QnAs with Partha Dasgupta

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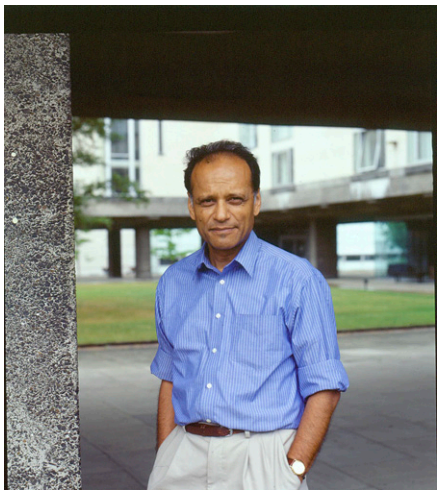
Back in the early 1970s, Partha Dasgupta realized that the economic models of the time were neglecting an entire class of capital assets: natural resources. Over the course of his career, Dasgupta, an economist at the University of Cambridge and a foreign associate of the National Academy of Sciences, has worked to put "natural capital" on an equal footing with other capital assets, exploring how natural resources and human population underlie issues such as poverty and sustainability. Dasgupta has advocated for measuring the strength of national economies based on their "inclusive wealth," which includes the value of natural capital alongside infrastructure and human capital, rather than gross domestic product (GDP). Recently, Dasgupta cochaired "Moral Dimensions of Climate Change and Sustainable Humanity," a joint symposium of the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences. The report from that symposium informed Pope Francis' encyclical on climate change and the environment (1). In 2016, Dasgupta became the first economist to receive the Tyler Prize for Environmental Achievement. PNAS spoke with Dasgupta to commemorate the honor.

PNAS: What is inclusive wealth, and how does it differ from GDP?

Dasgupta: A firm has a balance sheet. It will say what assets it owns: buildings fixtures, machines, and so on. Our national accounts don't do that. National accounts mainly look at flows: employment, output, consumption, investment, and so forth. What they don't do is to make an inventory of all of the stuff that is out there. Governments typically know where the roads are, they have estimates of how many people there are, and so on. But try to get a government official to tell you the number and extent of wetlands in their country and they would be hard put. The idea has some really important implications for the way our national accounts are prepared, and for the basis on which we judge not only what our policies should be, but also the way we convey information about the way things are, which is what our national accounts are designed to do. They talk about employment moving up or down, GDP going up or down, but rarely ever about the state of affairs of natural capital. Ideally, you want to be able to integrate the various categories of capital assets into one comprehensive index, and that's wealth. "Inclusive" simply means you include all of the bits and pieces, not just a few.



Partha Dasgupta. Image courtesy of Faculty of Economics, University of Cambridge.

PNAS: You've argued that GDP is an inadequate measure of the state of a nation's economy. Why?

Dasgupta: The simplest way to think about it is to ask what GDP actually measures. It measures the market value of final goods and services that a country produces. But it does not deduct the depreciation of those factors that have been used to produce that output. Firms think of depreciating their buildings and machines. With natural capital the depreciation is much more momentous and far more interesting. If you cut down a tree in an open range, you will have depreciated it totally. It's gone. Maybe it's going to be converted into furniture, but if you just measure the furniture production—that's part of the GDP—you will have forgotten that a tree is missing now. GDP per capita could be rising, but wealth per capita could be declining if you're tearing down your natural capital. GDP doesn't record that, inclusive wealth does.

PNAS: What is the importance of natural capital for understanding poverty?

Dasgupta: In villages in South Asia or Africa, there is rarely any processed food available. Your food will have to be cooked from raw materials. You won't get water by turning on a tap. You have to go and fetch water. You're not going to get electricity by turning on a switch. So where do you get your heat for cooking? You get it by going out into the fields and getting cow dung, or leaves, twigs, or logs. So the household there lives very directly on their local natural capital. The work that I'm most proud of is one that tried to illuminate the notion of poverty in the poorest regions of the world in terms of the degradation of their local natural capital base. In this way of viewing states of affairs, a rise in poverty would mean that the water

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sources are now farther away from the home, so you may now need to walk a mile to get your daily water. That has huge implications for labor requirements. A bachelor could not live in a village in Africa. He wouldn't have enough time, let alone the energy, to do all of the things that are required on a daily basis. So the study of poverty should have based itself on the study of people's dealings with the local environment, but the official economics of poverty still does not do that.

PNAS: How did the "Moral Dimensions of Climate Change and Sustainable Humanity" symposium inform Pope Francis' encyclical?

Dasgupta: It was defining a series of interconnections: this intricate tapestry that makes for the Earth system. If you look at the set of essays that's now been published by the Pontifical Academies, you will get a sense of the tapestry. It would seem that's exactly what the Pope wanted to see also. Of course he would use different language from what I would, but we're speaking the same tongue. I imagine the Pope had been thinking about these matters for quite some time, and he wanted to bring his office to the issues. But we had no idea at the time we were defining the program of the symposium that it would be of use to the Pope himself. When we made the proposal, Pope Francis hadn't been elected yet.

PNAS: You believe that global population is being overlooked in discussions of sustainability. How does population affect sustainability?

Dasgupta: We are heading for a world population of 10 billion. Imagine a world in which the average income per capita is $20,000 per year, which is the per capita GDP in Panama today. Recent, very rough, estimates say that 10 billion people at that standard of living would be making an unsustainable demand on Earth's services. The Sustainable Development Goals [SDGs] of the United Nations, which were signed last year, are laudable goals. But nobody seems to have asked whether they are sustainable. Suppose we achieved the goals by 2030. Two related questions arise: (*i*) do we know what price we'll be paying in terms of Earth's resources, and (*ii*) do we know whether we'll be able to maintain the SDGs indefinitely? As far as I can tell there's nothing in the intellectual architecture of the SDGs that addresses these questions, and one reason it doesn't is that population is not mentioned.

PNAS: How does it feel to be the first economist to win the Tyler Prize?

Dasgupta: It really is a great honor. I am delighted that the work I have been doing has proved useful to my colleagues in the environmental sciences.

1 Dasgupta P, et al. (2015) *Climate Change and the Common Good: A Statement of the Problem and a Demand for Transformative Solutions* (The Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences, Vatican City).