

MOCK TRIAL: HOW HUMAN FACTORS EXPERTS CONTRIBUTE TO CIVIL LITIGATION

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A mock trial format will be used to demonstrate how human factors consultants' expertise can facilitate the legal process. The following are two cases that will be "tried" in the mock trial sessions. These cases concern incidents that are commonly investigated by forensic human factors professionals: pedestrian accidents and product warnings. The trip and fall case is designed to depict how a human factors expert can contribute to a plaintiff's case; the warnings case is designed to demonstrate how a human factors expert can enhance a defendant's case. Participants will demonstrate the qualification process, and the direct and cross examination of experts. Experienced human factors professionals will serve as the experts, commentators, attorneys and judge. The commentators will highlight key issues and provide advice to those interested in a forensic human factors practice.

Case 1: A Pedestrian's Encounter with a Tripping Hazard

Several experienced forensic human factors professionals will fill the roles for this mock trial demonstration. The role of plaintiff's expert will be filled by David Thompson, the plaintiff's attorney by Leighton Smith, the defense attorney by Richard Olsen, the commentators by Harvey Cohen and Richard Hornick, and the judge by Alison Vredenburg.

The plaintiff, Betty Swanson, is an elderly (70 year-old) woman who is ambulatory, holds a valid driver's license, has correctable binocular vision, and habitually uses a hearing aid in her right ear. Mrs. Swanson drove her car to the local international airport and parked in a covered garage in an angle-in parking space. She was alone. As she was walking along the row of parked cars towards

the elevator and stairwell area (in the central part of the garage), she tripped over a parking tire stop and fell down breaking her left femur and pelvis and crushing two lumbar vertebrae.

The tire stop that Mrs. Swanson tripped over was painted a matte dark red and was placed in front of a 40" diameter support pillar. The garage staff had placed the tire stop there to protect some exposed pipes that were mounted on the pillar from cars that might brush up against the pillar. The tire stop was placed about 6" from the pillar. Because the pillar was round and the tire stop was straight and about 48" long, the tire stop's end protruded from the pillar about 18" on one side. The garage staff had painted over the yellow tire stop (as it had been borrowed from the stock that was used at the ends of the parking spaces) with some non-yellow paint that was handy to signify (hopefully) to drivers that the tire stop was not marking a legitimate parking space.

The Argument for the Plaintiff

Mrs. Swanson claims that the airport is liable for the damages because it created a pedestrian hazard with the unusual and unexpected placement of the tire stop. In addition, the airport (vis a vis the garage staff) further created a tripping hazard by painting it a dark color (too dark, given the low-light conditions of the garage) and by not shortening the tire stop to prevent it from protruding from behind the pillar.

The Human Factors Expert's Contribution to the Plaintiff's Case

There are several issues to be addressed by a human factors expert: conspicuity of the tire stop, expectations of pedestrians, reasonableness of behavior of the plaintiff (and defendants), illumination level of the parking garage, adequacy of warnings to pedestrians, and effects of aging on walking and vision.

The HF expert will testify about the visibility of a dark red object placed on the ground to a person with normal vision. Namely, that the tire stop in these conditions would be extremely difficult to see.

The HF expert will testify that illumination testing performed during a site inspection of the scene indicated that the ambient lighting condition was at 0.8 foot-candles, equivalent to the light given off by a cozy fire in an otherwise unlit room (for example) and that the reflectance on the dark red tire stop (still in place) was equivalent to the moonlight off of asphalt at half-moon at zenith more than two hours after sunset (for example). In addition, there was no warning or other visual cue evident that would alert drivers or pedestrians to the placement of the red tire stop.

The HF expert will also testify that the unusual and unexpected placement of a tire stop next to a pillar in a parking garage is not something that most people would have in their realm of cumulative experience; therefore, they would not have reason to leave a large space between themselves and pillars when walking near them. The HF expert will testify that normal pedestrian behavior in parking garages is to have one's head

up, with eyes and ears alert for signs of moving cars.

The Argument for the Defense

The defense will argue that parking lots are inherently dangerous places and that pedestrians are typically attentive to their surroundings. This implies that the plaintiff was inattentive.

The defense will also argue that the low-light condition of the airport garage was common (some survey data will support this) and that typical human behavior in darkened conditions is to be sure of one's footing (i.e., the eyes are generally looking down). This indicates that the plaintiff was careless and maybe had vision impairment.

The defense will argue that since there have been no reported accidents associated with this particular tire stop in the entire two and a half years that it has been next to the pillar (except this incident), it is clear that all other previous (and subsequent) pedestrian traffic had no difficulty negotiating this tire stop. This indicates that the plaintiff is clumsy and careless.

Counter-arguments for the Plaintiff

The HF expert will explain positive transfer of training and how the human filtering function allows the brain to process only contextually expected stimuli. [This is very complex but extremely important and based on very articulate testimony from the expert.] This shows that the incident was mitigated by special circumstances and hence was not the plaintiff's fault.

The HF expert will reexamine the effects of low-light conditions and the low reflectance of the red tire stop, explaining that since Mrs. Swanson was not expecting such obstacles, there was little about the ambient conditions that contributed to "catching her eye". Some survey data will be provided to indicate that none of the parking garages checked in that local area had an object lying on the ground that constituted any form of tripping hazard. This shows that in spite of the low-light conditions, the plaintiff, based on cumulative previous experience in similar situations, had no reason to be wary of tripping and hence had no need nor motivation to look down at her feet while

walking. This argument is to demonstrate that the plaintiff was not careless or reckless.

The HF expert will demonstrate that the amount that the tire stop juts into a normal path that a pedestrian might take en route to the elevators or stairs is significant, thus increasing the potential for a trip and fall incident. This shows that the plaintiff was not careless.

The HF expert will provide some demographic data on the local populace and also about users of the airport parking garages that indicate that a sizable proportion is elderly. This shows that the airport and parking garage management have a responsibility to accommodate for this segment of the population.

The HF expert will provide statistical data about trip and fall incidents involving elderly people and that nearly all trips also involve falls with this segment of the population. This shows that the plaintiff was not clumsy; her behavior was consistent with that typical of a person of her age.

Case 2: Adequacy of Warning Systems to Address Product Hazards

Several experienced forensic human factors professionals will fill the roles for this mock trial demonstration. The role of defense expert will be filled by Ken Laughery, the plaintiff's attorney by Mike Wogalter, the defense attorney by David Leonard, the commentators by Harvey Cohen and Richard Hornick, and the judge by Alison Vredenburg.

The plaintiff, George Brent, is a do-it-yourself type homeowner who has a shop in the basement of his home. George is a project-oriented guy who likes to fix and build things. Several months ago, he went to a big hardware store in his hometown and purchased a new table saw for his shop. This was the first such saw he had owned. The saw and a user's manual came in a large box. One of the safety features of the saw was that it had a guard covering the blade. The guard was attached to the saw with a cotter pin that allowed the guard to be raised to clean or replace the blade when the saw was not in use.

Approximately two months after purchasing and setting up the saw, George was using it to cut a 1" x 6" board for one of his projects. At one point during the cutting, the piece of wood got caught and the saw stopped. In an effort to assess the problem, George raised the guard. At that point, the blade started to rotate and hurled the piece of wood, striking George in the face. He lost vision in his left eye and suffered significant facial scarring that required plastic surgery. As a result of the incident and his injuries, George Brent filed a lawsuit against the manufacturer of the saw.

Argument for the Plaintiff

One of the claims made in the case was that the warnings provided by the manufacturer were inadequate. The box containing the saw at the time of purchase had a statement on the outside asserting that "This saw was designed with safety in mind, including a guard over the blade to protect the user." No other safety information or warnings was on the box. The manual that accompanied the saw included a section just inside the cover titled, "READ THIS -- IMPORTANT SAFETY INFORMATION." This section contained statements about three types of hazards: blade cuts, kick-backs, and electricity. Nothing was stated in this section about the possibility of a piece being thrown or hurled. The only mention of this hazard was on page 16, in a section containing instructions about what to do if a piece being cut gets jammed and the saw stops. This section contains an instruction that in such circumstances, power to the saw should be cut immediately and remain off until the jam is cleared.

A warning label was on the guard covering the blade. It was designed in accordance with the ANSI Z535.4 Standard for product warnings, including an alert signal, the signal word "danger" (white on a red background), and information about hazards and consequences including the possibility of a piece being thrown and striking the user.

The plaintiff contends that the safety information on the outside of the box was inadequate because it did not specifically address any of the hazards and the potential consequences associated with the use of the saw. Also, it is argued that the statement on the box is misleading

in that it implies that safety concerns have been handled through design features, such as the blade guard. Further, by omitting safety information on the product container, the manufacturer has deprived the consumer of the opportunity to take into account such information at the point of purchase. A second plaintiff contention is that the warnings in the manual are inadequate. By excluding the jamming hazard in the safety section in the front of the manual, the manufacturer is implying that such a problem does not exist, or at the very least, is leading the user not to consider such a possibility during use. Further, by “burying” the mention of this hazard on page 16, the manufacturer has made it less likely the user will be aware of it, and take it into account, in the event of a jam during use of the saw.

The Human Factors Expert’s Contribution to the Defendant’s Case

There are several issues to be addressed by the human factor’s expert: the concept of a warning system, risk perception, criteria for warnings design, and factors that influence warning compliance.

The warning system for the saw consisted of several components including the statement on the outside of the box, information in the manual, and the label on the saw. The relative importance of these different components will be addressed, and the point will be made that the primary warning component is the label on the product. The assessment of adequacy of the warnings should give the product label substantially greater weight than the box or the manual.

The risk perception issue concerns the extent to which the user of the saw is aware of and understands the hazards and potential injury consequences associated with the use of the saw. The expert will express the opinion that while some of the hazards associated with the saw may be open and obvious, such as being cut by a rotating blade, other hazards are not. The hazard of a piece being suddenly released and thrown as a result of the guard being raised is not open and obvious.

The criteria for product warnings will be explained. These criteria include attention, hazard information, consequence information, instructions, comprehension, motivation, durability, and brevity. The warnings system will be evaluated and its adequacy supported in terms of how it meets these criteria.

The expert will review factors that influence compliance with warnings. These factors include the presentation of explicit hazard and consequence information and the cost of compliance. It will be noted that the information contained in the warning system and the low cost of correctly and safely dealing with a piece jammed in the saw, are consistent with the conclusion that the warning system was adequate.

Finally, with regard to each of the above issues addressed by the expert, research results published in peer-reviewed outlets will be noted.

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