

Elhanan Helpman

Since the days of Adam Smith, international trade and long-run growth have engrossed economists. Global trade, after all, is the exchange of goods and services—at the core of economics—writ large. And long-term growth is how countries do (or do not) permanently raise their standards of living.

Several giants in economics have made important contributions to one of these fields or the other, but very few have had an enduring and transformational influence on both. Among the latter is Harvard's Elhanan Helpman, one of the world's foremost authorities on international trade and economic growth, and a leading figure in several other areas, including political economy.

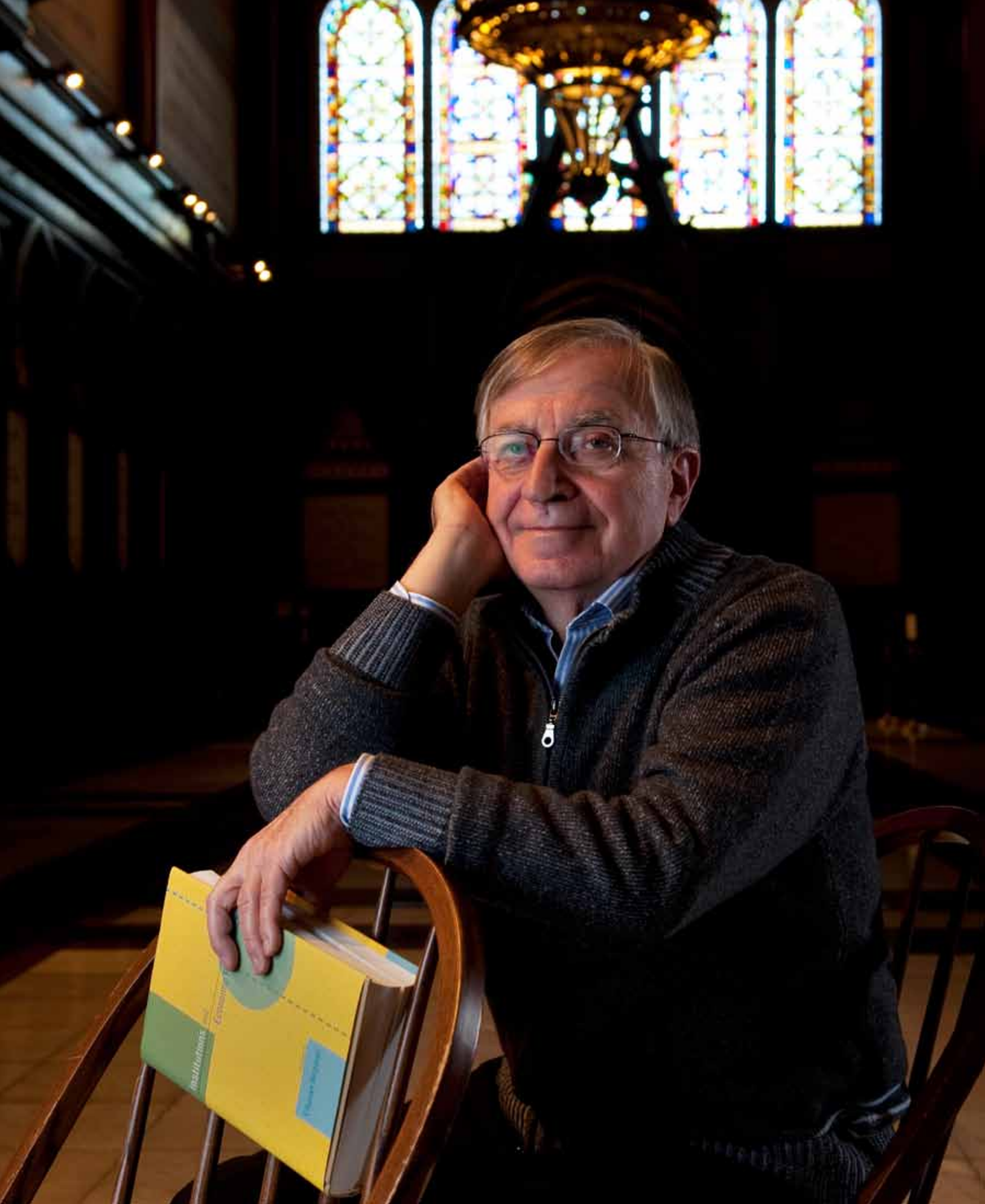
In 2010, the prestigious Nemmers Prize in Economics, awarded biennially to recognize "work of lasting significance," was given to Helpman "for fundamental contributions to the understanding of modern international economics and the effects of political institutions on trade policy and economic growth." (Five of the previous eight Nemmers Prize recipients later received the Nobel Prize.)

It was in the early 1980s that he helped develop "new trade theory," a fundamental concept that explained what traditional comparative advantage theory could not: The vast majority of international trade takes place among quite similar countries and sectors. He later developed key insight into the ways modern firms organize production not at a single factory but in multiple stages, sites and nations—leading to global trade flows never envisioned by earlier economists.

In addition, with Gene Grossman of Princeton, Helpman pioneered the extension of "new growth theory"—the idea that information, ideas and technology (not just capital and labor) are central determinants of economic growth—into settings with international trade. They explored the importance of international research and development, and spillovers thereof, to technological innovation and growth itself.

More recently, Helpman has investigated the role of institutions—legal regimes, education systems and the like—in both growth and the political systems that determine trade policy. Currently, he is studying why economic inequality often accompanies greater trade flows across borders—contrary to predictions of traditional trade theory—but then diminishes.

In the following interview, he describes the history and current frontiers of his pathbreaking research, sharing insights gained through decades of research into the riddles of economic growth and global trade.



Helpman: So, what would you like to talk about?

Region: In truth, I'm a bit overwhelmed by all the fields in which you've worked, but perhaps we could focus on three that I think are among your primary areas: new growth theory, new trade theory and trade (and policy) related to market structure. That's a lot to cover, but if we have time, perhaps we'll be able to visit a few other topics.

NEW GROWTH THEORY

Region: As you know, Paul Romer, Bob Lucas and others pioneered what was later termed "new," or "endogenous," growth theory, emphasizing increasing returns associated with new knowledge, ideas, technology and spillovers. You extended this new growth theory into settings with international trade, often with Gene Grossman, looking at the importance of research and development and spillovers from industrial research.

Could you tell us, why are R&D spillovers central to economic growth?

Helpman: In the previous episode of growth theory, the view was taken, fol-

lowing [Robert] Solow, that economic growth is driven mostly by capital accumulation. Some of Solow's students also discussed the accumulation of human capital, which Lucas essentially then extended and turned into a major view of economic growth.

However, at the same time, there were a number of people who worked on the impact of research and development. Zvi Griliches, for example, worked on it from a microeconomic perspective rather than from a macroeconomic perspective. They developed the concept of R&D capital stocks and the type of externalities that they generate. Moreover, they estimated these external effects.

Region: They developed spillover estimates that early on?

Helpman: They did, yes, and the typical estimate was that the social rate of return on R&D could be twice as high as the private return. So when Gene Grossman and I entered the field, we had this in the background. We knew that there were R&D spillovers, and we knew that the social rate of return was high. Then the question that Paul Romer and other people asked was, to what extent can

you explain growth with investment in research and development, rather than assume, as Solow had done, that the rate of technical change is exogenous? Because if you could tie growth to the rate of technical change, obviously, you potentially could explain a lot of aggregate growth.

Region: Which is what made it "endogenous" growth?

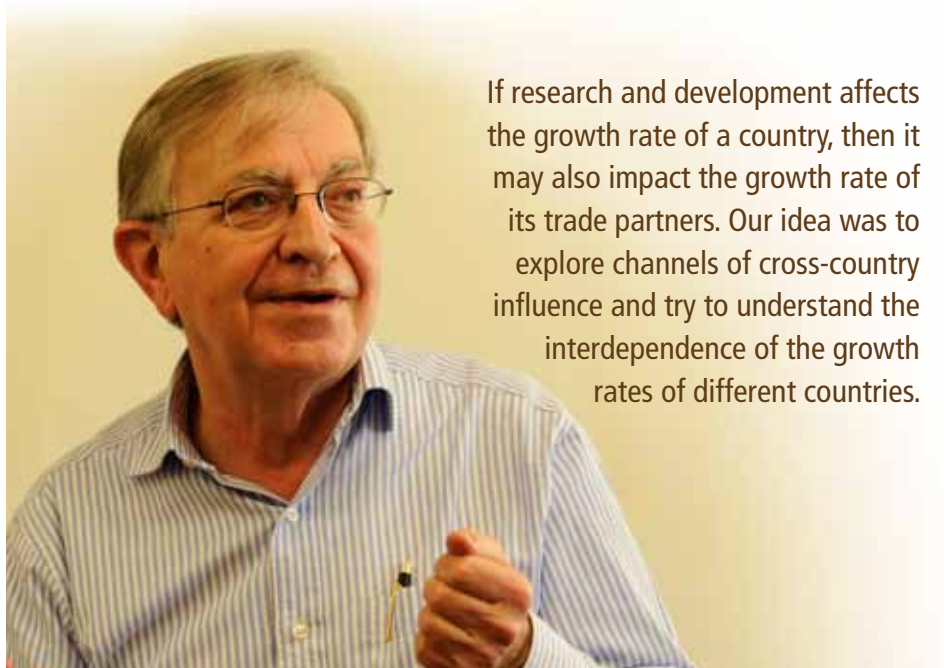
Helpman: Endogenous, correct. I mean, at some level in economics, almost everything is endogenous; it only depends on how far back you want to stand. You can ask the question, OK, research and development is endogenous, but it depends on the economics environment, which is treated as exogenous. If, however, you are willing to take one step back, you realize that some elements of this economics environment, such as the patent system, are in fact endogenous too.

In any case, Gene Grossman and I thought that this is very important for links across countries. In other words, that if research and development affects the growth rate of a country, then it may also impact the growth rate of its trade partners. Our idea was to explore channels of cross-country influence and try to understand the interdependence of the growth rates of different countries.

Region: This was your "quality ladders" paper?

Helpman: Well, the quality ladder was just a model. We actually wrote an earlier paper, less known than the others, I think it was in '89, which was very specific in many details. So when we wrote the quality ladder paper, we already had a better view of the world, and we could write something more appealing.

And, of course, there was the work of Paul Romer that we could build on. Our aim was to integrate this view of the growth process into a worldwide system in order to explore these interdependencies across countries. So when we wrote,



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later, the book, we showed that the same mechanisms work, whether you explain growth by quality ladders or by extending product variety.

From a macroeconomic perspective, these two alternative views are pretty good substitutes. For some issues, they are not. For example, if you want to measure the deviation of what the market generates from what is the best for society, these two views will give you somewhat different answers. But from a perspective on how the growth process behaves, they provide very similar results.

Region: The book you refer to is *Innovation and Growth in the Global Economy*?

Helpman: Yes, *Innovation and Growth*.

Region: Still considered the main reference on trade and endogenous growth, over 20 years after its publication.

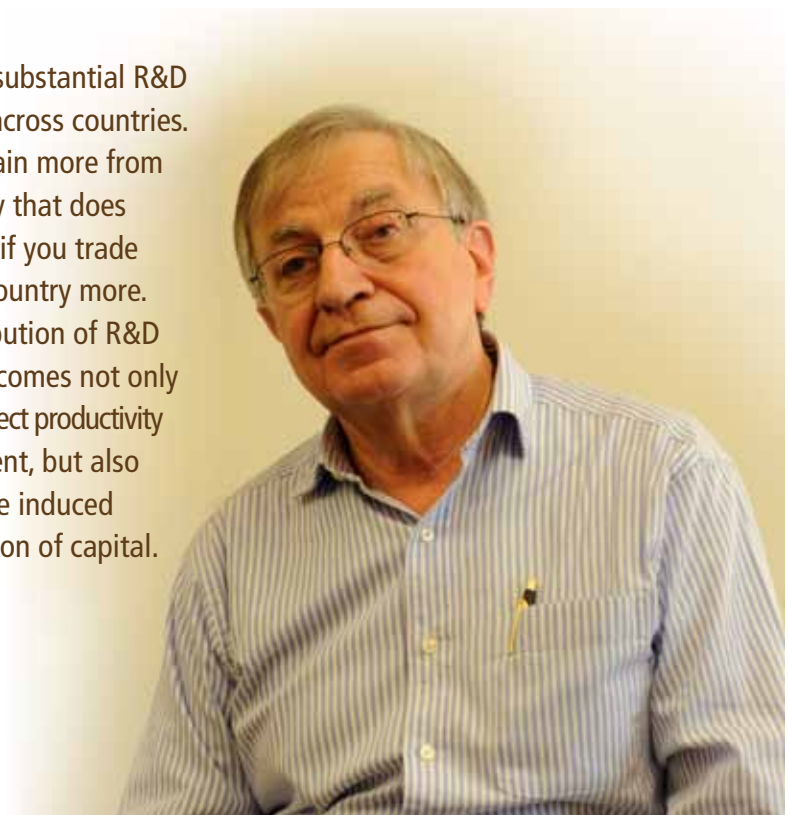
EMPIRICAL IMPACT OF R&D, HUMAN CAPITAL AND INSTITUTIONS

Region: Earlier you mentioned Griliches' empirical estimates. Though you're mainly a theorist, you too have studied the empirical impact of R&D—both domestic and international—on productivity and therefore growth. I think your first empirical work on this was in 1995 with David Coe. And you later extended that with Coe and Alexander Hoffmaister to look at human capital and institutions.

Would you summarize your findings from that work? Which variables—R&D, human capital, institutions—have the most significant impact on productivity? And what does that suggest for policy?

Helpman: Well, I'm a little shy about policy recommendations. But I can talk about the findings; it's easier. Yes, so, our first empirical paper on R&D spillovers, international R&D spillovers I should say, is the paper we wrote in '95. We wrote a couple of other papers as well. In

We found substantial R&D spillovers across countries. And you gain more from the country that does more R&D if you trade with this country more. The contribution of R&D to growth comes not only from the direct productivity improvement, but also through the induced accumulation of capital.



'97, Coe, Hoffmaister and I had a paper; then [Tamim] Bayoumi, Coe and I wrote another later on.

In the 1995 paper, essentially, we asked the following question—we know how Griliches has estimated R&D spillovers across firms; there also existed estimates of spillovers across industries—so we asked the question, can we estimate spillovers across countries?

We computed productivity growth in a variety of OECD [Organisation for Economic Co-operation and Development] countries in this particular paper. We constructed R&D capital stocks for countries, rather than for industries, which is what Griliches had done. Then we estimated the impact of the R&D capital stocks of various countries on their trade partners' productivity levels.

And we found substantial spillovers across countries. Importantly, in those data, these spillovers were related to the trade relations between the countries.

And we showed that you gain more from the country that does more R&D if you trade with this country more. This produced a direct link between R&D investment in different countries and how trading partners benefit from it.

In the '97 paper with Coe and Hoffmaister, we looked at developing countries because the '95 paper was about industrialized countries. The developing countries don't do much R&D. The overwhelming majority of R&D is done in industrialized countries, and this was certainly true in the data set we used at the time.

So we asked the following question: If you look at developing countries, they trade with industrialized countries. Do they gain from R&D spillovers in the industrialized countries, and how does that gain depend on their trade structure with these industrialized countries? We showed empirically that the less-developed countries also benefited from R&D spillovers. And the more they trade

with industrialized countries that engage heavily in R&D, the more they gain.

The exercise Bayoumi, Coe and I then did is also quite interesting. The International Monetary Fund had an econometric model for its midterm projections. We integrated the equations that Coe and I had estimated previously into this IMF econometric model. Then we could simulate it using our specification of the relationship between R&D levels and productivity levels across countries. In this way, we could essentially decompose the growth process. How much of it is driven by capital accumulation? How much is driven by productivity growth due to R&D?

One of the important findings—which analytically is almost obvious, but many people miss it—is that, if you have a process that raises productivity, such as R&D investment, then this also induces capital accumulation. So then, the contribution of R&D to growth comes not only from the direct productivity improvement, but *also* through the induced accumulation of capital. When you simulate the full-fledged model with these features, you get a very clear decomposition. You can see how much is attributable to each one.

With this, we could handle a relatively large number of countries in all different regions of the world, and [run some] interesting simulations. We could ask, for example, if all the industrialized countries raise their investment in R&D by an additional half percent of gross domestic product, who is going to benefit from it? Well, you find that the industrialized countries benefit from it a lot, but the less-developed countries benefit from it *also* a lot.

It was still the case that the industrialized countries would benefit more, so in some way it broadened the gap between the industrialized and the less-developed countries. Nevertheless, all of them moved up significantly.

This was quite fascinating—both the research itself and the implications we found in these simulations.

Of course, I’ve also been involved in an attempt to understand how institutions affect growth, and in the more recent paper, we looked at the role of institutions in enhancing the contribution of R&D to growth. And we’ve found that they’re quite important. For example, patent protection is an important tool. Countries that have better patent protection systems benefit more from R&D investment and also from R&D invested in other countries.

R&D, INSTITUTIONS AND INTERNATIONAL SPILLOVERS

Region: What’s your general sense then, from this entire body of both theoretical work and empirical research, of the importance of international R&D spillovers and institutions in contributing to economic growth?

Helpman: My sense is that institutions are very important. Of course, there has been a lot of work by other scholars on the subject, and my contribution is at the margin, to some extent. But you know, institutions impact growth through a variety of channels; R&D investment

is just one of them. It is relatively less-researched than some of the others.

Let me make some general remarks on this subject. If you look at the empirical work on institutions and growth, or institutions on economic performance more broadly, then I think we, many of us, have become convinced that there exists a robust relationship between the quality of institutions and economic performance.

However, most of the empirical work is based on a broad-brush sweep. And it’s hard to identify from that precise mechanisms through which institutions affect performance. There are, of course, exceptions to the rule. Generally speaking, we have these robust correlations, which in fact some people dispute, too, but let’s agree that these are robust correlations.

The more important understanding that will have clear policy implications requires studies of specific mechanisms and how they work through the system in order to translate features of institutions into features of economic performance. For example, think about correlations that tell you that different legal systems have a different effect on income per cap-



If you don’t understand what features of [a legal system] feed into better performance, through which channels and in what dimensions of performance, it’s very hard to think about the design of policies. So, this is an area where we need a much more detailed understanding.

ita. And suppose that you're convinced that one system is better than another.

Region: That perhaps the British legal system is better for economic growth than, say, the French system.

Helpman: Right. But if you don't understand what features of the British system feed into better performance, through which channels and in what dimensions of performance, it's very hard to think about the design of policies. So, this is an area where we need a much more detailed understanding in order to be able to actually translate these broad correlations into concrete policy recommendations.

CURRENT DEVELOPMENTS IN GROWTH THEORY

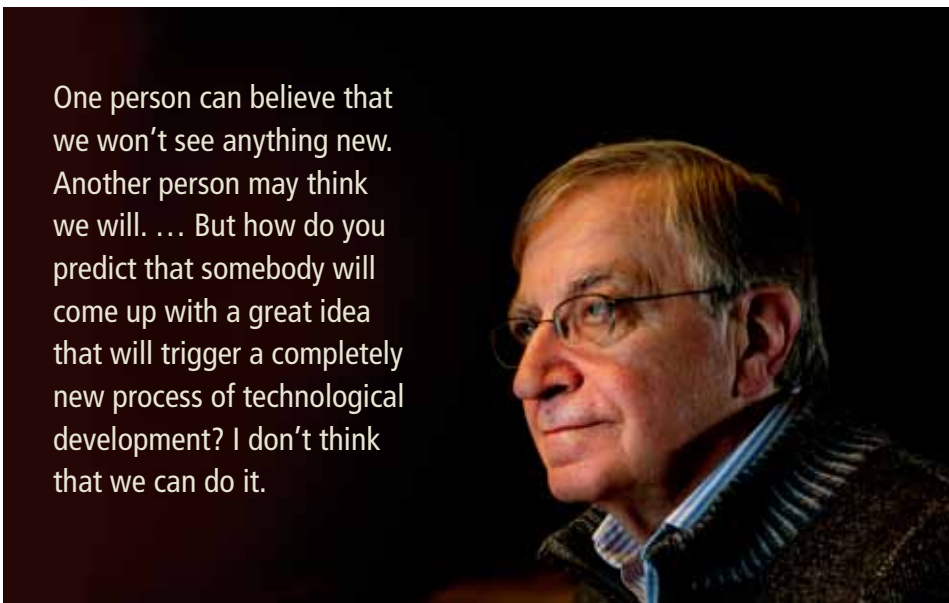
Region: Perhaps that leads to a question about current research developments. The world economy and theory itself have changed a great deal since the research of the early 1990s, so it's probably a misnomer to still call it new growth theory.

Helpman: Oh, right, it's not "new" anymore.

Region: Indeed. So, what current directions in growth theory, then, do you consider most promising? Which avenues should be pursued?

Helpman: There really hasn't been that much work on economic growth lately. A lot of work, for example, has tried to identify distortions in resource allocation, mostly empirical research. And there has been work like that of Daron Acemoglu on induced technical change.

But altogether, there hasn't been a big change in the view of the profession on economic growth. Frankly speaking, despite the fact that many papers have been published dealing with various aspects of this subject, there has been no major change in the view of the growth process.



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AN END TO GROWTH?

Region: Curiously, that lack of change in the view of the growth process brings to mind a recent paper by Robert Gordon on stagnation in economic growth itself. He argues that a number of factors suggest that the rates of economic growth seen in the United States specifically over the past 250 years are not likely to be seen again. Does that seem plausible to you?

Helpman: No. I mean this is his own personal judgment, right, and that's fine. Essentially, he talks there about technologies that I would term "general-purpose technologies," which is a subject on which people worked in the past. Again, there hasn't been much work recently, but in the '90s, there was quite a bit of work on this.

So, what's a general-purpose technology? It is a type of technology on which other technological developments build. And it usually induces more specific technical change and the development of inputs that build on this technology for further production.

Region: His examples are steam engines and locomotives, I believe, electricity and ...

Helpman: Yes, the steam engine was a general-purpose technology; electricity was a general-purpose technology. The microprocessor was a general-purpose technology. So there are technologies like this, which appear from time to time. And sometimes at the beginning they cause some havoc ...

Region: An end to the buggy whip industry, say.

Helpman: Right. But then eventually, they trigger a process of development and growth that can be very fast and can last very long. Therefore, it is true that a number of these general-purpose technologies were big contributors to growth. But there was at least one more recently, the microprocessor.

Moreover, I don't see how we can predict how many of these technologies will emerge in the future. So, one person can believe that we won't see anything new in the near future. Another person may think that we will. I don't think we have the capability actually to predict these developments. It's easier to predict what will happen once the general-purpose technology emerges. That's not entirely easy either, but at least you have some-

thing to build on in terms of predictive power.

But how do you predict that somebody will come up with a great idea that will trigger a completely new process of technological development? I don't think that we can do it.

NEW TRADE THEORY

Region: Let me ask about new trade theory. Of course, new growth theory relates to your work on new trade theory. In the 1980s, new trade theory expanded upon neoclassical trade theory, comparative advantage based on factor proportions, labor productivity. You and Paul Krugman were the foremost leaders in developing this new work, bringing [Edward] Chamberlin's theory into the mix.

What inadequacies in traditional theory required better answers? And how did new trade theory address those weaknesses?

Helpman: When I was a student, the type of trade theory that was taught in colleges was essentially based on Ricardo's 1817 insight, Heckscher's 1919 insights and then Ohlin's work, especially as formulated by [Paul] Samuelson later on.

This view of trade emphasized sectoral trade flows. So, one country exports electronics and imports food, and another country exports chemicals and imports cars. This was the view of trade.

The whole research program was focused on how to identify features of economies that would allow you to predict sectoral trade flows. In those years, there was actually relatively little emphasis on Ricardian forces, which deal with relative productivity differences across sectors, across countries, and there was much more emphasis on differences across countries in factor composition.

In parallel, some work tried to deal with industrial organization issues in trade. One of my teachers, Richard Caves, had done at one time quite a bit of work on it, but the theory of industrial organization and trade was very slim.

More generally, there was little integration of that theory with the empirical work in trade.

Two interesting developments in the 1970s triggered the new trade theory. One was the book by Herb Grubel and Peter Lloyd in which they collected a lot of detailed data and documented that a lot of trade is not *across* sectors, but rather within sectors. Moreover, that in many countries, this is the great majority of trade.


So, if you take the trade flows and decompose them into, say, the fraction that is exchanging [within sectors] cars for cars, or electronics for electronics, versus [across sectors] electronics for cars, then you find that in many countries, 70 percent—sometimes more and sometimes less—would have been what we call intra-industry trade, rather than across industries.

Region: So, for instance, looking at trade flows between the United States, Japan and Germany in, say, cars.

Helpman: Yes. You export cars, you import cars; you export electronics, you import electronics. So, Grubel and Lloyd did a great service by devising an index, which allowed a decomposition that showed the relative magnitudes of these trade flows.

The other observation that also started to surface at the time was that when you looked at trade flows across countries, the majority of trade was across the *industrialized* countries. And these are countries with similar factor compositions. There were obviously differences, but they were much smaller than the differences in factor composition between the industrialized and the less-developed countries. Nevertheless, the amount of trade between developed and developing countries was much smaller than among the developed countries.

This raised an obvious question. If you take a view of the world that trade is driven by [factor composition] differences across countries, why then do we



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have so much trade across countries that look pretty similar?

Some other empirical studies raised various issues, like the work of Béla Balassa on the formation of the European Common Market. But this would take too much time to explain.

These were the empirical developments. Then, on the theoretical front, monopolistic competition was introduced forcefully by both Michael Spence in his work, which was primarily about industrial organization, and [Avinash] Dixit and [Joseph] Stiglitz in their famous 1977 paper. These studies pointed out a way to think about monopolistic competition in general equilibrium. And trade is all—or, at least then, was all—about general equilibrium.

So combining these new analytical tools with the empirical observations enabled scholars to approach these empirical puzzles with new tools. And this is how the new trade theory developed. At some level, you know, the answers are pretty simple ...

Region: Well, simple in retrospect, perhaps.

Helpman: [Laughs.] Well, yes, yes. There were people like Béla Balassa who actually had the right insight. I mean, he



Only a fraction of firms in every industry exports, and not a large fraction. This triggered a reevaluation of the old new trade theory. Parallel to this, there was a new approach to multinationals based on contractual frictions. Eventually, these branches were integrated [into] a very comprehensive model.

didn't write down the model, but when he looked at the data and he saw this, he told a story that is not that different from what the models told.

Region: I read your conversation with Daniel Trefler, in which you describe the process of writing your 1981 *Journal of International Economics* paper—a landmark paper, as he said. Arriving at those “simple” answers sounded very difficult.

Helpman: Yes, indeed. It wasn't easy at all. It was very hard actually. It's very difficult to write down a detailed economic model that describes new phenomena in a convincing way. It's very difficult.

Nevertheless, we have to do it, because this not only imposes a discipline on how we think about the problem, but there are typically unintended consequences of model building. You build a model to explain a phenomenon, but the model then has other types of predictions, and you ask yourself, are these other predictions consistent with the evidence? If they are not consistent with the evidence, then maybe there is something wrong with this model.

Generally speaking, I think this is one of the nicer things that have happened in economics in the last few decades: this

interplay between theory and empirical findings. There used to be—in trade, this was definitely the case—a pretty sharp division between empirical work and theoretical work. And these new questions, and the construction of models to handle them, brought theory and empirical work much closer together.

These new models looked at product differentiation within industries. And they looked mainly at manufacturing. Today there is substantial trading in services, but at that time, it was negligible. Manufactured products are what countries used to trade. And in manufacturing industries, product differentiation is everywhere.

Region: So you look at trade flows of, say, Chevrolets and BMWs, for instance. Both cars ...

Helpman: Right, both cars.

Region: But very different.

Helpman: Yes, they are different cars. And countries produce different cars. And, you know, countries produce different electronic equipment, and they produce different chemicals. And they trade them.

The first obvious conclusion you reach is that if one country produces different brands of a product from its trade partner, then they're going to exchange these brands and then you'll get intra-industry trade. This may beef up the trade volume across quite similar countries to an extent that you wouldn't be able to predict if you wanted to use differences in factor proportions across countries as drivers of trade.

So, these models provided some nice predictions that could be brought to the data. They provided indices you could look at, and they started a new research program, which has been sustained to this very day with the more recent revolution in trade research.

NEW TRADE THEORY AND MULTINATIONALS

Region: Let's move to that. It seemed to me that your 1984 paper was one of the first to develop a theory of trade and multinationals. And then firm-level data became available toward the end of the '80s, early '90s, that pointed out the importance of understanding how firms differ in their levels of trade involvement. Within the same industry, some firms trade a lot internationally while others don't.

In addition, your paper “Trade, FDI and the Organization of Firms” points out that new research is looking at the *structure* of industries and providing what you call “new explanations for trade structure and patterns of FDI and new sources of comparative advantage.”

What are those theoretical refinements—the *new* new trade theory, if you will? And what are the new explanations they offer?

Helpman: In the 1990s, a lot of effort went into the integration of trade and growth. In parallel, a lot of excellent empirical work was being done. Part of it actually focused on the more traditional explanations based on differences across countries in factor proportions. This started

with the work of [Edward] Leamer in the mid '80s and some of his co-authors and continued with Treffer in a famous 1995 paper and a variety of papers that followed. This was one line of research.

There was another line of research that evolved. Andy Bernard, for example, from Dartmouth, was a big contributor to this one. This work started to look at firm-level data sets.

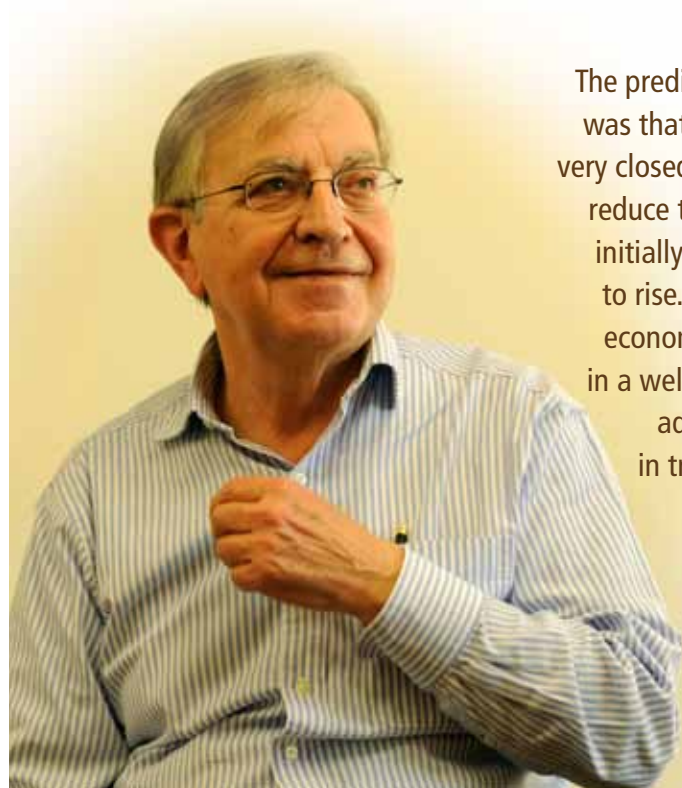
In the older new trade theory—that's a funny term, no?—in the older new trade theory, there were firms, obviously, but we didn't pay much attention to the differences across firms within an industry, basically. It's not that we didn't know there was a size distribution of firms in every industry, but the questions that we asked didn't seem to require this added complexity in order to answer them. Therefore, we assumed all these firms were, basically, symmetric.

Now, the important thing about the empirical work in the 1990s that used firm-level data sets is that they identified systematic relationships between firm characteristics and their involvement in

foreign trade. The key observation was that if you look across these data sets, then you find that only a fraction of firms in every industry exports, and it's not a large fraction, actually.

But this is not a random sample of firms in the industry. This is a skewed sample. In particular, the bigger and more productive firms engage in foreign trade, and the others don't. Moreover, those that export still serve the domestic market with a large share of their output.

Thus, we accumulated some insights into what you might call stylized facts about the relationship between trade and firm characteristics. And this is what triggered a reevaluation of the old new trade theory, which was then developed further, by Marc Melitz primarily but by other people as well, into the new new trade theory. The interesting thing here was that Melitz' paper—which essentially provided a theoretical explanation of these stylized facts—triggered a huge literature. And it triggered a huge literature in more than one way, one of them related to the multinational issue.



The prediction of this model was that if you start from a very closed economy and you reduce trade frictions, then initially inequality is going to rise. However, once the economy is open enough, in a well-defined way, then additional reductions in trade friction *reduce* the inequality.

Parallel to this, there was an independent development that allowed a new approach to multinationals, namely, the one based on contractual frictions. This is an interesting story because the work by [Sanford] Grossman and [Oliver] Hart on contractual frictions is from 1986. Then there was a paper by Hart and [John] Moore in 1990.

Evidently, Hart's work had been around for a while. However, it had not been integrated into international trade. And parallel to Marc Melitz' contribution, research was being built on these contractual frictions, particularly by Pol Antràs. Melitz' paper and Antràs' paper actually were published in the same year, but they dealt with very different issues.

Eventually, these two branches were integrated. As a result, we have a very comprehensive and detailed model of international trade where you can think simultaneously about the choices of firms to export, to engage in foreign direct investment, how this is related to the degree of heterogeneity of productivity within industries, how it is related to the severity of contractual frictions.

So it opens new windows, which are quite fascinating. And this research program that continues to this very day led to much better empirical work, more-refined theory; it has been a fantastic period for people working in this area.

Region: You chose your field well.

Helpman: One gets lucky from time to time. [Laughs.]

TRADE AND INEQUALITY

Region: I'd like to ask you about trade and inequality. Conventional trade theory, since Heckscher-Ohlin at least, has argued that trade should result in greater income and wage equality among nations and workers. But empirical studies generally haven't borne that out. They find an inverse relationship.

Recently, with Oleg Itskhoki and Stephen Redding, you've done a great deal of

work on the impact of trade on inequality and come up with an interesting explanation for this seeming anomaly, showing that trade seems to increase inequality initially, in contradiction to traditional theory, but eventually decreases it.

Essentially you argue for an inverted U-shaped curve between wage inequality and openness to trade, reminiscent of a Kuznets curve but for trade liberalization. Would you summarize that work and perhaps refer to your work on wage inequality in Brazil?

Helpman: Let me step back a little bit. Most of the work on trade and inequality in the neoclassical tradition was focused on inequality across different inputs. So, for example, skilled workers versus unskilled workers, or capital versus labor, and the like. There was a lot of interest in this issue with the rise in the college wage premium in the United States, which people then found happened also in other countries, including less-developed countries.

Region: So, the idea of skilled-biased technological change.

Helpman: Yes, the conclusion was that skilled-biased technological change drove wage inequality. Because if you wanted to use a trade explanation, then you should have seen opposite movements in inequality between skilled and unskilled workers in countries at different levels of development. This was one line of inquiry and debate in the literature on the impact of trade on inequality.

The other interesting thing that happened was that labor economists who worked on these issues also identified another source of inequality. They called it “residual” wage inequality, which is to say, if you look at wage structures and clean up wage differences across people for differences in their observed characteristics, such as education and experience, there is a residual wage difference, and wages are still quite unequal across

people. In fact, it’s a big component of wage inequality.

Our aim in this research project, which has lasted now for a number of years, was to try to see the extent to which one can explain this inequality in residual wages by trade. It wasn’t an easy task, obviously, but the key theoretical insight came from the observation that once you have heterogeneity in firm productivities within industries, you might be able to translate this also into inequality in wages that different firms pay.

You know, it’s not obvious that bigger and more productive firms have to pay higher wages, although empirically this is true. You can write down a model in which this doesn’t happen. Now, I was interested in the question of how do different countries respond to trade when they have different labor market frictions? This is partly related to some readings of what happened in Europe in terms of labor market policies.

Region: Sure. Greater rigidity in European labor markets has been considered a source of economic underperformance in many respects.

Helpman: We tried to combine these insights, labor market frictions on the one hand and trade and firm heterogeneity on the other, and the question is, can we generate a link between trade and unequal wages paid by different firms when there are labor market frictions?

We managed eventually, after significant effort, to build a model that has this feature but also maintains all the features that have been observed in the data sets previously. It was really interesting that the prediction of this model was that if you start from a very closed economy and you reduce trade frictions, then initially inequality is going to rise. However, once the economy is open enough, in a well-defined way, then additional reductions in trade friction reduce the inequality. Now, it is not clear that this is a general phenomenon, but our analytical model generated it.

Region: So, it’s an inverted U curve.

Helpman: Yes, it’s an inverted U shape, and the driving force there is the following. If, within an industry, you have firms with different productivity levels, they make different strategic decisions about how to organize their production and how to integrate into foreign markets.

What happens is the bigger, more productive firms export, as we observe in the data. But the key point here is the following: Look at two firms with very close productivity levels. And say the one with lower productivity chooses not to export because this is what maximizes its profits, and the one with a somewhat higher productivity level (even if just marginally higher) chooses to export.

The exporter is going to respond in a discontinuous way; it will perform a big jump. Why is this? Because to export, it has to cover the fixed cost of penetrating a foreign market. Therefore, it will be significantly larger than the firm with the slightly lower productivity level. Now, if you have a mechanism—as we do in our model—in which firms screen workers and then bargain over wages, which results in a positive correlation between wages and firm productivity, then you’re going to have a big jump in wages when the firm goes from nonexporting to exporting.

This generates inequality, but now, it depends where this jump takes place. If the jump takes place very close to autarky, so just a tiny number of firms in the country export, then when you remove the barriers so that more firms export, this is going to raise inequality.

But if it’s a nation where almost all the firms export, yes, then the inequality is not so large because the firms with the significantly lower wages employ very few people. So now, when you liberalize trade again, and you expand the range of firms that export, you actually reduce inequality.

Region: And, empirically, you found that Brazil’s trade liberalization experience was consistent with the model’s prediction.

Helpman: Right. In this paper on Brazil, we wanted to see to what extent this type of model fits the data. To assess a model like this, you need very detailed data, what we call matched employer/employee data. These are data where you know in which firm every person works. In addition, you need to know the wages of every worker, their education, their experience. You need to know if the firm exports, doesn't export. Very detailed data. So we have this huge data set from Brazil on which we estimated the model, and then when we simulate the model we get the inverted U shape.

REACHING A LAY AUDIENCE

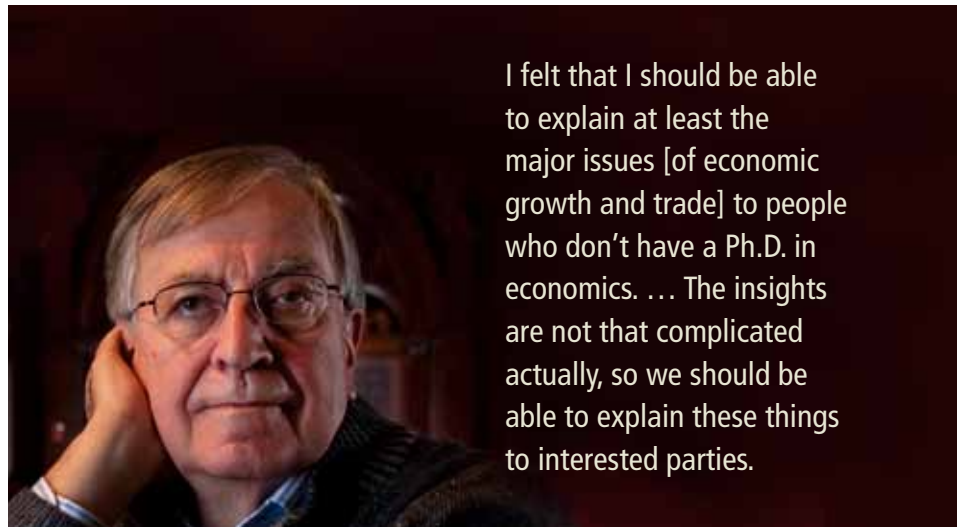
Region: Let me ask just one more question. In 2004, you wrote a wonderful book for a lay audience, *The Mystery of Economic Growth*. Then in 2011, *Understanding Global Trade*. Both books provide concise, lucid descriptions, in non-technical language, of the historical and current research in each area, growth theory and trade theory.

I'm curious to know why, after years of deeply technical research—work that has expanded frontiers of both areas—you've chosen recently to write for a lay audience. Why did you decide, twice, to devote a substantial amount of time to each book? The opportunity cost of working on those two books was enormous, given the research time you sacrificed. Why did you consider it important to reach the lay audience as opposed to continuing to work with your colleagues to further expand the frontiers of research in either growth or trade theory?

Helpman: You know, maybe I made the wrong cost/benefit calculation. [Laughs.]

Region: I certainly don't think so.

Helpman: I just had the urge to do it, frankly speaking. It came from the fact that very few people outside the profession—or even in the profession who



I felt that I should be able to explain at least the major issues [of economic growth and trade] to people who don't have a Ph.D. in economics. ... The insights are not that complicated actually, so we should be able to explain these things to interested parties.

were not close to this research line—really understood or knew about the importance of the research that has been done.

So it started with growth theory, yes? I was engaged in work on growth for a long time, and at the Canadian Institute for Economic Research, we have had a group that worked on this subject. But each time I talked to people from other fields in economics and certainly to people outside economics, they knew relatively little about the subject.

And by that time, I felt that we had a good enough understanding of this research that we could explain it actually in nontechnical terms. It is not always possible and it usually takes a long time, for whatever reason. I don't know exactly why. It's just something about how our brains work that over time we gain a better understanding of things, even if we are not working on them, necessarily. But obviously, you keep thinking about these issues time and again. You try to explain them to other people.

I felt that the topic was obviously very important—economic growth—and I felt that I should be able to explain at least the major issues to people who don't have a Ph.D. in economics, basically, or who have an economics Ph.D. but work in labor economics markets or economic development or whatever. So

I don't know, I developed this urge to do it, and I sat down and did it.

Region: And did it again, seven years later.

Helpman: Yes, it was the same. However, I would not have done it on the trade book if we had not had these wonderful 10 years of research where we had an explosion of new insights. Again, I felt the work had become more and more technical, on both the theoretical side and the empirical side. Nevertheless, the insights are not that complicated actually, so we should be able to explain these things to interested parties. And, well, I decided to do it.

Region: I'm very glad you did.

Helpman: Well, actually, I'm glad I did it too. It took a lot of time obviously and, you know, we don't have too much time. [Laughs.]

Region: Very true, and I've used more than my share of yours. Thank you so much.

Helpman: You're very welcome. Good to meet you.

—Douglas Clement
Oct. 25, 2012

More About Elhanan Helpman

Current Positions

Galen L. Stone Professor of International Trade, Harvard University; on faculty since 1997

Emeritus Professor, Tel Aviv University; on faculty 1974-2004

Director, Program on Institutions, Organizations and Growth, Canadian Institute for Advanced Research, since 2004

International Research Fellow, Kiel Institute of World Economics, since 2002

Research Fellow, CESifo, since 2002

Fellow, Canadian Institute for Advanced Research, since 1992

Research Fellow, Center for Economic Policy Research, since 1992

Research Associate, National Bureau of Economic Research, since 1986

Previous Affiliations

Editor, *Quarterly Journal of Economics*, since 2008

Board of Editors, *Journal of Economic Integration*, since 2003

Member, National Council for Research and Development, Government of Israel, 1995-96

Member, Board of Directors, Bank Hapoalim, 1993-96

Member, Council for National Economic Planning, Ministry of Economics and Planning, Government of Israel, 1992-96

Member, Advisory Board and Advisory Committee, Bank of Israel, 1988-89

Honors

Corresponding Fellow, British Academy, since 2012

Onassis Prize in International Trade, London, 2012

Distinguished Fellow, American Economic Association, 2010

Honorary Doctorate, Catholic University of Louvain, Belgium, 2010

Erwin Plein Nemmers Prize in Economics, Northwestern University, 2010

Fellow, European Economic Association, since 2004

Member, European Academy of Sciences and Arts, since 2004

EMET Prize, A.M.N. Foundation for the Advancement of Science, Art and Culture, 2002

Rothschild Prize, Yad Hanadiv Foundation, 2002

President, Econometric Society, 2000; Fellow, since 1986

Bernhard Harms Prize, Kiel Institute for World Economics, 1998

Foreign Honorary Member, American Academy of Arts and Sciences, since 1993

Honorary Member, American Economic Association, since 1991

Israel Prize, 1991

Mahalanobis Memorial Medal, Indian Econometric Association, 1990

President, Israeli Economic Association, 1989-91

Member, Israeli Academy of Sciences and Humanities, since 1988

Publications

Author or co-author of seven books on international trade, economic growth and political economy, including, most recently, *Understanding Global Trade* (Belknap Press of Harvard University, 2011) and *The Mystery of Economic Growth* (Belknap Press, 2004); editor or co-editor of additional books on those and other subjects; author of numerous journal articles about balance of payments, exchange rate regimes, stabilization programs and foreign debt, among other topics

Education

Harvard University, Ph.D., economics, 1974

Tel Aviv University, M.A. (*summa cum laude*), economics, 1971

Tel Aviv University, B.A. (*cum laude*), economics, statistics, 1969