



Leonid Hurwicz

Nobel Prize Winner in Economics, 2007

August 21, 1917 – June 24, 2008

by Wendy Williamson and Shomu Banerjee

On October 15, 2007 I was awakened at 6:45am by the phone ringing. At the other end of the line was **Shomu Banerjee** ('92) yelling, "Wendy, Leo won, Leo won – the Nobel Prize!" Huh? – it took me a few seconds to realize who it was and what he was talking about. I guess most of us put that possibility at the back of our minds long ago. What a great surprise! Leo won the prize with Eric Maskin of the Institute for Advanced Study and Roger Myerson of the University of Chicago. A week later the department hosted a reception for Leo at the Ted Mann Music Hall. Most faculty and grad students attended, and even at such short notice, a number of Leo's former students came from out of town. It was a joyous occasion, as was the ceremony six weeks later for the official awarding of the prize (see p. 8).

Sadly, Leo died just a few months later on June 24, 2008, at age 90. I last saw him on the day we moved the library, May 27. Leo was in his nearly-empty office with his daughter Sarah, and I knew it was the last time I would see Leo there, but the feeling of sadness I had that day would not go away. I think I sensed it would be the last time I saw him. He lived a long, remarkable life. Leo's life story is amazing and is documented here: http://nobelprize.org/nobel_prizes/economics/laureates/2007/hurwicz-bio.html

Leo was one of those people who thoroughly loved life and found everyone interesting. He could just as easily be talking to the President of the University at a reception as

the custodian in the elevator. He gave his time to all and cared deeply about his family, all the members of the department, his other professional colleagues, and the many students and professors whom he met around the world. One thing mentioned by many people from outside the U.S. was Leo's great knowledge of their language and cultural intricacies. Students were amazed that



Leo knew the origins of their family names. **V.V. Chari** said when they first met, Leo explained word origins and dialects from Tamil, Chari's native language: "I have spoken the language ever since I was an infant," Chari said. "He explained all the details I was never aware of."¹

Tatsuyoshi Saijo ('85) who was Leo's teaching assistant for 2 years, also noted: "Leo's lecturing style was amazing. He never looked into any textbooks or notes during his

lectures. Once I asked him whether he memorized every detail of lengthy proofs or not. He said, 'I never memorize anything. They come out from my brain when I write a few beginning words.' Driving back to Cal Tech from USC during a 1984 seminar visit, Leo recited street names a block before we passed them. The number of streets was more than ten. I asked him: 'How did you memorize them?' Leo replied, 'I do not memorize anything. We just went by them this morning!' When Leo turned 82 or 83, I asked him a kind of mean question: 'How do you feel, getting older?' He replied, 'My brain is getting better and better every year!'"

¹StarTribune, October 15, 2007.

LEO'S STUDENTS

Leo had a special fondness for international students. He traveled to India in 1965 on a Fulbright Grant and lectured at Bangalore University. Leo also lectured at the Indian Statistical Institute in Calcutta and New Delhi, and at the Institute of Economic Growth where Shomu first saw him: "Leo visited New Delhi in 1980, the year before I applied to graduate schools, and gave a talk complete with colored chalk out of a brown paper envelope that he brought with him--so typically Leo! I understood it only vaguely but I wanted to go to Minnesota after that." **Soumyen Sikdar** ('83) wrote a tribute to Leo found here: <http://journal.ci-iss.net/index.php/ciiss/article/view-File/66/58>, which includes some interactions of Leo with students from India.

Leo was instrumental in helping students from developing countries who were not his Ph.D. students or even students at Minnesota. **Tapen Sinha** ('86) mentioned: "One such case is Parkash Chander, who got his Ph.D. from the ISI in 1977. His work was actually done by 1973-4. Leo was the external examiner of his thesis, but also much more than that. When Leo found out what Chander was working on (decentralized resource allocation), he invited him to spend a year in Minnesota (1974-5) as a Research Associate. The outcome was two papers that Chander published in *Econometrica* in 1983."

Leo visited China in 1982 and again in 1984 as a Distinguished Scholar in an exchange program, where he lectured at universities in Beijing, Tianjin, Xi'an, Wuhan, and Canton. He also lectured at the People's University in Beijing in 1986. When compiling congratulatory Nobel e-mails for Leo in October of 2007, one that stood out was a letter signed by 48 Chinese students, which said: "Please accept heartfelt congratulations from all of us, who always consider you as a great thought leader in our time, and one of the most inspiring teachers in our life." A number of Chinese students later enrolled in Minnesota's graduate program because of Leo.

And then there was the relationship with the Spaniards, who started arriving in the early 70s with a fellowship from Dwayne Andreas, set up by Leo's good friend Walter Heller. Leo was mentioned in Spanish newspaper articles as the

father of the "Minnesotos," the name for the Spaniards who studied at Minnesota and returned home. **Fernando Vega** ('84) said: "For us Spanish students, as for all others, Leo was the exemplification of a true scholar -- someone whom we respected and admired beyond words. But, in addition, as a human being, we felt he was very warm and close to us. For example, he was an active (i.e. dancing!) participant in each so-called Spanish party -- the party Spanish students organized every year with food and music of our country. He was probably not the most coordinated dancer on the floor but few could beat him at the enthusiasm with which he attempted to compensate for any "minor" cultural handicap. This, of course, was just a reflection of the contagious love for life that he projected in every dimension, intellectual and otherwise."



LEO AS MENTOR

Liang-Shing (L.S.) Fan ('65), Professor Emeritus, Colorado State University, wrote:

"I met Professor Hurwicz for the first time in the fall of 1959 when he came back to Minnesota from Stanford. He appointed me as a Research Fellow when he received his first NSF grant on Decentralization. In those years in the department we

addressed faculty members as Professor or Mister, instead of Doctor. The story was that one of the most distinguished faculty members (i.e. Mr. Hurwicz) did not have a doctorate. I never did verify the truth behind that reasoning. For 49 years I never addressed him by his first name. For me it was always Mr. Hurwicz. Once I was sick for a day (or two at most) and did not go into the department. Mr. Hurwicz went out of his way to make sure I was all right, dropping in to see me in my \$25 per month apartment.

In 1971 Mr. Hurwicz was invited by Kenneth Arrow to deliver the Richard Ely lecture at the AEA meetings in Toronto. About 10 days before the meeting he flew me from Colorado to Minnesota to be his sounding board. We spent 8, perhaps 10 hours in his study. Mrs. Hurwicz supplied sandwiches and coffee. That was the one and only time I stayed over at the Hurwicz's. He was trying to perfect the last section of his lecture on the "Incentive Compatibility of Mechanisms."

Whenever I had the opportunity, I always asked for his autograph on the books and papers that he wrote. Over the

years, the inscriptions changed from “one of my favorite students” in *Studies in Linear and Nonlinear Programming* (1958) to “my loyal students and life long friends,” addressed to my wife **Chuen-Mei Fan** ('72) and me, in *Designing Economic Mechanisms*, (2006).

Mr. Hurwicz's generosity towards students is well known. In the early 70's I followed his “incentive” idea and wrote a short paper on “the Reward System” and “Bonus.” He refused to accept co-authorship and insisted that I publish as the sole author. The piece turned into two separate articles in AER and SEJ.

In 2007 I had the opportunity to meet with Mr. Hurwicz three times. The first was at his birthday party in April, and the second was a short visit to his Minneapolis apartment in September with my daughter Nina. The third and last time was backstage before he received his Nobel Prize in December. Not many people can say that they have touched both a National Medal of Science and a Nobel Prize in Economics Medal. I have, and the chance to do so was, like many other opportunities over the years, given to me by Mr. Hurwicz. I am proud to say that he was my mentor, and most importantly, that he was my friend.”

LEO'S INTELLECTUAL OUTPUT

I had the privilege of going through much of Leo's papers and correspondence, which was sent to Duke University for their “Economists' Papers Project.” Leo, as you may know, saved nearly everything, and his office showed it. He had boxes and boxes of things: reprints people had sent him, student papers and records, many versions of his own work, and probably every letter he ever received. He was so courteous to others that he saved it all. Now much of it will be accessible in the Duke archives.

Recently, Shomu Banerjee compiled a bibliography of all of Leo's published work, which spanned an incredible seven decades, from the 1940s up to the present. If you would like any copies of items, please let me know and I will scan and send them; see: http://www.econ.umn.edu/hurwicz/hurwicz_complete_bib.pdf

Shomu is now starting to work on an additional part of Leo's vita: unpublished papers. If you have any seminar handouts or unpublished work of Leo's that you feel is important, please send the citation to him at sbaner3@emory.edu. There is also a list of less well known items at: http://www.econ.umn.edu/hurwicz/hurwicz_current_pub_list.pdf

Shomu, on Leo's work: “Over seven decades Leo made

path-breaking contributions in at least 5 areas: mechanism design, econometrics, programming, decision sciences and microeconomic theory. Since his Nobel Prize citation was for mechanism design and this is where his legacy is most obvious, I begin with that.

While the first coherent and groundbreaking formulation of what is a resource allocation mechanism appeared in print in 1960—formulated, incidentally, without the use of any game theory, even though Leo had in his possession a draft of John Nash's thesis from either 1949 or 1950 that Wendy discovered among his papers--what is striking is that the key ideas that we now attribute to Leo (such as Pareto-satisfactory with respect to a class of environments, informationally decentralized, incentive-compatible mechanisms) had already been thought through in its modern formulation five years earlier in an unpublished Cowles Commission discussion paper (No. 2112).² The idea that resources are allocated through a communication process involving a language and messages led to a bifurcation of future research into the incentive and informational aspects of mechanisms.³ On the incentive side, the initial work of Vickrey on auctions was followed by further advances due to Myerson, Milgrom and Wilson. Green, Groves, Laffont, and Ledyard worked on the incentive-compatible provision of public goods. Hurwicz's 1972 impossibility theorem shook conventional wisdom when he showed that it was impossible to design a mechanism that provides dominant strategy incentives and gives rise to Pareto efficient and individually rational allocations, even in the absence of public goods; this showed that even the Walras mechanism in an economy with private goods was manipulable, at least when there are a finite number of participants. This paper led to the mushrooming of the implementation literature with contributions from Dasgupta, Hammond, Hurwicz, Maskin and many others, an area of research that remains active to this day. The field of experimental economics, developed by Plott, Roth and Smith, is also founded on Leo's work on mechanisms.⁴ On the information side, there was early work on incomplete information by Arrow and J. Marschak, by J. Marschak and Radner on the theory of

2 One of the central ideas of informational decentralization that we now call privacy-preserving is also included here under a different name: an external adjustment process.

3 At Leo's 90th birthday celebration, **Daniel McFadden** ('62) presented a tribute to Leo outlining his legacy in the various sub fields spawned by his foundational work on mechanism design (see ‘The Human Side of Mechanism Design: A Tribute to Leo Hurwicz and Jean-Jacques Laffont,’ December 2008 at <http://elsa.berkeley.edu/~mcfadden/>). With the usual caveat, this is my take based in part on his presentation.

4 See for instance the classic expository article by Vernon Smith ‘Microeconomic Systems as an Experimental Science’ in AER December 1982.

teams, and later by Williamson on governance. Akerlof, Spence and Stiglitz worked on asymmetric information, while Diamond, Grossman, Hart, Laffont, and Mirrlees developed principal-agent models. The focus on information is also related to Simon's work on bounded rationality which in turn gave impetus to the field of behavioral economics developed by Kahneman and Tversky. All of these areas owe an intellectual debt to Leo's work. Other research on informational issues include the size of message spaces and computational complexity by Mount and Reiter, and the later work on discrete mechanisms by Hurwicz and T. Marschak.

In the 1940s and 1950s, Leo wrote several papers on econometrics that perhaps have not received the attention they deserve. Of these, the five papers in the 1950 book edited by Koopmans, *Statistical Inference in Dynamic Economic Models*, deserve special mention. They cover a wide area from the sampling aspects of structural estimation, to the identification problem (which includes a succinct statement of the 'Lucas critique' over a quarter century before Lucas), variable parameters in stochastic processes, least-squares bias in time series, and systems with non-additive disturbances.

Starting in the mid-50s, Leo began writing on various topics in programming (constrained maxima, Lagrangian saddle-points, gradient methods for concave programming etc.), often with Arrow as co-author. Most of these were subsequently collected in two volumes, *Studies in Linear and Non-Linear Programming* by Arrow, Hurwicz and Uzawa (1958) and *Studies in Resource Allocation Processes* by Arrow and Hurwicz (1977). Math Econ wonks may be interested to know that among several papers that remain unpublished (but are downloadable from the Cowles Foundation website <http://cowles.econ.yale.edu/P/au/index.htm#H>) are two from 1954 (Nos. 2109 and 2110) which include theorems that require the use of the weak* topology, perhaps the very first use of this topology by any mathematical economist!

Also around 1950, Leo started work on understanding the game interpretation of the statistical decision problem and decision-making under ignorance. In decision sciences, there are four decision criteria under ignorance that are attributed to Laplace, Wald, Hurwicz and Savage. The Hurwicz criterion is based on a decision index calculated from a weighted average of the maximum and minimum payoff of each strategy. The weight, given by the Greek letter alpha, is called a coefficient of optimism and measures the decision-maker's attitude towards risk and is widely referred to in the decision sciences literature as the Hurwicz

alpha. With the exception of one paper co-authored with Arrow, Leo never published any of this work (see Cowles Commission paper Nos. 352, 355, 356, 357, 369 and 370). But he continued working on this topic for nearly the next 50 years, resulting in a 97-page unpublished manuscript entitled "On a generalized Bayesian-minimax approach to statistical estimation," which was last presented at a seminar in the Dept. of Statistics at the University of California-Santa Barbara in 1998.

Finally, Leo's many contributions to microeconomic theory began with two classic papers from 1958-59 on the stability of competitive equilibrium, one co-authored with Arrow and the other with Arrow and Block. Another landmark is his 1971 paper with Uzawa on the integrability of demand functions that exhausts the implications of neoclassical consumer theory by showing that the Slutsky conditions are (essentially) sufficient for utility maximization. One of my personal favorites is his 1995 paper, "What is the Coase Theorem?" which is perhaps the most precise statement of Coase's invariance conjecture (that the level of an externality is invariant to the assignment of property rights). Leo shows that not only is the absence of income effects sufficient for this invariance proposition (as Coase had himself stated), it is also necessary, thereby revealing that the circumstances under which this proposition is valid are quite limited."

LEO WAS THERE FIRST

Tapen Sinha ('86) relates the following: "The concept of rational expectations is one of the most well known concepts in modern econometrics. Most people credit John Muth to be the father of this concept. It's not so. Back in 1946, Leo Hurwicz wrote a paper in *Econometrica* ("Theory of the Firm and Investment"). In that, he used the term. Leo mentioned this casually to Tom Sargent in a seminar one day at Minnesota. Sargent was very apologetic and said "Why didn't you tell me before?" Leo replied: "It was not important."

When going through Leo's papers I found a note about this from Tom to Leo from 1993. It says: "Dear Leo, on page 6 of this manuscript, I argue that "rational expectations" was invented at Minnesota, not Carnegie or Chicago (see footnote 1). This is a little misleading, because you weren't yet at Minnesota when you wrote these two articles, but I hope that readers don't notice this. Best wishes, Tom Sargent." That footnote for Sargent's 1993 book, *Bounded Rationality in Macroeconomics*, says: "The first use of the term "rational expectations" that I know is by Hurwicz (1946, p. 133), who did not define the term, but used it in

discussing ways of modeling the behavior of a single firm facing an unknown distribution of future output prices. Muth's (1961) definition emphasizes the second aspect of the concept, consistency of perceptions. Hurwicz (1951) {Comment on 'Business Cycle Analysis and Public Policy' by Arthur Smithies, in Conference on Business Cycles, NBER} used both elements of the concept of rational expectations, though he did not use the term in his discussion of econometric policy evaluation procedures." There was an addition to this in Leo's files; Leo copied this note from Sargent and passed it on to Craig Swan. That memo, dated 1-14-94, reads: To: Craig From: Leo You may be interested (or, at least, amused) to see from the enclosed paper that (to exaggerate slightly) "it is all my fault."

Equating Leo with Kilroy, the World War II graffiti that appeared everywhere, Tapen noted additional path-breaking work of Leo's, which predated others' known for research on those topics: "That Leo has done pioneering work in economics is well known and well acknowledged. However, Leo's work in other fields is not that well known. One such area is Bayesian Statistics. Leo had done some early work in the area without the dogma of being a Bayesian. Like a mayhem creator, he just lobbed a few live grenades and walked right away." See Tapen's recent paper arguing for Leo's first-use of the term Bayesian as an adjective: <http://icpr.itam.mx/papers/LeoBayesian.pdf>

Besides the rational expectations and Bayesian examples, there is the simplex method of George Dantzig. Tapen continues: "When discussing this work with Tjalling Koopmans, Dantzig was told that Leo had already produced an algorithm similar to Dantzig that amounted to transversing a path of edges on a polyhedron. Trygve Haavelmo...in the 40s...was thinking about how a probabilistic approach to econometrics could be applied. The idea was to think of economic data as one realization of an underlying stochastic process. This would bring a Nobel Prize to Haavelmo. When he met Paul Samuelson, Samuelson mentioned that his research assistant was already investigating this! Of course, that was Leo. Later, when Haavelmo wrote a paper on the identification problem in structural equations, he found Leo had already written a short note on the subject summarizing all the relevant aspects!"

LEO'S HUMOR

Lowell Orren ('79) wrote: I have many memories of Professor Hurwicz. Of course he had a great wit. As we were walking out of my Ph.D. oral exam, I recall a conversation between Professor Hurwicz and Professor Richter. Professor Hurwicz was admiring a down parka worn by Professor

Richter. Richter said that the best time to buy a down parka was at the end of winter when they are less expensive. Professor Hurwicz then said, "Yes, at the end of winter the geese are easier to catch."

Shomu provided additional Leo humor: Once a visiting seminar speaker wrote a theorem on the blackboard. Asserting that the result was "obvious," the speaker looked around the room, daring anyone to challenge him. Leo piped up immediately: "Is that proof by intimidation?" (Eric Maskin, quoted from a *Financial Times* comment, July 19, 2008).⁵

At one point, Leo was working with Hans Weinberger in the Department of Mathematics and had been invited to a brown bag lunch event in Vincent Hall. Shomu showed up out of curiosity. Leo had a bologna sandwich, a Tupperware container of sliced peppers and carrots, and another Tupperware of home-made oatmeal cookies, courtesy of Evelyn. "They're made with all kinds of things that are supposed to be good for you. They're low-fat, low in sugar, made with oatmeal which is supposed to lower your cholesterol" Leo said. And then with a chuckle, "They're so good, they're strictly medicinal, you know!"

Another former grad recalled Leo's dexterity with tact: "After a couple of sessions to clean up a lapse in my knowledge about the so-called "identification problem," his comment was the highest accolade I received as a graduate student. Leo said: 'Enough, you are now making very sophisticated errors.'"

LEO'S LEGACY

Shomu concludes: "For those of us privileged to have studied under Leo, his legacy is now a permanent part of who we are, interwoven with the way we approach teaching, research, and even in our interaction with others. He changed us forever with his example: his immense curiosity, his indefatigable search for 'truth' through careful exploration, the scrupulous and thoughtful acknowledgment in footnotes of his intellectual debt to others no matter how small, and the basic decency and caring with which he treated everyone, regardless of who they were and from what walk of life. I dare say that we, his intellectual progeny, have consciously or unconsciously passed on much of Leo onto our students and advisees as well.

According to Tapen, when he was a first year student in 1979, Leo came to the first day of their micro class and de-

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⁵ For the lay person, there are broadly four kinds of proofs in mathematics: proof by construction, by contradiction, by contraposition, and by induction.

clared that because there wasn't enough time in their regular meetings to cover everything he wanted to teach, they would have an additional meeting every Saturday for an hour. While everyone gasped in astonishment, he laughed and said he was only kidding—they would meet for two additional hours each Saturday! This notion, that time was irrelevant when it came to the pursuit of knowledge, was something that I learned from him firsthand while working on my dissertation: I always knew when my meetings with him were to begin but the ending point, as Leo pointed out with a chuckle, was always indeterminate! Often, it would be many hours later, long after I had been squeezed through a mental wringer and thoroughly exhausted, and the only reason he had ended the session was because of a phone call from Evelyn reminding him of the hour of the night!

Leo once lamented to me that we who were younger were not as lucky as he had been since we had the pressure to publish as soon as we graduated and often, while he had had the leisure to let his ideas stew to maturity, sometimes over decades. As Eric Maskin mentioned at Leo's memorial service, anyone who worked with him knew that research was never finished; there was always another extension, another wrinkle to be explored. This applied just as well to graduate students. In my time, there were many students who dreaded getting a rewrite on their microeconomics prelim since that could easily mean a whole semester of one-on-one interactions with Leo, working on a sequence of problems that only begat more problems to be solved. To one graduate student who was getting exasperated by this seemingly never-ending rewrite, Leo tried to diffuse his frustration by pointing out that just as he had to put in hours of piano practice at the conservatory as an undergraduate in Poland, we needed to practice too. What is interesting is that, according to Paul Samuelson's congratulatory letter on Leo's 90th birthday, Leo had already evolved this form of pedagogy in his mid-20s while teaching at MIT—we were just the latest recipients of this treatment!

In teaching, I'm probably not alone in that my use of color has been influenced by Leo who never came to class without several different pieces of colored chalk. He also carried at least three writing instruments in his left shirt pocket (one black and one red ballpoint pen, and a beige BIC mechanical pencil whose tip had to be twisted to expose the lead which came with a well-worn pink eraser at the other

end)—in fact, it was with some delight that I noticed that he had all of those in his pocket while accepting the National Medal of Science from President George H.W. Bush at the White House in 1990! After all, you never know when inspiration might strike and multiple colors come in handy!

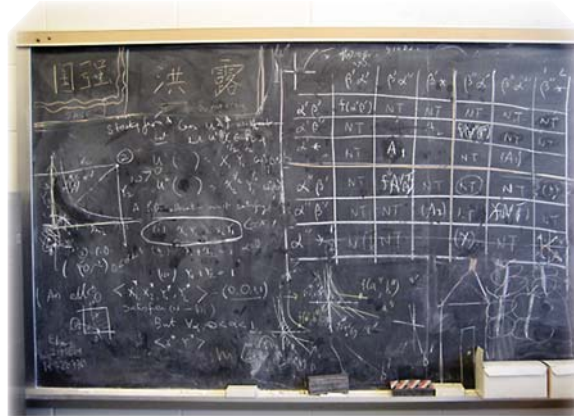
I had of course encountered indifference curves and Edgeworth boxes in my earlier education, but they were never drawn the same way after Leo—indifference curves now always have arrows attached to them showing the direction

in which utility is increasing, and Edgeworth boxes have lines that extend beyond the box, something that is so logical, useful, and patently sensible that I cannot imagine why few textbooks draw them that way. I also remember the impish chuckle with which Leo would teach about incentive-compatibility: truthful behavior was represented by the mnemonic device of putting a "halo" (a circle) above a strategic variable when a person was being truthful, while a tilde over

the same variable denoted "crooked" manipulative behavior.

Another pedagogical tool he used very effectively was to come up with "Is it true that...?" questions and get us to figure out whether a certain assumption in a theorem could be "dispensed with" by constructing counterexamples. I remember shaking my head in amazement at the never-ending stock of clever counterexamples that he had up his sleeve. He was of course getting us ready to do research, but I didn't know that then.

I will end this personal account of Leo's legacy by recounting an exchange I had with him that affected me profoundly and to me embodies the humanity with which he treated everybody. When I was about to go on the job market, it turned out that another advisee of Leo's and I were applying for a position at the same university. In my opinion this person's work was far superior to mine and since we both were getting letters of recommendation from Leo, I was hesitant as to whether I should apply there at all. As I haltingly tried to express all this to him, self-doubt and all, he interrupted me and put me at ease by saying that of course I should apply. He said he never compared one person with another and so even though we were both getting letters from him, he would write about our own individual strengths and weaknesses as he saw them without ever rank-



Leo's Office Blackboard

ing us. "You see," he said, "I am often asked by some department that is making a tenure decision on someone as to how I rate that person compared to four or five established luminaries in the field. The trouble is I know these four or five people intimately," he laughed, "and they all have so many dimensions that I'm familiar with that it is impossible to rank one person over another, to say that he is brighter than so-and-so but not as accomplished as someone else." Then he paused thoughtfully, his gaze lost in the distance. "It is this kind of mindset, that people can be ranked above another, that led to the madness of the Nazis."

On February 29, 2008 the department faculty and staff gathered at Eastcliff, the home of the University of Minnesota President. Thanks to the generosity of so many of you – alumni, faculty (current, former, and retired), and friends, we were there to celebrate the newly created Leonid Hurwicz Fellowship,⁶ which was formally announced by President Robert Bruininks. Leo did not know about the fellowship prior to this gathering, so it was a big surprise! It was very fitting that this was Leap Year Day, a day which only comes once every four years. It was a memorable afternoon, and Leo was extremely pleased that the fellowship named for him would help fund a first-year graduate student in 2008-09. Our first recipient, Minesh Amin, arrived in the Fall of 2008. Minesh said: "It has been an honor and a privilege to be the first recipient of the Hurwicz Fellowship, as it has allowed me to truly concentrate on my first year studies."

Leo's memorial service took place in Coffman Union's Campus Club on October 24, 2008. Besides his family, friends, and department faculty, students, and staff, a number of Leo's advisees, former Minnesota professors, and colleagues attended the event, including three who traveled from Japan. Everyone who spoke talked about their personal interactions with Leo and shared many wonderful memories. In addition to Eric Maskin, speakers were Roger Myerson, Stan Reiter, Ket Richter, Jim Jordan, current chair Larry Jones, Leo's wife Evelyn, daughter Ruth Markovitz, and son Michael. Leo is also survived by daughter Sarah Kogut, son Maxim, brother Henry, seven grandchildren and two great-grandchildren.

⁶ Gift commitments made in Leo's honor total nearly \$250,000. If you would like to make a contribution, follow the instructions at the end of Ed Foster's *Remembering Jim Simler* and select "Hurwicz Fellowship Fund" for your gift designation.

RECENT BOOKS BY ALUMNI

Masahiko Aoki ('67), Gregory Jackson and Hideaki Miyajima, eds. *Corporate governance in Japan: institutional change and organizational diversity*. Oxford University Press, 2007.

Len Burman ('85), Henry J. Aaron and Eugene C. Steuerle, eds., *Taxing capital income*. Urban Institute Press, 2007.

M. Umer Chapra ('61), *Muslim civilization: the causes of decline and the need for reform*. The Islamic Foundation, 2008.

Lars Peter Hansen ('78) and **Thomas J. Sargent**, *Robustness*. Princeton University Press, 2008.

Donald Katzner ('65), *Culture and economic explanation: economics in the U.S. and Japan*. Routledge, 2008.

George McCandless ('81), *The ABCs of RBCs: an introduction to dynamic macroeconomic models*. Harvard University Press, 2008.

Michael J. Meurer ('86) and James Bessen, *Patent failure: how judges, bureaucrats, and lawyers put innovators at risk*. Princeton University Press, 2008.

Oz Shy ('86), *How to price: a guide to pricing techniques and yield management*. Cambridge University Press, 2008.

Yung Chul Park ('69), Barry Eichengreen and Charles Wyplosz, eds., *China, Asia, and the new world economy*. Oxford University Press, 2008.

Tapen Sinha ('86) and Stephen J. Kay, eds., *Lessons from pension reform in the Americas*. Oxford University Press, 2008.

Tapen Sinha ('86) and Bradly J. Condon, eds. *Global lessons from the AIDS pandemic: economic, financial, legal, and political implications*. Springer, 2008.

Randall Wright ('86), with Charles F. Manski and Whitney K. Newey, eds. *Economics to econometrics: contributions in honor of Daniel L. McFadden*. Blackwell/Wiley, 2008.

Leo's Nobel Ceremony

by Wendy Williamson

Dec. 10th, 2007 was a nice bright sunny day, and the Ted Mann lobby on the University of Minnesota campus was abuzz with many familiar people. I was at the door with Colleen Donahue, the CLA development officer, to hand out tickets to alums. Many people came to honor Leo Hurwicz, who, at age 90, was the oldest Nobel Prize winner ever.

A number of alumni came back: **Tapen Sinha, Kim Border, Yochanan Shachmurove, Mayra Zermeno, Rosalinda Quintinilla, Gerald Eskin, Juan Gomez, Thanh Le, Mark Bergen, Changzhen Gong, John Roberts, Preston Miller, Clarence Nelson, Wu-Tien Peng, Liang-Shing Fan, Paul Manchester, Ed Fagerlund, Susana Gluck, Karine Moe, Kathy Combs, Meir Barnea, Shamlall Gupta, Marsha Blumenthal, Tom Stinson, and Elsie Martin**, a former secretary in the department. Retired professor **Ed Coen** (father of the Coen Brothers) and his daughter were also in attendance, as were nearly every current economics professor and graduate student.

President Bruininks gave a welcome and introduced the Swedish ambassador to the U.S., who was the one to present the award to Leo. We watched the live telecast on a large screen of the event in Stockholm. The introduction was in English, but the description of the winner's work was usually in Swedish; in one case German. So, with the sound turned off but the video still playing, various professors were on stage reading the text in English: Craig Swan read the Physics award, Fred Morrison the Chemistry (even translating some German right there!) and two oth-



ers I didn't know read the Medicine and Literature award information. The Swedish ambassador read the economics award description. Unfortunately, he was not done reading that when on screen we could see Eric Maskin and Roger Myerson, the two other economics winners, getting their awards—that part was in English. So we missed the audio on most of that. Myerson looked very emotional, I was thinking that he was thinking: "I wish Leo could be here."

The awards were interspersed with orchestral pieces and so the ceremony was a bit long – at least an hour. Leo missed getting his award from the King of Sweden but he got the same box with the medal from the ambassador. Leo also said a few words of thanks. There was much, much applause. It was so poignant that I was crying – with happiness, but also with regret that Leo couldn't go to Stockholm; if only he had won it even a year ago he probably would have been able to make the trip. After that, his son Maxim gave a very touching, wonderful tribute to his father. A reception in the lobby followed, after some photos on stage. There was a long line of people waiting to greet Leo.

The white limousine returned to whisk Leo and his immediate family away, as I was standing by the entrance (we were joking that it was for us). The alumni and some faculty/staff from the department then attended a nice lunch buffet in the Carlson School.

All in all, it was a wonderful day!

A Minnesota Presidential Election Tradition

This fall saw the return of the presidency to the Democrats. That evened the score between **Tim Kehoe** and **Ed Prescott** for their presidential wagers of the last 20 years. Each national election year in late November, either Tim or Ed picks up the tab for the weekly department happy hour. This year Ed had to pony up as fellow Arizonian John McCain lost. Ed only profited when the Bushes won, while Tim won twice with Clinton and now, Obama. If they would have included the Franken-Coleman race, we

would still be awaiting beer! Tim and Ed's other long-term Minnesota collaboration, the Minnesota Macro Workshop (now the Trade and Development Workshop) is still running smoothly; see: <http://www.econ.umn.edu/~tkehoe/workshop.html>. Tim says that he has enjoyed running the workshop with **Cristina Arellano** and **Fabrizio Perri** in recent years – Fabrizio had been a student participant while visiting Minnesota from Penn in 1997-98 – but that he still misses working with Ed.

Remembering Jim Simler

July 18, 1921 – August 15, 2008

by Ed Foster

Given at Jim's Memorial Service, St. Thomas University Chapel

August 29, 2008

Jim Simler became a faculty member of the University of Minnesota's Department of Economics by audacity: As he finished his Minnesota Ph.D., he announced that he wanted to stay on as an assistant professor; then and now, the department didn't hire its own new Ph.D.s, but Jim managed to get the job. Three years later, when Jim was being promoted to Associate Professor, John Buttrick described the negotiation:

"There was considerable debate in the department when Simler's name was proposed in 1959 for the position of assistant professor because he was older than many candidates and because he received his degree from us. Our decision at that time was to hire him only if he presented job offers from elsewhere and then only with reluctance. Simler then came to us with offers from Chicago and Oberlin, but chose to stay here at a lower salary. In the intervening years he received offers from several other schools including UCLA."

Janet and I came to Minneapolis in 1961. Walter Heller whisked Jim off to Washington to work on the Council of Economic Advisers' staff in 1962, but we were together in the Economics Department until 1991, when he retired from his 24-year stint as department chair and went off to chair the Macalester College Economics Department for 8 more years. Jim and Lucy were good friends to Janet, to me, and to our children.

You might wonder why professional colleagues and not family members are speaking on this occasion. I wondered the same thing. Cate (Jim and Lucy's daughter) said that her brother John simply could not face another occasion as traumatic as his mother's memorial service so he said his goodbye to his father privately; and she said that she herself would be a basket case, incapable of speaking coherently. So it's up to Vasant (Sukhatme, a colleague of Simler's at Macalester) and me.

But I can at least borrow from Cate: She said that what first comes to mind about her father is his character: He always did what was right. Chicago was a stronger university

than Minnesota, but it was no place to bring up children so he chose Minnesota. He threw his body between enraged deans and the economics faculty to protect them from controversy and maintain a tranquil internal environment. He put up with the rudeness of the rare prima donnas in his faculty because keeping them would help the department's reputation. He made sure that his love for his children and grandchildren always shone through. And from a proper German-Irish husband who left household affairs to his wife while he attended to affairs outside the home, he changed to a compassionate caregiver when Lucy could no longer take care of the household or herself.

In the Economics Department Jim did some outstanding early research and was recognized as an excellent teacher, but his major contribution was as department chairman. The most important job that a department chairman does is to recruit and retain top faculty. When Jim became chairman in 1967, Minnesota was ranked 11th in the country in quality. There were about 30 faculty members. Due to a succession of state budget cuts and an administrative tendency to spread the pain evenly rather than to protect pockets of excellence, the department shrank, but with Jim as chair we managed to swim upstream so that by 1983 the ranking of the department rose to 7th, one of the top two public universities. He used the advantage of having as a neighbor a very cooperative Federal Reserve Bank with an outstanding research department, to build particular strength in macro and monetary economics.

His inspired description in a newspaper interview of our leading macroeconomists as Minnesota's "Four Horsemen" (that's a reference to the Notre Dame football team, not to the Apocalypse) caught public attention and financial support; Minnesota is acknowledged to be one of the strongest few departments in the world in that area.

Of course a growing reputation means growing attempts to raid our faculty by other schools with their own ambitions for pre-eminence, but with the help of a now more cooperative administration, Jim did well at holding onto our stars. In one notable year, 1983, he beat back outside offers to 6

faculty including offers to 3 of the 4 Horsemen. A fan letter from CLA's associate dean that spring said, "I frankly wonder whether we would have kept the Department of Economics together without your leadership; in fact your skills were the crucial element in retaining these colleagues."

Anne Krueger, who left Minnesota in 1982 to become the Research Vice President of the World Bank, wrote an article about Jim for the department's Fall 2008 alumni magazine, where she gave her view of why the department was so successful in recruiting and retaining top faculty with Jim as chairman. First there were no contentious faculty meetings. Jim always visited with people individually before the meeting and where there was disagreement, worked out compromises.

Second, he left people alone to teach what they thought most important, and to do the research that they wanted to do. In teaching, that means no fixed syllabus tied to what was important 20 years earlier. In the ceremony to celebrate his 2007 Nobel Prize, Leo Hurwicz said that Jim's laissez faire approach to faculty relations kept him here in the face of offers from private universities with bigger budgets and higher salaries.

Third, his light touch and sense of humor made it fun to work here. No account of Jim's tenure as chair would be complete without some mention of the famous memos that circulated under his name – not all written by him, but always with his joyful participation.

One of our colleagues went to most Twins' opening games. A memo came out on opening day over Jim's signature (probably written by someone else) expressing regret that the faculty member would be unable to be on campus that afternoon because he had to attend his grandmother's funeral. And his sorrow was particularly deep because it was the fourth year in a row in which he had lost a grandmother in April. Another colleague, more serious than others, came to Jim's office to ask: "How can this be? A person only has 2 grandmothers!" "Oh," said Jim with a straight face, "the family's Mormon." The inquirer left satisfied, and Jim had a story to retell.

Finally, he had the good sense to recruit Lucy to oversee the department's social life, making sure that newcomers and especially their spouses, were made to feel welcome, and to demonstrate to potential recruits that they would be joining an extended family where everyone liked each other, not simply a professional work group.

I'd like to end with a comment from our old friend and for-

mer neighbor, Sue Flotten, who was the research librarian at the then College of St. Thomas when Jim taught there. Here's some background: Janet Foster teased Jim over the fact that he had inherited the title of the department's male chauvinist pig, after the retirement of a man who had insisted that his secretary sharpen his pencils and fetch his coffee. Jim's son John learned of the charge and bought his father a handsome tie that looked from a distance as though it had a pattern composed of tiny Brooks Brothers' sheep, but on closer inspection turned out to be pigs. Jim wore it often when we were going out together, and a few weeks ago explicitly willed the tie to Janet. Without knowing any of that background, Sue wrote to say that she still remembered Jim from when he was on the faculty at St. Thomas, because in a time when this was rare, "he was one of the few who treated female staff as thinking, capable human beings."

If Jim were Jewish, I would say that he was a mensch. But he was not. So, I will just say that he was a true gentleman...and a scholar. We miss him.



(Editor's Note: Because of Jim's incredible leadership and his years of dedicated service to the Department of Economics, the faculty and staff, along with alumni, former faculty and friends, have created the N. James Simler Fellowship. When the fund value reaches the minimum endowment level of \$25,000, the payout will be matched with the University's graduate fellowship matching program - doubling the award to a graduate student.

If you wish to make a gift in honor of Jim, please go online to www.econ.umn.edu and click on "Giving to Economics" to make your gift to Jim's fund.

The cursor must click on "Make a gift to the Department of Economics." You will then be linked directly to the University of Minnesota Foundation's secure giving website. One of the pull down funds is the N. James Simler Fellowship.

To write a check, please make the check payable to: the University of Minnesota Foundation (UMF), and address to UMF, CM-3854, P.O. Box 70780, St. Paul, MN 55170-3854. Write "N. James Simler Fellowship" in the memo line of your check.

If you have questions about pledges, stock transfers, or wire transfers, please contact Colleen Donahue at 612-626-7642.

Alumni News

Fernando Alvarez ('94) was elected a Fellow of the Econometric Society in 2007.

Peter Angelides ('98) {peter@angelides.net} moved to Econsult corporation in Philadelphia. "We provide public-policy oriented consulting services to private firms, governments and non-profit organizations. Plus I teach a few courses at Penn to fill up the evenings. Also, alums visiting Philadelphia are invited out for a beer!"

Masahiko Aoki ('67) delivered the 2008 Clarendon Lectures in Business Studies at the University of Oxford's Said School of Business in October 2008. The series of lectures were given over a three day period with the title "Corporations, Games and Societies."

Masahiko was also elected President of the International Economics Association for 2008-2011. The next World Congress of the IEA will be held July 2011 in Beijing.

William (Bill) Bonifield ('68) sent this update: "I left U of M PhD study to teach at Wabash College 1964-1981, Dean of Business at Butler University 1981-1984, VP for Education at Lilly Endowment 1984-1994, and Director of McDermond Center for Management and Entrepreneurship at DePauw University 1994-1998. Since retirement I have done volunteer facilitation for non-profits in strategic planning and board development." Bill can be reached at wb-bonifield@yahoo.com.

"News update for **Nick Bull** ('92): Recently promoted to Senior Economist, Joint Committee on Taxation. I just finished a 3-year stint on the Board of the National Tax Association. Most recent paper examines how much capital income gets inadvertently taxed as labor income, and vice versa, because of the tax code. Both kids (Ellen, 17, Simon, 14) are going to school full time at the National Ballet School of Canada, in Toronto. It's a long story. As of December 1, I've ridden my bike to work every day for four years running. Mileage so far this year is just over 8000 miles, with more than half of that in rides of a century or longer. Longest this year was 375 miles with 21,000 feet of climbing in 38 hours (Seattle International Randonneurs 600K). My wife, Jan, started a new job as Associate Director of the George Washington University Institute on Spirituality in Health. She's also been riding to work every day (since July) and now that the kids are in Canada, we have weekends together and have started riding centuries on the tandem. That's about all. Work, wife, kids, bike. nicholas.bull@mail.house.gov."

Miguel Cardoso Lecourtois ('03) writes: "My news is regarding a new change of scenery. I am leaving Banco Bilbao Vizcaya Argentaria-Chile in Santiago, Chile and taking over as BBVA's Chief Economist for Spain, beginning January 1st, 2009. So, I'm returning to Madrid."

Suparna Chakraborty ('05) and her husband Rajesh are proud parents of their first child, a daughter, Ryka (pronounced R-ai-ka, meaning born out of a hymn or prayer), who arrived on April 3, 2008. Suparna is at Baruch College in New York.

Partha Chatterjee ('05) and his wife **Soma Dey** ('06) are also proud parents of daughter Aleya, born on May 13th at 09:08 am. Aleya weighed 3.21kg and measured 49cm long at birth. Both Partha and Soma are at the National University of Singapore.

Hulya Eraslan ('01) has left Wharton at Penn. "I moved to Johns Hopkins. I am now happily back in Economics after an eight-year stint in Finance." Hulya can be reached at eraslan@jhu.edu.

After 26 years as a faculty member at Iowa State University, **Barry Falk** ('82) moved to James Madison University where he is the director of the university's honors program and professor of economics. Barry can be reached at falkbl@jmu.edu.

Lance Fisher ('88) moved from the University of New South Wales to Macquarie University, which is also in Sydney, as Professor of Economics. Lance can be reached at Lance.Fisher@mq.edu.au

After a long career as a natural resource economist, **Jon Goldstein** ('67) left the Interior Department 5 years ago, and set up as a consulting economist. He concentrates on mitigation of environmental damages from hydroelectric dams and global warming. He is currently working with an inventor who believes he can substantially eliminate greenhouse gas emissions from conventional, internal combustion engines. Jon can be reached at jongoldstein@verizon.net.

Lars Peter Hansen ('78) was awarded the CME Group-MSRI Prize in Innovative Quantitative Applications on September 30, 2008, for his innovative approaches to asset pricing models. CME is the Chicago Mercantile Exchange and MSRI stands for the Mathematical Sciences Research Institute. This is the 3rd annual award (former winners were

More Alumni News.....

David Kreps and Stephen A. Ross). Lars is the Homer J. Livingston Distinguished Service Professor at the University of Chicago.

Hui He ('07) sent a note last spring: "My wife and I had a baby boy on April 2, 2008 in Honolulu. His name is Samuel. Sam is growing really fast. I am also attaching a picture of Sam and me (with a Minnesota T-shirt)." Hui teaches at the University of Hawaii.

Beth Ingram ('86) writes: "I was recently appointed Interim Associate Provost for Undergraduate Education at the University of Iowa, effective January 1st. My youngest daughter is graduating from high school this year and my oldest graduates from college, so Pat and I will be empty nesters next fall."

In December 2006, **Per Krusell** ('92) was elected a Fellow of the Econometric Society.

This January **Paul Manchester** ('73) moved from the U.S. Department of Housing and Urban Development to the Federal Housing Finance Agency in Washington, DC.

Terry Monson ('72) retired as Professor of Economics and Associate Dean of the School of Business and Economics at Michigan Technological University in July of 2008. "I have had no trouble adjusting to retirement. The same cannot be said for my wife. She has been encouraging me to seek another job, preferably overseas. I still receive e-mail at tmonson@mtu.edu."

After a hiatus in aerospace, **Jerry Nickelsburg** ('80) re-joined academe in 2006 with an appointment at the UCLA Anderson Graduate School of Management. "I am part of the Anderson Forecasting Project applying Minnesota economics to regional and national economic forecasting. My current research is on organizational learning and forgetting, and skill specific wage differences and policy preferences. I will begin a new project with Paul McNelis of Fordham University on international finance and politics this year. I still live in Malibu, but bought a ranch in Colorado and will be spending part of the year there in the future. I look forward to seeing other UM'ers as they come through the seminar circuit at UCLA this year." Jerry is at: jnickels@aol.com.

Lowell Orren ('79) currently practices law in Pasadena California with his wife, Tyna, now a lawyer but also a PhD from Minnesota (English). See Lowell's story about Leo and Ket in the story about Leo. Lowell can be reached at

lowell.orren@orrenlaw.com.

Jose Victor Rios-Rull ('90) was elected a Fellow of the Econometric Society in 2007.

Bill Shobe ('91) along with former MN faculty member **Charlie Holt** was on the design team for the auction of carbon dioxide emission allowances in the northeastern US. From the Reuters article: "Permits for the right to emit carbon dioxide from power plants in the U.S. Northeast sold for \$3.07 per ton in the first U.S. greenhouse gas auction, states in the region said Monday. Ten states from Maine to Massachusetts will begin regulating carbon dioxide emissions from power plants in January. Under the agreement, known as the Regional Greenhouse Gas Initiative, the states are taking action in the absence of guidance on how to regulate the gases from the Bush administration. The auction price was lower than the \$4.50 to \$4.00 per ton that contracts on the permits had been fetching in recent weeks on futures markets. Still, all of the more than 12.5 million permits that had been offered sold. And RGGI said 59 participants from the energy, financial and environment sectors had bid to buy nearly 52 million permits...The nearly \$39 million raised by the auction will go to Connecticut, Maine, Maryland, Massachusetts, Rhode Island and Vermont. The states say they will invest those funds in energy efficiency and renewable energy technologies and plans to shield energy consumers from any higher energy bills as a result of the carbon caps. RGGI aims to cap carbon emissions from power plants at current levels for several years and then reduce them 10 percent by 2018." Bill is at the Weldon Cooper Center for Public Service, University of Virginia.

Tapen Sinha ('86) has been elected a member of the Mexican Academy of Sciences (La Academia Mexicana de Ciencias). He is the first (and so far, the only) Minnesota Economics graduate elected.

Francisco Thoumi ('73) will be spending Fall 2009 as a Tinker Visiting Professor at the Lozano Long Institute of Latin American Studies at U.Texas-Austin. The professorship, endowed by the Edward Larocque Tinker Foundation, brings scholars from Latin America and the Iberian Peninsula to the U.S. to collaborate.

Harald Uhlig ('90) moved to the Department of Economics at the University of Chicago in 2007 from the Humboldt Universität zu Berlin, Germany. He still keeps a small affiliation with Tilburg University in the Netherlands, where he was a research professor in macroeconomics from 1994 to 2000, as well as with the Bundesbank.

Vernon Ruttan

August 16, 1924 – August 18, 2008

by Philip Pardey
Professor

Department of Applied Economics, University of Minnesota

Vernon Ruttan was a farmer's son. In a family biography, Vern recounted that his own memory of farm life dated from the Depression years of the early 1930s. The eldest of 4 children, Vern recalled the 1.5 mile walks to school, the horse drawn machinery, and the stringent fiscal situation of farm life at the time. He was one of only two students in his graduating high school class of 42 students to go on to university. His farm background put him in good stead for his work in the New Haven Dairy which, combined with funds from the GI Bill, helped put him through a degree in economics at Yale University (which, had it not been for several accidents of history and the advice of his new wife Marilyn, was a far cry from Vern's original intention to major in dairy husbandry).



From Yale he went on to take a Ph.D. in Economics at Chicago where Ted Schultz and D. Gale Johnson were in full flight. But it was an accidental encounter with **O.H (Oswald) Brownlee** (an assistant professor in the department at that time, who later joined the economics department here at Minnesota) that spurred Vern's interest in technical change. As Vern himself wrote, "I was riding down a campus street on my bicycle when Brownlee waved me down and asked "Do you want a research assistantship?" Since my GI money had almost run out I hardly bothered to ask what I would be doing on the assistantship." As it happened, the assistantship involved a USDA grant to study technical change in the meat packing industry. Vern went on to complete a thesis on this topic in 1952 that was the first study to attempt to use a total factor productivity index to measure the rate of technical change in an individual industry.

From Chicago, Vern and Marilyn moved to Knoxville, Tennessee where Vern served as an economist with the Tennessee Valley Authority through 1954, and then on to Indiana as a faculty member at Purdue University from 1955-1963 (including an 18 month stint as a staff economist with the President's Council of Economic Advisors). In 1963 Vern joined the International Rice Research Institute (IRRI) stationed at Los Banos in the Philippines, the first economist brave enough to take up residence in the international research centers collectively known as the CGIAR. His time

at IRRI brought together Vern's interests in economic development and technical change. It was while at IRRI he became aware of the work of a young Japanese scholar, Yujiro Hayami, with whom he co-authored the now classic and widely read and cited 1971 volume *Agricultural Development: An International Perspective*, in which Yujiro and Vern revealed the role that changes in relative factor prices had on the direction of technical change.

Vern was a prolific and highly regarded writer. Aside from a long list of often seminal journal articles—and with a record 10 publishing awards from the American Agricultural Economics Association alone as testimony to his research and writing prowess—Vern also authored the 1982 book, *Agricultural Research Policy*, the volume *Aid and Development* in 1989, co-authored with Anne O. Krueger, and recently published *Is War Necessary for Economic Growth? Military Procurement and Technology Development* to name but a few.

Since 1965 the University of Minnesota had been Vern's main base of operations, including five years (1965-1970) as head of the Department of Agricultural and Applied Economics. He also served as President of the American Agricultural Economics Association from 1971-72. Vern was made a Regents Professor of the University of Minnesota in 1986, and was elected to the National Academy of Sciences in 1990. For me, his ever gracious, optimistic, and always intellectually curious persona was part of what made being back at Minnesota so enjoyable.

Editors note: this eulogy was delivered at the memorial service for Vern on December 3, 2008 when Professor Pardey introduced **Anne Krueger**, who gave the annual Vernon W. Ruttan Lecture. Vern was an adjunct professor in economics for many years and served on a number of thesis committees. He was a great library user and was still doing research until a few days before his death. Additional information about Vern and messages from colleagues and former students can be found at:

http://www.apec.umn.edu/Remembrances_of_Vernon_Ruttan.html

George Edward Schuh

September 13, 1930 – May 4, 2008

by Audrey-Marie Schuh Moore, Ph.D.

G. Edward Schuh was born on September 13, 1930 on a vegetable farm just outside of Indianapolis, Indiana. He grew up working on the farm and if it had not been for a 4-H scholarship received at the Indiana State Fair, he and his twin brother Fred would have never gone to college. An undergraduate student at Purdue University, my father once told me that his early training and education involved both formal and informal knowledge acquisition – meaning that he applied his education to life experiences and vice versa.

He began his undergraduate work in Dairy Production, but became disillusioned with the field and quickly changed his major to Vocational Agricultural Education. After completing his practice teaching, he felt that if he remained in that field he would be primarily looking after other people's children, managing discipline problems, and doing very little actual teaching – so, he looked around and thought about what he might do for the rest of his professional career. He had taken a class in Agricultural Economics and was fascinated by the field so he elected to continue his education in Agricultural and Applied Economics.

My father completed his Master's of Science degree at Michigan State University in 1954 and then completed two years of military service with the Army in South Korea and Japan. Upon his return from the Army, he was readmitted and given a Fellowship to the University of Chicago, where he completed his Master of Arts in 1958 and his Ph.D. in General Economics with a specialization in Agricultural Economics in 1961– studying under greats such as Ted Schultz and D. Gale Johnson.

From Chicago, Ed Schuh began his professional career as a Professor of Agricultural Economics at Purdue University focusing on microeconomic problems. Schuh claimed that “one of the unique twists that I was able to give to this program was to give my concentration to aggregate supply responses, not just on the supply responses of farmers.” It was a contribution he was proud of providing to the department. In 1963, Schuh traveled to Brazil as a visiting professor to the Federal University of Vicosa. As a visiting professor, he helped to establish the first graduate program in agricultural sciences – and more specifically, the first ag-



ricultural economics graduate program in Latin America. The program itself did institutional development work to try and develop the graduate school as well as teach and advise students about their research. It was while teaching at Vicosa that Schuh met his wife of 43 years, Maria Ignez Angeli Schuh. It was also the time when my father began his long-time love affair with agricultural development in Brazil and study of other Latin American countries' agriculture which led to working with the Ford Foundation for 10 years throughout the 70s into the 80s.

Schuh returned to Purdue University in 1972 where he became Chair of the Graduate Program in his department. He was appointed to President Ford's Council of Economic Advisors in 1974 and later served as a Deputy Undersecretary for International Affairs and Commodity Programs at the Department of Agriculture under the Carter Administration. Other appointments included: Director of Agriculture and Rural Development at the World Bank; and at the University of Minnesota: Head of the Department of Agriculture and Applied Economics; Dean of the Hubert H. Humphrey Institute of Public Affairs; Adjunct Professor in the Department of Economics; and Chair of the Orville Freeman Center at the Humphrey Institute.

In addition to his phenomenal influence and contributions to the field of international development, Schuh continued to publish widely throughout his career. He received five professional awards from the American Association of Agricultural Economics including best dissertation thesis in 1961, best published dissertation in 1971, and best article in 1974. Among his other awards and academic merits are: Doctorate in Agriculture, *Honoris Causa*, from Purdue University (1992); elected to the American Academy of Arts and Sciences in 1977; in 1988, Regents Professor, the highest academic honor given by the University of Minnesota; and in 2005 the Grã-Cruz da Ordem Nacional do Mérito Científico, which was presented by Brazilian President Lula on behalf of the Ministry of Sciences and Technology.

Ed Schuh presided over the Board for International Food

Continued on Page 16.....

From the Archives

The Minneapolis Fed Archives Project:

Synergy between the Bank, the Department of Economics and a call to Graduates

by Warren Young

INTRODUCTION AND DATING THE ORIGINS

In his December 2000 *Region* magazine article: "Greater than the Sum: the Minneapolis Fed and the University of Minnesota: a Partnership," Douglas Clement dealt with the history of the interaction between the Department of Economics and the Research Department of the Federal Reserve Bank of Minneapolis. This fruitful relationship is also recounted on the Dept. of Economics website in the section entitled "The History of Economic Research at Minnesota." In his article, Clement dated the Fed-Department collaboration from 1970, and the "Special Studies Group" set up by **John Kareken**, who was also an adviser to the Fed. The department website dates the "birth of the strong connection" to "the mid 1970s," but also mentions the contributions to policy advice of **Walter Heller**, Chair of the Department of Economics before his 1961 appointment to head the Council of Economic Advisers under President Kennedy.

Interestingly enough, in the course of a conversation between the author and **Arthur Rolnick** ('73), Senior VP of the Minneapolis Fed and Research Director, Art recalled that when chair, Heller may have been the person who promoted the *original* collaboration between the Dept. of Economics and the Minneapolis Fed. Based on this lead, and with the able assistance of Wendy Williamson, the librarian of the Economics Research Library, a memo from **E. Scott Maynes** to Heller, dated 23 June 1958, concerning the Report of the Research Committee of the Dept. of Economics, 1957-58, was found in the ERL. This provided evidence of the *earliest* collaboration between the Department and the Fed, relating to the Minnesota Economic Survey Project.

According to the Memo of 23 June 1958 (p.4): "In March [1958] Walter Heller and I [Scott Maynes] discussed the Minnesota Economic Survey proposal with Frederick Deming and Frank Parsons, respectively President and Director of Research of the Federal Reserve Bank. They reacted most positively to the proposal. President Deming assured us that the Federal Reserve would be willing to make a substantial and continuing contribution in the form of services.

(Political exigencies make it impossible for the Federal Reserve to provide cash underwriting of *outside* [my emphasis-WY] research projects)."

Since then, and in the framework of in-house research projects and activities, the Minneapolis Fed established a *synergetic* relationship with the Dept. of Economics by substantive institutional linkages, including a joint research institute (IEM), joint workshops and conferences, and departmental economists and PhD students doing research at the Fed.

THE RESEARCH ARCHIVES OF THE MINNEAPOLIS FED

For almost four decades, research done under the aegis of the Federal Reserve Bank of Minneapolis has been at the cutting edge of economics, especially since the years of high theoretical and empirical work that has characterized the period from the 1970s onwards. As such, the archives of the Minneapolis Fed potentially comprise one of the richest empirical resources for documenting the evolution and development of economic analysis as it relates to both theory and policy, such as the application of rational expectations and rational expectations econometrics to monetary theory and policy analysis; the development of VAR techniques for time-series analysis and forecasting; and the extension of competitive equilibrium models and calibration to business cycle analysis, as manifest in the real business cycle research program. Indeed, the Minneapolis Fed's research archives comprise a repository of some of the most important events and conferences in modern macroeconomics. And thus there is a cardinal need to organize and catalog these archives, to make available important papers and documents for both the economics profession and the public at large.

In order to do this: (i) *Existing* archival material at the Minneapolis Fed has to be surveyed, supplemented, organized, and catalogued; and (ii) *Missing* archival material has to be identified, obtained, organized and catalogued. Existing archival material that is surveyed will be supplemented

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Schuh from Page 14.....

and Agricultural Development, was President of the University of Minnesota Rural Development Council, and served on the Board of Trustees of the International Food Policy Research Institute. He was also actively involved in both national and international development projects in partnership with the United States Food Security Advisory Committee, the Board on Agriculture and Natural Resources, the Carter Center, the Sasakawa Africa Association, and the Thailand-Minnesota Program.

While my father held a raft of honors including the prestigious Regents Professorship, he is best remembered as a devoted teacher and mentor to his students. Julie Harold, Humphrey Institute Director of Admissions was quoted as saying, "The depth and breadth of his real-world experience that he could bring to the classroom made a huge difference in what students were able to learn and gain." My father's advice to all of his students? "Concentrate on training your minds, not on training yourself for a particular position because you simply don't know what you will be doing five years from now. Focus on developing keen critical thinking, analytical writing and speaking skills – these are the skills that will most help you in your career."

From the Archives from Page 15.....

by additional material collected so as to provide *complete* documentation regarding publications, research programs, and events such as meetings and seminars sponsored by the Minneapolis Fed. Furthermore, material identified as missing, due, for example, to moving to a new Fed bank building, has to be replaced and then re-integrated into the existing archival material. In order to supplement existing materials and provide a complete archival base, original papers and documents will be collected and catalogued relating to: (a) conference volumes published; (b) seminars and meetings, ranging from large-scale and formal gatherings through "brown-bag" seminars of the Institute of Empirical Macroeconomics, to ad-hoc meetings set up, for example, to keep the President of the Minneapolis Fed up-to-date with developments in economic research; (c) research groups organized, such as the "Optimal FOMC policy program" and "Special Studies" groups; (d) research programs de-

My father was always grateful for all the opportunities that his life awarded him, particularly the opportunity to become a scholar. I remember him saying on numerous occasions, "Only in the United States could the son of a vegetable farmer have the opportunities that I was given." Terry Roe summed it up nicely - "In almost all dimensions of his life, Schuh wanted to make a difference. He changed agricultural economics forever."

Ed Schuh retired from the University of Minnesota in 2006, but continued to work full time, teaching and advising at the university and serving as a consultant. He was correcting a dissertation thesis until midnight the evening before his surgery. Additional information about Ed and messages from colleagues and former students can be found at: <http://blog.lib.umn.edu/hhhevent/schuh/>

{Audrey-Marie Schuh Moore, one of Ed and Iñez Schuh's three daughters, is the Deputy Director of the Education Quality Improvement Program at the Academy for Educational Development (AED).}

veloped at the Economics Dept. and Minneapolis Fed, such as Rational Expectations, VAR, RBC among other areas; (e) Variorum Drafts of Working Papers. Wendy Williamson of the ERL has greatly assisted the Archives Project by providing drafts of Fed Working Papers from the ERL's collection.

A CALL TO GRADUATES

University of Minnesota Ph.D.s who worked for, or participated in conferences and research projects at the Minneapolis Fed may have, in their own files, *missing* archival materials, such as *drafts* of Minneapolis Fed *Working Papers*, seminar or conference papers, among other material. If you indeed have kept such material, please email Warren Young, Consultant, Archives Project, Federal Reserve Bank of Minneapolis. Thank you! youngw@mail.biu.ac.il

Recent Books by Current and Former Faculty

John Chipman, *The theory of international trade*, volume 1. (Economists of the Twentieth Century series), Elgar, 2008.

Timothy J. Kehoe and **Edward C. Prescott**, eds., *Great depressions of the twentieth century*. Federal Reserve Bank of Minneapolis, 2007.

Michele Boldrin and **David K. Levine**, *Against intellectual monopoly*. Cambridge University Press, 2008.

Matthew Jackson and **Andrew McLennan**, eds., *Foundations of microeconomic theory: a volume in honor of Hugo Sonnenschein*. Springer, 2008.

IN MEMORIAM

CARL LEROY NELSON, 1910-2007: OUR LONGEST-LIVED ALUM?

Carl L. Nelson, 96, a recipient of the American Accounting Association's Outstanding Accounting Educator in 1975, and a financial accounting professor who taught in leading graduate schools of business and management around the world for over 50 years, died March 30, 2007 of complications from pneumonia. He retained his acute mental faculties until the end.

Nelson was born in 1910 in Minneapolis, and received a B.B.A. in 1931 and a Ph.D. in 1944 from the University of Minnesota. In the interim, he worked in public accounting and was a CPA. After teaching at the Universities of Kansas and Nebraska, he became a professor of accounting at the University of Minnesota in 1947, where he played an active role in its Ph.D. program and later was chairman of the Department of Accounting. From 1963 to 1978, he was the George O. May Professor of Financial Accounting at the Columbia University Graduate School of Business. A versatile and inspiring teacher, Nelson also taught economics and finance, and consulted for banks, public accounting firms, investment banking firms, and the FASB. In addition, he taught at the Finnish School of Economics, Robert College in Turkey, the Norwegian School of Economics and Business, and the Indian Institute of Management.

Nelson was perhaps best known in the accounting profession and academia by his profoundly beneficial influence on a long list of well-known accounting practitioners and professors who were his students. Two former students, Robert K. Jaedicke and Robert T. Sprouse, became eminent Stanford University accounting professors who, in dedicating a 1965 book to Professor Nelson, wrote of the profound influence he had on their professional and personal lives as a teacher and a friend. Most of his former doctoral students felt the same way. In 1978 he received the outstanding alumni achievement award from the Carlson School of Management of the University of Minnesota. In 2002, in honor of their beloved accounting professor, Karin L. and Robert S. Moe (both B.B.A. 1956) established the Carl L. Nelson Professorship in Accounting at the Carlson School.

After officially "retiring" from Columbia in 1978, Nelson interspersed teaching there and at UCLA, and travel abroad, before moving to Santa Barbara in 1984. Even then he did not retire, and was teaching at the University of California-

Santa Barbara until 1990. He and his first wife, Charlotte Butler Nelson, traveled widely in Europe, the Middle East, Asia, and South America. His first wife died in 1992. He is survived by his second wife, Coraline Nelson, two sons, Dowlan R. Nelson and David B. Nelson, four grandchildren, and four great-grandchildren.



Reprinted with permission from *Accounting Education News*, Summer 2007.

(Editor's note: **Carl Nelson** originally wrote to me in 2002 thanking me for reprinting his copy of a 1924 *Economics Journal* rejection letter sent to Knut Wicksell from John Maynard Keynes, which Carl had sent to Ed Foster. The letter that Nelson sent after I reprinted

this 1924 letter in the 2002 newsletter says: "Thank you for the newsletter. Also thank you for giving the Keynes letter the prominence it deserved. However, someone should be rebuked for not including my name on the mailing list for ? years. I received my Ph.D. in 1944 - a major in economics. {This was when economics was a discipline within the business school: In 1913 economics became an independent department within the College of Science, Literature and the Arts. But in 1919 the economics faculty was merged with business education, becoming a unit within the newly formed School of Business. That association endured for more than four decades.} I did a small amount of teaching economics because of the shortage of staff to teach accounting. However at Kansas, Kansas State, Nebraska and Columbia, the mix was considerably different: The chairmanship of the economics department in an attempt to keep me from Minnesota. At Columbia I ran the basic course in microeconomics.")

Ed Foster added this note about Carl: "The Department of Economics was in the College of Business Administration when I arrived in 1961, and there was considerable internal friction, mostly between Economics, with aspirations to academic research, and most of the rest of CBA, with aspirations to be like the Harvard Business School, with a focus on cases and anecdotes. However the Accounting Department, with (I think) Carl as its head but certainly with Carl as its intellectual driving force, sided with Economics. When Economics arranged to move back to what was then SLA (the former College of Liberal Arts), Accounting wanted to come too. SLA balked at having an accounting department as part of its family, and Carl left for Columbia within about a year."

IN MEMORIAM

Baek In Cha ('92) died in the summer of 2008. He was a Vice President of the Korea Institute of Finance. He also had been an assistant professor at City University of Hong Kong and the University of Texas at Arlington. He received a B.A. in economics from Seoul National University, and his M.A. and Ph.D. from Minnesota.

Charwick J. Haberstroh ('58) died May 11, 2005 in Bellingham, WA. He had been a professor at the University of Wisconsin-Milwaukee and had retired to Washington state.

J.O. Einar Hardin ('57) died February 28, 2007. A retired professor of labor and industrial relations at Michigan State University, Hardin was born in 1922 in Ystad, Sweden. He served in World War II and moved to Minneapolis in 1946. After earning his doctorate in economics at Minnesota he began his career at MSU in 1956. Hardin married Patricia Aabey in 1949; she died in 2003. Both were active in civil rights, the Democratic Party, and the arts and photography. The Hardin's photographs won awards. His survivors include a granddaughter, Shannon Whalen, of Lansing, Michigan.

Gerald M. Lage ('67), age 66, died in his home Wednesday, August 15, 2007 as a result of brain cancer.

Lage was born in Sheffield, Iowa in 1941. After graduating from high school, he left the family farm to study agricultural economics at Iowa State University. He then attended the University of Minnesota where he earned his doctorate in economics and met his wife, Colleen. Lage moved to Stillwater in 1966 and began his 41-year career as a Professor of Economics at Oklahoma State University.

While at OSU, Lage taught economic theory to almost every doctoral candidate in economics as well as many students in business and agricultural economics. His early research in international trade was followed by work on the Oklahoma economy. Among other accomplishments, he and Tim Ireland developed the first econometric forecasting model for Oklahoma.

Lage served as chair of the General Faculty, the Faculty Council, and the Dept. of Economics, and also helped to develop the Center of International Trade Development. Lage also served as Associate Dean for Research and Graduate Programs in the School of Business, spending one year as interim dean. In addition Lage served for 24 years as Faculty Athletics Representative to the NCAA and the Big

Eight and Big XII conferences. He was the chairman on three occasions, in 1985-86, 1993-94 and most recently, 2003-04.

Lage is survived by his wife Colleen, his daughter Andrea, his brother John, and many extended family members and friends.

Charles G. Plourde ('70) passed away on April 4 2008, of cancer. He was 69 years old.

He was a Professor Emeritus at York University and first taught at the University of Western Ontario before coming to York in 1976 where he taught in the Department of Economics and at the Atkinson Faculty of Liberal & Professional Studies until he retired in 2004. Plourde played an integral part in the Graduate Program in Economics, working tirelessly to obtain the Ontario Council on Graduate Studies (OCGS) accreditation for the doctoral program. He served as the Graduate Program director from 1986 to 1989 and again from 1992 to 1997.

"Generations of graduate students appreciate the important contributions Charles made to their graduate studies and to the direction and success of their careers," said Debby Groves, administrative assistant to the Chair in the Department of Economics. The Department of Economics named its committee room the Charles Plourde Seminar Room in his honour on April 2. The department is also establishing a memorial scholarship.

Plourde is survived by his daughter Carolyn and her husband Henry Ensley and grandchildren Jonathan and James Ensley. His wife Dorothy predeceased him.

Edward M. Sabella ('71) died May 5, 2006 in Minneapolis of complications related to leukemia. Sabella was born in April 1933 in Cranston, RI, and graduated from the University of Rhode Island with a B.S. After attending the Ph.D. Program in Economics and teaching at the University of Minnesota and at St. Thomas, he taught at Augsburg College from 1967 to May 2000, when he retired as professor emeritus. He became chair of the newly created Business and Economics Department at Augsburg in 1968. He was instrumental in creating and building the department during his 13 year stint as chair, until 1981. He received tenure in 1972 and became a full professor in 1980. His research interests were tax policy and welfare economics.

In Memoriam continued next page

Heller Hall is History

The Department of Economics moved out of the 9th-12th floors of Heller Hall into the new Hanson Hall in May of 2008. After we moved out, that space was torn up and remodeled for the Dept. of History, who moved into it in January 2009. All the large corner offices (originally meant for students which were slowly taken over by faculty) were cut down into single offices, as History has double the professors of Economics. Each floor now has a kitchen. A large computer room was made out of a few offices. There are some weird hallway extensions cutting behind where the main office used to be. The new color scheme is a reworked 70s bad combo of avocado green and harvest gold (will we EVER forget those appliance colors?). Carpeting is large blocks of peel and stick sections, in not-pleasing colors or patterns. You don't think you'll ever long for linoleum and brightly painted block walls, but after seeing this, I do!

I miss the old view from the penthouse of the 12th floor. The library moved there in 1999 after the space was remodeled in 1998, when the Dept. of Marketing moved to the new Carlson School building. I always wondered why Marketing was put by itself, up on the 12th floor, intersected by Economics. Was it banishment, or an accident in planning? We may never know. **Mark Bergen** ('90), chair of Marketing from 2006-08, joked perhaps it was because Marketing was "the penthouse" of business school departments, or they were outcasts and thus placed furthest from the Dean's Office. One odd room on 12 back then was the experimental room, which had a light outside of the door to let you know it was occupied. Mark also noted that the room had a one-way glass window into an adjoining office "so you could look in and see the experiment taking place, but the subjects taking the experiment couldn't see you." The one-way window was removed in the 1998 remodel.

In Memoriam from Page 18

Susan M. Walz died of cancer in November 2008 at age 55. Susan was Leo Hurwicz's secretary from 1983-1990. I last saw Susan in the mid-90s when she worked at Networking Services; she then left the University around 1998 to work for Wells Fargo. She was an expert at Unix and taught me many things, one of which I still use – the Vi editor, for my webpages. Susan was so outgoing and always willing to share her computer and typesetting knowledge -- this in the pre-internet days of constantly changing systems and tedious proofreading. Susan taught me how to navigate the old Gopher (non-image browser) and how to telnet into library catalogs. She came into the library to pick up books

Ironically, a few years later, the 12th floor was also the setting of some experiments in economics run by our professor, **Aldo Rustichini**, although in a different room.

In the 2007 newsletter I indicated that I would write a history of Heller Hall for this issue, but with the move, that never happened. Plus, no one sent in any stories. There are the paper airplane episodes from the earlier newsletters, so that will have to suffice for now.

What some of us miss about Heller, besides the high views, are the wonderful custodians who worked for us for 10 years: Mike Beaudette (who just retired in December 2008) and Coronado Relopez. Both Mike and Coronado did outstanding work for us over the years, giving us good equipment tossed out from the Carlson School, cleaning up our messes, rousting the homeless people occasionally camped out in the building, and recycling literally tons of paper and old furniture during our move last May. One graduate student noted that, besides talking to Mike and Coronado, he also missed "the ability to hide oneself (on the 12th floor) and the exercise running up and down stairs to see others." At Hanson Hall, grad students are all housed on the 3rd floor, while faculty occupy the 4th floor. Another graduate student said: "Hanson Hall has helped camaraderie for our department. Although the old building had a better area for eating with colleagues, the four floors really separated us; having all the students on one floor helps. Additionally, the individual offices feel more like a home with the limited desks per office, carpeted floors and improved lighting." In the next newsletter I may write more about our big transition. There are still some bugs to be worked out...and all I can say is, it's no wonder that fast-track construction methods are controversial. *--The Editor*

and papers for Leo Hurwicz, and best of all - kept track of them! **Shomu Banerjee** ('92) adds: "Susan was very kind and helpful to me and amazingly well-organized--which is saying a lot given the person she worked for! I have very pleasant memories of her going out of her way to fish out obscure mimeos and working papers from decades earlier along with anything else that might be helpful. Even today, in the process of collecting Leo's papers, I have come across pages bearing the initials "S.W." with annotations, corrections and queries where she wasn't sure she had transcribed correctly. She must have been tickled to learn that Leo belatedly won the Nobel Prize in Economics in 2007."

The 2007 Minnesota Lecture: Hugo Hopenhayn

by Tim Kehoe

The annual Minnesota Lecture, started in 1998, recognizes a distinguished alumnus each year. **Hugo Hopenhayn** ('89) gave the tenth Minnesota lecture on Friday, 25 April 2008. A native of Argentina, Hugo came to the U in 1983, where he worked with Ed Prescott. He left in 1987 to take a position as an assistant professor at the Graduate School of Business at Stanford University, coming back to Minnesota briefly in 1989 to defend his thesis, "Essays on the Theory of Industry Dynamics." In 1992, Hugo left Stanford to go to the new Universitat Pompeu Fabra in Barcelona, Spain, which **Andreu Mas-Colell** ('72) and **Ramon Marimon** (faculty, 1984–93) had played important roles in starting. In 1994, Hugo returned to the United States to take a position as full professor at the University of Rochester. Starting in 1997, he also spent part of every year in Argentina as a professor at the Universidad Torcuato Di Tella in Buenos Aires. In 2003, UCLA was able to lure Hugo away from Rochester and the Di Tella. Hugo is still at UCLA and still doing innovative research, as the audience at his Minnesota Lecture can attest.

In his lecture "Knowledge, Diffusion and Reallocation," Hugo discussed his recent research on the cost of replicating knowledge. He discussed the implicit assumptions about the cost of replicating knowledge that are made when an economist chooses a firm's production function. A con-

stant returns to scale function, where a firm can double its output by doubling its inputs, assumes that when a firm builds a new factory all of the knowledge that was used in running the old factory can be reproduced without cost. Decreasing returns to scale assumes that there are costs to applying that knowledge to a new factory. This difference becomes critical for research on the welfare costs of barriers to reallocating resources, such as restrictions on firing workers and trade barriers. The welfare costs are much smaller under decreasing returns.

Hugo argued that knowledge replication is an important feature of the firm's problem and should be explicitly modeled. Heeding his own advice, he presented a model of where firms draw a random productivity level and then choose the amount of capital to devote to that producing output with that productivity draw over time. Firms face costs of accumulating capital, so the firm (or the economy overall) cannot cheaply reallocate capital to the most productive firm. In an economy where the distribution of productivity draws is improving over time, firms first accumulate more capital but eventually become obsolete as newer firms with better productivities drive up wages. Numerical analysis suggests that the welfare loss from policies which increase the cost of reallocation are lower if firms quickly become obsolete or if the costs of reallocation were high already.

The 2008 Minnesota Lecture: Randy Wright

by Larry Jones

Randy Wright ('86) is one of the most distinguished graduates of the University of Minnesota's Economics program. His scholarly work on the search theoretic foundations to monetary economics is among the best known research in economics in the last 20 years. It is deep, theoretically well founded and focused on an essential economic question -- exactly what we like at Minnesota!

Randy received his Ph.D. in 1986, working with Neil Wallace, and spent a short time at Cornell before moving to the University of Pennsylvania where he has been for the last 20 years and where he currently holds the James Joo-Jin Kim Chair in Economics. Among other professional activities, he has served as Editor of *IER* and Associate Editor at *JET* for 10 years each. He is also a Fellow of the Econometric Society, and plays guitar with *The Contractions*.

His research focuses on search theory as applied to monetary economics, search in general, macro-labor issues

including household production models, and other topics in theory and quantitative analysis. As noted above, monetary theory constitutes much of his best-known research, while his early work was concerned with building from the ground up better microfoundations¹.

Randy is a shining example of what we try to do in the PhD program at Minnesota -- help bright young students go on to reach their potential and become everything that it means to be a scholar. We could not ask for a better representative of our department and it was an honor for us to have him come back home to give the 2008 Minnesota Lecture last October.

1

One of his early home production papers worth mentioning is "Home work in Macroeconomics: Household Production and Aggregate Fluctuations" with Benhabib and Rogerson (*JPE* 1991), at least for its title. But perhaps an even better one is the infamous "Why is Automobile Insurance in Philadelphia so Damn Expensive?" with Smith (*AER* 1992).

The Lecture: Money and Capital

by Randy Wright

This year's Minnesota Lecture focused on integrating monetary theory and mainstream macroeconomics. The idea was to demonstrate that such an integration is possible, and that the new models not only generalize previous theories, they are also very tractable. Moreover, the new models have some quantitative implications that differ significantly from those coming out of theories where money is either ignored, or introduced in an *ad hoc* way, say by putting currency in the utility function or imposing cash-in-advance constraints. The example emphasized in his lecture concerned work Randy is doing with Aruoba and Waller, integrating the Lagos-Wright model with neoclassical growth theory. This integration substantially reduces the gap between macro and modern monetary economics. In particular, the new model contains interesting elements of the microfounded literature -- including explicit descriptions of information, specialization, spatial or temporal separation, commitment, etc. -- and important elements of standard paradigms used in macro to study growth, business cycles, public finance, and so on.²

The main technical hurdle that is overcome by using the Lagos-Wright model is the following. In earlier models of search and money, either one has to make severe assumptions, like restricting individual balances to be either 0 or 1, or somehow keep track of the distribution of money across agents as an endogenous state variable. Even with those severe assumptions, one could argue the models were interesting, but they were clearly ill suited for much policy or quantitative work. Some people eliminate these assumptions on money holdings, and deal with the distribution using advanced analytical or numerical methods (e.g. Green and Zhou 1998 or Molico 2005). This is admirable. But it is also useful to have a benchmark where the complications can be avoided. By analogy, the standard growth model with a representative agent and complete markets is useful, even if extensions to idiosyncratic uncertainty and incomplete markets are im-

2

It might be worth emphasizing that this integration did not seem trivial *ex ante*. As Azariadis (1993) put it, "Capturing the transactions motive for holding money balances in a compact and logically appealing manner has turned out to be an enormously complicated task. Logically coherent models such as those proposed by Diamond (1982) and Kiyotaki and Wright (1989) tend to be so removed from neoclassical growth theory as to seriously hinder the job of integrating rigorous monetary theory with the rest of macroeconomics." As Kiyotaki and Moore (2001) said, "The matching models are without doubt ingenious and beautiful. But it is quite hard to integrate them with the rest of macroeconomic theory -- not least because they jettison the basic tool of our trade, competitive markets."

portant. In monetary theory we cannot have a representative agent and complete markets if we want a role for money, making room for a benchmark like Lagos-Wright.

The way the Lagos-Wright model works is as follows. Each period has two subperiods. In one, agents interact in a decentralized market, where frictions make a medium of exchange essential as in standard search-based monetary economics. In the other, they interact in a centralized market, with no frictions, where agents adjust to differences in cash due to random trading in the previous decentralized market, leading under the right assumptions to them all entering the next decentralized market with *the same* money balances. This yields a model of money as a medium of exchange that is based on explicit frictions and yet is still quite tractable. Moreover, once the centralized market is in place, it can be not only a vehicle for agents to adjust money, it can also be generalized to include interesting labor and capital markets, government fiscal policy, financial arrangements like banking, and so on. In this lecture, capital is introduced, exactly as in the neoclassical growth model.³

Solving the integrated model is simple. Moreover, it reduces as one special case to the standard Lagos-Wright model, and as another special case to a standard RBC model -- literally, the well-known indivisible labor model in Hansen (1985). So one can no longer say mainstream macro and monetary theory are not integrated. Interestingly, however, the 'plain-vanilla' version of the model exhibits an unattractive feature known as *dichotomy*: it can be solved for the decentralized market equilibrium independent of the centralized market equilibrium, and vice-versa, which implies monetary policy affects the former but not employment, investment or consumption in the latter. Therefore the Aruoba-Waller-Wright paper studies generalizations that do *not* dichotomize. One such generalization is to assume capital produced in the centralized market is productive in the decentralized market. Then one has to solve for all equilibrium variables simultaneously, and monetary policy affects both markets.

3

There are some details to sort out concerning how capital and money can coexist. The current model has assumptions so that capital cannot be physically carried to the decentralized market, and claims to capital cannot be traded there due to a recognizability or counterfeiting problem. Recent research has been dedicated to formalizing these ideas more carefully. Randy's work ongoing work with Lester and Postlewaite, as well as independent research by Rocheteau, Wallace, and others, are attempts to confront the recognizability problem, but more needs to be done.

The model is then calibrated and used to study the effects of perfectly anticipated inflation on investment, welfare, and other variables. The findings are quite different from past reduced-form analyses, with money in the utility function or cash-in-advance constraints. For example, it is not hard to generate increases in the long-run capital stock of around 5%, and increases in welfare worth up to 3% of consumption, by eliminating a 10% inflation. Also, several ingredients from the search-based tradition turn out matter a lot: stochastic trading opportunities are key for matching the model to certain data; the two-sector structure with some centralized and some decentralized trade is key for matching some other observations; and the decentralized market pricing mechanism makes a huge difference. This is not the

place to go into numbers in detail, but the bottom line is that this approach seems interesting and gives new results, and hence is worth taking seriously.

The conclusion is that microfoundations matter in macroeconomics -- and not just to get a deeper understanding or a more elegant description of things we already know, like the fact that people value money because it helps facilitate exchange -- but because incorporating the details explicitly into models can change the implications for policy-relevant quantitative issues. It is interesting to see the progress in this area, but Randy also emphasized that there is much left to do in monetary economics, and he made an effort to communicate that it is still quite fun and exciting.

The Last Word

Due to our move, this newsletter is rather late. And there was much news to document.

2008 was a year of upheaval for Economics: the move from the 45-year-occupied Business Administration Tower/Management and Economics Building/Heller Hall. The deaths of so many wonderful people. The sinking economy. Personally, that affected me: I was laid off from my 14-year part-time job as a librarian at the J.J. Hill Reference Library in St. Paul, followed by the notice 2 weeks later that my 2009 property taxes went up 29.4 percent. My Christmas letter was entitled "Annus Horribilis."

This winter the old ERC finally bit the dust. For any of you with memories of offices across the river, I will leave you with these parting shots. In three weeks the place has been nearly demolished (the top windows in the rubble were Room 304 ERC, with Rooms 202 and 204 below it). The building that cost \$1.3 million to build in 1965 will now cost \$72.5 million to replace (this includes the cost of demolition). According to the Consumer Price Index, \$1.3 million in 1965 dollars would be \$8.8 million today ... and the replacement will cost 8 times that.

Here's hoping your health is good, you are still employed, and that 2009 will be better than last year!

--The Editor



The newsletter is now published once a year.

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**MINNESOTA DEPARTMENT OF ECONOMICS
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WINTER 2009**

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