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Being an expert witness in geomorphology

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ABSTRACT

Gathering your own data and coming to your own conclusion through scientific research and discovery is the most important principle to remember when being an expert witness in geomorphology. You can only be questioned in deposition and trial in your area of expertise. You are qualified as an expert by education, knowledge, and experience. You will have absolutely nothing to fear from cross-examination if you are prepared and confident about your work. Being an expert witness requires good communication skills. When you make a presentation, speak clearly and avoid jargon, especially when addressing a jury. Keep in mind that when you take on a case that may eventually go to court as a lawsuit, the entire process, with appeals and so forth, can take several years. Therefore, being an expert may become a long-term commitment of your time and energy. You may be hired by either side in a dispute, but your job is the same — determine the scientific basis of the case and explain your scientific reasoning to the lawyers, the judge, and the jury. Your work, including pre-trial investigations, often determines what the case will be based on. The use of science in the discovery part of an investigation is demonstrated from a California case involving the Ventura River, where building of a flood control levee restricted flow to a narrower channel, increasing unit stream power as well as potential for bank erosion and landsliding.

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Lawyers often refer to their expert witnesses as hired guns, but it is much more than that. Actually, it is more like looking for smoking guns that scientifically link an event, such as a landslide, flood, or wildfire, to possible causes of the event. I say causes because triggers, such as high magnitude storms or earthquakes, may be the immediate cause of a landslide, but the real cause may be steep slopes, prolonged intense precipitation, or a high water table that has been rising for years. A real cause might also involve, to a lesser or greater extent, *the hand of people*, such as change in land use (vegetation management, artificial addition of water, or excavating the toe of a slope). Lawsuits happen because someone claims damage as a result of another's actions, i.e., *the hand of people*. The person or persons that are damaged are the plaintiffs, and the person or persons that are sued are the defendants. Either side may hire you, but your job is the same either way — determine the scientific basis of the case and explain your scientific reasoning to the lawyers, the judge, and the jury.

This essay focuses on my personal experience and relevancy as an academic, teaching and conducting research and public service at a university and occasionally being an expert witness, rather than being an expert witness and working for a geotechnical or environmental company. This is a *nuts and bolts* essay of discussion and advice. This is not intended as a complete guide for being an expert witness. You can learn much more from the 1993 *Professional Practice Handbook of the Association of Engineering Geologists* (AEG), 3rd ed.

I have been asked if a license is required to be an expert witness. I do not know about all states, but a license is not required in California. The court and a judge decide if a person is qualified to be an expert. Qualification is based on education, experience, and publications. An opposing attorney once questioned some part of my qualifications when I was working on a case involving an agricultural-related flood with water flowing in irrigation channels, pipes, and culverts. The opposing attorney said that I was not qualified to work on water in pipes, but the judge ruled that I was an expert on the flow of water in channels and that covered pipes as well. Concerning the license, I decided years ago that I did not want a license because I did not want to compete with the students I train in engineering geology. Many of my former students went on to earn a license and have become successful consulting geologists.

I have been an expert witness in a variety of settings over a period of about 20 years and have had the opportunity to work with several lawyers. Sometimes, when I discuss about being an expert witness with my colleagues at meetings and so forth, I have noticed some reservation on their part because they are uncomfortable with cross examination from lawyers and do not want to be involved when *real money* is involved (i.e., on the table). On the other hand, some lawyers have told me that they prefer professors as expert witnesses when testimony is involved because we are more experienced with teaching and presenting material in a logical and straightforward way, which is at the heart of connecting with the jury. This is especially important in presenting quantitative information and results from modeling. Jury members may have trouble with models and quantitative relationships. I try to

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construct examples from real life experiences in clear language without jargon to help explain the results of model studies and the implications of model results to the case under consideration. For example, as part of a study to understand landslides on a river bluff you analyze the changes in river flow which are thought to result from a particular project in a river floodplain that narrows the channel. You hypothesize that the channel narrowing caused erosion of the river bluff that led to landslides that damaged property at the top of the bluff. You model the process using a two-dimensional flow model, and the results suggest that unit stream power is increased by two times because of the channel constriction. Explaining unit stream power to a jury is difficult so, rather than only present a mathematical argument, you might further explain to the jury that the situation is analogous to placing your thumb part way across a flowing garden hose constricting flow and increasing the velocity of flow. The increase in velocity causes an increase in unit stream power that causes erosion of the river bluff. You explain that the toe of the slope at the bottom of the eroding river bluff is important because it helps protect the slope and reduces the landslide hazard. You state that when the toe of a slope is eroded as a result of human activity, the probability of a landslide increases.

Several good sources exist in addition to the AEG mentioned above for information on being an expert witness in geomorphology. For example, in 2005, Stanley A. Schumm published an important paper on forensic geomorphology in *GSA Today*. When I started my work as an expert witness, I read this article because Stan Schumm happened to be one of my early mentors in the study of rivers, and I greatly respected his work. In that paper, he has a list of items he calls "helpful advice" that was provided by attorneys that he had worked with during his career. These are well worthwhile reading, and they focus on the fact that, as experts, we need to be truthful, listen carefully, and avoid jargon — among other things. Schumm pointed out that some geomorphologists are reluctant to be an expert witness because they might be made to look foolish by smart lawyers during cross-examination. Schumm remarked that if the truth was really known, lawyers may be very smart but they are not generally trained in geomorphology, and they may be more afraid of the expert than the other way around. This brings me to my primary bit of advice concerning being an expert witness: gather your own data and come to your own conclusions. I first learned to appreciate this principle when I read a book by Shuirman and Slosson, published in 1992 and titled *Forensic Engineering*. Of all the advice I can offer, I believe that gathering your own data and coming to your own conclusions is by far the most important. Remember the days of your Ph.D. dissertation defense. Your advisor may well have told you, "You should have little to worry about because you gathered the data, analyzed it, and know the subject better than those who are examining you." The same holds true in being an expert witness. If you gather your own data, come to your own conclusions and present them honestly and straightforwardly, then you should have little to fear under cross-examination. Another important point is to never use the data collected by the other side as part of your scientific argument. This is a recipe for disaster. What if their data turns out to be collected improperly or misstated? During one of my trials, the opposing expert used my data and quoted from one of my environmental geology books. The data enumerated in my book was correct, and all that the opposing attorney who was cross-examining me managed to accomplish was to increase my credibility as an expert (I had written a book).

Returning to the paper by Schumm, he pointed out that you can only be questioned in deposition and trial in your area of expertise. You are qualified as an expert by education, knowledge, and experience. Furthermore, your work, including pre-trial investigations, often determines what the case will be based on. You will have absolutely nothing to fear from cross-examination if you are prepared and confident about your work. Remember that, as an expert, you are not required to give an answer to a complex question. You have the right to explain your answer in the form of an opinion—something other witnesses may not have the opportunity to do (i.e., answering the question with a yes or no may be the cross-examiner's approach). Watch out for questions with a double negative such as, "Is it not the case that the event is not understood?" Ask the lawyer questioning you to reframe the question without a double negative to avoid confusion.

Being an expert witness requires good communication skills. When you make a presentation, speak clearly and avoid jargon, especially when addressing a jury. I generally try to determine which of the jury members are listening most carefully by observing their body language (alert and not asleep, leaning forward, etc.). As in any good lecture, I then speak to those listening carefully and get feedback as to whether or not I think they understand my argument. Because professors have a lot of experiences in the classroom, they have an advantage in being an expert witness should the case go to trial.

In addition to gathering your own data and coming to your own conclusions, it is also advisable to be very carefully prepared — and remember, you can only be questioned in deposition and trial in your area of expertise. Furthermore, a difference exists between science, which is your field, and justice, as seen by a jury. What I mean by this is that you may have the science carefully worked out, and you may have gathered your own data and came to your own conclusions and explained it carefully to a jury during trial. But you may then be surprised to learn that you still might not win a judgment, even though the science is correct. The reason for this is that juries often see justice as being different from science. If a person and his property are injured, then the jury may consider it a responsibility for someone to compensate that person, even though that person may have violated common sense in their actions. This is particularly true for people who may have lost a home and may become homeless or otherwise handicapped and are otherwise unable to support themselves. Loss of their home from, say, a flood or a landslide, may sway a jury, even if the people who suffered the damage were negligent in building on a floodplain, bluff, or stream bank or initiated processes that facilitated a landslide that may have damaged their property.

Several academic reasons exist why you might want to be an expert witness:

- It provides an opportunity to interact with our legal system in significant and important ways. This is especially true if you teach engineering or environmental geology. You will meet a variety of interesting people, ranging from other experts to lawyers on both sides of a case.
- It is interesting work and may complement your research. Be careful with this one, as confidentiality issues exist in being an expert witness. Often, I make it very clear to clients that I eventually would like to use the data I gathered about their case in publications, if appropriate, when the case is public. I also state that any work related to the problem that I have published prior to the case remains my property to use again. Often, they will agree to this, but I recommend getting it in writing, so no future problems of conflicts of interest arise. If the client states that the material may never be used, or that you cannot use your previously published work, then you will need to make a decision concerning whether or not you wish to pursue the case.
- Being an expert witness can provide experience for graduate and undergraduate students. Often, I have a team of people that work on projects with me that include graduate students who may do some fieldwork with me and work on areas such as geographic information systems. I also have utilized undergraduate students as field assistants to provide work experience for them as well.
- The experience of being an expert witness and working with students provides real world experience regarding honing communication skills and working as a team. More and more, as a teacher, my term projects involve teams of students who work together in a real world setting.

Before talking about the actual steps and processes of being an expert witness, I want to provide some information concerning fees that

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