

PERSPECTIVES

Economic growth and linguistic theory

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This ‘short shot’ article draws attention to an unresolved contradiction between fundamental assumptions of modern linguistics and economics. Endogenous growth theory has become the consensus explanation of the phenomenon of long-term economic growth. This theory makes an assumption that is not seen as controversial by economists, namely, that the supply of new, unanticipated ideas is limited only by the level of resources committed to idea generation. Much linguistic theorizing, by contrast, assumes that potential human cognitive products are tightly constrained by biology. Although linguists and economists are primarily interested in different kinds of ‘ideas’, there is a real contradiction between the respective assumptions. The article does not offer a resolution of the contradiction, but encourages members of our discipline to be aware of it as a problem needing to be resolved.*

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The phrases in my title are not often linked. Linguists who are asked about the social significance of their discipline commonly talk about the light it sheds on the diverse intellectual worlds inhabited by speakers of different languages, or the fact that it shows how immense an achievement it is to acquire and use a mother tongue. These things are true and important, but they are perhaps not central enough to the problems facing the average person in everyday life to seize the interest of a majority of the population. The purpose of this brief article is to draw attention to the fact that modern linguistic theory also has significant implications for our understanding of the mechanisms on which the material welfare of humanity centrally depends.

One of the largest, perhaps THE largest, advance in economic thought in recent decades has been the formulation of ENDOGENOUS GROWTH THEORY by Paul Romer (e.g. Romer 1990) and others. (An excellent exposition for a nonspecialist readership is Warsh 2006; see also Helpman 2004.) Endogenous growth theory claims to solve a long-standing economic paradox. The classical economic principles developed by men such as David Ricardo and Alfred Marshall predict that any society should move toward an economic steady state in which gross domestic product (GDP) per capita is constant, or even shrinks as increases in population lead to diminishing returns from exploitation of nonlabor resources. This contradicts the experience of much of the world over the past two hundred years, during which per capita GDP has increased dramatically although populations have also risen. For some time economists have understood that the resolution of the paradox must have to do with the creation of new, economically useful ideas, which enable greater value to be extracted from a given range of resources. Endogenous growth theory incorporates the process of idea creation into the economic machinery; it treats manufacturing, and research to generate ideas that might improve future manufacturing, as alternative uses to which a given set of human and other resources can be put. Considered as economic goods, ideas have some distinctive properties; notably, they are ‘nonrivalrous’: if I give you an apple I can no longer eat it, but I can give you my idea and still exploit that same idea myself. Taking these proper-

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ties into account, the theorists demonstrate (via algebraic reasoning whose details will be of little interest to linguists) that a society of economically rational individuals in a free market will choose to deploy resources in ways that create sufficient new ideas to cause per capita GDP to grow at an accelerating rate. This matches observed long-term trends in the advanced countries reasonably well (even if the time when I write happens to be marked by a hiccough in this growth).

One does not have to agree that economic growth is a good thing in order to see endogenous growth theory as a satisfying solution to what was previously a baffling intellectual puzzle. Voters in democratic countries commonly do see growth as good, and evaluate the politicians competing for their votes largely in terms of their ability to deliver growth; and writers such as Ridley (2011) argue passionately that economic growth offers the only realistic solution to a large range of threats facing humanity. But the opposite point of view is also possible. Many people nowadays see the costs of growth, in terms of damage to the environment, as outweighing its benefits. In 2010 John Holdren, director of the White House Office of Science and Technology, advocated a ‘massive campaign ... [to] de-develop the United States’, that is, to move economic growth into reverse (quoted in Ballas 2010). This journal is not the forum for that debate. What no one will deny is that the phenomenon of economic growth has immense practical significance for human life, for good and/or for ill.

Presenting endogenous growth theory as an innovation that began about 1990 arguably understates the extent to which it amounts to incorporation into mainstream English-speaking economics, and/or independent reinvention, of principles of the ‘Austrian’ school of economics initiated early in the twentieth century by figures such as Ludwig von Mises and Joseph Schumpeter. My present aim is not, however, to investigate the history of economic thought but to describe the current state of play. At the beginning of the twenty-first century, endogenous growth theory is generally accepted as the most persuasive explanation of the phenomenon of economic growth, so much so that it is serving as a basis for policy-making by practicing politicians. (Nick Crafts (1996) opens an analysis of the policy implications of the theory by referring to a famous occasion when Gordon Brown, soon to be Chancellor and later Prime Minister in the British government, was lampooned in the press for referring to its abstruse-sounding name in a public speech.) The theory may of course be wrong, but it cannot be ignored as merely an out-of-the-way eccentricity.

Endogenous growth theory makes one assumption that economists see as so uncontroversial that it is often left unstated: the theory takes for granted that the supply of new, economically valuable ideas is unlimited, so that the quantity produced in practice depends only on the quantity of resources devoted to idea creation. Paul Romer does recognize this as an assumption rather than a truism; in his first article he argued that rejecting it ‘would imply that Newton, Darwin, and their contemporaries mined the richest veins of ideas and that scientists now must sift through the tailings and extract ideas from low-grade ore’ (Romer 1986:1020), which he saw as a *reductio ad absurdum*. In his more widely read 1990 article, the point is dismissed in less than two lines: ‘there is no evidence from recent history to support the belief that opportunities for research are diminishing’ (Romer 1990:S84). Romer’s fellow economists, while often calling other aspects of his work into question, do not seem to have found this assumption problematic. At one point, Romer described resistance to the postulate of an unlimited supply of new ideas as a symptom of a widespread but irrational philosophical prejudice (1994: 16–21), but that prejudice appears not to be influential among the current economics profession.

Much modern linguistic theorizing is founded on the contrary assumption, that the potential products of human cognition are tightly constrained by our biology. The study of syntax from Chomsky 1956 onward has by and large taken for granted that humanly learnable grammars are a narrow subset of the set of recursively enumerable grammars, and much of the effort devoted to the field has aimed to identify the precise boundaries of that subset. In later writing, Chomsky (1981:11) even claimed that there are probably only finitely many possible human grammars. In the semantic area, Jerry Fodor (1975) argued that natural-language vocabularies can be mastered by speakers only because all of them are based on a common, innately fixed ‘language of thought’ that defines the set of all possible word meanings, various subsets of which are encoded in the words of individual languages. Both of these points of view have been restated for a new generation in Steven Pinker’s *The language instinct* (Pinker 1994, see e.g. pp. 106–25, 81–82), surely the most widely influential book about linguistics of the last twenty years. Anna Wierzbicka (1996) has turned Fodor’s abstract argument for the existence of a language of thought into a concrete description.

Although some linguists discuss this concept of constraints on cognition purely in connection with language structure, many others explicitly see language as providing evidence for a much more general picture of the nature of human cognition. Ray Jackendoff (1993:Ch. 13) uses universal grammar as a precedent to argue for innate cognitive constraints on our ability to recognize music, or to extract meaning from visual stimuli. Pinker (1994:412–15), citing the anthropologist Donald Brown, argues that innate cognitive constraints impose strikingly similar behavioral conventions and patterns on all human societies. Chomsky has argued (1976:124–25) that the rapid advances in scientific knowledge and innovations in the arts that have characterized the centuries since the Middle Ages were a temporary phenomenon reflecting a period when human beings were for the first time free to explore novel ideas and had not yet reached the limits of the cognitive possibilities biologically available to our species: ‘If cognitive domains are roughly comparable in complexity and potential scope, such limits might be approached at more or less the same time in various domains ... It may be that something of the sort has been happening in recent history’. Evidently, for Chomsky, Romer’s remark about Newton and Darwin would be not a *reductio ad absurdum* but a plausible description of the current state of the sciences.

I have quoted a handful of linguists, but readers will recognize that assumptions akin to those quoted about the supply of novel cognitive constructs being strictly limited are very widely shared by contemporary linguistic theorists. Not all linguists accept these assumptions, and not all economists accept endogenous growth theory, but they are part of the dominant consensus in the respective disciplines.¹

Not too many linguists, perhaps, would go all the way with Chomsky in suggesting that the constraints on one important domain of language structures are so very tight as to permit only FINITELY MANY distinct possibilities. But if other linguists see cognitive constraints as permitting infinitely numerous, though well-defined, ranges of alternatives, this would not alleviate the incompatibility with the economists’ assumption. Economic activities are commonly about optimizing some parameter or parameters,

¹ In 2012 Robert Gordon attracted widespread attention among economists with a paper (Gordon 2012) that argued that the economic growth that has characterized the West for the past two hundred years may be a temporary blip that has now run its course—making a neat parallel to Chomsky’s idea quoted in the preceding paragraph. Gordon’s suggestion, though, is a minority view within his discipline (see e.g. Krugman 2012, Pielke 2012, *Economist* 2013).

such as profit, market share, work/life balance, or the like. When elements of a solution space are enumerable, infinite cardinality is usually no hindrance to optimization. (There are infinitely many positive integers, but that creates no special difficulty for a decision about how many people to invite to a party.) Endogenous growth theory depends on the range of future ideas not being identifiable at any particular point in time. It assumes that an economic agent engaged in an optimization exercise will frequently be working with a solution space that omits numerous possibilities that will not occur to anyone until later, if ever.

Since Romer and his fellow endogenous growth theorists are concerned with only one category of new ideas, namely economically valuable ones (as Ridley (2011:269) paraphrases Romer, ‘recipes for rearranging atoms in ways that raise living standards’), and this particular category has not to my knowledge been discussed by linguists, it would be logically possible to deny that there is a contradiction. But neither linguists nor economists, surely, would want to suggest that human beings might have two separate faculties for idea generation, one inexhaustible and specialized for economically useful ideas, and another drawing on a limited range of ideas relevant to other domains. Much more plausibly, either the economists or the linguists are mistaken in their assumptions about intellectual innovation. Romer’s and Chomsky’s respective comments about scientific progress, quoted above, make the incompatibility rather explicit.

It is perhaps no accident that linguistics is the discipline that poses a challenge to the endogenous growth theorists’ assumption, because, apart from economics itself, linguistics may be the only area of social science that is sufficiently formalized to enable the contrary of that assumption to be clearly stated. Here and there one encounters informal hints in other fields of social study, for instance Vladimir Propp’s claim that folk tales conform to certain limited patterns. But I know of no field other than linguistics in which it is meaningful and normal to raise questions such as whether a given class of potential cognitive structures is or is not recursively enumerable.

In my experience, few linguists have much interest in economic thought, so I surmise that the above discussion of endogenous growth theory may come as news to many members of the discipline. But the sciences need to be consistent globally, not just within individual disciplines. It is clearly unsatisfactory for two subjects, even if pursued in separate university departments, to continue indefinitely making fundamental assumptions that flatly contradict each other. I put forward no suggestion here about how the contradiction should be resolved. But linguists and economists ought at least to be aware of the contradiction, and preferably should be actively engaged in seeking to resolve it.

This short article is offered in the hope of encouraging such cross-fertilization.

REFERENCES

- BALLASY, NICHOLAS. 2010. White House science czar says he would use ‘free market’ to ‘de-develop’ the United States. CNSNews.com, September 16, 2010. Online: <http://cnsnews.com/node/75388>, accessed January 2, 2012.
- CHOMSKY, NOAM. 1956. Three models for the description of language. *IRE Transactions on Information Theory* 2.3.113–24. [Reprinted in *Readings in mathematical psychology*, vol. 2, ed. by R. Duncan Luce, Robert R. Bush, and Eugene Galanter, 105–24. New York: Wiley, 1963.]
- CHOMSKY, NOAM. 1976. *Reflections on language*. London: Temple Smith.
- CHOMSKY, NOAM. 1981. *Lectures on government and binding*. Dordrecht: Foris.
- CRAFTS, NICK. 1996. ‘Post-neoclassical endogenous growth theory’: What are its policy implications? *Oxford Review of Economic Policy* 12.2.30–47.

- Economist*. 2013. Has the ideas machine broken down? *The Economist*, January 12, 2013, 20–23.
- FODOR, JERRY A. 1975. *The language of thought*. New York: Crowell.
- GORDON, ROBERT J. 2012. Is US economic growth over? Faltering innovation confronts the six headwinds. (Policy insight 63.) London: Centre for Economic Policy Research, September 2012. Online: http://www.cepr.org/sites/default/files/policy_insights/PolicyInsight63.pdf.
- HELPMAN, ELHANAN. 2004. *The mystery of economic growth*. Cambridge, MA: Belknap.
- JACKENDOFF, RAY. 1993. *Patterns in the mind: Language and human nature*. Hemel Hempstead: Harvester Wheatsheaf.
- KRUGMAN, PAUL. 2012. Is growth over? *The New York Times online: The Opinion Pages*, December 26, 2012. Online: <http://krugman.blogs.nytimes.com/2012/12/26/is-growth-over/>.
- PIELKE, ROBERT. 2012. Is economic growth coming to an end? How Robert Gordon misreads the data and what it tells us about the dismal science. *The Breakthrough*, September 26, 2012. Oakland, CA: The Breakthrough Institute. Online: <http://thebreakthrough.org/index.php/voices/roger-pielke-jr/is-economic-growth-coming-to-an-end/>.
- PINKER, STEVEN. 1994. *The language instinct*. London: Penguin.
- RIDLEY, MATT. 2011. *The rational optimist*. London: Fourth Estate.
- ROMER, PAUL M. 1986. Increasing returns and long-run growth. *Journal of Political Economy* 94.1002–37.
- ROMER, PAUL M. 1990. Endogenous technical change. *Journal of Political Economy* 98. S71–S102.
- ROMER, PAUL M. 1994. New goods, old theory, and the welfare costs of trade restrictions. *Journal of Development Economics* 43.5–38.
- WARSH, DAVID. 2006. *Knowledge and the wealth of nations: A story of economic discovery*. New York: W. W. Norton.
- WIERZBICKA, ANNA. 1996. *Semantics: Primes and universals*. Oxford: Oxford University Press.

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