CHAPTER 2

Actuarial Profession

EARLY DEVELOPMENT

Introduction

This Website relies in large part on traditional actuarial practices and their historical development. The role that *actuarial practice* has played in the development of our western and now global economic systems has been of great value and significance. A few criteria (reader-interest, contributions to the development of such practices and their relevance to actuarial work-products) were followed. The topic is discussed in these six parts:

1. Renaissance (The Need Emerges) (Pre-1700).
2. Enlightenment (The Tools Were Created) (1700 to 1850).
3. Actuarial Practice Developed (*Actuarial Practice became Actuarial Science*) (1850-1950).
4. Role of Computers.
5. Modern Enhancements (primarily cybernetics).
6. Purpose of this Website.

Renaissance

The Renaissance brought on trade and commerce and the creation of wealth as measured by the double-entry accounting system. As a result of these activities, the concept of risk came into being.

Concept of Risk

Earlier civilizations and cultures viewed *risk* differently than did the western world during the Renaissance, for reasons of religion or philosophy (Greek stoicism largely ignored the concept of risk and some Eastern belief systems held that the past and future were implicit in the present). Renaissance people, in the emerging mercantile environment, were also swept up by the newer practices of demonstration, experimentation and investigation that were motivated, in part, by the desire of such people to understand and control the future. The development of *risk theory* was begun by Pascal and the Bernoulli(s) who accepted the reality that *risk* and time are but *different sides of the same coin.*

Early Risk Transfers

Several examples of risk transfer during this period are these; (a) the formation of what is now maritime insurance is traceable to the sea trade which began in Venice and (b) an early example of long term care is traceable to the practice of *corody* (whereby a contribution to the early Church would be made in exchange for the promise of monastic care should senility or disability occur.

Enlightenment

Beginning In the early 1670s, there was a flurry of activity which made possible the development of what is now known as actuarial science. Halley (of comet fame) created some of the earliest mortality tables for death benefits. Abraham DeMoivre, famous for linking complex numbers and trigonometry, created one the earliest mortality tables for annuity benefits. Well-known mathematical *heroes* such as Euler, LaPlace and Gauss made huge contributions in such topics as probability, expectations, and statistics. Advancements in life contingencies by the use of new concepts were offered by Simpson (reversions) and Gompertz and Makeham (laws of mortality). Early lectures by Simpson laid the cornerstone for the business of life Insurance.

Actuarial Practice Developed

Beginning in the early 1800 the British organizations known as *friendly societies* were being replaced by insurance companies; such were mutual in nature as contrasted to being stockholder-owned. In 1860, the first professional actuarial organization was formed (the British Institute of Actuaries) and such is active and vibrant to this day.

To some, the name *actuary* was a bit odd (the root is the past participle of the Latin word *agare* which means to act or to do). In Roman days, the court official In charge of records was called actuary. The British, even before there was a structured organization, titled such person who was responsible for the financial sanctity of risk-driven enterprises as *actuary*. Such name and duties remain essentially unchanged to this day.

The high professional standards established by the Institute of Actuaries have been adopted with little modification by actuarial organizations world-wide. A few of the principles and practices worthy of mention are these: (a) the actuary is a business professional who uses mathematics, statistics and financial theory to analyze the financial consequences of risk; (b) the actuary considers risk only in the context of both past and future events (i.e., the actuary usually relies on experiential data in some form in looking to the future and does not act as a *futurist* who only ideates the future); (c) the actuary asserts the practice to be one of *science* thereby relying on Ruskin's rule to *substitute facts for appearances and demonstrations for impressions* and (d) the actuary should be so fair as to be able to always say that *my estimate is the best possible using relevant evidence provided or available – it will prove out to be either too high or too low – but I do not know which.*

Role of Computers

A brief chronology of computer development will follow. Of interest to the reader is that mathematicians (including actuaries) have been either the inventors, or the primary users thereof. In constructing his mortality tables, Halley *might* have used an abacus, logarithms, a primitive slide rule or a rudimentary mechanical (or geared) calculator but not much else.

Chronology

During the Renaissance, the only recorded mechanical device was the abacus (or a modification thereof).

During the Enlightenment period, Napier gave us logarithms; Oughtred developed a slide rule; and both Pascal and Leibniz built a rudimentary mechanical computer.

In the 1800s, Jacquard Invented the perforated card to control his loom. Babbage designed his *analytical machine* which received instructions from punched cards thus becoming the first general purpose computer; Lady Ada Byron (daughter of Lord Byron) documented the works of Babbage as well as doing the requisite programming, arguably becoming the first computer programmer. Boole developed his binary-based algebra of logic which became the foundation of future computer development. Hollerith invented the punch cards which were activated mechanically by *piano wires*. Burroughs invented the business adding machine.

In the period 1900-1950 electric circuitry was used to activate the punch cards. Electronics and vacuum tubes based upon the binary system saw the creation and development of the earlier large-model computer.

In the period 1950 to date, a plethora of inventions (transistor, magnetic tape, microchip, e.g.) and computing needs and opportunities (home computer, e.g.) created what is now a nearly 100% *wired* world. The culmination of the centuries of the development of the computer is the World Wide Net.

ORGANIZATIONAL DEVELOPMENT

In General

There are four major designation-granting professional actuarial organizations in the United States:

- Society of Actuaries (SOA)
- Casualty Actuarial Society (CAS)
- Conference of Actuaries in Public Practice (Conference)
- Academy of Actuaries (Academy).

Society of Actuaries

The SOA was created in 1949 by a merger of the Actuarial Society of America (founded in 1889) and the American Institute of Actuaries (founded in 1909). The Society is the largest actuarial organization in the United States. Society affiliation is generally recognized to connote expertise in actuarial applications in the life insurance and the pension and health areas.

Casualty Actuarial Society

The CAS was organized in 1914 as the Casualty Actuarial and Statistical Society of America. It adopted its present name in 1921. In the early part of the twentieth century, the evolution of workers' compensation laws required the application of actuarial principles to sickness, disability, and casualty events. The differences between these problems and those of traditional life insurance led to the formation of the CAS. The CAS is the branch of the actuarial profession that promotes actuarial and statistical science as applies to insurance other than life or health.

Conference of Actuaries

The Conference was established in 1950. The organizational emphasis of the Conference is upon consulting actuaries, and its membership includes individuals from all areas of actuarial expertise whose professional work is substantially limited to consulting. A Member of the Conference must: (1) be substantially employed in full-time consulting actuarial work as an actuary of a federal, state or local governmental unit or full-time as an enrolled actuary and; (2) have a position of substantial actuarial responsibility and; (3) have either, (a) attained membership in another actuarial body.

AMERICAN ACADEMY OF ACTURIES

Formation

The American Academy of Actuaries (Academy) is a nonprofit professional association established in 1965 to (a) provide a common membership organization for actuaries of all specialties practicing within the United States, and to (b) seek greater public recognition for the actuarial profession. To become an Academy member, an actuary must satisfy significant education and experience requirements, including successful completion of a series of examinations in relevant areas of actuarial practice. Membership in the Academy is required in most states, to perform certain types of actuarial work. Actuaries serve as consultants or employees of insurers and perform a wide variety of professional functions, ranging from primary responsibility for the operation of companies to individual consulting assignments.

Relationships

The Academy has four affiliated organizations in the United States: (a) the Society of Actuaries and the Casualty Actuarial Society, which administer the profession's examination system; the (c) Conference of Consulting Actuaries, which provides continuing education and other services to consulting actuaries; and (d) the American Society of Pension Actuaries, an organization for professionals (including actuaries, attorneys, accountants and plan administrators) who provide services to pension plans under ERISA. These organizations look to the Academy as the organization with primary responsibility for fostering actuarial professionalism in the United States.

Purpose

The Academy's stated mission is "to ensure that the American public recognizes and benefits from: (1) the independent expertise of the actuarial profession in the formulation of public policy; and (2) the adherence of actuaries to high professional standards in discharging their responsibilities." To achieve the second facet of its mission, the Academy has adopted a Code of Professional Conduct to govern the professional ethics of its members.

Mission

The Academy engages in the following significant activities:

- Administers the Code of Professional Conduct (Code)
- Promulgates Actuarial Standards of Practice (ASOP)
- Provides *Amicus Curie* Briefs
- Miscellaneous.

Administers the Code of Conduct

The Code of Professional Conduct is administered by the Actuarial Board for Counseling and Discipline (the "ABCD"). The ABCD's purpose is to maintain a high quality of actuarial practice by investigating complaints against actuaries, and counseling actuaries concerning the application of standards of practice, conduct and qualification to their professional activities. The Academy and other actuarial organizations that have adopted the Code of Professional Conduct have delegated to the ABCD responsibility to investigate complaints against their members, and to counsel their members in sound actuarial practice and conduct. The ABCD is also authorized to recommend to those organizations that public discipline in the form of reprimand, suspension or expulsion from membership be taken against actuaries where serious violations of the Code of Professional Conduct have occurred.

Promulgates the ASOPs

The Code requires actuaries to be certain that actuarial services provided by them, or under their direction, comply with the applicable ASOP. The ASOPs that are promulgated by the ASB are the standards to which the Code refers. However, the *Code* also recognizes that not all ASOPs apply to each assignment. Accordingly, an Annotation of the Code provides that "where a question arises with regard to the applicability of a standard of practice, or where no applicable standard exists, an actuary shall use professional judgment, taking into account generally accepted actuarial principles and practices." The Actuarial Standards Board (ASB) was established by the Academy to promulgate ASOPs for actuaries practicing in the United States. Its purposes are to:

- Expose, promulgate or adopt, and publish such ASOPs within its sole discretion and pursuant to such procedures as it deems appropriate, in all areas of actuarial practice.
- Provide continuous review of existing ASOPs and determine whether they are in need of amendment, alteration, expansion, or elimination.
- Direct and manage the development of the ASOPs by its operating committees in all areas of practice.

Provides *Amicus Curie* Briefs

Examples of such brief are set forth in the Chapter entitled Professional Liability.

Miscellaneous

The Academy also provides those services that are typically provided by all professional organizations: (a) be an advocate for the profession, (b) recommend discipline where appropriate, (c) serve as a font of knowledge, (d) schedule timely and topical meetings, (e) influence legislation, etc.

SELF-REGULATION

Background

For as long as actuarial organizations have existed, the self-regulatory feature has been a source of enormous professional pride.

Under the guidance of the Academy, and its affiliates, the United States actuaries have remained self-regulatory. A similar practice is the case with the other North and South American actuarial bodies. This has been largely due to their well-managed education and professional standards activities.

Notwithstanding similar professional practices by the United Kingdom (UK) actuaries (England and Scotland), these actuaries found themselves denied of self-regulation a few years ago. The change occurred when the UK's Financial Reporting Council (FRC) ruled that they, as well as the accountants, were subject to government oversight.

Description of UK Oversight

Goals of such Regulation by the FRC includes:

- The users of actuarial information must be able to place a high degree of reliance on its relevance and transparency of assumptions.
- The clients and employers of professionally qualified actuaries must be able to rely on such actuaries to act with integrity and competence, having due regard to the public interest.

The primary functions of FRC include the following:

- Promoting high standards of corporate governance.
- Setting, monitoring and enforcing accounting and auditing standards.
- Setting actuarial standards.
- Overseeing and regulating auditors.
- Operating an independent investigation and discipline scheme for public interest cases.
- Overseeing the regulatory activities of the professional accountancy and actuarial bodies.