The Art and Practice of Economics Research: Lessons from Leading Minds

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Interview with Robert E. Lucas, Jr.

University of Chicago (July 25, 2011)

Robert Lucas was born in Yakima, Washington in 1937 and graduated with both a BA in history and a PhD in economics from the University of Chicago in 1959 and 1964 respectively. Between 1964 and 1975, he taught at the Graduate School of Industrial Administration at Carnegie Mellon University, before moving to the University of Chicago, where he has remained ever since, currently serving as the John Dewey Distinguished Service Professor in Economics and the College.

Professor Lucas is widely acknowledged as one of the most influential macroeconomists of the twentieth century. He is perhaps best known for his work on the development of the theory of rational expectations, but he has also made significant contributions to the theory of investment, the theory of endogenous growth, the theory of asset pricing and the theory of money. In addition, he introduced the 'Lucas critique' of the use of econometric models in policy design. His most-cited articles in chronological order include 'Expectations and the Neutrality of Money,' *Journal of Economic Theory* (1972), 'Some International Evidence on Output-Inflation Tradeoffs,' *American Economic Review* (1973), 'Econometric Policy Evaluation: A Critique,' *Carnegie-Rochester Conference Series on Public Policy* (1976), 'Asset Prices in an Exchange Economy,' *Econometrica* (1978), and 'On the Mechanics of Economic Development,' *Journal of Monetary Economics* (1988). His books include *Studies in Business-Cycle Theory* (MIT Press, 1983), *Recursive Methods in Economic Dynamics* (Harvard University Press, 1989), co-authored with Nancy Stokey and Edward Prescott, and *Lectures on Economic Growth* (Harvard University Press, 2004).

Professor Lucas was elected as a Fellow of the Econometric Society in 1975, a Member of the American Academy of Arts and Sciences in 1980, and a Member of the National Academy of Sciences in 1981. He was awarded the Nobel Prize in Economic Sciences in 1995 "for having developed and applied the hypothesis of rational expectations, and thereby having transformed macroeconomic analysis and deepened our understanding of economic policy."

I interviewed Robert Lucas in his office in the Department of Economics at the University of Chicago. It was early afternoon of Monday, July 25, 2011.

BACKGROUND INFORMATION

Bowmaker: Why did you decide to pursue an academic career in economics?

Lucas: I was an undergraduate in history at Chicago and was drawn to the historical importance of economic forces. I began graduate work in history at Berkeley and took exciting economic history courses from David Landes and Carlo Cipolla. I realized that I needed to learn some economics, but was shocked to discover that I couldn't read past the first page of many economics books. And so I switched fields to economics and came back to Chicago.

GENERAL THOUGHTS ON RESEARCH

Bowmaker: There is an increasing emphasis in many economics departments on applied research. Is this true at Chicago?

Lucas: Chicago's always been involved in applied research. For example, Paul Douglas did pioneering work on production functions, Henry Schultz looked at demand systems, and Milton Friedman's research was always applied. The idea is that economic theory helps us understand the workings of the world that we observe.

Bowmaker: What is the value of pure versus applied research in economics?

Lucas: They're in it together. I don't know how to approach new evidence, except by trying to ask, "Well, what would I have expected to see based on economic theory? What were the discrepancies and how can I make it all fit together?" Of course, you can't always do it, but there have been enormous gains in the building, understanding and analysis of mathematically explicit models, which is at the center of all my work.

Bowmaker: How would you describe the dialogue between theory and empirics in economics?

Lucas: Some of the best theorists don't seem to have any interest in empirical work at all, and some people do valuable empirical work with very little theory. And there are others who mix them together in various ways. I like the mix. I think the empirical research that is most lasting identifies the underlying economic forces that interact to produce whatever we see, whether it be economic growth, depression or panic. In other words, what kind of model could produce that behavior?

Bowmaker: How would you characterize your own research agenda and how has it changed through time?

Lucas: In terms of substance, I've never really had an agenda. I've just accumulated a wish list of unsolved problems. And then when I run across a new paper or some new mathematics or new evidence that opens up new avenues for one of those problems, I'll drop what I'm doing and go for it. In that sense, I behave very opportunistically.

Bowmaker: Do you think it is important to have broad research interests?

Lucas: Economics is a very unified field. We have one body of theory and try to force the whole world into it. It's not like the biological sciences where specialties are so different that they can't even talk to one another. I feel I can work on anything in economics, and I think other people feel the same way. The economists whom I admire, like my Chicago heroes, Milton Friedman and Gary Becker, have worked on a vast range of problems. And people from Friedman's generation, like Kenneth Arrow and Paul Samuelson, have influenced my thinking in a very strong way, as have my own contemporaries, like Tom Sargent and Ed Prescott.

IDEA GENERATION

Bowmaker: Where do you get your research ideas?

Lucas: I like to work on basic problems. They're obvious in economics; things like business cycles, economic growth, and the effects of international trade. Everybody who reads the newspaper knows that they're good problems.

Bowmaker: At what point does an idea become a project that you devote resources to?

Lucas: When some kind of modeling that will be helpful in thinking about it occurs to me.

IDEA EXECUTION

Bowmaker: What makes a good theoretical paper? Can you give an example?

Lucas: There are different kinds. The work of the general equilibrium theorists, Kenneth Arrow, Gerard Debreu, and Lionel McKenzie brought a new level of mathematics into research, and they did it not to deal with specific problems, but just to recast the basic ideas of Smith, Ricardo, Marshall, Walras, and others.[1] It was beautiful work and extremely useful for those doing more applied research. I don't do that kind of work myself, but I apply it every day. I usually try to figure out a model that will illuminate a particular observation or event that I think is important. To pick an example out of the hat, economic development at some point involves a large outflow of people from the traditional agricultural sector into the cities and into the modern world. That says to me, "How does that take place? Why does it take so long?" And so I've done some work on models in the migration process.[2]

I want to get the right answer in my work; it's not a question of creating beauty. I want to make as clear as I can what the structure of the model is; I don't want anything mysterious. One of my friends who was talking about somebody's work said, "If I wrote a book and five years later people were still arguing about what it meant, I'd be ashamed." I agree [*laughs*].

Bowmaker: What makes a good empirical paper? Can you give an example?

Lucas: Milton Friedman's *Theory of the Consumption Function* [*goes to his bookshelf to show the book to me*].[3] I've still got the library copy. Cheapskate! [*Laughs.*] That was an incredible book. It's a model of how to do empirical work bringing evidence from very different sources to bear on the same question. He examined time series on consumption behavior and cross-sectional data for different families … anything he could find. What a powerful way of looking at the world.

Bowmaker: When you hit a brick wall on a project, do you continue to work on the problem or do you take a break and work on something else?

Lucas: I just stop and do something else. Sometimes you wait around for new mathematical tools, and when they come along, they give you a new life to something that you thought about but couldn't quite articulate. But there are plenty of problems that you just don't know how to solve. In my case, it's this business of price stickiness. When we have a monetary contraction of some kind, it plays out as spending reductions and then decreased production and unemployment. The clearest theory we have says that it should play out only as changes in prices or a change in the unit of account. It's true that sometimes it does happen that way. For example, when the euro was introduced, it didn't have any effect on spending in France or Germany; they just figured out the correspondence of how many francs or deutschmarks equaled a euro, and took it from there. But

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[1] See, for example, Arrow, K.J. and G. Debreu (1954), 'Existence of an Equilibrium for a Competitive Economy,' *Econometrica*, Vol. 22, No. 3 (July), pp. 265–290; McKenzie, L.W. (1959), 'On the Existence of General Equilibrium for a Competitive Market,' *Econometrica*, Vol. 27, No. 1 (January), pp. 54–71; McKenzie, L.W. (1954), 'On Equilibrium in Graham's Model of World Trade and Other Competitive Systems,' *Econometrica*, Vol. 22, No. 2 (April), pp. 147–161; McKenzie, L.W. (1981), 'The Classical Theorem on the Existence of Competitive Equilibrium,' *Econometrica*, Vol. 49, No. 4 (July), pp. 819–841.

[2] See, for example, Lucas, Jr, R.E. (2004), 'Life Earnings and Rural–Urban Migration,' *Journal of Political Economy*, Vol. 112, S1 (February), pp. S29–S59.

[3] Milton Friedman (1957), *A Theory of the Consumption Function*, National Bureau of Economic Research.

that does not happen in short-term movements within an economy … something else does. What is that something else? What governs it? That's an unsolved problem. I've worked on it off and on for my whole life and never got the right answer [*laughs*].

Bowmaker: What has been the biggest change during your career in how researchers in your fields conduct research?

Lucas: I'm a very self-centered person, so I don't care about changes in other people's research, unless it helps me do something that I want to do, which of course happens all the time. The work that I do now in economics is influenced by, for example, game theory and time series analysis, which are areas that I didn't know about when I started my career.

THE WRITING PROCESS

Bowmaker: You have a reputation within the economics profession for being a beautiful writer. When I interviewed Tom Sargent for this book, he told me that he didn't know whether you worked at it or whether it just comes easily. Can you shed some light on this?

Lucas: I have been grammatically pretty close to a flawless writer since the 8th grade. Stylistically, I have had to work at it; trying to avoid falling into clichés and jargon that doesn't tell you anything that you didn't already know, and using words that I don't understand. But as I get older, mathematics is more important to me and I trust it more and more. I want to write down a mathematical model that will take me into new territories. If I cheat on the math and get too sloppy, I am already telling it where I want it to take me. By beating it into compliance, I haven't learned anything. And so I like keeping the mathematics tight and explicit. Those rules help me to become a better writer and thinker. I trust them more than anything else.

Bowmaker: Have you learned about the art of writing from anybody else?

Lucas: I wrote a paper called 'Expectations in the Neutrality of Money,' which has influenced many people, when I was at Carnegie.[4] When I had it worked out, I was trying lots of different introductions, none of which seemed to click. And then Jimmy Savage, the well-known mathematical statistician, came to give a lecture that I went to. Savage was almost blind – he could barely see the blackboard – but he gave a clear description of the problem he was going to look at; nothing grand at all. It felt like he was just saying, "If this problem interests you, stick around. If it doesn't, go away." I went home after the talk and tried to write my introduction to the paper in the way Savage had given his lecture. It certainly worked for me. What an inspiration that was.

One of my tricks in writing the introduction is for the first two words to be "This paper … " Not to start out by saying something like, "The 1990s have witnessed … " Get that "have witnessed" crap out of here [*laughs*]. I also remember Sandy Grossman giving a talk when he was a kid. Sandy's a super-ambitious guy and so he had something grand in mind, but he began simply by saying, "I'm going to talk about the following mathematical structure … " He set it out in five minutes and then gave us some examples of good economic questions that this structure might help us think about. I thought that was really beautiful: you must help people get into your logic.

[4] Lucas, Jr, R.E. (1972), 'Expectations in the Neutrality of Money,' *Journal of Economic Theory*, Vol. 4, No. 2 (April), pp. 103–124.

Bowmaker: What do you think of the standard of writing in economics?

Lucas: It's not so good. Economics isn't that much fun to read anyway, but the refereeing process these days makes many papers mostly unreadable. They are becoming longer and longer because you have to spend so much time relating what you've done to the research of others and why yours is better than what somebody else did. Well, maybe it isn't better than what somebody else did. But as long as it's competently done and bears on an interesting question, then the damn thing should be published in six weeks. And everything is co-authored now, which also affects the quality of writing.

Bowmaker: How do you divide up the writing tasks when you work with co-authors?

Lucas: It's a problem. I like writing by myself much better because I can present it as, "Here's the way I think about it," without consulting with anyone else. But sometimes you need help and that means different views have to be honored, and different writing styles have to be reconciled. It has to be that way.

When I was working with Esteban Rossi-Hansberg, whose native language is Spanish, I wrote everything. At some point, I realized it would be good for him to write *something*, even though he didn't want to do it. (Since then, he has become very fluent). And when I was working with Andy Atkeson some years ago, he told me at the beginning that he wanted to be the author of the whole paper because he wanted to shape up his writing and develop his own style. It wasn't the way I would have done it, but I respected his wishes and kept my mouth shut. In my heart, of course, I wanted to do it all.

COLLABORATION

Bowmaker: When you do collaborative work, how do you decide whom to work with?

Lucas: I've worked with so many different co-authors during my career. Lately, it's been with people who have been able to take me into new territory. For example, when I visited the research department at the Minneapolis Fed, Mike Golosov was assigned to be my RA. I got him to work on something, but once I saw how good he was, I realized I could raise the ambition level of the project, and asked him to be a co-author.[5] (My work with Esteban started out in the same way). Now I'm working with Ben Moll, who has just started at Princeton after graduating from here. I had asked him to write a referee report on a paper by some French mathematicians who thought they had some ideas that would be useful in economics. Ben and I agreed, but thought we could get a better economic application by doing the economics our way. We discussed this and began working on it ourselves.[6] Again, I had to look at what he could do before I realized, "Hey, if I work with him, there are some questions we can look at that I wouldn't take on by myself. I'll go for it." Those collaborations are opportunities, and they offset the egotism [*laughs*].

[5] Golosov, M. and R.E. Lucas, Jr (2007), 'Menu Costs and Phillips Curves,' *Journal of Political Economy*, Vol. 115, No. 2 (February), pp. 171–199.

[6] Lucas, Jr, R.E. and B. Moll (2011), 'Knowledge Growth and the Allocation of Time,' University of Minnesota Working Paper.

Bowmaker: How do you prefer to communicate with your co-authors (e-mail, phone, or face-to-face)?

Lucas: I like to exchange pieces of paper. I'm not that interested in thinking out loud. I'd rather make my dumbest mistakes in private. Of course, you should do some talking. Ed Prescott and I did some of our best joint work when we both had a few beers [*laughs*]. But I can't deal with Skype. One time, I was working with Fernando Alvarez, whose office is next door to mine, and Francisco Buera, who was at Princeton at that point. Fernando's screen was connected up to Princeton but we had to go into my office because there was something on my computer that we needed to look at. Fernando picked up the screen and said, "We'll take Paco." He carried this talking head into my office! It was creepy.

Bowmaker: What are the main challenges associated with collaborative work and how do you overcome them?

Lucas: Writing down the math. There's always a lot of hand waving going on, and then at the end of it, you often think, "This thing is just as unclear now as it was 45 minutes ago." And so you go home, do some quiet thinking on your own, and come back later. But you can't write sentences collectively. That's impossible for me.

RESEARCH ASSISTANCE

Bowmaker: How do you use research assistants?

Lucas: I use them very rarely. I'm just a mediocre programmer by the standards of people who are doing numerical work. I love the fact that you can work out the math on your PC, but at some point it does get beyond me. And so I've hired students to help with that.

SEMINAR PARTICIPATION AND NETWORKING

Bowmaker: What are the benefits to attending a seminar that is closely related to your work versus one that is not closely related?

Lucas: As I said earlier, economics is a unified field, which means there are a wide variety of topics that I want to hear about. When I was at Carnegie, there was maybe one good speaker every week. But when I came to Chicago, there were two seminars a day on everything. How many hours of the week are you going to spend listening to other people describing their work? It's forced me to specialize. I spend about three hours of the week attending seminars in both micro and macro that I think I will find interesting. That's enough.

Bowmaker: How important is professional networking to success in research?

Lucas: Research is networking. Getting ideas, developing them, and talking about them. You can't be an economist by being up in the mountains.

COMMUNICATION OF RESEARCH

Bowmaker: How do you find the right balance between communicating your research at an early stage versus the close-to-finished stage?

Lucas: I write 35-40-page papers. I'm not like Darwin who keeps it all hidden until he's got a 400-page book that's air-tight [*laughs*].

Bowmaker: What are the unique challenges to giving a seminar and how do you overcome them?

Lucas: To me, it's just fun; writing something out and then trying to explain it. And the new technology is beautiful for presenting technical work these days.

I also think there is more agreement relative to when I started out on what it means to solve a problem. And there is shared impatience with people who claim they have something they haven't got. The crowd that I hang out with, which is a pretty big section of economics, will smoke you out. You'll pay a heavy price. I feel really cheated when somebody's got you on the hook for a problem that's well stated, but it turns out that he hasn't got anywhere. I'm mad at him!

Bowmaker: What has caused this change during your career?

Lucas: The mathematical end of theoretical and empirical work has become more professionalized, thanks to people like Arrow, Friedman, and Samuelson.

PUBLICATION

Bowmaker: How do you decide upon the appropriate journal to send your research to?

Lucas: When I started out, I tried to get things published in a journal that people might actually read. I was surprised when I once wrote a little paper for the *AER*'s Papers and Proceedings because it got a lot of responses.[7] And so I'd then try to get something in there, or the *JPE* or *Econometrica*, if it was technical. But now I mostly don't give a damn if my work ever gets published. The NBER working paper series is a great, unrefereed outlet for people in my field and many others.

Bowmaker: Do you have any advice for a young scholar who receives a 'revise and resubmit' request or an outright rejection?

Lucas: I still recommend that when you get a rejection, you send it off unrevised to another journal. The feedback you get from referee reports is almost always useless. Nancy [Stokey] and I sent a paper to *Econometrica* and we were told that it had some good examples in it, but the general theory was not needed. And so we sent it to the *Journal of Economic Theory*, and we received a response saying that the general theory was very valuable, but the little examples were not needed [*laughs*].

When young people start out, they take each criticism as if it's coming from God, but it's more likely to be someone who just doesn't understand what you're talking about. You get much better feedback from seminars. If some guy in the audience doesn't understand what you're saying or

7. Lucas, Jr, R.E. (1970), 'Capacity, Overtime, and Empirical Production Functions,' *American Economic Review*, Papers and Proceedings, Vol. 60, No. 2 (May), pp. 23–27.

thinks you're wrong, you can have a real conversation with him and argue back and forth. You learn so much from that process. I really like it.

TIME MANAGEMENT

Bowmaker: How do you divide up your working day, both in terms of quantity and timing of different kinds of work?

Lucas: My wife [Nancy Stokey] gets up at 6:00 am and starts working. I do that now, too. But I no longer have the energy to be able to put in 10 hours every day.

I bought out a fraction of my time from the university, so I don't go to any faculty meetings and I only teach one course each year. But my teaching is almost the same as research, because it is an advanced course with topics that I don't know anything about. I've got to learn fast to keep ahead of my students [*laughs*].

Bowmaker: How do you balance your personal and professional lives?

Lucas: Nancy and I try not to talk too much with each other about economics. But I pretty much work all the time on some level. I even wake up in the middle of the night thinking about economics. I wouldn't mind finding something else to do besides work, but I don't seem to have that many talents [*laughs*].

REFLECTIONS AND THE FUTURE OF ECONOMICS

Bowmaker: What have been the most important findings and contributions in your research fields during your career?

Lucas: Insofar as possible, incorporating macroeconomic phenomena into the general neo-classical economics framework. Back in the '50s, Robert Solow wrote about growth theory that way. It was the first paper I'd seen that used differential equations in economics.[8] And then people like David Cass, Karl Shell, Buz Brock, Lenny Mirman, Finn Kydland, Ed Prescott, myself, and many others, broadened the scope of Solow-type models by making them stochastic. Kydland and Prescott pushed it to the point of saying that there is nothing but neo-classical economics in macro phenomena, which had a huge influence on all of us.[9] I'd previously thought that the erratic behavior of an economy was due to some kind of monetary glitch, but that just isn't true; many recessions can be explained by a neo-classical model that is modified for shocks. I don't think the Great Depression or the current recession can be accounted for in this way, but Kydland and Prescott's contribution was a real transformation of macro, and people are now adopting their general framework for work in monetary economics.

Game theory has given us some tools for thinking about economics at a much higher level. For instance, in economic life, reputation is a huge factor: think of retailing. Game theorists have figured

[8] Solow, R.M. (1956), 'A Contribution to the Theory of Economic Growth,' *Quarterly Journal of Economics*, Vol. 70, No. 1 (February), pp. 65–94.

[9] See, for example, Kydland, F.E. and E.C. Prescott (1977), 'Rules Rather than Discretion: The Inconsistency of Optimal Plans,' *Journal of Political Economy*, Vol. 85, No. 3 (June), pp. 473–492; Kydland, F.E. and E.C. Prescott (1982), 'Time to Build and Aggregate Fluctuations,' *Econometrica*, Vol. 50, No. 6 (November), pp. 1345–1370.

out a way to talk about reputation. It's not that it points to directions that nobody had ever thought of before; it's that it gives us an actual framework for thinking about these effects. That's real progress.

Another strand of contributions is in new datasets. When I was writing my thesis, you had to rely on the US Census. But now if you're thinking about individual decision-making, you've got hard data on thousands of people making thousands of different decisions. And you can ask questions that you wouldn't even dream of asking back in the '60s. I'm on the periphery in benefiting from those developments, but in terms of developing the science, it's been important and exciting.

Bowmaker: What has been your greatest contribution to economics?

Lucas: I was certainly involved in making economic dynamics specific enough to focus on a particular phenomenon. You wouldn't want to describe that as my achievement because many people have been involved. For example, Arrow and Debreu took a static model and reinterpreted it as different goods that are available under different contingencies and different dates. Then you can think of a dynamic economy as one with a vast space of goods. That's very powerful. It's almost not a new theory; it's like they're saying, "Look, we've got this theory sitting right here that we always thought of as static. We can just change the names of the variables, and then we've got a theory of events in an economy with time and uncertainty." But it was a hell of an insight! And applied people like me have picked it up and used it in macro.

Bowmaker: How would you evaluate the Rational Expectations revolution?

Lucas: Totally victorious. It was the best way to look at things. No-one even argues about it. The game theorists discovered the same ideas without the jargon. If you're writing down a game, each of the players is responding optimally in full knowledge of the strategies adopted by everybody else, and what they're going to do in the future under various contingencies and so on. You can't just play with those expectations; they have to be tied in with rationality.

Bowmaker: When I interviewed Robert Barro for this book, he told me that you are one of the few economists who has continued to do serious research throughout his career. What has kept you motivated?

Lucas: Lack of imagination [*laughs*]. I've been department chairman, but I don't want to be in charge of anybody. It's a pain in the ass. So, what else am I going to do? I love working on hard problems. Maybe, I should do something grand, and people have tried to talk me into it. For example, I wrote a nice general audience piece for the Minneapolis Fed on the Industrial Revolution, but I wouldn't be able to write a 500-page book at that level.[10] I just prefer technical work, and it's fun to be able to still do it. I'm lucky in that regard.

It's nice of Barro to say that about me. I think he's the best critic of the stimulus package because he's brought some real economics to bear on the issue.

[10] Lucas, Jr, R.E. (2004), 'The Industrial Revolution: Past and Future,' Annual Report (May), Federal Reserve Bank of Minneapolis, pp. 5–20.

Bowmaker: What are the biggest challenges facing your research fields?

Lucas: Adam Smith and David Ricardo worked out a way of thinking about societies that was pretty well finished by, say, 1820. The progressive element in economics since then only relates to the technical machinery that has been developed. There are people who say that the mathematical and computational methods have gone as far as they can, or even too far. I don't believe that for a minute. The possibilities for formulating and estimating economic models are just getting better and better. It makes you say, "Geez, I can apply that to my problem." And then I do it.

Bowmaker: In which direction would you like to see macroeconomics research go?

Lucas: Everyone thinks they know what macroeconomists should be doing, which is annoying, but at least it means people care. Right now, what should macroeconomists do? We ought to know how to prevent financial crashes, and what kind of legislation to write that would make that happen. We ought to know the lender of last resort policies that the Federal Reserve should have and announce in advance. And we ought to know what to do about the 'too big to fail' problem. Those are real problems that we need to be able to solve. There is a lot of intelligent debate taking place, which has always been the case, but less attention was paid to it than should have been because we somehow slipped into thinking that financial crises weren't going to happen anymore.

Bowmaker: What are the strengths and weaknesses of your own research?

Lucas: I'm not a collector, or even a user, of frontier datasets. But I know how to apply mathematical analysis to problems in economics.

Bowmaker: Do you have any professional regrets?

Lucas: I've had a good research career, but it's easy to think of problems I haven't solved that I wish I had. That's true of anybody, isn't it? So, I guess I don't have any regrets. Maybe, I should regret that I missed out on the birth of artificial intelligence. Herb Simon was a hugely stimulating colleague for me when I was at Carnegie, but I never got involved into the research that he and Allan Newell and others were doing. What was the matter with me? [*Laughs*.] Artificial intelligence does not play much of a role in economic theory or applied economics, but it has had a huge impact more generally. By then, though, I guess I was already fully committed to economics.

Bowmaker: What are your professional ambitions?

Lucas: I'm 73 years old; I'm going to hang in as long as I can [*laughs*]. It's easy to kid yourself, but I'm going to give a talk at the Minnesota summer workshop on Wednesday. I've worked hard on some slides and a pretty cool paper, but I'm nervous about it. That's as it should be. I have to be nervous about how my work is going to be received by smart people whose opinion really matters to me.

Bowmaker: How would you describe the state of economics today? Are you optimistic about its future?

Lucas: I'm very much optimistic. What happened in 2008 wasn't a crisis for economics. We're still the only game in town; the only social science that's still standing from the days of Weber, Pareto,

Durkheim, and Boas. Why? We're not politicized, we've got some discipline, and we know how to do competent statistical analysis. And above all, we have a theoretical framework that continues to surprise us by its applicability to new problems, problems that were once thought to be beyond economics.