## C16 Conspicuity vs. Visibility in Accident Reconstruction

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The goal of this presentation is to show that the conspicuity of a hazard is a critical factor in reconstructing the visibility aspects of a collision between a vehicle and a hazard.

This presentation will impact the forensic community and/or humanity by demonstrating a better understanding of conspicuity and visibility in reconstructing the visibility aspects of vehicle/hazard collisions.

The objective of this paper is to discuss and analyze the factors that affect a driver's ability to visually perceive and then recognize hazards such as pedestrians, objects, and obstructions ahead under varying conditions of background clutter. The outcome will be to show that the conspicuity of a hazard is a critical factor in reconstructing the visibility aspects of a collision between the vehicle and the hazard.

A common cause of roadway accidents is the driver not seeing a hazard in time to respond and avoid collision. It is not uncommon for drivers who have hit pedestrians, for example, to report that they *"heard the thump but never saw him"* or that they *"didn't see him until it was too late."* When presented in court, the outcome of the case may depend on whether the jury believes the driver's testimony or concludes that since the pedestrian was in plain sight, the driver must be lying. The job of the expert, then, is to determine whether the signal value of the struck pedestrian was sufficient relative to the driver's visual field to assuredly capture the attention of all reasonable alert drivers exercising ordinary care with respect to lookout in time to enable them to respond in time to avoid collision. Through a review of published scientific literature, it will be shown that it does not follow that simply because a pedestrian, obstacle or obstruction is in plain sight that it will necessarily be perceived as a hazard and responded to in time by all reasonable alert drivers.

Under low-light-level and/or nighttime conditions, and at locations with no or minimal background clutter or visual confusion (e.g., rural settings), the visual perception and recognition of a hazard in the roadway simply requires that it be either more or less luminous than its immediate background and have a sufficient luminance and contrast to be distinguishable from its background. Contrast is related to the difference in the luminance of an object of interest and the luminance of its immediate background. Contrast sensitivity is quantitatively equal to the reciprocal of contrast threshold and represents a measure of an observer's ability to discriminate different levels of contrast. The contrast sensitivity of the human visual system decreases with age and with lower light levels.

Other factors that need to be considered in determining the visibility of a hazard under low-light-level and/or nighttime conditions are such things as observer expectancy, the age of the observer, exposure time, disability glare, light adaptation, purkinje effect, positive vs. negative contrast, headlight beam-pattern, and the relative geometry of the driver and headlights with respect to the hazard.

Under daytime and nighttime conditions at locations with significant background clutter and/or visual confusion, hazards can be perceived and recognized when they differ from their surroundings in such aspects as size, shape, luminance, color, motion, texture or some other visual disparity. Conversely, hazards that are visually identical to their surroundings cannot be seen or recognized and are said to be perfectly camouflaged.

To correctly express these concepts to a jury, it is important to understand the relevant terminology as it relates to visibility. To *detect* an object means to discover or determine its presence. A *detected* object that is also a hazard, however, may not necessarily be *recognized* as a hazard. To *see* the object, simply means to *perceive* it by the eye or by vision. To *perceive* it means to become aware of its presence through the senses (here by vision). An object is *visible* if it is capable of being seen. An object is *conspicuous* if it attracts or tends to attract the attention of an observer so as to be readily discovered by vision. Conversely, an object is *inconspicuous* if it is not readily noticeable or discoverable by vision. The term *conspicuity*, then, is the capacity of an object to stand out in relation to its background so as to be readily discovered by vision

Even though a hazard may be in plain sight and visible, it must be conspicuous relative to its surroundings to be seen in sufficient time by all drivers. Hazards that are more conspicuous are going to be perceived quicker and therefore at greater distances than hazards that are less conspicuous. At the extremes, hazards that are highly conspicuous should be seen at the greatest possible distances and hazards that are perfectly camouflaged will not be seen or recognized at all.

In conclusion, since it is clear that hazards such as pedestrians, objects and obstructions that are more conspicuous can be seen earlier and therefore at greater distances than hazards that are less conspicuous, and since it can be shown that inconspicuous or perfectly camouflaged hazards may not be seen at all, then it follows that hazards that are less conspicuous can in fact be shown to be the primary contributing cause of being hit by vehicles with drivers exercising ordinary care with respect to lookout.

 ** Presenting Author*

**Conspicuity, Visibility, Accident Reconstruction**

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