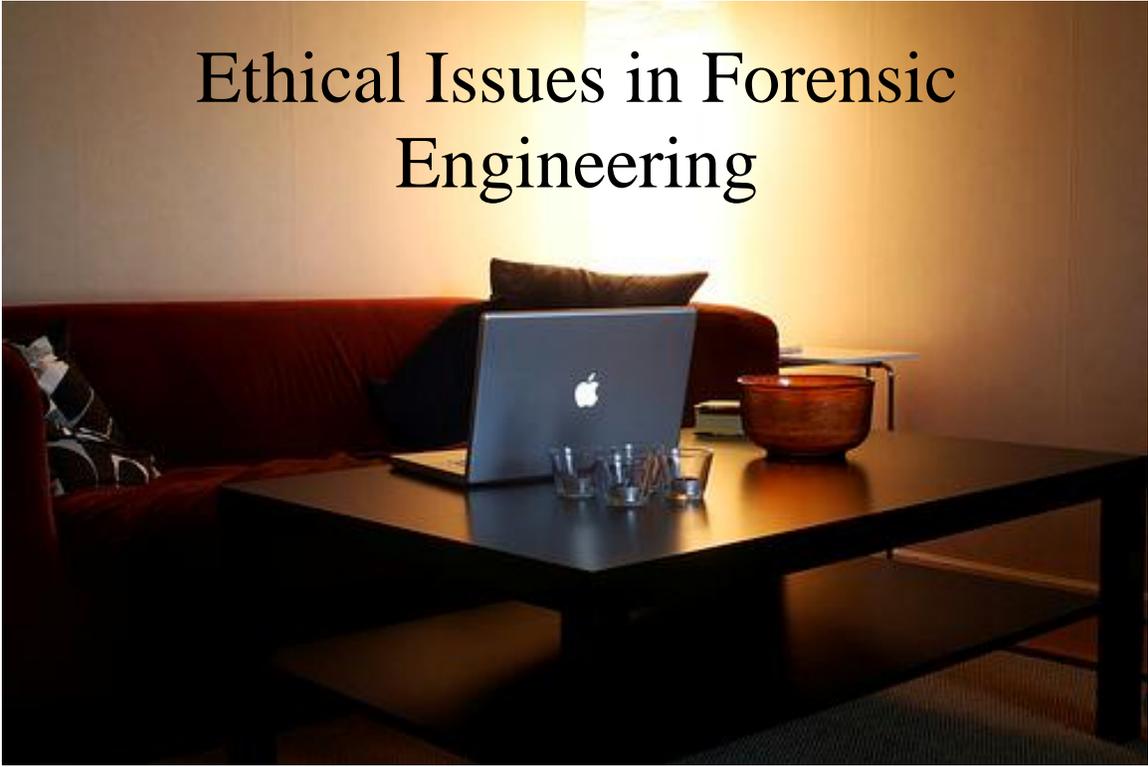


Ethical Issues in Forensic Engineering



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By

J. Paul Guyer, P.E., R.A.

2 PDH HOURS

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Guyer Partners
44240 Clubhouse Drive
El Macero, CA 95618
(530)7758-6637
jpguyer@pacbell.net

J. Paul Guyer, P.E., R.A.

Paul Guyer is a registered mechanical engineer, civil engineer, fire protection engineer and architect with over 35 years experience in the design of buildings and related infrastructure. For an additional 9 years he was a principal advisor to the California Legislature on infrastructure and capital outlay issues. He is an engineering graduate of Stanford University and studied law for three years at the McGeorge School of Law. He has held numerous national, state and local offices with the American Society of Civil Engineers and National Society of Professional Engineers. He is a Fellow of ASCE and the Architectural Engineering Institute.

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1. INTRODUCTION

Professional engineers who have reached mid-career may have heard the term “forensic engineer” but do not know much about what a forensic engineer does. That is because forensic engineering is not an engineering discipline but a business enterprise connected to the legal industry in the United States. It is an enterprise that challenges the public and practicing professional engineers.

2. WHAT IS FORENSIC ENGINEERING?

Here are some definitions from different sources:

- Forensic engineering is the investigation of materials, products, structures or components that fail or do not operate or function as intended, causing personal injury or damage to property. The consequences of failure are dealt with by the *law* of product liability.
- The application of accepted engineering practices and principles for discussion, debate, argumentative, or *legal* purposes.
- Application of engineering methods in determination and interpretation of *causes of damage* to, or failure of, equipment, machines, or structures.
- Forensic engineering is defined as the application of the art and science of engineering in matters which are in, or may possibly relate to, the *jurisprudence system*, inclusive of alternative dispute resolution.
- Forensic engineering is the application of the art and science of engineering in the *jurisprudence system*, requiring the services of legally qualified professional engineers. Forensic engineering may include the investigation of the physical causes of accidents and other sources of claims and litigation, preparation of engineering reports, testimony at hearings and trials in administrative or *judicial proceedings*, and the

rendition of advisory opinion to assist in the resolution of disputes affecting life or property.

- Forensic engineering is the application of engineering principles to the investigation of failures or other performance problems. Forensic engineering also involves testimony on the findings of these investigations *before a court of law or other judicial forum*, when required.

From these and other sources it is reasonable to conclude that forensic engineering is (a) a business enterprise and not an engineering discipline and (b) it is ancillary to the legal system in the United States.

2.1 FORENSIC ENGINEERING IS NOT AN ENGINEERING DISCIPLINE.

Engineering is the art and science of applied physics. Training and practice in engineering is, for obvious reasons, structured consistent with the principles of physics. For example electrical engineering is the art and science of application of the physical principles of electricity. Mechanical engineering is the application of the physical principles of mechanics. And so forth. But there are no physical principles of “forensics.”

2.2 FORENSIC ENGINEERING IS A BUSINESS ENTERPRISE.

Forensic engineering is a business enterprise. The objective of its practitioners is mercantile, that is, to earn money with which to buy the goods and services that will allow them to lead a secure, comfortable and enriching life. This is the reason people seek out and pursue jobs and careers. This is all perfectly reasonable.

2.3 FORENSIC ENGINEERING IS AN APPENDAGE OF THE LEGAL SYSTEM IN THE UNITED STATES.

Forensic engineers are participants in the legal system in the United States. This is clear from the quotations above and many other sources. For example....

- “the *law* of product liability”
- “or *legal* purposes”
- “interpretation of *causes of damage*”
- “the *jurisprudence* system”
- “application of the art and science of engineering in the *jurisprudence* system”
- “of these investigations *before a court of law or other judicial forum*”

3. FRAMING THE ETHICAL ISSUES

To address the ethical issues presented by a forensic engineer in a formal legal system (in the United States the “common law” system), it will be helpful to describe (a) the actors in a legal dispute generically and in customary common law terminology, and (b) the possible just and unjust outcomes that may result from the actions of a forensic engineer. Table 3-1 is a framework for the actors in a formal legal dispute. Table 3-2 is a framework for the possible just and unjust outcomes that may result from the actions of a forensic engineer.

TABLE 3-1

**DESCRIPTION OF PARTIES TO A DISPUTE
IN A FORMAL LEGAL SYSTEM (COMMON LAW)**

GENERIC TERM AND DESCRIPTION	LEGAL TERM
JUDICIAL AUTHORITY – <i>The person or persons in a formal legal system who have the power to decide if a claim of damages is legitimate and compensation by the accused party of the accusing party is just.</i>	JUDGE and/or JURY
ACCUSING PARTY - <i>The person or entity claiming to have been injured or damaged and to be entitled to compensation by the accused party.</i>	PLAINTIFF
Accusing Party’s ADVOCATE – <i>A person hired by the accusing party to persuade the judicial authority to render a judgment favorable to the accusing party.</i>	Plaintiff’s LAWYER
Accusing Party’s FORENSIC ENGINEER – <i>A professional engineer hired by the accusing party or the accusing party’s advocate to present technical evidence intended to persuade the judicial authority to render a judgment favorable to the accusing party.</i>	Plaintiff’s EXPERT WITNESS
ACCUSED PARTY – <i>The person or entity accused of injuring or damaging the accusing party.</i>	DEFENDANT
Accused Party’s ADVOCATE – <i>A person hired by the accused party to persuade the judicial authority to render a judgment favorable to the accused party.</i>	Defendant’s LAWYER
Accused Party’s FORENSIC ENGINEER – <i>A professional engineer hired by the accused party or the accused party’s advocate to present technical evidence intended to persuade the judicial authority to render a judgment finding the accusing party’s claim without merit.</i>	Defendant’s EXPERT WITNESS

TABLE 3-2

POSSIBLE OUTCOMES THAT MAY RESULT FROM THE ACTIONS OF A FORENSIC ENGINEER IN A FORMAL LEGAL SYSTEM (COMMON LAW)

JUST	UNJUST
JUDICIAL AUTHORITY may reach a just conclusion and the accusing party is thereby justly compensated by the accused party responsible for an injury or damages.	JUDICIAL AUTHORITY may reach an unjust conclusion and the accusing party is thereby unjustly enriched at the expense of the unjustly accused party.
FORENSIC ENGINEER may provide true, complete, and unbiased technical testimony and evidence.	FORENSIC ENGINEER may provide false, incomplete, and biased technical testimony and evidence.
FORENSIC ENGINEER has no pecuniary interest in prevalence of the party upon whose behalf he provides testimony and evidence.	FORENSIC ENGINEER has a pecuniary interest in prevalence of the party upon whose behalf he provides testimony and evidence.
Evidence provided by FORENSIC ENGINEER does not influence or persuade unjustly accused party to unjustly compensate accusing party because of prospective expense for accused party to seek just exoneration by the judicial authority.	Evidence provided by FORENSIC ENGINEER influences or persuades unjustly accused party to unnecessarily compensate accusing party because of prospective expense for accused party to seek just exoneration by the judicial authority.

A discussion of three social constructs will be helpful in understanding and addressing the ethical issues in forensic engineering. These are....

- **Systems of Law:** Civil/Common/Islamic
- **Linear and Non-Linear Thinkers:** Rule driven versus goal driven
- **Materialism:** The theory or attitude that physical well-being and worldly possessions constitute the greatest good and highest value in life.

Let's talk about these. Then we may better understand the ethical issues in

forensic engineering and be better prepared to seek a resolution that is fair and reasonable to the public and the professional engineering community. The first is systems of law....

4. SYSTEMS OF LAW

There are three substantive legal systems in the world:

- Civil Law
- Common Law
- Islamic Law

A fourth system of law, observed in a limited number of countries, can be characterized as “bijuridical”, that is, a combination of Civil and Common Law. Figure 3-1 shows the distribution of these principal legal systems globally.

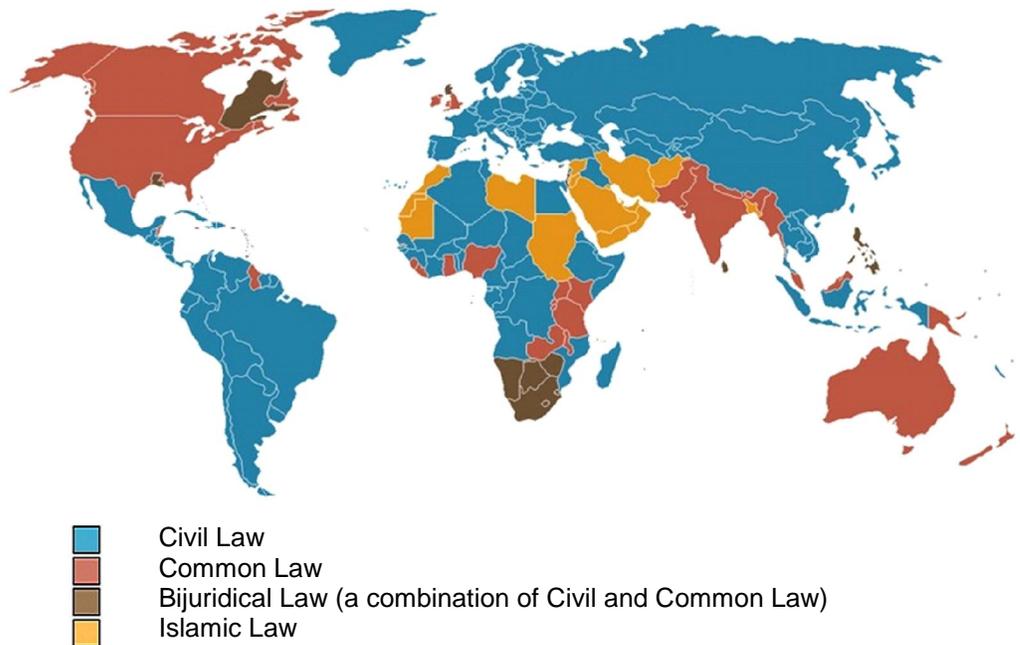


Figure 3-1
Systems of Law

4.1 CIVIL LAW. Civil law is the most widespread system of law in the world. Under Civil Law, the law-of-the-land is enunciated and approved by a duly constituted governmental body of appropriate authority (a parliament, congress, legislature, etc.) and thereupon codified (written-down and published in print or, in this day and age, in digital format).

There are two important distinguishing characteristics of Civil Law:

- The law is established and enunciated (written down) by an appropriately established governmental body (a parliament, congress, legislature, etc.), *not by the exercise of the prerogative of individual judges.*
- In the Civil Law system the judge *is responsible for reaching a just conclusion.* In this pursuit, the judge in a Civil Law system has at his disposal the resources (such as investigators) needed to discover facts so as to reach a just conclusion. That means, the judge has the responsibility to compel the presence of and to interrogate witnesses, demand the production of documentary evidence, and to order court investigators to investigate, discover and report facts that are needed for the judge to reach a just conclusion.

Codification of Civil Law is considered to have begun with the Code of Hammurabi in Babylon ca. 1790 BC; Civil Law systems developed during the Roman Empire. Civil Law today is interpreted rather than developed or made by judges. Only legislative enactments (rather than legal precedents, as in Common Law) are considered legally binding.

4.2 COMMON LAW. Common Law is globally less prevalent than Civil Law. Under Common Law, the law-of-the-land may or may not have originally been enunciated and approved by a duly constituted governmental body of appropriate authority. There are two important distinguishing characteristics of Common Law:

- In Common Law the law may be established and enunciated (written down) by (a) an appropriately established governmental body (a

parliament, congress, legislature, etc.), and *in addition* (b) by pronouncements of individual judges acting on their own volition.

- In the Common Law system the judge *is not responsible for reaching a just conclusion*. The role of the judge (and jury) is to listen to the arguments presented by advocates for the plaintiff and the defendant and then decide which party is to prevail.

Common Law developed in England. Common law was later inherited by the English commonwealth of nations (that is, countries colonized by England, including the United States), and almost every former colony of the British Empire has adopted it. The doctrine of *stare decisis* or *precedent by courts* (that is, *judges*) is the major difference between Common Law and the codified Civil Law system.

Under Common Law the relationships between statutes and judicial decisions can be complex. In some jurisdictions such statutes may overrule judicial decisions or codify the topic covered by several contradictory or ambiguous decisions. In some jurisdictions judicial decisions may decide whether the jurisdiction's constitution allowed a particular statute or statutory provision to be made or what meaning is contained within the statutory provisions. In other words, under Common Law the judges (and jury) have much flexibility and freedom to make judgments as they see fit, based upon such criteria and biases as they may have.

4.4 ISLAMIC LAW. Islamic law is a system wherein the law-of-the-land has been enunciated and is enforced by religious authorities based on religious dogma. These religious authorities are not elected or appointed to their offices through any secular government mechanism....such as popular elections and appointments. Islamic Law's application is generally confined to the Middle East and northern Africa. It is a culturally "eastern" legal system. The United States, which is the focus of this discussion, is a "western" civilization and the culturally "western" legal systems....Civil Law and Common Law....are of interest here. We will therefore set Islamic Law aside from this point forward.

4.5 COMPARISON OF CIVIL AND COMMON LAW. Table 3-3 illustrates and contrasts some important features of Civil and Common Law.

TABLE 3-3 CIVIL LAW AND COMMON LAW COMPARED		
CONSIDERATION	CIVIL LAW	COMMON LAW
Law-of-the-land is enunciated by....	a duly established governmental body (a parliament, congress, legislature, etc.)	a duly established governmental body (a parliament, congress, legislature, etc.), and....
		by individual judges based on their personal interpretation of the law as previously enunciated by governmental bodies and other individual judges
The judicial authority (judge and/or jury) is charged with responsibility for....	reaching a just conclusion	listening to arguments and evidence presented by the accusing party (plaintiff) and accused party (defendant) and making a decision favoring one party or the other based on those arguments and evidence
The judicial authority has a responsibility and resources to investigate the matter in order to obtain evidence intended to determine the truth and reach a just judgment	Yes	No
The judicial authority has a responsibility to interrogate witnesses in order to obtain evidence intended to determine the truth of the matter and reach a just judgment	Yes	No
Advocates and expert witnesses are <i>effectively</i> bound to provide complete and unbiased evidence and testimony	Yes	No. Advocates and their expert witnesses are bound to present only testimony and evidence that supports the position of their client, including that which is limited and biased.
Representative countries and regions where this system is the law-of-the-land are....	Europe and Asia (including Russia and China); Latin America (Mexico, Central and South America); African countries not colonized by England	Great Britain; the United States, Canada and other countries that were formerly part of the British Empire

It may then be said of a Common Law legal system....

- The Judicial Authority (judge and/or jury) is responsible only for listening to arguments and considering evidence and testimony presented by Advocates (lawyers) and Expert Witnesses (i.e. forensic engineers) and rendering a judgment thereupon, in consideration of the law-of-the-land as previously enunciated by legislative bodies and other judges.
- Advocates (lawyers) and Expert Witnesses (i.e. forensic engineers) are not compelled to provide complete and unbiased testimony and evidence. To the contrary, it is common practice for Advocates and Expert Witnesses to present evidence and testimony to the Judicial Authority that is incomplete and biased, in furtherance of the interests of their client.
- Since the Judicial Authority has no responsibility to ascertain the truth of the matter, Advocates and Expert Witness have the flexibility to present evidence and testimony that is not true, in furtherance of the interests of their client.
- The Judicial Authority has no responsibility and resources to investigate and determine the completeness, absence of bias, and truthfulness of evidence and testimony presented by Advocates and Expert Witnesses.

Now let's look at the second of these social constructs....that of "linear" and "non-linear" thinkers.

5. LINEAR AND NON-LINEAR THINKERS.

5.1 LINEAR THINKERS. Linear thinkers are driven by rules. When presented with an issue, they apply universally accepted rules and reason logically to a

conclusion that is driven by those rules. Engineers are classic examples of linear thinkers. Professional engineers are trained in engineering schools in the irrefutable laws of applied physics and learn to apply those laws to engineering problems in order to arrive at a correct solution. In engineering practice professional engineers are even more intensively driven by rules, in the form of numerous codes, regulations and design guides. Engineers are not the only examples of linear thinkers. Medical doctors, scientists and accountants are some other examples of linear thinkers. Here is a picture of how a linear thinker (such as an engineer) gets from a problem (Point A) to a solution (Point B).

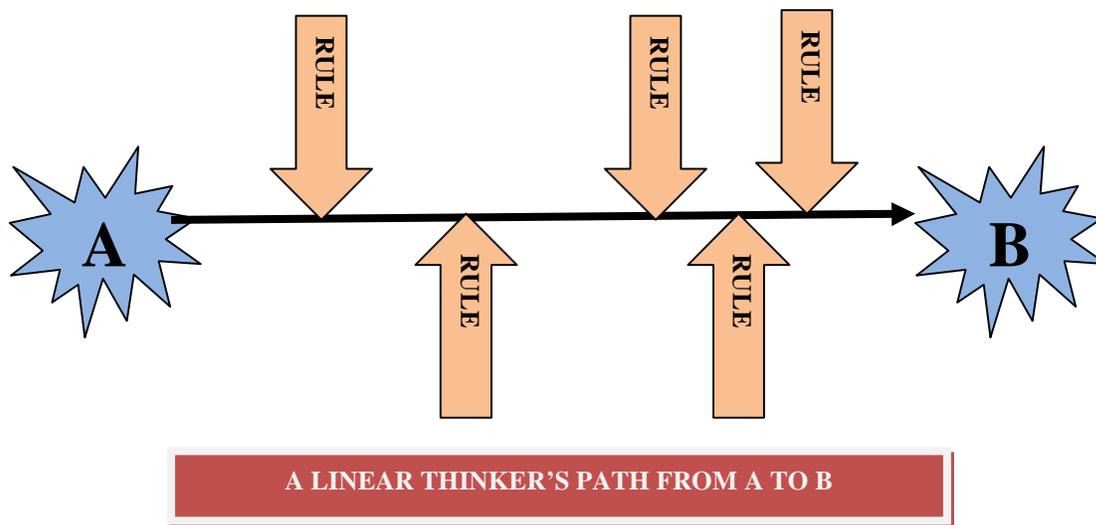


Figure 5-1

A linear thinker arrives at Point B by logical application of rules, not because Point B is a pre-determined goal. But this is not how non-linear thinkers get from Point A to, perhaps.... Point B....or Point C or Point D, depending on which is his or her goal.

5.2 NON-LINEAR THINKERS. Non-linear thinkers are not concerned about rules. They are concerned about getting from “Point A to Point C.” Point A is the situation with which they are currently confronted and Point C is where they want to be. They are “goal-oriented.” For example, if a non-linear thinker is currently a clerk in the mail room of a large corporation (Point A) his goal may be to become Chief Executive Officer of that large corporation (Point C). His goal is

not to design a big bridge (Point B). He wants to be Chief Executive Officer of that large corporation (Point C). Here is a picture of how a non-linear thinker gets from where he is now (Point A) to where he wants to be (Point C).

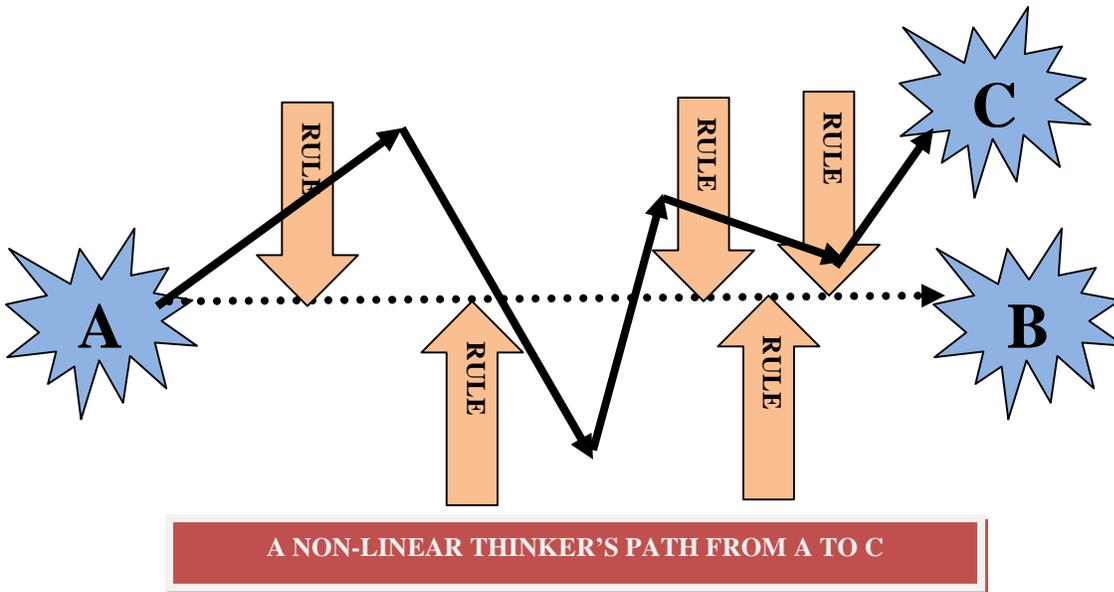


Figure 5-2

5.3 TYPICAL LINEAR AND NON-LINEAR THINKERS. Typical *Linear Thinkers* are:

- Professional Engineers
- Scientists
- Medical Doctors
- Accountants

Typical *Non-Linear Thinkers* are:

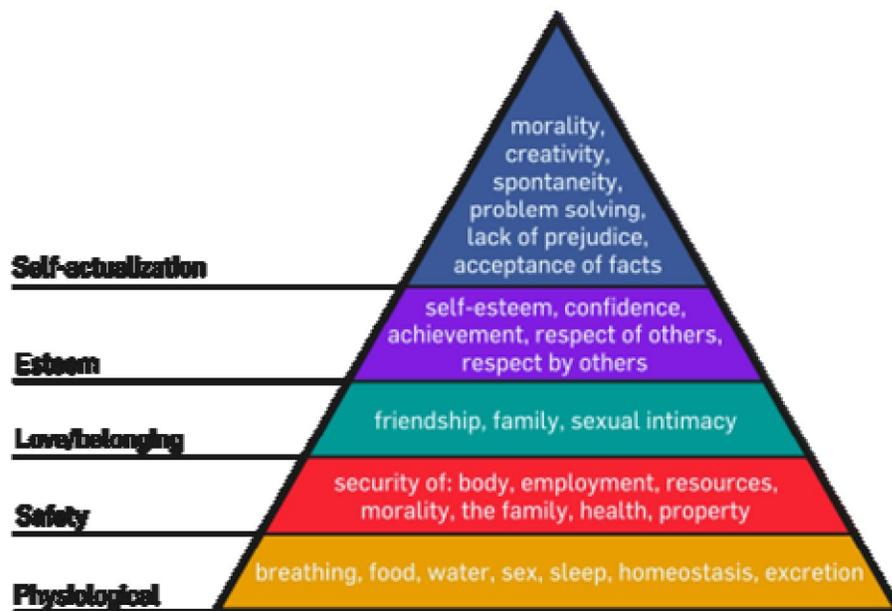
- Lawyers
- Politicians
- Salesmen
- Artists

Now let's look at the third of these social constructs: *materialism*.

6. MATERIALISM

The highest priorities of people are materialistic. People are driven to acquire the material things that bring them security, comfort, pleasure, and esteem from their peers.

The most famous articulation of human needs was by psychologist Abraham Maslow in 1943. His theory is known as “Maslow’s hierarchy of needs” and is widely accepted today as credible. It is frequently represented by a pyramid with the highest priority needs at the base and the lowest at the top, thus providing a graphic quantification of what considerations people value most and devote the most energy to obtaining. See Figure 6-1.



Maslow's Hierarchy of Needs
Figure 6-1

Notice that people value most highly “food and water”, “resources” and “property”. In mercantile cultures the mechanism that has been developed to facilitate trading and exchange for these highly valued temporal desires is “money.” Money is the medium people devote much of their energy to obtaining

so they can exchange it for material things that will satisfy their desire for security, comfort, pleasure, and esteem.

“Legal systems” that have developed over eons purport to satisfy higher level human needs such as “morality”, “problem solving”, “lack of prejudice” and “acceptance of facts.” There is, however, an inherent conflict with legal systems, such as Common Law, in mercantile cultures such as in the United States and elsewhere. The Common Law legal system nominally strives for “morality”, “problem solving”, “lack of prejudice” and “acceptance of facts”, but the primary motivation of the humans (Lawyers....and note that all Judges are Lawyers.... and Expert Witnesses as well) engaged in the Common Law legal system as a mercantile enterprise is to acquire money which can be exchanged for “food and water”, “resources” and “property”. This conflict is the root of the ethical issues inherent in the business of forensic engineering.

7. THE ETHICAL ISSUES

The root of the ethical issues in forensic engineering is the conflict between the high level objectives of a legal system and the basic objectives of the humans engaged in the legal system as a mercantile enterprise. Lawyers, of course, are the primary participants in a legal system. Indeed, in Common Law cultures such as that in the United States, the caricature of avaricious lawyers doing everything possible to make money from the legal system is likely not too far from the truth. This is consistent with the psychological profile of lawyers as “non-linear thinkers.” They are willing to do almost anything regardless of moral and ethical rules to achieve their goal of “making money.” This is also consistent with the role of lawyers in a Common Law legal system. A lawyer in the Common Law legal system is an advocate for his client. He has no responsibility to present evidence and testimony to the judicial authority that is complete, unbiased and true. Indeed a lawyer is free to present evidence and testimony that is incomplete, biased and untrue. And because of mercantile considerations....clients are unlikely to return to, and prospective clients are unlikely to engage....lawyers who lose cases. It, therefore, is not unreasonable

to expect lawyers to do whatever is possible, short of going to jail, to win cases. And this may well entail presenting evidence and testimony to a judicial authority that is incomplete, biased and untrue.

Expert witnesses include those engaged in forensic engineering. These forensic engineers are subject to the same mercantile forces as lawyers. They are technical advocates for a specific client. In a Common Law legal system they are free to present evidence and testimony to a judicial authority that is incomplete, biased and untrue, in pursuit of their client's interest. They are also aware that forensic engineers who provide evidence and testimony to a judicial authority which does not result in a judgment that is favorable to the forensic engineer's client are unlikely to receive repeat business from that client and prospective clients will question the wisdom of retaining them in the future.

This, then, is the fundamental ethical issue present in forensic engineering....

The Ethical Issue

How can the public and the engineering profession assure that the mercantile interests of professional engineers engaged in the forensic engineering business do not move them to provide incomplete, biased and false technical evidence and testimony to judicial authorities that unjustly damages persons, companies and agencies?

8. RESOLVING THE ETHICAL ISSUES

These are the ways business and professional behavior of individuals may be influenced....

- **Moral suasion**
- **Professional censure**
- **Government regulation**
- **Legal proscription**

- **Mercantile persuasion**

8.1 MORAL SUASION. Moral suasion can take many forms but all involve an appeal to the higher human need of “morality.” In some way methods of moral suasion all amount to preaching that the undesirable behavior is bad. This might be an approach in an eastern culture under Islamic Law but in a western mercantile culture the strong, fundamental human need to “make money” is going to override the higher human need of “morality.” Moral suasion is unlikely to prevent a professional engineer whose livelihood is derived from the business enterprise of forensic engineering from presenting incomplete, biased and false evidence and testimony to a judicial authority in furtherance of his client’s interest. The only thing less likely would be moral suasion influencing a lawyer engaged in the business enterprise of practicing the law to not present incomplete, biased and false evidence and testimony to a judicial authority in furtherance of his client’s interest.

8.2 PROFESSIONAL CENSURE. Professional engineering societies are “weak” compared to, say, bar associations which are “strong.” If a certain type of behavior of its lawyer-members is proscribed by a bar association, a bar association typically has the power to prevent a transgressing member from engaging in the business of practicing the law. This is an effective censure because it prevents the lawyer-member from satisfying his most basic need, which is to make money. Professional engineering societies have no such power to prevent an engineer-member from satisfying the basic human need to make money. Indeed, membership in professional engineering societies is completely voluntary and rather spotty at best. There is no scenario that can be envisioned where censure by a professional engineering society would be effective in modifying a professional engineer’s behavior.

8.3 GOVERNMENT REGULATION. The ability of *some* engineers to satisfy their basic human need to make money can be controlled by government regulation, specifically by engineering registration boards. The power of registration boards to control behavior of engineers, however, applies to only a

small segment of the engineering profession in the United States. It applies only to those engineers who seek to use the title *professional* engineer and offer their services directly to the public. The vast majority of well qualified engineers in the United States, however, are employed by companies and agencies which are exempt from professional engineering registration laws and engineers employed by them are not required to be registered as a matter of law. An additional complicating factor is motivating engineering registration board bureaucracies to take action on a matter such as this. It might be said that government bureaucracies have a high moment of inertia.

Additionally, because governmental action would be required, any attempt to prevent forensic engineers from presenting evidence and testimony to judicial authorities that is incomplete, biased and untrue would be opposed by lawyers' lobbyists. This opposition would arise because the fundamental strategy of lawyers is to present evidence, testimony and arguments to judicial authorities that is incomplete, biased and untrue when it is in furtherance of a client's interest. Given the proven power of lawyers' lobbyists to influence governmental bodies throughout the 50 states and in Washington, D.C., this would be a formidable barrier to overcome.

8.4 LEGAL PROSCRIPTION. Were judicial authorities (judges) to enunciate that forensic engineers must not provide testimony and evidence that is incomplete, biased and untrue....and if the judicial authorities enforced these proscriptions with meaningful penalties such as contempt citations with mandatory incarceration, proscription within the legal system might be effective. This could, however, only be effective under a system of Civil Law wherein the judicial authority (judge) and lawyers have a responsibility to investigate and reach a just judgment. Under Common Law the judicial authority (judge/jury) has no responsibility to arrive at a just judgment. The judicial authority's only responsibility is to listen to the evidence, testimony and arguments of the opposing advocates....which may be incomplete, biased and untrue....and thereupon render a judgment favoring one party or the other. Legal proscription will never remedy this ethical failure because of the fundamental nature of the

Common Law system and the fealty and economic investment judges and lawyers in the United States and other common law countries have in it.

8.5 MERCANTILE PERSUASION. Herein may lie the solution to the rub.

Forensic engineers are motivated for mercantile reasons to present evidence and testimony to judicial authorities that is incomplete, biased and untrue if it advances the interests of their clients. But the same common law mechanisms may be used to motivate forensic engineers to present only evidence and testimony to judicial authorities that is complete, unbiased and true.

This is the threat of being sued.

9. THE ROAD FORWARD. The Common Law legal system is a mercantile system. It has developed over centuries as a mercantile system to benefit its primary participants....advocates (lawyers). De facto, the Common Law's pretense to be a system for delivering justice is inconsequential. Here is how this mercantile system works....

- **The cost to make a claim against another party....to file a lawsuit....is miniscule**, perhaps a few hundred dollars. Once a party is sued, the accused party is compelled to hire a lawyer. In theory an accused party could go before a judicial authority and present his own evidence, testimony and arguments. But this will never succeed because if it did there would be no mercantile opportunities for advocates (lawyers). Judicial authorities (judges) would never allow this to happen because judicial authorities (judges) have the same basic human need....to make money... as advocates (lawyers). And judicial authorities (judges) are just advocates (lawyers) in different clothing.
- **Having been sued, the accused party is subject to extortionate pressures.** The accused is compelled by the Common Law mercantile system to hire an advocate (lawyer). If the accused party does not hire an advocate (lawyer) the Common Law is enunciated such that the accused

party is automatically liable to the accusing party for whatever amount of compensation the accusing party elects to claimwithout any determination of right or wrong.

- **The accused party is compelled to hire an advocate (lawyer)....who is free to charge hourly rates and fictitiously claim hours of work all out of proportion to the value of the advocate's services.** The cost for an accusing party to make a specious claim (file a law suit) is miniscule but the cost for the accused party to defend himself is massive.
- **Out of fear of the cost of defense the accused party submits to the accusing party's demands.** Thus an accused party is forced by economic necessity to pay an unjustified amount to settle an unwarranted claim, which includes outsized compensation for the accusing party's advocate (lawyer).

This is how the extortionate pressures work on the accused party. But let me now make a modest proposal....

Resolving the Ethical Issue

Employ law suits against forensic engineers to neutralize those who use the legal system for egregious mercantile purposes.

The cost to file a law suit against a forensic engineer is minimal. There are many arguable causes for legal action: defamation, libel, slander, fraud, interference with business relations, abuse of legal process, perjury, etc. Filing a law suit against a forensic engineer who uses the legal system for egregiously mercantile purposes will, as the saying goes, put the shoe on the other foot. The accused forensic engineer will be subjected to the same extortionate costs of legal defense as were his victims. After being forced to settle a few law suits it is unlikely a practitioner will continue to view the forensic engineering business as

highly profitable. Steps professional engineers can take to address this issue are:

Steps to Take

- Meet and confer with other professional engineers who may share your concern about abuses in the forensic engineering business, to identify specific forensic engineers who are believed to be using the legal system for egregiously mercantile purposes. This effort might be initiated, for example, through informal conversations at engineering society meetings.
- Establish relationships with lawyers (particularly those with engineering degrees) to pursue contingent-fee suits against such offending forensic engineers. Note there are many under-employed lawyers who will file a law suit on a contingent fee basis no matter how specious the cause of action may be.
- The ensuing settlement may well result in not only a handsome fee for your partner-lawyer, but a nice bit of compensation for your own time and effort.

QUIZ

Ethical Issues in Forensic Engineering

1. Forensic engineering is a/an _____ .
 - a. business enterprise
 - b. technical discipline
 - c. engineering discipline
 - d. engineering subspecialty

2. Forensic engineering is an appendage of the _____ .
 - a. mechanical engineering discipline
 - b. civil law system
 - c. legal system in the United States
 - d. civil engineering discipline

3. A judicial authority in a common law system is the _____ .
 - a. judge
 - b. plaintiff
 - c. defendant
 - d. forensic engineer

4. A forensic engineer is usually a/an _____ under common law.
 - a. expert witness
 - b. advocate
 - c. plaintiff
 - d. defendant

5. A judicial authority may reach a/an _____ conclusion in a common law legal system whereby the plaintiff is compensated by the defendant for an injury or damages.
 - a. unjust
 - b. just
 - c. inconclusive
 - d. involuntary

6. The three principal legal systems in the world are common, civil and _____ law.

- a. Roman
- b. Islamic
- c. English
- d. code

7. In a system of civil law the judge has a duty to determine the _____ of the matter.

- a. relevance
- b. duration
- c. truth
- d. necessity

8. In a common law jurisdiction forensic engineers are not compelled to provide complete and _____ testimony and evidence.

- a. unbiased
- b. biased
- c. verified
- d. unverified

9. In a common law jurisdiction a judge has no responsibility to _____ to determine the completeness, absence of bias, and truth of expert witness testimony.

- a. rule on motions
- b. collate evidence
- c. verify testimony
- d. investigate

10. One theory of human behavior characterizes people as linear or _____ thinkers.

- a. diffuse
- b. logical
- c. non-linear
- d. curvilinear

11. Linear thinkers are driven by _____ in their behavior.

- a. emotions
- b. rules
- c. self-interest
- d. geometric principles

12. A well known and credible theory of human needs is _____ hierarchy of needs.

- a. Rohrschach's
- b. Freud's
- c. Gestalt's
- d. Maslow's

13. The five possible approaches to influencing the professional or business behavior of a person are professional censure, government regulation, legal proscription, mercantile persuasion and _____ .

- a. the 12-steps process
- b. self-direction
- c. moral suasion
- d. therapeutic

14. The author of this course suggests that some forensic engineers are motivated more by _____ than a desire for truth and justice.

- a. mercantile self-interest
- b. business relationships
- c. personal relationships
- d. philosophical considerations

15. The author of this course suggests that _____ may be a mechanism for modifying the behavior of forensic engineers who abuse the legal process for self-gain.

- a. professional censure
- b. counseling
- c. law suits
- d. government regulation