Professionalism in Geology

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Almost all geologists think of themselves as scientists. Unfortunately, far fewer seem to think of themselves also as professionals; this thinking constitutes an unrecognized career handicap.

Geology is both a science and a profession. A science pertains to accumulated systematized knowledge. A profession pertains to a special occupation, often for monetary gain (Weimer, 1980). Petroleum geology, for example, is an occupation that requires specialized knowledge and academic preparation.

What is Professionalism?

The dictionary defines professionalism as the conduct, aims, or qualities that characterize or mark a professional person. A professional person is one who is engaged in a learned profession and who has an assured competence in a given field or occupation. A professional develops an attitude that brings about a dedication of time and effort to acquire knowledge, and to apply it for the benefit of mankind (Weimer, 1984).

The Taft-Hartley Act defines a professional in the following way:

> (a) any employee engaged in work (i) predominantly intellectual and varied in character as opposed to routine mental, mechanical, manual, or physical work; (ii) involving the consistent exercise of discretion and judgment in its performance; (iii) of such a character that the output produced or the result accomplished cannot be standardized in relation to a given period of time; (iv) requiring a knowledge of an advanced type in a field of science or learning customarily acquired by a prolonged course of specialized intellectual instruction and study in an institution of higher learning or a hospital, as distinguished from a general academic education or from an apprenticeship or from training in the performance of routine mental, manual, or physical processes; or (b) any employee who (i) has completed the courses of specialized intellectual instruction and study described in clause (iv) of paragraph (a), and (ii) is performing related work under the supervision of a professional person to qualify himself [or herself] to become a professional employee as defined in (a) (Campbell, 1990).

Professionalism and Ethics

Professionalism also is linked to ethics (Spoelhof, 1992). Ethics is the discipline of dealing with what is right and wrong. "In a general sense ethics is the name we give to our concern for good behavior" (Albert Schweitzer). Ethical behavior is motivated bv adherence to high moral principles (based on personal philosophy and ideals); desire for a good reputation; enhancement of productivity; fear of sanction (lawsuits, lost sales, dismissal, etc.); demands of society (environmental regulations and protection of investors); and requirements of professional affiliations (as stated in the Code of Ethics).

Spoelhof (1992) offers the following guidelines for ethical behavior in petroleum exploration:

- Decide on your fundamental assumptions.
- Separate the facts from the opinions. No one will be misled if the data are identified and the conclusions are separated and identified as such.
- Develop a commitment to the highest quality work.
- Devote the time and energy necessary to produce outstanding work.
- Do not cheat on time. Give full time while in the office, and do not double-bill your clients.
- Maintain confidentiality. Do not use knowledge gained from one source to the unfair benefit of another.
- Do not defame other companies or explorationists.
- Maintain the ethics of exploration by following proper channels to remove unethical individuals from practice.
- Do not plagiarize. Give credit to earlier studies.
- Do not use inside information for unfair personal gain.
- Avoid conflicts of interest. Do not take bribes.
- Make no unilateral adjustments to any part of an agreement.
- Be worthy of trust—call a situation just as you see it (such as in an employee evaluation or an estimation of risk).
- Be at the leading edge of technology.
- Do reject some conclusions—not everything is a good deal.
- Change company policy if you must, but do not circumvent it.
- Do not be a bigot or a chauvinist.
- Do what is right before you receive a court order.
- Recognize and credit employees and supervisors who do a good job.

Partly because of the savings and loan crisis and other ethical business problems of the 1980s, many business schools now require that students take courses in business ethics. The difference between what is right and wrong in business apparently is not clear to everyone.

Professional practice requires professional morality (principle of right and wrong), adherence to a code of values, and professional responsibility. Professional responsibility includes high standards of business ethics and professional behavior. Professionals must conduct themselves with the highest standards of ethical behavior when dealing with the public, employers, clients, and other professionals.

Many of the attributes of a professional geoscientist are summarized in AAPG's Code of Ethics (see Appendix 1). Key words or phrases describing a professional are honesty, integrity, loyalty, fairness, impartiality, candor, fidelity to trust, utter sincerity, and inviolability of confidence.

Maintaining and Expanding Your Expertise

Other important qualities of a professional include knowledge and competence. Formal education gives an individual a certain amount of knowledge that leads to professional com-

petence. Work experience supplies additional knowledge and competence. The half-life of one's scientific knowledge has been estimated as being 8 years (Weimer, 1984). In other words, half of what you know today will not be correct, useful, or remembered after 8 years. The answers to the problems keep changing, which means that the professional must be committed to expanding and improving his or her knowledge. Maintaining professional and technical competence, however, requires continuing education, which can take many forms (modified from Knight, 1989).

- Academic courses on a university, or college campus;
- Short courses;
- Seminars and/or field trips;
- Lectures, typically presented at luncheon or dinner meetings;
- Home or group study of technical or nontechnical journals, cassettes or videotapes;
- Formal correspondence courses;
- Having personal libraries (and using them!); and
- Attending conventions.

The changes that have taken place in our profession during the last 10 years (advances in computers, sequence stratigraphy, etc.) are remarkable. Part of being a professional geologist implies that the individual stays current with the latest ideas. *Such is the state of progression in geological science, that the geologist who stands still for but a very little, must be content to find himself left behind* (Miller, 1841).

The following guidelines for becoming a professional are modified from those offered by Gibbs (1991):

- Know what you know; always keep 1earning.
- Know what you don't know; don't bluff or proffer opinions on matters about which you're not informed.
- Acquire a broad overview of geological knowledge, not only as a science, but also as a business and a profession.
- Comply with the highest standards of ethical behavior.
- Communicate. We all need to help educate the media and to pass on our knowledge and enthusiasm to students and the public.

Is Professionalism Declining?

Many prominent professional geologists today are concerned that professionalism among geologists is declining. Weimer (1984) believes professionalism in geology is vanishing for four reasons: (1) inadequate education; (2) the attitude of the professional; (3) the way success is measured by society (i.e., material wealth and monetary gain); and (4) lack of recognition of the professional.

The first reason calls on universities or colleges to continuously revamp the curriculum necessary for geology degrees. Industry requirements continuously change and the academic world must respond accordingly. Today, most universities and firms consider the master's degree as the professional degree. The individual needs to make sure his or her educational background is sufficient to enter a chosen profession. Professionals also must be responsible for continuing their educations throughout their careers.

The second reason deals with attitude. This starts at home, is augmented and refined in college, and is continuously reinforced in the workplace. Professionals must be committed to doing the hard work necessary to achieve and maintain competence. They also should take great pride in their work. Professionals should participate in professional societies and get involved in community activities. They need to practice using clear and accepted ethical guidelines. Being a professional requires day-to-day application of standards. Academic institutions should do more to prepare students for lifetime professional careers through development of personal traits and habits. Miller (1969) points out that educators can help develop the following long-lasting desirable traits: self-discipline and individual competence; acute analytical observation; systematic interpretation and analysis; memory training; enthusiasm and patience; initiative and persistence; and imaginative reasoning and measured aggressiveness.

The third reason relates to the way society measures success. Weimer (1984) believes that recognition is diminishing for the person who does the job right for the sake of pride and accomplishment, regardless of external considerations. Individuals often succumb to societal pressures toward mediocrity, expediency, and bias. The interests and standards of society often suffer from a preoccupation with short-term goals because of the absence of historical perspective. An example is Wall Street's concentration on quarterly performance of petroleum and mining firms, whose real success depends on what is manifestly a long-term process—the discovery and development of mineral properties with lives of 20 to 100 years!

Weimer's fourth reason has two aspects: lack of recognition by the organization for which one works, and lack of recognition by legislative bodies of the professional's contribution to society. A corporate reward system should be in place to recognize and compensate productive professionals. Industry should recognize good professionals by giving raises, promotions, and reasonable job security. However, in the end, job security is in your own head, based actually on your own energy, knowledge, contacts, and integrity. Corporations cannot have loyalty—only people can. Thus, you must be a professional geologist first, and a company employee second. Professional geologists must interact much more with the local community and government, as well as state and national agencies and legislative bodies, if we are to gain public recognition for the profession. So get involved!

Another common deterrent to professionalism is the pressure to conform to the biases of one's employer (Campbell, 1990). A professional should follow orders, but also should suggest alternatives (and reasons) if his or her opinion conflicts with the employer's. A professional will not assume an adversarial role, but will try to overcome the employer's preconceived ideas with better, alternative recommendations. And in no case will the professional allow the employer to coerce him or her into unprofessional behavior.

Professional Organizations

How can you enhance your profession, which in turn will enhance your professional stature? Besides practicing a code of ethics, you can join and become active in geological societies. There are two types of geological societies: scientific and professional. Scientific societies, such as AAPG, gather devel-

op and disseminate technical information. The business purposes of the AAPG, as stated in the constitution, are to

> ...advance the science of geology, especially as it relates to petroleum, natural gas, and other energy mineral resources; to promote the technology of exploring for, finding, and producing these materials from the earth; to foster the spirit of scientific research throughout its membership; to disseminate information relating to the geology and the associated technology of petroleum, natural gas, and other energy mineral resources; to inspire and maintain a high standard of professional conduct on the part of its members; to provide the public with means of recognition of adequately trained and professionally responsible petroleum geologists; and to advance the professional well-being of its members.

AAPG meets these objectives through its publications, short courses, and conventions.

Professional affairs societies such as AAPG's Division of Professional Affairs, the American Institute of Professional Geologists (AIPG), or the Society of Independent Professional Earth Scientists (SIPES) have different objectives. These organizations establish and certify qualifications of the geoscientist. Individuals have to meet stringent educational and experience requirements and must pass a peer review. Professional affairs groups also monitor and try to influence governmental affairs and public opinion. These organizations generally have a paid lobbyist to help achieve these purposes.

Many states currently have registration bills or definition clauses that define what a professional geologist is and does. For example, Colorado defines a professional geologist as a person who is a graduate of an institution of higher education that is accredited by a regional or national accrediting agency with a minimum of 30 semester (45 quarter) hours of undergraduate or graduate work in a field of geology and whose postbaccalaureate training has been in the field of geology with a specific record of an additional 5 years of geological experience to include no more than 2 years of graduate work. Note that both academic education and experience are necessary to qualify as a professional geologist.

Examples of Problems in Professional Practice

The following examples are typical situations encountered by professionals from time to time. The problems are designed so that you, as a professional, can come up with your own solutions. (The solutions offered are short and incomplete.)

Problem 1. *What do you do when asked by your client to do something unethical or unprofessional?*

This situation occurs sometimes for consultants and expert witnesses. The solution is simple you do not work for such clients! The sad news is that it seems someone can always be found to do this type of work, especially if he or she is being well compensated. A more painful dilemma occurs when a professional employee is asked a similar question by his or her firm. Even so, the basic solution must be the same—play it straight, decline the assignment, or resign.

Problem 2. *What do you do when approached by a colleague to divudge information or slant a recommendation?*

The solution again is fairly simple—you do not do it. Your colleague is being unprofessional by putting you in the position in the first place. This again can become a problem when people are being compensated for information or for proffering opinions.

Problem 3. *What ethics are involved in job changes?*

Obviously, a professional will not steal or take information from one job to another. The gray area occurs for ideas that may be only in the mind of the professional—obviously these ideas do go with the individual. Many companies prefer that individuals not work in the same area or on the same type of project they worked on for their previous employer. Unethical companies want to steal or borrow ideas from their competitors, and may hire individuals from the competitor to gain an advantage. A professional simply must maintain confidentiality with the previous ernployer. Sometimes it may help to get the previous employer to state what would be considered a conflict of interest.

Problem 4. *How do you handle the short-fuse project in which you do not have ample time to do the job as you would like to?*

Consultants are always being put in this type of situation, The professional should devote the time and energy necessary to produce outstanding work. If a time problem exists, it should be brought to the attention of the client. The client or company needs to be aware that short-fuse projects tend to produce lower quality work, which is commonly less precise or reliable. In severe cases, the professional may have to decline accountability for the project or turn down the assignment. Sometimes, a productive and realistic way to deal with such assignments is to express your results or predictions as probabilistic ranges: where there is much uncertainty, you will show wide ranges. Often the client will be uncomfortable with such results and request more time be devoted to the problem.

Concluding Thoughts

- Professional practice is an ongoing, active undertaking (Sprinkel, 1987).
- Professionalism is not a product, it is a process of becoming (Gibbs, 1991).
- Professionalism is an attitude; it is a frame of mind (Foose, 1984).

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APPENDIX 1

Code of Ethics (American Association of Petroleum Geologists, 1991)

SECTION 1. General Principles

Geology is a profession, and the privilege of professional practice requires professional morality and professional responsibility.

Honesty, integrity, loyalty, fairness, impartiality, candor, fidelity to trust, and inviolability of confidence are incumbent upon every member as professional obligations.

Each member shall be guided by high standards of business ethics, personal honor, and professional conduct. The word "member" as used throughout this code includes all classes of membership.

SECTION 2. Relation of Members to the Public

Members shall not make false, misleading, or unwarranted statements, representations or claims in regard to professional matters, nor shall they engage in false or deceptive advertising.

Members shall not permit the publication or use of their reports or maps for any unsound or illegitimate undertakings.

Members shall not give professional opinions, make reports, or give legal testimony without being as thoroughly informed as is reasonably required.

SECTION 3. Relation of Members to Employers and Clients

Members shall disclose to prospective employers or clients the existence of any pertinent competitive or conflicting interests.

Members shall not use or divulge any employer's or client's confidential information without their permission and shall avoid conflicts of interest that may arise from information gained during geological investigations.

SECTION 4. Relation of Members to One Another

Members shall not falsely or maliciously attempt to injure the reputation or business of others.

Members shall freely recognize the work done by others, avoid plagiarism, and avoid the acceptance of credit due to others.

Members shall endeavor to cooperate with others in the profession and shall encourage the ethical dissemination of geological knowledge.

SECTION 5. Duty to the Association

Members of the Association shall aid in preventing the election to membership of those who are unqualified or do not meet the standards set forth in this Code of Ethics.

By applying for or continuing membership in the Association each member agrees to uphold the ethical standards set forth in this Code of Ethics.

Members shall not use AAPG membership to imply endorsement, recommendation, or approval by the Association of specific projects or proposals.

SECTION 6. Discipline for Violations of Standards

Members violating any standard prescribed in the Article shall be subject to discipline as provided by the Bylaws.

"In this profession, your credibility is your only real asset."

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