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Paradigm shifts

by Jon Rosenblith

“If everyone believes that something is true, it is true.” This challenging statement, made 20 years ago by an industrial engineering professor, stimulated a heated, two-hour discussion by a group of 30 students in an introductory class. By the end of that time, the class had discovered several key points that I still remember vividly:

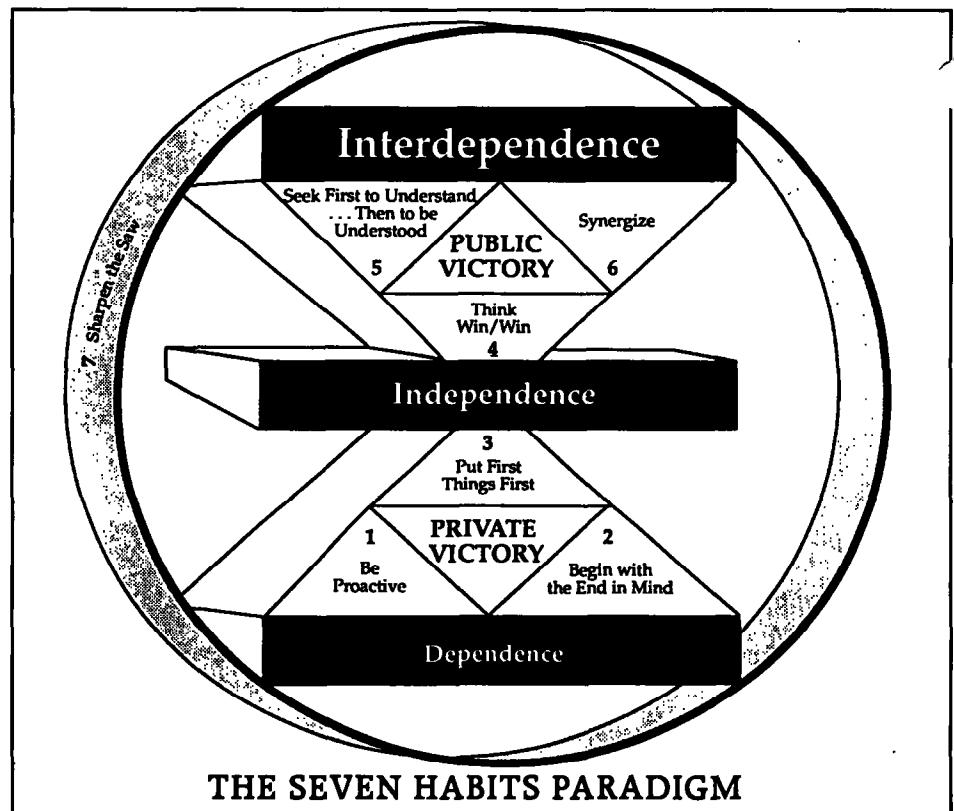
- We all live according to our “model of reality” (our beliefs about how the world works).
- No one’s model is complete or accurate.
- The ability to create new, more effective models is necessary for large effective changes in results.

These points can be unsettling for industrial engineers, actuaries, or any professional who is supposed to “know the answers.” They can be just as uncomfortable for companies and industries. It is much more comfortable, and dangerous, to believe that the “models” you already know are solid and unchanging or that you, the model builder, have already “substituted facts for appearances.”

The big picture and paradigm shifts
Paradigms are defined as examples, patterns, or models. A paradigm shift occurs when people first perceive “the big picture” in a new way. The new perception allows them to solve problems that were unsolvable by their old models.

The term “paradigm shift” was introduced by Thomas Kuhn in his book *The Structure of Scientific Revolutions*. Most significant breakthroughs in the field of scientific endeavor were breaks with tradition and with old ways of thinking.

In today’s fast-changing environment, understanding and being able to work effectively with personal, corporate, industry, government, and public paradigms have never been more important to the actuary. Actuaries who can develop the additional model building



skills of imaginatively questioning and testing their own and others' perceptions will prove invaluable to their clients. Those who cannot do this will create solutions that are effective only under stable, limited conditions.

Viewing ourselves

Dr. Stephen R. Covey has written extensively about paradigms and paradigm shifts in his book, *The Seven Habits of Highly Effective People* (1989, Simon and Schuster). A summary of some key points are:

- The more aware we are of our basic paradigms and the extent to which we have been influenced by our experience, the more we can take responsibility for those paradigms, examine them, listen to others' perceptions, and thereby develop a larger picture and a more objective view.
- Our paradigms, correct or incorrect, are the sources of our attitudes and behaviors and ultimately our relationships with others. A paradigm is like a pair of glasses; it affects the way you see everything in your life.
- Some of our most important paradigms are our views of ourselves. Our “social mirror” is what we believe others think about us and how they react to us. From this partially come our “self maps,”

as Covey describes in statements like, “I’m good with numbers,” or “I’m not a very good communicator.” We also are the social mirror for other people. We can use the principle of the social mirror to encourage people to expand their limits, rather than to live within them.

- We should live from imagination, not from memory, because our potential often is not accurately reflected by the social mirror. It is, at best, only partially correct.

Habits for effectiveness

Covey presents a major paradigm of effectiveness development for individuals. The figure on this page shows how to move from dependence to independence through the development of personal skills, and then on to interdependence through the development of interpersonal skills. The seven habits are:

- 1) *Be proactive* — Base your choices on your values and accept responsibility for who you are and what you do. Do not blame others for the results of your choices.
- 2) *Begin with the end in mind* — Identify your personal mission, roles, and goals. Rewrite these regularly. This process “is almost more an act of discovery than an act of creation.”
- 3) *Put first things first* — Gain control of time and events by seeing how

they relate to your mission.

Prioritize activities based on importance to your mission versus urgency of the activity.

- 4) *Think "win-win or no deal"* — Understand that we live in an interdependent world. We must cooperate with others to succeed. Look for alternatives that allow everyone to win. If a win-win option cannot be found, agree to disagree with no resentments. This will leave the door open for future win-win deals.
- 5) *Seek first to understand, then to be understood* — Always diagnose a problem before prescribing a solution for it. "Most people listen, not with the intent to understand, but with the intent to reply....By seeking to understand, we gain influence in the relationship." We may see another, more effective solution.
- 6) *Synergize* — "Synergy lets us discover jointly things that we are much less likely to discover by ourselves." We communicate with respect and creativity, while looking for a mutually satisfying solution with people who see the world differently. "Relationships that join people of different abilities and styles of thinking are opportunities for synergy."
- 7) *Sharpen the saw* — Take small positive daily steps to maintain and increase your personal production capabilities. This includes physical, mental, emotional/social, and spiritual exercises. Dedicate at least one hour a day to this activity.

The results achieved by any paradigm can be improved by comparing periodically the paradigm's assumptions with the most recent information available about the world in which the paradigm operates. Covey says, "It doesn't matter how good your behavior is or how good your attitude is if your paradigm is flawed." In a world of ever-faster changes, paradigm shifting becomes a necessary skill for the actuary or any other professional.

For more information, attend Teaching Session 8 on "Paradigm Shifts," offered Monday, October 26, at the Society of Actuaries' annual meeting in Washington, D.C.

Jon Rosenblith, associate actuary of Managed Care Product Development at Bankers Life and Casualty Company, is a member of the SOA Committee on Management and Personal Development.

Society publishes 2 new books

The Society of Actuaries has published two books that are now available.

Insurance Risk Models

This book by Harry H. Panjer and Gordon E. Willmot was funded by the Actuarial Education and Research Fund (AERF). It examines the mathematical modeling of the frequency and the severity of insurance losses, as well as the resulting total losses for a block of insurance business. The applications in all branches of insurance relate to the pricing and solvency of insurance and reinsurance. The book provides theoretical and practical justification for many mathematical models. The 442-page hardcover book sells for \$35 (U.S.). It is on the SOA syllabus for the Intensive Seminar on Risk Theory, Course 152.

Panjer and Willmot teach in the Department of Statistics and Actuarial Science at the University of Waterloo, Ontario, Canada. Panjer received his bachelor's, master's, and doctoral degrees in actuarial science and statistics from the University of Western Ontario. He has devoted most of his career to teaching and research in actuarial science at the University of Western Ontario, the University of Texas at Austin, and the University of Waterloo, where he is a professor. Willmot received his bachelor's, master's, and doctoral degrees in actuarial science and statistics from the University of Waterloo, where he is an associate professor. His research is in the areas of risk theory and other related areas such as statistics and queueing theory.

Options and the Management of Financial Risk

This book by Phelim P. Boyle introduces some basic concepts in modern investment finance. These concepts not only are relevant to the discipline of actuarial science but also provide the foundation for a wide spectrum of applications in the finance field. These models provide a theoretically sound framework for dealing with uncertainty and are based on strong economic intuitions. This 210-page softcover book will sell for a price yet to be determined.

Boyle holds the Harry A. Brandt Distinguished Chair in Financial Markets and Options at the University

of Illinois at Urbana-Champaign. He previously spent nine years at the University of Waterloo. He gained actuarial experience in Ireland and the United Kingdom before teaching at the University of British Columbia, Canada. Boyle was educated at Queen's University Belfast and received a Ph.D. in theoretical physics from Trinity College, Dublin.

Early release copies of TSA papers

The following papers have been accepted for publication in Volume 44 of the *Transactions*. Members who would like an early-release copy before it is published in a preprint should send \$5 for each paper to the SOA Books and Publications Department.

"A Practical Guide to Interest Rate Generators" by Sarah L. Christiansen

A new standard valuation law in the United States requires an actuarial opinion of asset adequacy. Often this opinion will be based on cash flow testing to assess the C-3 risk. Selection of interest rate scenarios is a critical part of any model used to perform cash flow testing. This paper discusses various methods of obtaining interest rate scenarios with particular emphasis on those methods that produce stochastic scenarios.

Several previously published generators are reviewed, along with two new generators. All easily programmable generators are parametrized for appropriate adjustments of bounds. A method of comparing generators was developed to aid an actuary in choosing a generator and to establish statistically that the generators reviewed are all distinct.

"Internal Rate of Return as an Evaluator of Tax Planning Strategies" by Edward L. Robbins and Kenneth A. LaSorella

The rapid evolution of tax law has seen a host of ambiguities and opportunities spring up, often with tax reserve issues, an area where large planning issues commonly are encountered. Since 1988, the industry also has confronted a series of both

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