UNEDITED TRANSCRIPT

Impact of the Work of Gary S. Becker, Keynote Address by James Heckman

October 31, 2014 • University of Chicago

THE UNIVERSITY OF CHICAGO
BECKER FRIEDMAN INSTITUTE FOR ECONOMICS

5757 S University Ave, Chicago, IL 60637
Main: 773.702.5599
bfi.uchicago.edu

ROBERT ZIMMER: Good morning. I'm Bob Zimmer. I'm president of the University of Chicago, and I welcome you to this celebration of the life and work of Gary Becker. Occasions like these are moments for reflection, and it is hard to think about Gary without being amazed at the impact he had on so many people. His work transformed not only economics but social science more generally. It had significant impact on the way the world has structured itself through its major social instruments, businesses, organizations, and governments.

He inspired both intellectual awe and deep personal affection of so many people around the world including many here in this room today. He was a pillar of the institution that he loved, the University of Chicago, and was an exemplar of what we aspire to be. He was a devoted friend and colleague and, of course, deeply devoted to his family. I feel profoundly privileged both individually and as president to have had Gary as a close friend and colleague.

Today's celebration has multiple components reflecting this array of professional and personal contributions and impact on so many people. This afternoon at a memorial service in Rockefeller Chapel, we will have the opportunity to reflect more personally on Gary. This morning, we will hear a discussion of Gary's work. This is a formidable task and requires a formidable individual to do so. Fortunately, such an individual is available in the form of Jim Heckman, and to formally introduce Jim, here is Lars Hansen.

[APPLAUSE]

LARS PETER HANSEN: Thank you, President Zimmer. I'm pleased but not surprised to see such a large congregation of people here to recognize Gary Becker's contributions to social sciences. We all know different aspects of Gary's work, but today we have an opportunity to gain an even better perspective.

I have the distinct honor to introduce my colleague, Jim Heckman. Jim has been at the University of Chicago for over 40 years and has been a special contributor to the intellectual environment here. As you know, Jim has incredible accomplishments as a distinguished scholar including, of course, his John Bates Clark Award and his 2000 Nobel Prize recognition for pioneering research that enhanced our ability to learn about economic fundamentals from microeconomic data and more recently, his contributions to our understanding of skill, formulation, and the differential impact of education on labor market outcomes and childhood development. What is perhaps less well known is that Jim also has a fascination with the intellectual history including Chicago economics.

Moreover, Jim was a long-time colleague of Gary Becker's, and the two of them had many common research interests. Collectively, they had a profound influence on many cohorts of graduate students. Given this backdrop, Jim is indeed the person best able to give us a unique and insightful perspective on Gary Becker's vast array of contributions to economic science. Jim.

[APPLAUSE]

JAMES HECKMAN: Well, thank you very much, Bob and Lars. And I have been given the formidable task of discussing the impact of Gary Becker's work, and, in fact, even in the title should be changed to talk about the impacts because there were multiple and they were profound.

Oh, I have a clicker. Sorry. Yes.

So how do we discuss Gary Becker's contributions in a relatively short period of time? It's a very formidable task indeed. And it's formidable for many reasons.

First of all, Gary Becker left a very large, tightly interconnected body of work, and it's not an easy task to summarize all of his contributions and the development in an hour even just the major contributions. He had many interests and ranged widely and deeply across fields within and between and beyond economics. I think what makes the task for me particularly formidable is that each of us here in the room has a particular favorite set or a particular Gary Becker contribution and knows those best.

And so covering the entire range of his work, I have a very critical and knowledgeable audience, and I'm inevitably going to admit some contributions. And I'm bound to offend, and I apologize in advance for doing so. Anything I can say can only be a partial and incomplete account of his work as a creative scholar who reshaped social science and who's had and continued to have an impact on economic policy. So there's a real question. The challenge in this lecture is to ask how do you measure the impact of such a creative scholar.

One way would be to just look around, each turn to the other like the Marine Corps when they say you're here and you might not be here in a week or something. If you look at each other, you should recognize that many of you are students and been influenced by Gary Becker, and just the sheer quality of the audience is really a measure of how his great impact.

There's a second way to do this, and a traditional way and a way that we've heard in this conference already is to list his honors. And for Gary, that's a very easy task to do. And it has been done already. We can start off with some of the more well-known honors, the Nobel Prize.

He was a Medal of Science recipient and a recipient of the Presidential Medal of Freedom. And so we all know that. He was honored by many academies and organizations around the world and justly so. And we could go on and list those honors.

There's yet another measure, which in some sense is more valuable, in some sense has an important theme that I want to spin throughout this lecture. And that is the accolades of his teachers and colleagues, not just the beginning of his life but over his whole lifetime.

And so, for example, there was a very famous Chicago economist who was here for many, many years and then left in the mid '40s seconds to go to Princeton near the end of his life. And his name was Jacob Viner, and he was a very important figure in international trade theory and in price theory, just creating the basic foundations of price theory circa 1930. And he made the statement in a letter to Gary's application here in Chicago that Gary Becker-- that Becker's the best student I ever had.

And that's really quite a profound statement when you realize that this man, Viner, actually taught many leading economists. Friedman, Stigler, and Paul Samuelson had all taken his classes. So Viner had quite a perspective to put into perspective. So he actually knew-- I think and had a vista that was very important.

Early on, one of his advisors and one of his friends and a lifetime colleague, Milton Friedman, here depicted around 1953, wrote the statement you can read-- and it's very important, and I want to come back to the theme that Friedman sounded-- that Becker had a brilliant analytical mind, great originality, knowledge of the history of economic thought, and respect for its importance-- and that's a theme that continues through his whole life's work-- and a real feeling for the interrelationship between economic and political issues and a profound understanding of both the operation of a price system and its importance as a protection of individual liberty. So early on in this lecture-- early on in this letter, Milton Friedman sounded the themes that were actually to be highly predictive.

And there was one other economist, probably less well known but very important in the Chicago empirical tradition, and that was H. Gregg Lewis, who was a cornerstone of the department in the '40s, '50s, '60s, and into the early '70s. And you can see that he also sounds a theme. This is, again, when Gary Becker's still a graduate student, that it's hard not to be overly enthusiastic. He was exceedingly intelligent, imaginative young man. And then he talks about these character traits, which, again, I think persisted throughout Gary Becker's life, a trustworthy individual and had the highest character, and he recommended them without any reservation.

So the question is what did his teachers think of him later. And here we actually have a chance 50 years later from the time Milton Friedman wrote the letter. Milton Friedman gave another talk here when Gary Becker received the Phoenix Award, one of the highest awards offered at the University of Chicago. And he said unequivocally that-- and this included his own life's work-- that Gary Becker was the most influential social scientist of the past half century.

So that's a good measure, and we could go on and on. But that's not a very satisfactory measure. There's yet another measure that you could use, and that is citations. And that's already been seen by some of the presenters earlier in the sessions yesterday. And it's a traditional measure, and Becker was and remains one of the most highly cited economists of the last half century. And even in death, his citations to his work are high, and I predict they're going to stay high for many, many years.

But in the end, all such summaries are very superficial. They focus on the exterior, and they miss the content and the contribution of his work. So today I'm going to apply Gary Becker's standards to Gary Becker. And this is what he said about economics, and I want to apply this to himself because I think he actually stands up well by this test. So I'm going to go through and apply the Becker test to Gary Becker. How well did Gary Becker help us understand the world and how we can help improve it?

So I want to focus on four themes and focused really on two main themes, but then there are two other themes that come along. And Lars is anticipated one of them, first of all and probably most important for this group of scholars, primarily a group of scholars or people who are students and interested in the world of scholarship, his contribution to thought, the world of ideas, the corpus of his body of work in economics and more broadly in social science. And then I want to talk about his contributions to public policy, and for Gary Becker and actually for Chicago of his era, I think the two worlds were not distinct. Frequently, these two worlds are viewed as very separate. You have a policy group over here, you have a theorist here, and they're separated.

At Chicago and for Gary Becker in particular and the whole Chicago group I think-- some of whom are here, going back from the '50s and '60s, the Chicago School of that era-- the important thing about economics is understanding the world. And in-- Gary frequently quoted a phrase from his teacher, Milton Friedman, that it was not a game played only for the pleasure of clever people to show how smart they were.

So even as a graduate student, Gary Becker showed a deep interplay between economic and political issues and thought a lot about the real world problems. And in the end of his life, he was teaching courses that were highly motivated by empirical problems, writing columns and discussing a variety of practical and important questions that were relevant to the economy.

I also want to discuss, as Lars anticipated, his impact on the vitality and continuity of both economics at Chicago and the Chicago School, which are two distinct but related entities, and how he maintained and extended this tradition and created a body of ideas that enriched this tradition. And he was an exemplar as President Zimmer has already said. So let me talk very briefly about his biography. I think it's well known. You have this in your program some information about him.

So we know that he was a brilliant student and scholar. He was born to middle class parents. He was raised in Brooklyn, educated in public schools in New York, went to Princeton and Chicago. He developed very rapidly. He was a quick study, and he was quite impressed-- quite easily absorbed the material that he was confronted with.

He graduated Princeton in three years, and he worked with Jacob Viner, whom we heard from already. And he co-authored a paper with William Baumol. And that paper is very interesting. It's prophetic. I think he was 21 years of age when it was published. I think he was already a graduate student here when it was published or maybe he was 20 when it was published.

But it showed a deep understanding of classical monetary theory and this theme that I think was sounded throughout his whole life of looking at the history of economics, putting economics, putting what his economics was into a proper perspective. And this was a trait that I think that characterized all of his work and as he-- as his papers evolved, as his thinking evolved, he presented a vision of continuously progressive evolution of the body of thought, but he would always go back and say it was as if he was talking to the past. So we can see some early pictures of Gary Becker as a undergraduate at Princeton.

He finished his PhD thesis at Chicago also in three years, and he stayed on the faculty for a while. And then he went off to Columbia and the NBER, then headquartered in New York. So early on he showed a great deal of independence. He was a bright student. Clearly he's among the very best.

But instead of staying on as a satellite or somehow a secondary individual, he went off to Columbia. He went off and became his own man and formed a position. He wanted to form his own mark, and I think that is very characteristic. He had a very independent streak, and that stayed with him and allowed him to be creative.

So when he was at Columbia, he was rapidly promoted to tenure as was appropriate. He became a chaired professor early on. And he created a body of work, and some of the students here are actually alums of that body of work, the Columbia Labor Workshop that he co-organized with Jacob Mentzer. And out of that came a body of thinking which then evolved as he returned to Chicago, which he did at age 40, which was extraordinarily important.

And I had the good fortune of being with him or being in-- at Columbia in the aftermath. Just after he left, I arrived on the Columbia faculty, and I could actually work with many of these students, see them, look at the idea. And what was interesting was not only the creativity of the work, but the sense of the community that these individuals had. They all felt a little persecuted.

I felt at times that I was looking at a community that must have been like the early Christians around in the Roman era. And there was a certain defensiveness, but there was also a deep sense of devotion. It wasn't just personal devotion in a kind of uncritical way, tough minded but very enthusiastic and very convinced that a certain body of thinking had been developed and that they were an important part of something. And they were, and they continue to be.

So if you look at this record, he came back to Chicago in 1970, and if I just count correctly, he was at Chicago for about 50 years. So even though he was not Chicago born, he really was Chicago bred. So this is a picture of him when he was on leave from Columbia at Chicago, and then he came back. So what Chicago did he come back to?

Well, he was the heir apparent to the leadership of economics at Chicago. So this was an iconic picture of the '70s and '80s. Many people will know this. There were a lot of people here in the room who used to hate this picture. They viewed it as oppressive. I'm not sure what Gary thought of the picture.

But Friedman and Stigler were actually the intellectual leaders at the time, and they really were the external symbol of what Chicago economics was all about. In case you don't know, Friedman's the shorter one of the two.

[LAUGHTER]

But Gary moved in as the heir apparent, and this is an iconic poster that some of you actually have and some of you actually appear in. So you can actually see this. This is a 1972 poster that was created by a graduate student named Roger Vaughan, and it was after the School of Athens, the famous painting of the School of Athens by Raphael.

And so there you see at the center of this George Stigler and Milton Friedman, and if you look closely, they're pointing up to the quantity theory equation, mv equals pt. And off to the right there of Friedman and Stigler, you can see Gary Becker waiting in the wings, maybe a little bit like [INAUDIBLE] Cassius, maybe you're not sure, but definitely they're waiting in the wings. But he didn't wait very long.

And the other-- what's remarkable about this picture-- and this was painted in 1972-- that five of the people depicted in this picture went on to win the Nobel Prize. They were all part of the Chicago School, and many others contributed really profound insights. So without going through all this, the picture face by face, body by body, this was a very impressive group. You'll also notice up here Nixon and Agnew in case which some of the older people will explain to the younger people over-- at the break.

And there's Al Herberger. I can't resist this since he's sitting here in the audience. And if you look closely, you'll see a triangle that's associated with a welfare loss etched on the diagram. So this was a Chicago School, but his wait in the wings was not very long.

So how do you place him in context? I want to place very briefly in context because it's a very heterogeneous audience. Many of you are better suited to give this talk than I am. But you certainly-- others I realize were not as familiar with economics and the way that Gary contributed to it and just exactly how you place them in context.

He came of age-- he became a professional economist in the mid '50s really or at least if you count, when you start your graduate work and when you start finishing your graduate work, it was in the '50s and '60s, and I think many people-- this came up in the discussion yesterday, but I think many people find it very difficult to understand the way economists thought about many of these problems at that time. Many of the problems we think about are in a very different way.

Outside of Chicago and a circle of Chicago schools that were influenced by Chicago, incentives and price effects were largely ignored. There was a long-standing Chicago tradition going back to Henry Simons, Frank Knight, and Jacob Viner and on to Friedman, Schultz, and Stigler and Harberger that emphasized the strong role of incentives and the need to respect them in devising policies. But this was an oddball view.

At that time, the Keynesian multiplier promised a free lunch for black box reasons, and even though he was a student of Viner, Samuelson was a promoter of the free lunch, the multiplier. And in 1962, there was a Kennedy tax cut that was viewed as a triumph of economics, and, in fact, one of the great-- and it was viewed as a triumph of Keynesian economics. So there was a view that this rather rigid price view-- and it was later shown analytically that the rigid price was really fundamental to understanding the Keynesian concept-- that this Kennedy tax cut was viewed as a triumph of the view, and this notion of the economy without incentives was extraordinarily important.

So a great example of this is the Brookings model. Many of you who don't know about the model. You shouldn't know about the model. But if in case you do know about the model, there was a Brookings model in 1965, and it was a complex monster with many different sectors.

But what's interesting if you look back at that model, it was viewed as the state of the art for macro economy. The model barely lacked any discussion of the labor market or household formation. And basically the view was that the labor supply and the family and many things that we-- some have saw were happening in the background were just in the background, and there was no discussion of how economics would have any relationship to that.

So here I've made a schematic that may be very difficult for people to read, and I apologize. It probably is impossible. So I'll-- let me just say that this is a schematic. So if you do have very good vision, you would be able to see this, and what it would show would be parallel developments.

But the stri-- the theme that comes out of this graph-- out of this chart is how anomalous in some ways Gary Becker and, in fact, the whole Chicago School was in the 1950s, that there was a lot of you, the way the macroeconomics was conducted, and there was a lot of exciting work going on in other fields. But the fact is that the incentive issue was really very, very underrepresented. And it was viewed that really the province of the family, the province of the labor market, all these were topics for people who were specialists outside of economics, and the view was to defer to the experts outside and take their wisdom and embody it. So the Brookings model was a great example of it.

So what this shows is there was a trend towards formalism in this period in economics. And what I would say that the Chicago School was somewhat belittled at that time because it wasn't as advanced in its technique. It wasn't really until the early 1970s that Chicago-- well, I guess the mid '60s that Chicago developed a strong mathematical tradition after the mathematical economics tradition, after the Cowles Foundation left-- Cowles Commission left in the 1950s.

So Chicago was viewed as a laggard and then an out beat-- an outlier because it was doing these off-beat topics, and it was worrying about incentives that really weren't part of the mainstream macro models. But going on, despite all of these themes in macroeconomics, there were themes of developments in data analysis. Microdata began to be collected, panel data, rich data, and a whole set of policy issues were always in the background.

But frequently the view was economists could comment on those, but it was in their off hours. You didn't use your economics much to talk about things like poverty, discrimination, schooling, and all these other issues that were actually salient in the '50s already. The Civil Rights Movement was very active.

So Gary and Chicago were really somewhat anomalous I think at that time. And it's hard to really understand that now from the current perspective because his work is so well received.

So how was Becker an innovative force in the world of ideas? Gary evolved in his thinking. This is the important thing. It's an amazing thing. Actually I had the privilege and burden I guess at the same time of going through a lot of his work in preparation for this lecture.

And it's very interesting in topic by topic to see how his thinking evolved and how he-- and what the style was of the economic scientists. But what's notable about Gary Becker was how as he evolved in his thinking he took the field of economics with him and later many other social sciences. He had a Midas touch, and when he touched a subject, he became a suitable topic for economists to study.

So he would walk on forbidden ground or maybe neglected ground, and he turned it into a whole field, fields of knowledge. And that's the legacy left. It wasn't a Johnny Appleseed just throwing seeds out. He actually was tilling these fields, created a framework, and then many followed in his notion.

So I want to talk in a brief time. I have left to-- on four topics that were basically illustrative of this theme. There are four general topics, so it's not paper by paper. If you had to go through each paper would have to have another entire conference that would last a week I think to do justice. But I want to talk about four topics that I think were very central to his work.

One is the economics of discrimination, which was an early sign of brilliance and creativity. I want to show it. It wasn't a pillar of his later work, but it was I think at a very important demonstration of his ability. And it brought in a lot of new ideas already, and it changed the topic. It was highly relevant.

Remember it was written in the 1950s. Martin Luther King was organizing Civil Rights Movement. It was not for another nine years that there was a Civil Rights Act. And so there was a whole discussion of the background, but it wasn't part of the foreground of economics.

Human capital is a topic where Gary Becker worked with incredible skill and insight. He gave us tools and gave us a coherent theory of the growth of earnings, human capital, education, both the investments by individuals and the investments by firms, the economics of slavery, inequality, job turnover, and growth accounting. There were themes of this lying around, but what Becker did in that '64 book and in his earlier 1962 paper was put together these things in a way that nobody had ever done before, and it was truly an amazing piece of work.

Then another body of work which you've heard more about in this conference was the economics of the family. This includes a broad range of topics-- fertility, marriage, household, division of labor, intergenerational mobility, how the family influenced the next generation.

But another fact, another theme throughout Gary Becker's work was the study of preferences. And I think if you look over his life from the very beginning and to the very end, the study of preferences fascinated him, and it's interesting to see how his views changed and how they oscillate and change the view of economics. But also on top of all this, I believe that Gary was an important empirical economist. He contributed to economic science by developing frameworks for data collection and analysis that had an enormous impact on empirical social science.

So this is a-- I'm reusing a figure creating Gary Becker as Becker Agoraeus. In case you're Greek, is a little weak, Agoraeus would refer to the marketplace, and he's throwing lightning bolts. And it shows my interpretation of the Temple of Becker. I'd prefer to have a Zeus figure than Hercules, but such are the limitations of graphics.

But this is the temple, and it shows the various topics we've heard about the last few days-- crime, addiction, inequality in marriage, and so forth. But the pillars at the base of all this was this notion of the power of incentives. That was the theme that ran through all of his work and through Chicago work. But he didn't just follow the Chicago tradition, he contributed to it in a way that I'll try to make precise.

But then these other pillars-- human capital, household production, and time allocation-- were really quite fundamental. So let me just try to take a-- and if we can, I have a video clip. When we talk about Becker on incentives, it might be best to actually have Gary Becker himself describe his work on incentives. So at this point--

[VIDEO PLAYBACK]

- In a nutshell, it deals with how people respond to incentives. And as you change various types-- monetary incentives but non-monetary incentives are all types of how people will respond to that. Other fields deal with that, too, but that's what certainly economists concentrate on. And if you think of designing a public policy of some type, you're always going to affect people's incentives no matter what you do.

You have Social Security retirement, and you think, well, what age are they going to retire and so on. You have disability program and what determines if I'm eligible for a disability, earned income tax credit, which we have in the United States. What determines how much I can get as a tax credit, and that'll be a function of how much I earn. That'll affect my behavior.

So all public policies affect incentives. And so one has to. It's necessary to understand these responses. Economics really in a nutshell.

[END PLAYBACK]

JAMES HECKMAN: So that was the pillar, and that was the base. And so incentives will be discussed throughout the remainder of this lecture but in passing. You can see that Gary Becker strongly felt about this.

So what was his approach to economics and social science? It was an approach that in some ways was very Chicago although he applied it and extended it. He used a core set of organizing principles and applied them everywhere. It wasn't like he would take a new theory for a new problem. He would change the principles. He wasn't like he was inflexibly applying the principles everywhere.

But what he was doing was basically getting to the essence of the problem but applying some basic principles. And what were those principles? Whoops.

His organizing principles, at least as I interpret them and as he wrote them in several essays, were three-fold. One is a people pursue self-interest, which he increasingly broadened over his lifetime to what was meant by self-interest. Secondly, that there were stable preferences. And, third, there was equilibrium in the market. And he followed the Chicago tradition by using what is sometimes called a Marshallian or a partial equilibrium analysis in most of his analysis but not all of his analysis either.

Now how did he also build on this tradition in Chicago? He also applied the methodology of positive economics that Friedman had developed and adapted it in his own way. So instead of looking at a single implication of a theory or saying here's my model, I've tested it, here's this particular data set, what he did is he used this notion and looked at multiple implications of his theories.

So, for example, in human capital, he looks at a variety of different data sets and a variety of new problems from the same core organizing principles. And that he judged a theory by the range of the implications, and he really was very vast. The '62 and '64 human capital papers are amazing studies. So it wasn't just one fact, one study, one cute little finding. It was like a body of work, and it was actually organized by a simple principle.

A second organizing theme I think in his work or a second principle was that he hated tautological explanations. Some people have said he wanted to do the economics of everything. I don't think that's quite correct, but I think what he disliked was the idea of taste change. It's of the nature of something or other to do it, which he realized was not much of an explanation. So he really wanted to try to understand phenomena from deep principles.

But the interesting thing is as he ventured over a range of territory, he always stayed rooted in economics. He carefully delineated his intellectual roots and how he departed from them. He went into other fields but was never absorbed by them. He showed how economics could inform the questions.

And so he learned the fields. He learned it very well. He learned all of these fields he went into and was very knowledgeable. But he also never left his role as an economist and brought treasures you can say or findings from other fields back into economics but used economics to help inform those fields.

And as I said earlier, he had a perspective that was deeply rooted in the history of economic thought. So his characteristics, in addition to what we've heard about at the conference and in various personal testimonials, he showed a great deal of openness to ideas. He listened to criticism. He basically listened to his harshest critics. He did so in a very polite and genteel way.

But he was firm, and he was actually very, very clear. I never saw him beat up people just mercilessly. His goal was basically to really try to understand ideas, and he sympathized with anybody who was sincerely trying to understand a problem.

And he also stayed the course. So he really was very, very, very, very persistent if you will as a trait. And when he ventured into these uncharted territories, he met enormous hostility. And I thank Bob Pollack for pointing this out. There's a quotation from Paul Samuelson, again, the Viner student I mentioned earlier, who was talking about a theory of fertility attributed to Richard Easterlin.

And so Samuelson, with faint praise, was praising Easterlin. And if you read it closely, you'll see it's all the more valuable for its scarcity among economic theories. And then he was attacking the rather sterile verbalizations by which economists have tended to describe fertility decisions in terms of the jargon of indifference curves, thereby tending to intimidate non-economists who've not misspent their youth in mastering the intricacies of modern utility theory.

So this was the-- remember, at this time, Samuelson was a Nobel Prize winner. Gary was in his mid-forties. This was quite a devastating critique. And I think what was interesting was that throughout this, he brushed these kinds of criticisms off. He went forward and thought, so let me talk briefly-- I guess I have to be briefer than I had planned, but about a couple of bodies of his work.

The first piece of work was an amazingly interesting, creative piece of work. It just-- it came out of nowhere in some sense, *The Economics of Discrimination* his 1957 book. He finished his thesis here in 1955.

So there's a real speculation about why he chose the topic. Maybe he personally experienced discrimination or witnessed it, but whatever it was, the thesis was a remarkable feat. And what he did is he recast the problem of discrimination, which up to that point was largely the province of psychologists. So there was a psychology of discrimination-- the Nazi mind, the criminal mind, the kind of mind that was racist in some sort. But there was very little interaction about how preferences interacted with markets.

And so there were many claims actually made in the popular literature-- and they still are today actually-- that the capitalists and in general whites benefited from discrimination and that exploiting-- by exploiting minorities majorities benefited. And Becker examined this idea in depth, and he contributed two basic ideas which were radical for the time.

First of all, he allowed for what are called now utility maximizing models of the firm. He allowed their firms to have a distribution of tastes, and that was very radical. The representative agent model was very much alive and well in that figure that I showed you or tried to show you. And that was one important notion that the firms were maximizing utility and that would include their distaste for hiring Black workers or minority workers more generally.

And the second was there was heterogeneity among firms. And so what came out of the model, which came out in his later work on the family, was how minorities sorted to firms that had less discriminatory tastes. Already he had this sorting equilibrium going on.

And what he did in a major accomplishment was he defined market and individual discrimination in an empirically operational way, the price that people paid for their tastes. And he contrasted market discrimination with individual discrimination, which is very important today. Because of the sorting, there are many studies that are still done that are used in the public media. We even published in economics journals where random audit pair studies are sent out to firms or to various other formats to see how those transactions that are somehow created at random workers are treated. Are they discriminated against?

And his great insight was that, well, there may be a cost to doing it, but there still is sorting, and that the transaction that actually dominated market discrimination was the transaction at the margin, where the less-- the least discriminatory firm that was just at the margin of indifference between hiring a minority and majority. And that has huge implications for interpreting even the current evidence that's out there today.

And what he went on is he went on to show the great benefits of which groups benefited and which groups lost from discrimination. And so, for example, he talked about really, without mentioning it, the Marcus Garvey movement that had actually proposed separation of Blacks and whites, and he pointed out that-- by discrimination of that sort, white capitalists would lose, white workers would win, and Black capitalists would lose and Black workers win by that kind of segregation. And so he really talked out in a much more nuanced way and gave us a much deeper understanding that simply wasn't there. So it was the interaction of taste and market.

Now in that particular body of work, he didn't look at the origins of preferences, which he was later to do, and this work still stands today. There are some other work that was done later by Phelps and Arrow on statistical models of discrimination, a different notion about discrimination. But Becker was very, very played a very important role.

So let me talk about these three pillars, if I can. And now I've been a little whimsical, having Gary turn around to each look at each pillar and then to throw a lightning bolt down on the human capital. So that's really corny and I apologize, but I couldn't resist.

So here's *Human Capital,* which is to me a fantastic book. And you have to understand this book was written, finished, sent off really in its essential form when he was 34 years of age and he'd worked on it. And so what did he do? There's this picture that was put up yesterday. I learned for the first time that that's not his handwriting in that board, but those are his equations. So nonetheless, it's an accurate representation of human capital theory.

So what did he do? He recognized an important phenomenon that by the mid 20th century, the US and many other countries had experienced great, greatly expanded educational systems. Skilled workforces were emerging, and yet economists were very slow to recognize this trend.

Now you can go back, and Gary did go back when he looked at this work about the classical antecedents for the work. Adam Smith, Marshall Latka, Simon Kuznets, Friedman and Kuznets, lots of work had talked about bits and pieces of this, but nobody had put together all the pieces in a way that Gary Becker did. And the classical view of income distribution. And, in fact, the classical view that was dominating growth theory and a lot of macroeconomics was the notion of labor as this kind of unskilled mass capital, which was created by investment-- and that's the only factor created by investment-- in land that might be improved.

And so his colleague and long-term mentor and advisor in some ways, TW Schultz, had in his presidential address to the AEA shown the importance of counting for human capital and for growth accounting purposes. But Becker created the field, and he created the modern field, showed the full range of modern implications. I can't go through all of the details, multiple implications as I talked about earlier. But just beyond the notion about how we explain wage differentials and how we can explain the age gap between the young and the old of a given education group, and how we can explain job turnover and the theory of quits and layoffs.

One, a great contribution to trade theory was his explanation of Leontief paradox. There was a paradox brought out in the mid '50s that the US was capital abundant country, and yet it exported labor intensive goods. And he pointed out there was no paradox because US was actually very rich and was a human capital abundant economy and there wasn't any great contradiction with trade theory.

So we developed the economics of investment, and this continues to this day. And he developed along with Barry Chiswick and Jacob Mincer various ways to compute rates of return. And these were extraordinarily important and very influential in shaping our thinking and ask a lot of questions that still shape the agenda today.

Now one notion that came out of all of his work though-- and this goes back to incentives-- was the notion of inequality. So we could understand inequality in the form of skills. But this by the way is not a notion that's even been well received as of 2014. There was a bestseller, a recent bestseller on *The New York Times* list by Thomas Piketty, which was talking about capital and the importance of capital in explaining inequality, missing exactly this kind of Schultz-Becker revolution of the importance of skills and the importance of skills, which are basically the major source of inequality in modern societies.

And so Gary talked about the notion of good versus bad inequality, and that got him into a lot of trouble as many of his statements did. What did he mean? A lot of people say there's no such thing as good inequality. What was he talking about? He was talking about incentives.

He said, well, if we think about who invests in education, if the price of education is sufficiently high, the return is sufficiently high because there's a demand for education, markets will respond. And there's a kind of inequality that may be well taken care of in the long run but actually would actually create good valid price signals. So Gary talked about this.

So that was Gary Becker at age 34. And that was pretty impressive. And most people-- by the way, I think most people probably even in this room would have stopped just about that time and settled down to a pretty comfortable life. But he went on because he had this deep curiosity.

So what was the next lightning bolt? The lightning bolt we heard about from several papers was the economics of the family. And here there's a case study. The book that he was most famous for in terms of the work on the family, which put together years of research, was the economics of-- was the economics of the family. And the economics of the family included a broad range of topics-- fertility, marriage, divorce, all kinds of aspects of family life.

But it's a very interesting case study about this in terms of the economics of fertility. And I can't help but tell this story because I think it's very symbolic and at the same time very enthusiastic. Gary was very enthusiastic about the topic of fertility to the end of his life. He was very enthusiastic about the Asian Family Initiative on understanding fertility, fertility changes in Asia, which would examine-- will examine the causes and consequences of declining fertility all around Asia.

And so his 19-- so it's interesting to see the evolution of his thought. He wrote a paper early on in his life-- and, again, you could say, well, maybe he was having his kids around that time, and so he wanted to come up with a way an economist would approach having children. I'm not sure. That I would leave to his sister to analyze.

But what I would say is that the 1960 paper in many ways, while very controversial and hated by many demographers, was a failure because what happened is he used classical economic analysis and basically said there should be-- children should be a normal good. If you have more income, you should buy more of the good. And one of the major persistent findings in the data was a negative correlation, and he really couldn't understand that.

Well, what was going on, and why-- how could he explain it? At that time, he used what we'd call a deus ex machina, pursuing this Greek god image here for a second, at least Greek theater image. And what he did was he said, well, the trouble is that income is positively correlated with contraceptive knowledge. So the higher income people have better way of controlling fertility, but it was not a good explanation.

And he got a lot of criticism and very hard criticism, some very valid criticism. Probably the most valuable criticism that stayed throughout his life was a critique by a Harvard economist named James Duesenberry, who basically criticized Becker for not recognizing that the consumption of children was basically linked among themselves and also to their own parents' consumption level.

So what did Gary do about this? Well, this was a slow response but a very good response. So he and his colleague Jacob Mincer slowly explored the economics of fertility. Mincer pointed out the value of female time, the value of women's time. As economic opportunities rose, as the societies developed, societies were richer, and therefore the higher was more costly for women to stay at home and more costly to have children. And so that was a building of the cornerstone. And that led Gary Becker I think to create the household production model, which is a major contributing factor. If you look closely at that, you'll see the household production. Those of his students will recognize the Z goods.

And the theory of allocation of time was a major paper in 1965 where he started putting together a theory of inputs. And this is very important when I come to the last topic, which is this notion about tastes. And so what he did was to develop the theory of inputs, and so the child-- a child was-- there was a derived demand for children. Inputs were the mother's time, and he organized thinking about household and home production.

That work by itself had huge impacts on the collection of data, on the organization of data. Time diary studies, household production studies, even though they've been around for a bit, a framework of analysis was there, and people used it and still use it to this day.

But the third piece was written only about 1972 and 1973, so it was a delayed response. So you can see that from this original notion of fertility. He had another notion, which he formalized in a paper with Gary-- formalized with HG Lewis, his thesis advisor, whom I quoted earlier. And there they talked about what was the notion of quantity and quality trade off. And that was a thoughtful but delayed response to Duesenberry.

And what he did is he created a model in which he could then say, well, now because we have to tie the living standard of the parent to the child and even the children among themselves, there's a different notion of what the price of a child is. And then under plausible conditions, as income increases, the price of actually quantity-- of quality and quantity would change, price of quantity would rise relative to the price of quality, and people would substitute.

And this was a very powerful idea, and it's a very powerful idea even to this day. And that's when we think about fertility in China, for example, today many people are saying, well, China's going to relax the one child policy because we now know that China is actually suffering a fertility decline-- will-- suffer an aging population and fertility decline, and there will be some important implications.

But many studies based on this work of Gary Becker and as it's generalized and expanded showed that actually even if China relaxes its one child policy, the basic economic forces he emphasized, the quantity, quality trade off and the opportunity cost of women's time will still cause Chinese fertility to decline. So in many countries around the world, you're going to find that fertility has declined even when there was no one child policy.

So this is just one of many examples I could give. Unfortunately, I'm running out of time, and I'm only a third of the way through. So I'll ask President Zimmer to lock the doors and stay here. But I won't. I'll finish up.

So but there are many other ideas. So I could go through example after example. We heard great papers today and yesterday about the marriage market. Again, he got the same idea of sorting. He went back to the sorting issue. He breathed life into certain assignment problems and showed the relevance of these assignment models to economic analysis.

And he created these prototypical examples. So you could look at the consequences of no fault divorce, the effect of firm specific capital. And then even within the household, he talked about the formation of skills human capital again. And so he created a whole series of very deep insights that motivated a lot of research, and typical of much of his work, he gave a very simple case that in some sense was slightly overstated, some people would say greatly overstated, but they got to the essence of the problem and stimulated a body of research.

But also typical of Gary Becker, he accepted all the criticism and encouraged it, and, in fact, he helped create the body of work. And so the new book by Browning, Chiappori, and Weiss is a great example of the evolution of this body of work and how this will affect our understanding of the family and, if you go back to the Brookings model, to really understand that the mechanical model of household formation and dissolution was in that model now has a much richer counterpart based in economic theory.

Let me finally talk about the last pillar. And here one more lightning flash. And that's my final one. I want to consider this question of tastes, preferences, and habits because this was a theme that I think fascinated him over his whole lifetime. He talked about preferences for discrimination and he organized the thinking, but he didn't notice where these came from.

He had a lifetime interest in this question. He rejected a taste-based explanation of the phenomena. He just simply did not like the idea that it's of the nature of a thing to act this way. What does that mean? He wanted to know what it was, what the preference-- where the preferences came from, what was the positive economics and predictive content of this kind of work?

And so what he did, he evolved, and he evolved in a series of steps. And I'm afraid I have to cut this too short. But what he did is he started as he did in his work on fertility using very standard preferences. He used standard preferences, and that was his work on fertility. And he said, well, people-- families can have more children. They prefer children, more children to less children, everything else the same like any other normal good. It's like a durable good. The very metaphor inflamed a lot of people, but it was a standard notion.

But then he also, at some key stage in his life, openly rejected the invocation of preferences, and he came across a very deep insight that I think is very relevant today to the understanding of economics. And what he rejected-- and this is where in a paper that I think is one of his most original and creative, a highly original, very, very simple paper-- but this paper is highly relevant today, this paper on irrational behavior that was published in 1962. This, meanwhile, is why he was doing his work on human capital theory.

This work is very timely because neoclassical economics has come under attack. There are a lot of journalists, even some trustees I would say of this university, who paint a style, a picture of economics as based on rationality, perfect foresight, and this automaton without any kind of imperfect information or groping.

And what Gary did is he got to the essence of the problem, and unfortunately, given time limitations, I'm not going to be able to develop this. If you've seen it before, this is the standard theory of consumer choice. The blue line is basically representing consumer preferences. The budget line is where the individual that's the feasible set for the individual. And the standard picture that all economics undergraduates learn is, well, now if you change the budget set to this dashed line here, you substitute, and so if you look at these two different situations, the old and the new, the new situation being one with a higher price for the good x1, that you substitute away from x1 towards x2. That's the standard theory.

What did Becker show? He showed-- and, again, just getting to the essence of what consumer theory is about that basically a lot of the propositions in consumer demand theory would hold up even if people were completely irrational, if there was no rationality whatsoever. So, for example, he said suppose that human beings are totally irrational. The only thing they're bound to-- he was exempting federal government spending by the way when he was doing this-- is they're bound by the budget constraint.

And so what happens is he just said suppose that these people are rationally located. They don't take negative amounts of goods. They can't do that, but they have to stay within this budget set. And so wherever they would locate would be the mean. It was the cloud of Brownian motion if you want to think of it that way.

And then if this cloud is-- if the constraints are changed, the cloud has to reallocate. That's it. That's the law of demand. And actually this is more subtle than a lot of work and a lot of the critiques that's gone on because it actually respects the budget set, and a lot of the critiques that have gone on that have been one preference at a time notion have really not respected the budget set. And the consumers and those models many times are vulnerable to being what economists would call a money pump.

They can be suckers. A sucker is born every minute. If they really had those preferences, they wouldn't last for very long. So he got to the essence of the idea. And this idea was extended, and it still remains a major theme.

So, again, I really should conclude without talking about the Chicago School, which would be very sad. But nonetheless looking at his work, the habit formation was another deep idea, and in many of his papers, he was fascinated by habituation as a way of preferences evolved. I can't really begin to count the number of times he talked about Aristotle, Thomas Jefferson, Adam Smith, and many, many other thinkers about how people formed habits and they formed habits and Aristotle talked about forming virtue. And he had many citations-- many discussions about people practice habits to become more predictable.

Now he had a series of papers on this question, and the one that I think is probably the most well known is the one with Kevin Murphy, where he discussed basically this question about habituation and a theory of addiction. And the very term rational and addiction just offended many, many people.

And what he did though was actually go back to this taste question, and we revisited the taste questions. He had written this influential paper with George Stigler about forming capitals and forming a robust capital of stocks of habits that would then help explain with stable preferences. You could nonetheless have a stock of preferences that would affect your behavior.

And so the stable preference solution, which is created in this paper with Kevin Murphy and extended in various ways and continued to work on until the end, showed that even though just like in his work-- later work on crime and his earlier work on discrimination saying there's kind of an irrationality out there in the market, people are throwing away things, he could say no. We have a stable preference solution, the stable preference solution can explain, and what looked like irrational drug addiction and irrational behavior could be under certain circumstances that he gave that they gave was basically defined by rational behavior, preferences over stocks that were stable.

So he could even get time consistent preferences. And then he continued to work on this problem. And he talked about how welfare economics, very much like Assar Lindbeck's talk earlier today, how basically welfare dependence might change.

And so, again, these ideas I just don't have time to talk about. Crime and punishment, again, the whole theory at that time about crime and punishment before he visited was the irrational criminal, and he pointed out that you could move beyond these kinds of crude psychological notations. It had notions.

He could also move on to topics in law and economics, which included the work on crime and punishment, the work that Bill Landes talked about yesterday and throughout was always the incentives. And there are a range of other questions that he worked on in terms of competitions. And he had massive contributions. He ran the rational choice workshop with James Coleman and then later Ed Lamin, and he had large impacts on sociology and the like.

So let me just talk very briefly. I'll let President Zimmer announce the moment of doom. But just talk about how he contributed to Chicago tradition in economics. And Chicago before him had this very high intellectual tradition. There was a general quality of Chicago economics, high quality of the faculty, high level of integrity. I think Becker had integrity throughout his whole life, and he valued integrity and sincerity. There was this belief that economics was really solving real-world problems, and the price theory was basically the language of the whole domain. You could put this together.

So how did it work? It worked because everybody thought we were doing something serious and that economics was doing something serious and that we could learn from each other. So there wasn't somebody who worked on this field and knew nothing and the other person over here knew nothing about it. There was a sense that at some level we could even understand and foster each other.

And he did this with his students, for example, his class with Gary-- with Kevin Murphy, here they are discussing rational choice. So maybe the writing on the board is really Murphy's in the other painting. I'm not sure. But anyway.

So they worked together, and they created this. And then they built the Chicago tradition. And I guess without showing you pictures of deceased Chicago economists of another era, I will skip past all those although it's nice to see them every once in a while, just recognizing the diversity of points of view of Chicago economics.

I would just add this, that Chicago economics is more than the Chicago School. Those two get very-- in the popular mind, these two get blurred together. But I think the theme of Chicago economics was that people were actually working at a high level of originality and creativity, and they certainly didn't agree with each other. So a lot of people didn't like Thorstein Veblen, who was here in the early part of the 20th century. Simons and Veblen certainly didn't have a comparable views, and Knight and Viner argued with each other, and Henry Schultz was viewed as an econometrician but not-- didn't know too much economics.

And then here-- for vivid display, here we have Paul Douglas, who later became US Senator and was a triumph of liberal economics in the Senate and always pushing for liberal policies and even in the '30s and '40s, and next to him on the Chicago faculty at the same time with Oscar Lange, who is probably most noted for his work on the economic theory of socialism and for going back to Poland after the end of the Second World War and becoming an economics minister in the Communist government of Poland. So I say that's a pretty broad range of view.

So let me just conclude. I'll stop with this because I won't be able to-- I really do have to stop. I have a tendency of abusing these forums, so I'll try to stop. I will just summarize what I think were the three ground rules for Chicago economics, and I think they're still relevant today. And I think Gary embodied these, and he went forward with these.

The first ground rule was that its faculty know and understand the corpus of economic theory, everybody. And it's not just their specialty. And so there really was a common language, and it wasn't a superficial language. People could understand each other. People would go to other students' theses seminars and participate in workshops, and that's what actually enriched the place, because there were a lot of new and very, very interesting ideas.

The second ground rule is that it views economics as a serious subject. And so it's not escapism. It's tackling serious problems. And Friedman once wrote that he didn't stay here because of the weather-- he certainly could have written that today-- but because his colleagues were engaged in the serious enterprise of understanding the world and not getting their names quoted in the newspapers. I think that gets to the essence of it.

And even though he was highly quoted and Gary was highly quoted, that was not the essence. That wasn't why they were here, and it wasn't the way they viewed Chicago economics. And then the third was this empirical tradition to which he contributed.

So let me just conclude. There are a lot of other aspects to Gary, and I can't really conclude-- I can't really cover them all in the time allotted. But let me say that this is a small sampling of what he did and his contribution, and that's what makes this task so formidable. But it is the case that he did more than just carry on a tradition. He extended it in every dimension.

So human capital, he brought really enriched to the Chicago School, really the understanding of fertility and the understanding more generally of the economics of the household and brought that to a rigorous, flourishing subject. And then the study of preferences, which he was still working on at the end, how families could induce preferences in children, how that would solve inefficiencies that might arise and maybe even be more efficient than certain proposed market solutions.

So he stayed to the end. And in his columns with his wife Judy, and also with Dick Posner, they did a lot of research and applied this in a very creative way, but he set a standard that's going to be hard to maintain. I think it's a standard that we should rise to, but I certainly think that we should recognize that Gary Becker-- so here I'm going to skip through a lot of pictures and just-- oops.

I can't tell you all. But just to think of the impact, so how did I answer these questions? I'll just tell you my answers to these questions. The answer to the Becker question how well did he do. I think I presented only a sampling of his work, but I think it should be suggesting that he did, in fact, show that economics contributed to the understanding of the world and how you can help improve it. I've given you only a tiny fraction of what his contributions were.

His impacts were wide ranging. He expanded the scope of economics and expanded the frameworks used by others in social science. And his whole approach to rational choice, to understanding that there wasn't this automaton view of rational choice, that rational choice really respected the fact that people had constraints, constraints being the most basic thing in economics maybe even before preferences, and that we should really think about-- that we should really think about economic problems in this way and think about social problems this way. That's permeated across all of the social sciences, not just in economics.

But he also stimulated the production of huge amounts of data everywhere he went. So sometimes said that Helen of Troy, they had the face that launched 1,000 ships. I would say that Gary Becker had the work and the research corpus that launched hundreds of thousands of papers, books, and actually the scholarly careers of many people here in the audience, produced a cadre of well-trained students. So his impact is staggering.

And I must say that in preparation for this lecture, I became almost overwhelmed by the sheer enormity of this work and realized how understated he was, that he let-- many people say-- talk about people-- this is not suffering fools gladly. I think he suffered a lot of fools gladly. He put up with a lot of foolishness and a sense of being a gentle, informed, and highly intelligent spirit. So thank you very much for your attention.

[APPLAUSE]