



CAMOUFLAGE

By Sid Heal

Camouflage is the term used to describe the obscuration of an object by changing the appearance to disguise its true nature or make it indistinguishable from its surroundings.

The value of camouflage in the animal kingdom is undisputed. Camouflage works in either one of two ways; it blends an object to a point where it is indistinguishable from its surroundings or it changes its appearance to seem as something else. Camouflage does not conceal an object but rather changes it to make it less conspicuous or important. Predators use it to stalk prey, and prey use it to avoid being detected by predators. Interestingly, its use in military and law enforcement operations has been relatively recent, nearly entirely within the last 300 years.

Camouflage is a technique which relies on art as much as science and so intuition and ingenuity are as important as scientific principles and concepts. What works well in one environment may be completely ineffective in others or even the same en-

vironment under different circumstances, especially lighting conditions. In developing effective camouflage, the single most important factor is recognizing that camouflage does not conceal objects but rather renders them inconspicuous. Since the object can be seen the human brain must be convinced (fooled) into either ignoring the object or attributing it to something other than its true nature. This always involves one or more of the senses.

When interacting with the environment, humans rely most heavily on vision. The brain interprets vision factors such as proximity, color, contrast, shape, texture, pattern and so forth. All of these are highly

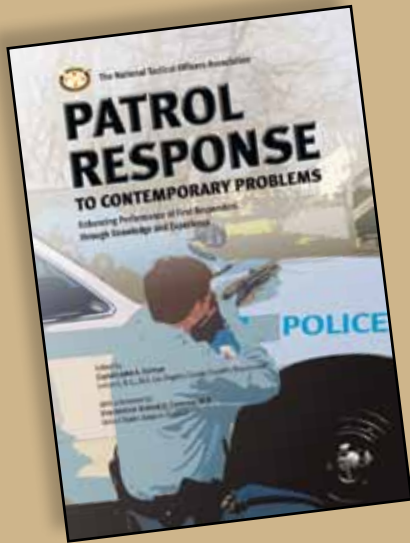
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dependent upon the circumstances and surroundings of the camouflaged object. During low light, for one example, vision is monochromatic, meaning that objects are detected and identified by shades and tones of a single color. In bright light vision is polychromatic, meaning that all the visible colors are used. Thus, a single factor — the amount of available light — can have a significant impact on the effectiveness of camouflage.

Second only to vision is the contribution hearing provides in understanding the environment. Unlike vision, however, hearing need not be “aimed” by having to look at an object because the ears are capable of picking up sounds from all directions. In the same manner that the brain process visual cues, auditory cues rely on a number of factors, especially frequency (pitch), direction and finally identification and understanding (such as language, signals, etc.). Because the ears can detect sounds from all directions, hearing works like a sentry in that it alerts a person whether they have focused their attention on an object or not. This single factor emphasizes the role that sound (noise discipline) can play in effective camou-

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flag. Like vision, however, sounds from one source can oftentimes be used to mask others.

In the same manner as hearing, the sense of smell also works like a sentry. Although humans are not very good at discriminating scents, they are capable of detecting about 10,000 different odors and so raise suspicions and vigilance. Moreover, smells are closely linked with memories in the brain and so an odor can invoke immediate and vivid memories with a clarity that provides near total recall. Hence, once exposed, even briefly, a person can quickly interpret smells based upon their past experiences.

Because of the limitations of human senses we commonly augment them with technology and animals. Binoculars, telescopes, night vision goggles, thermal imaging equipment and the like are technologies that tremendously enhance vision. Similarly, sound can be detected, broadcast and amplified with special microphones and speakers. One of the most common methods of enhancing human sensory perception is with the use of canines. Dogs can see better in low light and detect motion far better than humans. Likewise, they can hear a wider range of sounds and at lower levels and can detect odors at nearly 100 million times lower concentration than humans can. Augmenting human senses, then, makes it nearly impossible to camouflage all objects under all conditions.

As camouflage has taken on increasing importance for tactical operations, more and more supporting science has become available. While an exhaustive list is impossible, here are several factors that have proven nearly universal:

Background: The surroundings in which the object needs to blend.

Color: The color of the object in respect to the conditions in which it is most likely to be viewed.

Contrast: Regardless of color, any material that stands out for any reason will be conspicuous.

Shape: Because the human brain has a tremendous ability to detect patterns, the shape or silhouette of an object is one of the first factors used to identify it.

Shine: Even when a material is the same color and contrast of its background it may glisten, sparkle or reflect light differently than its surroundings.

Texture: The relative coarseness and fineness of the surface of an object may make it conspicuous even when all other factors have been neutered.

Shadow: Because it is impossible to change the color of a shadow, great care needs to be taken to reduce its size and contrast.

Smell: From aftershave and perfumes to gasoline and wet paint, an object's odor cannot be completely ignored. This is particularly true when canines are anticipated.

Sound: Unexpected sounds will attract attention and some are so unique as to be diagnostic, thereby compromising all other camouflage efforts.

Movement: Human eyes are exceptionally adroit at detecting even slight movements.

Light: Illumination of any kind that is out of context is not only easily detectable but highly suspicious.

Deception: Because camouflage always involves deception of some sort, it is often easier to disguise an object than it is to make it less conspicuous.

The assumption that "seeing is believing" is fertile soil for camouflage and one which shrewd tacticians can exploit. Camouflage is often used to gain the advantage of surprise, one of the most potent force multipliers imaginable, and no good commander ignores the opportunity to gain it. ◀◀

Photo courtesy of Sgt. Sam Todd, Kent (OH) PD.