the top right corner or typing your name) and password.

3.Your partition should appear in the Fibrejet list. Double-click on your partition to unlock it and have it show up on the desktop. Once its on the desktop, you may start Final Cut or I-Movie.



Partition on the desktop:

4.To Log out, click on the airplane icon on the bottom of the screen again to bring up the list of partitions. Next go to the top menus and select FibreJet → Quit FibreJet.



DIGITAL PHOTOGRAPHY UNIT:

AN INTRODUCTION TO EXPOSURE AND DIGITAL PHOTOGRAPHIC TERMS INCLUDING F-STOP, ISO, DEPTH OF FIELD, IMAGE SENSORS, AND SHUTTER SPEED.

"CORRECT EXPOSURE" OUTLINES

CORRECT EXPOSURE LECTURE OUTLINE

- LIGHTING CONDITIONS
- SUBJECT
- IMAGE SENSOR – ISO
- APERTURE AS MEASURED IN F-STOPS
- SHUTTER SPEED
- AESTHETIC DECISIONS

THE DIGITAL SLR CAMERA

LENS – FOCUSES THE LIGHT ENTERING THE CAMERA

APERTURE – LIGHT CONTROL DEVICE SIMILAR TO THE HUMAN EYE. CONTROLS THE AMOUNT OF LIGHT THAT REACHES THE IMAGE SENSOR. APERTURE SIZES ARE MEASURED IN F-STOPS. THE LOWER THE F-STOP NUMBER, THE LARGER THE LENS OPENING & THE SHALLOWER THE FOCUS WITHIN THE PICTURE PLANE (Z-AXIS). THE HIGHER THE F-STOP NUMBER, THE SMALLER THE LENS OPENING & THE DEEPER THE FOCUS ON THE PICTURE PLANE (Z-AXIS).

DEPTH OF FIELD – THE ARE OF ACCEPTABLE SHARPNESS IN THE PICTURE PLANE (THE Z-AXIS) IN A PHOTO IS KNOWN AS DEPTH OF FIFELD. CONTROLLING (AND SOMETIMES LIMITING) DEPTH OF FIELD DIRECTS THE VIEWER'S ATTENTION. AN EXAMPLE OF USING DEPTH OF FIELD TO DIRECT THE GAZE OF THE AUDIENCE IN A FILM IS RACKING FOCUS.

SHUTTER – MOVEABLE PROTECTIVE SHIELD THAT OPENS AND CLOSES RECORDING AN IMAGE ON THE IMAGE SENSOR. CONTROLS THE AMOUNT OF LIGHT THROUGH THE AMOUNT OF TIME IT REMAINS OPEN. A FAST SHUTTER SPEED WILL FREEZE MOTION. A SLOW SHUTTER SPEED WILL RECORD A MOTION AS A BLUR.

VIEWFINDER – VIEWING SYSTEM FOR COMPOSING SHOTS, AND FOR ELECTRONIC MONITORING OF EXPOSURE

SHUTTER SPEED – AFFECTS THE SHARPNES OF MOVING OBJECTS. THIS CAN BE CAUSED BY NOT KEEPING THE CAMERA STABLE. TO AVOID BLURRING A PICTURE WHEN HAND-HOLDING THE CAMERA, YOU SHOULD ADJUST SHUTTER SPEED TO CORRESPOND WITH THE FOCAL LENGTH OF THE LENS BEING USED TO SHOOT AN IMAGE. FOR EXAMPLE, A SHUTTER SPEED NO SLOWER THAN 1/60TH OF A SECOND, SHOULD BE USED IN COMBINATION WITH A LENS LENGTH OF 60MM OR LESS.

"PANNING" IS MOVING THE CAMERA WITH A MOVING SUBJECT. THE EFFECT WILL BE TO KEEP THE SUBJECT IN FOCUS, WHILE BLURRING THE BACKGROUND.

VARIOUS LENSES HAVE DIFFERENT DEPTH CHARACTERISTICS.

A WIDE-ANGLE LENS allows more of the scene to be included in the photograph, which is useful in architectural, interior and landscape photography where the photographer may not be able to move farther from the scene to photograph it.

A NORMAL LENS is a lens that reproduces a field of view that generally looks "natural" to a human observer under normal viewing conditions. It is the closest thing to a "normal" view.

A LONG or TELEPHOTO LENS is used to make distant objects appear magnified (closer) with magnification increasing as longer focal length lenses are used. The longer focus lenses compress the perception of depth.

DIGITAL STILL PHOTOGRAPHY UNIT
FOUNDATIONS OF MEDIA DESIGN

Digital photography is a form of photography that uses an array of light sensitive sensors to capture the image focused by the lens, as opposed to an exposure on light sensitive film. The captured image is then stored as a digital file ready for digital processing (colour correction, sizing, cropping, etc.), viewing or printing.

Until the advent of such technology, photographs were made by exposing light sensitive photographic film, and used chemical photographic processing to develop and stabilize the image. By contrast, digital photographs can be displayed, printed, stored, manipulated, transmitted, and archived using digital and computer techniques, without chemical processing.

Digital photography is one of several forms of digital imaging. Digital images are also created by non-photographic equipment such as computer tomography scanners and radio telescopes. Digital images can also be made by scanning conventional photographic images.

Storage

Most digital cameras use memory cards having flash memory to store image data. The majority of cards for separate cameras are SD format; many are CompactFlash and the other formats are rare. XQD card format is the latest form of storage medium. Modern digital cameras have internal memory for a limited capacity for pictures that can be transferred to or from the card or through the camera's connections; even without a memory card inserted into the camera.

Memory cards allow for vast numbers of photos to be taken, requiring attention only when the memory card has exhausted its free space. For most users this translates into dozens to hundreds of quality photos to be stored on the same memory card. Transferring the images is also possible for archival or personal use to another medium as required by the photographer.

Applications and considerations

With the acceptable image quality and the other advantages of digital photography (particularly the time pressures of daily newspapers) the majority of professional news photographers capture their images with digital cameras.

Digital photography has also been adopted by many amateur snapshot photographers, who take advantage of the convenience of sending images by email, placing them on the World Wide Web, or displaying them in digital picture frames. Some commercial photographers, and some amateurs interested in artistic photography, have been resistant to using digital rather than film cameras because they believe that the image quality available from a digital camera is still inferior to that available from a film camera, and the quality of images taken on medium format film was thought to be impossible to match with a digital camera. Some have expressed a concern that changing computer technology may make digital photographs inaccessible in the future. A related concern in a specialized application is the use of digital photographs in court proceedings, with the

added difficulty of demonstrating an image's authenticity. Some high-end film can also still be projected for viewing at a much higher optical resolution than even the best digital projectors. Some professional photographers resist the use of digital cameras because they are poor performers when it comes to speed for multiple shots. Storing an 8MP image takes a lot of time and therefore, in some applications digital cameras are not currently appropriate.

Other commercial photographers, and many amateurs, have enthusiastically embraced digital photography because they believe that its flexibility and lower long-term costs outweigh its initial price disadvantages. Almost all of the cost of digital photography is *capital* cost, meaning that the cost is for the equipment needed to store and copy the images, and once purchased requires virtually no further expense outlay. Film photography requires continuous expenditure of funds for supplies and developing, although the equipment itself does not outdate so quickly and has a longer service life.

Some commercial photographers have also begun moving to digital technology because of the tremendous editing capabilities now offered on computers. The photographer is able to color-balance and otherwise manipulate the image in ways that traditional darkroom techniques cannot offer, or are far more laborious in the darkroom. With fully color-balanced systems from the camera to the monitor to the printer, the photographer can now supply, either as a print or as a computer display, what is actually seen on the photographer's screen.

Digital cameras require batteries that need to be recharged or replaced frequently, and this means that a photographer needs access to electrical outlets. Digital cameras also tend to be much more sensitive to moisture and extreme cold.

Advantages of professional digital cameras

- Immediate image review and deletion is possible; lighting and composition can be assessed immediately, which ultimately conserves storage space.

- High volume of images to medium ratio; allowing for extensive photography sessions without changing film rolls. To most users a single memory card is sufficient for the lifetime of the camera whereas film rolls are a re-incurring cost of film cameras.

- Digital manipulation: A digital image can be modified and manipulated much easier and faster than with traditional negative and print methods.

- Recent manufacturers such as Nikon and Canon have promoted the adoption of digital single-lens reflex cameras (DSLRs) by photojournalists. Images captured at 2+ megapixels are deemed of sufficient quality for small images in newspaper or magazine reproduction. Eight to 24 megapixel images, found in modern digital SLRs, when combined with high-end lenses, can approximate the detail of film prints from 35 mm film based SLRs.

Social Impact of Digital Photography

Digital cameras have decimated the film photography industry through declining use of film rolls and development chemicals previously required to develop the photos. This led to a decrease in film and film camera sales and film processing, and has had a dramatic effect on companies such as Fuji, Kodak, and Agfa. In addition, many stores that used to offer photofinishing services or sell film no longer do, and those that do have seen a tremendous decline. In 2012, Kodak filed for bankruptcy after struggling to adapt to the changing industry.

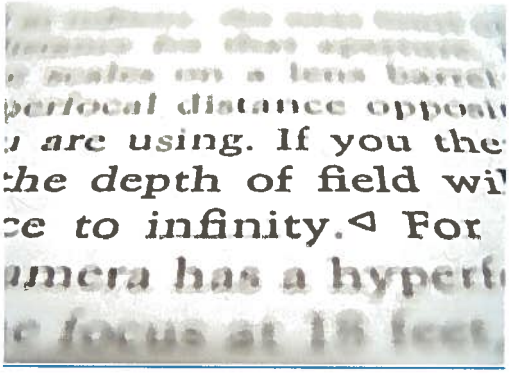
Up until the advent of the digital camera, amateur photographers could either buy print film for their camera, or slide film. If they purchased slide film, the resulting slides could be viewed using a slide projector. Digital photography revolutionized the industry by allowing for photographs to be viewed without conventional development processes and the significant time and costs associated with it. The ease of viewing, transferring and editing allowed consumers to manage their digital photos without use of specialized equipment.

Digital Cameras in cell phones however has arguably the largest impact on society. Smart phones have the ability to take and upload the taken images instantly to the Internet in minutes allowing the photographer in certain situations; even if the photographer is discovered and the images or recording are deleted pictures are not necessarily lost.

Simon Glik was arrested in 2007 for recording a police arrest on his cell phone, but after filing a federal lawsuit he won the case and even prompted the Obama administration to comment on the matter. Carlos Miller, a Miami journalist, recovered video of police officers arresting him after it was deleted from his camera. Throughout 2011 and 2012, images of Syrian protests were recorded and transmitted through the use of cell phones equipped with digital cameras.

Of growing concern for both archivists and historians is the relative non-permanence or transitory nature of digital media. Unlike film and print, which are tangible and immediately accessible to a person, storage of digital images is ever-changing with old media and decoding software becoming obsolete or inaccessible by new technologies. Historians are concerned that we are creating a historical void where information and details about an era will have been lost within either failed or inaccessible digital media. It is recommended that both professional and amateur users develop strategies for migrating stored digital images from old technologies to new. Scrapbookers who may have used film for creating artistic and personal memoirs may need to modify their approach to digital photo books to personalize them and retain the special qualities of traditional photo albums.

Depth of Field:



An example of very shallow depth of field in a macro photograph.
In optics, particularly film and photography, the depth of field (DOF) is the distance in front of and behind the subject which appears to be in focus. For any given lens setting, there is only one distance at which a subject is precisely in focus, but focus falls off gradually on either side of that distance, so there is a region in which the blurring is tolerable. This region is greater behind the point of focus than it is in front, as the angle of the light rays change more rapidly; they approach being parallel with increasing distance.

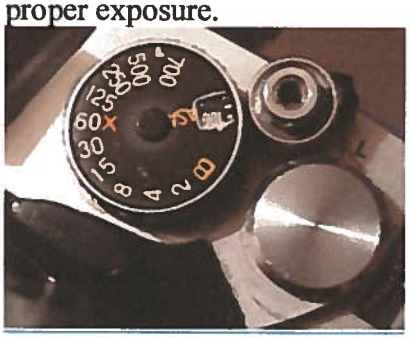
Aperture Effects:
The aperture controls the effective diameter of the lens opening. Reducing the aperture size (by increasing the f-number) increases the depth of field; however, it also reduces the amount of light transmitted, placing a practical limit on the extent to which the aperture size may be reduced. Photography lenses almost invariably work best at medium apertures. Motion pictures make only limited use of this control. To produce a consistent image quality from shot to shot, cinematographers usually choose a single aperture setting for interiors and another for exteriors and adjust exposure through the use of camera filters or light levels. Aperture settings are adjusted more frequently in still photography, where variations in depth of field are used to produce a variety of special effects.

[edit] **Artistic considerations:**
Depth of field can be anywhere from a fraction of an inch to virtually infinite. For instance a shot of a woman's face in closeup may have shallow depth of field (with someone just behind her visible but out of focus—common, for instance, in melodramas and horror films); a shot of rolling hills would be likely to have great depth of field, with the objects both in the foreground and in the background in focus.

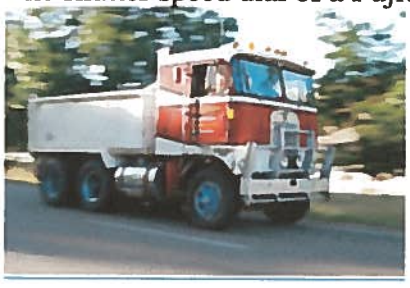
Shutter Speed

From Wikipedia, the free encyclopedia

Shutter speed can have a dramatic impact on the appearance of moving objects. Changes in background blurring are apparent from the need to adjust the aperture size to achieve proper exposure.



The shutter speed dial of a Fujica STX-1.



Slow shutter speed combined with panning the camera can achieve a motion blur for moving objects.

Using long shutter speeds can be used to achieve interesting effects for photographing objects with moving lights at night.

A photo at night with automatic exposure time 1/8 second

The same photo as above taken with exposure time 10 seconds

In photography, shutter speed is the time for which the shutter is held open during the taking of a photograph to allow light to reach the film or imaging sensor (in a digital camera).

In combination with variation of the lens aperture, and film/sensor sensitivity, this regulates how much light the camera will record. For a given exposure, a fast shutter speed demands a larger aperture to avoid under-exposure, just as a slow shutter speed is offset by a very small aperture to avoid over-exposure. Long shutter speeds are often used in low light conditions, such as at night.

Shutter speed is measured in seconds. A typical shutter speed for photographs taken in sunlight is 1/125th of a second. In addition to its effect on exposure, shutter speed changes the way movement appears in the picture. Very short shutter speeds are used to freeze fast-moving subjects, for example at sporting events. Very long shutter speeds are used to intentionally blur a moving subject for artistic effect.

In early days of photography, available shutter speeds were somewhat ad hoc. Following the adoption of a standardized way of representing aperture so that each major aperture interval exactly doubled or halved the amount of light entering the camera f/2.8, f/4, f/5.6, f/8, f/11, f/16 etc.), a standardized 2:1 scale was adopted for shutter speed so that opening one aperture stop and reducing the shutter speed by one step resulted in the identical exposure. The agreed standard for shutter speeds is:
1/8000 s
1/4000 s
1/2000 s
1/1000 s
1/500 s
1/250 s
1/125 s
1/60 s
1/30 s
1/15 s
1/8 s
1/4 s
1/2 s
1 s
B (for bulb) — keep the shutter open as long as the release lever is engaged.

The ability of the photographer to take images without noticeable blurring by camera movement is an important parameter in the choice of slowest possible shutter speed for a handheld camera. The rough guide used by most 35 mm photographers is that the slowest possible shutter speed that can be used with care is the shutter speed numerically closest to the lens focal length. For example, for handheld use of a 35 mm camera with a 50 mm normal lens, the closest shutter speed is 1/60 s. This rule can be augmented with knowledge of the intended application for the photograph, an image intended for significant enlargement and close-up viewing would require faster shutter speeds to avoid obvious blur. Through practice and special techniques such as bracing the camera, arms, or body to minimize camera movement longer shutter speeds can be used without blur. If a shutter speed is too slow for hand holding, a camera support — usually a tripod — must be used. There are also stabilized lenses available.

ISO:
ISO is the measure of a photographic film's sensitivity to light. Stock with lower sensitivity (lower ISO speed rating) requires a longer exposure and is thus called a slow film, while stock with higher sensitivity (higher ISO speed rating) can shoot the same scene with a shorter exposure and is called a fast film.

Digital camera ISO speed and exposure index:
The International Organization for Standardization (ISO) has a performance-based ISO speed standard for digital cameras, just as they have for film. ISO Standard 12232:2006 ("Photography — Digital still cameras — Determination of exposure index, ISO speed ratings, standard output sensitivity, and recommended exposure index") defines ISO speed in terms of the amount of light needed to achieve a certain "quality" in the sense of a per-pixel signal-to-noise ratio.

However, this standard ISO speed "rating" for a digital camera is not necessarily very related to the ISO "setting" or "exposure index" used on the camera.
The image sensors in digital cameras can be adjusted, or can have their outputs adjusted, in sensitivity to function with metering at any given ISO setting. This is usually done by simply amplifying the output of the image sensor, which increases image noise, sometimes beyond the level that the ISO standard says is acceptable.
Just as in photographic film, greater sensitivity comes with some loss of image quality, though this is visible as noise rather than grain. The best digital cameras as of 2006 exhibit no perceptible noise at ISO 200 sensitivity, and some produce useable results up to ISO 3200.

AN INTRODUCTION TO EXPOSURE

Light - In order for an image to be captured on a digital camera's sensor, it must be exposed to light. In photography, it is important to be able to measure light. Too much light can ruin a photograph, and so can too little. Light can be measured and controlled by its brightness - (Aperture/F-Stops) and by its duration - (Shutter Speed).

ISO & Digital Sensors – The sensor on a DSLR reacts to light. The more light you give to it, the brighter the image will be. In digital photography, ISO measures the sensitivity of the image sensor. The same principles apply as in film photography – the lower the ISO number the less sensitive your camera is to light and the finer the grain. Higher ISO settings are generally used in darker situations to get faster shutter speeds (for example an indoor sports event when you want to freeze the action in lower light) – however the cost is noisier shots.

When choosing the ISO setting I generally ask myself the following four questions:

Light – Is the subject well lit?

Grain (Resolution) – Do I want a grainy shot or one without noise?

Tripod – Am I using a tripod?

Moving Subject – Is my subject moving or stationary?

If there is plenty of light, I want little grain, I'm using a tripod and my subject is stationary I will generally use a pretty low ISO rating.

However if it's dark, I purposely want grain, I don't have a tripod and/or my subject is moving I might consider increasing the ISO as it will enable me to shoot with a faster shutter speed and still expose the shot well.

Of course the trade off of this increase in ISO will be noisier shots.

Situations where you might need to push ISO to higher settings include:

Indoor Sports Events – where your subject is moving fast yet you may have limited light available.

Concerts – also low in light and often 'no-flash' zones

Art Galleries, Churches etc- many galleries have rules against using a flash and of course being indoors are not well lit.

Birthday Parties – blowing out the candles in a dark room can give you a nice moody shot, which would be ruined by a bright flash. Increasing the ISO can help capture the scene.

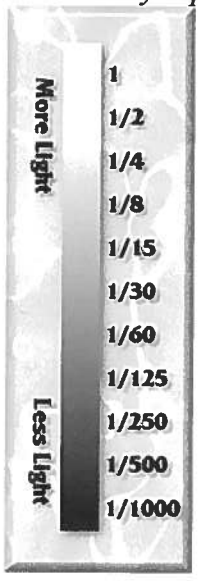
Shutter:

In a digital camera, the shutter blocks all light from exposing the sensor UNTIL you press the button. Then it quickly opens and closes, giving the sensor a brief flash of light. You can control the length of time the shutter remains open by setting the SHUTTER SPEED.

Aperture:

When light passes through a camera's lens, it must pass through an opening called an "Aperture". In plain English it's a hole that lets in more light when it's wide open and less when it's small. In essence the aperture is just like the pupil in the human eye. You can control the aperture by setting the "Aperture Opening", also known as an **F-Stop.**

Shutter speed:
Determines how long the shutter stays open



Examples:

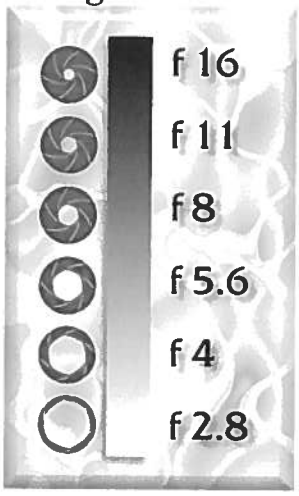
A half second exposure is ONE STOP darker than a one second exposure.

A 1/125 exposure is TWO STOPS brighter than a 1/500 exposure.

A 1/1000 exposure is THREE STOPS darker than a 1/125 exposure.

The longer exposures (like 1 second) give much MORE light to the film than a 1/1000 of a second exposure. So even though the number may look bigger, don't be deceived!

F-Stops : *Control how much light is passed through the lens.*



Every step in this table represents a ONE STOP change in light.

Like the pupil in a human eye, the aperture on a camera controls light. It does so by closing up to restrict light, and opening up to let it through. Lower F-Stop numbers indicate MORE LIGHT.

Exposure is about different combinations of shutter and f-stop settings. These combinations can drastically affect the finished picture.

Exposure (photography)

From Wikipedia, the free encyclopedia

In photography, **exposure** is the total amount of light allowed to fall on the photographic medium (photographic film or image sensor) during the process of taking a photograph. Exposure is measured in lux seconds, and can be computed from exposure value (EV) and scene luminance.

A photograph with an exposure time of 25 seconds

A photograph of a night-time sky with an exposure time of 8 seconds.

Contents

Long-Exposure photos can create some very interesting photos.

Correct Exposure

The "correct" exposure for a photograph is determined by the sensitivity of the medium used. For photographic film, sensitivity is referred to as film speed and is measured on a scale published by the International Organization for Standardization (ISO). Faster film requires less exposure and has a higher ISO rating. Exposure is a combination of the length of time and the level of illumination received by the photosensitive material. Exposure time is controlled in a camera by shutter speed and the illumination level by the lens aperture. Slower (longer) shutter speeds and greater (bigger) lens apertures produce greater exposures. The electronics in a digital camera may allow one to adjust the sensitivity of the CCD or CMOS sensor. ISO numbers are usually used to express this attribute.

An approximately correct exposure will be obtained on a sunny day using ISO 100 film, an aperture of f/16 and a

shutter speed of 1/125th of a second. This is called the sunny f/16 rule.

Ultimately there is no such thing as "correct exposure", as a scene can be exposed in many ways, depending on the desired effect a photographer wishes to convey.

long exposure with soft red light

Reciprocity

An important principle of exposure is reciprocity. If one exposes the film or sensor for a longer period, a reciprocally smaller aperture is required to reduce the amount of light hitting the film to obtain the same exposure. For example, the photographer may prefer to make his sunny-16 shot at an aperture of *f*/5.6 (to obtain a shallow depth of field). As *f*/5.6 is 3 **stops** 'faster' than *f*/16, with each stop meaning double the amount of light, a new shutter speed of (1/125)/(2·2·2) = 1/1000 is needed. Once the photographer has determined the exposure, aperture stops can be traded for halvings or doublings of speed, within limits.

A demonstration of the effect of exposure in night photography. Longer shutter speeds mean increased exp

The true characteristic of most photographic emulsions is not actually linear, (see sensitometry) but it is close enough over the exposure range of about one second to 1/1000th of a second. Outside of this range, it becomes necessary to increase the exposure from the calculated value to account for this characteristic of the emulsion. This characteristic is known as *reciprocity failure*. The film manufacturer's data sheets should be consulted to arrive at the correction required as different emulsions have different characteristics.

Determining Exposure

The Zone System is another method of determining exposure and development combinations to achieve a greater tonality range over conventional methods by varying the contrast of the 'film' to fit the print contrast capability. Digital cameras can achieve similar results (High Dynamic Range) by combining several different exposures (varying only the shutter speeds) made in quick succession.

Today, most cameras automatically determine the correct exposure at the time of taking a photograph by using a built-in light meter, or multiple point meters interepreted by a built-in computer, see metering mode.

Negative/Print film tends to bias for exposing for the shadow areas, (film dislikes being starved of light), with digital favouring exposure for highlights. See latitude below.

Latitude

Latitude is the degree by which you can over, or under expose an image, and still recover an acceptable level of quality from an exposure. Typically negative film has a better ability to record a range of brightness than slide/transparency film or digital. Digital should be considered to be the reverse of print film, with a good lattidue in the shadow range, and a narrow one in the highlight area; in contrast to film's large highlight latitude, and narrow shadow latitude. Slide/Transparency film has a narrow latitude in both highlight and shadow areas, requiring greater exposure accuracy.

Negative film's latitude increases somewhat with high ISO material, in contrast digital tends to narrow on latitude with high ISO settings.

Highlights

Areas of a photo where information is lost due to extreme brightness are described as having "Blown-out Highlights" or "Flared Highlights".

In digital images this information loss is often irreversible, though small problems can be made less noticeable using photo manipulation software. Recording to RAW format can ameliorate this problem to some degree, as can using a digital camera with a better sensor.

Film can often have areas of extreme overexposure but still record detail in those areas. This information is usually recoverable either when printed or transferred to digital.

Loss of highlights in a photograph are often undesirable, but in some cases can be considered to "enhance" appeal. Examples include black and white photography and portraits with an out of focus background.

Example image exhibiting blown-out highlights. Top: original image, bottom: blown-out areas marked red

Blacks

Areas of a photo where information is lost due to extreme darkness are described as having "Crushed Blacks". Digital capture tends to be more tolerant of underexposure or recovery from shadow detail, then print/negative film.

Crushed blacks are generally undesirable, but can be used for artistic effect.

See also

- Double exposure
- Exposure value
- Gray card
- Light value
- Sensitometry (and Hurter–Driffield curves)

Helping Links

- digital Exposure Correction with Gimp
- Articles on Exposure

- Video Tutorial on how to read the photographic histogram and get proper exposure

Retrieved from "http://en.wikipedia.org/wiki/Exposure_%28photography%29"

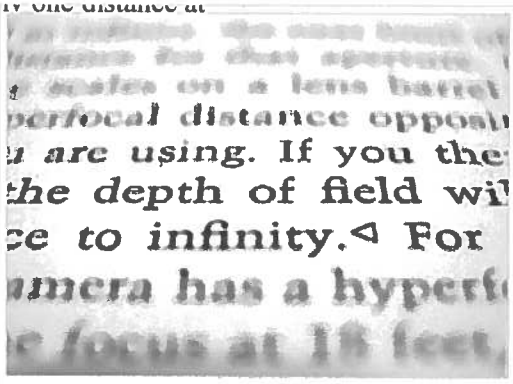
Category: Photography terms

Depth of field

From Wikipedia, the free encyclopedia

Photography Portal

In optics, particularly film and photography, the **depth of field** (DOF) is the distance in front of and beyond the subject that appears to be in focus. There is one distance at which a subject is precisely in focus, but focus falls off gradually on either side of that distance, and there is a region in which the blurring is imperceptible under normal viewing conditions.



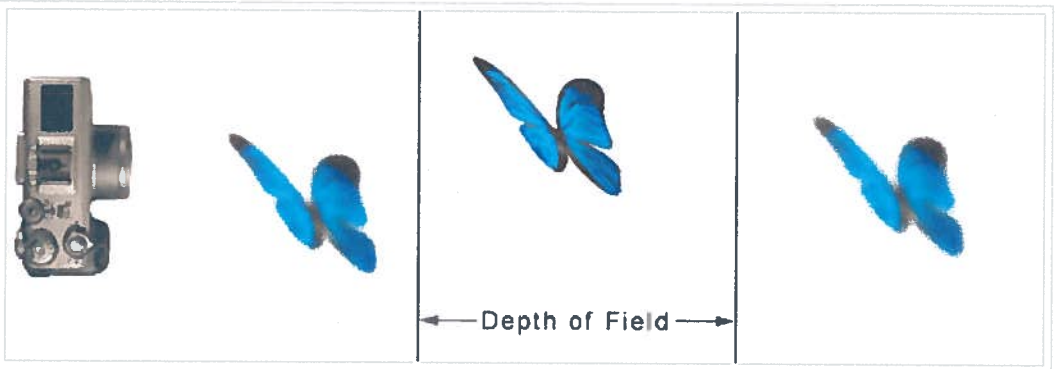
An example of very shallow depth of field in a macro photograph.

Contents

Definition of "acceptably sharp"

Several factors determine whether the objective misfocus becomes noticeable. Subject matter, movement, the distance of the subject from the camera, and the way in which the image is displayed all have an influence. However, the most important factor is the actual degree of misfocus in relation to the area of film exposed.

A point subject at the focused distance will produce a point image. A point nearer or farther away will produce a circular image. The diameter of the circle increases with distance from the point of focus; the largest circle that is indistinguishable from a point is known as the *acceptable circle of confusion*, or informally, simply as the *circle of confusion*.



The area within the depth of field appears sharp while the areas in front of and beyond the depth of field appear blurry.

For a 35 mm motion picture, the image area on the negative is roughly 0.87 in by 0.63 in (22 mm by 16 mm). The limit of tolerable error is usually set at 0.002 in (0.05 mm) diameter. For 16 mm film, where the image area is smaller, the tolerance is stricter, 0.001 in (0.025 mm). Standard depth-of-field tables are constructed on this basis, although generally 35 mm productions set it at 0.001 in (0.025 mm). Note that the acceptable circle of confusion values for these formats are different because of the relative amount of magnification each format will need in order to be projected on a full-sized movie screen.

(A table for 35 mm still photography would be somewhat different since more of the film is used for each image and the amount of enlargement is usually much less.)

A 35mm lens set to *f*/11. The depth-of-field scale (top) indicates that a subject which is anywhere between 1 and 2 meters in front of the camera will be rendered acceptably sharp. If the aperture were set to *f*/22 instead, everything from 0.7 meters to infinity would appear to be in focus.

The image format size also will affect the depth of field. The larger the format size, the longer a lens will need to be to capture the same framing as a smaller format. In motion pictures, for example, a frame with a 12 degree horizontal field of view will require a 50 mm lens on 16 mm film, a 100 mm lens on 35 mm film, and a 250 mm lens on 65 mm film. Conversely, using the same focal length lens with each of these formats will yield a progressively wider image as the film format gets larger: a 50 mm lens has a horizontal field of view of 12 degrees on 16 mm film, 23.6 degrees on 35 mm film, and 55.6 degrees on 65 mm film. What this all means is that because the larger formats require longer lenses than the smaller ones, they will accordingly have a smaller depth of field. Therefore, compensations in exposure, framing, or subject distance need to be made in order to make one format look like it was filmed in another format.

Depth of field and *f*-number

For a given subject framing, the DOF is controlled by the lens f-number. Increasing the f-number (reducing the aperture diameter) increases the DOF; however, it also reduces the amount of light transmitted, and increases diffraction, placing a practical limit on the extent to which the aperture size may be

reduced. Motion pictures make only limited use of this control; to produce a consistent image quality from shot to shot, cinematographers usually choose a single aperture setting for interiors and another for exteriors, and adjust exposure through the use of camera filters or light levels. Aperture settings are adjusted more frequently in still photography, where variations in depth of field are used to produce a variety of special effects.

Artistic considerations

Depth of field can be anywhere from a fraction of an inch to virtually infinite. For instance, a shot of a woman's face in closeup may have shallow DOF (with someone just behind her visible but out of focus—common, for instance, in melodramas and horror films); a shot of rolling hills might have great DOF, with the objects both in the foreground and in the background in focus. A closeup still photograph might employ a very shallow DOF to isolate the subject from a distracting background.

At *f*/32, background is distracting.

Hyperfocal distance

The hyperfocal distance is the nearest focus distance at which the DOF extends to infinity; focusing the camera at the hyperfocal distance results in the largest possible depth of field for a given *f*-number. Focusing *beyond* the hyperfocal distance does not increase the far DOF (which already extends to infinity), but it does decrease the DOF in front of the subject, decreasing the total DOF. Some photographers refer to this as "wasting DOF"; however, see *The Object Field Method* below. Focusing ahead of the hyperfocal distance increases the DOF ahead of the subject, but decreases DOF beyond the subject, including objects near infinity. Of course, this latter approach may be appropriate for images that do not extend to infinity.

Shallow DOF at *f*/5 isolates flowers from the background.

The Object Field Method

Traditional depth-of-field formulae and tables assume equal circles of confusion for near and far objects. Some authors, such as Merklinger (1992),[1] have suggested that distant objects often need to be much sharper to be clearly recognizable, whereas closer objects, being larger on the film, do not need to be so sharp. The loss of detail in distant objects may be particularly noticeable with extreme enlargements. Achieving this additional sharpness in distant objects usually requires focusing beyond the hyperfocal distance, sometimes almost at infinity. For example, if photographing a cityscape with a traffic bollard in the foreground, this approach, termed the Object Field Method by Merklinger, would recommend focusing very close to infinity, and stopping down to make the bollard sharp enough. With this approach, foreground objects cannot always be made perfectly sharp, but the loss of sharpness in near objects may be acceptable if recognizability of distant objects is

Shallow DOF at *f*/2.8 isolates kitten from the background

Shutter speed

From Wikipedia, the free encyclopedia

In photography, **shutter speed** is the time for which the shutter is held open during the taking of a photograph to allow light to reach the film or imaging sensor (in a digital camera).

Shutter speed can have a dramatic impact on the appearance of moving objects. Changes in background blurring are apparent from the need to adjust the aperture size to achieve proper exposure.

In combination with variation of the lens aperture, and film/sensor sensitivity, this regulates how much light the camera will record. For a given exposure, a fast shutter speed demands a larger aperture to avoid under-exposure, just as a slow shutter speed is offset by a very small aperture to avoid over-exposure. Long shutter speeds are often used in low light conditions, such as at night.

Shutter speed is measured in seconds. A typical shutter speed for photographs taken in sunlight is 1/125th of a second. In addition to its effect on exposure, shutter speed changes the way movement appears in the picture. Very short shutter speeds are used to freeze fast-moving subjects, for example at sporting events. Very long shutter speeds are used to intentionally blur a moving subject for artistic effect.

The shutter speed dial of a Fujica STX-1.

In early days of photography, available shutter speeds were somewhat *ad hoc*. Following the adoption of a standardized way of representing aperture so that each major aperture interval exactly doubled or halved the amount of light entering the camera f/2.8, f/4, f/5.6, f/8, f/11, f/16 etc.), a standardized 2:1 scale was adopted for shutter speed so that opening one aperture stop and reducing the shutter speed by one step resulted in the identical exposure. The agreed standard for shutter speeds is:

Slow shutter speed combined with panning the camera can achieve a motion blur for moving objects.

- 1/8000 s
- 1/4000 s
- 1/2000 s
- 1/1000 s
- 1/500 s
- 1/250 s
- 1/125 s
- 1/60 s
- 1/30 s
- 1/15 s
- 1/8 s
- 1/4 s
- 1/2 s
- 1 s
- **B** (for *bulb*) — keep the shutter open as long as the release lever is engaged.
- **T** — keep the shutter open until the lever is pressed again.

This scale can be extended at either end in specialist cameras. Some older cameras use the 2:1 ratio at slightly different values, such as 1/100 s and

1/50 s, although mechanical shutter mechanisms were rarely precise enough for the difference to have any significance.

The term "speed" is improperly used, except if we speak of the inverse of the "exposure time". "Exposure time" is measured in seconds and "shutter speed" in terms of the inverse of a second, which is an appropriate measure of "speed". So we would have the following "speed" measures:

- 8000 s^{-1}
- 4000 s^{-1}
- 2000 s^{-1}
- 1000 s^{-1}
- 500 s^{-1}
- 250 s^{-1}
- 125 s^{-1}
- 60 s^{-1}
- 30 s^{-1}
- 15 s^{-1}
- 8 s^{-1}
- 4 s^{-1}
- 2 s^{-1}
- 1 s^{-1}

Using long shutter speeds can be used to achieve interesting effects for photographing objects with moving lights at night.

A photo at night with automatic exposure time 1/8 second

The same photo as above taken with exposure time 10 seconds

The ability of the photographer to take images without noticeable blurring by camera movement is an important parameter in the choice of slowest possible shutter speed for a handheld camera. The rough guide used by most 35 mm photographers is that the slowest possible shutter speed that can be used with care is the shutter speed numerically closest to the lens focal length. For example, for handheld use of a 35 mm camera with a 50 mm normal lens, the closest shutter speed is 1/60 s. This rule can be augmented with knowledge of the intended application for the photograph, an image intended for significant enlargement and closeup viewing would require faster shutter speeds to avoid obvious blur. Through practice and special techniques such as bracing the camera, arms, or body to minimize camera movement longer shutter speeds can be used without blur. If a shutter speed is too slow for hand holding, a camera support — usually a tripod — must be used. There are also stabilized lenses available.

Cinematographic Shutter Formulae

In cinematography, shutter speed is a function of the frame rate and shutter angle. Most motion picture film cameras use a rotating shutter with a shutter angle of 170 to 180°, which leaves the film exposed for about 1/48 or 1/50 second at a standard 24 frame/s.

Where E = Exposure, F = Frames per second, and S = Shutter opening:

$$E = \frac{F \cdot 360^\circ}{S}$$
$$S = \frac{F \cdot 360^\circ}{E}$$

A photo of dark street at night (exposure time 20 seconds)

See also

- exposure
- shutter
- f-number
- exposure value

External links

- A Guide for shutter speed combinations when using aperature priority mode to distinguish the correct ND grad filter/s by A S Mitchell

Retrieved from "http://en.wikipedia.org/wiki/Shutter_speed"

Category: Photography terms

Bell Hooks Biography

Born: September 25, 1952
Hopkinsville, Kentucky
African American activist, educator, and writer

Writer, professor, and social critic, bell hooks is undeniably one of the most successful "cross-over" academics of the late twentieth century. Her books look at the function of race and gender in today's culture.

Childhood
Born Gloria Jean Watkins on September 25, 1952, bell hooks was raised in Hopkinsville, Kentucky, a small, segregated (separated by race) town in rural Kentucky. She recalled her neighborhood as a "world where folks were content to get by on a little, where Baba, mama's mother, made soap, dug fishing worms, set traps for rabbits, made butter and wine, sewed quilts, and wrung the necks of chickens." She later explained how this community turned the hardships created by racism (the idea that one race is superior to another) into a source of strength. The neighborhood where she grew up provided young Gloria with her resistance to racism, but it also provided her with the negative and positive experiences that would shape her feminism (support of equal rights for women).

Gloria was one of six siblings: five sisters and a baby brother. Her father worked as a janitor, and her mother, Rosa Bell Oldham Watkins, worked as a maid in the homes of white families. As a student at segregated public schools, hooks was taught by a dedicated group of teachers, mostly single black women, who helped to shape the self-esteem (satisfaction with oneself) of children of color. But the late 1960s Kentucky schools became desegregated. By the time she was ten, hooks had begun writing her own poetry and soon developed a reputation for her ability to recite poetry.

Learned to "talk back"
Although hooks was supposed to become a quiet, well-behaved young woman, she became instead a woman who "talked back." This action, for which hooks eventually named a volume of essays, actually refers to the development of a strong sense of self that allows black women to speak out against racism and sexism.

Although young hooks continued to write poetry—some of which was published—she gained a reputation as a writer of critical essays on systems of domination. In order to do this work, she found that she needed to develop a different voice, a different name. She first used her pseudonym (assumed name)—her maternal great-grandmother's name—for a small book of poems. She decided not to capitalize her first and last names in an attempt to place the focus on her work, rather than her name.

Wrote first book at nineteen
After high school, hooks accepted a scholarship to Stanford University, in California. Despite her full-time studies she began *Ain't I a Woman* at the age of nineteen. She also took a job as a telephone operator. Finding time for her writing was a challenge, but hooks found that the job offered her something she did not have in school at the time—a community of working-class, black women.

The author went through several drafts of the manuscript over the next six years before she had one that satisfied her. It was at this moment that the persona of bell hooks truly rescued Gloria Watkins. At first hooks had considerable trouble publishing her work, and eventually she was directed to her future

publisher, South End Press, while giving a talk at a feminist bookstore in San Francisco. Once published in 1981, *Ain't I a Woman* became a central book in discussions of racism and sexism. Eleven years later, Publishers Weekly ranked it among the "twenty most influential women's books of the previous twenty years."

A career in higher education

While *Ain't I a Woman* made bell hooks an important name in feminist debate, she continued her work. After obtaining a doctorate degree in English literature, she began her teaching career. It was in her role as a teacher that hooks felt she was doing her most important work. She knew that for a people historically and legally denied the right to education, teaching was one of the most substantial forms of political resistance she could choose.

After holding various positions at the University of California in Santa Cruz, California, in the early 1980s, hooks left for Yale University in New Haven, Connecticut, when she had the opportunity to teach in African American Studies. In 1988 she joined the faculty at Oberlin College, in Ohio, where she would teach in Women's Studies, a program that now offered the critique of racism that was absent during her undergraduate years.

Taking a post with the City College of New York in 1995, hooks moved to the Henry Holt publishing company and came out with *Killing Rage: Ending Racism*, a book that calls for a more proactive approach (initiative) to solving the problem of racism in America.

Hooks lives in New York City and remains an important figure in the fight against racism and sexism in America. With the release of *Communion: The Female Search for Love* in 2002, hooks has more than twenty books to her name with more to come.

For More Information

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Talking about a Revolution: Interviews with Michael Albert, Noam Chomsky, Barbara Ehrenreich, Bell Hooks, Peter Kwong, Winona LaDuke, Manning Marable, Urvashi Vaid, and Howard Zinn. Cambridge, MA: South End Press, 1998.

In Our Glory: Photography and Black Life

ALWAYS A daddy's girl. I was not surprised that my sister V. became a lesbian, or that her lovers were always white women. Her worship of Daddy and her passion for whiteness appeared to affirm a movement away from black womanhood and, of course, away from that image of the woman we did not want to become—our mother. The only family photograph V. displays in her house is a picture of our dad, looking young with a mustache. His dark skin mingling with the shadows in the photograph. All of which is highlighted by the white T-shirt he wears.

In this snapshot he is standing by a pool table. The look on his face is confident, seductive, cool—a look we rarely saw growing up. I have no idea who took the picture, only that it pleases me to imagine that he cared for the person—deeply. There is such boldness, such fierce openness in the way he faces the camera. This snapshot was taken before marriage, before us, his seven children, before our presence in his life forced him to leave behind the carefree masculine identity this pose conveys.

The fact that my sister V. possesses this image of our dad, one that I had never seen before, merely affirms their romance, the bond between the two of them. They had the dreamed-about closeness between father and daughter, or so it seemed. Her possession of the snapshot confirms this, is an acknowledgment that she is allowed to know—yes, even to possess—that private life he always kept to himself. When we were children, he refused to answer our questions about who he was, how he acted, what he did and felt before us. It was as though he did not want to remember or share that part of himself, as though remembering hurt. Standing before this snapshot, I come closer to the cold, distant, dark man who is my father, closer than I can ever come in real life. Not always able to love him there, I am sure I can love this version of him, the snapshot. I gave it a title: "in his glory."

Snapshot of Veodis Watkins. *1949. Courtesy of bell hooks. Photographer unknown.*

Before leaving my sister's place, I plead with her to make a copy of this picture for my birthday. She says she will, but it never comes. For Christmas, then. It's on the way. I surmise that my passion for it surprises her, makes her hesitate. My rival in childhood—she always winning, the possessor of Dad's affection—she wonders whether to give that up, whether she is ready to share. She hesitates to give me the man in the snapshot. After all, had he wanted me to see him this way, "in his glory," he would have given me the picture.

My younger sister G. calls. For Christmas, V. has sent her a "horrible photograph" of Dad. There is outrage in her voice as she says, "It's disgusting. He's not even wearing a shirt, just an old white undershirt." G. keeps repeating, "I don't know why she has sent this picture to me." She has no difficulty promising to give me her copy if mine does not arrive. Her lack of interest in the photograph saddens me. When she was the age our dad is in the picture, she looked just like him. She had his beauty then, the same shine of glory and pride. Is this the face of herself that she has forgotten, does not want to be reminded of, because time has taken such glory away? Unable to fathom how she cannot be drawn to this picture, I ponder what this image suggests to her that she cannot tolerate: a

grown black man having a good time, playing a game, having a drink maybe, enjoying himself without the company of women.

Although my sisters and I look at this snapshot and see the same man, we do not see him in the same way. Our "reading" and experience of this image is shaped by our relationship with him, with the world of childhood and the images that make our lives what they are now. I want to rescue and preserve this image of our father, not let it be forgotten. It allows me to understand him, provides a way for me to know him that makes it possible to love him again, despite all the other images, the ones that stand in the way of love.

Such is the power of the photograph, of the image, that it can give back and take away, that it can bind. This snapshot of Veodis Watkins, our father, sometimes called Ned or Leakey in his younger days, gives me a space for intimacy between the image and myself, between me and Dad. I am captivated, seduced by it, the way other images have caught and held me, embraced me like arms that would not let go.

Struggling in childhood with the image of myself as unworthy of love, I could not see myself beyond all the received images, which simply reinforced my sense of unworthiness. Those ways of seeing myself came from voices of authority. The place where I could see myself, beyond imposed images, was in the realm of the snapshot. I am most real to myself in snapshots—there I see an image I can love.

My favorite childhood snapshot, then and now, showed me in costume, masquerading. Long after it had disappeared, I continued to long for it, and to grieve. I loved this snapshot of myself because it was the only image available to me that gave me a sense of presence, of girlhood beauty and capacity for pleasure. It was an image of myself I could genuinely like. At that stage of my life I was crazy about Westerns, about cowboys and Indians. The camera captured me in my cowgirl outfit, white ruffled blouse, vest, fringed skirt, my one gun and my boots. In this image I became all that I wanted to be in my imagination.

For a moment, suspended in this image: I am a cowgirl. There is a look of heavenly joy on my face. I grew up needing this image, cherishing it—my one reminder that there was a precious little girl inside me able to know and express joy. I took this photograph with me on a visit to the house of my father's cousin Schuyler.

His was a home where art and the image mattered. No wonder, then, that I wanted to share my "best" image. Making my first real journey

away from home, from a small town to my first big city, I needed the security of this image. I packed it carefully. I wanted Lovie, cousin Schuyler's wife, to see me "in my glory." I remember giving her the snapshot for safekeeping: only, when it was time for me to return home, it could not be found. This was for me a terrible loss, an irreconcilable grief. Gone was the image of myself I could love. Losing that snapshot, I lost the proof of my worthiness—that I had ever been a bright-eyed child capable of wonder—the proof that there was a "me of me."

The image in this snapshot has lingered in my mind's eye for years. It has lingered there to remind me of the power of snapshots, of the image. As I slowly complete a book of essays titled *Art on My Mind*, I think about the place of art in black life, connections between the social construction of black identity, the impact of race and class, and the presence in black life of an inarticulate but ever-present visual aesthetic governing our relationship to images, to the process of image making. I return to the snapshot as a starting point to consider the place of the visual in black life—the importance of photography.

Cameras gave to black folks, irrespective of class, a means by which we could participate fully in the production of images. Hence it is essential that any theoretical discussion of the relationship of black life to the visual, to art making, make photography central. Access and mass appeal have historically made photography a powerful location for the construction of an oppositional black aesthetic. Before racial integration there was a constant struggle on the part of black folks to create a counterhegemonic world of images that would stand as visual resistance, challenging racist images. All colonized and subjugated people who, by way of resistance, create an oppositional subculture within the framework of domination recognize that the field of representation (how we see ourselves, how others see us) is a site of ongoing struggle.

The history of black liberation movements in the United States could be characterized as a struggle over images as much as it has also been a struggle for rights, for equal access. To many reformist black civil rights activists, who believed that desegregation would offer the humanizing context that would challenge and change white supremacy, the issue of representation—control over images—was never as important as equal access. As time has progressed and the face of white supremacy has not changed, reformist and radical blacks would likely agree that the field of

representation remains a crucial realm of struggle, as important as the question of equal access, if not more important. Roger Wilkins emphasizes this point in his recent essay "White Out."

> In those innocent days, before desegregation had really been tried, before the New Frontier and the Great Society, many of us blacks had lovely, naive hopes for integration . . . In our naiveté, we believed that the power to segregate was the greatest power that had been wielded against us. It turned out that our expectations were wrong. The greatest power turned out to be what it had always been: the power to define reality where blacks are concerned and to manage perceptions and therefore arrange politics and culture to reinforce those definitions.

Though our politics differ, Wilkins's observations echo my insistence, in the opening essay of *Black Looks: Race and Representation*, that black people have made few, if any, revolutionary interventions in the arena of representation.

In part, racial desegregation—equal access—offered a vision of racial progress that, however limited, led many black people to be less vigilant about the question of representation. Concurrently, contemporary commodification of blackness creates a market context wherein conventional, even stereotypical, modes of representing blackness may receive the greatest reward. This leads to a cultural context in which images that would subvert the status quo are harder to produce. There is no "perceived market" for them. Nor should it surprise us that the erosion of oppositional black subcultures (many of which have been destroyed in the desegregation process) has deprived us of those sites of radical resistance where we have had primary control over representation. Significantly, nationalist black freedom movements were often concerned only with questions of "good" and "bad" imagery and did not promote a more expansive cultural understanding of the *politics* of representation. Instead they promoted notions of essence and identity that ultimately restricted and confined black image production.

No wonder, then, that racial integration has created a crisis in black life, signaled by the utter loss of critical vigilance in the arena of image making—by our being stuck in endless debate over good and bad imagery. The aftermath of this crisis has been devastating in that it has led to a relinquishment of collective black interest in the production of images. Photography began to have less significance in black life as a

means—private or public—by which an oppositional standpoint could be asserted, a mode of seeing different from that of the dominant culture. Everyday black folks began to see themselves as not having a major role to play in the production of images.

To reverse this trend we must begin to talk about the significance of black image production in daily life prior to racial integration. When we concentrate on photography, then, we make it possible to see the walls of photographs in black homes as a critical intervention, a disruption of white control over black images.

Most Southern black folks grew up in a context where snapshots and the more stylized photographs taken by professional photographers were the easiest images to produce. Displaying these images in everyday life was as central as making them. The walls of images in Southern black homes were sites of resistance. They constituted private, black-owned and -operated gallery space where images could be displayed, shown to friends and strangers. These walls were a space where, in the midst of segregation, the hardship of apartheid, dehumanization could be countered. Images could be critically considered, subjects positioned according to individual desire.

Growing up inside these walls, many of us did not, at the time, regard them as important or valuable. Increasingly, as black folks live in a world so technologically advanced that it is possible for images to be produced and reproduced instantly, it is even harder for some of us to emotionally contextualize the significance of the camera in black life during the years of racial apartheid. The sites of contestation were not *out there*, in the world of white power, they were *within* segregated black life. Since no "white" galleries displayed images of black people created by black folks, spaces had to be made within diverse black communities. Across class boundaries black folks struggled with the issue of representation. This issue was linked with the issue of documentation; hence the importance of photography. The camera was the central instrument by which blacks could disprove representations of us created by white folks. The degrading images of blackness that emerged from racist white imagination and that were circulated widely in the dominant culture (on salt shakers, cookie jars, pancake boxes) could be countered by "true-to-life" images. When the psychohistory of a people is marked by ongoing loss, when entire histories are denied, hidden, erased, documentation can become an obsession. The camera must have seemed a magical instrument to many of the displaced and marginalized groups

trying to carve out new destinies for themselves in the Americas. More than any other image-making tool, the camera offered African-Americans, disempowered in white culture, a way to empower ourselves through representation. For black folks, the camera provided a means to document a reality that could, if necessary, be packed, stored, moved from place to place. It w documentation that could be shared, passed around. And, ultimately, the images, the world they recorded, could be hidden, to be discovered a another time. Had the camera been there when slavery ended, it could hav provided images that would have helped folks searching for lost kin and loved ones. It would have been a powerful tool of cultural recovery. Half a century later, the generations of black folks emerging from a history of loss became passionately obsessed with the camera. Elderly black people developed a cultural passion for the camera, for the images it produced, because it offered a way to contain memories, to overcome loss, to keep history.

Though rarely articulated as such, the camera became in black life a political instrument, a way to resist misrepresentation as well as a means by which alternative images could be produced. Photography was more fascinating to masses of black folks than other forms of image making because it offered the possibility of immediate intervention, useful in the production of counterhegemonic representations even as it was also an instrument of pleasure. The camera allowed black folks to combine image making, resistance struggle, and pleasure. Taking pictures was fun!

Growing up in the 1950s, I was somewhat awed and at times frightened by our extended family's emphasis on picture taking. From the images of the dead as they lay serene, beautiful, and still in open caskets to the endless portraits of newborns, every wall and corner of my grandparents' (and most everybody else's) home was lined with photographs. When I was young I never linked this obsession with self-representation to our history as a domestically colonized and subjugated people.

My perspective on picture taking was also informed by the way the process was tied to patriarchy in our household. Our father was definitely the "picture-takin' man." For a long time cameras remained mysterious and off limits to the rest of us. As the only one in the family who had access to the equipment, who could learn how to make the process work, my father exerted control over our images. In charge of capturing our family history with the camera, he called and took the shots. We were constantly being lined up for picture taking, and it was years before our

household could experience this as an enjoyable activity, before any of the rest of us could be behind the camera. Until then, picture taking was serious business. I hated it. I hated posing. I hated cameras. I hated the images that cameras produced. When I stopped living at home, I refused to be captured by anyone's camera. I did not wish to document my life, the changes, the presence of different places, people, and so on. I wanted to leave no trace. I wanted there to be no walls in my life that would, like gigantic maps, chart my journey. I wanted to stand outside history.

That was twenty years ago. Now that I am passionately involved with thinking critically about black people and representation, I can confess that those walls of photographs empowered me, and that I feel their absence in my life. Right now I long for those walls, those curatorial spaces in the home that express our will to make and display images.

Sarah Oldham, my mother's mother, was a keeper of walls. Throughout my childhood, visits to her house were like trips to a gallery or museum—experiences we did not have because of racial segregation. We would stand before the walls of images and learn the importance of the arrangement, why a certain photograph was placed here and not there. The walls were fundamentally different from photo albums. Rather than shutting images away, where they could be seen only upon request, the walls were a public announcement of the primacy of the image, the joy of image making. To enter black homes in my childhood was to enter a world that valued the visual, that asserted our collective will to participate in a noninstitutionalized curatorial process.

For black folks constructing our identities within the culture of apartheid, these walls were essential to the process of decolonization. In opposition to colonizing socialization, internalized racism, these walls announced our visual complexity. We saw ourselves represented in these images not as caricatures, cartoonlike figures; we were there in full diversity of body, being, and expression, multidimensional. Reflecting the way black folks looked at themselves in those private spaces, where those ways of looking were not being overseen by a white colonizing eye, a white-supremacist gaze, these images created ruptures in our experience of the visual. They challenged both white perceptions of blackness and that realm of black-produced image making that reflected internalized racism. Many of these images demanded that we look at ourselves with new eyes, that we create oppositional standards of evaluation. As we looked at black skin in

snapshots, the techniques for lightening skin that professional photographers often used when shooting black images were suddenly exposed as a colonizing aesthetic. Photographs taken in everyday life, snapshots in particular, rebelled against all those photographic practices that reinscribed colonial ways of looking and capturing the images of the black "other." Shot spontaneously, without any notion of remaking black bodies in the image of whiteness, snapshots posed a challenge to black viewers. Unlike photographs constructed so that black images would appear as the embodiment of colonizing fantasies, snapshots gave us a way to see ourselves, a sense of how we looked when we were not "wearing the mask," when we were not attempting to perfect the image for a white-supremacist gaze.

Although most black folks did not articulate their desire to look at images of themselves that did not resemble or please white folks' ideas about us, or that did not frame us within an image of racial hierarchies, that desire was expressed through our passionate engagement with informal photographic practices. Creating pictorial genealogies was the means by which one could ensure against the losses of the past. Such genealogies were a way to sustain ties. As children, we learned who our ancestors were by listening to endless narratives as we stood in front of these pictures.

In many black homes, photographs—especially snapshots—were also central to the creation of "altars." These commemorative places paid homage to absent loved ones. Snapshots or professional portraits were placed in specific settings so that a relationship with the dead could be continued. Poignantly describing this use of the image in her novel *Jazz*, Toni Morrison writes:

> . . . a dead girl's face has become a necessary thing for their nights. They each take turns to throw off the bedcovers, rise up from the sagging mattress and tiptoe over cold linoleum into the parlor to gaze at what seems like the only living presence in the house: the photograph of a bold, unsmiling girl staring from the mantelpiece. If the tiptoer is Joe Trace, driven by loneliness from his wife's side, then the face stares at him without hope or regret and it is the absence of accusation that wakes him from his sleep hungry for her company. No finger points. Her lips don't turn down in judgment. Her face is calm, generous and sweet. But if the tiptoer is Violet, the photograph is not that at all. The girl's face looks greedy, haughty and very lazy. The cream-at-the-top-of-the-milkpail face of someone who will never work for anything, someone who picks up things lying on other people's dressers and is not embarrassed when found out. It is the face of a sneak who glides over to your sink to rinse the fork you have laid by your place. An inward face—whatever it sees is its own self. You are there, it says, because I am looking at you.

I quote this passage at length because it attests to a kind of connection to photographic images that has not been acknowledged in critical discussions of black folks' relationship to the visual. When I first read these sentences, I was reminded of the passionate way we related to photographs when I was a child. Fictively dramatizing the extent to which a photograph can have a "living presence," Morrison describes the way that many black folks rooted in Southern tradition once used, and still use, pictures. They were and remain a mediation between the living and the dead.

To create a palimpsest of black folks' relation to the visual in segregated black life, we need to follow each trace, not fall into the trap of thinking that if something was not openly discussed, or only talked about and not recorded, it lacks significance and meaning. Those pictorial genealogies that Sarah Oldham, my mother's mother, constructed on her walls were essential to our sense of self and identity as a family. They provided a necessary narrative, a way for us to enter history without words. When words entered, they did so in order to make the images live. Many older black folks who cherished pictures were not literate. The images were crucial documentation, there to sustain and affirm memory. This was true for my grandmother, who did not read or write. I focus especially on her walls because I know that, as an artist (she was an excellent quiltmaker), she positioned the photos with the same care that she laid our her quilts.

The walls of pictures were indeed maps guiding us through diverse journeys. Seeking to recover strands of oppositional worldviews that were a part of black folks' historical relationship to the visual, to the process of image making, many black folks are once again looking to photography to make the connection. The contemporary African-American artist Emma Amos maps our journeys when she mixes photographs with painting, making connections between past and present. Amos uses snapshots inherited from an uncle who once took pictures for a living. In one piece, Amos paints a map of the United States and identifies diasporic African presences, as well as particular Native American communities with black kin, marking each spot with a family image.

Drawing from the past, from those walls of images I grew up with, I gather snapshots and lay them out to see what narratives the images tell, what they say without words. I search these images to see if there are imprints waiting to be seen, recognized, and read. Together, a black male friend and I lay out the snapshots of his boyhood to see when he began to lose a certain openness, to discern at what age he began to shut down, to close himself away. Through these images, my friend hopes to find a way back to the self he once was. We are awed by what our snapshots reveal, what they enable us to remember.

The word *remember* (*re-member*) evokes the coming together of severed parts, fragments becoming a whole. Photography has been, and is, central to that aspect of decolonization that calls us back to the past and offers a way to reclaim and renew life-affirming bonds. Using images, we connect ourselves to a recuperative, redemptive memory that enables us to construct radical identities, images of ourselves that transcend the limits of the colonizing eye.

SOUND DESIGN
WALTER MURCH
BY
FRANK PAINE

Sound Design

WALTER MURCH
Interviewed by
FRANK PAINE

Image and sound are linked together in a dance. And like some kinds of dance, they do not always have to be clasping each other around the waist: they can go off and dance on their own, in a kind of ballet. There are times when they must touch, there must be moments when they make some sort of contact, but then they can be off again. There are some films where the fact is unbroken: the image leads and the sound follows—it never deviates from what you actually see, what is directly indicated. Other films are way out there—what you are hearing has only the smallest physical relationship to the image. Yet there is—there has to be—some kind of connection being made, a mental connection. Out of the juxtaposition of what the sound is telling you and what the picture is telling you, you (the audience) come up with a third idea which is composed of *both* picture and sound and resolves their superficial differences. The more dissimilar you can get between picture and sound, and yet still retain a link of some sort, the more powerful the effect.

The relationship is always shifting, though, in any film. Sometimes it is very close and then it will open way up and the sound will do something completely off the wall, and then zoom back in again. But that's where it starts to be like a dance. I mean, they're dancing together and then they go off, and then they come back, and cross, and go in different directions again.

An example of this is something we tried to do in *Apocalypse Now*. At the very beginning of the film, Captain Willard (Martin Sheen) is in a hotel room in Saigon. He wakes up and looks out of the window, and what you hear are the off-screen policeman's traffic whistle, the car horns, motorbikes, the little fly buzzing in the window pane, etc. Then he sits down on the bed and starts talking, in narration, about how his heart is really in the jungle and he can't stand being cooped up in this hotel room. Gradually, what happens is that all of those street sounds turn into jungle sounds: the whistle of the policeman turns into a cricket; the car horns turn into different kinds of birds; and the fly turns into a mosquito. You are watching Willard sitting in his hotel room, but what you are hearing is a very strong jungle background. One reality is exchanged for another. The thread that links them is the fact that although his body is in Saigon, his mind is in the jungle. That's what Willard really wants to get back to. By gradually making that shift you've presented the audience with a dual reality which—on the face of it—is absurd, but one which nevertheless gets at the dilemma of this particular character.

WALTER MURCH graduated from Johns Hopkins University and did graduate work at the University of Southern California. He has worked on the sound for all of Francis Coppola's films since 1969, including *Godfather* and *Godfather II*, and *The Conversation*. He also worked on George Lucas's *THX 1138* and *American Graffiti*. He has been the picture editor of Coppola's *Conversation* and *Apocalypse Now*, in addition to Fred Zinnemann's *Julia*. He won an Academy Award in 1980 for the sound design of *Apocalypse Now*.

At the time of the interview, he was working on a script for a feature film. We talked in the writing room on the second story of his horse barn at "Blackberry Farm," overlooking the lagoon in Bolinas, California. F.P.

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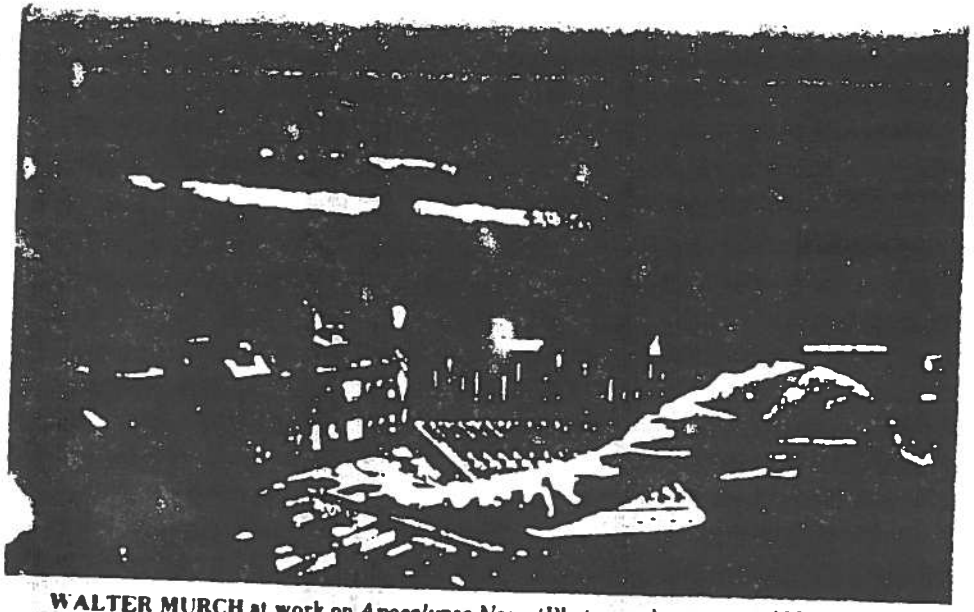
The first thing in approaching a new project is to make a list of sounds which you think might be necessary or effective, but which were not in the film when it was shot. Think as deeply as you can about the characters in the film and the environment in which they move. Find moments at which you can, gracefully, add to the character, or his motives, or the story, or whatever, and not interfere or detract. There are times when too much texture would simply get in the way. There are other times when you can, deftly, put little things in there that don't seem like you put them there but which, nonetheless, add up: somebody closes the refrigerator door and there is a little tinkle of glass from inside—that means the refrigerator is full. The function of sound at this level is very close to art direction. Where does this guy live? Is it close to a freeway? Add some traffic. What kind of doors does he have in his apartment? Hollow core with Schlage locks? Put them in. Etc.

The other thing is to think of the sound in layers, break it down in your mind into different planes. The character lives near the freeway, so you've got this generalized swash of traffic sound, but then occasionally a plane flies over: these are the long, atmospheric sounds. On top of these you then start to list the more specific elements: the door closes, the gunshots, the bats that live in the attic—who knows? Isolated moments. Once you've done that, once you can separate out the backgrounds from the foregrounds, and the foregrounds from the mid-grounds, then you go out and record those specific things on your list separate from everything else. You record the freeway without the planes; then just the planes. You record the bats squeaking without any other kind of background noise. And then you build it up, one sound track superimposed on another, like one of those little Easter eggs which has different planes of stuff in it—little ducks in the foreground, then the bunnies, the grass, and the sky. And hopefully it will all go together, and it will look like a coherent whole that not only seems to exist on its own, but which connects with certain things in the story, certain things in the character. Since each of those layers is separate, you can still control them, and you can emphasize certain elements, and de-emphasize others the way an orchestrator might emphasize the strings versus the trombones, or the tympani versus the woodwinds.

There's a difference in approach between the traditional Hollywood way of putting a sound track together and the way that it is done in England. On *Apocalypse*, we worked pretty much with the English system. The fact is: if you have to do a certain amount of work in a certain limited amount of time, you have to employ more than one person. You can't do it all yourself. So, how do you allocate the jobs? The way in Hollywood has been to hire one person as sound supervisor, and that person selects all the sound: where the sound will go, what kind of sound it is, and records it if necessary. And then he says, "Joe, come in here." And Joe comes in, and he says, "Here's reel 8", and he gives Joe the picture and then this stack of sounds. "I've marked on the picture where all of these sounds should go. Cut 'em in." And Joe says, "Right." Joe goes away, and a week later, he comes back with all of those sounds cut in. Joe is reduced in his responsibility. It's more of an assembly line procedure. He has certain bolts that he has to screw on to the frame at certain points. There is a certain amount of initiative that he has, but it's contained. He also doesn't see the whole film, or rather he doesn't work on the whole film. He works on Reels 2 and 8 and 12. And so he doesn't really get into what all of the intermediate reels are all about. That's Fred and Mack and Peter's responsibility.

The English system is to swing around and look at the problem horizontally, rather than vertically. Which is to say, each sound editor will weave one thread of sound through the fabric of the entire film. One sound editor will take all helicopters in the film, another sound editor will take all the gunshots in the film, another all of the boat sounds, and another all of the jungle sounds. That way each of the editors, within his own domain, is able to think of and work with the film



WALTER MURCH at work on *Apocalypse Now*. (Photograph courtesy of Mr. Murch.)

as a whole. He is able to research, say, all of the available helicopter sounds that there are and make sure that they have a tonal and textural variation throughout the course of the film, the way red threads in a rug would. So it's not just the same stupid red thread, but here is a little crimson, here is pink, depending on what's lying next to it. And inevitably in a film, you might have recorded maybe one really great sound—a helicopter, for instance. There's just something about the way it was recorded that's great. If one person is doing it, he will say, "It really should be here. This is where the greatest helicopter sound in the film should be, right here." And he'll put that there. If it's all being done by different people, they all want that same helicopter sound, and they all try to cut it in. Theoretically, the sound supervisor is supposed to supercede all of that and say, no, it should go here, but it's better, I think, for one person to be in charge of that thread. It's like having concertmeisters in an orchestra. The lead violinist, who thinks only about the violins. And when the conductor wants to talk about the violins, he talks to the concertmeister. And so each of the sound editors is a concertmeister of his own string section, which may happen to be the helicopters. He will develop that as a coherent whole within itself over the course of the film. Also, just for their own well-being and sanity, as individuals who work on a film with a great deal of commitment for a long time, it's better that they work on the whole film than that they feel like they're punching in and punching out each day, just being given the bolts to be put on the film. After a while, I think people become brutalized by that kind of treatment, and they lose any kind of interest or contact, which is something that begins to reinforce itself within the traditional Hollywood system, where you have only so much time; there isn't that much commitment to the film. The way the thing is geared, the sound editors don't have the total vision of what the sound is all about. They can certainly see the film as a whole, maybe, once or twice, but they are not working on all of it all the time.

English system is that you may get moments where the left hand doesn't know what the right hand is doing. And the person who's doing the helicopters has constructed this elaborate thing, but so has the guy that's done the jungle, and they're going to be competing. You still need, in the English system, some one person who has the overall thing, who says, "I know there's a lot of helicopter action here visually, but I don't want a lot of heavy helicopter sound there. So let's just cut in what is minimally necessary. Because although we see helicopters there, I want the jungle to be really dominant." And so you have to have somebody who can step back and look at the total effect of the sound over each of these individual departments. Otherwise, you'll have conflicts.

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We talked about the layers of sound for the editing of a film. But I think it's generally misleading to say, "Well, that sequence had 60 tracks, it must be great." Ideally, for me, the perfect sound film has zero tracks. You try to get the audience to a point, somehow, where they can *imagine* the sound. They hear the sound in their minds, and it really isn't on the track at all. That's the ideal sound, the one that exists totally in the mind, because it's the most intimate. It deals with each person's experience, and it's obviously of the highest fidelity imaginable, because it's not being translated through any kind of medium. So, at a certain point, there were 160 tracks for *Apocalypse*. That is an awful lot, but on the otherhand, if somehow I could have achieved the same effect with no tracks, I would have been more impressed. Or one track. If there had been one sound that did all of that, so mysteriously, I would be more impressed. But what that means is: thinking very, very deeply, and being very, very lucky in getting exactly the right thing. And if you can do that, then the number of tracks is meaningless. But, generally speaking, it doesn't happen very often, if ever, to get that one thing. That's just an abstract ideal that I always strive for.

there will always be silent films. You can look at television shows today, or even some features, and there really is no "sound" in them. There is talking, and there's music, maybe, but the part of the brain that is interested in sound and texture and the meaning of sound as music is totally uninvolved. The sound in those films is conveying little pellets of information—the door closed, the person said this—and there's no duality, no stretching. So there are silent films today: they've got sound tracks, of course, but emotionally, they're silent. Whereas you can look at Chaplin's silent comedies and certain other films and they depend tremendously on the sound: the sound that the wardrobe made when it fell on him. You can "hear" all of the dishes break. Those films are using sound. They're asking you to imagine the sound of things. So they are sound films, even though they are completely silent. You try to track yourself along the boundaries between those two things—that's where you swing between zero tracks and 160 tracks.

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As to the question of previewing a film for an audience: it's very risky and very misleading, I think, to ask audiences direct questions about the film, especially if you're asking about sound. Sound is so sneaky in its effect on people that when it's really working at its best, the people are most unaware of what's happening: to ask them, specifically, about things in the sound track is tampering with part of its function. You're not going to get straight answers, and the answers that you do get, if you rely on them, will be very shaky; people don't really know what they're talking about with sound. So you can really, in the end, rely only on how it feels to you. The real experience of going to a preview is to look at the film *with* the audience, not to see what the audience tells you afterwards, or to read cards or anything, but to put yourself in a situation which is different from all the other times you've looked at the film. If you get locked up with the film for 3 or 4 months, seeing

over and over again, after a while your judgment starts to vacillate. That can be very quickly fixed by previewing a film with an audience. Then you find you're looking at the film again, but from 50 paces to the "left" of where you've seen it before, and you suddenly see new things in the film just from the experience of changing the whole environment in which you look at it, knowing that other people are watching it who have never seen it before. That's where you gain the most insightful sense of what to do. The audience cards and the things the audience says to you directly are, really, only corroborations of what you feel. I mean, you can use them that way. "See, they said here, 'Change it.'" You can use cards, but to go to them for the primary information is a stupidity. It's like you set your transit, that thing that surveyors use, to move way over from where you were looking before. You're looking at the same thing, but now you're looking at it against a completely different background. You *feel* very different, and therefore, you *see* very different things. You compare what you feel now with what you felt then. What you're felling now is not necessarily true. This isn't the truth and what was before was not a lie; it's just that when you compare the two of them you see three dimensions, and *that's* the truth. It's the comparison of those two things. You get as close to the truth as you can.

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I always think that my entry point into film—and I think anyone who is working in film will agree, to a certain extent—is very much like Alice's entry point, when she tumbled down the rabbit hole or when she went through the mirror. It is a completely unique, miraculous experience. In the moments before it happens you're looking at a mirror that is reflecting you with this kind of icy stare, and saying, "You can't go through a mirror." And then, all of a sudden by some process that you find mysterious, you're on the other side of the mirror. And things are all weird; the clock has a face that's smiling at you, and you're looking at the back of the fire. It seems especially unique, like it'd never happen again.

For each individual, it is slightly different I think. There is no well-trodden path into the film business. I think that, in a strange sense, there is an ironic truth to that, because you're dealing with an art and a business that is completely illusory. I mean, you're dealing with a final product, 50% of which is total blackness. Yet people are sitting in the theater, convinced that they're not only looking at something that they paid money to see: sometimes, they plunge into that world of the film, and become totally lost. They have entered that state of mind of the film. So, you're dealing with huge insubstantialities. You're not dealing with office copiers, or sheet metal, or screws, or vises, or what normal, sane businesses deal with. The more concrete the industry is, I think, the more definite the road into that industry is. You can go to IBM, and say, I want a job at IBM, and they'll say, right, here are 15 different folders that will tell you 15 different routes, depending on what your interests are, to get into IBM. And if you do all these things correctly, it can be fairly predicted where, in 20 years, you will be. Doing this job at this pay, with this kind of security. There is nothing even remotely like that in the film industry. And the justice there, I think, is that once you get "in," you find yourself very quickly on the outside of another thing that you want to get into. So, you try to get through that. And then that glass wall stares at you again, and you have to get through another one. There is just this endless series of boxes within boxes, or walls behind walls, that you are trying to scale, or trying to penetrate. Sitting here, trying to write a script, and looking at a blank piece of paper—that is another blank wall that says, "You can't get through me." And it's the state of mind or the will, or the whatever it is, that's able to stare back at that mirror or the blank piece of paper and say, "Somehow, yes, I will. I'll get through you. I don't know how, but I'll *will* myself through you." If you're the kind of person who is not put out by those blank walls,

them, then you are going to be suited to work in the film business, because it is wall after wall after wall. If you haven't been put off by the first one, you're not going to be put off by the tenth. If somehow the industry had been geared so that there's a little train that you got on, and after a year and a half you are deposited at a certain place, and you got off, then all of a sudden you found yourself surrounded with these blank walls—you would be very misused by the system that had gotten you there, because it had taken you, by very predictable routes, to a very unpredictable place. And so the film industry—I don't think by design, I think by the way it has evolved—presents you at first with the very thing that trains you when you get through to keep on *going* through. As I said, there is a kind of ironic justice in it.

I guess the message out of that is, "Take heart." Although it looks completely immore comforting, it looks impossible for a reason. There is some human psychic reason that has to do with what's going on that makes it look that way. And if you have the will, and the persistence, and the luck, and the talent, to somehow get through that first wall, you will probably get through the rest of them. But if you are the kind of person who looks at blank walls and says, "Oh no, this is impossible. I can't get through that," then nature is being kind to you and saying, "Well, then, go do something else where it is more predictable, and you'll be happy." Because even if you did get through that by chance, you'd be in an environment in which you'd be very unhappy. You have to almost like that process of inching up walls that have no foot holds, because you'll be doing that all of your life, in one form or another. If you choose any kind of insubstantial business, like film or like writing, or anything where the product is a total product of the mind, there is no handle. It is what you make it.

FORTHCOMING ISSUES OF THE JOURNAL

Vol. 34, No. 1 (deadline: 1 December 1981):
FILM MUSIC

Vol. 34, No. 2 (deadline: 1 February 1982):
FILMMAKERS TURNED ACADEMICIANS

Vol. 34, No. 3 (deadline: 1 May 1982):
ACCESS TO TELEVISION

Vol. 34, No. 4 (deadline: 15 August 1982):
INTERNATIONAL IMPACT ON CONTEMPORARY U.S. FILM/VIDEO/TV

WALTER MURCH: THE SOUND FILM MAN

BY

KEVIN HILTON

Studio Sound ° Pro Sound News Europe ° What's new in Pro Audio ° Pro Sound News Asia
The European professional audio titles from Miller Freeman Entertainment Ltd

Walter Murch
The sound film man

Immortalised by his soundtrack for The Conversation, Walter Murch has a rare understanding of the elements of cinema. Kevin Hilton listens carefully

LOOK THROUGH any film encyclopedia and you will find numerous actors, editors, directors and cinematographers. Less numerous are sound designers. Fewer still are sound designers who have also excelled in picture editing, directed their own movie and even done stints as camera operator and actor. In a field that, even today, gets overlooked in favour of special visual effects and other technical disciplines, Walter Murch is something of a hero, a fact underlined by the number of people queuing up to talk to him or at least shake his hand when he gave a lecture at the 'School of Sound' seminar held in London during April.

These sessions were accompanied by aseason of movies with sophisticated or notable soundtracks at the National Film Theatre. Among the titles were four of Murch's best: American Graffiti (1973); The Conversation (1974), which he introduced at the NFT, and for which he received his first Oscar nomination; Apocalypse Now (1979), his first Oscar winner; and The English Patient (1996), for which he picked up two statuettes, one for the sound, one for picture editing.

Born in New York, Murch was part of the first generation of movie lovers who went to film school. It was at the Cinema School of the University of Southern California that he met the writer-director-producer George Lucas, who would go on to become one of the most successful commercial movie makers of all time. Murch's early career is entwined with that of Lucas and both became involved with another huge figure (in both senses) when Lucas won a scholarship to observe Francis Ford Coppola making the out-of-character Finian's Rainbow for Warner Bros in 1968.

On Coppola's next movie, 1969's The Rain People, Lucas took the role of production associate, while Murch got his first sound credit. In his work, Murch has always acknowledged the correlation between what is seen and what is heard, something that was not necessarily the product of film school lectures. 'I think that, to a degree, it was already obvious to me,' he says. 'As I progressed in my career, the depth of the relationship between the two elements became more and more obvious. There is an opportunity to take advantage of this complex relationship but you are not free to do that completely because you are always an observer of the film as well as someone working on it.'

MURCH IS NOT an admirer of the soundtrack for its own sake style of working, preferring to recognise that it has to work with everything else in the production. 'Sound has a great power but it is a conditional power,' he observes. 'It places the image in a physical and emotional context, helping

us to decide how to take the image and how it integrates itself into everything else. This goes back to the silent movies, which were never completely silent because there was music and even sound effects. The only thing that was missing was the spoken word. Silence can be a useful tool; although it isn't used that often. One memorable scene that I used it on was the end of Godfather II [1974], where Michael Corleone [Al Pacino] is sitting by the lake. I dropped the soundtrack down to the atmos and then shut it down completely, which transmitted the interior emotions being felt by the character.'

After The Rain People, Murch and Lucas were among the army of camera operators employed for Gimme Shelter (1970), the concert film of the Rolling Stones' now notorious Altamont gig. 'Everybody automatically assumes that I must have done the sound on that film,' he says, 'but I was just a cameraman. The makers came to Zoetrope Studios to hire cameras, including a 1000mm lens, which I operated. The final shot of the movie--a man taking a piss, silhouetted against the sunrise, which I shot from a great distance so he had no idea--was mine.'

Next came THX 1132, a dystopian fantasy developed from a prize-winning short Lucas made at university. As well as designing the sound, Murch received a co-writing credit, cementing his creative partnership with the director. The two went on to make the nostalgic American Graffiti but the sound designer was not involved in Lucas' next project, the movie that made his name and established Dolby Stereo as a cinematic tool--Star Wars (1977). Part of this is due to being involved in the sprawl that was the production of Apocalypse Now (1979) and also two other movies, The Black Stallion (eventually released in 1980) and Julia.

After American Graffiti, Murch worked more with his mentor than his peer, becoming involved in The Conversation (1974), which is regarded by many as much as the sound designer's film as Coppola's. The plot revolves around a surveillance expert (Gene Hackman) who, using sophisticated microphones, may or may not have recorded two people discussing a murder plot. Nominated for the Academy Award for Best Sound, Murch has distinct memories of this movie: 'For me it had all the uncertainty of a first film because it was the first one where I both edited and designed the sound. Perhaps because of this there is an emotional edge to it that I can recall to this day. A difficulty was that it is both a character study and a murder mystery and it required a knife edge balance between the two, which are almost contradictory. If you have a murder mystery, the characters are normally subservient to the plot, something that Hitchcock was a master of. Ultimately The Conversation had to be both and there was struggle in the sound and the editing to find the edge and perch on it.'

MURCH'S NEXT MOVIE for Coppola was the near-hallucinatory Apocalypse Now, for which he was Oscar nominated for film editing and won the Award for Best Sound. Many stories are told about this production, some of which are documented in both Eleanor Coppola's diary and the making-of film Hearts of Darkness (1991). 'I remember it in terms of being a first,' Murch recalls. 'It was the first multitrack film I had worked on and it was new territory because it was a multichannel soundtrack with low frequency enhancement. At the time I looked at the way the film was shot and thought to myself, 'Does he [Coppola] really need to do this?' because there was so much else going on. But when I looked at it later, with the big Panavision visuals, I realised that the sound-track we did was the thing to do.'

From the stories of Apocalypse Now and the evidence of Hearts of Darkness, an image emerges of

Coppola as a single-minded dictator. Murch says this is not the case. 'Francis hires heads of departments and collaborators and allows them to experiment. He always gives us plenty of rope, sometimes enough to hang ourselves with. Hearts of Darkness emphasised some aspects of his character and the way he works but it was meant to be cinematic as well as just a record of what happened during the making of Apocalypse Now.'

Another collaborative director Murch has worked with is Anthony Mingella, whose The English Patient was the Titanic of the 1997 Oscars, winning Murch his second Best Sound Award and his first Best Film Editing statuette. 'He's one of those very collaborative directors,' he says of Mingella, 'evolving ideas with everyone and not necessarily sticking with his own concepts. His goal seems to be not to dictate but to harness the ideas and talent of others. That's the role of a director, to see that all the different points of view of the craft departments are pointing in the right direction. He has to set in motion a very complex machine and create a unity. The advantage of many points of view is that the work will be multifaceted, rather than monophonic, which is the danger with more dictatorial directors.'

In Murch's most recent project, he indirectly worked with one of the great mavericks of modern cinema, Orson Welles. In restoring Touch of Evil (1958), one of the greatest film noir thrillers and yet another Welles film that suffered from studio interference (to the point where Welles was barred from the lot and the movie was finished by another hand), Murch again combined sound and vision. 'I got a phone call out of the blue from the producer,' he recalls. 'They had found the memos Welles had written during production, before he was fired from the movie. These notes are half about the sound and what he wanted to do; the other half is about the pictures. I suppose the restorers considered that they needed someone who could both work on the sound and the pictures and that Walter Murch was the man.'

WELLES IS RECOGNISED for his precision but even this reputation did not prepare Murch for what his notes held. 'I was shocked by the detail of the memos and Welles' articulation of what he wanted,' he says. 'Every film should have a document like this as a kind of touchstone but rarely does a director have the time, the ability or the articulation to do it. Welles had all three. Because of this we were loathe to stray from what he had said. If he had been there we could have talked about it but unfortunately he's dead so we held ourselves strictly to what was in the memos, which are not only articulate but also specific. However, the memos did allow a certain degree of interpretation so it was a bit like collaborating with Welles on the work.'


The Conversation is one of Murch's career highlights

Touch of Evil was loaded reel by reel into an Avid nonlinear editing workstation, where Murch cleaned up the pictures and remixed the audio as an 8-track digital soundtrack. It is generally held that film making has moved away from the old mag recorder methods but Murch says that it is still relatively new for him. 'Last year I remastered the soundtracks of The Godfather trilogy using it and I've made a few music videos that way but the first film Iworked on using it from start to finish was The English Patient. Surprisingly it is also the first film to have been edited electronically and win an Oscar. I would have assumed that this barrier would have been passed before that but it's not the case.'

In terms of the differences between the old and new technologies, Murch says that the primary one is

flexibility, with computers bringing more functionality. 'For the sound on The English Patient we used the Sonic Solutions system. They have in place something that other manufacturers are only now addressing--a network function that enables people working on the different elements (footsteps, atmos) to access the edit decision list and see what is being done. In this way the two can be played together to see how it will work, without interfering with anyone else. It's very different to how it was before, when you would have to stop people from working to try things out. You also have the ability to have the computer on the stage itself and fix anything that goes wrong there and then.'

Walter Murch's career in movies has been both diverse--in terms of the people and material he has worked with and the different roles he has taken--and highly successful, despite his one excursion into directing, the overly bleak Wizard of Oz sequel Return to Oz, being a commercial and critical failure. In his work he has shown how audio can be used to enhance and drive along a film and that technology is just a means towards creativity. The main surprise in meeting him is discovering that a man so associated with The Doors song 'The End' was not a fan of Jim Morrison and his chums. Still, that's the movies--nothing is straightforward. Which is as it should be.

Walter Murch filmography

Touch of Evil (1998, restoration sound and film editing)

Dumbarton Bridge (1998, consulting editor)

The English Patient (1996, sound, film editor)

First Knight (1995, rerecording mixer, film editor)

I Love Trouble (1994, film editor)

Crumb (1994, rerecording mixer)

House of Cards (1993, film editor)

Romeo is Bleeding (1993, sound rerecordist, filmeditor)

The Godfather: Part III (1990, film editor)

Ghost (1990, rerecording mixer, film editor)

The Film School Generation (1994, actor) (TV)

Call from Space (1989, film editor)

The Unbearable Lightness of Being (1988, filmeditor)

Return to Oz (1985, director, cowriter)

Dragonslayer (1981, rerecording mixer)

Apocalypse Now (1979, sound montage, film editor)

Julia (1977, film editor)

The Conversation (1974, sound montage, sound rerecordist, co-film editor)

The Godfather: Part II (1974, sound)

American Graffiti (1973, sound)

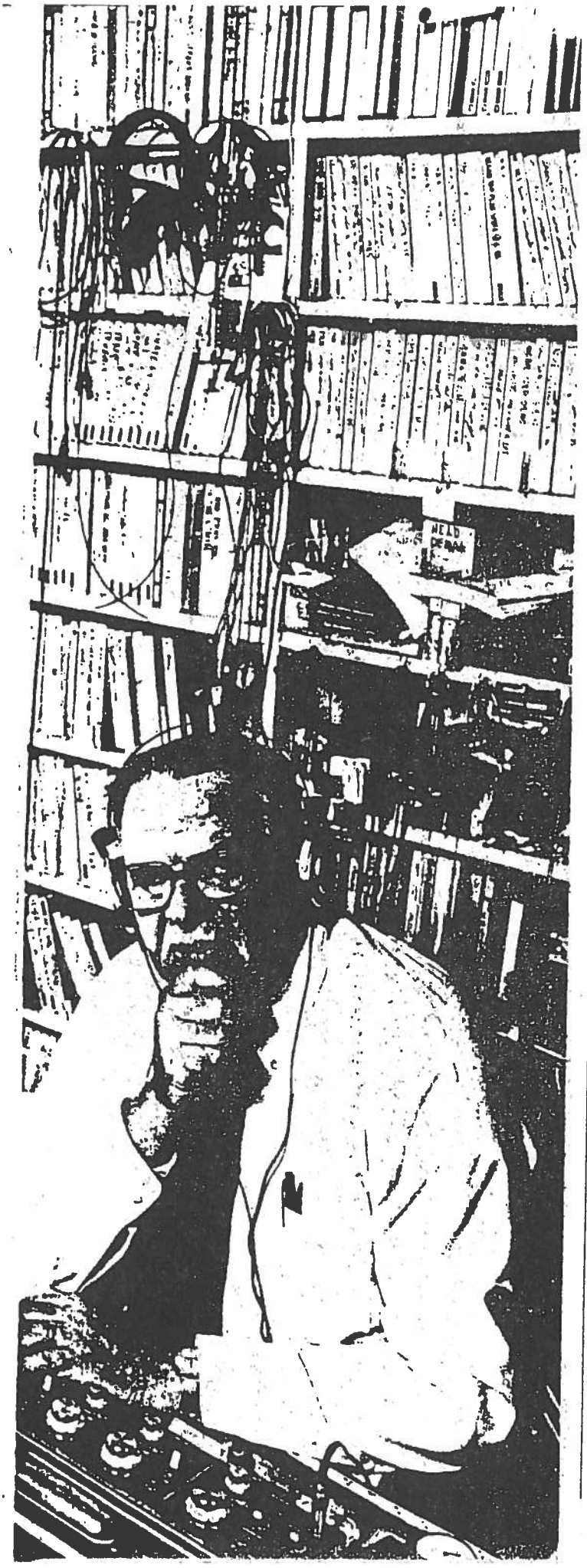
The Godfather (1972, production consultant)

THX 1138 (1970, sound montage, cowriter)

Gimme Shelter (1970, cameraman)

The Rain People (1969, sound)

MAN OF INFLUENCE: TONY SCHWARTZ
BY
AUDREY BERMAN



Man of Influence

by Audrey Berman

'The sound of words is the body language of the ear.'

Drop by media guru Tony Schwartz's townhouse in Manhattan at the right moment and he may be talking to his colleague, Bob Landers. Nothing unusual about that except that Landers happens to live in Carlsbad, California, and though his voice bounces off two satellites to get to the East Coast, it arrives in full-blown high fidelity.

Schwartz and Landers share a little inside joke: They communicate to work. And it is work they do. Tony writes and Bob reads eight or 10 commercials a week, something they've been doing for 20 years. "Bob is the best announcer in the world," says Schwartz affectionately. "And I can reach him quicker than I can get any other announcer in New York City, unless he's walking past this door." The door is the one to his home studio, where Schwartz, the ad man, political consultant, and author of two scholarly books on radio and TV, creates his scripts and then sends them to Landers by Qwip or by computer ("we also compute to work").

Landers, in the workroom next to his kitchen, rehearses and records the commercials and feeds them back to Schwartz, who edits them and has them delivered to the agency. "We know of no other twosome that does anything like this. The idea of two people communicating by satellite across the country is not new in telephone quality, but it's unheard of in high fidelity."

Such communication is possible thanks to a Culver City, California, company named IDB Communications, which distributes the satellite transmissions for CBS radio and other broadcasters. Landers uses one of IDB's channels four hours a day, and transmits his voice to a New York City earth station, which relays it to Schwartz's home. From door to door, Landers's voice travels about 90,000 miles.

Tony Schwartz in his state-of-the-art studio.

PHOTOGRAPH BY BRYAN FRIEDMAN

PHOTOGRAPH BY MARK HANAUER

Bob Landers doesn't have to leave his West Coast studio to make Tony Schwartz's commercials in New York. Here he's sharing a transcontinental joke.

Here is a media consultant to presidents and governors who says that images don't count.

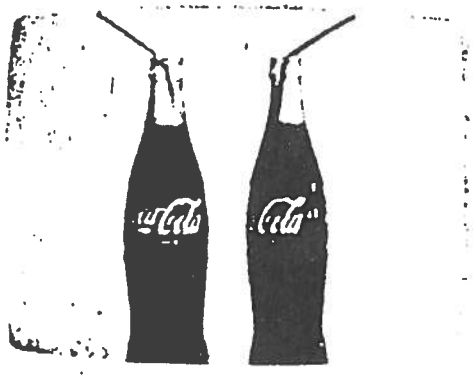
'Commercials don't have to be expensive to work. My daughter did this art.'

'Congress wants to prevent negative political commercials. And they say this one was the first of them all. But it would pass all their guidelines today.'

'These Coke bottles were all you saw on the screen for 60 seconds, and yet it won first place at the Cannes Film Festival.'

'The emotional set-up was made while the screen was black. This visual was the payoff.'

Man of Influence



PHOTOGRAPHY BY DONAL ROLWAY

Landers's velvet voice is so well suited for a Tony Schwartz commercial that they are true collaborators. Having worked together for so long, Landers knows just the inflection, just the coaxing tone that Schwartz aims for. "The sound of speech," says Schwartz, "is the body language of the ear." Their ads are lessons in subtle persuasion. Remember the Alka Seltzer commercials, where an off-camera voice says, "What do you mean you're sending six gross? I only ordered a dozen!" while the sole visual is a glass of water and a hand dropping two tablets that fizz in relief. Or the thirst-provoking Coke commercial, where the only image is two bottles of Coke, the only movement the beads of condensation dripping down their sides. And perhaps the most famous of all, though it aired only once: the-girl-and-the-daisy spot with which Lyndon Johnson successfully cast Barry Goldwater as a warmonger.

Tony Schwartz is literally a man of influence. The creator of thousands of radio and television commercials, he has been striking responsive chords for almost 40 years, and is so successful at it because he has done his research—or "presearch," as he is fond of saying.

He also likes to say that television is not a visual medium. In fact, he finds the notion ridiculous. "They called it a visual medium because the visual was the new element that was added to radio. Just like when they added sound to movies and called them 'talkies.' Movies were more of a visual medium before sound came along." Here is a media consultant to presidents and governors—an image-maker—saying that images don't count. It is especially ironic that Schwartz began his professional life as an art director. In most cases, he maintains, once the picture catches the eye, it is the sound that delivers the message. "If you had two sets, one with a broken picture tube and one with a broken speaker," Schwartz says, "you'd get much more out of the one with the broken picture tube."

The trouble with today's television commercials, according to Schwartz, is that they rely on the principles of print communication, which are totally different from those of the electronic media. "The agencies are busy studying learned recall. The real thing we have to deal with in this field is *evoked* recall. They're studying what you remember after you hear a commercial. I'm more concerned with what you remember *while* you're hearing a commercial."

Landers offers the old Pillsbury commercial to illustrate the point. "Remember 'Nothing says lovin' like something from the oven'? That subliminally says 'nothing says lovin' like childbirth.' This is evoked recall.

"If we're going to deal with what's evoked, it pays to learn beforehand what *can* be evoked," says Schwartz, warming up to his favorite slogans. "See, we're really dealing with a new form of PR. It's not public relations or press relations; it's really personal retrieval. It's really PR for people's recall. PR for people's reactions." Which brings us to Schwartz's company: Planned Reactions. "We're structuring people's reactions," he says.

According to the Schwartz Theory of What Makes People Listen, "People don't have earlids, therefore what determines what someone listens to? Whatever interests them." Schwartz proves this with the story of how he can narrowcast his ads to just one person. He did just that when the president of NBC Radio called with a problem: Lee Iacocca had just moved from Ford to Chrysler, and NBC wanted the Chrysler business, but Iacocca thought manufacturers shouldn't advertise on radio, dealers should. Could Tony Schwartz do anything?

This is where presearch came in. Schwartz had a research firm interview 45 Detroit business leaders, asking them about government regulations, what they thought about local issues—and what radio station they listened to when they drove to work. But all he really wanted to find out was to which station Iacocca listened, and then he ran a commercial on that station directed specifically at Iacocca every morning for five days.

The spot began: "Do you know anybody who looks at television or reads a newspaper while they're driving to work? Well, do you know a lot of people who listen to the radio while they're driving? . . . Radio is the only medium that can talk to these people while they're actually involved with their cars."

Iacocca got the message. Within a few days Chrysler bought ads on the NBC, ABC, and CBS radio networks, and within a few more days, so did GM. ●

PORTRAITS IN SOUND
BY
TONY SCHWARTZ

PORTRAITS IN SOUND Tony Schwartz (POPULAR PHOTOGRAPHY, May, 1964)

About 16 or 17 years ago, I bought my first tape recorder. About this same time I became friendly with Isaac Nadler, a house painter working in the apartment I lived in. He was about 76 years old, but a young man in attitude. One day he poked his head through the door of my apartment as I was working with the recorder. "Did you ever hear your voice?" I asked him. He said, "No" and I asked him if he would like to hear it. "Yes" he said and I handed him the mike telling him, "You speak here, say anything you want and I'll record it."

I turned on the recorder and he started: "I would like to tell you the story of my life . . ." And he went on for two hours.

That was my first portrait in sound. Nadler had the soul of an artist and this was caught in his words on tape. The music of his words, the tone of his voice--such things added to this first profile in sound.

Before I go further I would like to quote Robert Frost, from a letter dated Feb. 22, 1914, fromthe book ROBERT FROST AND JOHN BARTLETT by Margaret Bartlett Anderson, Holt Rinehart, 1963.

"A sentence is a sound in itself on which other sounds called words may be strung. You may string words together without a sentence-sound to string them on just as you may tie clothes together by the sleeves and stretch them without a clothes line betwe two trees, but it is bad for the clothes.

"The sentence sounds are very definite entities. . .They are apprehended by the ear. They are gathered by the ear from the vernacular. . . The most original writer only catches them fresh from talk, where they grow spontaneously.

"The ear does it. The ear is the only true writer and the only true reader. I have known people who could read without hearing the sentence-sounds and they were the fastest readers. Eye readers we call them. They can get the meaning by glances. But they are bad readers because they miss the best part of what a good writer puts into his work. Remember that the sentence-sound often says more than the words. It may even as in irony convey a meaning opposite to the words.

"I wouldn't be writing all this if I didn't think it the most important thing I know."

This is one of the most meaningful pieces on the sound of words. When a man tells about himself in his own words, the listener hears the full value and implication of the words. The sound "biography" contains an added dimension, a dimension not found in the written biography.

A profile in sound can be a minute long or two hours long. The other day I believe I was successful in producing a one-minute profile on our baby sitter. I took the sound of her singing to our child and dubbed in over thismusic the hurt words about how a cab driver had passed her up on a cold wintry night as she tried to hail him.

A portrait in sound can tell you as much or as little as a portrait in photography. People react to both from what they bring to each of these portraits. I have found that people have totally different reactions to a sound portrait of someone, compared to a visual portrait. People get much more involved in sound. With sound you preserve more than a person's thinking. There is also a time element to the sound portrait, and through time there is motion in the sound portrait.

The visual portrait is static , and only the eye moves. The visual is static, the sound moves.

There is an art to asking questions of people. One must avoid questions that can be answered with a yes or no. Instead, questions that draw out complete thoughts must be used. Sometimes one has to tell the person being interviewed to answer with complete thoughts. The word "Brooklyn" doesn't tell the complete story. "I was born in Brooklyn" does.

There are several dodges that one can use in getting people to open up. For instance, if someone is making a statement stiffly, have him repeat it by saying "I couldn't quite hear that; can you say it again?" Sometimes I'll say, "To whom are you talking?" This question usually allows the subject to re-focus, and re-examine what he has just said.

Sometimes I ask the subject to repeat the essence of my question in their answer so I can cut out my own voice later in editing. Some people are less able to express their thinking about themselves; I sometimes have to push them into expressing ideas better.

There is a great difference in reporting for a sound portrait and reporting for a newspaper. Asking a question such as "What is your name?" provides almost useless sound-profile information. One must ask questions that might bring out emotional as well as factual information from the subject. With one subject recently I had to go to the extreme of asking "Well, what kind of a nut are you to go through such hardship?" This piercing question resulted in a beautiful statement.

With a cab driver who was talking about sending his daughter through college, I felt the following statement would draw him out. "It is a shame when people don't appreciate what you're doing for them." This one sentence opened the way for him. Words and statements poured out on his relationship with his family.

Portraits in sound can happen anywhere at any time.

I'm happy if I can feel something about a person strongly and have someone hear the sound portrait and get a similar quality. If I can convey this I feel I am successful. I find it beautiful when I can show the uncommon in the common man. The real value of radio (and tape recording) is in the people-to-people aspects of it. One human being can sense another human being.

Not every portrait in sound has to come from the subject himself. When my mother died it was more meaningful for me to tell what I felt about her than to have a newscaster tell about her. I would rather hear Mrs. Kennedy talk about her husband than a distant newsman. I also did a portrait of Lincoln by using comments of people in the street. What people today think of him is meaningful and it turned out to be a beautiful portrait.

I have done sound portraits of so many subjects: the beat generation, a fight manager, a house painter, a French waitress working here in the U.S., and there was a great one on a cab driver who had Jayne Mansfield as a passenger. His descriptions of her were punctuated with colorful laughs that said as much as his words.

In general, I like to work with the mike about six inches from a person's mouth. The reason for this is that clarity and fidelity seem to be at a maximum at this distance. But most important this distance produces a feeling of intimacy, a feeling that the person is in the room with the listener.

I once did a portrait in sound of Jimmy Giuffre and put it on the air. After hearing it, his 77-year old aunt called him and said, "James, I now know what you're doing." This comment made me feel I was paid in full for my efforts.

TONY SCHWARTZ
POINTS ON PORTRAITS IN SOUND
POPULAR PHOTOGRAPHY, DECEMBER, 1964

Portraits can be of many subjects: a child ... an adult...a chorus...a sports team... a pet...a class or school...a town or city ...a departed leader. etc. The portrait can cover a moment in one situation or many moments edited into one. I believe my telling about several portraits I have recorded might give you a more specific idea:

The "Portrait of Nancy" consisted of vignettes of the voice of Nancy recorded over a twelve year period. It started with her cry at about fifteen minutes of age and then a comment recorded every six or ten months until she was twelve years old. All these segments were spliced together with five- or ten-word statements of mine placed between them telling the age and situation. Result: from a five-minute tape you can "see" a little girl grow into a"young lady".

The "Portrait of an Elderly Woman" was just an eighty-five year old woman telling her memories of her cat, "Thistleblossom." Although "Thistleblossom" died in 1929, the memory made it seem as though the animal were still alive. Listening time: one-and-a-half minutes, production time: ten.

The "Portrait of Lincoln" was made by asking people in all walks of life "Who was Abraham Lincoln?" and "What was he like?" From their answers emerges a portrait of the picture of Lincoln in people's minds over one hundred years after his death. Listening time was seven minutes and production time was forty hours.

A "Portrait of a City" was done over a nine-year period and consisted of recordings made as I came upon the interesting sounds of objects and people. The end product was a portrait of New York City that revealed its particular sound and character. Recording time was parts of nine years, editing time was three months, and listening time was thirty minutes.

At present I am working on a portrait of my daughter Michaela who is now twenty-two months old. I have recorded over fifty hours of tape of Michaela cooing, crying, laughing, trying to talk, and finally talking. I've also recorded the sound relation of people close to her- our houseworker, her pediatrician, her relatives and friends, etc. From time to time I have put together short "portraits" of material realted to a single subject. I made a three-minute "picture" of the "crazy" sounds baby Michaela evokes from people as they look at her. Another tape was a condensed "picture" of Michaela awaking in the morning. One hour of tape was cut to five minutes. It seemed like the aural counterpart of time-lapse photography. What form the finished "picture" will take, only time will tell.

An interesting thing about sound is that it can capture not only the externals as film is able to,but, unlike film, with tape you can dig into and portray the thoughts and inner feelings of people. For instance, at your daughter's graduation you can tape or photograph the appearance and sound of the situation. But with tape, you can also record the thoughts and feelings of the graduate and relatives.

SOUND RECORDINGS IN THE FIELD: TECHNICAL INSTRUCTIONS

Tascam DR – 07 – Portable Audio Recorder
Basic Instruction Guide*

***For a PDF of the entire Owner's Manual check this link:**
http://tascam.com/content/downloads/products/38/DR-07_Manual.pdf

Inserting & removing the SD Card:

- Press the cover down in the direction of the arrow to open it.
- Insert the SD card in the SD card slot and push it until it clicks fully into place.
- Close the cover after inserting the card.
- Make sure the unit power is off.
- Press the inserted SD card in gently and it will disengage from the unit so that you can pull it out completely.

NOTE: By covering this unit's built-in stereo mics with a windscreen, noise caused by wind and other sources can be reduced.

Top panel - Built-in stereo microphone
To use this stereo electric condenser microphone as the input source, select "MIC" on the Input Setting screen. If you connect an external microphone to the MIC IN jack on the rear panel, the built-in microphone becomes inactive.

FAST REWIND key
Press this key to return to the beginning of a track that is playing or stopped in the middle. If you press this key when a track is stopped at its beginning, the unit will skip to the beginning of the previous track. Press and hold this key to search backwards. When a setting screen is open, press to return to the Home Screen.

MENU key
When the Home Screen is displayed, press this key to open the Menu Screen. Press this key to return to the Menu Screen from the various setting screens. When the Menu Screen is displayed, press this key to return to the Home Screen.

HOME key
Press this key to stop recording and playback or to end recording standby. Briefly press this key to turn the speed control that is set on the Playback Control Screen (VSA and/or SPEED) ON and OFF.

FAST FORWARD key
Press this key during playback or when playback is stopped to skip to beginning of the next track. Press and hold this key to search forward.

RECORD key
When playback is stopped, press this key to put the unit into recording standby. When in standby, this key flashes. When in recording standby, press this key to start recording. The key lights while recording. When recording, press this key to pause recording.

LINE IN jack
Use this stereo mini-jack for line input.

OUTPUT LEVEL (+, –) keys
Use these keys to adjust the signal level output from the /LINE OUT jack. The volume level appears on the display during adjustment.

REC LEVEL volume
Use this to adjust the input signal level of the built-in microphone, the MIC IN jack and the LINE IN jack.

DC IN 5V jack
Connect a TASCAM PS-P520 AC adapter (purchased separately) to this jack. Do not connect other adapters.

SD card slot lid

POWER key
Press and hold this key to turn the unit's power ON and OFF

USB port
Use the included USB cable to connect with a computer USB port. By connecting this unit with a computer, you can copy WAV or MP3 music files from the computer to this unit. From the computer you can also erase files on this unit and manipulate folders. To connect to a computer, open the lid on the left side of the unit, use the included USB cable to connect the USB port of the DR-07 and the computer. The unit cannot be used when connected with a computer by USB. When connected, "USB connected" appears on the DR-07 screen. The recorder appears on the computer screen as an external drive named "DR-07."

RECORDING
- Select the audio file type that you want to record before you start recording.
- Press the MENU key to open the Menu Screen.
- Select the REC SETTING item to open the Recording Settings Screen.
- Use the FORMAT item to select the file type from the following options: WAV at 16-bit
- (factory setting) or 24-bit, or MP3 at 32 kbps, 64 kbps, 96 kbps, 128 kbps, 192 kbps,
- 256 kbps, or 320 kbps.
- Press the MENU key and select INPUT SETTING item, then press the ***Forward/Pause*** key to open the Input Setting Screen.

MIC
Sets the input source as the built-in microphone when no microphone cable is connected to the MIC IN jack (stereo mini-jack). When a microphone cable is connected to the MIC IN jack, the input microphone signal becomes the input source. If you select MIC, you should also set the input functions. (See "Setting the MIC input functions" below.)

CAUTION - Use headphones to monitor when you are recording with a microphone. If you use speakers to monitor, the sound output from the speakers may also be recorded, causing a poor recording and even feedback.
Gain = MID
Type = Stereo
Power = Off when using built-in mic
Low Cut = Off unless there is a lot of wind noise where you are recording. Then

choose either 40HZ or 80HZ as the cut-off frequency.
Level Control = (limiter) can be set on Auto. The default is OFF.

Press the RECORD key to begin recording standby. The key flashes red and the Record Screen appears. The input signal is output from the Headset/LINE OUT jack.

Use the REC LEVEL volume control on the right side of the unit to adjust the input level.

The L/R meter shows the input level. If the input is too high, a line remains at the right end of the level meter and the PEAK indicator to the left of the RECORD key lights. Set the level as high as possible without causing the PEAK indicator to light when the loudest sounds occur.

TIP
In addition to adjusting the REC LEVEL volume, try changing the distance and angle between the microphone and the sound source. To record the sound of a source most effectively and accurately, point the front of the DR-07's built-in mics toward the sound source with the LCD facing up. An easy way to set the input level is to raise it until the PEAK indicator lights while inputting as loud a noise as you expect to record. When the PEAK indicator lights, lower the input level until it no longer lights.

NOTES:
Press STOP/HOME to end recording standby.

Before starting the following operation procedures, input selection and level adjustment should be completed, and the Home Screen should be open.

Press RECORD to begin recording standby. To start recording, press the RECORD key again. When recording starts, the RECORD key lights continuously, and the display shows the elapsed recording time and the remaining recording time.

Press the STOP/HOME key to end recording and create the audio file.

To pause recording, press the RECORD key. Press the RECORD key again to restart recording in the same track.

Systems Settings & Formatting:
Use the INITIALIZE item to restore the various settings of this unit to their factory settings.

Formatting the SD card
Using QUICK FORMAT or FULL FORMAT erases all music files on the card and automatically creates new "MUSIC" and "UTILITY" folders as well as the "dr-1.sys" file that is necessary to use the SD card with the DR-07.