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Abstract

This paper uses as source material twenty-three autobiographical essays by Nobel economists presented since 1984 at Trinity University (San Antonio, Texas) and published in *Lives of the Laureates* (MIT Press). A goal of the lecture series is to enhance understanding of the link between biography and the development of modern economic thought. We explore this link and identify common themes in the essays, relying heavily on the words of the laureates. Common themes include the importance of real-world events coupled with a desire for rigor and relevance, the critical influence of teachers, the necessity of scholarly interaction, and the role of luck or happenstance. Most of the laureates view their research program not as one planned in advance but one that evolved via the marketplace for ideas.

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Lessons from the Laureates

A goal of the Nobel Economists Lecture Series at Trinity University has been to enhance our understanding of the link between biography, and most especially autobiography, and the development of modern economic thought. Each of the twenty-three lectures, organized around the theme "My Evolution as an Economist," provides source material for this endeavor.

The purpose of this afterword is twofold. The first section identifies common themes as well as some disparate views expressed by the laureates in describing their development as economists. Among these are the importance of real-world events coupled with a desire for rigor and relevance, the critical influence of teachers and scholars during the laureates' formative years, the necessity of scholarly interaction and a lively intellectual environment, and the role of luck or happenstance in their lives. Most, but not all, of the laureates view their research program as having been largely unplanned, evolving via the marketplace for ideas and taking form as a coherent body of thought only after the fact. There are exceptions, however. In summarizing these themes, we rely heavily on the words of the laureates, taken from their Trinity University lectures.

The second section assesses the difficult question of whether or not biography is important for understanding the development of modern economic thought. Ultimately, we cannot provide a definitive answer to this question. One can neither observe nor simulate in any methodical fashion the appropriate counterfactual—how economic thought would have developed absent these individuals and their particular life histories. The inability to answer this question in a definitive way, though, does not imply that it should be ignored. These twenty-three essays provide ample source material for reasoned speculation on the significance of biography in the evolution of economic thought.

Common Themes and Disparate Voices

Few individuals begin life expecting or desiring to be an economist. This same generalization holds true among Nobel economists. The laureates came to economics based on the influence of particular teachers or scholars, because of the intellectual challenge and rigor of economics, or because economics was perceived as being relevant for real-world issues. Several of the laureates cite their favorable reaction following exposure to formal economics. Four examples follow:

> Rare is the child, I suspect, who wants to grow up to be an economist, or a professor. . . . Cutting my teeth on *The General Theory*, I was hooked on economics. Like many other economists of my vintage, I was attracted to the field for two reasons. One was that economic theory is a fascinating intellectual challenge, on the order of mathematics or chess. I liked analytics and logical argument. . . . The other reason was the obvious relevance of economics to understanding and perhaps overcoming the Great Depression and all the frightening political developments associated with it throughout the world. . . . Thanks to Keynes, economics offered me the best of both worlds. (James Tobin)

> In the first semester of my sophomore year I took required courses in accounting and microeconomics. The former was, in reality, bookkeeping—and mindless bookkeeping at that. I loathed it. But microeconomics had everything: rigor, relevance, structure, and logic. I found its allure irresistible. The next semester I changed my major to economics and never turned back.
>
> Thus my first stroke of luck. I sometimes break out in a cold sweat thinking about what might have happened had I taken a modern accounting course and an institutional economics course. (William Sharpe)

> My choice of Colorado College was more eventful then I could have forecasted. . . . In my junior year, I took a readings class in economic growth from Ray Werner. . . . We read Ricardo, Smith, and Arthur Lewis. . . . The professor also loaned me his copy of Paul Samuelson's *Foundations of Economic Analysis* (which I still own) to read as an extra bonus. Samuelson's *Foundations* had a major impact on me. It demonstrated to me that economics could be as rigorous and empirically relevant as physics. . . . At the same time, it showed that economics had empirical content through the theory of revealed preference. I saw a counterpart in social science to the hard science I had experienced in Oppenheimer's classroom. Lewis's *Theory of Economic Growth* appealed to my liberal arts training. . . . My junior year readings class led me to decide on

> economics as a career. . . . I could have my science and my social science too. (James Heckman)

> I relished the unbending rigor of mathematics, physics, and engineering, but then, as a senior, I took an economics course and found it very intriguing—you could actually learn something about the economic principles underlying the claims of socialism, capitalism, and other such "isms"? Little did I know, but I was intrigued. Curious about professional economics, I went to the Caltech library, stumbled on Samuelson's *Foundations of Economic Analysis*, and later that year, von Mises's *Human Action*. From the former, it was clear that economics could be done like physics, but from the latter there seemed to be much in the way of reasoning that was not like physics. I also subscribed to the *Quarterly Journal of Economics*, and one of the first issues had a paper by Hollis Chenery on engineering production functions. So economics was also like engineering. I had not a hint then as to how much those first impressions would be changed in my thinking over the decades to follow. (Vernon Smith)

For at least some, economics appears to be chosen because alternative paths are closed or unappealing:

> I gather that the sponsors of this set of lectures hope to see how one's thinking is tied to one's environment. I am not a very good example. I began by showing you that I became an economist when I really wanted to be an engineer, became a university teacher because there was nothing else for me to do, and became an applied economist because that was my mentor's subject. The next phase of this story continues in the same vein. I am not complaining; fate has been kinder to me than to most other persons. I am merely recording what happened. (W. Arthur Lewis)

> I was not an immediate success in Australia. My English was not very good and my Hungarian university degrees in pharmacy and philosophy were not recognized in Australia. It was clear that I would have to do factory work, which I did on and off for three years. Often I was unemployed because my manual skills were very deficient. I typically could not keep any factory job for more than a few days. Sometimes I would keep a job for a couple of weeks, but this was the exception. . . . I enrolled at the University of Sydney as an evening student. I did so as a student in economics. . . . I loved the logical elegance of economic theory. (John Harsanyi)

Nor do all Nobel economists embrace fully the label "economist":

> I am not sure that I ever did become an economist. I started as a statistician and have ended as a time series econometrician. . . .
>
> It soon became clear to me that economists think differently than mathematicians. Rather than dealing with carefully defined objects obeying precise rules, economists considered large numbers of independent decision makers who based their decisions on changing experiences including learning, information, and institutions. These decision makers were assumed to be rational and sometimes super-rational to an impossible extent. When put into a microeconomic framework their behavior could be satisfactorily described to a mathematician, but I did not recognize my own economic behavior. In aggregate, these decision makers formed markets and became captured by mysterious forces, such as supply and demand, arbitration, and the invisible hand, which produced charmingly simple rules but of dubious reality. (Clive Granger)

The desire for relevance is an important theme in the lectures. As indicated in the earlier quote from Tobin, for the older generation of Nobel laureates it was the Great Depression that triggered an interest in economics. Tobin as well as other laureates make this point forcefully:

> Keynes's uprising against encrusted error was an appealing crusade for youth. The truth would make us free, and fully employed too. . . . [E]conomic knowledge advances when striking real-world events and issues pose puzzles we have to try to understand and resolve. (James Tobin)

> Yes, 1932 was a great time to be born as an economist. The sleeping beauty of political economy was waiting for the enlivening kiss of new methods, new paradigms, new hired hands, and new problems. Science is a parasite: the greater the patient population the better the advance in physiology and pathology; and out of pathology arises therapy. The year 1932 was the trough of the Great Depression, and from its rotten soil was belatedly begot the new subject that today we call macroeconomics. (Paul Samuelson)

> Soon there will be no more active economists who remember the 1930s clearly. The generation of economists that was moved to study economics by the feeling that we desperately needed to understand the depression will soon have retired. Most of today's younger and middle-aged macroeconomists think of "the business cycle" as a low-variance, moderately autocorrelated, stationary, stochastic process taking place around a generally satisfactory trend. That is an altogether different frame of mind from the one with which I grew up in the profession. (Robert Solow)

Although the Great Depression is long past, the desire for relevance remains crucial among recent Nobel laureates. Edmund Phelps characterizes his research as a response to a prevailing orthodoxy that lacked relevance, leaving too little room for realistic human behavior and uncertainty. For example:

> But having read Hayek's *Prices and Production* (2nd ed., 1935) and Keynes's *General Theory*, I could sense that the neo-Keynesian research, though intriguing and possibly useful in some ways, had utterly abandoned the modernist emphasis on incomplete information and imperfect knowledge in favor of some new method or methodology with which I was not at all comfortable. Instinctively, as Keynes would have said, I understood that the neo-Keynesian models, in abstracting from these things, inadvertently left no role for humans to play. There could be no beliefs as distinct from what is true, no expectations as distinct from what is or will be, no mental stimulation and challenge, no problem solving, no creativity, and no discovery. (Edmund Phelps)

Gary Becker is one of several laureates who looked for relevance with respect to social issues:

> During my senior year at Princeton, however, I was losing interest in economics and began to think that I should go into something else. Economics seemed excessively formal to me. . . . Economics appeared incapable of helping me understand the issues in which I had an interest: inequality, class, race, prestige, and similar issues that were important for society. . . . I remained unhappy—unhappy by what seemed to me a disconnect between what economists would talk about in textbooks and elsewhere and what I wanted to talk about. . . . [At Chicago] Milton Friedman became the greatest influence of any individual on my development as an economist. Attending his graduate course in price theory was just exciting, and I would eagerly wait for that course to come twice a week. . . . Here I saw economics as a tool and not simply as a game played by clever academics. . . . [It] showed me what I thought was not possible. You can do economics and do it in a rigorous way and nevertheless talk about important problems. (Gary Becker)

The above quote from Becker shows how Friedman opened his eyes about the relevance of economics. Most who were students at the University of Chicago mention the charismatic

importance of Friedman in their lives. Personality matters. But none of the Nobel laureates, even Friedman, is more renowned for their personality than for their scientific work. Becker is far from alone in recognizing the influence of a great teacher or particular individual. Myron Scholes, James Buchanan, and Edward Prescott are among the others:

> McMaster turned out to be a fortuitous choice. Because it was such a small school, Professor McIver, a University of Chicago graduate in economics, worked closely with me in my studies. He directed me to read and understand the work of many classic economists, including the more contemporary teachings of Milton Friedman and George Stigler. . . . Because of my enjoyment of economics and my planned return to business, I decided on business school, not law school. Although my family wanted me apply to other schools, such as Harvard, I wanted to go only to the University of Chicago, where Stigler and Friedman were teaching and conducting research. (Myron Scholes)

> I am not a "natural economist" as some of my colleagues are, and I did not "evolve" into an economist. Instead I sprang full blown upon intellectual conversion, after I "saw the light." . . . I was indeed converted by Frank Knight, but he almost single-mindedly conveyed the message that there exists no god whose pronouncements deserve elevation to the sacrosanct, whether god within or without the scientific academy. Everything, everyone, anywhere, anytime—all is open to challenge and criticism. There is a moral obligation to reach one's own conclusions, even if this sometimes means exposing the prophet whom you have elevated to intellectual guruship. (James Buchanan)

> With this collaboration, I understood the comment he [Lucas] made after I defended my dissertation. He was telling me to use dynamic economic theory to model aggregate phenomena. With this collaboration I became a Bob Lucas student and an economist. To return to the theme of this lecture, Bob Lucas is the most important person in my development as an economist. Having been at the right place at the right time was another stroke of luck.
>
> The principle guiding my research is the importance of theory interacting with measurement. I came to the conclusion that there was no hope for the approach being used in macroeconomics of empirically searching for the policy invariant laws of motion of the economy. I had read the Lucas critique. Something else was needed. Given this, I stopped teaching what was then called macroeconomics and began using dynamic equilibrium models to study aggregate economics as practiced by Bob Lucas. (Edward Prescott)

Tobin emphasizes the important role played by his graduate school professors, but suggests that much of this learning occurred outside the classroom:

> I see in retrospect that our professors left most of our education to us. They expected us to teach ourselves and learn from each other, and we did. They treated us as adult partners in scholarly endeavor, not as apprentices. I am afraid our graduate programs today try too hard to convey a definite and vast body of material and to test how well students master what we know. (James Tobin)

Nearly all the laureates identify a particular work environment, usually but not always a university economics department, as a critical factor in their evolution as an economist. Stigler, Lawrence Klein, and Sharpe are particularly emphatic on this point:

> So to understand the conditions under which modern work in economics has emerged, one must look at the conditions of training and work of the modern scholar. Those conditions are no substitute for creativity, but they have become an indispensable condition for creativity to be exercised. . . . There is good reason for believing that economics is a social science in quite another sense from the indisputable one that it concerns itself with mankind in social relationships. It appears also to be a social science in the literal sense that it is a science in which it is difficult to do creative work if one is not in a congenial intellectual environment. (George Stigler)

> A truly exceptional group of people was assembled in Chicago during the late 1940s. I doubt that such a group could ever be put together again in economics. From our closely knit group, four Nobel laureates have emerged, and two others came from the next bunching of Cowles researchers—partly at Chicago and partly at Yale. We worked as a team and focused on a single problem—to put together an econometric model of the American economy (a second attempt after Tinbergen's of the 1930s)—using the best of statistical theory, economic theory, and available data. After about four or five years of intensive research built up around this theme, the team dispersed to new openings in academic life. (Lawrence Klein)

> The Rand [Corporation] of 1956 was a truly unique organization. . . . Employees were free to work any hours they chose, within wide limits. Office doors were open, intellectual discussions on the most wide-ranging topics were de rigueur, and everyone was expected to spend one day per week on research of strictly personal interest.

> Those were heady days. Some of the key work in systems analysis, operations research, computer science, and applied economics was being done at Rand. One of our first computers was designed by John von Neumann. George Dantzig was working on linear programming. Some of the most illustrious academics served as consultants. Everyone was on a first-name basis. If ever there was a place for one interested in practical theory, the Rand Corporation in the 1950s was it. (William Sharpe)

A common theme in the laureates' lectures is the role of luck. Emphasis on the role of luck no doubt stems in part from the general tone of humility expressed in many of the lectures. Obviously, a combination of brilliance and hard work is a necessary, albeit not sufficient, condition for being awarded a Nobel Prize. The laureates often use the term "luck" to mean the unpredictability or unplanned path through which their career evolved. Each can readily imagine some alternative turn taken early in life that would have set them on an altogether different path. Friedman and Becker make this fact explicit:

> I have been enormously impressed by the role that pure chance plays in determining our life history. . . . As I recalled my own experience and development, I was impressed by the series of lucky accidents that determined the road I traveled. (Milton Friedman)

> I soon realized that much more was needed. . . . There were no foundations for the theory of investment in human capital. . . . I set about trying to sketch out a small set of foundations to give the work theoretical content. . . . I had no vision at all of what this would lead to. Once again, here is an example of the role of luck. . . . I was amazed and then greatly excited when I began to realize that this framework could integrate scores of observations and regularities in individual earnings, occupational differences in earnings, and employment. (Gary Becker)

One area where there is not a consensus among the laureates is how research programs are developed. The quote above from Becker shows that he had little idea what eventually would develop from his early forays into human capital theory. Many of the laureates likewise insist that their research was not part of any grand design or vision but rather evolved within the highly

competitive market for ideas. Ronald Coase, Buchanan, and Samuelson are exemplars:

> If his [Lars Werin's] words are interpreted to mean that I started with a relatively simple theory and gradually, purposefully added building blocks until I had accumulated all that were needed to construct a theory of the institutional structure, it would give a misleading view of the development of my ideas. I never had a clear goal until quite recently. I came to realize where I had been going only after I arrived. The emergence of my ideas at each stage was not part of some grand scheme. In the end I found myself with a collection of blocks which, by some miracle, fit together to form, not a complete theory, but, as Lars Werin indicated, the foundation for such a theory. (Ronald Coase)

> I recognize of course that my own research-publication record may be interpreted as the output of a methodological and normative individualist whose underlying purpose has always been to further philosophical support for individual liberty. In subjective recall, however, this motivational thrust has never informed my conscious work effort. I have throughout my career and with only a few exceptions sought to clarify ambiguities and confusions and clear up neglected pockets of analysis in the received arguments of fellow economists, social scientists, and philosophers. To the extent that conscious motivation has entered these efforts, it has always been the sheer enjoyment of working out ideas, of creating the reality that is reflected finally in the finished manuscript. (James Buchanan)

> Repeatedly I have denied the great-man or great-work notion of science. Every drop helps, the old farmer said, as he spat into the pond. One does the best one can on the most pressing problem that presents. And, if after you have done so, your next moves are down a trajectory of diminishing returns, then still it is optimal to follow the rule of doing the best that there is to do. Besides, at any time a Schumpeterian innovation or Darwinian mutation may occur to you, plucking the violin string of increasing return. . . . Scientists are as avaricious and competitive as Smithian businessmen. The coin they seek is not apples, nuts, and yachts; nor is it the coin itself, or power as that term is ordinarily used. Scholars seek fame. The fame they seek . . . is fame with their peers—the other scientists whom they respect and whose respect they strive for. (Paul Samuelson)

Thomas Schelling notes that the direction of his research was shaped in no small part by suggestions and requests from others.

> The second, related impression is that nearly everything I've done was stimulated by opportunities I didn't seek but came to me, and many things I've done, including some of the things I'm most satisfied with, I did at the suggestion of somebody else or as a result of some unsolicited invitation. (Thomas Schelling)

Douglass North, Franco Modigliani, and Tobin are three laureates who describe a more methodical course. One knew where he was headed early on, one attempted to run counter to whatever was currently in fashion, and one states that he consciously aimed for the big problem of his day.

> I knew where I was going from the day I decided to become an economist. I set out to understand what made economies rich or poor because I viewed that objective as being the essential prerequisite to improving their performance. The search for the Holy Grail of the ultimate source of economic performance has taken me on a long and certainly unanticipated journey, from Marxism to cognitive science, but it has been this persistent objective that has directed and shaped my scholarly career. (Douglass North)

> As I contemplate my contributions, I find one unifying thread: a propensity to swim against the current by challenging the self-evident orthodoxies of the moment, be it that the classics are altogether outdated, or that the rich must save a larger fraction of their income than the poor, or that debt financing is cheaper because the interest rate on high-quality debt is lower than the return on equity.
>
> I would love to be able to continue to play that role. But I don't want to think too much about where I am going. I just like to let things come and be ready to jump in where there is excitement. (Franco Modigliani)

> The most important decisions a scholar makes are what problems to work on. Choosing them just by looking for gaps in the literature is often not very productive and at worst divorces the literature itself from problems that provide more important and productive lines of inquiry. The best economists have taken their subjects from the world around them. (James Tobin)

Important breakthroughs in economics do not occur in a vacuum. Some of the major developments in economics are likely to have occurred in much the same fashion absent the contribution of a particular economist. Other contributions are more distinct—very much shaping

the future path of economic literature in that area. For other work, its precise contribution to economics evolves over time. These alternative possibilities are evident in the following quotes:

> Multiple discoveries are in fact very common in science. . . . Developments in related fields with different motivation help one to understand a difficult problem better. Since these developments are public knowledge, many scholars can take advantage of them. It is pleasant to the ego to be first or among the first with a new discovery. However, in this case at least, the evidence is clear that the development of general equilibrium theory would have gone on quite as it did without me. (Kenneth Arrow)

> Further work led to "Expectations and the Neutrality of Money," . . . finally published in the *Journal of Economic Theory* in 1972.
>
> The paper contained a careful and explicit construction of a theoretical example of an economy in which the motives, opportunities, and information of every economic actor was unambiguously spelled out. Expectations were rational. In this setting, as in Friedman's AEA address, there was no long-run trade-off between employment and inflation. Yet the model also implied the kind of correlations between employment and inflation that were then widely interpreted as hard evidence that such trade-offs did exist. I felt I understood for the first time both why Friedman and Phelps were right in arguing there was no long-run trade-off between unemployment and inflation and why econometric tests continued to reject this "natural rate" view.
>
> Working out this example took me to the limit of my technical skills and beyond: it was not easy reading, nor had it been easy writing. . . . It is easy for me to see the influences of Phelps, Rapping, Prescott, and Cass in this paper, but the combination was new and striking: no one else was doing macroeconomics this way in 1970. The paper made my reputation. (Robert Lucas, Jr.)

> The question arises, was that book, *Micromotives and Macrobehavior,* game theory? If so, what makes it game theory?
>
> I didn't think so at the time—it just didn't occur to me—but there were hints in the Nobel Committee's remarks that the committee thought it was. And I see now that everything in that book had to do with individuals' adjustment to or anticipation of the choices of others, and with needs and opportunities for coordination, formal cooperation, or submission to direction or regulation. . . .
>
> I've now concluded that this is game theory. Game theory, I find (or choose to define), is very much about *situations*. What is "prisoners' dilemma" but a situation? The logic of choice is central to game theory, but what game theory—again, I'm thinking about the invention of matrices—is often critical for

> is identifying situations in which choice is somehow puzzling, problematic, or challenging, and in identifying how many distinct situations of a certain kind there may be. (Thomas Schelling)

The "lessons from the laureates" identified in this section provide considerable insight into the intellectual process through which ideas in economics, and no doubt other disciplines, develop and evolve. One cannot come away from these lectures without an appreciation for the critical role of teachers, the intellectual environment, the search for rigor and relevance, and happenstance in the evolution of modern economic thought. Contained within these lessons is at least the suggestion that biography matters. It is to this topic that we turn.

Does Biography Matter?

Do the autobiographies presented at Trinity University since 1984 reveal anything of scientific significance? Would our understanding of the laureates' pathbreaking achievements be incomplete without these stories of their intellectual journeys, as told in their own words?

The phrase "as told in their own words" is important. For in the Trinity lecture series each author was the living subject, each providing an "oral history" of his own "evolution as an economist." Of necessity, time constraints forced the scholars to present their glimpses into the past in a much-abbreviated form. What they chose to reveal and not reveal was of their own choosing. But in the case of autobiographical data, the voice and image of the living subject is before us in a way not possible in biographies written by others. There is a sense of immediacy in these personal histories that typically will not be found in more impersonal narratives of their lives. It is likely that the more influential of these economists will inspire biographies composed by others long after these subjects have passed from the scene. Absent direct contact with these laureates, they will not capture the uniquely idiosyncratic perspective that only autobiography

can offer. For that reason, future biographers might find the Trinity lectures providing invaluable insights for their work.

When the senior editor organized the lecture series in 1984, he stated that the larger purpose was to supply crucial source material for a theory of scientific discovery. After more than twenty years, it is fair to ask whether the rationale has been in any significant sense justified. Do these autobiographical accounts reveal a connection between the economist's life and their intellectual achievements?

Certainly the lectures make obvious some links between one's environment and subsequent intellectual development. The traumatic impact of the Great Depression led several future laureates to identify economics as their intellectual discipline of choice. But this evidence for the role of biography hardly suffices. After all, the most casual observation would lead one to expect that experience affects choices. Does the study of the lives of the laureates do nothing more than confirm what everybody knows? Or can we say something about the extent to which the very substance of their contributions is a reflection of the individual lives they have led?

This last question is complex and can be answered only through the careful study of the autobiographies themselves. In that way, we become observer-participants in the lives of the speakers, focusing on not only what they explicitly reveal but also any inconsistencies and self-deceptions in their narratives. Yet in doing so, the authors of this afterword must assume the role of biographers themselves, as distinct from the autobiographer/subjects of the lecture series. Autobiography is, of course, a subset of biography. Nevertheless, it forms a crucial part of the archive from which biographical data are drawn. The autobiographies provide valuable material from which we, as biographer/editors, try to reach a deeper understanding of the connection

between the lives led and the pathbreaking work achieved. If we can accomplish this task, the larger purpose of the lecture series will have been realized.

In the introduction to this volume we asserted that "these autobiographical essays reveal psychological truths—perhaps hidden from the subjects themselves—that an especially perceptive reader will discern." The autobiographical elements give us some tantalizing glimpses into the imaginative and creative minds of these scholars—insights that only autobiography could provide. Below we offer some examples.

The link between autobiography and subsequent intellectual development is made explicit in James Heckman's essay. As Heckman recounts his childhood,

> My father fell victim to company politics and suffered various demotions and lateral transfers throughout his career. . . . He urged me at an early age to enter a profession where I could develop an independent reputation and avoid the politics of the bureaucracy of middle managers that he had experienced. I took his message to heart and decided early on to enter a profession where I could make my own mark independent of the good will of any superior and where I would never have to be a company man. (James Heckman)

His father's career also took his family to towns in the border South and West, where "I saw firsthand the last vestiges of the Jim Crow system of racial discrimination. Its protocols and intrinsically demeaning effects on all participants fascinated me."

Also critical for Heckman was his early faith, being raised in a tradition of fundamentalist Protestant Christianity. "As a young child, I fervently embraced the faith of my parents and by age eight, I was a child minister giving sermons on Sunday evenings introduced by a motto taken from the New Testament, 'A little child shall lead them.' It was expected that when I became an adult, I would be a minister. . . . My deep religious belief led me to read and study the Bible very closely. I committed vast passages of it to memory." But Heckman's deep faith did not survive:

> By my early teenage years . . . I began having doubts. . . . I began to notice inconsistencies in the Bible, and as I read more broadly in science and philosophy, I came to question the literal interpretations of creation and aspects of the fundamentalist Christianity with which I was raised. . . . The intolerance, bigotry and unwillingness of most of the elders in my church to discuss ideas left me deeply dissatisfied. I found that I was unable to accept authority qua authority, a trait that has characterized me ever since. . . . At the same time, I learned early to live off my own intellectual and emotional resources. (James Heckman)

Heckman ends his essay by summarizing his approach to economics:

> Economics is useful only if it helps to explain the economy and solve practical problems. It produces wise policy advice when it is anchored in data and potentially dangerous advice when it is not. . . . Good answers to these questions require good theory and econometrics. . . . Anchoring my own research in serious empirical analysis has protected me from the fads that plague the profession and has given me the autonomy and independence I have always craved. . . . This is my way of following my father's advice of being independent and developing an independent reputation, and my way of avoiding appeals to authority in any form—whether mathematical or divine—that motivated my early break with organized religion. (James Heckman)

For Heckman, the lessons of his childhood experience not only made the choice of economics and empirical inquiry irresistible but also helped frame his personal and intellectual approach to his career within economics.

Thomas Schelling is widely recognized for developing the idea of a focal point (sometimes called a Schelling point). Although he cannot recall precisely how the idea developed, he is certain it arose out of his early life experience.

> Again, I happened to run into Kenneth Boulding outside the Yale Cooperative Store in New Haven one afternoon. . . . I told Ken that there was one topic I'd wanted to include in the article that I couldn't get a grip on, and I tried to express what it was. I couldn't be explicit or else I'd have been able to deal with it in the article. Boulding said something to me—I've never been able to reconstruct what it was—that clicked in my brain and revealed what it was I was trying to formulate. Just one sentence on a sidewalk in New Haven and I had the grasp I needed. His suggestion—actually it wasn't a suggestion, just a hint of some

kind—led me to the idea of a "focal point," and the concept of tacit bargaining and its influence on explicit bargaining.

I mention here an experience in my development of the focal point idea. I spent summer 1940 driving from San Diego to New Hampshire and back with two college friends. Somewhere I stopped so one of the other two could buy some crackers and peanut butter. A policeman made me move on; I tried to go around the block but was frustrated by one-way streets, and when I got back to where I'd let him out, he wasn't there. (Not seeing me, he had gone looking.) I went around again, and there he was. As we drove on, eating crackers and peanut butter, one of us said, "You know that could happen. Suppose we got separated in a strange city. How would we find each other?" . . .

After supper—we were sitting out around a campfire—we compared solutions. We had all gone to the same place. . . . [T]he one location in some city that was unique to us was the general delivery window of the main post office. Every city had a main post office, and every main post office had a general delivery window where one could show up and ask if there was anything for Schelling. . . .

That experience was still vivid when I needed a focal point to concert expectations. (Thomas Schelling)

Vernon Smith's essay focuses on the lessons learned from his childhood experiences in Kansas. In this passage, he contrasts the vibrancy of city life, characterized by impersonal exchange, with an earlier farm life and personal exchange.

In 1934, my father returned to the Bridgeport Machine Company [in Wichita] for alternate week half-time work and subsequently full-time work. This was fortuitous, as we lost "ownership" of the farm to the mortgage bank. . . .

We were returning from the farm world of personal exchange through the trading of favors to a world of impersonal exchange through markets. More, but far from all, of our needs would be met from store-bought goods, and that world would gradually be emerging, reinvigorated, from the Great Depression. . . .

Wichita and farm life were separated by location, by intellectual and economic activity. The city had homegrown a surprising breadth of prominent business life. Beech, Stearman, and Cessna Aircraft, the Coleman Lantern Company, Dold meatpacking, and the Fred Koch, Jack Vickers, and other petroleum companies provided tangible initial evidence of the machinery of markets, specialization, and globalization. Bold independent actions by Coleman, Cessna, Beech, Koch, Garvey, and many others instilled a midwestern sense of freedom and entrepreneurship. (Vernon Smith)

Intriguing glimpses into these private realms can be illustrated as well by the example of Robert Lucas, Jr., although here the link is not made explicit for the reader. Lucas begins his memoir with a reminiscence of his mother, who worked as a commercial artist drawing newspaper ads for a clothing store. He tells us that she took him and his two siblings (at ages six, four, and three) to an apparel shop in downtown Seattle where she received the items that were to be advertised by the store the following week. His recollection of this early childhood experience is told in vivid detail:

> She would take the three of us . . . all of us struggling to keep up with her clicking heels, on the half-mile walk to the bus and then on the long bus ride downtown, to the McDougal's store. There we would sit still while she handed over her drawings from last week, discussed her assignments for the week to come, and put the articles to be advertised into a shopping bag. . . . At home, she took out a dress, shoes, and a belt from the shopping bag. She hung the dress up on a hanger near the drawing board, in the living room of the shabby house we rented during the war, and put the accessories in front of her, at the top of the board. She set out her paints—pure white, glossy black, elegant grays—and her tiny brushes, and as I watched there came into being on paper a confident and attractive woman, stylishly dressed in what I had seen as nothing more than an ordinary dress, limp on the hanger. (Robert Lucas, Jr.)

Lucas's creative work for which he is admired by his peers and which earned him his Nobel is his construction of ingenious theoretical models of the economy that brought a refocusing of the way economists think about the world. In his own words, he gives his opinion of why he values mathematical modeling: "It is a method to get to new levels of understanding of the ways things work. . . . It is this struggle to capture behavior in tractable models that leads us deeper into the economics of market transactions and forms the progressive element in economic thought." Just as the ordinary dress on the hanger was transformed into a stylishly dressed woman at the artistic hands of his mother, so too would his own model building bring us

to new levels of viewing and understanding the welter of confusing data that make up the macroeconomy. Lucas's choice of subject matter to open his lecture is surely a way of leading his audience into a significant area of his being. We are allowed to see him as the observant little boy who had watched with astonishment as his mother skillfully used paints and tiny brushes to transform something ordinary and mundane into something beautiful.

What are we to make of this unexpected story? Surely this: long before Lucas had a conscious interest in economics, he had cultivated an eye for bringing new ways of seeing the evidence before him. This tale of innocence and wisdom was surely a crucial episode in his life. The story offers grounds for conjecture about the value of autobiographical details in bringing us to understand at least some part of the creative process.

A final example linking autobiography and one's intellectual approach is that of Milton Friedman. Yet here, we attempt to draw a perhaps unconscious link that the author has not drawn. Friedman made it respectable for economists to question the efficacy of Keynesian policy; he resurrected the quantity theory of money and placed it on a secure footing; and he championed the private market economy at a time when intellectuals who did so were often subjected to ostracism in respectable academic circles. Few would doubt that we are all richer for his having become an economist. But why did he enter graduate school in economics? Initially, Friedman had planned to choose mathematics because he liked the subject. The Great Depression was under way, though, and Friedman was intrigued by what he called "the paradox of great need on the one hand and unused resources on the other." Moreover, making the decision process more difficult, he had offers of financial aid from two universities—one for the study of mathematics at Brown, and the other to study economics at Chicago. The final decision came down almost to the toss of a coin. Economics and the puzzle of the Great Depression won out. In

his autobiographical lecture he attempts to explain his choice. To do so he quotes Robert Frost's famous poem "The Road Less Traveled."

> Two roads diverged in a yellow wood,
> And sorry I could not travel both
> I took the one less traveled by.
> And that has made all the difference.

And yet, reference to the Frost poem does not seem appropriate in his case. During the Great Depression, when Friedman entered college, economics was not the road "less traveled by." To the contrary, it was among the most popular of majors. He said he chose economics because of its relevance to the issues of the day, as with so many others of his generation. But this leaves us with a mystery. What is the relevance of Frost's poem? Why did he quote it?

Perhaps the choice of the poem reveals something about Friedman that was hidden from him when he quoted its words. Even if entering economics during the Great Depression was not really taking the road less traveled, nevertheless Friedman's subsequent career persistently took him along untrampled pathways *within economics*. Was this a conscious decision? For in his attempt to answer questions posed by the depression, Friedman stood apart and almost alone. He rejected the Keynesian solutions that the overwhelming majority of the profession had come to accept. Friedman lived long enough to see many of his ideas become the consensus view of a younger generation of economists. Because he was different, he attracted attention; his persuasive powers, style, and charisma did the rest. For Friedman, the road less traveled indeed "made all the difference."

In the end, the case for biography generally, and autobiography in particular, is a strong one. To believe that biography is *essential* for understanding economics and the evolution of economic ideas admittedly requires a leap of faith. We simply are unable to meaningfully

compare the current state of economic science to what might have existed under some reasonable counterfactual. That being said, the twenty-three lectures in this volume provide strong evidence that biography matters. We have seen how the most important developments in modern economics did not spring out of the air randomly but were intimately related to the laureates' backgrounds, intellectual environments, interactions with teachers and colleagues, desire for relevance and rigor, and competition in the marketplace for ideas. For individual laureates, the road traveled was sometimes the result of happenstance and sometimes not. Following the laureates on their intellectual journeys not only makes for fascinating reading but also enriches our understanding of the development of contemporary economic thought.