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Applied Economics at the University of Minnesota



@ApEcMN



Notes from the Department Head

BY FRANCES HOMANS



Earlier this month, I was in San Diego interviewing candidates for our open position in environmental and natural resource economics, when I opened my email to learn that two of our alumni were named Fellows by the Agricultural and Applied Economics Association, the association's most prestigious honor. This summer, we will gather in Kansas City to celebrate their induction as Fellows.

Shenggen Fan earned his PhD under the supervision of Vernon Ruttan in 1989 and has had a productive career at the International Food Policy Research Institute (IFPRI). In reflecting on his career in a recent piece in *Global Food Security*,¹ he writes that he was born just after China's Great Famine of 1959-61 and subsisted on a diet made up primarily of rice. At 15, he learned that he was malnourished but "We did not recognize malnutrition when we saw it, because to us it looked normal. We were all malnourished." Fan's career has focused on policies to ensure food and nutrition security, recognizing that adequate calorie intake (e.g., with a rice-only diet) is not enough to solve problems of malnutrition. We recognized Fan's achievements with the Outstanding Alumni Award in 2006. It is fitting that the AAEA recognizes his lifetime of commitment to, in his words, "achieve a world where hunger and malnutrition are only a memory."

Scott Swinton earned his PhD under the supervision of Rob King in 1991 and pursued his academic

career at Michigan State University. In 2019, he was named University Distinguished Professor at Michigan State University and received our department's Outstanding Alumni Award. Swinton's research focuses on how to create better-performing agricultural systems through managing as an ecosystem. In a recent interview, Scott says "I like to work on research that makes a difference. That's the fundamental idea in the land grant system, that we're not just kind of doing research and education because it's interesting, but we're doing it because it helps improve people's lives." Swinton's contributions extend to the profession as a whole through his leadership of the Agricultural and Applied Economics Association and AgEcon Search.

Fan and Swinton join University of Minnesota alumni Klaus Deininger, Bob Evenson, Ray Goldberg, Jim Houck, Helen Jensen, Harry Kaiser, Alex McCalla, Robert Myers, George Norton, Phil Pardey, Rich Sexton, Bud Stanton, and Bill Tomek as Fellows of the AAEA. Faculty members Vernon Eidman, Rob King, Jean Kinsey, Phil Pardey and Ben Senauer are also AAEA Fellows.

We celebrate Shenggen Fan's and Scott Swinton's careers as we remember the strong history of the department. We look forward to identifying a new faculty member to join us in 2020 and to a bright future ahead.

Frances Homans

DEPARTMENT OF APPLIED ECONOMICS

¹ Shenggen Fan, Some lessons from a life in food policy, *Global Food Security*, Volume 22, September 2019, Pages 33-36.



Interview

WITH STEPHEN POLASKY

Tell us a bit about the Fesler-Lampert Chair and how you came to join the faculty at the University of Minnesota.

SP The Fesler-Lampert Chair is an interdisciplinary position made possible by a generous donation from David Fesler, a 1950 graduate of the University who went on to a successful career in business and made numerous philanthropic contributions. The Fesler-Lampert Chair requires two or more departments to make a case for why their particular combination of disciplines is especially important for the advancement of knowledge. The prior holder of the Fesler-Lampert Chair combined computer science and cognitive science as the Fesler-Lampert Professor of Artificial Intelligence and Cognitive Science. When I was recruited to the University of Minnesota, the Department of Applied Economics and the Department of Ecology, Evolution & Behavior had won a university-wide competition by making the case that advances in sustainability and conservation required combining ecology and economics. This position was particularly appealing to me because I was working at the interface between economics and ecology and Minnesota had a stellar reputation in both fields.

You are well-known for your role in starting the Natural Capital Project. Could you tell us about the project? Can you tell us about your partnership with Chinese scientists to implement natural capital accounting in China?

SP The Natural Capital Project is a partnership that brings together great academic institutions (Minnesota, Stanford, the Chinese Academy of Sciences, the Stockholm Resilience Center) with great conservation organizations (The Nature Conservancy and World Wildlife Fund). The idea of the partnership is to meld rigorous science with practitioners able to get science into practice to improve ecosystem management and outcomes for people and nature. The objective of the Natural Capital Project is to quantify the contributions that nature makes to human well-being (“ecosystem services”) and to bring these values into decision-making by governments, corporations, and households. The Natural Capital Project has created a free and open-source computer software package called InVEST (Integrated

Valuations of Ecosystem Services and Tradeoff) that is now used around the world to analyze how decisions affect a range of ecosystem services.

As part of this work, the Natural Capital Project is currently working in China to develop a measure of Gross Ecosystem Product (GEP) that summarizes the value of ecosystem services in a single monetary metric. GEP is similar to Gross Domestic Product (GDP), a widely watched metric that summarizes economic performance in a single monetary metric. To support the development of GEP, we have worked to develop an integrated environmental-economic accounting system. The Chinese government is planning to use GEP to highlight ecological connections among regions, guide financial compensation from ecosystem service beneficiaries to regions supplying those services, inform conservation policy and serve as a government performance metric.

What is the role of economic research in interdisciplinary projects? What have you learned about the contributions economists can make in the policy arena?

SP Successfully addressing difficult social environmental issues requires blending insights from economics along with the natural sciences, cognitive and social sciences, engineering, law, and politics. Joining economics with other disciplines provides a powerful combination with which to analyze problems and provide policy solutions. While other disciplines, such as civil engineering and ecology, are essential for understanding the effects of investment in various types of infrastructure and ecosystem restoration, these disciplines alone cannot answer the question of whether such investments are worth making. That decision typically involves comparing the benefits of the investment relative to the cost. Economics can be extremely helpful for integrating the results of interdisciplinary research teams, comparing the net benefits of alternative investments, and communicating results to decision-makers. However, my experience is that not many economists are adept at working across disciplines. Not many universities train economists to do this kind of work nor is this kind of interdisciplinary solution-oriented work rewarded in much of the economics profession. I’m glad that the Department of Applied Economics, and the University of Minnesota more generally, has put a high priority on this kind of role for economics.

Please tell us about a policy issue you are working on and the research that supports your contributions.

SP Currently I'm working with colleagues in the Natural Capital Project and the World Bank on a project to generate a "Natural Capital Index" for the World Bank. The World Bank recently pioneered a "Human Capital Index" that provides a report card on how well each country is doing in terms of investing in the health and education of its population. The Natural Capital Index aims to provide a report card on the degree to which each country is using its natural resources in a sustainable and efficient manner. The Bank intends to use the Natural Capital Index to evaluate potential loans and investments and to offer advice to national governments on how to improve ecosystem management and use of natural resources. This work builds on years of research on ecosystem service and natural resource modeling efforts. We deliberately constructed these models to require only readily available data. The increase in availability of remote sensing data in recent years has allowed us to apply these models in all countries including developing countries without much of a local scientific base.

Please tell us about the classes you like to teach.

SP I enjoy teaching. Being with bright students talking about important and interesting issues is wonderful. If we could somehow get rid of grading, it would be heaven. I teach a broad range of classes that include everything from game theory in the graduate microeconomics theory sequence, to natural resource and environmental economics, to the core class for graduate students in the conservation science program, to interdisciplinary courses on sustainable science, and the science and policy of global environmental change. This coming semester I will be teaching two of my favorite courses: game theory, and global environmental change. In game theory, we start every class with a game. After describing the game, each student chooses a strategy that we combine with the strategy of one or more other students in the class to determine the student's payoff. We then talk about the theory part of game theory, which describes how rational players should play the game to maximize their payoffs. The divergences between theory and the choices of the students often highlights important lessons about both human behavior and theory. Playing the game makes the theory come alive. The global environmental change course is a university Grand Challenge Class that I

teach with ecologists Sarah Hobbie and Peter Reich. We tackle big questions including climate change, loss of biodiversity, nutrient cycles and pollution, water quality and water availability. I've learned a lot by teaching alongside two world-class ecologists. Finding potential solutions to global environmental problems, however, requires going beyond natural science. My role in the course is to explain potential policy approaches to address global environmental problems. For example, we discuss carbon taxes and carbon cap-and-trade to address climate change. We also discuss the challenge of addressing global environmental issues in a world of nation-states without effective international institutions. The class changes every year depending on what is happening in the news, whether it is the Paris Climate Agreement or the rise of nationalism opposed to taking action on climate.

What are you working on with your Applied Economics colleagues and students? What do you plan to accomplish over the next five years?

SP My work focuses on integrating economics with ecology and other disciplines, so economic activity is efficient and sustainable, providing human well-being both now and in the future. In work published last year by a team of my graduate students and post-docs from Minnesota along with scientists at The Nature Conservancy, we showed ways to achieve a world in which people and nature thrive. We found ways to meet the increasing demands for food, water, energy, and material goods from an increasing human population with a higher standard of living out to 2050 that also reduces greenhouse gas emissions, preserves habitat for biodiversity, and reduces threats to air quality and water availability. In contrast, continuing along a "business-as-usual" path increases environmental degradation and is not sustainable. The question that follows from this work is how to shift the trajectory of economic development from business-as-usual to a sustainable path. The answer to this question, I believe, will come from combining what we know about market economies, public policy, and human behavior, with understanding how human actions affect earth systems and how changes in earth systems affect human well-being. My central goal is to make it so environmental impacts are not an afterthought in economic and policy decisions but incorporated into decision-making from the start; that integrated ecological economic analysis becomes routine ("second nature").

CLASS NOTES: BROOKE BAHNER

How 3611W Prepared Me to Do Research

I took Professor Jay Coggins' class in environmental and natural resource economics, ApEc 3611W, in the spring of 2019. It was the first time that I heard that transitioning to renewable energy would cost trillions less globally than continuing to use natural gas and coal and I was eager to learn more. We learned about externalities and solutions such as carbon taxes and cap and trade, cost-benefit analysis, nonmarket valuation, and much more. Jay always made learning interesting and engaging by prioritizing discussion, creating meaning to what we were learning by relating it to our daily lives, and using a great sense of humor. I remember many classes where a fellow student would have a question about something that came up in the news and we would spend 20 minutes in a beautiful tangent discussing the validity of the proposed policy change, calculating the costs, and even drawing up graphs to illustrate the possible changes in emissions over time. I believe Jay's personal goals for the class are to make his students more competent members of society and to give us the resources to understand our changing world.

Knowing that I wanted to do research with Jay, we started meeting approximately every week outside of class to talk about environmental economics and to consider potential research topics. Over the semester I was delighted to learn about what economists in our field are doing, how to use modeling programs,

and where to find good data sources. The topic that we settled on for my Spring 2020 Undergraduate Research Opportunities Program (UROP) project is to calculate Minnesota's carbon emissions as well as the costs and benefits of putting a moratorium on the production of all new internal combustion engine vehicles, as well as on new coal and natural gas power plants.

Taking 3611W has prepared me for this UROP in a number of ways. It was a great way to get an overview of the different industries I can go into, how to analyze data, and how to research effectively. By the end of my UROP, I hope to have a better understanding of what it takes to create a sustainable society and what climate change will mean for Minnesota. One major factor that is hindering the transition to sustainable practices is that businesses and policymakers are unaware of the economic benefits. I hope that the concluding data from my UROP will illustrate the economic benefits of renewable energy to Minnesota legislators and will encourage energy companies to make a more aggressive switch to renewable energy.



EASTER FAMILY SCHOLARSHIP

The Easter Family Scholarship, established in 2018 by Professor Emeritus K. William (Bill) Easter and his wife Carolyn, was created to support our undergraduates studying Applied Economics with a preference for students interested in natural resource economics.

"This is my way of giving back to the department where I had the great opportunity to work for 42 years. I helped my grandchildren attend college, and I want to help even more students," said Bill.

The first two scholarship recipients were Applied Economics students Eric Schmid and Jonathon Goettl.

"The Easter Family Scholarship is not only a financial relief, but also brings me great pride and a sense of place within the Department of Applied Economics," said Eric Schmid, a double major in Political Science and Applied Economics. He continued: "the material I've learned has made me eager to apply myself somewhere in the real world to ignite change and practice my values."

STUDENT HIGHLIGHT

National Grocers Association

The 2018 Farm Bill renewed a program designed to help promote the purchase and consumption of fresh fruits and vegetables in low income neighborhoods. The Gus Schumacher Nutrition Incentive Program (GusNIP) encourages Supplemental Nutrition Assistance Program (SNAP) recipients to purchase more fresh fruits and vegetables through farmers markets, direct marketing and retailers who buy such products directly from farmers. In 2020, the National Grocers Association is using that program for its student case competition. A team of eight UMN students in Mike Boland's Retail Supermarket Case Analysis class, ApEc 3511, is looking at ways that independent retail grocery stores could use GusNIP incentives to boost sales. Casey McNichols, a student in the class, says: "the GusNIP program has been an interesting project for this year's NGA competition. Previous competitions were more centered around marketing or human relations issues. I like this topic because it ties in with some of the interests I have in public policy and applied economics. We have learned a lot about the SNAP, WIC,

and other programs in the Farm Bill. I've enjoyed working with a team of CFANS students, from a variety of different majors, to collectively solve a problem."

This February, the team will finalize the research they have conducted over the past semester and compete at the National Grocer's Association show in San Diego with teams from other universities. Allowing students to address real-world issues faced by food companies assists students in career preparation and allows them to use critical thinking skills to address actual current issues in the industry.

Experiential learning classes such as these are not opportunities that are available at every college or University, and draw attraction not just to our current students, but visiting and transfer students as well. "This is an opportunity I wouldn't get at my home University," said Natalie Thomsen, a current visiting student and NGA participant. We are grateful to those who contributed through Give to the Max Day this year to help students travel to the competition in San Diego.

"Knowing that someone cares about the students studying environmental economics inspired me, and now I want to inspire other people to care about it too" said Jonathon Goettl.

Eric and Jonathon had an opportunity to meet Bill and Carolyn and to learn about Bill's long career. We are looking forward to seeing where Eric's and Jonathon's paths take them.

Bill and his wife, Carolyn, with scholarship recipients Jonathon Goettl and Eric Schmid.





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RECAP: OUTSTANDING ALUMNI AWARD

On Friday, October 4, we hosted our annual Outstanding Alumni Award event and forum in Ruttan Hall. Our 2019 awardees were Pat Duncanson, Nancy Morgan, and Scott Swinton.

We were honored to have not only our award winners, but our generous donors, exceptional scholarship and fellowship winners, and outstanding TA award winners join us for this special event. We look forward to seeing everyone again next year.

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