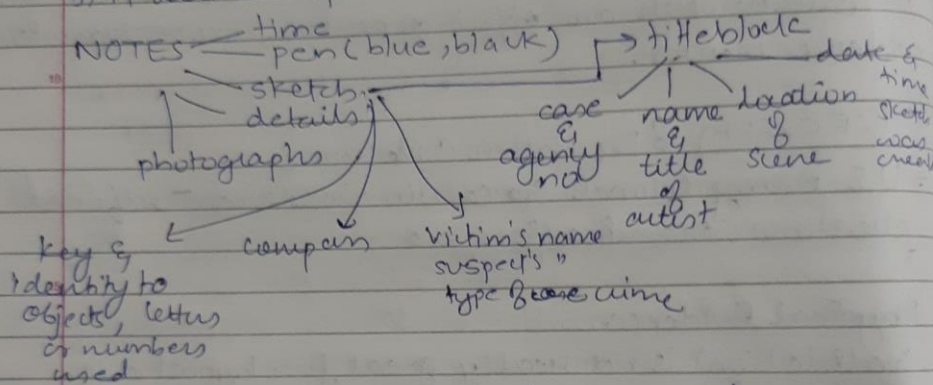


Ch 3 - Recording the crime scene

Initial notes should include:

- 1) who contacted the investigator
- 2) when the contact was made
- 3) what the case entails:
 - case number
 - case type (stabbing)
 - names & DOB ^{suspects} ^{witnesses}
- 4) where the scene is located → physical address
- 5) if additional personnel



Photography is considered as visual evidence
 → produce examination quality photographs that document crime scene & provide evidence
 → everyone should be able to interpret photographs easily

layout of crime scene

- position & dimension of evidence to be collected
- physical relation of one object to another
- documenting biological evidence in original condition

They are complementary to notes & sketches

To be admissible as evidence in justice system:

- 1) they must represent crime scene as found without manipulation or bias.
- 2) any re-creations of scene or manipulation must be documented.
- 3) they must have bearing on the case in question
- 4) they must not engage in emotional manipulation

DIGITAL PHOTOGRAPHY

- Light sensitive microchip inside a digital camera is exposed to light coming from an object or scene.
- Captures light on each of millions of tiny picture elements called "pixels".
- Light on each pixel is recorded as a specific electric charge using a charged coupled device (CCD) or complementary metal oxide semiconductor (CMOS).
- Camera reads this charge number as image info & stores as file on SD card.

→ No. of pixels \propto resolution $\propto \frac{1}{\text{distance}}$
minimum distance that must separate two objects in order for them to be viewed as distinct objects.

- High Resolution → more detail, sharper.
- megapixels.

Scientific Working Group on Image Technology (SWGIT)
→ use a single-lens reflex (SLR) camera with at least 8MP resolution

Adv: ① increase investigation

- ② aid in evidence's provision & suspect identification
- ③ can create 3D panoramic view by stitching together diff. images captured

Dis: ① since digital, easy manipulation using comp. software
② cropping of photo.

Admissible of digital images

SOFT — standard operating procedures

- 1) must be reliable
- 2) " " reproducible
- 3) " " secured & integrity should be assured
- 4) both original and altered images & their metadata must be made available with judicial process.

Goal: set guidelines for determining circumstances under which digital photography may be used

Camlin Page
Date / /

- digital photographs - copied to only writable disk
↳ not on rewritable; since easy alterations
↳ new image saved separately after enhancing
- preservation - lossy or lossless compression
condenses files by disregarding some image info and this is irretrievable.

JPEG

TIFF, RAW
tagged image file format

mostly used cameras

DSLR - digital single lens reflex camera.

With min. 8MP, interchangeable macro, zoom, manual override, external flash with GH extension cord, using flash attached, remote shutter release cable, lightening slaves & towers, barrier and bypass filters, polarizing filters, tripods, reflectors, tape measure, scale, storage media, large imaging microchip

most: take IR & UV photography

LENSES - bends light to focus an image on film or detector

thicker → greater ability to bend light

$\propto \frac{1}{f}$

based on the size of the focal length → charge-coupled device (CCD) or complementary metal-oxide-semiconductor (CMOS)

most photographs relatively wide angle

- 1) Normal lens → 50-55mm f. → as much area as half a wall
- 2) Telephoto lens → 100mm f, 200mm → allows to zoom in
- 3) Wide Angle lens → $f < 50\text{mm}$
- 4) Macro lens - close & good detailed $f < 50\text{mm}$
- 5) Multipurpose lens - zoom lens

$28 < f < 80\text{mm}$
normal wide angle

SLR
DSLR

allow manual adjustment of

camera settings: aperture, shutter, ISO, white balance, etc.

Aperture - diaphragm - allows in light to film

$$f\text{-number} = \frac{\text{focal length}}{\text{diameter of aperture}}$$

each f-stop indicated

2-fold difference in amt of light entering camera.

f-2 aperture

> f-22 aperture.

• aperture priority camera - allow user to control the f-stop manually, but not shutter speed

↓
 mechanism that controls exposure of film/microchip to light

• shutter speed : length of time microchip is exposed to light
 unit : fractions of second.

① auto mode

② night mode (slower) ☾ or ☆

③ sport mode

④ mountain landscape mode (high f-stop)

← (higher shutter speed)

⑤ portrait mode (low f-stop)

Depth of field

every element of composition is in focus
 max " → determined by : aperture size, f-stop selection, lens selection, distance b/w camera & subject.

$$\text{depth of field} \propto \frac{1}{\text{aperture}} \propto \text{f-stop number}$$

• foreground and background of object in focus is also in focus.

• Illumination - light falling on an object in photo

• color temp : measurement of difference in hue b/w a light source and a theoretical source of perfect white light.
 "Hot" - blue, "cold" - red/orange hue.

KEY while surveying crime-scene

Crime Scene Photography

Photographs

- 1) Show the layout & crime scene
- 2) " posⁿ of collected & uncollected evidence
- 3) " pov of victims, suspects, witnesses
- 4) " original condⁿ of items of evidence at scene

* Photographic film - sheet of silver halide grains - expose presence of light

✱ Illumination

- light falling on object.
- light sources alter an object's illumination

→ angle matters to make sure proper illumination

Factors: ① amount of light illuminating the object

② angle of illuminⁿ

③ use of flashes

④ " " reflectors to direct light

⑤ " " filters

⑥ tripods

eliminates blurred photos

check for tripod that has:

- independently adjustable legs for uneven terrain

- a level to ensure 90° images of evidence

Baier filters

↓
block specific wavelengths of light to reach film

Bypass filters

↓
allow small range of wavelengths & block others

Outdoor! — locⁿ of photographs by GPS or landmarks
→ may include aerial photos.

Special Crime Scene Photography

① Arson photography —

- point of fire's origin
- use of special equipment
- outside crowd scene since arsonists ^{commonly} return

② Sexual assault

- all wounds, clothing while showing discretion to victim

③ Impression photography

- details & scales to later create 1:1

④ Bloodstain photography

- all persistent stains, ^{determined} area of convergence of origin
- luminol photo in dark

⑤ Fingerprint

- usually ~~seen~~ seen in black and white to show greater contrast
- use special latent fingerprint camera

* Adv of digital Photography.

- 1) clear & show best detail
- 2) resolution can exceed 6 MP, while SLR gives max 5 MP
- 3) 3-D view can be created of crime scene

* Disadv

- 1) may lose image data through compression
- 2) easily manipulated through comp. programs

* Law enforcement

- 1) Developing Standard Operating Procedures followed
- 2) saving images on writable disk by lossless compression
- 3) saving altered files separately
- 4) keeping detailed and accurate photography log
- 5) accuracy of digital images to be submitted as testimony.

VIDEOTAPING

- must include overview, mid range, close up
- narration needed - only narrator heard
- photograph also required

Sketching Crime Scene

- (1) layout
- (2) relⁿ among all items, features ^{imp}
- (3) classify object in notes described
- (4) measurement over long distances & topography of outdoor scenes
- (5) depict path of entry, exit, movement
- (6) account of victim, suspect's witness is feasible

Rough Sketch

- compass show TN
- Body
- objects ^{identity} ^{dimensions}
- points of references ^{rectangular} ^{triangulation} ^{baseline} ^{polar coordinate method}
- title block ^{case info} ^{prime scene} ^{info person making sketch}