Who Causes Environmental Problems?

By Donella Meadows

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To a small but influential bunch of global thinkers the abbreviation “IPAT” (pronounced “eye-pat”) says volumes. It summarizes all the causes of our environmental problems.

IPAT comes from a formula originally put forth by ecologist Paul Ehrlich and physicist John Holdren:

Impact equals Population times Affluence times Technology.

Which is to say, the damage we do to the earth can be figured as the number of people there are, multiplied by the amount of stuff each person uses, multiplied by the amount of pollution or waste involved in making and using each piece of stuff.

A car emits more pollution than a bicycle, and so the 10 percent of the world’s people rich enough to have cars cause more environmental impact in their transport than do the much more numerous bicycling poor. But a car with a catalytic converter is less polluting than a car without one, and a solar car even less. So technology can counter some of the impact of affluence.

The IPAT formula has great appeal in international debates, because it spreads environmental responsibility around. The poor account for 90 percent of global population increase — so they’d better get to work on P. Rich consumers need to control their hedonistic A. The former Soviets with their polluting factories, cars, and buildings obviously should concentrate on T.

I didn’t realize how politically correct this formula had become, until a few months ago when I watched a panel of five women challenge it and enrage an auditorium full of environmentalists, including me.

IPAT is a bloodless, misleading, cop-out explanation for the world’s ills, they said. It points the finger of blame at all the wrong places. It leads one to hold poor women responsible for population growth without asking who is putting what pressures on those women to cause them to have so many babies. It lays a guilt trip on Western consumers, while ignoring the forces that whip up their desire for ever more consumption. It implies that the people of the East, who were oppressed by totalitarian leaders for generations, now somehow have to clean up those leaders’ messes.

As I listened to this argument, I got mad. IPAT was the lens through which I saw the environmental situation. It’s neat and simple. I didn’t want to see any other way.

IPAT is just what you would expect from physical scientists said one of the critics, Patricia Hynes of the Institute on Women and Technology in North Amherst, Massachusetts. It counts what is countable. It makes rational sense. But it ignores the manipulation, the oppression, the profits. It ignores a factor that scientists have a hard time quantifying and therefore don’t like to talk about: economic and political POWER. IPAT may be physically indisputable. But it is politically naive.

I was shifting uneasily in my seat.

There are no AGENTS in the IPAT equation, said Patricia Hynes, no identifiable ACTORS, no genders, colors, motivations. Population growth and consumption and technology don't just happen. Particular people make them happen, people who shape and respond to rewards and punishments, people who may be acting out of desperation or love or greed or ambition or fear.

Unfortunately, I said to myself, I agree with this.

Suppose we wrote the environmental impact equation a different way, said the annoying panel at the front of the auditorium. Suppose, for example, we put in a term for the military sector, which, though its Population is not high, commands a lot of Affluence and Technology. Military reactors generate 97 percent of the high-level nuclear waste of the U.S. Global military operations are estimated to cause 20 percent of all environmental degradation. The Worldwatch Institute says that "the world's armed forces are quite likely the single largest polluter on earth."

Suppose we added another term for the 200 largest corporations, which employ only 0.5 percent of all workers but generate 25 percent of the Gross World Product — and something like 25 percent of the pollution. Perhaps, if we had the statistics, we would find that small businesses, where most of the jobs are, produce far less than their share of environmental impact.

Suppose we separate government consumption from household consumption, and distinguish between household consumption for subsistence and for luxury, for show, for making us feel better about ourselves. If we had reliable numbers, which we don't, we might be able to calculate how much of the damage we do to the earth comes from necessity, and how much from vanity.

An equation was beginning to form in my head:

Impact equals Military plus Large Business plus Small Business plus Government plus Luxury Consumption plus Subsistence Consumption

Each of those term has its own P and A and T. Very messy. Probably some double counting and some terms left out. But no more right or wrong, really, than IPAT.

Use a different lens and you see different things, you ask different questions, you find different answers. What you see through any lens is in fact there, though it is never all that is there. It's important to remember, whatever lens you use, that it lets you see some things, but it prevents you from seeing others.