

ECONOMICS FOR A HIGHER EDUCATION

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In Becker (1997), I called attention to economists' lack of interest in the teaching of economics and the plunging number of majors in economics within the United States. Six years later I reported on the growth in economists' interest in the teaching of economics and an apparent turn-around in the number of majors (Becker, 2003). For instance, when economics degrees were at a relative high of 2.13 percent of all U.S. Bachelor's degrees awarded in 1988, only a couple of sessions at Allied Social Science Associations meetings were devoted to the teaching of economics. At the low point for economics degrees in 1996, there were six ASSA sessions devoted to teaching economics, with an explosion to 16 such sessions by 2002.

The mistaken notions that there are no incentives for teaching and that teaching does not matter in a student's choice of a course of study were refuted by the revealed preferences of academic economists at these ASSA meetings, where attendance in these higher numbers of sessions on teaching economics were also among the highest of all sessions. Economists apparently recognized that their teaching is one of the few policy levers they controlled, but that does not necessarily imply that they have learned what is required for good teaching (Becker and Watts, 1996; 2001), or what should be taught. In this article I primarily address the latter (content) with passing reference to the former (teaching methods). In essence, in this article I synthesize my articles in the *Chronicle of Higher Education* (Becker, 2001), and *Southern Economic Journal* (Becker, 2003).

For some time within the United States there has been a move to impose standards on high school subjects, including expectations of students passing literacy tests in economics for high school graduation (Siegfried and Meszaros, 1998). But these standards for literacy can also be seen in the teaching of economics at post-secondary levels (Hansen, Salemi and Siegfried, 2002). At both the high school and post-secondary levels, the goal is to enable students to use basic concepts (opportunity cost, comparative advantage, demand and supply, marginal comparisons, etc.) in diverse situations as the mark of being literate in economics. It is believed that having students learn to use a few

concepts well is preferred to having the instructor cover the waterfront with students being able to do little afterwards.

There are benefits to learning the vocabulary and rhetoric of economics. As with motherhood and apple pie, education in any discipline and preparation of students to do something with their training cannot be faulted. But doing in universities that which should have been done in high schools is remedial education (or training) and not higher education. Back in the 1960s economists such as G. L. Bach, then Chair of the American Economic Association's Committee on Economic Education, championed the idea of emphasizing a few basic economics concepts in the hopes that students would at least retain something (although his principles textbook was encyclopedic). The idea that less is better in teaching economics is not new. I want to revisit the issue of what should be taught in university level economics courses and what students should understand and be able to do with their higher education in economics.

The Same Old Concepts or Why They Don't Always Work

As I wrote in Becker (2001), satirist P. J. O'Rourke was in part correct when he wrote in *Eat the Rich: A Treatise on Economics* that textbook supply and demand graphs do not help much in analyzing situations that are found in newspaper headlines. Textbook-style competitive markets that may work for agricultural commodities, at least in an idealized world, do not work for many items of interest to students. When imperfect information leads to the use of price as a measure of quality -- as in used-car markets, insurance, and labor markets -- then equilibrium may be characterized by inequality between quantities demanded and supplied, and a neat separation of demand and supply curves may not be appropriate. Scarcity of concert tickets may actually increase their attractiveness making static demand curve analysis meaningless. Similarly, supply and demand curves are arguably unidentifiable in the case of medical and legal services. Traditional discussions of supply curves are problematic when marginal costs are approximately zero, as is the case for many information-based goods today. As demonstrated by advances in the science of economics, the 150-year-old basic concepts of economics may be suspect when applied to some modern-day events.

Shapiro and Varian (1999) argue that students as decision-makers do not need a brand-new economics but they are hungry for the “the really cool stuff.” Students need to see situations in which increasing or decreasing a price does not automatically imply higher or lower profits, but they don't need to spend hours calculating meaningless elasticities. They need to know about the principle of comparative advantage, but they also need to learn how risk is reduced through diversification, not specialization. Any professor of economics can identify the field's traditional basic concepts. The trick is to recognize and articulate the shortcomings of simplistic analysis before students rightly dismiss it as irrelevant and then wrongly dismiss all of economics with it.

Bright and motivated students will view standards that are based on out-dated ideas and inappropriate methods of analysis, no matter how hard and complex, as dismal. For instance, the driver's test administered by Britain's Driving Standards Agency is regarded as one of the hardest in the world. Only 44 percent of takers pass, compared with 79 percent in Germany and 61 percent in New York State; yet, 20 percent of those passing the British test have accidents within a year of passing (Calian and Stecklow, 2002). This test is mocked as one of the most out-dated, remaining relatively unchanged since the 1920s – the hand break must be used to bring the car to a stop, one must be able to back around a corner and up one block next to a curb without touching the curb, one's hands can never cross when turning the steering wheel, turn signals cannot be activated without first looking in the review mirror, etc. The Polish cavalry was revered as highly skilled and unmatched in discipline and high standards, however, that tradition of excellence came to a tragic end when confronted with the German tank.

Furthermore, as argued in Becker, Greene and Rosen (1990), some basic skills may have a high value at one point in time and little value at another; for example, the ability to manipulate a slide rule fell in value with the availability of the inexpensive hand calculator; the ability to manipulate the hand held calculator fell in value with the advancement of computer spreadsheets and statistical packages. So, too, in economics: skills become dated. The advent of the modern-day computer, for instance, has turned economics into a more empirical subject; yet, the typical undergraduate curriculum gives little attention to the importance of quantitative research and empirical findings.

Innovations in the science of economics are not making their way into the teaching of economics at the undergraduate level.¹ For example, although Nobel prizes are typically awarded for work completed years earlier, and Zahka (1999) describes how the Nobel laureates' acceptance speeches can be used in teaching the principles of economics, the work of Nobel laureates is not presented regularly in principles textbooks prior to announcement of the award and even seldom afterward. At my request, James Murray checked the indexes of macroeconomics editions of Ekelund and Tollison (2000), Mankiw (2001), Samuelson and Nordhaus (2003), Case and Fair (2002), Schiller (2003), and microeconomics editions of Bade and Parkin (2001), Mankiw (2001), Samuelson and Nordhaus (2001), Baumol and Blinder (2003), Schiller (2003) and Gwartney, Stroup, Sobel, and Macpherson (2003) for prior reference to Nobel laureates Daniel Kahneman, Vernon Smith, George Akerlov, Michael Spence and Joseph Stiglitz. He reported finding only a reference to Smith in Gwartney, et al. (2003).

While surfing the Web, students will find criticism of economic textbooks – e.g., Yoram Bauman puts the boot into Mankiw's ten principles of economics at <http://www.improb.com/airchives/paperair/volume9/v9i2/mankiw.html>. They will find Avinash Dixit's proposal and demonstration of how game theory can be taught before or as an alternative to the traditional introductory economics course, at <http://www.princeton.edu/~dixitak/home/AdelaideConf.doc>. They will find entire journals devoted to showing the fragility of simplistic textbook economics – e.g., the online *Post-Autistic Economics Review* started by the French students' protest against neoclassical economics <http://www.paecon.net>. A trip to the library will uncover Steve Keen's controversial book *Debunking Economics: The Naked Emperor of the Social Sciences* (which more accurately could have been titled *Debunking Textbook Economics*). Instructors who ignore the debate going on in economics have their heads in the sand.

We Have the Tools to Teach at the Forefront of the Discipline

Colander (2000, pp. 122-123) tells how his efforts to get ideas related to complexity and dynamic processes into his textbooks were thwarted by the reviewers; yet, students are aware of the idea of the complex dynamics of chaos theory from movies

such as the schizophrenic thriller “**p**”, where Max says, “If you graph the numbers of any system, patterns emerge; therefore, there are patterns everywhere in nature . . . So what about the stock market? A universe of numbers that represents the global economy . . .” A similar theme appears in Tom Stoppard’s play, *Arcadia*, and an anthology by Watts (2003) provides nearly a hundred passages from both classic and contemporary literature and drama dealing with a wide range of economic concepts and issues, including a reading from *Arcadia*. If contemporary movies like “**p**” and “A Beautiful Mind” and plays like *Arcadia* can engage the general movie and theater-going population with current economic ideas, why aren’t academic economists doing the same in their classrooms? Possibly it is simply that they do not know what activities are available or they have only seen the generic stuff advanced by teaching specialists who do not know economics.² Or, as Hoyt (2003) noted, possibly academic economists have not embraced alternatives to chalk and talk because they are experience goods: anticipated high start-up costs keep risk-averse economists from trying them but those who have mastered them are hooked.

As an example of what can be done, consider the blonde-in-the-bar clip from “A Beautiful Mind.” I have used this clip as a motivational tool to establish the connection between Adam Smith’s invisible hand and John Nash’s recognition of the role of cooperation with heterogeneous student bodies consisting of both entry level university students and advanced graduate students.³ I sandwich this clip between Charles Holt’s (1996) trading-pit simulation (in which a Smithian equilibrium results from students pursuing their individual self-interest as demanders and suppliers) and Pickhardt’s extension of Holt and Laury’s (1997) classroom simulation in which a less than optimum noncooperative equilibrium tends to dominate a Nash cooperative equilibrium, which is the Pareto optimum.

Following the showing of Max’s clip from “**p**,” macroeconomics students who have had some exposure to probability theory can be challenged by Mathews’ (2000, pp. 242-246) “urn activities” to show the “Polya process” in which multiple equilibria result from a stochastic time process involving the sequential drawing and replacing of balls based on a stochastic decision rule. Mathews (2001) places the importance of this classroom experiment in an economic context through examples drawn from history.

Many economists present without question the tenets of expected utility theory even though the 1970 work of Nobel laureate Daniel Kahneman and Amos Tversky demonstrates that decision-makers have trouble with the concept of probability and the valuation of expected gains and losses. The Allais Paradox can be used with even introductory students to demonstrate the trouble folks have ordering uncertain prospects in a way that is independent of irrelevant alternatives – a critical postulate for von Neumann-Morgenstern expected utility theory.⁴ An instructor does not have to endorse Kahneman and Tversky's prospect theory and the more general theories of bounded rationality being advanced by behavior economists, but those teaching microeconomics can no longer ignore this work on decision-making under uncertainty.

Christopher Sims (2001, p. 53) states that few economists have been taught -- and thus they have not given thought to -- the differences and similarities among objective and subjective probabilities, uncertainty, ambiguity, chance and risk. But the distinctions can be used to challenge undergraduates to think beyond the blind use of expected utility theory, and to show the cutting-edge work undertaken by economists. For example, the Ellsberg Paradox can be used in a principles class to make apparent the distinction between risk, defined in terms of probability, and ambiguous uncertainty.

My version of the Paradox has a player (student) facing two bins, each with 10 balls. The first bin contains 5 regular white golf balls and 5 Flying Lady pink golf balls, but the distribution of white and pink balls in the second bin is unknown. The objective probability of blindly drawing a white (or pink) from the first bin is 0.5, and in the absence of additional information (or an assumed probability distribution) even the subjective probability of a white (or pink) ball from the second bin is ambiguous. Players are not indifferent to a choice of bin when betting on the draw of a white (or pink) ball. They typically select the first bin, which is a choice in a decision-making situation that is inconsistent with the notion of a unique probability measure as used in expected utility theory -- the backbone of economic and financial theory. I have been able to demonstrate the preference for a known probabilistic choice over ambiguity time and again by offering as little as \$1.00 for the draw of one or the other pre-specified ball color to a succession of three to five players in both small classrooms and large auditoriums.

My golf ball demonstration of the Ellsberg Paradox is but one example that demonstrates that preferences in different types of situations involving uncertainty and ambiguity need not be the same. Following a short classroom experiment, students can appreciate how the schooling-versus-work decisions, whether to consume or save, and portfolio allocations are qualitatively different events than which bet to accept on the outcome of a coin flip or dice roll. The former choices involve ambiguities but not well-defined probability distributions. The latter choices involve standard probability measures of risk. They can also see the importance in daily life of differentiating uncertainties associated with probabilities and uncertainties associated with ambiguity for which the concept of probability is totally inappropriate. For example, on the Lehrer Report on Public Broadcasting Nightly News (April 3, 2003), business correspondent Paul Solman had a special on how the Iraqi war was affecting the economy. Economist Mickey Levy of Bank of America said in an interview, “There is still huge uncertainty . . . you cannot put probabilities on outcomes”

<http://www.pbs.org/newshour/newshour_index.html>.

As illustrated in a four-article series on “Robustness of Uncertainty” (*American Economic Review*, May 2001, pp. 45-66), economists are formulating models of decision-making that attempt to capture the sources of ambiguities without imposing explicit probability distributions on uncertainties. The mathematics of this approach are challenging for graduate students but via activities such as my classroom simulation of the Ellsberg Paradox even first-year undergraduates can be engaged in the paradoxes of human behavior on which leading economists are now working. Similarly, in classroom activities undergraduates can experience other cutting-edge work being done by economists.

Concluding Comment

The need for better examples than those typically found in textbooks is identified by Nobel laureate Gary Becker (1996, p. 19): “Students have unnecessary difficulty learning economics because textbooks generally do not have enough good examples of real-world applications.” As added by Alan Krueger (2002, p. 475): “What most students (and people in general) need is instruction in personal financial literacy so they can make

better economic decisions themselves, not the aggregate supply-aggregate demand model.” Professor Krueger is attempting to write such a financial/economic literacy textbook for the high school level where it belongs. Let’s not turn the teaching of economics in higher education into remedial education. The dumbing down of economics to the dogmatic preaching of a few basic axioms in freshman and sophomore-level classes in institutions of higher education misses the excitement of the discipline. Let’s show students that economics is a science that is innovating and evolving with social change.

References

Anderson, Simon, and Engers, Maxim. 2002. "A Beautiful Blonde: A Nash Coordination Game." Working Paper, University of Virginia (July).

Bade, Robin, and Parkin, Michael. 2001. *Foundations of Microeconomics*. Boston: Addison-Wesley.

Baumol, William, and Blinder, Alan. 2003. *Microeconomics*. Cincinnati: Southwestern.

Becker, Gary. 1996. "Not-So-Dismal Scientist." *Business Week*, (October 21): p. 19.

Becker, William E. 1979. "Professorial Behavior Given a Stochastic Reward Structure." *American Economic Review*, 69 (December): pp. 1010-1017.

_____. 1997. "Teaching Economics to Undergraduates." *Journal of Economic Literature*, 35 (September): pp. 1347-1373.

_____. 2001. "How to Make Economics the Sexy Social Science." *The Chronicle of Higher Education*, (December 7): B10-B11.

_____. 2003. "Undergraduate Choice: Sexy or Non-Sexy." *Southern Economic Journal*, Vol. 70(1): pp. 219-223.

_____ and Powers, John. 2001. "Student Performance, Attrition, and Class Size Given Missing Student Data." *Economics of Education Review*, 20 (August): pp. 377-388.

_____ and Rosen, Sherwin. 1992. "The Learning Effect of Assessment and Evaluation in High School." *Economics of Education Review*, 11 (June): pp. 107-118.

_____ and Watts, Michael. 1996. "Chalk and Talk: A National Survey of Teaching Undergraduate Economics." *American Economic Review P&P*, 86(May): pp. 448-454.

_____ and Watts, Michael. 2001. "Teaching Economics at the Start of the 21st Century: Still Chalk and Talk." *American Economic Review P&P*, 91, (May): pp. 446-451.

_____ Greene, William, and Rosen, Sherwin. 1990. "Research on High School Economic Education." *American Economic Review P&P*, 80 (May): 14-23, and an expanded version in *Journal of Economic Education* (Summer): pp. 231-253.

Calian, Sara and Stecklow, Steve. 2002. "In Britain, Getting a Driver's License Can Be a Royal Pain – The Exam Is So Harrowing That Many Give Up." *The Wall Street Journal*, 30 (October): p. A1+.

Case, Karl E., and Fair, Ray C. 2002. *Macroeconomics*. Saddle River: Prentice Hall.

- Colander, David. 2000. "Complexity and the Teaching of Economics," in David Colander (ed.), *The Complexity Vision and the Teaching of Economics*. Cheltenham: Edward Elgar: pp. 121-136.
- Ekelund, Robert and Tollison, R. 2000. *Macroeconomics*. Reading: Addison-Wesley.
- Garratt, John, Overton, Tina, Tomlinson, Jane, and Clow, Doug. 2000. "Critical Thinking Exercises for Chemists: Are They Subject Specific?" *Active Learning in Higher Education*, 1(2): pp. 152-167.
- Gwartney, James D., Stroup, Richard L., Sobel, Russel S., Macpherson, David A. 2003. *Microeconomics: Private and Public Choice*. Cincinnati: Southwestern.
- Hansen, W. Lee, Salemi, Michael K., and Siegfried, John J. 2002. "Promoting Economic Literacy in the Introductory Economics Course." *American Economic Review P&P*, 92 (May): pp. 463-472.
- Holt, Charles. 1996. "Classroom Games: Trading in a Pit Market." *Journal of Economic Perspectives*, 10 (Winter): pp. 193-204.
- _____ and Laury, Susan. 1997. "Classroom Games: Voluntary Provision of a Public Good." *Journal of Economic Perspectives*, 11 (Fall): pp. 209-216.
- Hoyt, Gail. 2003. "How to Make Economics the Fulfilling Social Science." *Southern Economic Journal*, 70(1), pp. 216-218.
- Keen, Steve. 2002. *Debunking Economics: The Naked Emperor of the Social Sciences*. Annandale, Australia: Pluto Press.
- Krueger, Allan B. 2002. "Promoting Economic Literacy: Panel Discussion." *American Economic Review P&P*, 92 (May): pp. 475-476.
- List, John. 2003. "Does Market Experience Eliminate Market Anomalies." *Quarterly Journal of Economics*, 118(1), February: pp. 41-71.
- Mankiw, Gregory N. 2001 *Principles of Macroeconomics*. Fort Worth: Harcourt College.
- Mankiw, Gregory N. 2001. *Principles of Microeconomics*. Fort Worth: Harcourt College.
- Margo, Robert A., and John J. Siegfried. 1996. "Long-term Trends in Economics Bachelor's Degrees." *Journal of Economic Education*, 27 (Fall): pp. 326-336.
- Mathews, Peter. 2000. "Toward the Complexification of Statistics and Econometrics Curricula," in David Colander (ed.) *The Complexity Vision and the Teaching of Economics*. Cheltenham: Edward Elgar: pp. 231-254.

_____. 2001. "Positive Feedback and Path Dependence Using the Law of Large Numbers." *Journal of Economic Education*, 32 (Spring): pp. 124-136..

O'Rourke, P. J. 1999. *Eat the Rich: A Treatise on Economics*. New York: Atlantic Monthly Press.

Pickhardt, Michael. (Forthcoming) "On Teaching Public Goods Theory with a Classroom Game." *Journal of Economic Education*.

Samuelson, Paul, and Nordhaus, William. 2001. *Macroeconomics*. Boston: McGraw-Hill.

Samuelson, Paul, and Nordhaus, William. 2001. *Microeconomics*. Boston: McGraw-Hill.

Schiller, Bradley. 2003. *The Macroeconomy Today*. Boston: McGraw-Hill.

Schiller, Bradley. 2003. *The Microeconomy Today*. Boston: McGraw-Hill.

Shapiro, Carl, and Varian, Hal. 1999. *Information Rules*. Cambridge MA: Harvard Business School Press.

Sims, Christopher. 2001. "Pitfalls of a Minimax Approach to Model Uncertainty." *American Economic Review Papers and Proceedings*, 91 (May): pp. 51-54.

Starmer, Chris. 2000. "Developments in Non-Expected Utility Theory: The Hunt for a Descriptive Theory of Choice Under Risk." *Journal of Economic Literature*, 38 (June): pp. 332-382.

Walstad, William, and Becker, William E. 2003. "The Instructional Use and Teaching Preparation of Graduate Students in U.S. Ph.D.-Granting Economics Departments." *American Economic Review Papers and Proceedings*, 93 (May): pp. 449-454.

Watts, Michael (ed.). 2003. *The Literary Book of Economics*. Wilmington, Delaware: ISI Books.

Zahka, William. 1999. "Acceptance Speeches by the Nobel Laureates in Economics," in William Becker and Michael Watts (eds.), *Teaching Economics to Undergraduates: Alternatives to Chalk and Talk*. Cheltenham: Edward Elgar: pp. 209-224.

Notes

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¹ Economics is not the only science for which undergraduate instruction has fallen behind innovations in the discipline. For example, the teaching of biology at the undergraduate level has not kept pace with research advances, according to a report by the National Academies' National Research Council, <<http://chronicle.com/daily/2002/09/2002091102n.htm>>.

² Academic economists are proud to proclaim that they teach students a way to look at issues; their aim is to get students to think like economists. Implicit in these goals is a belief that there is something special about analysis in economics versus other disciplines. Similarly, however, chemists Garratt, et al. (2000) proclaim that their job is to get students to think like chemists and they go on to show how this unique aptitude is advanced through alternative teaching methods and student activities. The survey results of Walstad and Becker (2003), however, demonstrate that, unlike these chemists, economists leave the teacher training of their students to noneconomists. Contrary to the fundamental assumption behind general books on instructional methods, teaching any discipline within higher education consists of a blend of generic teaching skills combined and weighted heavily with the ethos of the discipline, which the general education specialists cannot provide.

³ Anderson and Engers (2002) correctly point out that the Nash equilibrium portrayed in the movie (all the men including Nash ignore the blonde) is not a sustainable equilibrium because given the strategies of the others Nash himself could score by going for the blonde – as pointed out by one of his male friends in the bar. Given sufficient desirability of the blond, no heterosexual male will be willing to let her walk, unescorted, so any one of them could expect to score given the strategy of the other males.

⁴ The Allais Paradox involves two choice situations, each with two lotteries:

Choice Situation A is

Lottery *A1* promises a sure win of \$30,

Lottery *A2* is an 80% chance to win \$45 (and zero in 20% of the cases).

Choice Situation B is

Lottery *B1* promises a 25% chance of winning \$30,

Lottery *B2* is a 20% chance to win \$45.

It is usually easy to find students in a class who say $A1$ is preferred to $A2$, when confronted with Situation A, and $B2$ is preferred to $B1$ in Situation B, even though Situation B differs from Situation A only by a factor of 0.75. To show the preference reversal for such a student, assume $u(0) = 0$, $u(45) = 1$, and $0 < u(30) < 1$. The overall attractiveness of a lottery (compared to another lottery) derives as the sum of the outcomes' elementary attractivenesses, weighted by their respective probabilities. Situation A, the revealed preference of $A1$ over $A2$ implies $u(30) > 0.8 u(45) > 0.8$; whereas the revealed preference of $B2$ over $B1$ in situation B shows that $1/4 u(30) < 1/5$, or $u(30) < 0.8$. For a review of alternative decision theories see Starmer (2000). "Can people learn to be as rational as economic theory supposes," *The Economist* (Aug 30 – Sept 5, 2003, p. 56.) provides an excellent discussion of some of the research supporting behaviouralists' views versus the newer research (by John List, 2003) supporting neoclassical theory that even introductory students can understand.