

T.W. Schultz Lecture — Private Notes

James J. Heckman

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- It is a great honor to be invited to give the T.W. Schultz Lecture this year.
- T.W. Schultz was my colleague at Chicago for over 25 years and I came to know him well through our frequent interactions.
- We spoke about many topics, ranging from general equilibrium theory; to the writings of Jacob Viner in *The Long View and the Short*; to human capital and child quality — the topic of my lecture tonight.
- We shared many interests and I learned a lot from him.

- He was 70 when I first encountered him.
- I was stunned by his vigor and clarity.
- I was amazed by the broad, insightful view that he took on a wide range of issues in economics and social science more broadly.
- He was deeply curious about the world.
- In a Chicago that had immense talents — Milton Friedman, Gary Becker, Harry Johnson, D. Gale Johnson, Arnold Harberger, Bob Fogel, H. Gregg Lewis, Hans Theil — Schultz stood out as a leader, a man with great vision and much wisdom.
- He was a builder of intellectual environments. As a department chair, he built two highly successful economics departments: Iowa State (1935–43) and Chicago (1946–61).

- He believed in the value of first-hand observation and learned from his extensive travels, starting with a 1929 trip to the USSR, where he witnessed the Stalinist economy being created, a visit to Auburn University in the 1930's, where he observed tenant farming and race relations in the South, and many of his other trips that we discussed in our years together, including his work in training economists in Chile.
- He impressed on me the value of making first hand contact with the phenomenon being studied. Today, we would call this aspect of his work ethnography.
- In agricultural economics, he would be called a man with mud on his feet.

- He was a teacher who produced many students and inspired those he did not know. Many of his students became leading independent scholars in their own right — the mark of a great teacher who produces scholars, not sycophants or acolytes.
- He was a listener. I was always struck by how carefully he listened to a wide array of persons with different backgrounds and talents and how much he drew from them.
- Will Rogers said that he “never met a man [he] didn’t like”. Of Ted Schultz it can be said that he “never met a person he did not learn from.”

- Ted Schultz made important contributions to agricultural economics and agricultural policy, to the theory and practice of economic development by showing the importance of the agricultural sector to development, to framing the broad questions and research agenda that defined the modern field of human capital, to the study of productivity, the analysis of poverty, and a variety of other fields.

- As a student of Arthur Lewis at Princeton, I had grown up on the theory of economic development with unlimited supplies of labour, and the later Ranis-Fei model. I was impressed by Schultz's deep insights that, contrary to the conventional wisdom of the day, showed that:

(a) The marginal product of labor in agriculture was not zero.

(b) The agricultural sector should be fostered and not drained to promote economic development.

- He was a very wise and kind man.
- One lesson he taught me I carry to this day.
- Chicago economics in the early 70s was a rough-house environment. Browbeating and intimidation, especially of students, were natural by-products.
- Responding to this ethos when I first arrived, one day I demolished a student's work at a seminar where Ted was present.
- Later, Ted took me aside and told me that I had made some excellent, helpful points.
- But he also encouraged me to “remember that today's student is tomorrow's colleague, and you will be together in this profession for many years. Be kind and they will remember.”
- I completely changed my approach to students based on this remark, and I am grateful for this wisdom.

- Another story of his kindness: A tale of his boyhood.
- My son was assigned a fourth grade paper. He was to interview a much older person about how he/she celebrated the holiday season when he/she was young.
- Ted agreed to be interviewed.
- For two hours he regaled my son with tales from the South Dakota prairies in the early twentieth century.
- Tales of hunting and trapping game.

- Better known is the story of D.G. Johnson as a high school student writing T.W. about international agricultural markets when T.W. was at Ames.
- T.W. responded with a letter and books, and came to Johnson's presentation.
- He graciously engaged a variety of people, including an unknown Iowa farm boy.
- But as this story reveals, and as his success in building two strong economics departments shows, he was also a great judge of talent.
- Had Ted been a scout for the Cubs, there would be many more World Series pennants flying at Wrigley Field.

- Ted felt that it was essential to draw on knowledge whatever its source.
- So it was no accident that he drew on the work of anthropologist Sol Tax, *Penny Capitalism*, in his own work *Transforming Traditional Agriculture*.
- He often quoted, and embodied in his own work, a statement of Hayek:

The physicist who is only a physicist can still be a first-class physicist and a most valuable member of society. But nobody can be a great economist who is only an economist — and I am even tempted to add that the economist who is only an economist is likely to become a nuisance if not a positive danger. (Friedrich von Hayek, 1956)

- Ted was much more than just an economist, and that made him a great economist.

- Although Ted did not often write about methodology, when he did, he offered an eclectic approach.
- In his 1990 book, *Restoring Economic Equilibrium*, published when he was 88 years old, Schultz developed his view of entrepreneurship, which was strongly influenced by the Austrians and by Schumpeter in particular.
- It is worthwhile to review his methodology.
- His message — which is relevant today, when advocates of alternative methodologies often dismiss each other's work on methodological grounds — is really one of anti-methodology, and of tolerance.

- Instead of pointing to a “correct method” or “correct path”, he suggested a very different point of view.
- His credo was to use whatever tools were needed to answer the problem at hand, being mindful of the limitations of each tool and of each fact, and the need for basic economic theory to smooth out the rough spots.
- He rejected blind empiricism, which has come back into fashion in recent years.
- The need to be eclectic was especially true in the study of entrepreneurship, which was the topic of his book *Restoring Economic Equilibrium*.

- From *Restoring Economic Equilibrium*:

Inferences from empirical evidence are not free of doubts. An epistemology of the nature and grounds of economic knowledge is essential to comprehend and understand human actions in economic affairs. It entails perceptions based on observations, reasons based on logic, and judgements based on values. For the study of entrepreneurship this means that for want of observable evidence, perceptions are intuitive, for want of economic logic there can be no economic reasons for what entrepreneurs do, and for want of a received set of values there can be no accepted judgements of their performance. The economic analysis of entrepreneurship is weak for lack of observations. A useful general theory of entrepreneurship is wanting. Ideological controversies distort the values required to evaluate the contributions that entrepreneurs make.

Specialization in economics has enhanced the productivity of economists. Appeals to data and quantitative analysis have flourished as dependence on introspection and intuition has declined. Some properties of theory are beyond the reach of evidence. Moreover, there are difficult unsolved problems that pertain to economic decisions and actions of people as economic conditions change over time.

Notwithstanding the advances in economics, there are alternative modes of economic thinking that are more comprehensive than economic growth models. For our purpose, however, the language of economics about entrepreneurs is beset with ambiguities that limit its usefulness in dealing with observable behavior. . . (Schultz, 1990)

- He was interested in knowledge about the world and not about methodology *per se*, and he was prepared to venture into new theoretical worlds, however imperfect the models, in pursuit of understanding real world phenomena.

- Tonight I want to talk about a topic near and dear to Ted's heart — the economics of child quality.
- One of his books was *Investing in People: The Economics of Population Quality* where he discussed the sources of human development.
- At one of the several economics of population conferences that he held at Chicago, he solicited a paper from Arlene Leibowitz, then a graduate student at Columbia and now dean of the UCLA School of Public Policy.
- To my knowledge, hers was the first systematic empirical analysis of family influence on child skill formation.

- She built a simple recursive model of child development, a forerunner of the work I will discuss tonight, that explained differences among people as a consequence of parental investment.
- Two prominent economists had discussed the origins of human differences long before Arlene Leibowitz or Ted Schultz had done their work.
- It is interesting to compare their views because the contrast in their points of view is still relevant to the analysis of child quality.

- The first economist, Adam Smith, was a follower of Locke and a believer in “*tabula rasa*”. He wrote that all people are born essentially alike and are shaped by experience after age 8:

The difference of natural talents in different men is, in reality, much less than we are aware of; and the very different genius which appears to distinguish men of different professions, when grown up to maturity, is not upon many occasions so much the cause, as the effect of the division of labour. The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature, as from habit, custom, and education. When they came into the world, and for the first six or eight years of their existence, they were, perhaps, very much alike, and neither their parents nor playfellows could perceive any remarkable difference. About that age, or soon after, they come to be employed in very different occupations. The difference of talents comes then to be taken notice of, and widens by degrees, till at last the vanity of the philosopher is willing to acknowledge scarce any resemblance. But without the disposition to truck, barter, and exchange, every man must have procured to himself every necessary and conveniency of life which he

wanted. All must have had the same duties to perform, and the same work to do, and there could have been no such difference of employment as could alone give occasion to any great difference of talents. (Smith, 1776)

- Smith's belief that market trade and specialization shaped human differences was corollary to his insight about the powerful role of specialization in a market economy.

- Later, another prominent economist assigned a greater role to the family and showed more understanding of the origins of human capital:

The most valuable of all capital is that invested in human beings; and of that capital the most precious part is the result of the care and influence of the mother. (Alfred Marshall, 1890)

- Schultz's 1980 Royer Lectures at Berkeley addressed these issues. Schultz noted that the success of modern economies depends in part on well-educated, healthy and adaptable workers who are capable of learning new skills so that they remain competitive in a continually changing global market.
- Schultz showed the value of skill and ability in adapting to and exploiting new opportunities.
- He supported the notion that families are the major producers of the skills that promote schooling and adaptability.
- He did not develop the mechanisms of family influence nor did he take a position on whether Marshall or Smith was correct.

- This lecture addresses these issues. It follows the precept of Hayek that Schultz liked to quote and draws on some results currently outside of conventional economic analysis to enhance economic knowledge. It also creates a bit of new economics as well.
- Drawing on a large body of research in neuroscience and psychology, I show that the early years are foundational for a full range of human competencies and capacities and are a period of heightened sensitivity to the effects of both positive and negative experiences.

- Studies of human capital formation indicate that the quality of the early childhood environment is a strong predictor of adult productivity, and that early enrichment for disadvantaged children increases the probability of later economic success.
- Research also shows the importance of the early years in shaping growth, human health and the foundations of adult physical well being.
- Although explanatory mechanisms for interpreting these correlations are still being developed, recent advances in neuroscience and physiology are illuminating, as they demonstrate the extent to which early experience influences the development of neural circuits that mediate cognitive, linguistic, emotional, and social capacities.

- Today I discuss a body of research on the development of humans and animals that cuts across disciplines.
- I discuss recent evidence on the technology of skill formation that helps to unite the evidence within a unified economic and econometric framework.
- This research provides a framework for integrating diverse evidence from the field of child development and economics within a unified framework.
- I move beyond “treatment effects” reported in the literature to develop a general interpretive framework that can be used for policy evaluation.

- There is a striking convergence of four core concepts that have emerged from decades of mutually independent research in economics, neuroscience, and developmental psychology.
- First, the architecture of the brain and the process of skill formation are both influenced by an inextricable interaction between genetics and individual experience.
- It is not often that one hears from a Chicago economist that Adam Smith was wrong on any point.
- But on the issue of the formation of human differences, Adam Smith was wrong to deny the importance of family environment in the early years in shaping important differences among persons.

- Second, both the mastery of skills that are essential for economic success and the development of their underlying neural pathways follow hierarchical rules in a bottom-up sequence such that later attainments build on foundations that are laid down earlier.
- Third, cognitive, linguistic, social, physiological and emotional competencies are interdependent, all are shaped powerfully by the experiences of the developing child, and all contribute to success in the workplace, in schools and in society at large.
- Fourth, although adaptation continues throughout life, human abilities are formed in a predictable sequence of sensitive periods, during which the development of specific neural circuits and the behaviors they mediate are most plastic, and therefore optimally receptive to environmental influences.

- Virtually every aspect of early human development, from the brain's evolving circuitry to the child's capacity for empathy, is affected by the environments and experiences that are encountered in a cumulative fashion, beginning in the prenatal period and extending throughout the early childhood years.
- Extensive evidence indicates that cognitive, social, and emotional capacities play important roles in the attainment of adult economic productivity, and all are shaped in part by early life experiences.
- High levels of socioemotional skills foster exploration, curiosity and learning.
- Cognitive and noncognitive abilities are produced by families and affect later acquisition in a dynamic fashion.