PROFESSIONAL LIABILITY AND DECISION MAKING

by

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FOREWORD

The Computer Integrated Construction (CIC) Research Program at Penn State was started in 1987 with a large grant from the National Science Foundation. This grant enabled the research team to develop the fundamental process models defining the scope of the activities required to provide a facility. The research team comprised up to twenty researchers at various stages of its life. It included faculty and research assistants from Architectural and Industrial Engineering, an academic advisory board from five of the leading research schools in the country and a five member industrial advisory board representing experts in each of the phases of the facility life cycle.

While the CIC program focuses specifically on process modeling and information needs as they support decisions, this report explores the effect of professional liability on decision making. Kevin Norton has assembled a body of knowledge focusing on the effect of liability on decisions made by professionals. These professionals are the engineer and the accountant.

It is envisioned that this piece of background research conducted by Kevin will lead us to a better understanding of how these qualitative aspects should be accounted for in the design of project information requirements. This is more and more important in today's highly volatile business environment, where errors and omissions insurance and costs are an increasing portion of the price of a facility to the owner and user.

Other complimentary work resulting from this work will be detailed in subsequent technical reports issued by the CIC research program.

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Director of CIC Research Program
ABSTRACT

This report is the result of an initial investigation into professional liability, the decision making process, and their mutual relationship. It is derived from the author's previous research into this area focusing on liability's effects on decision making in the engineering design and accounting professions. These areas are of particular interest in today's world of increasing liability, litigation, and general confusion in the engineering profession. A general model of the decision making process is presented with the discussion centering on the human as a decision maker. Professional liability, both generally and as it pertains to engineering and accounting, is discussed with a brief overview of the pertinent legal principles. The present relationship between liability and decision making is explored through a discussion of the probable effects liability may have on decision making in the two professions. Finally, conclusions of this research and recommendations for future studies are presented.
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PROFESSIONAL LIABILITY AND DECISION MAKING

1.0 - INTRODUCTION

1.1 - Background
Decision making is an activity and process which most people probably don't often give much thought unless or until a crisis of some type has arisen. Yet it is a process used continually every day by everyone in all contexts. The process of making decisions is at the heart of most, if not all, professions and when something begins to interfere or degrade the process or its outcome, it is a major problem. Unfortunately, as the scenario often goes, by the time someone notices something is wrong, the initial problem has grown into a major obstacle to the smooth functioning of the process. Professional liability, the state of being held accountable or responsible for one's professional actions, behaviors, and the like, is just such a problem which seems to have sprung up in the media and public awareness almost overnight. It actually has been growing over the past twenty years or so. It is only now, however, that it has begun to have a direct impact on many professionals and their firms.

1.2 - Purpose of Paper
The purpose of this paper is the initial investigation of professional liability, the decision making process, their mutual relationship, and the effects they exhibit on both the accounting/auditing and engineering design professions. It is derived from the author's previous research into this area focusing on liability's
effects on decision making in the engineering design and accounting professions. A secondary goal is to identify areas and topics for future research.

1.3 - Scope of Paper
As stated above, this paper will examine two different topics and their mutual relationship as they relate to two different professions. Liability has become such a concern in recent years that the author decided to investigate its possible and probable effects on decision making which is the core of many professions. Any effects on the decision making process may eventually reveal themselves in the overall make-up of the profession. The professions chosen for study, engineering design and accounting, may not seem to have much in common, but on closer inspection, they do share similar characteristics. For instance, both types of professionals rely very heavily on decision making in the performance of their duties. They are often contracted to perform services for another party. In addition, they are typically quite independent of their client in the performance of their services. This implies that, typically, accountants and designers both rely on their clients for information and input but remain organizationally separate. A third similarity is the impact professional liability has had on these fields. Accounting and design have been hit particularly hard by liability and its associated consequences. And finally, there is ample information on the accounting profession's attempts to deal with and control the impacts of liability.

To assist the reader with the structure of the remainder of this paper, a short "map" of the following chapters and the topics they cover is given below.
Chapter 2 - Discussion of the decision making process through a general model and its phases of the process. Included here is a discussion centering on the human as a decision maker, covering limits on people as well as the effects of psychological stress on the decision maker and process.

Chapter 3 - Professional liability in general and in the professions of Accounting/Auditing and Engineering Design. A brief and shallow background in pertinent legal principles is also given.

Chapter 4 - Present relationship between liability and decision making is covered by discussing the probable effects liability may have on the decision making process as well as on accountancy and engineering. Current efforts, in both professions, to handle this subject are also presented.

Chapter 5 - Conclusions of the research as well as recommendations for further research and investigations are presented.

2.0 - DECISION MAKING - MODELS AND LIMITATIONS

One of the aims of this paper is to discuss the effects of professional liability on the decision-making process. This chapter presents a principal model of decision making and investigates the capacities of people as decision makers as a starting point.

2.1 - Simon's Model of Decision Making

How are decisions made? This question has fueled a lot of research and debate in the past. A person continually makes decisions almost every waking moment of the day, every day of his life. Decisions concerning what to wear and eat to career moves to decisions about money, marriage, and other issues. But as common as decision making is, many people would have some degree
of difficulty trying to pin down the specific steps they follow when making decisions.

Probably the most well-known model of the decision-making process was proposed by Herbert A. Simon around 1960. Simon chose to separate the process into three major phases: intelligence, design, and choice. The intelligence phase involves examining the surrounding environment for conditions requiring a decision. During the design phase, possible courses of action are devised, developed, and studied to establish feasibility. Finally, the choice phase requires that alternatives be evaluated and one selected and implemented.\(^\text{1}\) It is an iterative process and during these phases a decision maker may, and often does, return to a previous phase for some reason. For example, an advertising executive may be in the choice phase and rejects the different ad campaigns and will return to the design phase to develop more alternatives.

There are additional models available which extend their coverage to include implementation and feedback phases. The implementation phase is when the selected alternative is put into action. Monitoring the effects of the implemented solution during the monitor or feedback phase checks to see if the overall process needs to be repeated if the desired results are not realized.\(^\text{2}\) Each phase of the process is covered in more detail below.

**Intelligence**

Before any decision can be made, it must be known that one is needed. The term, intelligence, is used in a militaristic sense; the gathering of information for some use. This represents the primary function of the intelligence phase.
There are two major functions within the intelligence phase. The first is a search of the environment to find clues which may point to conditions or situations where a problem or opportunity for improvement exists. This scanning of the environment can be periodic or continual, depending upon the particular situation at hand. The overall result of this function is "dissatisfaction with the current state or identification of potential rewards from a new state."³ This activity can be considered the problem identification part of intelligence.

The second function of intelligence is establishing the correct problem. Identifying that a problem exists is only half of the difficulty. Making sure the correct problem is being addressed is the other. The purpose of this function is to solidify and clarify the problem or situation so that the remaining phases can be focused on solving the right problem. For example, say a company decides to spend a large sum of money on a new way to improve productivity in a plant that is experiencing falling productivity. Then, let's say very little improvement occurs. A subsequent study into why the program didn't work as well as expected reveals that the actual problem was due to lowered morale of the workers rather than the lack of sufficient productivity improvement measures. The company's efforts may have been in vain because they had misidentified the problem. Occasionally, the original problem may be too complex to be dealt with as a unit and should be broken up into smaller, less complicated problems.

Design
During the overall decision-making process, a large percentage of time is spent on inventing and developing possible solutions. These solutions will be evaluated and one selected during the choice phase. The various alternatives should be evaluated against the overall decision objectives and not only
against each other. As with any design, the key to a successful result is creativity. Creativity and creative thought should be encouraged and enhanced when and where possible. The use of brainstorming, scenarios, checklists of needs, and the like may prove helpful. Other conditions are also necessary for the development of ideas. The problem must be known and well-stated. Constraints, such as time, and other limiting factors need to be known by the decision maker. Also, some drive or motivating force should be present which requires that the problem be solved.

**Choice**

Finally, once alternative solutions have been established as feasible, one must be chosen and implemented. Considerations such as available funding, personnel, and time, possible impacts of implementation, and alternate courses of action should the implemented one fail must be taken into account. There are a variety of selection methods in use presently and which one to use depends upon the conditions prevalent in any situation. Such methods include decision trees, optimization techniques, game theory, statistical inference, and more of which the specifics are beyond the scope of this paper.

Once a decision has been reached, focus "shifts from analyzing options against objectives to developing methods for reaching the end result." Implementation of a decision requires a good plan which must be flexible should conditions change as well as have some method of "checks and balances" to assist in monitoring or follow-up. The most important elements necessary for the proper execution of an implementation plan are "direction, priority, and communication." Communications, including some type of feedback, are
crucial to the proper implementation of a decision, especially if someone other than the decision maker must implement the decision.

2.2 People as Decision Makers
Under similar conditions, different people in different positions and different situations will come up with different decisions. These various viewpoints can be used to explain some of the decisions reached. Two models which have been used are presented below.⁶

**Classical Economic Model** - this model describes how to make a category of decision types. It uses three assumptions:

a) All alternatives and outcomes are fully known.

b) Maximization of utility is sought.

c) The decision maker is totally alert to the differences in utilities of the outcomes.

Rarely are all of these conditions met in a decision situation.

**Administrative Model** - this model covers how decisions are actually made. Its assumptions about the decision maker are as follows:

a) All alternatives and outcomes are not known.

b) A limited search to find a few acceptable alternatives is made.

c) The decision maker satisfies his goal level.

This seems to be a more realistic approach or model than the preceding one.
The remainder of this section discusses the influences and differences which can affect the way a person makes a decision. Included in this discussion are limits on people, information, and decision making under stress.

2.3 - Limitations on Decision Making

People are only human. This one statement carries some serious implications concerning decision making and any necessary information handling. The most serious of these are the limits of people as "information processors." Humans possess limits on the amount of information we can handle in our short-term memory, our abilities to perceive differences, and our abilities to handle probabilistic information.⁷

Humans have a very limited short-term memory. Studies in psychology indicate that people can hold in short-term memory and effectively process only about seven units of information. This can seriously restrict the decision maker's capability to recognize, know, and interpret all available information on a problem. There are, however, methods and aids available which help in expanding short-term memory. In the evaluation of decision alternatives, a crucial skill is the ability to recognize differences. Decision makers must be able to notice the differences between correct and incorrect data, assumptions, and other information. People are also limited in this ability. Here, again, training of personnel may increase their capacity to see differences. Often, people making decisions must assign and interpret statistical probabilities of the different outcomes. People are generally poor performers in intuitive "statistics" and this reveals itself in a number of ways, the principal of which is the poor ability of identifying correlation and causality.⁸ Many people will often see the
(apparent) dependencies between two items or actions and will infer a relationship or link between them when none actually exists.

There are also limits on the information which the decision maker must handle. Ideally, all facts would be known so that the correct action could be chosen as the best decision. Unfortunately, the real world doesn’t work this way. In the most common of occurrences, the quantity and quality of the available information is far from optimum. Quality is almost never sufficient for most decision makers and the cost, both in time and expense, required for the development of "perfect" information typically precludes it from occurring. Usually, the quantity of facts is insufficient to allow the decision maker to make the best choice and he must try to fill in the missing pieces. However, there are occasions when too much information is available and the person experiences "information overload." This occurs when a person's capacity for interpreting information is exceeded. All of these limits can cause the degradation of the decision maker's performance and increase the amount of time required for the decision to be reached.

When faced with incomplete information and other constraints, a person may postpone making a decision in the hope that the problem will solve itself or simply go away. Of course, this almost never happens. Instead, it usually grows worse, adding only more difficulties and problems to the situation. Instances like this tend to create a sense of decisional conflict. This conflict can cause quite a bit of stress for the decision maker. If the decision maker recognizes that there are some serious negative consequences anticipated from all of the alternatives, this problem may become particularly acute.
As a result of this conflict and stress, a decision maker may resort to using defense mechanisms, most of which result in incomplete searches for and evaluations of alternatives. Some of these mechanisms, all of which operate unconsciously so that the decision maker often doesn't realize he is using them, include rationalization, hypervigilance, and avoidance. Rationalization comes about when a person (or even a group) "devises a superficially plausible explanation or excuse for one's acts, beliefs, etc." Another defensive block, hypervigilance, occurs when a better solution to a problem is thought to exist but there is no time available for a complete search, evaluation, and planning of it. This usually occurs in an emergency situation. The decision maker will be so concerned and preoccupied with the expected adverse results, he won't acknowledge or process any information showing that they may not happen at all. When this occurs, he perceives pressure (either actual or imagined) to hurry and make a decision before conditions get worse. He short-circuits the decision-making process by ignoring other courses of action and not recognizing the possible effects of his decision. The final defense mechanism mentioned, avoidance, manifests itself through wishful thinking, information distortion, and selective memory loss on the part of the decision maker. Procrastination, buckpassing, and bolstering are all part of the avoidance behavior pattern.

The concept of stress is an important consideration when dealing with liability issues. Liability concerns can only add to the number of items already on the decision maker's mind. With additional stresses, a decision made under these conditions may not be the best or most effective. Stress must be recognized as a contributor to ineffective decision making and professional liability may have an additive effect on the stress people must contend with.
3.0 - PROFESSIONAL LIABILITY - APPLICATIONS IN THE REAL WORLD

3.1 - Liability in General
In almost all professions today, one of the most frequently heard buzz words is liability (citations given on endnote page). This word is often used in the context of a lawsuit, typically against some profession or another. As examples, manufacturers are sued because their products fail in some way; a student sued a teacher for failing to teach him adequately; an architect is sued because a basement leaks; an accountant is sued because an investment went belly-up; etc. Webster's defines liability as "the state of being liable" or "anything for which a person is liable." Looking further, liable is defined as "legally bound or obligated, as to make good any loss or damage that occurs in a transaction; responsible." It is this concept of responsibility to others which society seems to be rediscovering in recent years. The courts have also responded to the increasing pressures from the public for an extension of these obligations we owe one another.

But what does this expansion of responsibilities mean to people and organizations? In general, it means that a party's liability for its actions (personal, professional, etc.) is increasing. For example, a manufacturer has the responsibility of seeing that a product placed by him on the open market is reasonably fit for its intended use. He may be held liable for a breach of duty to anyone who might foreseeably be injured by the product. Of course, the quantification and interpretation of terms such as reasonably and foreseeably are left up to the courts. Only several decades ago, this same manufacturer would have been protected from such liability by a lack of privity, or in other
words, lack of a contract between the injured party and the manufacturer. As the law and courts view it today, however, there is relationship enough between the manufacturer and the product user to substantiate liability on a tort basis. The concepts of privity and tort are discussed below.

Contracts and contract law are covered in section 3.3, but a note on the privity concept is warranted here. Returning again to the dictionary, privity is defined as follows: "a successive relationship to or mutual interest in the same property or rights, established by law or legalized by contract..."\textsuperscript{13} Translated, this means, for our purposes, that a proper contract creates a legally recognizable relationship. It is this definition which, historically, was used as a defense to liability. The defense was that there was no contractual bond between the two parties which created a duty owed to one by the other. This non-fiduciary relation held that each party should watch out for its own interests in the transaction. Again, in many, if not most, cases this type of legal defense is being weakened by present court decisions and opinions.

Tort and tort law are areas of confusion and vagueness. A tort has been defined as a civil wrong, other than a breach of contract, committed against one party by a second resulting in damages, for which the law will grant a remedy, often a monetary award,\textsuperscript{14} or in other words, "a wrongful act, injury, or damage for which a civil action may be brought."\textsuperscript{15} Making sweeping generalizations about tort law can be dangerous due to the nature of its development. At least in the United States, tort law developed bit by bit until it is now a compilation of particular problems and wrongs which have been addressed in the courts. By definition, a tort sounds similar to a crime, but there is a legal difference. A crime is an offense against society in general, for which the state usually brings
criminal prosecution as a legal action. A tort, on the other hand, is usually an act or invasion of rights of a private person or group. It usually doesn't threaten society as a whole. A crime, however, may also be a tort in that it results in personal damages.

Tort law is typically concerned with compensation of the injured party, not punishment of the offender. These compensatory damages are most commonly a sum of money judged to counterbalance the amount of the damage directly caused by the tort. Other damages, such as punitive damages, may be allowed in special cases (i.e., the tort was caused by malicious intent). There are, in general, at least four major categories of actions which fall under the heading of tort. These include:\textsuperscript{16}

Misrepresentation: a false statement by a party of an important fact he knows to be incorrect, with the intent to deceive another party.
Nuisance: a condition or thing causing danger or annoyance to some party (individual, general public, etc.)
Bailments: the delivery of goods or personal property by one party to another for a specific purpose (e.g., for repair). It falls under torts because it deals with protection of personal property.
Negligence: the failure to use a reasonable amount of care, resulting in property damage or personal injury.

Misrepresentation may often be a factor in a breach of contract claim and may also be preplanned. This paper focuses on those errors resulting from mistakes. Of these four, the last is of particular interest in the engineering design field and is discussed in section 3.3.
3.2 Liability in Accounting

As with many other professions, legal liability of public accountants is continuing to grow as it has done since the early 1960s. The causes of the growth in scope vary and include "professional, business, and societal factors."\(^{17}\) One thing which has occurred, although it is unknown whether it is a cause or an effect, is a "major shift of investment risk from the investors themselves to the independent accountants who certify financial statements."\(^{18}\)

As a result of this shift, there has been an increase in liability insurance premiums and a reduction or abandonment of professional liability coverage all together in some instances (see Figure 1).

Another reason often cited for the liability crisis is the ever-increasing litigious nature evidenced in our society. Due to this, "minimizing risk and exposure has become a continuous process for ... accountants."\(^{19}\) In addition, accountants are often seen as the deep-pockets after a business fails. There seems to be a driving force behind the movement to find a pocket deep enough to compensate for every wrong, perceived or actual. As an example of the sizes of the settlements and judgments from lawsuits recently, the eight largest CPA firms have paid out some $180,000,000 between 1980 and 1986.\(^{20}\)

Most professionals, at one time or another, have probably asked themselves why there is such a rush to litigate nowadays. Another unwelcome bit of news is that "the urge to litigate is intensifying."\(^{21}\) Robert Mednick, of Arthur Andersen & Co., feels that the most visible cause is the "increasing success of plaintiffs in winning ever-spiraling jury awards and out-of-court settlements."\(^{22}\) He cites this trend as an over-extension in the swing of the settlement pendulum. The act of compensating an injured party is commendable, but the present trend of
awarding excessive awards is perceived as unfair by a defendant who had little to do with the injury. Figure 1 shows some examples of this trend.

**Liability Insurance Problems**

As shown by Figure 1, one of the harshest effects of the increased litigation is manifested in the area of liability insurance. The insurance companies who write liability coverage for the medical, legal, engineering, accounting, and other professions have had to react to the liability issues as well. As the amounts paid out in settlements have increased, the insurance firms have had to build up a monetary reserve through increased premiums. In many cases, unfortunately, it's not just the price of coverage, but actually getting coverage which is the problem. Many insurers are no longer writing new policies for those professions hit particularly hard such as obstetrics, gynecology, and accounting. Additionally, many professionals have chosen to drop their coverage all together because rates have been skyrocketing to the point where quadrupling of prices is not surprising.

The American Institute of CPAs (AICPA), in July 1984, increased premium rates by up to 50% and then again upped them by 100% at the end of the same year. They also doubled the deductible while reducing the maximum coverage available to one-fourth of the pre-1984 level. The effects of this on all size firms is proving difficult to cope with, at best; impossible to meet, at worst. The public will also feel these effects through increased costs of these professional's services. As a note of interest, it has been found that plaintiffs receive only about half of the total amount spent on general litigation ($29 billion to $36 billion in 1985). Legal fees and other costs burn up the rest.
THE HARSH TRENDS OF CIVIL SUITS

• The number of lawsuits filed annually in federal courts has jumped from 86,000 in 1962 to 239,000 in 1982 -- an increase of 178% in 20 years.

• By 1985, 8 million lawsuits were pending in state and local courts -- about 1 for every 20 adult Americans.

• As an example of the incredible increases in awards -- in Cook County, Illinois, the average malpractice jury award increased by 2167% between 1960 and 1984.

Particularly hard hit are accountants and their firms:

• More suits have been filed against accountants since 1960 than in the entire previous history of the profession.

• The largest accounting firms collectively have paid more than $250 million in settlements of mostly audit-related suits between 1980 and 1987.

Invariably, this has had a devastating effect on the CPA firms and their insurers:

• Insurance premiums for the largest CPA firms multiplied by a factor of five between 1984 and 1987. In addition, available commercial coverage has been cut in half with deductibles increasing sharply.

• The AICPA's liability insurance plan's 1980 premium for firms of 25 professionals was about $64 per person for $1 million in coverage. By 1986, the premium was up to $1,160 per person with twice the deductible.

• 20% of firms responding to a Wisconsin Institute of CPAs survey has had to drop its professional insurance coverage.

FIGURE 1: Evidence of the Trend of Granting Excessive Awards
(Adapted from Mednick article)
Claims for Nonaudit Work

Figure 1 also shows the magnitude of the lawsuits filed for audit work. Although most claims against accountants arise from audit work, there is an increasing number using "compilation, review, and financial projection" agreements as their basis. It was once felt that an accountant acquired no legal liability when engaged for nonaudit work because he gave no opinions. This is no longer true. Today, the legal arena does not differentiate between audit and nonaudit work despite there being definite differences in the accounting rules relative to both.

There are two general categories of claims concerning compilation and review engagements. One involves cases where the client feels the accountant should be held liable for not discovering wrongful acts of the client's employees. The second category includes suits brought by the client's creditors when the client fails to repay his loans. In either instance, the accountant will have to prove that "he performed ... according to the relevant professional standards" as his defense.

Erosion of the Privity Concept

Typical of many professions, accounting has seen in recent decades an almost continual erosion of privity. Originally, most states followed the privity defense which was established in the courts around 1930. This rule essentially stated that accountants could be held liable for negligence only to their clients and anyone they knew would be using their job output. This quite effectively shielded accountants from lawsuits brought against them by third parties. In order to recover damages resulting from reliance on misstated financial statements, these third parties had to prove the accountant acted fraudulently
(or its equivalent). The court felt that even if the professional knew that third parties may rely on his decision, their reliance on possibly incorrect opinions was "outweighed by holding a professional liable for such a limitless risk."\textsuperscript{29}

Mednick argues that it is unfair to hold accountants responsible for negligence to the incredibly huge number of potential third parties who might use their results. His argument is not against liability for fraudulent acts (generally intentional), but against liability for negligent acts (generally mistakes). He bases his argument on two premises. First, in most cases, the accountant is a "secondary participant in the circumstances that gave rise [originally] to the economic loss."\textsuperscript{30} In addition, they are, themselves, often victims of the loss because they may not even get paid if their client goes under. Secondly, the nature and structure of the accountant's compensation doesn't allow for the cost of increased liability. Like many professionals, the accountant is paid for the time he has spent or devoted to providing the service rather than for the frequency or extent of the service.

Fortunately or unfortunately, depending on your point-of-view, by the late 1960s, this philosophy was beginning to feel some judicial pressure. One particularly injurious blow was delivered in 1983.\textsuperscript{31} Here, the court stated that "accountants could be held liable for negligence to any reasonably foreseeable 'third parties' who rely on that information."\textsuperscript{32} Many in the profession probably felt this was the beginning of the end as the list of cases striking down the privity defense continued to grow. There is, however, hope for accountants as some courts and states seek to reaffirm privity.
3.3 - Liability in Engineering Design

3.3.1 - Background

Engineering is a profession which influences almost every aspect of modern human life. A quick look around any room will show the importance of the profession if one asks, "What in the room (product, material, or energy source), aside from one's self, has not been designed by some type of engineer. Its disciplines are drawn from virtually every scientific field of study. The civil engineer designs and aids in the construction of large facilities such as mass transportation systems, bridges, waste treatment facilities, dams, and buildings of various types and uses. Chemical engineers develop new materials, from textiles to construction materials, and pharmaceuticals. Genetic engineers are beginning to create new forms of life "designed to rid society of its parasites and pests; artificial pets...more suited to urban life styles...; and an endless march of scut workers groomed for dangerous jobs in mines or along the ocean floor." By using recent technological developments, these and other engineering disciplines are continually exploring ways to supply the materials and services needed by society in order to smoothly operate.

Today's professional consulting engineer is in a unique position of responsibility to assure other parties that the products or services he/she provides are sufficient, safe, and reliable. To this end, society has established a set of laws binding the engineer. Figure 2 shows the major divisions of law and a brief description of some of these follows.

The areas of law pertinent to this paper are included under the substantive division of law. Substantive law is commonly thought to consist of common law
DIVISIONS OF LAW

ADMINISTRATIVE

SUBSTANTIVE

CIVIL & CRIMINAL

STATUTORY LAW

COMMON LAW

PROCEDURAL

CONSTITUTIONAL

INTERNATIONAL

COMMERCIAL

MUNICIPAL

MARITIME

TORT

CRIMINAL

CONTRACT LAW

FIGURE 2: Realms of Law 34
and statute law. Common law is based primarily on historical precedence and can be thought of as somewhat similar to customs since it is based on tradition and consensus. The authority of common law comes from the courts; a decision reached in one case is often used as the basis for deciding similar cases. This is known as the doctrine of precedent or case law. This facet of common law, due to its being open to interpretation, allows courts some flexibility in their rulings. For example, our federal system sets standards but individual states are free to interpret these standards relative to regional customs and common law. Statutory law, on the other hand, is legislative law; meaning that it is created through enactments of a legislative body. The laws, or statutes, prescribe particular actions that apply to specific situations. Statutes may modify, reverse, or abolish common law doctrines on the same subject.

3.3.2 - Contract Law

As shown in Figure 2, a subset of substantive law is commercial law from which contract law is derived. Contract law is the enforcement of contractual obligations typically administered by the state. Contracts are an integral part of the business world and form the basis of most people's everyday legal activities. In the realm of an engineer's professional life, contractual agreements are the foundation upon which the engineer's work rests. In its simplest sense, a contract is an agreement between two parties that is enforceable in a court of law. Basically, it is a promise by one party to do or not do something in return for something else. Contractual rights and duties are taken on by a party by voluntary agreement. As long as the contract terms are not in violation of public policy, each party is entitled to fulfillment of those terms by the other party. If there is a breach of contract by one party resulting in damages (physical, financial, etc.) to the other, the law provides a possible remedy. The steps
involved in the forming and carrying out of a contract are beyond the scope of this paper. However, some general comments about contracts should be discussed.

First, the overall role of a contract is to "encourage economic exchanges" and to "protect the reasonable expectations of each party that the other will perform."\textsuperscript{35} Secondly, contracts need not be in writing to be legally binding; a particularly sticky point when dealing with liabilities. All that is required is an implied intent of the parties to enter into a contractual agreement to be recognized by law. Third, such an agreement must be a voluntary agreement for all concerned parties. This means that the parties involved are allowed to pick and choose with whom they wish to deal. It is also an assurance that it is not a take-it-or-leave-it contract, known as an "adhesion contract"\textsuperscript{36} Such adhesion contracts are controlled by a dominant party and are typically thrust upon the weaker party with little or no bargaining between them.

Fourth, there must be mutual assent or a "meeting-of-the-minds" between the parties. This typically includes the process of communications culminating in the making of an offer and an acceptance of that offer. An offer can be thought of as a promise which is legally acknowledged. This requires that it be clear, definite, and specific, with little room for misunderstanding. An offer also "creates the power of acceptance in the offeree."\textsuperscript{37} An acceptance is the agreement by a party to accept an offer made by another party. An acceptance need not be in writing and can be implied by the actions of the accepting party (i.e., performance of the act requested by the offer), whereas an offer must be explicit, often in writing. Fifth, the contract must have proper subject matter. In other words, the purpose of the contract must be legal. There must be no
intentional fraud or misrepresentation of facts or promises by either party. Finally, the contract must be an exchange of goods or services. One or both of the parties will expect some good or the performance of some service in return as their compensation. This can be thought of as the doctrine of consideration, the general gist of which is that a promise is not enforceable unless it is an agreement to exchange things of value.

Of prime concern when considering liability of a design professional is the designer's relationship to the other parties with whom he deals. Shown in Figure 3 is a typical contract triangle for traditional construction projects. In a general sense, the relationships between the parties, shown by the arrows, can be described as follows:

**Owner-Contractor:** This relationship is usually an "arms-length" transaction, defined as a "transaction...whereby the parties are expected to protect themselves." Most commercial dealings are of this type. There is no responsibility on either party to protect the interests of the other.

**Owner-Designer:** Typically, this association is one of mutual trust, loyalty, and respect; a fiduciary relationship. Both the Owner and Designer want to work toward the same goal, the successful completion of the project. This relationship and the concept of agency are extremely interwoven. Agency will be discussed in a moment.
Designer-Contractor: This relationship can be defined by a number of means, primarily via the contract between the Owner and Designer. However, to the Contractor, the designer is usually considered an agent of the Owner.

One of the most common relationships the designer experiences is an agency relationship with the owner. Agency is a legally created relationship which developed out of the "commercial necessity...that persons be able to act through others." In general, anything one party may lawfully do for himself may be delegated to an agent via an agency contract. In most cases, an agent with certain abilities and skills is hired to perform services which one cannot perform for one's self. In the typical agency setting, there is a principal, an agent, and a third party (at least one). Referring to Figure 3, and in light of this section, the Owner is the principal; the Designer, the agent; and the Contractor, the third party. The primary premise of the agency concept is that an agent's actions
bind the principal. A third party will deal with an agent as long as they feel they can look to the principal to back up the claims and actions of the agent. The acts of the agent can be considered to have the same legal effect as if they were performed by the principal.  

The extent of the agent's powers varies depending on the type of relationship created. This is also the crux of many disputes because the details of the relationship may not be in writing and can be inferred through the actions of the parties. Vagueness and ambiguity of this type can lead to questions about the liability of either the agent or the principal. In the context of the construction industry, a design professional is exposed to liabilities at many different points during the performance of his duties. Some of these are covered below.

Design Process

Designers are involved in many facets of the typical construction project. In addition to the design itself, he/she may be involved on the site during construction, required to act as contract administrator, and perform almost as a judge in possible disputes to name a few duties which a designer may be expected to perform. Before discussion of these types of duties, some background in the primary area of the designer's expertise, development of the design itself, is presented.

The overall design process is just that, a process; a continuum of development involving many changes. As such, it is difficult to break the process into specific steps or stages. However, through general convention, it has been divided into the following phases:
Conceptual Design - initial review of requirements and development of design concepts. Everything is quite general and vague.

Schematic Design - refinement of the conceptual design as additional information is acquired. Specific systems designs (e.g., structural, heating and cooling, electrical, etc.) are begun.

Design Development - often thought of as the "final" design phase; details are developed, specifics confirmed, and the design fleshed out.

Contract/Construction Documents - Development of the drawings, specifications, and other documentation of the design.

The names of the phases vary depending upon to whom you speak and those presented here are by no means the final word on the division of phases, but they do reflect the general consensus as to the process' constituent parts.

**Illustrations of Liability**

Possibly the most critical issue which must be recognized relative to designer liability is that the more information given out, and the more detailed that information, the more liability is assigned to the design professional. Also, due to the nature of design, it is often difficult, at best, to assign liability fairly among the various participants in the construction process. Many claims brought against design professionals for activities or duties during the actual design are based on a claim of negligence on the part of the designer. Several examples of such claims are presented in section 3.3.3.
In addition to the duties of design, the designer's contract with the owner may require that he (designer) act in other capacities as well. A standard contract in common use in the industry assigns duties to the designer during the bidding of the job and the construction of the project. The most prominent of these duties are supervisor of the work, interpreter of contract requirements, mediator in disputes between the owner and contractor, and inspector of the work for the purposes of paying the contractor and determining the dates of completion. Some example claims relating to the duties during construction may include the following:

Failing to make changes required in order to be in compliance with codes.
Failing to perform supervision properly.
Issuing payments and/or other certificates negligently.
Failing to condemn defective work.

And the list goes on. This shows that there is an increasing tendency to expose the designer to claims made by other participants in the process, including such typical third parties as contractors, sureties, and even buyers and tenants of the completed project.

Some recent periodical articles on the subject give excellent examples of the designer's liabilities and the actions which led to problems for some design professionals. The collapse of the Kansas City Hyatt Regency skywalks in 1981 caused the end of that building's design firm. Failure on the designer's part to properly and thoroughly investigate the possible effects of a design change proposed by a contractor brought about the firm's demise. The progressive
collapse of the L'Ambiance Plaza apartment complex under construction in Bridgeport, Connecticut in 1987 was caused by the failure of a flawed connection during a temporary condition in the construction. Though I found no news of the designer's fate, the collapse did point to the fact that critical connections and temporary loads get little attention from designers. A designer, among other parties, is being sued by the owner of an earth-sheltered building which collapsed when a supporting arch failed. In Switzerland, designers were found guilty of negligence and manslaughter in 1987 when a concrete ceiling caved in on an indoor pool due to chlorine corrosion of the ceiling support hangers. Not all cases are related to structural failures, however. Early in 1987, an engineering firm was found to be in breach of contract for failing to employ a professional estimator, provide revised cost estimates during construction, and inform the owners about alternate contract formats.

3.3.3 - Tort Law
Another subset of substantive law which can often lead to liability issues is that of tort law. Tort doesn't result from any contract between the parties but rather it arises by reason of their mutual relationship. An example of a tort liability would be as follows: a designer has breached some duty owed to persons who could foreseeably be damaged by such a breach, therefore he may be held liable for damages due to negligence. Claims against design professionals can be divided into three types: personal harm, harm against property, and economic loss. Traditionally, tort law dealt with harm to person or property. Today, however, tort law is playing an increasingly important role in the allocation of purely economic losses.
Tort in Negligence

As stated in section 3.1, negligence is the failure to use a reasonable amount of care which results in damages or injury to another party. Typically, these damages are recoverable through a tort case. To prove a tort of negligence has occurred, four conditions must be satisfied.\textsuperscript{51,52}

- Party 1 must owe a duty to Party 2 to provide safety (i.e., protect Party 2 against unreasonable risk of harm).
- Party 1 must have neglected this duty.
- Party 2 must have suffered damages.
- The negligence must be the direct cause of the damages.

However, just proving that negligence has occurred isn't enough because the designer does have defenses, albeit fewer than in years past. Some of these may include client knowledge and approval of the design, passage of time (statute of limitations), and quasi-judicial immunity (i.e., for when the design professional acts as contract interpreter, to resolves disputes, and to monitor performance).\textsuperscript{53}

Negligence in design has been the basis of many claims relating to the designer's duties during design. Examples of such claims are shown below.\textsuperscript{54}

- Misrepresenting existing topography.
- Specifying materials which don't comply with building codes.
- Failing to inform client of potential risks of using certain materials.
- Designing an inadequate solar heating system.
This variable of tort has wreaked havoc in the construction world. It's considered bad enough to let the major parties involved (see Figure 3) sue each other in tort. It's even worse to allow more remotely related parties to use tort principles to shift their economic losses onto the major players in the construction process. One method of encouraging parties to enter into contracts is to limit their exposure for damages suffered by the other party. Today, professional liability is a critical issue and one which is growing in importance in many professions. More and more, all types of professionals are being held liable for their actions, behaviors, and decisions. To ignore it only invites trouble. Efforts to handle this concern are explored in Section 4.

4.0 - PROBABLE EFFECTS AND PRESENT EFFORTS

4.1 - Probable Effects
Intuitively, it would seem that liability would have a somewhat detrimental effect on the decision making process. Although I found no literature relating to these possible effects, I will offer some conjecture. By its nature, liability concerns itself with a problem situation: who is responsible if something goes wrong during some activity. Other facets of liability including insurance and litigation are also geared toward a problem setting. Despite the necessity of these considerations, especially in today's world, they do have an impact on decision making as well as on engineering and accounting.

4.1.1 - On Decision Making
Some of the consequences of this interaction between liability and decision making were discussed in Chapter 2. As a result of the stress it induces, liability
would probably cause the decision maker to be more cautious (or at least attempt to be). The decision maker may then be less willing to take chances, more hesitant to explore new or unfamiliar areas, and more apprehensive of other effects which may become known as he tries to protect himself or minimize the anticipated losses. If he is doing this, his decisions will probably be on the conservative side as he tries to avoid excessive risk. This cautiousness could come into conflict with other stress-inducers such as time limitations. If someone is trying to be as careful as possible in his decision making, it will require time and information. This may not be feasible if there is some deadline or other restriction on the time or information available to the decision maker.

There are dangers and pitfalls inherent in both of the approaches mentioned here, allowing too much time or information and allowing too little time or information. If there is an overabundance of information, the decision maker may hope that the sheer amount of data will lead to a possible solution which may jump out at him. If too much time is allowed (infrequent as it is), he may postpone the decision, especially if there are other more pressing issues to which he must devote his attention. This would translate, eventually, into the following situation. More common is the instance of too little time or information, the decision maker must attempt to fill in the blanks where possible and must acknowledge that he doesn't, and most likely won't, be aware of all the possibilities.

4.1.2 - On Accounting
Many of the major effects of liability on the accounting field were covered in section 3.2 and include insurance problems, increases in settlements and
awards, increasing nonaudit work claims, and erosion of privity. Again, no information on the possible effects liability has had on the accounting professional was found. However, I feel that results similar to those in engineering (explained in 4.1.3) may occur or may have already occurred. For example, the use of overprotective contract language in engineering design is paralleled in accounting by the use of a carefully worded engagement letter which "would limit responsibility and disclaim liability to discover fraud."55

Accounting firms are encountering, in addition to increased liability exposure, "greater competition for clients."56 In response to this stiff competition, firms are offering new services (an invitation for liability issues) and trying to maintain service quality despite rising costs.57 Many firms are attempting to "diversify their client base" so they aren't dependent on a few clients for most of their business.58 Should they lose one of these clients due to litigation, for instance, their firm could be in serious trouble.

4.1.3 - On Engineering Design
The engineering design process is a continuous string (or more accurately, set of strings) of decisions which must be made. Decisions such as: Should the facility be built? If so, where? Who will back it, financially? What size facility is needed? How much should it cost? What materials should be used? What layouts are best? The list of decisions to be made can grow to an incredible length quite quickly. Restricting ourselves to those decisions made by the design professional, the list is reduced only slightly. Some decisions will have to be made by the owner or end user but the designer may be involved with assisting them. This illustrates the role and importance of decision making in the design process. Decisions are made on every aspect of the design from
overall external appearance of the building to what materials are best suited for the anticipated needs and conditions to how often to meet with the key parties involved.

The concept of stress and decisional conflict discussed earlier also applies to the design professional. Two prime constraints of the design process and designer are time and money; there are never enough of either and too many people are only too eager to steal your's away. The design professional is under almost continual pressure from the owner to stay up to his quality standards, under budget, and on time. The owner usually wants the best quality, for free, yesterday. The contractor exerts pressure through shop drawings, change orders, claims for changes, and other items. Also, the external world puts pressure on the designer in the form of professional standards to live up to, codes to be adhered to, and legal actions by other parties to name a few.

With the addition of the specter of liability to the list of concerns facing design professionals, the profession must attempt to come to grips with these pressures while maintaining the integrity of the profession and the design. The possible tendency toward more conservative decisions, on the part of the designer, may have a negative impact on engineering design as they try to minimize or eliminate their exposure to liability and risk. Probably the most vulnerable area to liability claims an engineering firm must contend with is the design itself. The design is at the heart of the firm's functioning. During design, there is a consistent possibility that a hidden error may have been created. The error could result from many areas.$^{59}$
The selected materials may be inadequate or may fail to comply with accepted industry or user standards. Requisite safety considerations or devices may not be included in the design. The designer may fail to consider possible unsafe conditions which are readily foreseeable by him.

With liability insurance premiums rising and coverage dropping, there is no question that design professionals and their firms will attempt to reduce their vulnerability. Some firms may reduce the scope of their services in the areas of construction site and additional services. They may restrict the extent of their designs, issuing disclaimers and warning statements left and right. This may result in "overdesign, an unwillingness to take risks, and mediocre design."\(^6^0\) Many feel the best way to minimize liability is to continually design within the confines of the tried-and-true. Though this may succeed in limiting liability in most senses, it also fails to aid the development of design on the whole as a profession. In order to further this or any profession, there must be those people who will be on the leading edge of their field. These people are continually creating and discovering new areas to be explored and may be thought of as not "keeping with the usual and accepted standards and practices of the profession," to quote an often heard saying in design. Bronikowski presents a variety of possible ways to limit product liability through design.\(^6^1\) Many of these considerations and suggestions are applicable to construction design with only minor changes in wording.
Expanded liability has been rationalized as a "process for allocating responsibility to the persons who are responsible and who can best spread the loss." The main difficulty when relating this to the construction process and industry is that the number of involved parties, the interconnected functions and duties, and the vague lines of responsibility make it difficult and improbable that responsibility will be placed on the proper party. Some definite results of this increased liability are the use of "overprotective contract language" and the "complicated and unpredictable lawsuits with the inevitable rise in overhead of performing professional services." What the profession must do is to address liability without retreating from new approaches and advances. Retreat could lead to the degradation of the profession. Some efforts to control liability and risk exposure in accounting and engineering are covered in the following sections.

4.2 - Present Efforts in Accounting

It appears the accounting profession is ahead of engineering in terms of their response to and efforts to deal with expanded liability and its associated consequences. This could be due, primarily, to this profession having been subjected to the expansion of liability before engineering was affected. This profession, acting through the AICPA mostly, is attacking the problem on several fronts: malpractice prevention, insurance arenas, and legislation.

4.2.1 - Malpractice Prevention

The main push in risk reduction and malpractice prevention is education; education of the professionals so they can recognize high risk situations and can either avoid them or be aware of what they're getting into. The basic philosophy being stated is one of careful consideration and analysis coupled
with common sense. The best way to reduce risk and liability is to avoid the situations and clients which may be deemed high risk. However, since this isn't always practical, the professional should analyze the risk "by both types of engagement and types of client."\textsuperscript{64}

When contemplating accepting a job, the three most important factors to be considered are "investigation, competence, and independence."\textsuperscript{65} Investigation of the risk possibilities and other conditions is crucial for the professional to gain a perspective on the potential client and situation. Competence refers to the capability of the accountant; is the professional qualified to perform competently? If the professional performs duties for which he is not properly trained, all manner of lawsuits and issues may arise if something goes wrong. Independence from the client relates to financial, operational, etc. independence of the professional. Another precept being preached is the use of clear, unambiguous documentation which avoids "advertising hype," references "all internal control problems," and "explain[s] all potential problem areas to the client."\textsuperscript{66}

\textbf{4.2.2 - Insurance Arenas}

As stated in Chapter 3, liability insurance premiums have increased dramatically while coverage has tended to drop. This trend is not confined to the United States only, however. Both in Great Britain and Canada, accountants have seen similar occurrences in recent years.\textsuperscript{67,68} Some possible solutions being investigated in Britain include "a statutory ceiling on liability, incorporation for accountants, and a joint captive insurance company."\textsuperscript{69}
Here in the U. S., the AICPA is also studying the problem. A task force, appointed by the AICPA professional liability insurance committee, looked into recent "claims and losses...that exceeded $50,000." It was found that 35 percent of these losses were as a result of work for only three different institutions or industries.\(^{70}\)

- 17% from financial institutions, mainly banks.
- 10% from non-profit institutions.
- 8% from the construction industry.

An interesting fact is that financial institutions and construction companies are both considered to be high risk clients.\(^{71}\) The main goal of the committee is to suggest approaches, including possible legislative actions, to reducing or limiting "unreasonable" liability.

4.2.3 - Legislation

There exists the possibility of some type of legislative action recommendations being strongly backed as a result of the inclusion of many small businesses into the discussions. Because small business shares the accounting profession's interest about liability insurance, they are also interested in finding some method of controlling it. Several state small business conferences have recommended various actions ranging from capping or eliminating attorney contingency fees to limiting liability awards to the adoption of uniform standards of liability insurance.\(^{72}\) It appears that there are two main thrusts in any type of "tort reform:" the privity standard and joint-and-several liability.
Privity Standard

The erosion of the privity standard, as discussed in section 3.2, is of prime concern to the field of accounting. Accountants have a moral obligation to their clients to perform as well as can be expected depending upon the various conditions in the environment. If failure to uphold this obligation results in damages to their clients, the clients have the right to bring suit against the professional. In addition, should the professional act fraudulently, any damages incurred by third parties are liable to the professional. However, the main question is "how far should accountants' liability for negligence extend to third parties?" The present trend of court decisions is to allow "all third parties who were 'foreseeable users' of the audited financial statements" to hold the accountant liable.

Mednick feels that legislation relating to privity laws is necessary to help control the almost runaway trends present today. He also stated that in the past several years, some states (Illinois, Kansas, and Arkansas) had passed some type of accountant privity laws. He cites this as a good sign for the profession as lawmakers become aware that this and other professions feel that things are off-balance relative to liability and litigation issues.

Joint-and-Several Liability

This type of liability has serious consequences for anyone caught in the midst of a lawsuit. Briefly stated, this type of liability requires that codefendants in a suit are "jointly" responsible to cover the entire judgment as well as individually responsible for the share of the damages directly caused by their actions. This rule is generally perceived as unfair to any defendant who is stuck with paying any percentage greater than their share of the award because
The defendants couldn't cover their shares for some reason (e.g., they may be bankrupt). Again, Mr. Mednick points out that, although this liability type was the norm in most states in the past, almost half of the states (24 of them) have changed their laws in recent years.\textsuperscript{77}

Despite these encouraging signs, the profession must still work toward "tort reform," probably through legislation.\textsuperscript{78,79} The profession must also channel sufficient energies into addressing the effects of liability on decision making. Hopefully, by working on the tort reform issues, some of the more damaging effects relative to decision making will lessen in their severity.

4.3 - Present Efforts in Engineering Design
Because the engineering design profession began feeling the consequences of increased liability on the design process only recently, information relating to efforts of the industry to deal with them has not become readily available. No information on the attempts of professional designers to handle the effects of expanded liability on the decision making process was uncovered either. What this lack of information may indicate is that the industry has yet to coordinate any kind of effort presently under way. It may also imply that this is an area ready for studies and investigations to gather information on and assess the condition of the industry and profession as these consequences make themselves felt even more strongly in the future.

One of the items found pertaining to possible engineering liability efforts concerns the establishment of the Architecture and Engineering Performance Information Center (AEPIC) at the University of Maryland.\textsuperscript{80} The AEPIC is presently creating and expanding a database of appellate court decisions
related to construction failures. This database will provide access for various firms and professionals who are interested in a particular topic or point-of-law for some reason (e.g., preparation for litigation). As another project, these researchers are also identifying and studying the elements of design which have led to the worst failures in the past decade or so. This latter project may prove valuable in the battle against rising liability. The designer could, by using the results of this second project, identify certain aspects of designs which caused problems on jobs similar to any he was working on. He could then address them properly or more thoroughly to help reduce risk of liability.

Another item uncovered concerns legal matters. It covers the ruling of a Massachusetts court which states that a state law protects firms from suits over design and construction deficiencies when filed six or more years after services have been performed.\(^8\) This time limit is known as a statute of limitations and it can be a tricky item to handle. The length of the period varies from state to state. One of the main problems with statutes of limitations is setting the point at which this period begins. This may be a sticking point, especially where design is concerned, because the defect giving rise to the claim may not be discovered until long after the design is complete. A more or less common base point is when the project is completed (constructed).\(^8\) This difficulty points out that many legal issues in engineering design are vague and open to much interpretation. The profession is eventually going to have to address this and other laws presently in place to ascertain if they are adequate or are in need of modifications.
5.0 - CONCLUSIONS AND RECOMMENDATIONS

5.1 - Conclusions

In sum, professional liability is, and will remain for the foreseeable future, an issue which must be addressed and handled by the professional world. In many professions, of particular interest here are accounting and engineering design, liability of individual professionals and their firms has been expanding rapidly in recent years. The days of the privity defense and other similar shields have passed. And with it go many of the traditional mindsets which had served the professional world. Today, society demands more accountability for our actions that ever before. However, the effects of liability on design, accounting, and on a process central to both professions, decision making, are relatively new and not yet fully felt or comprehended.

When considering decision making, it is thought that liability is adding to the volumes of material which the decision maker must worry about when involved in the process. This additional stress under which the decision maker has to operate is believed to contribute to the degradation of his performance and the quality of his decisions. This drop in the quality and, possibly, timeliness of decisions may also have a similar adverse effect on the professions themselves.

To combat these outgrowths of the liability issue, each profession is or should be involved in activities designed to study the effects and to develop methods to deal with them. In this respect, accounting appears to be further along than engineering. This may be due, in part, to when the perceptions of liability were first felt by each profession. Examples of the methods to cope with these issues
may include legislative actions limiting certain aspects of the topics (e.g., caps on liability), education of professionals to enable them to recognize liability and its associated risks and not just ignore them. An example of a study which has been used in the accounting field to measure decision making and information processing is an "experimental task" booklet put out by the Pennsylvania State University's College of Business Administration. The author was unable to locate any information on similar, existing experiments geared to the engineering profession, so this realm appears to remain relatively unexplored.

5.2 - Recommendations
As is evidenced by the definite lack of information on the engineering side of the issue, the author's first recommendation is for more studies to be developed and performed. Their aim should be to gain information on such areas as decision making in the design process, the impact of various liability concerns on the design process and/or profession, and other similar factors. Such studies will become more important as the full effect of liability on design and the decision process becomes more thoroughly felt. From these studies, other research topics will most likely become evident.

A second recommendation is for further research into the present efforts undertaken by other professions aimed at coping with the effects of liability. Reviews of the medical, accounting, and manufacturing industries could prove useful as they have had to contend with this matter for some time now. From their efforts, engineering could learn what actions have succeeded, failed, and under what conditions they did so. We in the engineering field could probably learn much from these professions. The application of at least some of their
plans could possibly benefit our profession. The principal goal which must be acknowledged and realized is to not either ignore the situation or overreact to it.
ENDNOTES

CHAPTER 2


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CHAPTER 3


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CHAPTER 4


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APPENDIX A

ANNOTATED BIBLIOGRAPHY


This paper discusses the growth of public accountants' legal liability to third parties in the United States and in several other nations. The countries chosen by the authors are the United Kingdom and Canada due to the similarity in economic systems and ethnic background. Areas covered include institutional differences among the countries, comparisons of statute law, and comparisons of the development of common law. The conclusions reached state that the accounting professionals in all three nations have experienced and increased scope of responsibility and expanding legal liability. However, only in the United States have they encountered an actual litigation explosion. The authors feel that the U.K. and Canada may repeat the U.S. experiences but possibly not to the same extent due to differences in the legal environments of the various countries.

Mednick, R., "Accountants' Liability: Coping with the Stampede to the Courtroom," *Journal of Accountancy*, September 1987, pg 118

This article deals with the increasing legal liability of public accountants and discusses what is necessary to "swing the pendulum back toward fairness." It discusses the tort reform debate, especially as the pendulum swung toward excessive compensation of plaintiffs. Also discussed is the joint-and-several catch-22. This predicament occurs when several defendants must pay percentages of the settlement related to their involvement. If one or more of the defendants cannot pay their share for some reason, the remaining defendant(s) must take on the remaining percentages which is not fair to them. The need for legislative change on
this and other issues, such as the privity standard, is recognized and addressed.


This article covers some of the effects of worsening liability requirements; skyrocketing liability insurance premiums, reduced (or no) coverage, increased litigation, rising awards, etc. The topic of privity erosion is covered. Originally, privity provided some defense against third party lawsuits, but since the late 1960's, privity has been eroded in lawsuits against accounting professionals. However, recently there appears to be a reaffirmation movement of the privity rule. Another area of recent judicial assaults against accountants is suits under the Racketeer Influenced and Corrupt Organizations Act (RICO). Finally, the future of the trend is examined.


This article covers an American Institute of CPA's (AICPA) conference where the main thrust was the minimization of risk to CPA's. The reason accountants have been hit so hard in recent years is their perception as the "deep pocket" after a business fails, the article states. Speakers at the conference offered advice to the practitioners on how to deal with increasing liability. Ways to protect oneself by limiting liability are discussed. One speaker stated the best defense to litigation is a composite of understanding requirements, planning, quality work, satisfied clients, and luck. Another basis from which more and more claims are arising is nonaudit work (e.g., compilation, review, and financial projections).

The paper is intended to help develop an understanding of the cross-cultural differences and similarities in the professional and work values of accountants. It covers some of the research already done and indicates where future research can lead (there are many references to previous research and papers). This paper focuses on cross-cultural differences by examining professional accountants from two cultural groups within one national setting. This helps hold some variables, such as level of economic development, legal framework, etc. as constant as possible. The authors used the Anglophiles and Francophiles of the Canadian province of Quebec.

The model studied is given and discussed. The authors' interest centers on the degree to which important professional and work values of professional accountants differ among cultural groups. These values include the importance of job outcomes (based, in part, on Maslow's theories of human psychology) and professional commitment. Moderating variables of age and rural/urban backgrounds were addressed in the study as well as the cultural backgrounds on the two groups. Three hypotheses, the method of study, and the results are all presented. The results appear to be consistent with the concept that culture has a significant effect on certain professional and work values of professional accountants, while differences in other work values, thought to be based on cultural differences, appear to be minimized by the process of becoming a professional accountant.


This paper covers a study performed by the author investigating the economic trade-offs an auditor can expect to weigh before issuing a
qualified versus and unqualified opinion (i.e., risking losing a client versus risking a lawsuit, respectively). The study is explained and the results are presented. The paper demonstrates how to use economics and institutional knowledge to design and gather samples of qualified and unqualified firms, matched on the basis of underlying economic uncertainty.


The Architecture and Engineering Performance Information Center and the University of Maryland is expanding its failures database using appellate court cases. It is also trying to identify the elements of design and construction which have led to the most - and most serious - failures in the past decade.


When an engineering firm sued an owner over an additional fee, the owner counterclaimed for breach of contract. The engineering firm was
found to be in breach of contract by failing to employ a professional estimator, provide revised cost estimates during the construction, and inform the owners about alternatives to their cost-plus contract.


Article covers the collapse of an upper deck being constructed on a sports stadium at the University of Washington. It was in the state of bare steel erection at the time of collapse. Permanent bracing was not in place and joints were not welded. At the time of printing, it was still under investigation.

"Roof Collapse at Rink Has Engineers Snowed," *Engineering News Record*, Vol. 218, No. 10, March 5, 1988, pg 13

The roof of a prefabricated metal building collapsed while supporting only half of its designed snow load. Engineers are investigating (at the time of printing).


Investigation of the L'Ambiance Plaza collapse centers about the buckling failure of a column. It is thought the column will aid in the determination of the failure mechanism of the disaster. Also covered is the lift-slab technique and some of its attributes (good and bad).

The results of an interim report on the April 1987 collapse of the New York State Thruway bridge over the Schohaire Creek shows that a state district engineer had raised questions about it shortly after its completion in 1954. The engineer recommended a longer span (than was built), raised pier design issues, and detailed flaws in the structure. The original design firm (no longer in business) proposed two alternatives in 1951. A probable primary cause of the collapse was the scouring of the creek bed due to the restriction of the creek width.


A church brought its lawsuit over a leaky roof too late. The article centers around the issue of statute of limitations. A sub-article on the same page relates that an Illinois court has ruled that an engineering firm which wrongfully interferes in a builder's relationship with the owner can be held responsible for the resulting damages suffered by the contractor.


A Massachusetts court ruled that state law protects firms from suits over design and construction deficiencies when filed six or more years after services have been performed.


The New York Thruway Authority has been blamed for the Schohaire Creek bridge collapse. The authority didn't follow a critical recommendation of a consultant and also didn't follow its insurance company's order to contract for an underwater inspection (around the pier bases). The investigation team's report says that though the design
and construction may well have been deficient, with proper inspection and maintenance the bridge wouldn't have collapsed.


A flawed connection detail started the collapse of the L'Ambiance Plaza towers. The collapse was probably triggered when an overloaded lifting connection rotated or deformed upward causing the lifting mechanism to slip free. This probably occurred at the building's most heavily loaded column and started a chain reaction progressive failure. The failure has raised questions for the industry. For example, why don't critical connection details not get enough attention from engineers. It also revealed a need for greater attention to temporary loads during construction and designs which provide enough integrity to prevent a progressive failure when a local failure occurs.


A building owner is suing 11 other parties involved in the design and construction of an earth-sheltered building. The owner was sued by heirs of a tenant killed in the failure and settled out of court for $450,000. The owner is now suing for that money and additional damages incurred in the demolition of the building.


An engineering firm and one of its subs are in dispute over a design error in three Interstate overpasses. During the design, someone made a miscalculation so that the bridge's lower edge was an inch too close to
the roadways below. The dispute centers about who is responsible for the error and any subsequent costs for repairs.


When the ceiling over a 13 year old pool collapsed, killing 12, the Swiss court found the designers guilty of negligence and manslaughter. The ceiling was a 166 ton concrete slab held in place by hangers suspended from the roof. The hangers were found to have been corroded by the acidic, chlorine laden water vapor from the pool below. During a restorative job on the building's exterior in 1984, a corroded hanger was found but there was no investigation as to the conditions of the remaining 200 or so hangers.


The article covers the collapse of the Ashland Oil, Inc. oil tank on New Year's Weekend 1988 which spilled a million gallons of diesel oil into the Monongahela River. The tank had been moved from a terminal near Cleveland and reassembled at the site near Pittsburgh. It was discovered that it had been rebuilt without a permit and was not tested by the most rigorous means. The article goes on to discuss the use of 40-year-old steel, the method of disassembly and reassembly, and other topics related to the accident.


The owner of a warehouse had its bowing walls investigated to determine the cause of the deformation. The investigating engineer
found that the building's concrete tilt-up panels had bowed because of eccentricity of the roof's dead load. The walls in question had bowed out about 4 inches in 13 years and had no stiffening elements at the vertical joints between the panels. The original designers believe the bowing occurred curing construction. The investigator disagrees and says that it was bowed from the beginning due to the roof's load eccentricity and lack of stiffeners. The investigator has designed a stiffening system to straighten the walls.


A section of a printing plant's roof fell in and killed 2 workers. The cause of the collapse is unknown. There was a heavy snow load present at the time of the collapse and the perimeter columns were not evenly spaced. The owners have hired three engineering firms to investigate.

"Faulty Smoke Venting Results in Lawsuit," Engineering News Record, Vol. 220, No. 6, February 11, 1988, pg 9

Harris County Commissioner's Court in Houston agreed to file suit against an engineering firm over long-standing problems with the county jail's emergency smoke venting system. The system has failed repeatedly since the facility opened in 1982. The suit seeks to recover from the design engineers the estimated $3.8 million it will cost to overhaul the system.


This rather long article covers managing crises by looking at several construction failures, such as the Mianus Bridge and L'Ambiance Plaza collapses, and how they were handled. It covers such areas as planning
for a crisis, conducting emergency drills, and ambivalence among construction executives.


A 292-ft-long box truss assembly being placed atop an arena apparently shifted and fell into the arena, pulling the booms of two cranes down with it. The cause is under investigation by OSHA. It is believed that as the truss was being lowered into position, it shifted and one of the cranes lost the load and the whole thing fell in.

"Deck Fails a Month After Inspection," Engineering News Record, Vol. 220, No. 10, March 10, 1988, pg 15

Only a month after an inspection, a section of a road slab dropped 4 inches on a 40-foot high viaduct in New York City. This section is cradled on 5 sliding expansion bearings. Three of the 5 brackets (part of the attachment above the bearings) gave way because one of the bearings was frozen with corrosion. As the slab contracted and expanded with temperature changes, the added stresses on the frozen bracket caused welds to break.