How to Win the 'Battle of the Experts' In Landslide Cases

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An unprecedented number of landslides have occurred throughout California, especially in the greater Los Angeles area, as a result of heavy rains this past winter. Landslides, coupled with the ever-rising value of California real estate, is certain to cause increased litigation.

When landslide litigation ensues, the parties to the litigation set the stage for the "battle of the experts" by retaining a team of highly trained specialists, including geotechnical engineers, engineering geologists, appraisers, surveyors and, in some cases, hydrologists to support their respective positions.

The expert who applies the scientific method of analysis meticulously to the large amount of highly technical and in some cases esoteric information involved in typical landslide litigation stands the best chance of convincing the trier of fact that his or her causation theory is correct.

The scientific method comprises the following steps:

- Collecting relevant data.
- Developing causation hypotheses from the data collected.
- Testing the viability of the causation hypotheses developed.
- Evaluating alternative causation hypotheses.
- Developing conclusions regarding causation.

Victory in the battle of experts usually comes by discovering when the other side's expert deviates from the scientific method. Competent counsel working with a competent expert generally can spot deviations from the scientific method easily.

An example involving a large highway excavation and the resulting distress to a nearby single-family residence illustrates how the scientific method prevailed in prominent landslide litigation in Northern California.

The initial excavation allowed for the highway construction between 1955 and 1957. A second excavation, which widened and deepened the slope, was undertaken from 1967 to 1970 to widen the highway and make space for railroad tracks in the center median.

Two single-family residences were constructed in the same location near the top of the 230-foot-high cutslope between 1965 and 1988. The first residence occupied the site from 1965 until 1985, when it was decommissioned because of ground movement-related distress. The second residence was constructed in essentially the same location in 1988 and experienced similar damage from ground-movement distress in 1995.

Litigation over the cause of the ground movement began shortly after the second residence was damaged. A cadre of seasoned and highly qualified soil experts on either side of the litigation began an extensive investigation into the cause of the landslide.

The data-collection process focused on the following points:

- Type of movement — for example, slow and episodic movement versus rapid and continuous movement.
- Direction of movement — for example, toward or away from the highway excavation.
- Identification of the depth of movement and soils in the vicinity of the landslide — for example, surficial sliding versus deep-seated movement in bedrock.
- Repeated triggering of movement — for example, rainfall or earthquake.
- Cause of the movement — for example, the highway excavation or top-of-slope activities.

The causation hypotheses developed by each geotechnical expert differed significantly, even though each had a doctorate in geotechnical engineering and used essentially the same information.

The plaintiffs' expert hypothesized that a deep-seated failure surface, which passed under the cutslope and into the westbound lanes of the highway, caused the ground movement.

The defendant's expert hypothesized that upslope migrating erosion of nearby gullies, which undermined the soil underlying the residence, caused the distress, not the highway excavation.

This is the point at which experts typically stop their inquiry and remain steadfast about their causation hypotheses through trial. However, counsel should insist their experts complete two more important steps in the scientific method:

- A frank evaluation of the hypothesis that the expert is advancing, including identifying inconsistencies with field observations and data.
- A thorough evaluation of all possible alternative causation hypothesis.

In our example, the defendant's expert offered only one alternative hypothesis that attempted to prove that the distress at the cutslope toe was independent of the movement at the top of the slope.

This proved problematic because his explanation of the distress at the toe proved inconsistent with field observations and other relevant data.

Specifically, the defendant's expert concluded that the pavement heave observed in the westbound lanes of the highway was unrelated to the surficial sliding on the face of the cutslope. The expert also concluded that expansive soils, differential settlement (which was the result of a transition from natural to fill material) and poor pavement construction caused the heaving.

If the pavement heave was taken, independent of other data, these hypotheses may have been plausible. However, the alternative analysis ignored the data from a slope inclinometer installed adjacent to the cutslope toe, aerial photographs archived by the defendant to monitor episodes of pavement heave and the results of field investigations.

The slope inclinometer, which the defendant installed and monitored, showed a distinct failure surface at a depth of 30 feet below the toe of the cutslope and a slide direction that did not correspond with the direction of the shallow surficial slide that defendant's expert proposed.

The inclinometer data was evidence of a deep failure surface that "daylighted" at the highway and heaved the westbound lane — a more plausible explanation for the pavement heave than that advanced by defendant's expert.

In addition, the fact that episodes of pavement heave occurred only after years of heavy rainfall — that is, greater than 35 inches — further disproved the hypothesis advanced by the defendant's expert.

Last, the fact that numerous field investigations could not locate a "head scarp," expected as a result of the upslope-migrating erosion hypothesized by defendant's expert, was ignored entirely.

The defendant's expert also failed to explain the depth and extent of landsliding on the face of the cutslope.

Although he performed hundreds of stability analyses using different landslide profiles, none explained a failure surface that passed through the inclinometer at a depth of 30 feet at the cutslope toe and reached the ground surface in the adjacent westbound highway lanes.

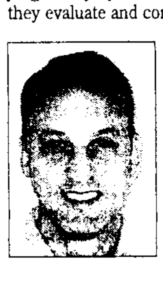
In fact, the analysis of such a failure surface would have yielded an extremely high factor of safety — that is, 2.5 versus 1.0 required for failure — because of the high strength of the bedrock exposed on the cutslope face.

The defendant's expert was unable to confirm his hypothesis by offering and disproving alternative hypotheses. This left his testimony open for impeachment by plaintiffs' counsel and severely injured his credibility before the trier of fact.

As a result, the fact-finder concluded that the cause of the landslide was consistent with the hypothesis advanced by plaintiff's expert, that a failure surface extended from the westbound lanes of the highway, through the inclinometer at the cutslope toe, into the slope to the vicinity of the current residence, and then upward to the ground surface, where a scarp formed under the residence.

Landslide litigation is fraught with many difficulties associated with collecting, reviewing and analyzing relevant data and information.

Application of the scientific method forces experts to evaluate their causation hypotheses systematically and provides the judge and jury with an opportunity to observe the experts as they evaluate and compare the hypotheses and decide which expert is most credible.



An expert's inability to discuss alternative hypotheses, including the other expert's hypothesis, impugns the expert's credibility before the jury.

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