



When Theory and Practice Part

I'M STILL RECOVERING from studying graduate-level economics, where the going wisdom was that certain challenges are insoluble. An early lesson, for example, was that no voting system can reliably reach the “right decision” that satisfies a set of basic principles. Nobel laureate Kenneth Arrow showed that no voting method is fair, and that the only voting method that isn't flawed is dictatorship. I learned through the apocryphal tale of the Tragedy of the Commons that un-governed access to common resources will always end in the overuse and destruction of those resources. I also learned that collective action to produce public good could not succeed if it involved more than seven people. I'm not kidding.

As I recover, I've detected a flaw in the *sequence* adopted by economists to break down problems. We look first to theory to frame our response, then seek to apply the theoretical structure to resolve the challenge. We begin with seemingly reasonable assumptions about rational human behavior, e.g., people always prefer more rather than less of a good thing; if a voter prefers candidate A over candidate B and candidate B over candidate C, then the voter must prefer candidate A over candidate C (transitivity). We then construct the challenge itself as a set of choices made by rational agents. Inevitably, theory tells us that some challenges are insurmountable, and optimal resolution is impossible. No matter how we tally votes, we can always find a case where voters will collectively violate transitivity. Because more is better, pastoralists will overgraze and destroy shared grazing commons by increasing the size of their herds.

But the words of two more practical 20th-century philosophers have helped me see things differently: “In theory, there is no difference between practice and theory. In practice, there is” (attributed to Yogi Berra); and, “A resource arrangement that works in practice can work in theory” (commonly known as Ostrom's Law). Berra was a short, stocky baseball catcher who would swing at anything thrown near him—and almost never struck out. He was voted league MVP three times and played on more world champion teams than any other player. Elinor Ostrom, the first woman to win the Nobel Prize in Economics, spent a career showing how large groups of individuals who use a common resource, like a fishery, find ways to steward the resource sustainably.

As it turns out, many of the challenges eschewed by economists as insoluble are also existential. Maybe the best way to solve them is to try things out until we find something that works. One of the best and most effective examples of taking action before all the theoretical nuts and bolts were firmly in place—and a potential model for addressing other complex global issues—is the Montreal Protocol.

In the 1970s, people started noticing that the ozone layer of the upper atmosphere was thinning out over the poles—especially over Antarctica. The ozone layer makes the sky blue. It also makes life on earth possible by absorbing harmful ultraviolet radiation from the sun. After a little more than a decade, scientists concluded that the culprit was the release of chlorofluorocarbons and other ozone-depleting substances (ODS), artificial compounds used as refrigerants,

aerosol propellants, and inputs in the production of plastics like Styrofoam. ODS use was ubiquitous and growing, and the chemical industry did not have—and was not particularly willing to develop—alternatives. It became clear that action on a global scale would be required to address the ozone crisis, motivating industry to find alternatives to these harmful chemicals, persuading as many countries as possible to ban their use and enforce the bans, and collecting and replacing ODS in existing refrigerators and industrial stocks.

The obstacles seemed insurmountable. Industry spokespeople popularized “ozone denial”: “How do propellants from my deodorant, sprayed at sea level, get to altitudes of 50,000 feet?” “How do ODS released in Topeka make it to the poles?” Scientists produced compelling, but not definitive, answers to these questions, in the form of things like thunderstorms and global circulation. But as public concern grew, something extraordinary happened: even without scientific certainty, policy makers, environmentalists, scientists, and industry leaders decided that the risks posed by ozone depletion were severe enough to warrant precaution.

In 1987, 46 countries signed the Montreal Protocol to protect the ozone layer by phasing out the production and consumption of ODS. It took effect two years later, and its implementation was adaptive and practical. Because the science was emerging, signatories decided

to base future policy decisions on periodic assessments by panels of worldwide experts in science, the environment, and economics. To get the other 151 countries in the world to join, signatories agreed to trade only with other signatories. It didn’t take long before all countries signed on.

For lower-income countries without the resources needed to replace ODS, compliance enforcement was non-punitive. Wayward countries were asked to work with a UN agency to prepare action plans to get back into compliance. In 1991, the Multilateral Fund was established, with wealthier countries providing around \$4 billion to help lower-income countries meet their commitments. By 2010, all 142 developing country signatories had completely phased out ODS.

The Montreal Protocol was the first UN treaty in history to achieve universal ratification. It proves that, economic theory to the contrary, collective solutions to seemingly insurmountable challenges are possible. It also proves something especially critical for our current times: we can effectively and comprehensively tackle our most complex global environmental challenges. Concerns over ozone depletion evolved from a fringe environmental issue to a driver of unprecedented national and international cooperation. As of this year, 98 percent of ODS contained in nearly 100 hazardous chemicals worldwide have been phased out. All 197 signatories are in compliance. Projections show that the ozone layer will return to 1980 levels between 2045 and 2065.



The Montreal Protocol is an effective global policy framework that has led 197 nations to address threats to the ozone layer. Here, representatives gather for the opening session of the 28th meeting of the parties to the protocol in 2016. Credit: Ministry of Environment, Rwanda/Flickr CC BY 2.0.

One unanticipated benefit of the Montreal Protocol is the climate protection that it has already achieved. By removing some of the most powerful greenhouse gases from the atmosphere, the treaty's contribution to climate change mitigation is larger than the first global reduction target of the climate-focused Kyoto Protocol. The latter was an extension of a global framework established in 1992 to prevent "dangerous" human interference with the climate system. That framework, the United Nations Framework Convention on Climate Change (UNFCCC), proposed a simple goal: to reduce greenhouse gas emissions from all sectors to keep global warming below 2°C. Like the Montreal Protocol, it has been ratified by 197 countries and relies on an expert research panel to guide and adjust policy responses. But climate change is far more challenging and contentious than protecting the ozone layer. So far, this framework has not been nearly as effective as the Montreal Protocol; it remains to be seen whether increasing public concern or shifting political winds will change that.

In 2000, following the adoption of the United Nations Millennium Declaration, global Millennium Development Goals (MDGs) were established for all member states. The declaration stated that all people have the right to freedom, equality, and a basic standard of living that includes freedom from hunger and violence. The MDGs established eight specific targets to be achieved by 2015 for poverty reduction in all countries, and met with some success: member states achieved three of the eight targets, and made significant progress on four of the other five. To help less developed countries achieve the goals, developed countries agreed to cancel around \$50 billion of debt for heavily indebted poor countries.

In 2015, the UN developed a set of Sustainable Development Goals (SDGs) to succeed the MDGs. The SDGs, the most complex global policy framework to date, include 17 global goals designed to "achieve a better and more sustain-

able future for all." A reporting framework binds the 193 ratifying member states to report on progress on 169 targets and 232 approved indicators. The SDGs reveal ever more ambitious efforts to work collectively to address global challenges.

Though these global policy frameworks have attained varying levels of success, they share important common elements: recognition of the problem; general agreement on causes and remedies; lofty but specific goals; an onus on developed countries to lead the way (sometimes with resources); monitoring and evaluation structures; and, in the best cases, binding agreements that define compliance and include mandatory reporting.

Thank goodness economists didn't take the lead in the design of these frameworks. We would still be waiting for a theoretical framework for our collective efforts before we could begin implementation. Luckily, more pragmatic people realized that finding a structural solution that satisfies a set of predetermined principles is less important than taking action to overcome an existential challenge, addressing obstacles when they are encountered.

At the Lincoln Institute, we have adopted a similar approach to achieve our global mission. The guiding framework, our Pathways to Impact, illustrates our strategy for addressing six global social, environmental, and economic challenges using land policy. We have articulated medium-term objectives and will soon identify a set of benchmarks through which we can track our success. In the coming months, we will align our objectives and benchmarks with the appropriate SDGs. This will show both our commitment and our contribution to a better and more sustainable future for all. We also recognize that our work on the ground won't always align with even the most well-crafted strategic goals, and we are working to remain flexible enough to meet obstacles as they arise. If there's one thing I've learned, it's that practice makes theory imperfect—and that's a good thing. □