Prologue

"Learning was everything to Leo."
Friend and colleague Marcel "Ket" Richter[1]

My father, Leonid Hurwicz ("Leo" from here on out), didn't focus fanatically on one great achievement to the exclusion of everything else. He didn't consort with movie stars or seek power and glory. Not many people recognize his name. Fewer still can correctly pronounce it (HER-wich) and spell it.

He was married only once, from the age of twenty-seven until he died; he and Evelyn had four children and a stable, normally chaotic and typically overwhelming family life, with work, friends, colleagues, travel, pets, politics and chicken pox. When asked what he wanted for his birthday, he would invariably say, "Twelve hours of uninterrupted sleep." (Dream on, Leo.) Instead, he developed the ability to lose consciousness over a book or newspaper at any convenient time, in an easy chair or on a couch.

He was an excellent pianist and played Beethoven, Schumann, Mozart and Chopin with great verve and precision. In addition, gathered around the piano in the evening, he would accompany as the family sang "Oh Susannah," "The Wraggle Taggle Gypsy," "Clementine" and "Hallelujah I'm a Bum" from the *Fireside Book of Folk Songs*. All his children developed a lifelong love of music. How much might those times of family closeness and warmth have contributed to that?

At bedtime, however, he was at his creative best, improvising stories for his attentive children: marvelous adventures in far-off lands, peril and escape, vast journeys across land and ocean, tales for which they never questioned the inspiration. At other times, he shared the classics: *The Adventures of Peter Rabbit, The Wind in the Willows, Winnie the Pooh, Alice in Wonderland*. Each one he recounted in a rich, resonant voice, full of conviction, as if—as my sister Ruth noted—he himself had fallen down the rabbit hole and landed in a strange new world.

There were also more obscure tales. Ruth particularly remembered the "Yes and No Stories," by George and Helen Papashvily—folk tales from what is now the Republic of Georgia. Each story begins, "There was, there was, and yet

1 The sources for all the quotes in this prologue will be found in Appendices A and B.

there was not, there was once . . .” In the first story, “The Tale of the Tales,” a boy sits at the campfire night after night, listening to stories from the elders of his village. Then one night, the eldest of the elders turns to him and tells him that it’s his turn. The boy insists that he doesn’t know enough, that he prefers to just listen. But the elder insists: if he wants to keep coming to the campfire, he must take his turn. No one gets it all right, he assures him. If he leaves something out, someone else will fix it. But it’s vital that we all pass on what we’ve learned to others. And so the boy hesitantly begins, “There was, there was, and yet there was not . . .”

Learning was important to Leo; so was teaching, even if you didn’t have all the answers. When appropriate, he might reply, “That’s a very good question. It’s a very interesting question. But it’s not my question. It’s your question.”

Leo attended the symphony, danced to New Orleans jazz, owned classical and Broadway musical albums, as well as those of singer-satirist-mathematician-crazy person Tom Lehrer (“Poisoning Pigeons in the Park”) and lefty folk favorites Harry Belafonte and The Weavers. He relished sauerkraut and dark chocolate, had equal energy for exploring cities and camping out in national parks, where he seemed to be able to identify every tree, shrub and flower. He delved deeply into archaeology, history and current events.

Active participation in politics—local, national and at the university where he worked—was a mixture of a pastime he enjoyed and a duty he would not shirk. In 1968, at the Democratic National Convention, he was a delegate for presidential candidate Eugene McCarthy, who was running on an anti–Vietnam War platform and challenging incumbent Lyndon B. Johnson. Evelyn shared his dedication to activism; they attended their last Democratic caucus together the year he died.

His motivation for these activities was reflected in a paper he worked on from the mid-90s until 2007, “But Who Will Guard the Guardians?” The article suggested that economic measures may be enforceable due to the presence of *intervenors*: “guardians” (people or organizations) that had both the power and, because of their ethics or beliefs, the willingness to enforce the rules.

Ruth said, “As long as my dad was living, I felt that someone wise and good was watching out for all of us. Dad tracked world events as one who understood that they are happening to us, not ‘them.’ He valued an active citizenry, and took his role as guardian to heart, doing his part to help steer the world in good directions.”

His native language was Polish; he spoke his adopted language, English, with a mild Polish accent and grammar superior to that of his American-born children; he achieved fluency in French and German, could read Russian with some

difficulty, and had a smattering of Latin, Greek and Hebrew. Late in life he took up Chinese. On his office shelves were yards of dictionaries.

As a Fulbright Scholar teaching in Bangalore, India, in 1965–66, Leo became particularly interested in Anglo-Indian locutions. His colleague and friend Ket Richter remembered questioning the existence of an exotic word used by economist Arijit Mukherji in the course of a dinner at Leo and Evelyn's. Mukherji insisted that, in his home city of Calcutta, this word was commonly used, adding that if they had a Hobson-Jobson, they could settle the issue. Leo, at the other end of the table, heard "Hobson-Jobson," disappeared and came back with the very thing: "A Glossary of Colloquial Anglo-Indian Words and Phrases, and of Kindred Terms, Etymological, Historical, Geographical and Discursive," which no doubt did settle the issue. (What the word was is lost to history. Ket thought it was "prequel," which is neither Anglo-Indian nor in Hobson-Jobson. Feel free to imagine "pish-pash," "poggle," "pootly" or "pucka," all of which are.)

Leo's fascination with language extended to the meanings, origins, and geographical and temporal travels of personal names. A student seeking guidance on a dissertation would wait hours outside Leo's office (due evidently to Leo's in-depth interaction with another student), finally gain admission to the inner sanctum, and then spend the next hour learning all about the name they had been carrying around for the past few decades but, as it turned out, knew less about than their thesis advisor.

What the impatient student might not realize is that earlier that day, Leo had taught a class that ran over either because, as Evelyn once noted, the students "wouldn't stop listening" or because Leo had to go through the article he was reviewing with them, perhaps one article for the whole semester, as Richter said, "line by line, definition by definition, theorem by theorem, proof by proof, until at the end, every student in the class knew exactly what was true and what was not true." In Leo's classes, students not only learned, but learned to learn.

He might that same day have attended an ancient studies group tracing the migrations of Proto-Indo-European language speakers into Greece at the end of the Neolithic—a study group spontaneously formed and initially consisting of Leo and a few classicists and graduate students; Leo's enthusiastic urgings eventually brought in scholars from a variety of other disciplines, including geography, linguistics, zoology, botany and archaeology.

He might have spoken on the floor of the faculty senate, for example, in defense of colleague Jacob Schmookler, who was under attack in the state legislature for, as Ket explained, "foisting a communist, subversive, radical textbook on the students." *Economics: An Introductory Analysis*, by Paul Samuelson, would go on to become a worldwide standard, the best-selling economics textbook of all time.

Though no one would say Leo had a flamboyant personality, in a social setting he could be lively, fun and interesting—often in an educational way. University of Chicago professor Roger Myerson recalled making an obscure comment at an academic cocktail party about the divide between the Mississippi and Great Lakes drainage systems—"the kind of remark that normally kills the conversation. But not when Leo was there. Then my remark could stimulate a 30-minute discourse on great dams of the Midwest."

A frequent comment about Leo was that he seemed to know everything. The more cautious would say "almost everything." A close friend, Nina Reiter, was rapturous when she correctly contradicted Leo about a tree he had misidentified on the Reiters' farm: "It was an amazing triumph, one not duplicated very often."

With all this, he had time, when the occasion demanded, to lend a sympathetic ear to a friend's personal troubles. He was sensitive to the moods of those around him, though he would seldom intrude by mentioning it. He might observe, for example, that his secretary at the economics department seemed depressed, though she hadn't said anything about it.

Ruth remembered talking with him about various problems and situations, and benefitting from his "wise and sensitive counsel in matters of diplomacy, relationships, strategies and ethics."

As with students, he seemed to have all the time in the world for his kids. Sometimes, as with the students, this could be frustrating: you didn't want to ask him for help with your algebra, or your history or social studies lesson, if all you wanted was to get through it as quickly as possible. On the other hand, were you perhaps open to going down a path you could never have thought of, to an intriguing destination that might have nothing to do with your grade in social studies that week? Willing to risk starting out for the north side of town and ending up traveling on foot to the North Pole and back with a guide who knew every inch of territory? Interested in stopping along the way to examine maps showing political boundaries, natural features, geology, weather patterns and human migrations, including some ancient maps that were actually inaccurate but of significant historical value? Leo was your guy.

With all this, he managed to continue to turn out groundbreaking original research. This could also turn out to be quite a painstaking endeavor.

Harvard professor Eric Maskin remembered a "summer camp" for economic theorists at Stanford during which a colleague, Andy Postlewaite, discovered a puzzling phenomenon: it appeared that, in a competitive economic "game" in which players might behave "strategically" (for instance, by not communicating privately held information honestly), an outcome that was technically feasible

might not be implementable in "Nash equilibrium"—that is, in such a way that no one would want to unilaterally change their strategy even if they knew all the other players' strategies.

"Well, Leo, Andy and I thought about that for a while and soon got to the bottom of it. And we wrote up a short manuscript of eight pages or so, suitable for publication as a note, say, in the *Journal of Economic Theory*."

But did Leo want to submit the paper for publication?

Actually, Leo asked, wouldn't they like to know what happens if agents can destroy their endowments? And of course they did want to know that. So, about a year later, they had answered that question and had a manuscript of thirty pages, suitable for an article in *Econometrica*. But was Leo now ready to send it in?

Actually, he thought before publishing the paper, it would be very interesting to find out what happened if production could occur. And it was very interesting to find this out. So, six years later, when they had actually done the finding out, they had a gargantuan manuscript of eighty pages, too long for any journal. So they thought they should turn it into a monograph.

Was Leo prepared to do this?

Actually, Leo thought the proofs and exposition still needed some refinement. So, over the next eleven years or so, Andy and Eric would at erratic intervals receive from Leo updated versions of the manuscript, in which a proof or a definition would be improved. And naturally the paper only got longer.

This would have continued indefinitely, Maskin was sure, if their colleague Stan Reiter "had not been gracious enough to reach an age where it was appropriate to present him with a Festschrift." The piece was finally published in that collection of papers honoring Stan, twenty years after they had started work on it.

Even after that, from time to time, Maskin would get phone calls or notes from Leo, suggesting for example that they really should think more about the case in which agents could hide their endowments. "Relentless curiosity" was Maskin's term for it.

Leo was philosophically opposed to "elegance"—brevity for its own sake—in proofs, and frequently quoted Austrian physicist Ludwig Boltzmann's famous condescension: "Elegance is for tailors."

Colleague Jim Jordan remembered going over with Leo a paper Leo had written. Jordan found himself merely confirming the correctness of everything Leo had done, a situation which engendered in Jordan a feeling of intellectual insecurity "verging on panic." Luckily, the phone rang mid-session. It must have been Evelyn, because Leo picked it up. Desperately trying to think of something

useful he could contribute, Jordan suddenly remembered seeing a result similar to Leo's in a book, which he now ran back to his office to consult.

"I found the result I was looking for, which stated in a very compact way, and using much more abstract mathematics, exactly what Leo was verifying by brute force using the necessarily more cumbersome calculations of elementary calculus. So I felt very much better about myself then, because although this was hardly a creative observation, at least I would have the pleasure of saving one of the world's great theorists several hours of calculus homework."

Leo finished the call. Jordan showed him the elegant statement that would replace all of his calculations.

"Yes," said Leo, "That's right. Now, where were we before the phone rang?"

"I guess," Jordan said later, "I should feel grateful that he had the kindness not to tell me that my comment was purely sartorial."

Part of the problem, no doubt, was that Leo loved his work and tended to be blind to the tedium in it. He often told us that he would have done what he did for free.

It all might never have happened if it hadn't been for Hitler, Stalin and Franco.

[*All quotes in this prologue, both direct and indirect, are from Appendices A and B—M. H.*]