

Economizing Principle in Accounting Research

Shyam Sunder, Yale University

Abstract

Joel S. Demski's work is characterized by the austere discipline of applying the economizing principle to accounting and management phenomena. In natural sciences optimization is used as a structural principle for understanding the organization of the physical universe. As social scientists applied it to our self-conscious selves, economizing acquired a behavioral interpretation, leading to unnecessary and avoidable confusion with the findings of cognitive sciences. Important aspects of aggregate level outcomes of social phenomena are structural. The use of the economizing principle for understanding social phenomena in general, and accounting in particular, has been highly productive, and it is not in conflict with cognitive limitations of human individuals. Demski's work defines the application of this powerful principle to problems of accounting.

Keywords: economizing principle, self-selection, employee stock options, integrated financial-tax accounting, audit failures

First Draft, September 21, 2005

Prepared for presentation at the University of Florida, Gainesville, on October 14, 2005.

Economizing Principle in Accounting Research

Shyam Sunder, Yale University

Joel S. Demski's contributions to accounting are best characterized by use of the simple idea of economizing to build our understanding of accounting. Exploration of the reach and consequences of this idea for the discipline and practice of accounting is a good way to recognize his pioneering contributions.

All great ideas are simple, but not all simple ideas are great. The economizing principle is both simple as well as powerful. Borrowed from physics and biology where it is recognized as optimization principle, into management, economics, and social sciences, this principle serves as a domain of attraction, and the bedrock of our discipline.

The Economizing Principle

When a marble rolls down the side of a bowl and comes to rest at the bottom, physicists know the marble minimizes its potential energy. When a photon leaves the sun and travels to the eye of a fish swimming under water on earth, the physicist knows that the photon bends just sufficiently at the surface of water so its total travel time from the sun to the eye of the fish is minimized. How does the marble decide where to go and where to stop? How does the photon know where to turn and by how much? Why do they, or anything else in the universe, care to minimize or maximize anything? These are not meaningful questions to a physicist. In physics optimization is used as a fundamental organizing principle of nature. Minima or maxima are guides to identify the domain of attraction of physical systems.

Similarly, in Biology:

At multiple hierarchical levels--brain, ganglion, and individual cell—physical placement of neural components appears consistent with a single, simple goal: minimize cost of connections among the components. The most dramatic instance of this "save wire" organizing principle is reported for adjacencies among ganglia in the nematode nervous system; among about 40,000,000 alternative layout orderings, the actual ganglion placement in fact requires the least total connection length. In addition, evidence supports a component placement optimization hypothesis for positioning of individual neurons in the nematode, and also for positioning of mammalian cortical areas.

A basic problem of network optimization theory is, for the connections among a set of components, to determine the spatial layout of the components that minimizes total connection costs. This simple goal seems to account for nervous system anatomy at several organizational levels. It explains “why the brain is in the head” of vertebrates and invertebrates—this placement in fact minimizes total nerve connection lengths to and from the brain. Proceeding to the internal structure of the brain, the working hypothesis of component placement optimization in cerebral cortex is consistent with known interconnections and spatial layout of cat visual and rat olfactory areas. In addition, the hypothesis exactly predicts contiguities among ganglia in the *Caenorhabditis elegans* nervous system. Finally, this “brain as ultimate VLSI chip” framework also applies to the lowest-level components, to predict grouping of individual neurons of the nematode into ganglion clusters, and even their positioning within ganglia. The observed harmony of component placement and connections in turn raises questions about whether in fact connections lead to optimal positioning of components, or vice versa. (Cherniak, 1994)

The objects of analysis in physics—marbles and photons—are inanimate. We do not ascribe intentionality to them. Physicists talk about the behavior of these elements only in the sense that they follow the immutable laws of nature the physicists seek to identify. Even in the passage quoted above from biology, two out of the three objects of analysis are ganglion and individual cells which are physical objects with no ascribable intentionality. Their behavior, too, is supposed to follow the immutable laws of nature the biologist seeks to identify. Physicists, biologists, chemists, and other natural scientists can talk about behavior of objects and use optimization as a structural principle to gain an understanding of the big-picture. Structural models are about the proverbial forests, not

the trees; they concern the existence, type, and growth of the forest, not the location and height of individual trees. They shield us from getting lost in the detail.

Economics and management borrowed the optimization principle from physics, (and increasingly from biology, in recent decades). Demski has been instrumental in applying this principle to understand a variety of accounting problems (See Christensen and Demski, 2003). In economics, management and accounting, the application of this principle inevitably acquires a flavor of its own. Instead of inanimate marbles or photons to which the physicist applies this principle, we and the institutions in which we live and work, are the objects of economic and management analysis. When applied to our own self-conscious selves, “behavior” takes on the burden of intentionality not necessary, or present, in the natural sciences. It also gives rise to questions about the descriptive validity of optimization as a behavioral principle, about human rationality, and the related arguments.

Application of the optimization principle, combined with our concept of ourselves as sentient beings, led to the creation of the theory of choice.¹ We postulated for ourselves a definable and knowable preference ordering over all relevant objects of choice. The preference ordering, being directly unobservable to others, and possibly without the property of self-awareness, must be inferred from observable choices. In the absence of generalization to contexts outside the choice data used to infer preferences, the

¹ Whether, and in what sense, the choice theory allows us the opportunity to choose is replete with contradictions of its own, and perhaps I should not try to pursue that subject here. Briefly, on one hand, humans proudly claim to have unique attributes of free will, imagination, and creativity, placing how we act beyond the kind of laws physicists devise to describe the behavior of marbles and photons, and even other forms of life. Yet, social sciences try to identify general laws that may help us understand, explain and predict human actions as if we were some not-so-special kind of marbles.

theory of choice is essentially tautological—we choose what we prefer, and we must prefer what we do choose.

The power of the economizing principle derives from the discipline that its extreme simplicity imposes on our thinking. It does not allow us many degrees of freedom, nor lets us introduce new explanatory variables at will. We must force ourselves to think very hard about how and why our wants and behavior are linked to each other. If we assume that we choose what we want, and infer our wants from what we choose, we can identify one or more sets of mutually consistent wants and choice/behavior. Demski brought this mindset and tight discipline to accounting research, and used its remarkable power to identify internally consistent propositions in accounting and management contexts.

Behavioral Interpretation

In spite of the power and reach of the economizing principle, its results have come to be questioned due, I believe, to a deep misunderstanding of its roots. This has to do with the doubts about the rationality of individuals in making choices. It would be useful to make a short detour to touch on this subject here.

It was not surprising that in borrowing the concept of optimization from natural sciences, where it is used as a structural or organizing principle of the universe, economists and other social scientists were tempted to interpret it as a behavioral principle.² In economics, optimization came to be regarded as a matter of conscious and deliberate economizing—individuals choosing the best of the alternatives known and

² Dixit (1991, p. 1): “Economics has been defined as the study of making the best use of scarce resources, that is, of maximization subject to constraints. The criteria being maximized, and the constraints being imposed on the choice, vary from one context to the next: households’ consumption and labor supply, firms’ production, and governments’ policies. But all constrained maximization problems have a common mathematical structure, which in turn generates a common economic intuition for them.”

available to them. Cognitive psychology soon revealed, if it needed any revealing, that when acting by our intuition, we humans are not very good at optimization (Simon, 1957). While Simon was not a reductionist, and understood the distinction between structural and behavioral assumptions³, not all those who claim his legacy do.

This literal interpretation of economizing as a behavioral principle has expanded to include some of those who use it in their own work. If people cannot intuitively choose what is best for them, they must be irrational⁴, and therefore it follows that the results derived from the application of the economizing principle must be viewed with caution, even rejected.

There are three problems with this interpretation. First, failure to choose the best option does not necessarily arise from irrationality if the availability and the consequences of the option are not known. One cannot be expected to choose an unknown option, or one which is desirable without adequate information being available. In addition, if the unavailability of cognitive or computational tools of analysis leads to failure to choose the option which would have been best if such tools were available, irrationality would not seem to be the appropriate interpretation of the choice.

Second, a related problem of interpretation concerns generalization of evidence from contrived laboratory settings, with which subjects have had little living experience. Laboratory settings can yield valuable initial insights into a variety of real phenomena.

³ “This skyhook-skyscraper construction of science from the roof down to the yet unconstructed foundations was possible because the behavior of the system at each level depended on only a very approximate, simplified, abstracted characterization of the system at the level next beneath. This is lucky, else the safety of bridges and airplanes might depend on the correctness of the ‘Eightfold Way’ of looking at elementary particles.” Simon (1996, p. 16).

⁴ Conlisk (1996), for example, gives four reasons for dropping the “infinite in faculties” assumption in favor of incorporating bounded rationality in economic models: empirical evidence on the importance of bounded rationality, proven track record of bounded rationality models (in explaining individual behavior), unconvincing logic of assuming unbounded rationality, and the cost of deliberating on an economic decision.

However, their value for better understanding such phenomena depends on their generalizability outside the laboratory. We know that humans as well as animals adapt themselves by learning to solve complex problems over time through repetition, trial-and-error, and contemplation. We must be careful not to assume, either that human beings must already have adapted themselves to any task the experimenter can contrive for them in the lab, or that given the chance to learn through repetition, such learning cannot or would not occur.

Third, and most importantly, even if human ego supports the behavioral interpretation of the optimization principle, in the larger scheme of things, we cannot ignore its structural interpretation in aggregate or social level manifestations. In a largely serendipitous discovery, Gode and Sunder (1993a, b) found that under classic conditions, even markets populated by the so-called “zero-intelligence” traders⁵ tend to converge, in price, allocations, and efficiency, to close proximity of the equilibrium predictions of economic theory. While the equilibrium predictions are derived using advanced mathematical techniques, and assuming optimization on part of the individual traders, the rules of a simple double auction (and many other forms of market organization) are sufficient to ensure that aggregate market outcomes are reached by individual traders whose behavior is far from optimizing. If our primary concerns are with aggregate social phenomena, we should not jump to the conclusion that the failure of individuals to optimize makes the predictions of economizing models inapplicable (Sunder, 2004).

⁵A “zero-intelligence” buyer submits a randomly chosen number between zero and its value of the object as the price at which it is willing to buy the object. Similarly, a “zero-intelligence” seller submits a randomly chosen number between its cost and an arbitrary upper limit as the price at which it is willing to sell the object. Such traders have no memory, learning, expectations, or attempt to optimize. They submit proposals to trade such that if a trade is completed, they would not incur a loss.

Economizing in Accounting

The economizing principle has applications in, and implications for, many aspects of accounting. Most of these applications have been centered on managerial accounting, driven largely by the need for estimates of parameters in order to solve the problem on hand. This self-imposed limitation on the application of the economizing principle also appears to be driven by the behavioral and literal interpretation of the principle: In order to solve a problem we not only need to formulate it, but also need the knowledge of parameters to arrive at the actual solution in specific instances. I would like to argue that this interpretation is unnecessarily restrictive, confining accounting applications of the economizing principle to managerial contexts.

In accounting contexts where the aggregate or market level outcomes are of primary interest, the structural interpretation of economizing can be assumed to be more relevant. In such situations, we do not need to know the parameters of the problem in advance. If the market (or other aggregation) mechanism functions reasonably well, we do not need to know the parameters of the problem *ex ante*. Instead, if necessary, we can infer the parameters of the problem from observed outcomes of the aggregation mechanism. This, in essence, is the efficient markets argument.

Employee Stock Options

With only a few exceptions (e.g., marketable securities), regulators of financial accounting in the United States (U.S.) have been reluctant to use economizing tendencies as reflected in even well-functioning, liquid markets to guide their actions. Feedback from such markets, when used in incentive compatible formats, can considerably simplify the regulatory burden by eliminating the need for objective estimation of parameters by individuals. For example, U.S. regulators have struggled mightily with the problem of

measuring and recognizing the cost of employee stock options for well over 15 years, insisting throughout on model-based approaches. Proposals to construct scenarios so the economizing tendencies of markets (e.g., Sunder, 1994) can simplify the task of financial reporting received scant attention until quite recently when Jonathan Glover went to work at the SEC as an academic fellow and asked its office of economic analysis to scrutinize the proposal. The Chairman of the SEC said (SEC, 2005a):

As the OEA memorandum makes clear, the use of an appropriate market instrument for estimating the fair value of employee stock options has some distinct advantages over a model-based approach. Most importantly, the instrument's price could establish the issuer's true cost of the option grant, by having it priced by the market.

The Office of Economic Analysis (OEA) of the SEC concluded (SEC, 2005b):

- The market price obtained through a market-based approach value can efficiently reflect a consensus view among informed marketplace participants about an expense, asset or liability's utility, future cash flows, the uncertainties surrounding those cash flows, and the compensation that marketplace participants demand for bearing those uncertainties.
- The instrument's price could establish the true opportunity cost of the award to the issuer by having it priced by the market.
- Use of a market instrument may promote competition between different approaches to the estimation of the value of the market instrument, and thereby lead to innovations in models and techniques used to price employee stock options.
- There could be a positive externality for other firms that could use market prices to help improve their calibration of model-based estimates.

Integration of Financial and Tax Accounting

In the U.S. practice, financial and tax accounting have taken divergent paths over the years. I had always thought of this divergence as strength of the U.S. system in which corporations can solve two separate optimization problems independently, without worrying much about the other. On one hand, they decide what and how to report their financial results to the investors and general public, within the constraints of the

applicable financial reporting rules, in order to optimize the interests of the shareholders and of their own. On the other hand, they decide how to report their results to the Internal Revenue Service (IRS), presumably to minimize the present value of taxes paid to the government. Within some limits, the former problem is often believed to induce a tendency to overstate the current performance of the firm while the latter problem induces corporations to report lower income. A corporation is free to paint a rosy picture for its shareholders and a dismal one for the tax collector.

Attempts to limit corporate discretion take the form of costly auditing. Independent financial auditors try to make sure that the financial reports are not excessively rosy. On the other hand, the IRS employs an army of auditors of its own to try to make sure that the tax returns do not present an excessively low income. Thus considerable amounts of real economic resources in the economy are devoted to these two kinds of audit services. In addition, the SEC on one hand, and the IRS on the other, devote resources to formulate their respective accounting rules to control the contents of the reports, not always successfully. Pressures to “clarify” the rules have led to an inevitable thickening of the two rulebooks.

An economizing approach to the problem might suggest that integration of the two accounting systems into one may help improve corporate financial reporting as well as taxation. If corporations were given wide reporting latitude with the provision that the same set of reports must be submitted to shareholders and the tax collector, the corporate tendency to overstate financial income and understate taxable income will have a disciplining influence on each other. If X were the “neutral,” albeit unobservable, income of the firm, and if the firm were to try to report a higher amount ($X + Y$), it would also

have to pay taxes on the additional amount Y. The system will impose a real cost on the corporation for deviating from the neutral amount, and thus discourage it. If the firm were to report a lower amount as income to the tax collector (X-Z) in order to pay lower taxes, it will also have to report the lower amount to the shareholders and the public, possibly lowering the performance evaluation and rewards to the managers who make such decisions. In other words, the corporate tendencies to overstate financial performance and avoid taxes will counterbalance each other. The self-serving behavior of managers, and a significant part of the corporate governance problem could be addressed by such a reform.

Such integration may have the additional advantage of substantially reducing the burden of dual auditing by independent and IRS auditors, as well as reduce the pressure on the SEC and the IRS to write evermore detail in their accounting rules.

While an application of the economizing principle to derive aggregate outcomes of interactions among individuals may yield equilibrium outcomes, the same principle also informs us that equilibria do not always exist. Even when they exist in open loop systems, designing a regulatory system in which markets and regulatory action are mutually dependent can create instability or indeterminacy (e.g., Brennan and Schwartz, 1982; Sunder 1989; and Marimon and Sunder, 1993 and 1995). Further, an inappropriate application of economizing principle, as well as ignoring it, can do more harm than good.

Failures of Accounting and Auditing⁶

The economizing principle, applied to the market for audit services, can help us better understand the large-scale and well-publicized audit failures during the recent years. While the antitrust laws, to promote competition in trade and industry, have been

⁶ This section is based on Sunder (2003).

on the books in the U.S. since the late nineteenth century, these laws were not enforced on professionals such as doctors, lawyers and accountants. In their codes of ethics, the professional associations included provisions to proscribe advertising and solicitation of competitors' clients and employees as being unprofessional. The economic rationale for this informal exemption for the professions lay in the asymmetry of information. It is difficult for the clients of the professionals to see the quality of services rendered to them. Indeed, they often rely on the professionals to advise them on what services they should buy. Emphasizing competition in this setting, it was feared, would result in lowering not only the price but also the quality of the professional services, and thus result in a collapse of the market for such services. George Akerlof, formalized this idea in his famously elegant model of economizing he called the "Market for 'Lemons'."

Economists also examined the robust of competition to information asymmetry, and the possibility of seller reputation about the quality of goods or services provided serving as an effective antidote for the problems caused by information asymmetries (Leland 1979, Smallwood and Conlisk 1979, Shapiro 1982, and Rogerson 1983). When sellers can develop reputations with the customers, we need not fear that the competition will lower the quality of goods or services provided.

The U.S. Supreme Court, which had heretofore sustained the ban on advertising in the market for professional services, ruled in 1977 that the Bar of the State of Arizona could not prevent its members from advertising their services. Though the case was decided on the grounds of (commercial) free speech guaranteed by the First Amendment to the U.S. Constitution, arguments about the opportunity to build reputations played an important role in this ruling.

Though not directed at them, it turned out to be a watershed ruling for the auditing profession in U.S. The Supreme Court ruling led the U.S. government to change its policy on professional competition, and the latter forced the professional associations to drop the anticompetitive provisions from their codes of ethics. The American Institute of CPAs changed its Code of Ethics effective 1979, resulting in major consequences.

Generalization of the reputation argument from the professions of medicine, dentistry, and law to auditing was fundamentally flawed because the results of the medical and legal services are observable, at least ex post, to the customers in a reasonably prompt manner. Such observations have a reasonable, albeit imperfect, correlation with the quality of services rendered; reputation has a fair chance of keeping markets from collapsing under competition.

This is not the case with the market for audit services. Corporate managers and directors hire the auditors. The real clients of the auditors— the investors— never see the auditors. Even if they could, they would not be able to tell by watching them if the auditors have done their job diligently. Managers who see the auditors hardly have any incentives to make sure that they properly check the representations made by the managers to the investors and others. Only on rare occasions, when a corporation runs into serious financial trouble, are questions raised about the fairness of its financial reports and the quality of the audit work used to certify the reports. More than 99 percent of the time, no questions are raised about the quality of the audit, and no one looks into what the auditors actually did.⁷ In this environment, there is hardly any opportunity for the auditors to build their reputation based on the quality of their work. Thus the

⁷ Attempts of the Public Oversight Board to scrutinize the quality of audit services proved to be ineffective. We would not know for a few more years whether the efforts of the newly created Public Company Accounting Oversight Board to do so will prove to be more effective after their novelty wears off.

reputation argument cannot be generalized from other professions to the auditing profession.

However it was generalized to the auditing profession, and under the pressure of competition, as Akerlof's economizing model predicted, auditing turned into a "market for lemons." The prices dropped as the corporate controllers solicited new bids from audit firms, year after year, to get a better price from their auditors. At these ever-lower prices, the auditors could not continue to do what they had long done and still earn a decent living. Something had to change, and it did.

To survive in this new competitive environment forced upon them, auditors built themselves a new business model. It had three new elements— a new product mix, a new production function, and a new compensation policy. While I will not go into the details of what happened, this strategy did not work. Over the next 15 years, the audit firms tried various alternatives in business, political, and legal domains to recover their profitability. The widespread failures of auditing can, however, be traced to the misapplication of the economizing principle to promote competition in an industry whose product quality is virtually unobservable. In pushing competition on all professions in the late seventies, the government policy failed to consider the consequences of the economizing principle in this case and the special susceptibility of the market for audit services to become a "market for lemons." In pushing for competition, the government not only damaged auditor independence, but paradoxically, it damaged the competition too. After a quarter-century of efforts to promote competition, the number of large audit firms who audit most publicly held firms has been halved from eight to four.

Research and Pretense

This is a special occasion for me to share with you a brief account of my second encounter with Demski. I first met him as a yet-to-be-minted PhD candidate visiting Stanford, hoping to get a job offer. Demski was my host for the visit. In one memorable instant, I knew that I was in the presence of a very special person—unconventional and independent. No pretense here—what you see is what you get. It took me five more months to find out, through another close encounter with him, the depth of thinking that accompanied that iconoclasm. It took me yet another ten years to discover that his thinking was the essence of the distinction between pretense and the real thing in research.

The second opportunity arose five months later. Nicholas Dopuch had asked me to present a paper (Sunder, 1973) from my PhD dissertation at the 1973 Journal of Accounting Research Conference, about a week before I was scheduled to defend it at Carnegie Mellon University. With the help of my mentors (Yuji Ijiri, Robert Kaplan, Richard Roll, Edward Prescott, and Marcus Bogue), data provided to me by Kaplan, and frequent conversations with Nicholas Gonedes who was visiting that year at Carnegie, I had moved from program entry to defense in about 24 months. This progress seemed to stall during the Spring Semester following the job market interviews.

At that time, the realization dawned upon me that my attempts to deal with the self-selection problem of my LIFO-FIFO sample were doomed to fail. Taking the argument one step up the ladder would not help any more than chasing my own shadow would help me catch up—the self-selection objections, too, simply move one step up the ladder. It reminds one of an oft-repeated story that has acquired the status of an urban

legend under the label “turtles all the way down.”⁸ Various versions of the story share answers to the series of questions starting with: what does the earth rest on? A turtle. What does the turtle rest on? Another turtle, which rests on another, and another, and so on, all the way down. Whether in self-selection, or in cosmology, resorting to an infinite regress to shove inconvenient problems under the rug appears to be an old device.

When I had thought I only had to tie up a few loose ends in order to finish up my dissertation, this realization was becoming a growing psychological hurdle in my motivation. My advisors were kind enough to let me wrap up after pursuing the self-selection issues on inventory valuation one step above the conventional ladder. My tentativeness was reflected in the cautious title of the paper: Relationship between Accounting Changes and Stock Prices: Problems of Measurement and Some Empirical Evidence. I felt shaky defending it on logical grounds as I stood up at the JAR conference, unable to conceal how I felt through my halting, uncertain, and nervous delivery. I finished the talk with my results and caveats, and Dopuch called Demski to discuss the paper. Today is my chance to discuss Demski’s comments.

An author’s worst nightmare is that the discussant goes straight to the point. Without mincing many words, Demski did exactly that. After granting the justification for the study, he pointed out the gap between the theoretical demands of the question posed, and what could be learned from an empirical study of observed stock prices of samples of firms in the field. He went on, patiently, to list the internal and external validity problems of the study, and the gaps in the reliability of the claimed inference.

When Demski finished, Dopuch asked me to reply to his criticism. I said I agreed with him, and there was nothing for me to add. At the end of the session, while others

⁸ See http://en.wikipedia.org/wiki/Turtles_all_the_way_down.

thought I must have been crushed by the criticism, I felt amazingly good inside. Through his pointed critique Demski (1973) had freed me from having to defend what I knew could not be defended. He freed me from the pressure to pretend to do something that I knew could not be done.

For this early freedom, I am ever so grateful to him. I could move on to try to learn new things, without being tethered all my professional life to my very first research project. I returned, thirty years later to his criticism of my inability to establish a link between the individual behavior and aggregate market outcomes in the LIFO study, when Gode and I discovered (Gode and Sunder, 1993a, b), that the link between the two was tenuous, at best.

Each research method has limitations of its own. Demski had critiqued not just my paper, but the limitations of what could be learned from empirical method. To the best of my knowledge, it remains unsurpassed to this day. It is unfortunate to see that that branch of accounting literature has neither addressed, nor adjusted itself in light of this critique, and has moved along, as if pretending he never wrote or spoke those words.

Distinguishing pretense from the real thing has become increasingly difficult in many aspects of our lives, and this problem is, if anything, even worse in the field of research. When evidence suggests results that we don't like, we are often inclined to pretend even more. A few weeks ago, I learned of a study (Robinson and Adler, 2003) reporting that the periodical literature in accounting lags behind the literature of our sister management disciplines in publication and as well as citation statistics. Not only do we publish less often, each published paper is cited less often by others, both in and outside the accounting literature. This finding appears to have generated some discomfort and

given rise to suggestions such as exhorting our colleagues to be more generous in acknowledging the work of others within accounting.⁹ If I don't like my complexion in the mirror, will a rose-tinted mirror help? Can pretense substitute for the real thing?

Some twenty-two years ago, during our visit to the University of British Columbia, I walked into Vancouver's science museum with my three-and-a-half year old daughter. As we entered the lobby, a robot took a step forward and in its high-pitched, synthetic robotic voice asked: Where did you get your pretty blue dress? Richa could not be more pleased with the instant recognition, and gleefully responded: my aunt made it for me. The friendly robot, modeled after R2D2 of star wars, engaged in a few more sentences of banter with her before turning its attention to the next visitor. For Richa, that short conversation was the highlight of the visit.

Pretense is the essence of toys, dolls, learning, and imagination. If we cannot pretend, we cannot simplify; if we do not simplify, we cannot learn. Yet, if our learning is to amount to anything in the complex world we live in, the loop of imagination, simplification, pretension, learning and experience must be closed. To an engineer or scientist, it was clear that it would not have been possible for a robot, in the early 1980s, to do what it pretended to do. Pretending to do what tens of thousands of engineers and scientists have struggled mightily to do for decades was remarkably simple. On hearing the greeting, I had glanced around and had spotted a young woman sitting high up in the balcony with a microphone in her hand, greeting the visitors through speakers installed in the "robot" as they entered through the door.

⁹ Occasionally, one hears allegations about the existence of citation rings or closed groups whose members supposedly agree to cite or download one another's work, and then promote the citations of the download statistics as evidence of accomplishment.

Robots are designed to pretend to be people, and here was a “robot” designed to pretend to be a “real” robot. In the world we live in, we may often come across even more layers of pretense and modeling.¹⁰ It may be worthwhile to look into these layers. That afternoon in the science museum, children were not the only ones who did not see through the layers of pretense. Some, unaware of the current limitations of robotic technology, and unaware of the young woman sitting in her high perch in the balcony, even objected to the suggestion that they were not looking at a “real” robot. What is a real robot, and what could it mean for accounting research?

The real driver of research, whether accounting or any other, is our curiosity to seek a better understanding of the world around us. Curiosity is a result of the interaction between our observation of the world, and contemplation that accompanies the integration of the observations with our internal model of the world. The internal model is a complex combination of memories, beliefs, expectations and their interrelationships about various phenomena. When new observations do not mesh with the existing internal model, a dissonance arises between the two. A scholar cannot afford to live with such dissonance, and must launch a search to find a way to eliminate it.

Such searches are curiosity-driven; they do not allow the mind to rest until a way has been found to reconcile the observation with the internal model. Reconciliation may involve either a parametric or structural revision of the model, or a correction of the observation. Given the frequency of observations and the range and complexity of models we carry in our heads, a scholar has a perpetual supply of inconsistencies that arouse curiosity, demand attention, and support the life of the mind. It is only a matter of

¹⁰ For an example, see Blake Edwards’ film *Victor/Victoria* (1982) in which Julie Andrews plays a woman who pretends to be a man, who in turn, goes on stage in drag to act like a woman.

deciding when to devote time to addressing which question. That choice is often made by the “excitement quotient” of the problem. One addresses the question that insists on being addressed first—the squeaky wheel principle. In any case, research is driven by internal, not external motivations, a palpable characteristic of Demski’s work.

Demski’s gift to accounting is the discipline of thinking deeply about problems within the strict constraints of the economizing principle. We think harder, and learn a great deal more, when we seek solutions for our problems within the confines of a few explanatory variables. The extraordinary power of economics among the social sciences arises from this discipline, and Demski’s work is the best example of this approach to learning in accounting.

References

- Akerlof, George A. 1970. "The Market for 'Lemons': Quality, Uncertainty and the Market Mechanism", Quarterly Journal of Economics, Vol.84, No.3, Aug.1970, p.488.
- Brennan, M. J. and E.S. Schwartz, "Consistent Regulatory Policy Under Uncertainty," The Bell Journal of Economics (Autumn 1982): 506-521.
- Demski, Joel. "Discussion of 'Relationship between Accounting Changes and Stock Prices: Problems of Measurement and Some Empirical Evidence'," Journal of Accounting Research, Supplement (1973):46-54.
- Cherniak, C. 1994. "Component Placement Optimization in the Brain," Journal of Neuroscience, Vol. 14(4), 2418-2427.
- Christensen, John and Joel Demski. 2003. Accounting Theory. New York: McGraw-Hill.
- Conlisk, John. 1996. "Why Bounded Rationality?" Journal of Economic Literature 34 (June): 669-700.
- Dixit, Avinash. 1990. Optimization in Economic Theory. Oxford University Press.
- Gode, Dhananjay K. and Shyam Sunder, "[Allocative Efficiency of Markets with Zero Intelligence Traders: Market as a Partial Substitute for Individual Rationality](#)," Journal of Political Economy, Vol. 101, No. 1 (February 1993a), 119-137.
- Gode, Dhananjay K. and Shyam Sunder, "Lower Bounds for Efficiency of Surplus Extraction in Double Auctions," in D. Friedman and J. Rust, editors, The Double Auction Market: Institutions, Theories and Laboratory Evidence, Santa Fe Institute Studies in the Sciences of Complexity. New York, NY: Addison-Wesley (1993b), 199-219.
- Leland, Hayne E. "Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards," Journal of Political Economy 87:6 (December 1979), 1328-1346.
- Marimon, Ramon and Shyam Sunder, "Indeterminacy of Equilibria in a Hyperinflationary World: Experimental Evidence," Econometrica, Vol. 61, No. 5 (1993), 1073-1108.
- Marimon, Ramon and Shyam Sunder, "Does a Constant Money Growth Rule Help Stabilize Inflation?: Experimental Evidence," Carnegie-Rochester Conference Series on Public Policy, 43 (1995), pp. 111-156.
- Nicolaisen, Donald T. "Statement Regarding Use of Market Instruments in Valuing Employee Stock Options," Chief Accountant of U.S. Securities and Exchange Commission, September 9, 2005.
<http://www.sec.gov/news/speech/spch090905dtm.htm>.
- Robinson, Larry M. and Roy D. Adler, "Business Research in Eight Business Disciplines," Presented at the International Business and Economics Research Conference, Las Vegas, October 6, 2003.
http://www.academicassessments.com/ArticlesFolder/pdfs/2-Las_Vegas_Paper.pdf.
- Rogerson, William P. "Reputation and Product Quality," The Bell Journal of Economics 14:2 (Autumn 1983), 508-516.
- Securities and Exchange Commission. "Statement of Chairman Christopher Cox Regarding Use of Market Instruments in Valuing Employee Stock Options," Press

- Release 2005-129, September 9, 2005a. <http://www.sec.gov/news/press/2005-129.htm>.
- Securities and Exchange Commission, "Economic Perspective on Employee Option Expensing: Valuation and Implementation of FAS 123(R)," Office of Economic Analysis Memo to Donald Nicolaisen, Chief Accountant, March 18, 2005b. <http://www.sec.gov/interps/account/secoeamemo032905.pdf>.
- Shapiro, Carl. "Consumer Information, Product Quality and Seller Reputation," Bell Journal of Economics 13:1 (Spring 1982), 20-35.
- Simon, Herbert A. 1957. Models of Man. New York: Wiley.
- Smallwood, D. and J. Conlisk. "Product Quality in Markets Where Consumers are Imperfectly informed," Quarterly Journal of Economics 93 (February 1979), 1-23.
- Simon, Herbert A. 1996. The Sciences of the Artificial, third edition. MIT Press.
- Sunder, Shyam. "Relationship between Accounting Changes and Stock Prices: Problems of Measurement and Some Empirical Evidence," Journal of Accounting Research, Supplement (1973):1-45.
- Sunder, Shyam, "Proof That in an Efficient Market, Event Studies Can Provide No Systematic Guidance to Making of Accounting Standards and Disclosure Policy," Contemporary Accounting Research Vol. 5:2 (1989), pp. 452-460.
- Sunder, Shyam, "Economic Incentives as a substitute for Detailed Accounting Requirements: The Case of Compensation Value of Stock Options," Accounting Horizons, 8:2 (June 1994), pp. 110.
- Sunder, Shyam, "Rethinking the Structure of Accounting and Auditing," Indian Accounting Review Vol. 7 No. 1 (June 2003), pp. 1-15.
- Sunder, Shyam. "Markets as Artifacts: Aggregate Efficiency from Zero-Intelligence Traders." In M. E. Augier and J. G. March, eds., *Models of a Man: Essays in Memory of Herbert A. Simon*. Cambridge, MA: MIT Press, 2004, pp. 501-519.