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Economics Is on the Verge of a Golden Age

By Diane Coyle

Progress in any science depends on a combination of improved observation, measurement, and techniques. The cheap computing of the past two decades means there has been a tremendous increase in the availability of economic data and huge strides in econometric techniques. As a result, economics stands at the verge of a golden age of discovery.

You might be surprised by that statement, especially if you've been following the general debate about the role the discipline has played in the economic crisis. With Paul Krugman, in his *New York Times* article "How Did Economists Get It So Wrong?," at the forefront of the attack last autumn, certain prominent journals and blogs have given their readers the impression that economics is in a state of catastrophic intellectual collapse.

I'd better start with the question of why those attacks are so wrong.

Krugman's controversial article contains many statements that are either inaccurate or tendentious—starting in the opening paragraphs with the claim that "few economists saw our current crisis coming." In fact, many economists predicted the crisis, including, famously, Raghuram Rajan, Nouriel Roubini, Robert Shiller, and Martin Feldstein in the United States, and Roger Bootle and Andrew Oswald in Britain. Those were not lone voices. It is not economists' fault that policy makers chose not to act on the many warnings of unsustainable global economic imbalances and financial-market excesses.

However, it's not my aim to pick apart specific claims made by Krugman or any of the other commentators who've used the crisis to attack economics. Several excellent articles elsewhere do that, including those by John Cochrane, Robert Lucas, and Casey Mulligan. Rather, I'll make two points about the general nature of the criticisms of economics and economists before turning to the impressive developments in the subject in recent years.

The first point is that all of the recent critiques assume that macroeconomics defines economics. In fact, macroeconomics—the study of the economy in the aggregate—is just one part of the

subject. Most economists are microeconomists, specializing in the study of small parts of the whole. Macroeconomics is, of course, both prominent and important because it is needed to set monetary and fiscal policy appropriately. At what level do interest rates need to be? Is unemployment higher than it needs to be, and how can the government reduce it? Some macroeconomists say that their branch of the profession has responded pretty well to the crisis, managing successfully to avert a much more serious downturn. Indeed, Fed Chairman Ben Bernanke and his counterparts in other central banks have followed standard prescriptions from the macroeconomic textbooks in ensuring we did not get a repeat of the Great Depression.

However, it's glaringly obvious that macroeconomics is far from the settled realm of hard knowledge. On the contrary, it is the muddy terrain of partisan political warfare, as demonstrated by the grilling this winter of Bernanke and Treasury Secretary Timothy Geithner in Senate committee hearings, and by the furious left-right sniping worldwide about how quickly government budget deficits need to be reduced. Last spring's spat about Treasury-bond yields, of all things, between Krugman (again) and the economic historian Niall Ferguson, demonstrates well the passion and bitterness involved. That political dimension of macroeconomics is a return to the norm, subverting the consensus of recent years, which turns out to have been a symptom, rather than a cause, of what's become known as the Great Moderation, a rare period of stable growth and low inflation.

The absence of agreed-upon analysis and policy prescriptions reflects the fundamental difficulty of what macroeconomists are trying to do, namely understand and predict the decisions of millions of people who are all influenced by what other people do. Macroeconomic forecasting is often compared to weather forecasting—both involve nonlinear dynamic systems or, in other words, a number of interrelated variables that change over time in ways that themselves change. Actually, the state of the macroeconomy is even harder to predict than the weather because raindrops don't read about one another in the news or try to avert a drought by adopting a cloud-seeding policy. The economy as a whole is not prone just to self-fulfilling or herding tendencies, like any complex system in nature, but to self-reflective ones, too. The eminent Cambridge economist Sir Partha Dasgupta has written: "It is a recognition of the commonality of the human experience, on the one hand, and the separateness of every human being and the particularity of the circumstances she faces, on the other, that gives

economics its special flavor and is a reason why it is an awesomely difficult subject."

Given that macroeconomics is both necessary and difficult, those of us who are not macroeconomists might hope for a somewhat more diffident tone from those who are. It would be a vain hope, sadly. It's not just that the macroeconomic arguments make for great ammunition in a political debate. There are also too many macroeconomists employed in the financial markets to generate PR, or help out their traders, by forecasting whether GDP growth will be 0.3 percent or 0.4 percent this quarter.

A more realistic hope would be to reform the macroeconomics curriculum. Previous attempts to shift the teaching of economics at the graduate level away from its undoubtedly narrow focus, involving a particular technical approach, have foundered. When it comes to macroeconomics, too much reliance has been placed on a certain type of economic model that cannot incorporate the kinds of feedback and herding behavior we know occur, nor take account of the ways the structure of an economy changes as a result of new technologies, for example. Technical rigor is a strength only if it is accompanied by an acknowledgment of its limitations. The well-trained economist should be aware of economic history and findings from the other social sciences. Some are, no thanks to a curriculum that has narrowed over the decades. But David Colander of Middlebury College, a leading advocate of such reform, is relatively optimistic in his latest books about the way the teaching of the subject is moving. My conversations with many academic economists on both sides of the Atlantic also lead me to believe there is a strong appetite for updating the curriculum.

The second general point to make about the current wave of attacks on economics is that all have in common a distrust of its use of mathematical modeling in general. Astonishingly, that group includes even Krugman, who in a previous existence (see his 1996 *Slate* article called "Economic Culture Wars") defended the essential role of mathematics in economics. (He has claimed his recent *Times* article on the matter was misinterpreted, but if so it is a misinterpretation hard to avoid. There he wrote: "The economics profession went astray because economists, as a group, mistook beauty, clad in impressive-looking mathematics, for truth. ... The central cause of the profession's failure was the desire for an all-encompassing, intellectually elegant approach that also gave economists a chance to show off their mathematical prowess.")

The math is important because it enforces logical consistency and provides the scaffolding for testing hypotheses against evidence.

"Common sense" is well able to ignore accounting truths, like the fact that if the United States wants to reduce its current account deficit while its government budget deficit is increasing, then private saving has to increase and private spending has to decrease (a lot). That, in turn, would constrain what's usually called demand management. Without the formalism of mathematics, game theory—the study of strategy—would not exist. Nor would econometrics, the statistical testing of economic hypotheses. There would, in short, be no scope for scientific discovery.

For many critics of economics, the real objection is in fact this very notion of applying the scientific method to any aspect of human society, including economic transactions. I've concluded that it's an emotional response, similar to the so-called "yuck factor" that many people feel about seemingly "unnatural" biomedical innovations like face transplants, or transplanting animal organs into humans.

That is not to say that economics deserves no criticism. Certainly in the early 1980s, many of the charges made by its critics—the simplistic assumptions about human psychology, the excessive belief in the benign properties of markets, the conflation of general self-interest with narrow selfishness, the reliance on an unrealistic application of rational calculation in decision making—were valid. That was the high-water mark of free-market individualism in economics, just as it was in politics.

But that was three decades ago. A whole generation of economists has since transformed the subject into exactly what its critics are now saying it ought to become. Oddly enough, some parts of the recent research agenda have caught the public imagination. For example, behavioral economics is firmly lodged there thanks to popular books ranging from Shiller's *Irrational Exuberance* to Richard Thaler and Cass Sunstein's *Nudge*. The economics of "happiness" is another area that has caught on. In both cases, critics imagine that these areas of research "disprove" economics. Never mind that economists themselves are at the forefront of both.

The behavioral approach has gained wide acceptance in the profession because in some areas of decision making it has empirical validity, and most economists are empiricists. It is by no means seen as overturning all previous economic research. On the contrary, there are other areas of decision making where conventional economics has far greater empirical traction. For example, auction theory has helped governments raise billions of dollars from using market-based mechanisms to sell access to scarce resources like the broadcast spectrum or oil. "Market design" based on game theory has been widely used to improve the way job

markets operate or to set up e-commerce platforms. "Happiness" economics is more contentious in the profession, and recent research (by Angus Deaton, and by Betsey Stevenson and Justin Wolfers) has cast serious doubt on the claim that economic growth does not increase happiness. The new research points out that it is a statistical error to expect happiness (measured by the limited options in a survey question: Would you say, generally speaking, that you are very happy, happy, or not very happy?) to rise in proportion to GDP (a statistic that can increase without limit). But the happiness literature has nonetheless helped spur a revival of serious interest in welfare economics.

Other areas of recent research are not yet quite so familiar. The 2009 Nobel Memorial Prize awarded to Elinor Ostrom and Oliver E. Williamson brought to wider attention the exciting work on institutional economics. That is the study of the ways economies are organized, either through informal rules such as sharing water and pasture, as in Ostrom's case, or by formal institutions such as business corporations, as in Williamson's. But there are other areas so far entirely neglected outside the economics profession, especially by those whose aim is to criticize the subject.

An astonishing explosion of creativity and intellectual progress has been under way for years in a number of areas. Consider competition economics (should the Department of Justice challenge the Google Books settlement on antitrust grounds?), the application of game theory or the use of market design (what's the best system for matching newly qualified doctors or Ph.D.'s to jobs?), development economics, the economics of technological change and network markets (what prices should mobile-phone companies charge for access to one another's networks?), and the study of long-term growth. Or technical areas such as the development and application of experimental methods, innovation in econometric techniques (for instance, how should the empirical assessment of a policy take proper account of gaps in the data or variables that can't be observed?).

Economists—microeconomists—doing this kind of work are well aware of and able to live with the messiness of real psychology and institutions. Market imperfections are their bread and butter. So, for that matter, are government imperfections. For both markets and governments will often "fail" in similar situations, because of asymmetric information or transactions costs, factors that frequently make economic policy difficult. For example, how can economists factor in the incentive people have to lie about their health to get insurance? Some groups might not be able to get

coverage at all, whatever their individual characteristics. But even if the government steps in to provide insurance where the market fails, incentives to lie remain and will make the scheme inefficient. It takes an economist to analyze the details of a particular market or government policy with the necessary rigor. Such work is often highly mathematical and technical, not abstract and unrealistic.

The balance economists should seek is between rigid mathematical modeling that disregards the human element and a math-phobic generality that's too abstract to apply to real-world problems.

The growing availability of data online and the collection of new data mean that for the first time it is becoming possible to advance economic knowledge in the robust and detailed manner that's familiar from other sciences. Economics is at the dawn of an age of discovery. That will be accomplished incrementally, rather than in headline-grabbing grand theories about how the economy ticks as a whole. It will consist of evidence about particular markets, people, places, times. But it will improve policies and the way we organize our societies.

Buck up, economists. Before long you'll defy your ill-informed critics.

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