SIGGRAPH 2002
Course 8

My Work Is Finished, Now What Do I Do? A Guide to Making a Dynamite Demo Reel

Course Title: My Work Is Finished, Now What Do I Do? A Guide to Making a Dynamite Demo Reel

Course Organizer: Barbara Helfer and Tim Merritt

Summary Statement: All your hard work has been put into the production of making animation or doing the research. Now that you are finished, what are you going to do with your work? This course goes through a step by step process of getting your movie or research into a video product, which you can present with confidence to colleagues and future employers.

Speaker Names:

Barbara Helfer, Ohio State University

Tim Merritt, Georgia State University

Mary Nichols, Middle Tennessee State University

Dan Pfeifer, Middle Tennessee State University

Expanded Statement: Much time and effort is expended in the making of an animation or completing one's research, but little time is taken in thinking about the presentation of that material. This course takes an attendee through the process of creating a demo reel starting from the beginning with basic video technology and terms and ending with the distribution of the product. The course breaks down the day into a four-part process: preproduction, production, post-production, and distribution. Learn how to plan and distribute your work in a manner that will impress you colleagues and help you with your job search.

List of Prerequisites: Knowledge about the basics of computer graphics and elementary video knowledge is needed.

List of Topics: Topics will include an overview of the video including terminology, compression issues, non-linear editing systems, aesthetics of a video project, and considerations for the final output.

Course Syllabus:

Pre-production

Introduction: Helfer and Merritt

Basics of technology: Helfer

- Comparison of Digital and Analog Video
  - Composite
  - Component
  - S Video
  - DV
- Colors
- Importing
- Compression Formats: Merritt
  - Mpeg II
  - Mpeg IV
  - Motion Jpeg
- Popular Codecs

Pre-production: Nichols

- Planning
- Audience
- Content outline
- Storytelling
- Aesthetics
- Treatment
- Storyboarding

Production

Production

- Framing: Merritt
  - Aspect Ratio
    - 4:3, 16:9
  - Field of view
- Composition: Merritt
  - Rule of thirds

- Leading the Action
- Equipment: Helfer
  - Non-linear editors
    - Hardware
    - Software
  - Linear editors
- Depth of Field: Merritt
- Effects: Merritt
  - Standard: keys, wipes, dissolves
  - Digital Effects
  - Compositing
  - Filters
- Audio: Pfeifer

Post-Production
- Editing styles: Nichols
- Aesthetics: Merritt
- Comparison of Tape Formats: Helfer
- Tricks and techniques: All

Distribution Issues
- Streaming: Merritt
- Copyright: Nichols
  - Protecting your work
  - Infringing on the work of others

Suggestions for Shorter Presentations: This course can be broken down into four sessions with the theory and preproduction in one session, production in the second, post production issues in the third, and finally the distribution and copyright issues regarding their work in the last session.

Course History: A course, which dealt with video theory as it relates to computer animation, web, and multimedia applications, was presented at the SIGGRAPH 1997 Conference. While this course will present some of the theory of video, which the S97 course presented, the primary focus of this course is on

the basic concepts of putting together a video presentation and telling the story you want to tell.

Description of the Course Notes: We will include a detailed outline, slides with extended information as well as a bibliography of papers, books, websites, and articles.

Special Notes Requirements: We will include our materials as well as the video for the tutorial for the Course Notes CD-ROM, but the video does not need to be printed as an addition for the printed course notes. The videos will be provided to the CAL on CD-ROM and through a website if attendees would like to download them for future use.

Special Presentation Requirements: We will need no special requirements. We will provide our own copies of FinalCut Pro, Premiere, and Vegas Video for demonstrations within the class. Screen dumps will be provided in the course notes of the AVID System as well as the Media 100 system.

Course Presenters Information:
Barbara Helfer
Helfer and Associates
Video Manager

Barbara Helfer is a Video Manager with a teaching focus in motion capture, digital video, and compositing aspects of computer graphics with video. She was a speaker in the SIGGRAPH 2001 Fundamentals Seminar emphasizing the role of the SIGGRAPH venues in the educational development of the attendee. She is an ACM, ACM SIGGRAPH, and COACM member. She has worked as a course reviewer since 1993 as well as being the SIGGRAPH Courses Chair in 1997 and 1999. She heads the Pathfinders Program for SIGGRAPH 2001. She received her undergraduate and graduate degree from the University of South Carolina in Journalism and Mass Communications. She has worked professionally as technical director for several television stations, as well as designing and maintaining corporate video facilities.

Tim Merritt

Video/Multimedia Manager
Instructional Technology Center
College of Education
Georgia State University

Tim Merritt has worked with and taught in digital and desktop video for four years as Manager of Video and Multimedia Services at the Instructional Technology Center in the College of Education at Georgia State University. He holds an MA in Communication Arts, and has taught numerous classes in film studies and broadcast production. He has presented in DV for Educators at the GSU's Technology for Teachers conference, the Georgia Distance Learning Association Conference, and the National Educational Computing Conference. He consults throughout the university in video and multimedia applications, and regularly teaches and consults on video and multimedia production.

Mary Nichols, Ph.D.
Associate Professor
Electronic Media Communication
Middle Tennessee State University

Mary Nichols teaches video production in the Electronic Media Production sequence at Middle Tennessee State University. Courses taught include entry level video as well as advanced field production. She also teaches courses in Television as Popular Culture and Mass Media Law. She has been a regular presenter at the International Television Association (now known as Media Communication Association-International, MCA-I) conference, speaking on copyright issues. After authoring a book on copyright for producers, she presented workshops around the country explaining and discussing copyright law. She has worked with SIGGRAPH Television (STV) since 1998, served as STV Program Chair in 2000, and was recently appointed Program Chair for Pathfinders for 2003. She received her B.A. and M.A. from Clarion University of Pennsylvania in Mass Communication and her Ph.D. in Mass Communication Research from the University of North Carolina-Chapel Hill. Professionally she was active in corporate communications prior to her academic career and is still active in the production market in the Nashville area.

Dan Pfeifer
Assistant Professor
MTSU Depart. Of Recording Industry

Dan is an Assistant Professor of Recording Industry and Technology Internship Coordinator, received his Bachelor of Music degree from MTSU and his M.A. degree in audio engineering and music production from the University of Memphis. While attending the University of Memphis, he received an education grant from the Audio Engineering Society. Dan has worked as chief audio engineer for Memphis
Sound Productions, staff engineer for Media General Broadcast Services and studio engineer and producer for other independent studios. He has worked for Capitol, Chrysalis, MCA and Columbia Records, as well as artists ZZ Top, B.B. King, Albert Collins and Kevin Paige. He has been a stage manager, house engineer, monitor mixer and stage technician for live concerts. Dan has served as an officer and member of the Board of Governors of the Memphis chapter of the National Academy of Recording Arts and Sciences and was responsible for establishing the Governors in the Schools Program, modeled after the Grammy in the Schools Program. He won the " Premier Audio Engineer " award from the Memphis NARAS chapter in 1991. Dan received an MTSU Outstanding Teacher Award in 1997.

Table of Contents

Introduction of Speakers

- Tim Merritt, Georgia State University
- Mary Nichols, Middle Tennessee State University
- Barbara Helfer, Helfer and Associates
- Dan Pfeifer, Middle Tennessee State University

Basic Terminology

- Composite
- Component
- S-Video
- Digital Composite
- Digital Component

Basic Terminology

- Composite
  - A video system in which three color components are simultaneously present in a single signal. Examples are NTSC and PAL, which use the frequency interleaving principle to encode luma and chroma.

Basic Terminology

- Component
  - A video system that conveys three component signals independently, free from mutual interference.

Basic Terminology

- S-Video
  - An interface that conveys luma and quadrature modulated chroma separately as two signals n a specific four-pin mini-DON connector.

Basic Terminology

- Digital Composite
  - Is the digitized waveform of NTSC or PAL video signals with specific values assigned to sync, black, and white levels.

Basic Terminology

- Digital Component
  - It uses separate color components such as YCbCr or RGB

Basic Terminology

- Analog Formats
  - VHS and SVHS
  - 8mm and Hi8
  - 3/4" Umatic
  - 1 inch type C
  - Betacam
  - Betacam SP

Analog Formats

- VHS
  - VHS stands for video home system. This VTR was introduced to the market by JVC.
  - VHS, it was the first consumer format to be widely accepted for home use
  - Has about 250 lines of resolution

Analog Formats

- SVHS
  - A videotape format based on VHS, but with wider luminance bandwidth, which has a potential horizontal resolution of more than 400 lines. Allows component recording and playback without cross-luminance or cross-color artifacts.

Analog Formats

- 8mm
  - When Betamax didn't survive, 8mm video was introduced. The format in part tried to cash in on the "8mm" name that had long been a household name in home movies.
  - Eastman Kodak was one of the originators of 8mm video.

Analog Formats

- Hi-8
  - Sony introduced Hi8, a higher quality version of 8mm.
  - This is also used as an acquisition format, and under optimum conditions can produce very high quality video.

Analog Formats

- 3/4" Umatic
  - The first widely used cassette format was introduced in 1972.
  - Originally it was intended as a home and institutional format.
  - Because of its advantages, primarily its small size, it was soon adapted for field production use.

Analog Formats

- 1 inch type C
  - With the one-inch Type C format, still-frame, slow-, and accelerated-motion playbacks became possible for the first time.
  - During the 1980's Type C was the dominant format in broadcasting and production facilities.

Analog Formats

- Betacam
  - Sony Corp. introduced Betacam in 1982, based on a 1/2-inch tape format that had been pioneered by companies such as Grundig and Phillips.
  - Betacam combined the camera and recorder into a single unit. Thus, the term camcorder was born.

Analog Formats

- Betacam SP
  - In 1987, Sony improved on the concept with Betacam SP
  - SP stands for superior performance
  - Exceeded the quality of 1" Type C
  - Production companies and television station began relying on Betacam for both studio and non-studio production.

Basic Terminology

- Digital Formats
  - Digital Betacam and Digital Betacam SX
  - Digital-S
  - DV
  - Dvcam
  - DVCPRO
  - MiniDV

Digital Formats

- Digital Betacam SX
  - A Sony format which is the digital successor to Betacam SP
  - This format is geared mostly at news operations
  - Offers a high compression rate of 10:1

Digital Formats

- Digital Betacam
  - A Sony format which is the digital successor to Betacam SP
  - Uses 1/2" tape format
  - Has the compression ratio of 2.3:1

Digital Formats

- Digital-S
  - JVC's digital format is designed to be compatible with VHS
  - The compression rate is 3.3:1

Digital Formats

- DV
  - This is a consumer digital format
  - Uses 1/4" cassettes
  - Has a compression ratio of 5:1
  - Is the basis for DVCAM, DVCPRO, and MiniDV

Digital Formats

- Dvcam
  - Sony's version of DV
  - Differs from other DV format

Digital Formats

- DVCPRO
  - Panasonic's version of DV
  - It has increased the head to tape speed to 33.8 mm
  - It has a compression rate of 5:1

Digital Formats

- Mini DV
  - This is the name of a cassette format.
  - Sometimes is mistaken for a recording format
  - Can use MiniDV cassette in DV, Dvcam, and DVCPRO

Basic Terminology

- Digital formats
  - DV25
  - DV50
  - DV100

Basic Terminology

- DV 25
  - DigitalS, DV, DVCAAM, DDVCPRO
  - All the luminance resolution of ITU 601-4
  - Betacam SP quality at much lower prices
  - Excellent multigenerational performance
  - Digital Dubbing with IEE 1394
  - Non linear editing capabilities
  - Faster, cheaper, better

Basic Terminology

- Defined
  - Specification of consumer digital VCR's using 6.3mm magnetic tape, HD Digital VCR Conference, December 1994
  - DV, DVCAM, D-&, Digital 8
  - All use standards compression and formatting
  - D-7 has 4 difference header bits and difference VAUX, AAUX, and Subcode blocks

Basic Terminology

- 4:1:1 YUV encoding; 5:1 CBR DC
  - 4:2:0 for 625/50 (PAL) Dv/DVCAM
  - All the luminance resolution of ITU601-4
  - 720*480= 525/59.94
  - 720*576= 625/50
  - Half the color resolution of ITU601-4
  - 180*480 = 525/59.94Dta
  - 180*576 = 625/50 D-7
  - 360* 288 = 625/50 DV, D8, and DVCAM

Basic Terminology

- Luma Sampled at 13.5 MHz
- 4:2:2 for ITU-R BT-601
- 4:1:1 for 525/59.94 DV
- 4:2:0 for 615/50 DV

Basic Terminology

- DCT compression
- Intra-frame- two fields together
  - Easy to edit
  - Adaptive to field or frame compression
- Adaptive Q tables at the macroblock level
  - Allows for tuning compression across an image
- Fixed data rate of 25 Mb/sec for video
  - 5:1 compression rate
  - 3.6 Mb/sec data rate for Audio and Video

Basic Terminology

- Audio sample rates
  - 48 kHz, 16 bit linear
  - 44.1 kHz, 16 bit linear
  - 32 kHz, 12 bits nonlinear* 2 or 16 bits linear
- Data
  - Timecode, time, date, camera info
  - Program codes: WX data

Basic Terminology

- Current Specifications
  - DV IEC 61834
  - D-7/ DVCPRO
    - SMPTE 306M video compression
    - SMPTE 307 M tape cassette
    - SMPTE 314M data formats for DV25/DV50
  - D-9/ Digital-S
    - SMPTE 316M, video compression
    - SMPTE 317M, tape cassette

DV Defects

- Compression Artifacts
- Dropouts because it is a tape
- 4:1:1 color limits chroma keying
- Edge bleeding
- 8-bits; banding, post-proc limits
- YUV-RGB conversions
  - Clipping vs.. dynamic range
- Codec differences

Compression Artifacts

- Quilting- information between blocks
- Mosquito noise- ringing in the high frequency details

DV 50

- JVC D-9; Panasonic DVCPRO50
  - Twice as good as DV25
  - 3:3:1 compression, 50 MBPS, using 2 codecs
  - 4:2:2 chroma sampling
  - 486 lies (525/59.94) plus two uncompressed
  - D-9 uses 1/2" VHS-sized tapes
  - DVCPRO50 use 1/4" D-7 tapes

DV50

- Panasonic DVCPRO Progressive
  - 480/60p; 16:9
  - 4:2:0 dynamic chroma sampling
  - 480i output capability
  - Great image quality
  - VTRS play DVCPRO50, D-7 tapes
- Editing?
  - Not cheap

DV100

- JVC and Panasonic
  - Backwards compatible; SDTV D-7 or D-9
  - 720/60p, 1080/30i. 1080/224p formats
  - Not cheap, decks start at $45K
  - DVCPROHD shipping
- Sony
  - HDCAM: 135 MBPS
  - Not compatible with any DV formats

DV100

- Vendor predicament - if DV25 is good enough for most buyers, will they buy significantly higher priced equipment
- DVCPROHD comparable in price to DigiBeta, does it make sense to shoot high-end SDTV formats?

Tape Limitations

- Dropouts
  - A single frame hit
  - One head clogs
  - Data replicated from a previous frame

Acknowledgments

- Articles
  – AV Video Multimedia Producer, Sept. 2001, p32-33

Acknowledgments

- Books
  – A Technical Introduction to Digital Video, Charles Poynton, 1996, John Wiley & Sons,   ISBN 0-471-12253
  – Digital Videotape Recorder, John Watkinson, 1994, Focal Press, ISBN 0-240-51373-8
  – NAB Handbook, National Association of Broadcasters, ISBN(various)
  – Television Engineering Handbook, K. Blair Benson, 1986, McGraw Hill, ISBN 0-07 004779-0
  – The Guide to Digital Television, Michael Silbergleid, 1998, Miller Freeman

Acknowledgments

- Web
  – http://www.adamwilt.com
  – http://www.cybercollege.com
  – http://www.lionlmb.org

Color

- Color is light that has been divided into one or more visible light waves by some object.
- Rainbow colors are called spectral colors because their wavelengths fall into the visible electromagnetic spectrum.
- The waves of the visible spectrum are not colored, we perceived them that way.

Color

- Basic Physiological Factors
  - Three basic color sensations or color attributes
    - The color itself- red, green, blue
    - The color strength-how deep or washed out a color looks
    - How light or dark it appears

Color

- Color attributes
  - Hue
    - Describes the color itself, only colors of the color spectrum are true hues.

Color

- Color attributes
  - Saturation
    - Sometimes called chroma
    - Describes the strength or purity of a color
    - Highly saturated colors look rich, while low saturation looks faded
    - Represents the amount of white, black, or gray mixed into the hue

Color

- Color attributes
  - Brightness
    - How light or dark a color appears in a black-and-white photograph
    - Depends on how much light the color reflects
    - Perceptually brightness refers to how light or dark an image appears to you
    - Lightness is the perceiving of brightness
    - Brightness can be measure by a light meter

Color

- Color models
  - An attempt to standardize the color attributes and show their interrelationship.
  - Quite helpful to printers and computer generated images which need a standard to assure accurate color representation
  - Video and film have so many other factors that color models are relatively of little use.

Color

- Compatible color
  - Technically for NTSC signals, it means that it can be reproduced on a black and white television screen
  - Aesthetically it means that the various colors used in a scene have enough brightness that they will show up on a black and white television set.
    - Two highly saturated hues with the same level of brightness will been seen as the same gray.

Color

- Compatible color
  - To be interesting aesthetically, a scene needs to have variations in hue, saturation, and brightness.
  - Rule of thumb, have individual colors differ by two or more gray scale steps.
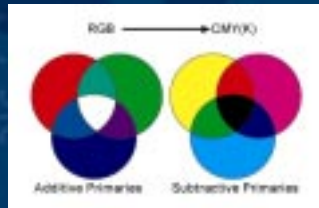
Color

- Additive color mixing
  - Primaries for additive color are red, green, and blue.
  - When added together red, green, and blue form to make white
  - Computers and video use additive color principles

Color

- Subtractive color mixing
  - Primary colors are yellow, cyan, and magenta
  - Involves filtering out the white light all the colors accept for the ones you would like
  - Printers, filmmakers, and painters use subtractive color mixing.

Color

- Additive and Subtractive Color Models

Color

- Light environment
  - Color changes with the amount and kind of light that falls on an object
  - A minimum amount of light is needed because color is filtered and reflected light
  - Too much light can distort colors as well because we see not only the color but the white of the light being reflected back.

Color

- Surface reflectance
  - Colored objects reflect partly on the amount of light that falls on it, but also on how much light the surface object reflects.

Color

- Color temperature
  - No white light is pure white, it always has a cast to it.
  - The relative reddish or bluish tint of light is measured by color temperature in degrees Kelvin.
  - The more bluish the light the higher color temperature; the more red the lower the color temperature.

Color

- Surrounding colors
  - The way we perceive colors is greatly influenced by the surrounding colors
  - Similar colors- depth of field and distinguishing between objects is hard when the foreground and the background are the same color.
  - Contrast- in video you don't want to exceed 40:1, which means that the brightest color can be only 40 times brighter than the darkest color.

Color

- Simultaneous contrast
  - Describes the influence of the surrounding color on the hue of the foreground
  - Foreground color takes on a tint that is complementary to the background color

Color

- Color juxtaposition
  - When two highly saturated colors are juxtaposed you can create color vibrations
  - The two colors seem to compete with each other pushing the simultaneous contrast to a point where it becomes an artifact.
  - Similarly in black and white objects when narrow strips are placed side by side a moiré effects occurs.

Color

- Color constancy
  - Colors appear to be uniform
  - Your perception is guided not only by what you actually see, but by your mental operating system as well.
  - Your mental operating system tries to stabilize the environment as much as possible

Color

- Color and feelings
  - Particular color groups influence our perception and emotions in specific ways.
  - Certain colors seem warmer than others, and make some objects look closer or further away.
  - A perceptual effect that rarely works in isolation, but rather with other aesthetic variables.
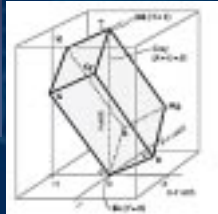
Color

- Color energy
  - Is the aesthetic impact a color has on us
  - The energy of a color depends on:
    - Hue, saturation, and brightness attributes
    - The size of the colored areas
    - Contrast between foreground and background colors.

Color Space

- A mathematical representation of a set of colors
- Three fundamental color models
  - RGB (computer graphics and color television)
  - YIQ, YUV, or YCbCr (broadcast and television systems)
  - CMYK(printing)

Color Space

Color Space

- None of the color spaces are directly related to intuitive notions of hue, saturation, and brightness
- Development of other models, such as HSI and HSV to simplify programming, processing, and end-user manipulation.

Color Space

- RGB
  - Additive color space
  - Represented by a three-dimensional Cartesian Coordinate space

Color Space

- YCbCr
  - Developed as a recommendation to ITU-R BT601
  - Scaled and offset version of YUV color space
  - Y is defined to have a nominal range of 16 to 235
  - Cb and Cr are defined to have a nominal range of 16 to 240 with 128 equal to zero

YCbCr Sampling Formats

- 4:4:4
- 4:2:2
- 4:1:1
- 4:2:0

4:4:4

- Each sample has a Y, Cb, Cr value
- Each sample is typically 8 bits per component for applications
- Each sample is typically 10 bits per component for editing applications
- Each sample requires 24 bits or 30 bits for editing

4:2:2

- For every two horizontal Y samples there is one Cb and Cr sample
- Each is 8 bit or 10 bit per component depending upon application
- Each sample requires 16 or 20 bits
- Y samples that has no corresponding Cb or Cr data uses interpolation from previous and the next sample of Cb and Cr data.
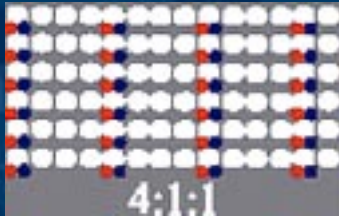
4:2:2

4:2:2
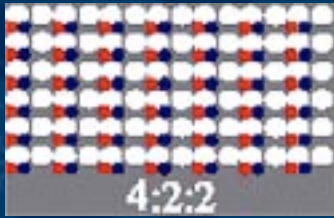
4:2:2

- Tape formats which support 4:2:2 color space
  - D-1
  - D-5
  - DigiBeta
  - BetaSX
  - Digital-S
  - DVCPRO50

4:1:1

- Four every four horizontal Y samples, there is one Cb and Cr value
- Each component is typically 8 bits.
- Each sample requires 12 bits
- Y samples that has no corresponding Cb or Cr data uses interpolation from previous and the next sample of Cb and Cr data.

4:1:1

4:1:1

4:1:1

- Tape formats which support 4:1:1 color space
  - NTSC DV
  - DVCAM
  - DVCPRO

4:2:0

- Used primarily in H.261 and H.263 video teleconferencing, MPEG 1 video compression, and DV 625/50
- Rather than horizontal-only reduction of 4:2:2 and 4:1:1, 4:2:0 implements a 2:1 reduction of Cb and Cr in both the horizontal and vertical directions

4:2:0

4:2:0
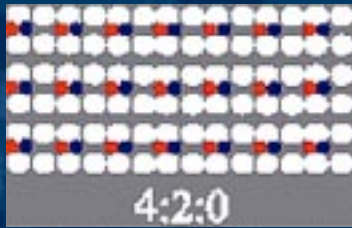
4:2:0

- Tape formats which support 4:2:0 color space
  - PAL DV
  - DVD
  - Main-profile MPEG-2

Importing

- IEEE 1394 is the standard
  - Apple FireWire and Sony I.LINK are trademarked applications to the standards
- Short distance network; data and control
  - 4.5 meters
  - Up to 100 meter via repeaters, fiber, Distance DV cables

IEEE 1394

- DV and IEEE 1394, while compatible are not the same
- Other data can travel on IEEE 1394 protocol
  - Digital still images
  - Disk drives
  - IP networks
  - ATSC MPEG-2 bitstreams: DTV STB's DVHS, DTV TV's

IEEE 1394

- 1394 and DV work well together
  - Cheap, easy way to transfer data
  - Lossless transfer makes DV NLE system work
  - Because 1394 and DV are linked vendors and consumers think they are synomous, they aren't

Acknowledgments

- Articles
  - SIGGRAPH 97, Computer Animation Using Digital Video for the Web, Multimedia, and Broadcast

Acknowledgments

- Books
  - A Technical Introduction to Digital Video, Charles Poynton, 1996, John Wiley & Sons,   ISBN 0-471-12253
  - Digital Videotape Recorder, John Watkinson, 1994, Focal Press, ISBN 0-240-51373-8
  - The Guide to Digital Television, Michael Silbergleid, 1998, Miller Freeman
  - Video Demystified, Keith Jack, 1996, HighText Interactive, ISBN 1-878707-23-X

Acknowledgments

- Web
  - http://www.adamwilt.com/
  - http://www.dv.com/

Video Compression: Codecs

- "**CO**mpression/**DEC**ompression"
  - Encoding algorithms to remove redundant video and audio data
  - File size reduced further by removing other data
  - Which other data, and its effectiveness, determines quality of codec
  - Spatial vs. Temporal encoding

Spatial Encoding

- Spatial: removes repeated instances of flat color - static background areas, etc.
- Specifies coordinates of repetitive area
- Repeats data stored for the area rather than repeating it for each frame

Temporal Encoding

- Keyframe: complete reference frame
- Codec looks for changes between keyframe and consecutive frames
- Stores only differences:
  - *delta frames, difference frames*
- New keyframe at set intervals
- But: compression can be sl-o-o-o-ow

Video Compression: Codecs

- Determined by distribution method
- CD-ROM: Photo JPEG, Sorenson
- VideoCD: MPEG-1 (<VHS quality)
- DVD: MPEG-2
- NTSC/PAL Tape: DV codec
- Web: many codecs available for Real, Windows, QuickTime

For Best Compression Results

- *GIGO*: "garbage in, garbage out"
- Capture the cleanest possible signal
  - Codec treats noise (static, snow) as signal
  - Slows processing
  - Increases file size and data rate
  - Looks bad!

For Best Compression Results

- Soft, diffused lighting looks best
- High contrast makes more visible compression artifacts: "jaggies"
- Limit camera and subject movement to the degree possible

For Best Compression Results

- Frame tightly for desktop video
  - Long shots too small
  - Important visuals lost in small frame
- Limit or exclude background detail
  - Like noise, slows compression, increases file size, data rate
  - Not visible on small frame anyway
- Use static mask for unchanging background

For Best Compression Results

- Avoid fancy transitions
  - Cuts OK; signal codec to insert key frame
  - Dissolves, etc, require high compression
- Freeze Frames can be a good transition
  - Allows more video to buffer (streaming)
  - Audio can continue running

For Best Compression Results

- Use few titles
- For CD or web, make titles 25% bigger than in regular video
- For tape, feather edges of title elements
  - Same problem as high contrast images
  - Helps avoid interlace artifacts

Production Proposal

- Needs Analysis
  - A detailed analysis
  - is of the problem and why the video is needed to address the problem. Remember-you are not addressing the need for the clients product, but the need for the video.

Production Proposal

- Audience Analysis
  - Who is the client trying to reach with this video. (E.g. how much money do they make, age, gender, race, income, personality, style . . .etc.)

Production Proposal

- Audience Objectives
  - What will the audience have learned after viewing this video. Try to use action verbs in creating your objectives. (E.g. "The audience will be able to list three advanced features of the widget.")

Production Proposal

- Audience Objectives
  - You will need about three or four audience objectives. Remember, these are not YOUR objectives, but objectives the audience will be able to accomplish.

Production Proposal

- Content Outline
  - This outline will detail ALL of the information you must provide in order that your audience will be able to achieve the objectives you've established

Production Proposal

- Content Outline
  - If you think they should be able to list three advanced features of the widget, you must tell them what those features are.
  - You would also want to give any information that might help the audience understand the difference between regular features and the "advanced" features.

Production Proposal

- Treatment
  - How will the information in your content outline be presented to the audience? This should be extremely detailed, including what the set for each shot will look like, what the talent looks like, what they are wearing, where they are standing, what kind of camera shot you intend to use. . .etc.

Production Proposal

- Treatment
  - After reading this treatment, the client should have "seen" the entire video in their mind. The more detailed you are here, the less likely the client will be "surprised" when they see the final cut.

Production Proposal

- Storyboard
  - The storyboard contains thumbnail sketches of each shot change. It is a visual representation of the treatment.

Production Proposal

- Script
  - The script is either full-page or partial page containing the final script copy for the talent, talent and camera blocking descriptions and camera shots and placement. You should be able to hand the script to a director who has never heard your treatment and it should come out exactly as you had it planned.

Production

- Framing & Composition
- Aspect ratio
- Effects
- DV Effects

Framing

- Field of view
  - XLS/ELS: Extreme long shot
  - LS: Long shot
  - MS: Medium shot
  - CU: Close up
  - XCU/ECU: Extreme close up

Framing: Field of view

- XLS/ELS: Extreme long shot

Framing: Field of view

- LS: Long shot

Framing: Field of view

- MS: Medium shot
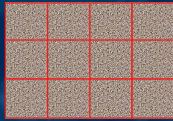
Framing: Field of view

- CU: close up

Framing: Field of view

- XCU/ECU: Extreme close up

Aspect Ratio

- 4:3

- 16:9
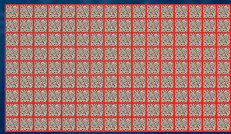
Composition

- Rule of thirds: primary compositional elements fall on these lines
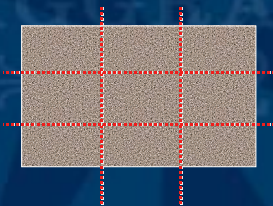
Depth of Field

- Depth of area actually in focus
- Relationship of
  - Focal length of lens
  - Aperture (lens opening)
  - Distance of camera to subject

Shallow Depth of Field

- Long lens (telephoto, zoomed in)
- Wide aperture
- Longer subject-camera distance

Out of focus

In focus
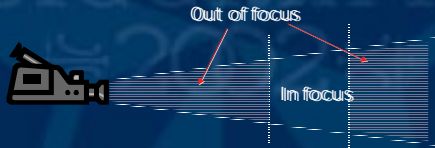
Shallow Depth of Field
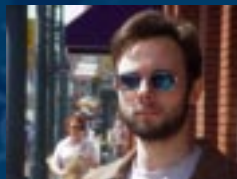
- Long lens (telephoto, zoomed in)
- Wide aperture
- Longer subject-camera distance

Deep Focus

– Shorter lens (wide angle, zoomed out)
– Narrower aperture
– Shorter subject-camera distance

Out of focus

In focus
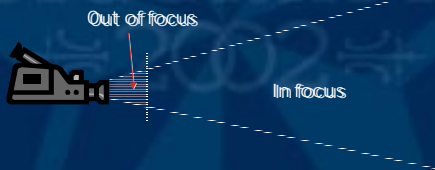
Deep Focus

- Shorter lens (wide angle, zoomed out)
- Narrower aperture
- Shorter subject-camera distance

Effects

- Dissolves, Wipes, Keys
- Digital Effects
- Compositing
- Filters

Dissolve

- The first shot fades out as the second fades in

Wipes

- The first clip is "wiped" off to reveal the second

Keys

- A Key places text over the image

Space Walk!

DV Effects

- Compositing
  – Split screen
  – Picture in Picture
  – Transparency

Split Screen

- Two shots - framed for half screen - side by side

Picture in Picture

- A scaled-down clip composited over another

Transparency

- Layers with transparency adjustable by varying criteria

Aesthetics

- 90% of all edits:
  - Straight cuts
  - Narrative continuity within a scene
- The rest:
  - Dissolves, fades
  - Create distinctions between scenes
  - Wipes, etc: attention-grabbing transitions for specific effects

Non-Linear Editing Systems

- NLE's
  - Come in a wide variety of price ranges
    - Inexpensive
    - Prohibitive for most
  - Come in with different
    - Software only
    - Hardware and software bundled
    - Complete systems

Software

- Discreet Edit 6, $8,000 software
  - Windows2000
  - Multicam editing
  - DV compatibility
  - Uncompressed video
  - Works best with Matrox DigiSuite LE and Matrox DigiSuite capture cards

Software

- Apple Final Cut Pro,3.0, $999
  - Mac Designed by Premiere creator.
  - Combines video editing, compositing, and special effects.
  - Matrox's announcement of the RTMac hardware acceleration adds real time features
  - Real time previewing on Mac G4's that run 500MHz or faster

Software

- Adobe Premiere 6.0, $549 , upgrade,$149
  – Mac/PC. The popular timeline-based editing software is able to switch between timeline-style and 3-point-style editing.
  – New version 6 offers built-in, cross-platform support for a large selection of DV devices,
  – An enhanced user interface, new professional editing tools
  – Seamless integration with other Adobe applications.

Software

- Ulead MediaStudio Pro 6.5, $495
  – Windows 95/98, NT, Me, 2000, XP
  – MPEG-2, DV, and MP3 native.
  – Strengths in text and rotoscoping.
  – Built-in DVD/VCD authoring software

Software

- Vegas Video 3.0, $420
  – Windows98, Me, 2000, XP
  – Composite video and audio
  – OHCI compliant DV card allows for DV in and out
  – Layer sophisticated effects

Software

- iMovie
  - Included with every Mac purchase.
  - Easy to use
  - Limited on transitions,
  - FireWire in and out

DV Cards

- DV Cards under a $100
  - ADS PyroDV, $79.95
    - NLE App: Ulead Video Editor
    - No DVD Authoring
    - Compression: DV
    - No Real-Time Option

ADS PyroDV

- Great FireWire Card
- Ulead's Video Studio
  - Easy interface to learn
  - Limited
- Card works well with other NLE such as Premiere, XpressDV, Vegas Video 3

DV Cards

- DV Cards under a $200
  - Pinnacle Studio DV 7, $129.95
    - NLE App: Studio 7
    - No DVD Authoring
    - Compression: DV
    - Real-Time preview in window on VGA monitor
    - Smart Capture low resolution batch capture

Pinnacle Studio DV 7

- Studio 7
  - Easiest to use
  - Tool Rich
  - Interface extremely friendly and easy to navigate
  - Media management system
  - TitleDeko titling & Hollywood FX transitions
  - SmartCapture- low res images 150Mb/hr

DV Cards

- DV Cards under a $200
  - ADS USB Instant DVD, $199.95
    - NLE App: Video Studio
    - DVD Authoring: My DVD
    - Compression: MPEG
    - No Real-Time

ADS USB Instant DVD

- Easiest way to get material from camera to a CD-ROM or DVD
- Breakout box uses USB jack
- Video of good quality

DV Cards

- DV Cards under a $300
  - Dazzle DM7000 DVC2, $249.95
    - NLE App: MovieStar
    - DVD Authoring: DVDit! Le
    - Compression: MPEG
    - No Real-Time

Dazzle DM7000 DVC2

- Uses C-Cube technology with real-time MPEG2 encoding
- Analog video source only
- Easy to use and setup is a breeze

DV Cards

- More expensive cards
  - Vitec DCM30PLUS, $699.95
    - NLE App: MPEG Toolkit
    - DVD Authoring: Roxio VideoPack 5
    - Compression: MPEG
    - No Real-Time

Vitec DCM30PLUS

- Comes with tools and utilities needed to produce VCD/SVCD/DVD-Video and MiniDVD
- Selection of compression rates using variable or fixed bit rates
- Video out allows for MPEG playback on a television screen

Getting Started in NLE

- Ulead Media Studio Pro 6.5 DV, $249.95
  - NLE App: MS Pro 6.5
  - DVD Authoring: DVD Plug-Ins for MS Pro
  - Compression: DV & MPEG2
  - Real-Time: Real-Time preview in window on VGA monitor
  - Full MS Pro 6.5 a

Getting Started in NLE

- ADS Pyro Platinum, $279.95
  - NLE App: Premiere 6
  - DVD Authoring: MyDVD
  - Compression: DV
  - No Real-Time
  - Full Premiere 6a

Getting Started in NLE

- Pinnacle Studio Deluxe, $299.95
  - NLE App: Studio 7
  - DVD Authoring: Express
  - Compression: DV
  - Real-Time: Preview in window on VGA monitor
  - Analog and DV I/O w/ Breakout Box
  - Smart Capture

Real-Time FX DV NLE Systems

- Pinnacle DV500Plus, $499.95
  - NLE App: Premiere 6
  - DVD Authoring: Impressions SE
  - Compression: DV
  - Real-Time: Dissolves, Wipes, Titling
  - Analog and DV I/O w/ Breakout Box
  - HFX 3D transitions

Real-Time FX DV NLE Systems

- Matrox RT2500, $799.95
  - NLE App: Premiere 6
  - DVD Authoring: DVDit! le
  - Compression: DV & MPEG2
  - Real-Time: 3D transitions, particles FX, Blur & Mask
  - Analog & DV I/O w/ Breakout Box
  - After Effects output

Real-Time FX DV NLE Systems

- Pinnacle Pro-One, $899.95
  - NLE App: Premiere 6 & Commotion
  - DVD Authoring: Impressions DVDSE
  - Compression: DV
  - Real-Time: 3D transitions, Hollywood FX RT, image stabilizer, speed control
  - Analog and DV I/O w/ Breakout Box
  - 10 layers of real-time filters & FX

Real-Time FX DV NLE Systems

- Canopus DV Storm SE Plus, $1299
  - NLE App: Premiere 6 & Storm Edit
  - DVD Authoring: DVDit! le
  - Compression: DV
  - Real-Time: 3 video layers, multiple layers of filters, advanced image correction
  - Analog & DV I/O w/ Breakout Box
  - Real-Time DV output

Real-Time FX DV NLE Systems

- Pinnacle DVD1000, $1499
  - NLE App: Premiere 6 & Storm Edit
  - DVD Authoring: Impressions DVD Pro
  - Compression: MPEG2
  - Real-Time: Dissolves, wipes and titling
  - Analog and DV I/O w/ Breakout Box
  - Real-Time DV output
  - Real-Time MPEG2 output

Real-Time FX DV NLE Systems

- Avid Xpress DV 3.0, $1499
  - NLE App: Xpress DV 3.0
  - DVD Authoring: DVDit! le
  - Compression: DV
  - Real-Time: Everything
  - 11th generation Avid editing in Real-Time
  - PyroDV card included

Real-Time FX DV NLE Systems

- Avid Xpress DV 3.0 PowerPack, $2495
  - NLE App: Xpress DV 3.0
  - DVD Authoring: DVDit! se
  - Compression: DV
  - Real-Time: Everything
  - PowerPack includes image Stabilizer
  - DV Film Makers toolkit
  - Commotion4 and Pyro DV card included

NLE Systems

- Matrox DigiSuite DTV, $12K turnkey
  – Windows 2000
  – Offers native DV, DV50, and MPEG-2 multi-format editing
  – Support for DVD authoring

NLE Systems

- Avid Xpress 4.5, $13K boards/software
  – Mac/Windows 2000
  – Edits layers so they are nondestructive
  – Uncompressed video option for television and DVD
  – One step web streaming

NLE systems

- Media 100 iFinish V80, $15K
  – Windows 2000
  – Supports component, composite, DV, SDI, and S-video formats
  – Real time MPEG

NLE Systems

- Accom Affinity, $43K turnkey
  - Clean video
  - Ability to composite 50 layers
  - Real time Abekas frame-based 3D DVE

NLE Systems

- Avid Media Composer v10.5, $85K
  - Windows 2000, Mac
  - 3-point editing
  - Edit multi-camera with nine real time sources at one time

NLE Systems

- Avid Symphony version 3.5, $105K
  - Windows 2000
  - Real time multilayer, uncompressed editing
  - Color correction
  - Motion tracking and image stabilization
  - 24p/25p editing
  - multi-format output of PAL, NTSC, 16:9, 4:3

NLE System

- Softimage/ DS 4.0, $150K
  - Windows 2000
  - Unique interface
  - Uncompressed video and HD video
  - Multiple uncompressed HDTV and SDTV formats including 720P, 1080P, 1080I
  - Supports 24p progressive scanning

NLE Systems

- Discreet smoke HD, $260K
  - SGI Octane2
  - Uncompressed HD editing
  - Instant response on two layers
  - Sophisticated color correction
  - Superb tracking controls

Home Video

- Interested in producing CD-ROM's
  - Dazzle DVC2
- Analog Systems
  - Dazzle DVC2
  - StudioDC10+
  - DV.now.AV

Home Video

- DV/FireWire
  - Pyro Platinum
  - Studio DV
  - DV200
- Analog & DV
  - DV.now.AV
  - DV500Plus
  - RT2500

Home Video

- Real-Time
  - RT2500
  - DV500Plus
  - DV Storm

Prosumer

- CD ROM:
  - Broadway
  - Dazzle DVC2
  - DVD Cut Machine
- Analog:
  - RT2500
  - DV.now.AV
  - DV500Plus

Prosumer

- DV/FireWire
  - DV200
  - DV500Plus
  - DV.now.AV
- Analog & DV
  - RT2500
  - DV.now.AV
  - DV500Plus

Prosumer

- Real-time
  - DV500Plus
  - RT2500
  - DV Storm

Industrial/Corporate

- CD ROM:
  - RT2500
  - DigiSuite DTV
  - iFinish V80
  - Xpress 4.5

Industrial/Corporate

- DV/FireWire
  - RT2500
  - DigiSuite DTV
  - iFinish V80
  - Xpress 4.5

Industrial/Corporate

- Real-time
  - RT2500
  - DigiSuite DTV
  - iFinish V80
  - Xpress 4.5

Industrial/Corporate

- Component:
  - RT2500
  - DigiSuite DTV
  - Xpress 4.5
- Web Streaming
  - DigiSuite DTV
  - Xpress 4.5

Videographer

- CD ROM:
  – DigiSuite DTV
  – iFinish V80
  – Xpress 4.5

Videographer

- DV/ FireWire:
  – DigiSuite DTV
  – iFinish V80
  – Xpress 4.5

Videographer

- Analog & DV
  – RT2500
  – DigiSuite DTV
  – iFinish V80
  – Xpress 4.5

Videographer

- Real-Time
  - RT2500
  - DigiSuite DTV
  - iFinish V80
  - Xpress 4.5

Videographer

- Component
  - DigiSuite DTV
  - iFinish V80
  - Xpress 4.5

Commercial Video

- CD ROM
  - Affinity
  - Media Composer v10.5
  - Symphony version 3.5

Commercial Video

- DV/FireWire
  - Affinity
  - Media Composer v10.5
  - Symphony version 3.5

Commercial Video

- Real-Time
  - Affinity
  - Media Composer v10.5
  - Symphony version 3.5

Commercial Video

- Component
  - Affinity
  - Media Composer v10.5
  - Symphony version 3.5
  - DS 4.0
  - smoke HD

Commercial Video

- Web Streaming
  - Affinity
  - Media Composer v10.5
  - Symphony version 3.5
  - DS 4.0
  - smoke HD

Mac Users

- Analog
  - RTMac
- DV/FireWire
  - RTMac
- Real-Time
  - RTMac

Acknowledgments

- Web
  - http://www.adamwilt.com/
  - http://www.digitalorigin.com/
  - http://www.digitalvideoediting.com/
  - http://www.dv.com/

Sound

- What do we mean by "sound"?
  - Dialogue
  - Music
  - Sound Effects

Sound

Herbert Zettl says, "Sound represents the all important fifth dimension in the total field of applied aesthetics."

Sound

- Sound is normally thought of as being an additional element to a highly developed, independent visual element.
- Considerable amount of time has past before sound has been accepted as an aesthetically potent medium of its own.

Sound

- Most media terms such as television, film, computer graphics, video, or motion pictures do not incorporate the concept of audio.
- This has led to the notion that sound is not important, unnecessary, and nonessential.

Sound

- Five Major Aspects of the Five-Dimensional Field
  - Sound and Noise
  - Video and Film Sound
  - Literal and Nonliteral Sound
  - Sound Functions
  - Aesthetic Factors

Sound

- Sound and Noise
  - Audible oscillations of the air or other material
  - Distinguishing factor between sound and noise is its communication purpose.
  - Sound has a purpose; it is organized.
  - Noise is random.
  - The same audible oscillation, depending on the purpose can be both sound and noise.

Sound

- Video and Film
  - Film aesthetics were highly developed before the advent of "talkies", so sound at first was thought of as a detriment.
  - From early broadcast television to today's video, most of the images shown have accompanying sound.

Sound

- Video and Film
  - Video and Film sound are now established
  - Distinct differences between video and film sound

Sound

- Video
  - Why is sound so important in video?
    - Reflection of reality
    - Low-definition image
    - Production and technical restrictions and limitations
    - Audio/video balance

Sound

- Reflection of reality
  - Sound is an essential communication factor
  - Video draws on "real" events
  - All events happen within a space, time, and sound environment
  - The sound track of the events lends credibility and authenticity to the images

Sound

- Low-Definition Image
  - By necessity, the video image is small, whether it is on a television or on the web
  - Once to video the resolution is relatively low and contrast and color palettes are considerably restricted
  - Sound is essential for supplemental information
  - Gives coherence to an inductive series of images

Sound

- Production and Technical Restrictions and Limitations
  - Time consuming to "sweeten" sound that has been recorded with video
  - All major sound makers need to be covered with microphones
  - Sound reproduction through most receivers is limited in frequency and amplitude

Sound

- Audio/Video Balance
  - High Fi and Stereo television has not had the public acceptance
    - Has the public become aesthetically insensitive?
    - Do we accept bad sound as inevitable?
  - High quality sound diminishes low quality video
  - Images shrink with high energy sound, there is a need for balance.

Sound

- Film Sound
  - High-definition images carry so much energy that high-definition sound is needed as well.
  - Sound requires as much attention in production and post production as does the visual content.
  - Surround sound is an attempt to achieve an energy balance between images and sound.
  - Sound edited separately and and added in complex postproduction activities

Sound

- Literal and Nonliteral Sound
  - Literal Sound
    - Include forms of speech and environmental sounds
    - Convey as specific meaning
    - Refer you to a sound-producing source
    - Sometimes called "diegetic" sounds because they occupy "story space".

Sound

- Literal and Nonliteral Sound
  - Nonliteral Sound
    - Include most background music and other sounds which influence our emotions some way.
    - Not intended to refer a particular sound to a particular source
    - Deliberately source-disconnected
    - Do not evoke a visual image of the sound producing source

Sound

- Literal and Nonliteral Sound Combinations
  - Combined in a scene
  - Communicates the event and how one feels about it
  - Increases the magnitude of the energy of a screen event

Sounds Context

- Events
  - Sporting
  - Funerals
  - Weddings
  - Political gathers
  - Car chase
  - Oceans

Sounds Context

- Light
  - Lights
    - Passing, approaching, going into the distance
  - Search lights
    - Searching, moving, blinding
  - Sun
    - Hot, overcast, fading
  - Moon
    - Shadows, bright, soft

Sounds Context

- Space
  - Distance
    - Far, near, infinite
  - Size
    - Small, large, huge, minute
  - Height
    - Tall, short, high, low
  - Volume
    - Large, small

Sounds Context

- Time
  - Seasons
    - Spring, summer, fall, winter
  - Time of day
    - Morning, evening, sunrise, sunset
  - Motion
    - Slow, fast, standstill, flowing, bumbling
  - Time Movement
    - Fast, accelerated, boring, exciting

Sounds Context

- Quality
  - Weight
    - Heavy, light, shifting, moving
  - Personality
    - Cheerful, depressed, anxious, nervous, bold, shy
  - Texture
    - Rough, smooth, buoy, scratchy
  - Feeling
    - Hateful, loving, gentle, sad, lonely

Functions of Sound

- Major Functions
  - Information
  - Outer Orientation
  - Inner Orientation

Functions of Sound

- Information
  - Communicate specific information verbally
  - Forms of speech most often used
    - Dialogue
    - Direct Address
    - Narration

Functions of Sound

- Outer Orientation
  - Space
    - Location, environment, off screen space
  - Time
    - Clock time and season
  - Situation
    - Predictive sound and leitmotiv (short musical phrase or sound which denotes a person, event, or action)
  - External Events Conditions
    - Big, small, cavernous, tight, high, low

Functions of Sound

- Inner Orientation
  - Mood
    - Happy, sad, laugh, cry
  - Internal condition
    - Unstable environment, person feeling calm or anxious
  - Energy
    - Frantic or serene music, reveals inner state of a person
  - Structure
    - Establish or supplement the rhythmic or visual structure of a screen event.

Sound

- Aesthetic Factors
  - Figure-Ground
  - Sound Perspective
  - Sound Continuity

Sound

- Figure-Ground
  - Choose the important sounds to be the primary figures and relegate less important sounds to the background
  - These change with the content of the visual image

Sound

- Sound Perspective
  - You match sounds with their location in the shot
    - Close ups need sounds which are close up
  - Presence is the sound quality which makes you feel you are close to the sound source
  - Depends on the figure-ground relationship
  - Most routine productions do not take this factor into account

Sound

- Sound Continuity
  - Sound maintains its intended volume and quality over a series of edits
  - Expect audio quality to be the same over a series of shots
  - Need to maintain ambient sound over the duration of a scene

Acknowledgments

- Books
  - Sight, Sound, and Motion, Herbert Zettl, 1999, Wadsworth, ISBN 0-534-52677-2
  - Video Basics, Herbert Zettl, 2001, Wadsworth, ISBN 0-534-52624-1

Applied Media Aesthetics

- You make aesthetic choices every day from what you wear to how you serve the food you choose to eat.
- Throughout your day you are constantly making perceptual and aesthetic choices.
- This decision making process requires that you know you choices and options

Applied Media Aesthetics

- Need to go beyond everyday reactions and approach the creative process with an educated perspective
- Develop a heighten sense of vision
- Give the visual aspect a significant form
- Communicate effectively

Applied Media Aesthetics

- To do this we will look at
  - The definition of applied media aesthetics
  - Applied aesthetics and contextualism
  - Context and perception
  - Media as structural agents
  - The method of applied media aesthetics

Applied Media Aesthetics

- Definition of applied media aesthetics
  - Considers art and life as mutually dependent and essentially interconnected
  - Aesthetics is not an abstract concept, but the process of examining the number of media elements, such as composition, lighting, and sound, and the way we perceptually respond to them.

Applied Aesthetics and Contextualism

- Applied aesthetics takes art out of the museum and puts those experiences into everyday life.
- Whatever medium you chose, there is a need to constantly engage in the activities of aesthetics, which require perceptual judgment.

Applied Aesthetics and Contextualism

- Art and experience
  - Everyday life might not be considered "art", but each activity has the potential for the process for aesthetic communication that we call art.
  - What takes an ordinary life experience and makes it art? You the artist or group of artists who perceive, order, clarify, intensify, and interpret a media communication for an audience.

Applied Aesthetics and Contextualism

- Art and experience
  - Irwin Edman, philosopher in the field of aesthetics said:
  - "So far from having to do merely with statutes, pictures, symphonies, art is the name for the whole process of intelligence by which life, understanding its own conditions, turns these into the most interesting or exquisite account."

Applied Aesthetics and Contextualism

- Art and experience
  - From Edman's perspective that life is the "line and composition", events which seem mundane and simple have a chance of becoming an aesthetic experience.

Applied Aesthetics and Contextualism

- Incidents of life
  - Contextualism stresses the essential, intimate, and purposeful relationship between art and life.
  - Look at the art of the past years with the historical perspective of the artist.
  - Look at events which are live and spontaneous in their present.

Applied Aesthetics and Contextualism

- Incidents of life
  - Relate contextually
  - We perceive them in relationship to one another
  - All events combine to become an event which holds significance

Applied Aesthetics and Contextualism

- Contextualistic Aesthetics
  - Convenient frame of reference for applied media aesthetics
  - Applied aesthetics combine perceptual moments, when combined, can result in significant media experiences.

Context and Perception

- View world in terms of relationship rather than in absolutes
- We judge events one aspect at at time and their juxtaposition to other events.
- Constantly evaluating position of objects to other objects
- Develop habits of how one sees and hears

Context and Perception

- Selective seeing
  - We see events and the details of those events in the way we choose to see them
  - We generally pick information which conforms to our world, and we leave the rest of the information out.
  - Selective exposure to information

Context and Perception

- Selective Seeing
  - Screening input by reducing details are essential in the perceptual process, otherwise we would be overloaded with information.
  - By looking at what we want to see, rather than at all we can see, we distort our view of the world.

Context and Perception

- The power of context
  - Our perceptions are guided by the event context.
  - Context has a powerful influence on radically different perceptions of the identical event.
  - Going against established context is hard.

Context and Perception

- The power of context
  - Our perceptual faculties are so established that we respond to certain aesthetic stimuli in predicable ways, even though we know that we are being manipulated to respond in a certain manner.
  - Just think of your favorite commercial …..

Context and Perception

- Context
  - Establishes a pattern that dictates, on some levels, how you feel and interpret events.
  - We seek information that reinforces our projection of reality and are ready to be manipulated by context.
  - How do we change how we view the world?

Context and Perception

- Context
  - Fine arts have tried for centuries to break the continuum
  - Art leads to counter our automatic responses to stimuli by making us look at events from various points of view.
  - Media should do the same. Your piece should make the viewer look at work from your point of view.

Media as Structural Agents

- Primary function of a piece is to communicate specific information
- You influence how that message is received.

Media as Structural Agents

- Communications scholar, Marshall McLuhan say, "The medium is the message."
- Meaning … the media plays an important part in the distribution and the shaping of the event.

Media as Structural Agents

- Because differences in media, to communicate the same message, you will have to go about it in different ways. You don't design your project the same way for film, HDTV, television, or the computer screen in the same way.
- The production and reception of the message are a function of the technical and aesthetic potentials and requirements of a particular medium.

The Method of Applied Media Aesthetics

- The inductive process of building an event by combining graphic elements in a certain way.
- Not limited by what there is in the world to see, instead building a vision of what ought to be there.

The Method of Applied Media Aesthetics

- Fundamental Image Elements
  - Light and color
  - Two-dimensional space
  - Three-dimensional space
  - Time and motion
  - Sound

The Method of Applied Media Aesthetics

- What about content? Isn't it important? Don't we need an idea before shape it into an event for a particular medium?
  - Yes, but a good idea doesn't necessarily mean effective communication.
  - Learning to mold an idea so it fits with the technical as well as aesthetic consideration of a medium is essential.

The Method of Applied Media Aesthetics

- Content
  - The need to learn tools and techniques before putting them to work in a variety of contexts.
  - You can apply elements and techniques with maximum effectiveness
  - Combine aesthetic elements in nontraditional ways.
  - Potentials of applied media aesthetics can produce new ideas.

The Method of Applied Media Aesthetics

- Responsibility
  - Applied media aesthetics clarifies, intensifies, and interprets events for an audience
  - You as the creator must bring a genuine respect and concern for your audience to the forefront. You have the ability to manipulate the perception of your audience by the way you tell your story.

Acknowledgments

- Books
  - Sight, Sound, and Motion, Herbert Zettl, 1999, Wadsworth, ISBN 0-534-52677-2
  - Video Basics, Herbert Zettl, 2001, Wadsworth, ISBN 0-534-52624-1
- Web
  - http://www.cybercollege.com/

Tape Formats

- D1
  - Sony 4:2:2 component digital
  - 8-bit recording
  - No Compression

Tape Formats

- D2
  - Ampex and Sony 4Fsc composite digital
  - 8-bit recording
  - No Compression

Tape Formats

- D3
  - Panasonic 4fsc composite digital
  - 8-bit recording
  - No Compression

Tape Formats

- D5
  - Panasonic 4:2:2 component digital
  - 10-bit recording
  - No Compression

Tape Formats

- D6
  - Digital high definition recording
  - 8-bit
  - Luminance sampling 72Mhz
  - Chroma is 36Mhz

Tape Formats

- D7
  - Panasonic DVCPRO format
  - 4:1:1 component
  - 8-bit recording
  - 5:1 compression
  - 25Mb/sec data rate

Tape Formats

- Betacam SX
  - Sony format
  - Successor to Betacam SP
  - MPEG-2 Studio Profile
  - 10:1 compression rate
  - 4:2:2 component
  - 8-bit recording

Tape Formats

- Digital Betacam
  - Digital successor to Betacam SP
  - Sony format uses half-inch tape
  - Compression rate is 2.3:1
  - 4:2:2 component digital
  - 10-bit recording

Tape Formats

- Digital-S
  - JVC digital format
  - Size-compatible with VHS
  - Compression rate 3.3:1
  - 4:2:2 component
  - 8-bit recording

Tape Formats

- DV
  - Consumer digital-video format
  - Quarter inch tape format
  - Compression rate is 5:1
  - Basis for DVCAM and DVCPRO

Tape Formats

- DVCAM
  - Sony version on DV
  - Differs from other DV formats
    - Tape pitch is 15 microns
    - Tape speed is 28.22mm/sec
  - 4:1:1 component
  - 8-bit recording
  - 5:1 DCT compression

Tape Formats

- DVCPRO
  - Panasonic version of DV
  - Differs from other DV formats
    - Tape pitch is twice that of normal DV
    - Tape speed is 33.8mm/sec
  - Compression rate is 5:1
  - 4:1:1 component
  - 8-bit recording

Tape Formats

- DCT
  - Ampex component format
  - 2:1 compression

Tape Formats

- DVCPRO50
  - Newer version of DVCPRO
  - 50Mb/sec data rate
  - Doubles number of tracks per frame to 20
  - Tape speed is 67.88 mm/sec
  - Compression rate is 3.3:1
  - 4:2:2 color space

Tape Formats

- DVCPRO100
  - Panasonic and JVC HDTV
  - 100 Mb/sec data rate
  - Backwards compatible; SDTV D-7 or D-9
  - 720/60p, 1080/30i. 1080/224p formats

Tape Formats

- Analog Tape
  - Betacam SP
  - 1" Type C
  - 3/4" SP
  - 3/4", Hi8, SVHS
  - Video 8, Betamax
  - VHS

Tape Formats

- From best signal quality to worst
  - D-5 (10-bit uncompressed digital)
  - D-1 (8-bit uncompressed digital)
  - Digital Betacam, Ampex DCT
  - Digital-S, DVCPRO50
  - DV, DVCAM, DVCPRO
  - MII, Betacam SP

Tape Formats

- From best signal quality to worst
  - D-3, D-2 (composite digital)
  - 1" Type C
  - 3/4" SP
  - 3/4", Hi8, SVHS
  - Video 8, Betamax
  - VHS

Acknowledgments

- Articles
  - AV Video Multimedia Producer, Sept. 2001, p32-33
  - SIGGRAPH 97, Computer Animation Using Digital Video for the Web, Multimedia, and Broadcast

Acknowledgments

- Books
  - A Technical Introduction to Digital Video, Charles Poynton, 1996, John Wiley & Sons, ISBN 0-471-12253
  - Digital Videotape Recorder, John Watkinson, 1994, Focal Press, ISBN 0-240-51373-8
  - The Guide to Digital Television, Michael Silbergleid, 1998, Miller Freeman
  - Video Demystified, Keith Jack, 1996, HighText Interactive, ISBN 1-878707-23-X

Acknowledgments

- Web
  - http://www.adamwilt.com/
  - http://www.dv.com/

Video Distribution

- Tape vs. Disk vs. Streaming
- Seek the best image and sound quality at the highest frame rate the bandwidth allows
- Data Rate
  - Usually in MB/s (DVD, CD) or Kb/s (streaming)

Data Rate

- Compromise:
  - Image and sound quality
  - File size
  - Bandwidth

Data Rate: Quality

- Video Frame Rate
  - NTSC video: 30 fps
  - PAL video: 25 fps
  - Film: 24 fps
- Audio Sampling Rate
  - Audio CD 44.1 KHz
  - DV codec 32, 48 KHz

Data Rate: Quality

- Frame and audio sampling rates reduction settings
  - Frame rates ≤ 50% (15, 12, even 10 fps)
  - Motion less smooth
  - Allows bandwidth for good image quality
- Audio sampling down to 11.025 KHz
  - Some sound degradation

Data Rate: File Size

- Frame size
  - Full size video: 640 x 480
  - Reduce to 320 x 240
    - 240 x 180
    - 160 x 120

Data Rate: Bandwidth

  - Speed of connection
    - E.g. 56K modem = 56 kbs at best
    - Cable modemup to 300 kps
  - Capacity of lowest target CPU

High Total Data Rate

- Highest data rate gives best quality
- Demands fastest playback processor
- Largest file size requires videotape or DVD on high-speed CPU
- I.e., *not streamed*

High Data Rate Codecs

- DVD: MPEG-2
- NTSC/PAL videotape: DV codec
  - DV codec for editing on most NLEs
  - Requires export via IEEE 1394 hardware
- VideoCD: MPEG-1
  - Less than VHS quality
  - Not compatible with all CD-ROM drives

Lower Data Rate = Lower Quality

- …but larger potential audience
- Smaller file sizes
- Allows streaming via web
- Older machines can play it
- Picture and/or motion quality may suffer

Low Data Rate

- CD-ROM: Photo JPEG, Cinepak, Sorenson
- Less than full-screen
- 320 x 240 pixels or smaller frame size

Streaming: HTTP vs RTSP

- HTTP = HyperText Transfer Protocol
  - 'progressive download'
  - Not true 'streaming'
- RTSP=Real Time Streaming Protocol
  - True 'stream' of 'content'

HTTP Streaming

- File downloads to viewer's drive
- Begins play without waiting for entire file
- Requires wait, but assures quality

HTTP Streaming

- Best with broadband connection
- Risk of unauthorized re-distribution
- Works from any web server
- e.g: QuickTime movie Trailers

RTSP Streaming

- No download
- Unsavable, no unauthorized redistribution
- Near-immediate play after buffering

RTSP Streaming

- Lowest picture quality
- Network congestion can cause freezes, dropped frames
- May require proprietary $erver$

Streaming Server Options

- Windows, Real
  - Require specialized server, software
  - License fee paid per streaming user
- QuickTime streams on Darwin Streaming Server
  - Free, Open Source
  - Runs on Mac OS X (client), Red Hat Linux, Solaris 8, Windows NT Server & Windows 2000 Server

COPYRIGHT BASICS

or. . .
So who's gonna know?

INTRODUCTION

No matter on which side of the copyright fence you find yourself, granting copyright or seeking copyright, it is a complicated area of law. Bottom line is that if you did not create it, it probably belongs to someone else and they deserve compensation for their creative efforts. As a producer/writer/creator, it is important that you know when and how to seek clearances for the use of digital images, video footage, music, photography and other digital applications. Just as important, you should also know how to be sure your own work is best protected from infringement.

During the past several years I have presented copyright seminars to several organizations and groups with internal production facilities. The attendees, even those without formal training, appear to be aware that they should be concerned with copyright clearances, but many feel it is too much trouble and too confusing to make all the contacts and secure specific licenses. (This is where the sub-title ". . .so who's gonna know?") Hopefully this handout will provide assistance and simplify the process of securing or granting copyright clearance.

Much of the information presented here is available in greater detail though the US. Library of Congress Copyright Office. The copyright office publishes several circulars pertaining to specific copyright issues and much of the information in this handbook is based on several of these

handouts. At the end of these notes is the web site that contains a list of current registration forms and circulars available to anyone at no cost, courtesy of the US. Government and your tax dollars. Our intent is to present all this free information in a more focused form for creative professionals. Remember, although some of the information in this book cannot be copyrighted since it is government provided, my interpretations, format, presentation and creative use of this information IS copyrighted. In other words, you can't make copies without permission.

THE BASICS

WHAT IS PROTECTED

The subject matter eligible for protection under the Copyright Act of 1976is set forth in Section 102(a): *Copyright protection subsists. . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.* [1]

Section 106 of the Copyright Act gives the owner of a copyright the exclusive rightto do and to authorize others to do the following:
- •To reproduce the copyrighted work;
- •To prepare derivative works based on the copyrighted work;
- •To distribute copies or phonorecords of the copyrighted work to the public or other transfer of ownership, or by rental, lease or lending;
- •To perform the copyrighted work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works; and
- •To display the copyrighted work publicly, in the case of literary, musical, dramatic and choreographic works, pantomimes, and

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[1]From U.S. Copyright Circular 1 (Copyright Basics.) Unless otherwise noted, all circulars referenced were downloaded from the Library of Congress internet address

pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work.

Under the present copyright law which became effective January 1, 1978, a work is automatically protected by copyright when it is created; a work is created when it is "fixed" in a tangible form for the first time. Neither registration in the Copyright Office nor publication is required to secure copyright.   However, there are certain advantages to registration with the Copyright Office, including the establishment of a public record of the copyright claim.   Copyright registration must generally be made before an infringement suit may be brought.   Timely registration may also provide a broader range of remedies in an infringement suit.

REQUIREMENTS FOR PROTECTION

Originality: a work must be of independent creation.   (Not copied or recreated.)   In other words, you can't take someone's screenplay and simply put it to music, calling it "original."   (In an infringement suit, courts will look at the amount of "substantial similarity" of one work to an earlier work.)

Creativity: Although the work need show creative input, the level of creativity is slight; "even a slight amount will suffice."

Fixation: Protection attaches automatically to an eligible work or authorship the moment the work is fixed in a tangible medium of expression; "now known or later developed."   Again, you can't take someone else's videotape and put it on DVD, calling it your own just because there was no DVD when the video was created.

Not
Protected: "any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied" in

such work. (In other words, the **idea** for an animation cannot be copyrighted - but the written treatment and format CAN be protected.)

TYPES OF OWNERSHIP

Single Author: The person who creates the work, owns the work.

Joint Works: A work prepared by two or more authors. The work as a whole is owned by each author. If each is to own specific parts of the whole, a written agreement to that effect should be made. The right to use a portion (or whole) of the joint work can be granted by any one of the joint owners since they are equal owners.

Work-for-hire: A work-for-hire is usually a work created by an employee within the scope of employment. The employer is deemed to be the owner and author of the completed work. (Work-for Hire is discussed in more detail later in this handout.)

DURATION OF COPYRIGHT

The duration of a copyright is a tricky topic. If the copyright has expired, the work falls into the realm of public domain (PD) and can be used without fear of infringement. Since the length of copyright duration changed in 1978, was modified in 1992 and again in 1999, it is more complicated to determine whether a copyright is still in force. If you have any doubts about the work being PD, it would be in your best interest to seek advice from a copyright attorney or copyright search firm.

Registered between 1909 and 1978:
    •Protected for 28 years and renewable for another 28 years.

- If copyright was in its first 28 year period when the law changed in 1978, the work could be <u>renewed </u>for 47 years. If in its second 28 year period, automatically extended an additional 19 years.
- A 1992 law (Public Law 102-307) amended the Copyright Act of 1976 to extend automatically the terms of copyrights secured from 1/1/64 through 12/31/77 to the further term of 47 years.

Registered 1978 or after:
- Life of the author plus 70 years.
- If joint copyright, 70 years from death of last surviving author
- Work for hire, the lessor of either 95 years from publication or 120 years from creation.

IMPORTANT: The present law in the United States does NOT require that a copyright notice be affixed to the work. Just because there is no notice, don't assume it is not protected -- it probably is. However, if you are seeking to maximize protection of your work, it is always best to affix the notice. (© Copyright, date of first publication, and full name of owner.) Since so much digital information is distributed internationally, it is important to affix the notice to your work to assure coverage in other countries.

Simple, right? Overall the law tries to provide a 100 year term of protection to works properly registered in and after 1964.

(See Library of Congress Copyright Circulars 15, 15a, and 15t for more information on terms of copyright.)

<u>TRANSFER OF COPYRIGHT</u>

- Any or all of the exclusive rights, or any subdivision of those rights, of the copyright owner may be transferred, but the transfer of exclusive rights is not valid unless that transfer

is in writing and signed by the owner of the rights conveyed (or such owner's duly authorized agent). **Transfer of a right on a non-exclusive basis does not require a written agreement, although it is always advisable.** This means that if you want permanent and exclusive rights to a work your commission, get it in writing. Otherwise, the owner of the work can also grant the rights to your competition. It's a good policy to put all the copyright agreements between the parties in writing. . . then there is less likelihood of any surprises.

• A copyright may also be conveyed by operation of law and may be bequeathed by will or pass as personal property by the applicable laws of intestate succession.

• Copyright is a personal property right, and it is subject to the various state laws and regulations that govern the ownership, inheritance, or transfer of personal property as well as terms of contracts or conduct of business. For information about relevant state laws, consult an attorney.

• Transfers of copyright are normally made by contract. These contracts regarding transfer of copyright ownership do not have to be filed with the Copyright Office, but it is in your best interest to do so. If a lawsuit is filed regarding ownership, you will have a stronger case.

WORK FOR HIRE

Under most circumstances the person who creates the work owns the work. However, there is an exception to this rule defined by the copyright law as "works made for hire." Under this rule, the employer and not the employee is considered the author. The author can be a firm

or organization or an individual.   The following section is from U.S. Copyright Circular 9.[2]

Statutory Definition
Section 101 of the copyright law defines a work made for hire as either:

(1) a work prepared by an employee within the scope of his or her employment; **O R**

(2) a work specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas, **if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire.** For the purpose of the foregoing sentence, a "supplementary work" is a work prepared for a publication as a secondary adjunct to a work by another author for the purpose of introducing, concluding, illustrating, explaining, revising, commenting upon, or assisting in the use of the other work, such as forewords, afterwords, pictorial illustrations, maps, charts, tables, editorial notes, musical arrangements, answer material for tests, bibliographies, appendixes and indexes, and an "instructional text" is a literary, pictorial or graphic work prepared for publication and with the purpose of use in systematic instructional activities.

Determining Whether a Work is Made for Hire
        Whether or not a particular work is made for hire is determined by the relationship between the parties under either of the two tests above. This determination may be difficult because the statutory definition of a work made for hire is complex and not always easily applied. That

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[2]This section references U.S. Copyright Circular 9 (Works-Made-For-Hire Under the 1976 Copyright Act.) *Emphasis added.*

definition was the focus of a 1989 Supreme Court decision (Community for Creative Non-Violence v. Reid, 490 U.S. 730 [1989]). The court held that **to determine whether a work is made for hire, one must first ascertain whether the work was prepared by (1) an employee or (2) an independent contractor.**

If a work is created by an employee, part 1 of the statutory definition applies and generally the work would be considered a work made for hire. IMPORTANT: The term "employee" here means an employee under the general common law of agency. (See below for further information about agency law.)

If a work is created by an independent contractor (that is, someone who is not an employee under the general common law of agency), the work is a specially ordered or commissioned work and part 2 of the statutory definition applies. Such a work can be a work made for hire only if (1) it comes within one of the nine categories of works listed in part 2 of the definition and (2) there is **a written agreement** between the parties specifying that the work is a work made for hire.

Employer-Employee Relationship Under Agency Law

The court identified certain factors that characterize an "employer-employee" relationship as defined by agency law. Among them are:

1) Control by the employer over the work (e.g., the employer has a voice in how the work is done, has the work done at the employer's location, and provides equipment or other means to create work).

2) Control by employer over the employee (e.g., the employer controls the employee's schedule in creating work, has the right to have the employee perform other assignments, determines the method of payment, and/or has the right to hire the employee's assistants).

3) Status of employer (e.g., the employer is in business to produce such works, provides the employee with benefits, and/or withholds tax from the employee's payment).

These factors are not exhaustive. The court left unclear what factors must be present to establish the employment relationship under the work for hire definition, but held that supervision or control over creation of the work alone is not controlling. All or most of these factors characterize a regular, salaried employment relationship, and it is clear that a work created within the scope of such employment is a work made for hire (unless the parties involved agree otherwise).

Examples of works for hire created in an employment relationship are:

• A software program created by a staff programmer for Creative Computer Corporation.

• A digital character created by a staff artist for publication on a company web site.

• A musical arrangement written for XYZ Music Company by a salaried arranger on its staff.

• A sound recording created by the staff engineers of ABC Record Company.

The closer an employment relationship comes to regular, salaried employment, the more likely it is that a work created within the scope of that employment would be a work made for hire. However, since there is no precise standard for determining whether or not a work is made for hire under the first part of the definition, consultation with an attorney for legal advice may be advisable.

Who is the Author of a Work Made for Hire?

If a work is a work made for hire, the employer or other person for whom the work was prepared is the author and should be named as the author in Space 2 of the application for copyright registration, and the box marked "work-made-for-hire" should be checked "yes." This distinction is critical for two reasons. Most notably, the person who

created the work cannot terminate the hiring parties rights as would otherwise be the case if it were a simple transfer of rights. Secondly, as stated earlier, the work for hire status will affect the duration (95 years for author, 120 years for a work for hire) of the copyrights.

Who is the Owner of the Copyright in a Work Made for Hire?

If a work is a work made for hire, the employer or other person for whom the work was prepared owns the copyright **unless there has been a written agreement to the contrary signed by both parties.**

So. . . How does this Affect an Independent Producer and/or Freelancer?

The preceding section is quoted from the government circular explaining works-for-hire, but how exactly does this affect a producer/writer/developer? You can be affected in two ways. First, as a producer or project manager you will want to make sure that any work you have created by an independent contractor belongs to you. And second, if you are an independent contractor you will want to make sure you don't give away ownership to any work you aren't prepared to give away.

Producers often hire freelance talent to create graphics, to shoot video, to take photographs and create other elements of a final visual creation. It is in your best interest to work by contract with these individuals, clearly stating that the work created for your project by that contractor will henceforth be created as a work made for hire or that the contractor hereby assigns all copyrights in and to the work created for your project to you. With a written agreement from the creator of the work that copyright ownership belongs to you, you can do whatever you want (unless limited by the contract) with the work contributed for that project by the independent contractor.

As an independent contractor the copyrights to anything you create, no matter who pays for it (as long as you are not by law considered an employee and absent an agreement to the contrary,) belongs to you. Many independents assume that if they create an element of a larger production on a freelance basis, once they are paid the buyer owns the

work. If you create it, YOU OWN IT. Ownership of that element must be transferred by you, in writing, to the buyer for them to claim ownership.

If your work is considered a work-for-hire based on the statutory definition, you have no termination rights, no right to future payments (unless specifically bargained for), and no ability to use your creation in the future. As an independent contractor you can retain all of these rights unless specifically transferred to another person.

This does bring up some interesting concerns. As a freelance producer, who actually owns the final product? You have written contracts assigning copyright ownership of all elements to you as producer. Legally, you now have copyright control of that final project. However, good business sense dictates that when you complete the project all copyright ownership is then transferred to the client. . . or not. In cases like this it is always best to put all copyright expectations in writing. Often a freelance producer (not on the clients regular payroll) will have a clause in the contract stating that transfer of copyright ownership is effective upon final payment for services. That way you are protected if the client doesn't pay.

Work for Hire issues can be complex based on copyright law, contractual law and talent agreements. If there is any doubt as to ownership upon completion of a project, consult an attorney. You are best protected by having a good, solid contract going into such a production.

INTERNATIONAL COPYRIGHT PROTECTION

Because of the nature and limited space of this handout, there will be little discussion of international copyright protection and/or ownership. According the Library of Congress Copyright Office (Circular 1) there is no such thing as an "international copyright" that will automatically protect an author's writings throughout the entire world. Protection against unauthorized use in a particular country depends, basically, on the national laws of that country. However, most countries do offer protection to foreign works under certain conditions, and these

106

conditions have been greatly simplified by international copyright treaties and conventions.

If you are doing business in a foreign country and wish to protect your work, you should seek the advice of a copyright lawyer. If you are seeking to gain permission to use a portion of a foreign work, you should contact the specific country for the applicable laws. It's a complicated task (or at the very least time consuming) so allow plenty of time on the front-end of your project to procure proper clearances. If funds permit, this would be a good time to hire a copyright firm to do the search for you.

For a list of countries that maintain copyright relations with the United States, request Circular 38a.

Summary

The right to protect the intellectual property of an author or creator is provided by the federal government under the federal Copyright Act of 1976. If you create it, you or your employer own it and you have the right to control the use of that property. It also means that if you did NOT create it, you must ascertain the ownership of the material and obtain permission to use it.

Most anything that can be created by an author is protected by copyright law once it is recorded in some tangible form of expression. The law gives the owner the right to use and distribute their work, create derivative works, perform and/or display the work, and to assign the right to use the work to another person. Ideas and other non-recorded, non-documented performances are not protected.

The duration of copyright protection varies from 28 years, to 100 years, to life of the author plus 70 years. When the copyright protection expires for a work, it becomes a matter of public domain and is no longer protected in its original form.

Copyrights can be transferred to a new owner, but any such transfer must be in writing and should be filed with the Library of Congress Copyright Office. Transfers of copyright ownership may be affected by

state laws and regulations. For specific information about a situation, consult a lawyer specializing in copyright law.

Most countries have agreed to abide by the Berne Convention, which governs international copyright protections. Copyright protection attaches to a work upon publication and is recognized internationally. Again, this protection may be dependent upon the country in which distribution takes place and laws governing that area may vary. Consult a lawyer for specifics. Using the work of another without proper permissions and clearances can be a very expensive proposition.

LIMITATIONS OF COPYRIGHT

Although copyright law can be an intimidating and confusing process, our legal forefathers did recognize that there are times when it is important to allow legal use of copyrighted material without requiring fees and permission. This concept has been labeled Fair Use. As with most elements of copyright law this term is also easily misunderstood; it does not mean you can use anything you want as long as you use just "a little."

It has also been established that copyright protection does not last forever and continued attempts have been made to set the durations of copyright protection to be fair to the creators as well as fair to future users of the work.[3] From this task has come the concept of public domain, or works that have been protected but have lasted beyond the original duration of that protection. Works that have outlasted the duration of their copyright enter the realm of public domain and can be used by anyone.

The final area of limitations on exclusive rights involves the use of federal government created works.[4] The authors of the Copyright Law recognized that as the "employers" of government employees, the public

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[3]See explanation of durations of copyright protection in Chapter 1. For most works nearing the end of protection it would be a total of 75 years. It would be safe to say in 2002 that works created in 1922 or earlier would likely be in the public domain.

[4]It is doubtful that the law is broad enough for works created by state employees to fall within the realm of public domain.

has a right to use the works created by government employees within the scope of their government positions. Therefore, government employees and agencies cannot copyright any work created as a part of their employment. The government can, however, receive and hold copyrights transferred to it by assignment, bequest or otherwise.

FAIR USE

Under normal circumstances the owner of a copyright has the exclusive rights to reproduce the work, to prepare derivatives based on the work, to distribute copies of the copyrighted work, and to perform or display the work. However, there are specific instances when it is NOT an infringement for someone other than the copyright owner to use such a work. According to §107. of Title 17, The Copyright Act, *the fair use of a copyrighted work. . . for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright.*

In determining whether a use is truly fair use, there are four guidelines weighed by the courts. Consider each of these carefully before claiming fair use:

1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2) the nature of the copyrighted work;
3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4) the effect of the use upon the potential market for or value of the copyrighted work.

Each of these guidelines is further discussed below.

Purpose and Character

The court will be interested in what you are using the protected work to accomplish. If you are copying a short article on new technology in its entirety to distribute to a class of students studying new technology,

there will likely be no problem. If you are copying a short article on new technology in its entirety to publish in a magazine then sold to the public, you are infringing on the rights of the author and it will not be seen as fair use. If you are reviewing that same article for the magazine and use only portions of the article for reference, it would fall under the fair comment and criticism protection of fair use.

Company training facilities ARE NOT considered educational facilities by the courts. Many people have asked if they can copy training materials to use in their training facility. The answer is no. Bottom line is that a corporation is in business to make money. If they spend money to train employees, it is not a non-profit educational venture, it is to increase their line of profit. This element is likely to eliminate any chance of Fair Use for corporate use of copyright protected material.

Producing this handbook could be seen as an educational venture. I work for a major University as a professor and will use portions of this handbook to teach media law. However, since I produced this book at home, on my own time using my own computer it is not a work-for hire. (The University does not hold the copyright.) The copyright can be transferred to another party for the purpose of sale and profit, but only by me as the author. Since this work will be distributed at a major professional conference, the purpose and character of this handbook is NOT non-profit educational and it precludes me from using the words written by any other author without permission.

Nature of the copyrighted work

When considering the nature of the copyrighted work, you need to consider whether the work is a fact-based work or is more of a creative or artistic endeavor. This factor of determining fair use looks at allowing a broader range of fair use for fact-based works versus works of art or fiction. For example, using five lines from a news story that is presenting facts is different from taking five lines of a hit song. The closer the original is to fact based information, the less the scope of protection.

Courts will also consider what the original is intended to accomplish. Through your use are you impeding that goal or enhancing their goal. If your use of a small portion of a protected fire safety tape is shown to further the cause of fire safety (the intent of the original) you

might be safe with fair use.   However, be sure to consider the fourth element to be sure you are not affecting the market of the original.

Amount and Substantiality of the Use

The third standard in determining whether fair use applies looks at how much of the work you used and what was the qualitative importance of the portion taken relative to the entire copyrighted work.   In other words copying a short, but well remembered, refrain from a multi-verse song is probably worse, under this category, than copying several pages from a dictionary.   This is the element that causes the greatest confusion in that it just doesn't seem to be problem to use a small portion of a whole.   However, courts will look very closely at the amount and substantiality of work used in conjunction with the first two elements.

If you are using a small portion of a protected work, in a project that will be used for training and the original was not aimed at the same audience, you might be protected.   The problem is that there is no hard and fast rule for this.   No court has claimed that you can use three minutes of a 90 minute film for use in a corporate video that will be shown one time.   It is a risk you must be willing to take.   The safest route is to consult the owner about any specific use.

Effect on the Market of the Original

This is the most crucial element in determining fair use.   If your use of copyrighted material will result in loss of revenue for the original, you cannot use it.   If you are using a short piece of music without permission when others would pay for use of the clip, you are effecting the market of the original.   If you are using a part of a motivational video in your motivational video, you are using the work of another to increase your (or company employees') productivity.

Summary

When considering the four elements of fair use, if only one applies to your case you are probably not protected by fair use.   For example, if you are using a small portion of animation from a copyrighted promotional videotape to present your own product:

- your purpose is to increase profit (not protected)

- the original has a similar purpose to your use (not protected)
- you are using a small portion of the original (protected)
- you are not paying for the use (not protected)

You are probably not protected by fair use.

It is important to note that business use of copyrighted material is rarely protected by Fair Use. The Fair Use Guidelines are specifically designed to apply to nonprofit educational facilities. Corporate training facilities ARE NOT considered nonprofit and they ARE NOT considered educational facilities under the guidelines.

PUBLIC DOMAIN

Works that have entered the public domain (PD) can be used in any manner without fear of infringement As of 2002, the only safe assumption in determining if a work is PD is to check for an original copyright date prior to January 1, 1922. Not much there for business use since most company's want to be seen as at least contemporary. In seeking PD work (mostly music) be sure to check not only original copyright, but new copyright on arrangements or performance. Just because Beethoven's music is PD, does not mean that the arrangement and performance you want to use on your DVD demo reel is PD.

LIMITATIONS ON GOVERNMENT WORKS

Works that are created by US. Government employees are not eligible for copyright protection. This includes any web site graphics, video, film, print, AV and other created works. In many cases agencies maintain a library of available works for use by the public. Several years ago I needed a shot of a rocket taking off for a motivational tape. In contacting NASA in Florida, they sent 60 minutes of footage from which to select and asked only that I return the tape after making a copy for

myself. For this handbook, I was able to use some of the text from the US. Copyright Office circulars because it cannot be protected by copyright.

It is always in your best interest to identify the portions of the final product that are from government sources. Although you can copyright a completed work that contains government works, you cannot copyright those portions that are government works. In other words, anyone can use my shot of the rocket even though it is a part of my final videotape. By identifying that segment, any user will know when the government work begins and ends and the rest is protected by my copyright.

There is also a common misconception that government employees can use (infringe) any material they want because the government can't be sued. This is not true in the case of copyright. Once a work is protected, even the government must seek clearance to use the material.

Another important thing to remember when dealing with government works is that although it can't copyright its own works, copyright can be assigned (as well as bequeathed or transferred) to the government by someone else. Many of the "Be All you Can Be" type videos are not actually produced by the government but are produced by outside agencies who either maintain the copyrights or assign them back to the agency commissioning the work. Just because it is recognized as a government work, does not mean it can be used without clearance. Before using any government work in your production/project, it is best to contact the agency and request clearance. They will either give you clearance or put you in contact with the copyright owner.

Summary
There are ways to use creative works without seeking permission, but such use is carefully monitored and restricted. Most professional uses of the work of others will not fall under Fair Use. (You can't use "just a little" of the Wizard of Oz on your company web site!) It is possible to use work created by government employees within the scope of their positions, and works with expired copyrights within the public domain. It is difficult to put in writing what is protected use and what is not since the courts will consider infringement on a case by case basis. The safest way to protect your interests and the interests of your employer/client is to consult with a copyright lawyer, conduct a search

for ownership or hire a copyright search firm to seek ownership information.

DETERMINING OWNERSHIP

Often in creating a work, we rely on certain elements that we've seen before. As long as the new work can be considered an original work, there are no copyright issues. But in these changing times, we often rely on parts of other works in the creation of new works. For example, in creating a web site we might want to use a specific graphic, or a flash animation or simply an image that was created by someone else. In seeking permission for the use of that element, we must first determine the owner.

If there is no owner contact information listed on the work itself, there are two other common ways to determine ownership. First is to hire a copyright search agency to obtain the permissions for you (sometimes costly.) The other is to do a search through the US Copyright Office (often time consuming.) To do this, you will be asked to enter the type of registration you wish to search.

TYPES OF REGISTRATION

The library of Congress provides certain categories for copyright registration. By logging onto the Copyright catalogs, you will be asked for the category you wish to search. The categories include: books, music, audiovisuals, visual arts, multimedia, manuscripts, microcomputer software, serials, maps and others. The most commonly sought copyright permissions for visual communications are registered as text, sound recordings, visual arts, or performing arts, (including multimedia and audiovisuals).

VISUAL ARTS

Works of visual arts are protected by the copyright law from being copied, being reproduced in any derivative manner, or being displayed without permission from the author. As a producer you cannot take a photograph of a three dimensional object and use it on a web site. This creates some concern with the availability of such works on the internet - and how such works can legally be used. For many of these works, it is not possible to use a small portion of the entire work. You either show the photo, cartoon, bumper sticker, poster, etc. or you don't.

Copyright protection extends to the artistic expression of the author of a pictorial, graphic or sculptural work. In other words, the drawing or photograph of a common widget can be copyrighted, but that does not give the author the exclusive right to make the widgets portrayed in the image. In some cases, it might be easier and less expensive to take your own photographs than to track down ownership of the original photograph. Do remember, however, that a new work must show originality in order to be copyrighted on its own merit.

For a specific work of visual art, there are several ways to seek ownership information. The most common is to contact the US. Office of Copyright to do a search of copyright registration. It is also common for a person to contact the magazine, museum, publisher or other location of the work desired to request ownership information.

Although there is no specific clearinghouse for the rights and permissions to use protected works of visual art, there are several stock houses the maintain libraries of such works. These stock houses have negotiated rights for specific works and can often find the work you request or similar works that have been previously cleared.

Cartoons and Comic Strips

Cartoons and comic strips can be registered as either visual arts or text. According to US. Copyright Circular 44, cartoons and comic strips are among the types of works of authorship protected by copyright. This protection extends to any copyrightable pictorial or written expression contained in the work. This protection **does not** extend to the title or general theme for a cartoon or comic strip or to the general idea or name for the characters depicted. Intangible attributes of characters are not copyrightable, but a drawing, picture, or depiction or a written

description of a character may be registered for copyright. However, copyright **does not** extend to the character itself. That would fall under trademark law.

There is a common misconception that you can use a cartoon or comic in any project as long as you identify the author. Remember, you are using an author's work in its entirety and they are receiving no compensation for their work. It would be costly for them to sue you and for you to defend yourself, so infringement suits aren't likely. But if you use comics and cartoons without permission of the author, it is illegal and you are setting yourself up for possible litigation. Again, it is more an ethical consideration than financial.

Although you may not copyright titles, themes or characters of a comic strip, other state, common, or trademark laws may apply. Consult an attorney for details.

MULTIMEDIA

US. Copyright Circular 55 explains "multimedia" works as works, often instructional, which combine authorship in two or more media. The authorship may include:
- text/graphics
- photography
- artwork
- sounds
- sculpture
- music
- cinematography or
- choreography.

The media may include two or more of the following:
- printed matter, such as a book, charts or posters, or sheet music;
- audiovisual material, such as a filmstrip, slides, videotape or videodisk;
- a phonorecord, such as an audiodisk or audiotape; or
- a machine-readable copy, such as a computer-read disk, tape, or chip.

For the purpose of determining ownership of such works, it is important to identify the copyrightable elements contained in the multimedia work. Identifying the elements will help you to determine who might own each part of the work and if it is a combination of owners. Registration of copyright for multimedia works may be made by a single author (a person who has gathered rights and permissions to each element in writing) or by individual authors who each claim ownership of their part of the whole. (e.g. a producer might claim authorship of the video production, photography, dialog, etc., while the performer may claim ownership of the accompanying music, and the graphic artist claims ownership of all graphic production.)[5] In any multimedia work, there may be several elements, usually including a motion-picture element or other audiovisual element, or a sound recording element.

> An **audiovisual element** consists of a series of related pictorial images intended to be shown by the use of projectors, viewers, or electronic equipment. This element may be a filmstrip, slides, a film, a videotape, a videodisk, or a CD-I.

> A **motion-picture element** is an audiovisual element which consists of a series of related images which, when shown in succession, impart an impression of motion. This element may be in the form of film, videotape, videodisk, or a CD-I.

> A **sound-recording element** is a series of recorded sounds. Sounds accompanying an audiovisual or motion picture element are not defined in the copyright law as a "sound recording."

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[5]This again demonstrates the importance of determining final ownership of each element in a contract when hiring freelance artists. Ownership of product remains with the author unless it is created by an employee or producer is granted specific ownership through written contract by the author upon hire. Just because you paid a freelance artist to create it, doesn't mean you own it.

There is some activity in this area of copyright law. With the increased interest in producing the new DVD format, some forms of DV might fall under multimedia protection, while others might fall under the more traditional protections of motion picture, sound recording or text. As with any new format, the laws will eventually catch up with the technology. In the meantime, to use DVD information, it would be best to seek professional help in copyright searches.

AUDIOVISUAL WORKS

Audiovisual works include motion pictures, video recordings and other works that involve a series of related images, motion and sound. It can be more difficult to track down ownership of such works, but the process of identifying ownership is the same as with any other work. Unfortunately, there is no established clearing house for requesting rights to these works. The best place to start is with the name on the copyright notice. Contact the US. Copyright Office for ownership records and to see if the work is formally registered. If there is no notice and the work is not registered, contact the producer or executive producer listed on the credits. Again, it is easier to hire someone to do this search for you if budget allows.

It is important to know exactly what is protected by copyright law when dealing with audiovisual works.

- Only the expression (camera work, dialog, sounds, graphics, etc.) that are fixed in the final product are protected by copyright.
- You cannot copyright the idea or concept behind the work or any characters portrayed in the work. (Some characters can be covered under trademark law. . .but that's another book. For now, questions about trademark protection should be directed to your legal counsel.)
- A live telecast is not protected until it is fixed in a copy.
- A screenplay or treatment of a future audiovisual work or derivative cannot be protected as an audiovisual work. Once it is produced, the screenplay, to the extent it is embodied in the

motion picture, is considered an integral part of the final product. (NOTE: However, a screenplay or treatment can be protected as text. So, if you use someone's treatment to produce a video without permission, you will be infringing on their rights by producing an unauthorized derivative work.)

A work is protected upon creation whether or not it has been registered with the US. Copyright Office and whether or not a copyright notice has been affixed to the final work. If the notice can be identified, (highly recommended by the way) it makes ownership easier to track and allows the creator of the work to be contacted for copyright clearance.

NOTE: Getting permission to copy portions of a video may include additional concerns. Talent hired to appear in the video have contractual rights to their performance. Not by copyright, but by contract. It is in your best interest to be sure the talent who appear in the original video are notified of your intended use and grant consent to appear in your video.

MUSIC

For use of musical selections, it is important to remember that a song is probably registered in a few different ways. The publisher can register the song and the arrangement (musical composition), the performer can register the performance of the recording (musical performance) and the producer (or label) can register the actual sound recording. If you want a specific song, by a specific artist and a specific recording you will have to make sure you clear each of these elements in applying for license.

This does, however, give you some options. You can get clearance from the publisher for the song/arrangement and hire musicians and a singer to re-record the song. The composition rights can sometimes be purchased inexpensively and you can hire the other performers oftentimes for much less money than paying for the performance license for the original recording. You can also pay the publisher for use of the song and contact the artist to perform the song for your use, but this is

not usually a less expensive option unless the performer is not widely known.   There are several types of licensing for copyright clearance. Once you have determined your needs, you will then determine what kind of license you will need to obtain from the copyright owner.   The most common types of licenses for musical composition are:

PerformanceLicense	To perform the work in the presence of an audience. (MAY be covered by a blanket license)
Sync License	Allows you to cut visuals to composition.
Mechanical License	Can record and distribute the music on an audio only format.
Adaptation Right	Allows for use and alteration of the music to fit your final product. Also used for parody applications. (Might also be required for use of sound recording depending on the use.)

For sound recording clearances you will most often require:

Master Use Rights	The use of an original work in full or in part.

The rights to musical compositions and sound recordings are likely to be assigned to music performing rights organizations (PRO's)such as BMI, SESAC and ASCAP. When a product is assigned to one of these organizations, the publisher and performers often leave the task of handling the details of copyright requests to them.   (Some performers do not permit these clearinghouses to grant performance rights for them, they will often deal only with lawyers, talent agencies and copyright search firms.)   All of the major PRO's are accessible through the internet. They are:

ASCAP	BMI	SESAC
ASCAP Building	320 West 57th St.	156 West 56th St.

One Lincoln Plaza   New York, NY 10019   New York, NY 10019
New York, NY 10023
http://www.ascap.com   http://www.bmi.com   http://www.sesac.com

These are fun sites to visit because they have search capacities for songs when you only remember a few words, or you only remember the song, but not the artist. You can even download portions of a tune to see if it's the one your looking for. Just remember to get clearance for it before you use it!

REMINDER: Often you will need more than one license for a specific project. For example, if you want to use a Moody Blues song as background for your animated video of airplanes being blown up you will need permission from the artist and publisher for a performance license and a sync license to put images to the music. (You would also need Master Use rights if you plan on using the original recording.) If you decided to change the song in any way, i.e. put the last verse first and first last, you would also need the adaptation rights.

In any case, be sure to get a warranty from any party who licenses something to you that they have those rights to grant to you and indemnity so if you are sued, they pay.

Musical Compositions

There are significant differences in seeking permission to use a musical composition and a sound recording.[6] Different approaches are involved with each as they are separate copyrights with separate owners.

A musical composition is a musical work, including any accompanying words, which are fixed in some tangible medium of expression. Musical works include both original compositions and original arrangements or other new versions of earlier compositions to which new copyrightable authorship has been added.

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[6]See U.S. Copyright Circular 56 for more information on Sound Recordings and U.S. Copyright Circular 50 for more information on Musical Compositions. U.S. Copyright Circular 56a further explains the differences between the two.

•If you plan to use a composition and record a new version (often cheaper but more time consuming), you must get a license from the publisher who controls and probably owns the copyright.

•If you need the right to perform the composition you may need to go to the PRO's (Performance Right Organization), though quite often when getting a sync license the publisher will issue it directly.

•The most convenient way to seek all rights necessary is to contact a clearance organization (e.g. Harry Fox, The Clearing House, B & Z Rights) and pay for the search to be completed to your needs and specifications.

Sound Recordings

A sound recording is a work that results from the fixation of a series of musical, spoken, or other sounds, but not including the sounds accompanying a motion picture or other audiovisual work. The author of a sound recording is usually the label. It is important to make sure the label has the right to assign the artist's performance for the purpose you've requested. If they do not, you may have to contact the performer or his/her legal representative for permissions.

If you are seeking to use the words and the music, you would research the musical composition category (author would have filed a form PA.) If you are seeking to use the actual recording of the composition, you would also have to search sound recordings through the record label.

There is further and more detailed explanation of these areas in Library of Congress Copyright circulars 50 and 56.

TEXT

In my experience, producers don't often rely on text information for copyright issues. The few questions asked in this area involve creating an animation, screenplay or dialog from a book. The same rules apply to copyright protection of any text. It is protected from the moment of

creation and all derivatives of that work are also protected. If you plan on making an animation or video based on a written work, you must get permission.

However, getting permission is usually quite simple. If it is a published work, begin your inquiry's with the publisher. They can often either give permission or put you in contact with the author who can give permission. One video professional wanted to use a chapter from a book as a training manual to accompany a video on teaching children to read. When she contacted the author, she not only received written clearance (from the author and from the publisher) at no cost, but the author also provided additional information from an unpublished revision for use in the video.

There are several circulars dealing with specifics in the print areas. See Circular 62 for serials (periodicals, newspapers, magazines, bulletins, newsletters, annuals, journals) and other similar works; Circular 62c for daily newsletters; and Circular 44 for cartoons and comic strips.

PROTECTING YOUR WORK

After spending several weeks or months putting together a creative and successful program, it is in your best interest, or your company's, to register the completed program with the Library of Congress Copyright Office. Although any work is automatically protected once it is stored in a tangible form, it must be formally registered before an infringement suit can be filed and before any punitive damages can be requested. Proper filing also makes it easier for those wishing to contact you for clearances and permissions to find you and make such requests. The filing procedures are fairly simple and the cost is minimal.

Many of the questions asked during copyright seminars involve how a person can protect their work from the unfair use of others. Other questions refer to who actually is responsible for filing the forms for a

specific work.   Each common category is broken down in the following chapter to make it easier for you to find the procedures to follow.

SECURING COPYRIGHT

Copyright protection exists from the time the work is created in fixed form; that is, it is an incident of the process of authorship. The copyright in the work of authorship immediately becomes the property of the author who created it. Only the author or those deriving their rights through the author can rightfully claim copyright.

According to the Library of Congress (see Circular 1) the way in which copyright protection is secured under the present law is frequently misunderstood. No publication or registration or other action in the Copyright Office is required to secure copyright.   Before 1978, statutory copyright was generally secured by the act of publication with notice of copyright, assuming compliance with all other relevant statutory conditions.

However, in works created after 1978, copyright is secured automatically when the work is created, and a work is "created" when it is fixed in a copy or phonorecord for the first time. "Copies" are material objects from which a work can be read or visually perceived either directly or with the aid of a machine or device, such as books, manuscripts, sheet music, film, videotape, or microfilm. "Phonorecords" are material objects embodying fixations of sounds (excluding, by statutory definition, motion picture soundtracks), such as cassette tapes, CD's, or LP's. Thus, for example, a song (the "work") can be fixed in sheet music ("copies") or in phonograph disks ("phonorecords"), or both.

If a work is prepared over a period of time, the part of the work that is fixed on a particular date constitutes the created work as of that date.

Publication

Publication is no longer the key to obtaining statutory copyright as it was under the Copyright Act of 1909. However publication remains important to copyright owners.

The Copyright Act defines publication as follows:

"Publication" is the distribution of copies or phonorecords of a work to the public by sale or other transfer of ownership, or by rental, lease, or lending. The offering to distribute copies or phonorecords to a group of persons for purposes of further distribution, public performance, or public display constitutes publication. A public performance or display of a work does not of itself constitute publication.

A further discussion of the definition of "publication" can be found in the legislative history of the Act. The legislative reports define "to the public" as distribution to persons under no explicit or implicit restrictions with respect to disclosure of the contents. The reports state that the definition makes it clear that the sale of phonorecords constitutes publication of the underlying work, for example, the musical, dramatic, or literary work embodied in a phonorecord. The reports also state that it is clear that any form of dissemination in which the material object does not change hands, for example, performances or displays on television, is not a publication no matter how many people are exposed to the work. However, when copies or phonorecords are offered for sale or lease to a group of wholesalers, broadcasters, or motion picture theaters, publication does take place if the purpose is further distribution, public performance, or public display.

Publication is an important concept in the copyright law for several reasons:

When a work is published, it may bear a notice of copyright to identify the year of publication and the name of the copyright owner and to inform the public that the work is protected by copyright. Works published before March 1,1989, were required to display the notice or risk loss of copyright protection.

Works that are published in the United States are subject to mandatory deposit with the Library of Congress.

Publication of a work can affect the limitations on the exclusive rights of the copyright owner that are set forth in sections 107 through 120 of the law.

The year of publication may determine the duration of copyright protection for anonymous works and pseudonymous works (when the author's identity is not revealed in the records of the Copyright Office) and for works made for hire.

Deposit requirements for registration of published works differ from those for registration of unpublished works.

Notice of Copyright

For works first published on and after March 1, 1989, use of the copyright notice is optional, though highly recommended. Before March 1, 1989, the use of the notice was mandatory on all published works, and any work first published before that date must bear a notice or risk loss of copyright protection.

Use of the notice is recommended because it informs the public that the work is protected by copyright, identifies the copyright owner, and shows the year of first publication. Furthermore, in the event that a work is infringed, if the work carries a proper notice, the court will not allow a defendant to claim "innocent infringement"--that is, that he or she did not realize that the work is protected. (A successful innocent infringement claim may result in a reduction in damages that the copyright owner would otherwise receive.)

The use of the copyright notice is the responsibility of the copyright owner and does not require advance permission from, or registration with, the Copyright Office.

Form of Notice for Visually Perceptible Copies

The notice for visually perceptible copies should contain all of the following three elements:

1. The symbol © (the letter in a circle), or the word "Copyright" or the abbreviation "Copr."; and

2. The year of first publication of the work. In the case of compilations or derivative works incorporating previously published material, the year date of first publication of the compilation or derivative work is sufficient. The year date may be omitted where a pictorial, graphic, or sculptural work, with accompanying textual matter, if any, is reproduced in or on greeting cards, postcards, stationery, jewelry, dolls, toys, or any useful article; and

3. The name of the owner of copyright in the work, or an abbreviation by which the name can be recognized, or a generally known alternative designation of the owner.

Example: © 1997 John Doe

Works Including US. Government Materials

Works by the US. Government are not eligible for copyright protection. It is legal to incorporate materials produced by the government into your work (Be SURE the work wasn't actually created by an outside source who may own the copyright.) For works including government information published on and after March 1, 1989, use of the copyright notice is still strongly recommended. Use of a notice on such a work will defeat a claim of innocent infringement as previously described provided the notice also includes a statement that identifies one of the following: those portions of the work in which copyright is claimed or those portions that constitute US. Government material.

An example is:

International Copyright Protection

There is no such thing as an "international copyright" that will automatically protect an author's writings throughout the entire world. Protection against unauthorized use in a particular country depends, basically, on the national laws of that country. However, most countries do offer protection to foreign works under certain conditions, and these conditions have been greatly simplified by international copyright treaties and conventions. For a list of countries that maintain copyright relations with the United States, request Circular 38a.

HOW TO REGISTER

AUDIOVISUAL WORKS [7]

Motion pictures are audiovisual works consisting of a series of related images which, when shown in succession, impart an impression of motion, together with any accompanying sounds. They are typically embodied in film, videotape, or videodisk.
Only the expression (camera work, dialogue, sounds, etc.) fixed in a motion picture is protractible under copyright. Copyright does not cover the idea or concept behind the work or any characters portrayed in the work.

CHOOSING THE APPROPRIATE FORM

To register a motion picture, video recording or other audiovisual work, the proper form is the PA (Performing Arts).

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[7]From U.S. Copyright Circular 45 (Motion Pictures Including Video Recordings.)

To register either a published or unpublished motion picture, send the following to Register of Copyrights, Copyright Office, Library of Congress, Washington, DC. 20559:

1. A signed application on Form PA;
2. One complete copy of the motion picture being registered (see "Deposit Requirements for Registration," below);
3. A separate written description of the contents of the motion picture; and
4. A non refundable filing fee of $20 for each application in the form of a draft (that is, a check, money order, or bank draft) payable to: Register of Copyrights. Do not send cash.

If it is impossible or highly impractical to send the deposit (for example, a 35mm film) in the same package with the other registration material, include a letter with each set of materials indicating that the missing element(s) are being sent under separate cover.

We suggest that you contact your local post office for information about mailing these materials at lower-cost fourth class postage rates.

VISUAL ARTS [8]

Copyright protects original "pictorial, graphic, and sculptural works," which include two-dimensional and three-dimensional works of fine, graphic, and applied art. The following is a list of examples of such works:

Advertisements, commercial prints, labels;
Artificial flowers and plants, floral arrangements;
Artwork applied to clothing or other useful articles;
Cartographic works: maps, globes, relief models;
Cartoons, comic strips;
Collages; Dolls, toys;
Drawings, paintings, murals;

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[8]From U.S. Copyright Circular 40 (Works of the Visual Arts.)

Enamel works; Fabric, floor, and wall covering designs;
Games, puzzles; Greeting cards, postcards, stationery;
Holograms, computer and laser artwork;
Models; Mosaics;
Original prints: engravings, etchings, serigraphs,
Photographs, photomontages;
Posters;
Record jacket artwork or photography;
Relief and intaglio prints;
Reproductions: lithographs, collotypes;
Sculpture: carvings, ceramics, figurines, maquettes,
Stained glass designs;
Technical drawings, architectural drawings or plans,
Blueprints, diagrams, mechanical drawings;
Weaving designs, lace designs, tapestries.

CHOOSING THE APPROPRIATE FORM

Form VA is the appropriate form for registration of a work of the visual arts. The form should be completed legibly with black ink or typewriter. Do not use pencil or send a carbon copy. All pertinent information should be given on the basic application form.

If you choose to register a claim in your work, package together the following materials in the same envelope and to Register of Copyrights, Copyright Office, Library of Congress, Washington, DC. 20559:

1. A properly completed application;

2. A non returnable deposit of the work to be registered; and

3. A non refundable filing fee of $20 in the form of a check or money order, payable to the Register of Copyrights with each application.

MORAL RIGHTS FOR VISUAL ARTISTS

For certain one-of-a-kind visual art and numbered limited editions of 200 or fewer copies, authors are accorded rights of attribution and integrity. The right of attribution ensures that artists are correctly identified with the works of art they create and that they are not identified with works created by others. The right of integrity allows artists to protect their works against modifications and destructions that are prejudicial to the artists' honor or reputation. These rights may not be transferred by the author, but they may be waived in a written instrument. Transfer of the physical copy of a work of visual art or of the copyright does not affect the moral rights accorded to the author.

MULTIMEDIA [9]

A multimedia work is a work, often instructional, which, excluding its container, combines authorship in two or more media. The authorship may include:

- text
- photography
- artwork
- sounds
- sculpture
- music
- cinematography or
- choreography.

The media may include two or more of the following:

- printed matter, such as a book, charts or posters, or sheet music;
- audiovisual material, such as a filmstrip, slides, videotape,
- or videodisk;
- a phonorecord, such as an audiodisk or audiotape; or
- a machine-readable copy, such as a computer-read disk, tape, or chip.

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[9]From U.S. Copyright Circular 55 (Multimedia Works.)

For the purpose of copyright registration, it is important to identify the copyrightable elements contained in the multimedia work. Identifying the elements will help you to determine which application form to use and what type of material to deposit.

In any multimedia work, there may be several elements, usually including a motion-picture element or other audiovisual element, or a sound recording element.

An **audiovisual element** consists of a series of related pictorial images intended to be shown by the use of projectors, viewers, or electronic equipment. This element may be a filmstrip, slides, a film, a videotape, a videodisk, or a CD-I (interactive compact disk).

A **motion-picture element** is an audiovisual element which consists of a series of related images which, when shown in succession, impart an impression of motion. This element may be in the form of film, videotape, videodisk, or a CD-I.

A **sound-recording element** is a series of recorded sounds. Sounds accompanying an audiovisual or motion picture element are not defined in the copyright law as a "sound recording."

CHOOSING THE APPROPRIATE FORM

The appropriate form for registration depends on what elements make up the multimedia kit.

Generally, select the application form on the following bases:

1. Use Form PA if the work contains an audiovisual element, such as a filmstrip, slides, film, or videotape, regardless of whether there are any sounds.

2. Use Form SR if the work does not contain an audiovisual element, but contains an audiotape or disk in which sound-recording authorship is claimed (such as a CD).

3. Use Form TX if the work contains only text, such as a manual and a computer program that produces a textual screen display. (See Circular 61 for further information.)

Single Unit Registration

All copyrightable elements of a multimedia kit may generally be registered with a single application, deposit and fee, provided: 1) they are not published, or if published, are published together as a single unit; and 2) the copyright claimant is the same for each element.

Separate registrations for individual elements may be made by submitting a separate application and filing fee for each. A separate registration is required, however, for any element of a multimedia kit that is published separately or claimed by someone other than the copyright claimant for the other elements.

To register a claim to copyright in a work, send the following three elements in the same envelope or package to the Register of Copyrights, Copyright Office, Library of Congress, Washington, DC. 20559:

1. A non refundable filing fee of $20 for each application;
2. A non returnable deposit (copy) of the work for which registration is being made; and
3. A properly completed application form.

NOTE: Regardless of the form used, the application may include a claim in all accompanying authorship.

MUSIC

To register music with the Copyright Office, you must first determine whether the work should be registered as a musical composition or as a sound recording. Each requires a different Form for registration.

Musical Compositions [10]

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[10]From U.S. Copyright Circular 50 (Musical Compositions.) Unless otherwise noted, all Circulars were downloaded from the U.S. Library of Congress Copyright Office via the internet as of April, 2002.

If you choose to register a claim of your work, send the following material in the same envelope or package to the Register of Copyrights, Copyright Office, Library of Congress, Washington, DC. 20559:

1. A properly completed application form;

2. A non returnable deposit of the work to be registered; and

3. A non refundable filing fee of $20 with each application.

Application Form

Form PA is the appropriate form for registration, whether it is accompanied by the deposit of a "copy" (lead sheet or sheet music) or a "phonorecord" (disk or tape). The form should be completed with pen-and-ink (preferably black) or typewriter. Do not use pencil or send a carbon copy. All pertinent information should be supplied on the basic application form. A Continuation Sheet supplied by the Copyright Office should be used only when all necessary information cannot be recorded on the basic application form. No other attachments will be accepted.

Sound Recordings [11]

Copyright in a sound recording protects the particular series of sounds "fixed" (embodied) in the recording against unauthorized reproduction and revision and against the unauthorized distribution of phonorecords containing those sounds.

Generally, copyright protection extends to two elements in a sound recording: (1) the contribution of the performer(s) whose performance is captured, and (2) the contribution of the person or persons responsible for capturing and processing the sounds to make the final recording.

CHOOSING THE APPROPRIATE FORM

Copyright registration for a sound recording alone is not the same as, nor a substitute for, registration for the musical, dramatic, or literary

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[11]From U.S. Copyright Circular 56 (Sound Recordings.)

work recorded. The underlying work may be registered in its own right apart from any recording of the performance, or in certain cases, registered together with the sound recording.

When to Use Form SR

Use Form SR for registration of published or unpublished sound recordings, that is, when you are seeking to register the particular sounds or recorded performance.

Form SR may also be used if you wish to make one registration for both the sound recording and the underlying work (the musical composition, dramatic or literary work). You may make a single registration only if the copyright claimant is the same for both the sound recording and the underlying work. In this case, the authorship statement in Space 2 should specify that the claim covers both works.

Form SR is also the appropriate form for registration of a multimedia kit that combines two or more kinds of authorship including a sound recording (such as a kit containing a book and an audiocassette).

NOTE: In November, 1996 the US. Copyright Office issued an opinion that the "output of standard MIDI files are works of authorship copyrightable as sound recordings since the information in the file causes the sound device to render the pitch, timbre, speed, duration and volume of the musical notes in certain order as does a player piano or a CD player."[12]

When to Use Form PA

For registration purposes, musical compositions and other works intended to be performed are classified as works of the performing arts. For example if you wish to register only the musical composition (not the particular sounds of recorded performance) you should use Form PA even though your deposit may be a phonorecord.

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[12]*Playback*, "Industry Skinny: MIDI Files Considered Phonorecords," NAME News Publication, November, 1996

Whether a musical composition is fixed (embodied) in a notated copy such as a lead sheet or sheet music, OR in a phonorecord such as a tape or disk does not affect its classification as a work of the performing arts.

If you choose to register your work, send the following three elements in the same envelope or package to: Register of Copyrights, Copyright Office, Library of Congress, Washington, DC. 20559

1.   An application on the appropriate form;
2.   A non returnable deposit of the work for which registration is sought; and
3.   A non refundable filing fee of $20 in the form of a check or money order (payable to the Register of Copyrights) for each application.

NOTE: Sounds Accompanying Motion Picture or Other Audiovisual Works should not be registered on Form SR; the copyright law does not define these sounds as "sound recordings," but as an integral part of the motion picture or audiovisual work in which they are incorporated.   These works are classified as works of the performing arts and should be registered on Form PA. Request Circular 55, "Copyright Registration for Multimedia Works" for more   information.

TEXT [13]

Published and unpublished literary works can be registered by the author once fixed in a tangible form. This is the category for registering scripts and other written materials for later production. (Once the script is produced, it can be protected as one of the integral elements of a motion picture or video recording using a for PA.)

CHOOSING THE APPROPRIATE FORM

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[13]From U.S. Copyright Circular 1 (Copyright Basics.)

Form TX is the appropriate form for registration of a literary work. However, Form SE would be the appropriate form for serials, works issued or intended to be issued in successive parts bearing numerical or chronological designations and intended to be continued indefinitely (i.e. periodicals, newspapers, magazines, newsletters, annuals, journals, etc.)

To register a claim to copyright in a work, send the following three elements in the same envelope or package to the Register of Copyrights, Copyright Office, Library of Congress, Washington, DC. 20559:

1. A non refundable filing fee of $20 for each application;
2. A non returnable deposit (copy) of the work for which registration is being made; and
3. A properly completed application form.

FOR ALL REGISTRATION APPLICATIONS

A copyright registration is effective on the date the Copyright Office receives all of the required elements in acceptable form, regardless of how long it then takes to process the application and mail the certificate of registration. The time the Copyright Office requires to process an application varies, depending on the amount of material the Office is receiving and the personnel available. It must also be kept in mind that it may take several days for mailed material to reach the Copyright Office and for the certificate of registration to reach the recipient.

If you apply for copyright registration, you will not receive an acknowledgment that your application has been received (the Office receives more than 600,000 applications annually), but you can expect:

-- A letter or a telephone call from a Copyright Office staff member if further information is needed; or

-- A certificate of registration indicating that the work has been registered, or if the application cannot be accepted, a letter explaining why it has been rejected.

You may not receive any communication from the Copyright Office until 120 days have passed. If you want to know the date that the

Copyright Office receives your material, send it by registered or certified mail and request a return receipt. You can also enclose with your material a self-addressed stamped postcard briefly describing your material. The Copyright Office will stamp it with the date of receipt and mail it back to you.

Summary:
It is as important to protect your own work as it is to seek proper clearance for the use of the work of others. It is in your best interest to make contact information clear so that people who do want to use your work can find you.

Different works require different forms on file with the Copyright Office. Be sure the form you file is the required form for proper protection of your work. The more you know about copyright, the less likely you will be to run into issues of infringement and improper use of your works and the works of others.

For more information: www.copyright.gov