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# Orientation Photography in Forensics

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ABSTRACT: Crime scene photography, part of forensic photography, knows several procedures. They are usually divided into two categories - general procedures and special procedures. In particular, the general shooting procedures, as their name suggests, are applicable and are carried out in all cases where research is carried out on the spot, and their importance is emphasized by this feature. This is also the reasoning for which, in this paper, I set out to present the first general procedure of forensic photography that takes place on the spot, namely orientation photography. In the presentation of this topic, I will approach in detail the description of this procedure and its membership in forensic photography, the criteria that must be met by the photography equipment, and some rules of execution that must be taken into account.

KEYWORDS: forensic, photography, orientation, crime, scene, investigation

## Introduction

Forensic photography, defined as "all the special methods of photographing and studying material evidence used in the investigation of crimes" (Vinberg, Mitricev, Comarineț 1953, 54), can be divided into various categories and subcategories, depending on the criteria chosen. Often, in specialized works, it is divided into two main categories, which do not differ at all. The first category is called operational forensic photography and includes all categories of photographs taken at the crime scene (orientation photography, special procedures for shooting traces, reconstitution photography) and for fixing other activities, their role being to include as much information as possible about the crime scene, which will ultimately serve to find out the truth (Ciobanu 2017, 120).

The second category, called forensic examination photography, includes all photographs taken in forensic laboratories (illustration photography, invisible radiation photography).

In the specialized literature, depending on the circumstances, purpose and moment of shooting, the operative forensic photography is classified in: crime scene photography, mug shot photography and the photography for fixing some criminal investigation activities (Ion 1998, 29). In their turn, crime scene photography is devided in two categories, namely: general procedures and special procedures. Although both are particularly important, it is important to note that, unlike special procedures, the general ones apply in all cases where crime scene investigation is carried out.

The actual examination of the crime scene begins with the topographic and forensic orientation of the place of the crime. The fixing of the coordinates, of the place where the deed was committed is done, in the first phase, with the help of the orientation photography, and then with the help of the overall photography (Aionițoaie 1994, 37). Since in some areas orientation photography is called overall photography, overview photography or long range photography (Austin Police Department, 8) and in other areas these three notions involve taking photos exclusively of the place of the crime (McNeill 2020), I chose to call this procedure *Orientation Photography.*

## Notion and elements of interest

Orientation photography is a general procedure of shooting at the place of the crime. Its purpose is to capture the crime scene between certain coordinates that will serve to locate and identify it.

Usually, as we mentioned in the introduction of the work, it is the first photography procedure that takes place on the spot. As exceptions, there are situations in which other procedures are performed before. As an example, the deep footprints identified on a clay soil can be altered due to precipitation, in which case their photography will be a priority in the context of imminent showers.

The orientation photographies must be taken in such a way as to fully capture the perimeter in which the act was committed, as well as other elements capable of indicating the distance and positioning between this perimeter and the nearest buildings, streets, signs, milestones, barriers or any other elements considered fixed landmarks in the area. In this sense, it can be included a car whose condition indicates that it has not been used, moved from that place for a long time. In the event that the crime was committed in a bedroom, not only the entire apartment will be photographed, but also the exterior of the building (the landing, the staircase of the building, as well other elements mentioned above).


Figure 1. Hypothetical Example of Orientation Photography
*Source: Personal Archive*

The fact that the place under investigation is located in the field, forest, water, etc. it must determine the extension of the area to be examined over as wide an area as possible, covering the roads, paths, obligatory places of passage to the neighboring localities or the intensely circulated national or county roads. Practice has shown that on these ways used by the offender to move as far away as possible from the place of the crime, traces and material means of evidence can be discovered, of particular importance for the case (Aioniţoaie 1994, 35-36).

In the event that the death was caused by drowning, the access roads to the water banks will be examined, respectively photographed. Useful for this situation can be a polarizing filter, which has the ability to remove reflections from glossy surfaces, as can be considered the surface of the water. Likewise, in the event of explosions, the research will be extended to the maximum limit of horizontal blast action (Aioniţoaie 1985, 57-58).

The purpose of this forensic photography procedure is to help judicial bodies determine the perpetrator's access possibilities, to find out if a witness or a suspect existence is possible (for example, a security guard could have been in a security booth), to identify more easily the place of committing the deed, in case it may be necessary to resume this activity or to carry out other criminal investigation activities, such as the home search, the reconstitution of the deed.

In the case of the reconstitution of the deed or the conduct of the home search, I remind you that, in order to facilitate the identification of the place where the orientation photos were taken, certain models of cameras are equipped with the geotagging function. This function allows you to store in the EXIF (exchangable image file format) of the image the

geographical coordinates from the moment when the shutter-release button is pressed, coordinates which may consist in the number of satellites, date and time of the GPS, latitude, longitude, altitude. This information can be viewed either from the camera menu or using a computer by right-clicking on the photo and then accessing *Properties*, *Details*.

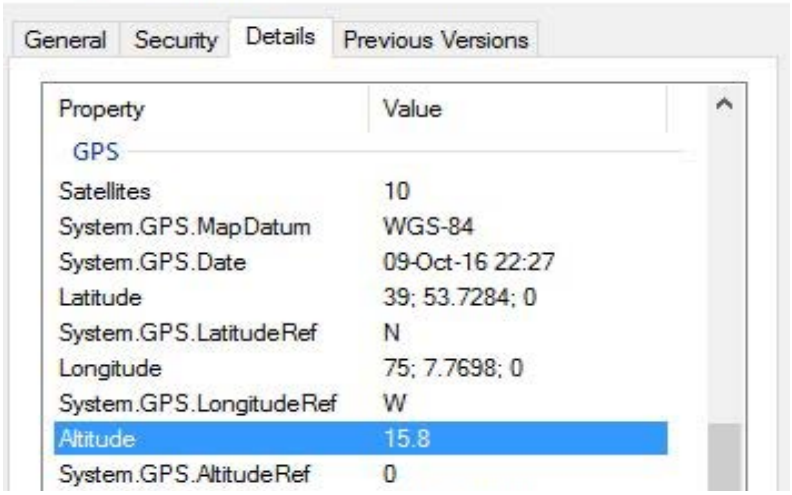


Figure 2. Viewing Geographic Coordinates On A Computer
*Source: www.photo.net*

**Recommended equipment**

The photography gear should contain all the tools, accessories, and objects necessary for the proper execution of any on-site shooting process, as the orientation photo will be followed by the other general shooting procedures: overall photography, midrange photography, and close-up photography. However, I have chosen to highlight some peculiarities and criteria that must be met by technical equipment adequate for this procedure.

To perform this shooting procedure, the casing of the cameras used should be weather-sealed or protected from raindrops and dust particles so that outdoor, atmospherical conditions can not lead to delaying the activity, altering the resulting images, or failing the devices used. For additional weather protection, the following items are recommended for the photography gear: raincoat, umbrella, plastic wrap, elastic, camera lens, camera sensor cleaning kits, protective camera and lenses covers, and other useful accessories.

Figure 3. Improvised Weather Protection
*Source: www.phototraces.com*

It is also advisable to use the lens hood not only against the harsh rays of the sun specific to the time of the meadow, which can affect the image, but also in order to prevent raindrops or dust particles from reaching directly on the front element of camera lens.

In the context where ultra wide or wide-angle lenses are often used to take pictures, a full-frame sensor (35mm format) camera is recommended, as a smaller sensor has the disadvantage of cropping factor, which restricts the angle of view. To avoid shaking hands or imbalances at difficult angles, the camera display should be tiltable on all axes.

The camera lenses in the kit should cover as wide a focal range as possible and allow the aperture to be opened as low as possible so that as much light as possible can reach the camera's sensor. Although the works do not always contain mentions of fish-eye lenses, I believe that they can be recommended in confined spaces, as long as the deformations will be corrected in post-processing.

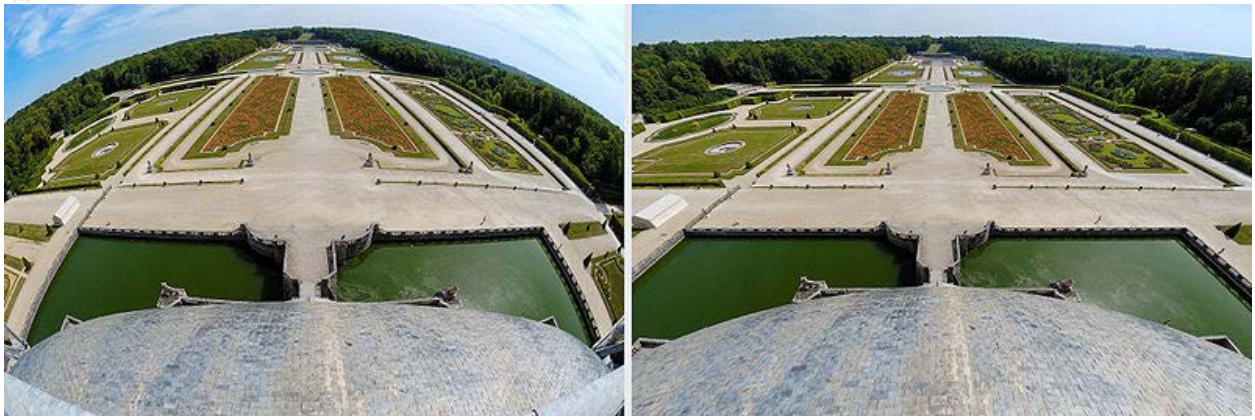

Figure 4. Example of Geometric Correction
*Source: www.commons.wikimedia.org*

In low light conditions, an important accessory is the tripod, which allows the camera to be fixed for long time exposures. Also useful are in-body stabilization systems (IBIS) that come with certain camera models, vibration reduction (VR) or image stabilization (IS) systems found in certain lenses, and artificial light sources. When it comes to artificial light sources, there should be both continuous light sources and flashes in the photography kit. Continuous light sources have the advantage that they can be manipulated while taking the photos, while the flash has the advantage of power.

Other objects necessary or useful for the execution of this shooting procedure may consist of back-up batteries, memory cards, protection filters, circular polarization filters.

**Relevant aspects in execution**

The lens of the camera will be chosen according to the possibilities of access and positioning, to the size of the criminal field and the distance between it and the elements that will be captured. In this sense, an ultra wide or a wide lens, with as wide an angle of coverage as possible, so with a focal length as small as possible, is recommended when taking photographs of confined interior spaces or in the event that access possibilities do not allow the positioning at the necessary distance for capturing the elements of interest in a photograph or, if this is not possible, in as few photographs as possible, without this leading to insufficient documentation (see Anghel 2022, 84). On the other hand, a telephoto lens, with a bigger focal length, will be preferred when shooting with ultra wide, wide or standard lenses is not possible or easy due to visual or access obstacles or when it would endanger life or the integrity of those charged with these duties.

The station point must be chosen so that the image contains as many of the relevant elements listed above as possible. In most cases, it is considered that the camera should be positioned as high as possible, sometimes even using aerial photography. It is noteworthy that, historically, Alphonse Bertillon was the first to methodically photograph the crime scene, both at ground level and above the head, calling the latter process "God's Gaze".

Figure 5. Caracal Case - Aerial Photography Spread In Press
*Source: www.antena3.ro*

If the place of the crime cannot be framed in a single photo, several photos will be taken or the panoramic photography procedure will be used, which involves taking several photos and merging them in post-processing.

Figure 6. Example of Panoramic Photography Made of 5 Vertical Photos
*Source: Personal Archive*

Panoramic photography has two procedures: linear panoramic photography and circular panoramic photography. To take a linear panoramic photo, we need to move the camera parallel to the crime scene and take a sequence of photos. For the second procedure, circular

panoramic photography, it is not necessary to move, but only to change the position of our body by rotating, thus taking a sequence of photos.

Photos taken for panoramic photography procedure must have the same exposure (ISO, aperture, shutter speed, white balance), the same depth of field, and respect the rule that the right edge of the first photo must be the left edge of the next photo. Following these rules, photos will be merged using softwares, such as Adobe Photoshop, Adobe Lightroom, PTGui, AutoStitch, etc.

The lighting must be adequate. For this, it is recommended to use a longer exposure time to capture natural lighting conditions or to use an artificial light source, with the advantage of using a faster shutter time, a higher aperture value or a lower ISO sensitivity.

In order to cover as wide a depth of field as possible, it is recommended to shoot at aperture values between f/8 and f/13, the upper limit being determined by the possibility of diffraction, an optical phenomenon that can affect the image quality.

## Conclusions

Orientation photography is an easy shooting process compared to other crime scene photography procedures. Limiting myself to the purpose of this procedure, as mentioned in the literature, that of fixing the crime scene between certain landmarks in order to be identified, I consider the level of difficulty in fulfilling this purpose to be low. Mid-range photography and close-up photography are two of the procedures that require technical knowledge, accuracy and high attention, the rules of execution being broader.

However, I argue that analyzing some of orientation photos may even lead to drawing the route of the perpetrator, to the possibility of discovering unmarked surveillance video cameras or put into operation without obtaining the necessary legal permits, they not being, therefore, in the records of the authorities.

I also believe that devices that can capture 360-degree images can be useful for both orientation photography and overall photography. These, having the maximum angle of coverage on all axes, can capture several elements and remove situations in which it is necessary to resort to cross-photography. I also think that the creation of virtual tours with the help of images and softwares could be useful for further analysis.

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