

INTERVIEW

Bruce Yandle

Editor's Note: *This is an abbreviated version of RF's conversation with Bruce Yandle. For the full interview, go to our website: www.richmondfed.org/publications*

There's only one planet Earth. So until the day comes when technology makes pollution-control measures costless — or, at least, makes them cheaper than disposing of raw wastes in the air, in water, and on land — environmental economists will have a critical set of problems to study, drawing on such concepts as externalities, risk assessment, cost-benefit analysis, microeconomic theory, and public choice theory. Bruce Yandle of Clemson University and George Mason University's Mercatus Center is among the circle of economists who pioneered environmental economics as a distinct subfield in the 1970s. His approach has been marked by an interest in the application of private-law solutions (such as tort law) to environmental issues. He has authored or edited 14 books on regulation and environmental policy. He has also, starting in the 1990s, studied the movement of the macroeconomy. David A. Price interviewed Yandle in Williamsburg, Va., in March 2011.

RF: How did you become interested in the economics of the environment?

Yandle: What some people refer to as the “externality revolution” was occurring in economics when I was a doctoral student in the late 1960s. In addition to that, there was the revolution that was formed by the rise of public choice as an analytical device, primarily associated with Gordon Tullock and James Buchanan's 1962 book, *The Calculus of Consent*. Both were associated with a move from normative to positive economics and empirically-based studies. I wrote my dissertation on externalities in housing and the rise of what were then called slums and the programs that were addressing them, urban renewal. So I began writing on property rights and external effects, and that led naturally into questions of water quality, air quality, pollution, and so forth.

My direct link into questions of the environment as we think of it narrowly — water, air — was a colleague I became associated with at Clemson by the name of Hugh Macaulay. He was writing on, as he put it, “dirty water.” So when I joined that faculty, there was a senior faculty member who was working on this. I thought, my work transfers directly. I just have to change the names on the axes from “housing” to “water,” then I've got my model.



RF: In your writings about environmental economics, you've described a “systems approach” and a “process approach” to environmental policy issues. What do you mean by these terms?

Yandle: A systems approach is where the “brightest and best” get together and look at a problem and come up with what they believe to be the best solution. They describe the system that can be installed that will lead to a solution of the problem and so it tends to be top-down.

In a process approach, you identify goals and outcomes, develop some rules of the game, and then let the process take hold, holding accountability with respect to outcome. You don't tell people how to do things; you say this is the outcome that must be achieved, or it's going to be costly for you.

RF: You have been a proponent of the process approach. But aren't there success stories that the systems approach has enjoyed?

Yandle: There are success stories in both camps. The process approach is by far the oldest because common law is a process approach where there are rules of property, rules of liability, rules with respect to pollution that have been around for centuries, so that one cannot impose costs on his

neighbor without your neighbor's permission, or your neighbor has a cause of action against you. At common law, people downstream hold property rights to water quality and people upstream cannot destroy that with impunity. Basically what protected air and water quality in the United States up until the late 1960s was the process approach

based on common law, with a lot of state and local ordinances and statutes supplementing it. So there are wonderful success stories there. That is, somehow we all survived until the 1970s without having a systems approach imposed from the top for the environment in a consistent way.

There are transaction-cost problems and enforcement-cost problems that lead to situations where people will understandably develop a systems approach. Generally, when you have crises, systems approaches tend to take over — that is, we move to hierarchies, just as we are seeing now with Japan and nuclear power.

There are some wonderful success stories: EPA is now promoting process with respect to river basin management approaches for water quality and we've got some pretty interesting success stories going on there. They are, I would say, hampered inasmuch as they are promoting it within the context of technology-based, systems-approach standards based on inputs, and that's because of the statutes under which they operate. The statute says you will define "best available control technology" and require it of all users of these particular streams. We have gotten to the point now where the EPA is identifying maximum loads that can be imposed on a stream; that's an outcome. Then EPA says, OK, members of this watershed community, tell us how you would like to achieve that goal. That's a process.

RF: You mentioned transaction costs. How much of an obstacle are transaction costs to environmental protection under the process approach?

Yandle: Transaction costs are large under either approach. The transaction costs are high in a technology-based systems approach on the input side. The difficulty is no one is keeping score on the output side and we literally have rivers that come close to dying, even though every discharger is meeting the requirements of the law. So you have a community of legal polluters killing a river. You can say we saved a lot of transaction costs. Well, I would say, "But you didn't save the river!" Should we be concerned with transaction costs or outcomes? You do have a trade-off there.

I looked at the level of litigation under common law and statute law. We looked at the amount of litigation in the post-1970 world and the pre-1970 world and it looks like you get about the same amount of litigation with the statutes as you do at common law. It's not an apples-to-apples

As income rises across any population of people anywhere we've ever measured it, the demand for environmental quality changes.

comparison because all we're looking at are counts of cases that are brought. Statute law generates a huge amount of litigation, and litigation costs are transaction costs in a way. That's an important consideration, but I think the more important consideration is outcomes, and then to look, in some way, at the costs.

RF: At what point in American history do you believe the systems approach became dominant?

Yandle: I would say the turning point was around 1970. You can look at it in terms of statutes that were passed. Up until about 1967, there were no federal regulatory agencies deeply involved in environmental regulation, workplace safety — what regulatory economists call "social regulation." Most of the major statutes were passed in 1970-1972.

If you look at a count of pages in the *Federal Register*, where the rules get published, as an indicator, there's an interesting time series. It begins in 1940 when the *Federal Register* first starts. So you're bubbling along with occasional hills and valleys until you get to about 1969 and that's when mountains start appearing. From 1970 through last year, we had 2.5 million pages of the *Federal Register* published during that period; from 1940 to 1970, about 350,000. What I call the environmental saga begins in the United States in about 1970 and that's when the world changes dramatically.

RF: Where's that coming from? Is it just a matter of public consciousness or awareness having changed?

Yandle: There are probably many reasons. It would be associated with rising income; that is, as income rises across any population of people anywhere we've ever measured it, the demand for environmental quality changes. From a very low level, the demand for environmental quality actually goes down; that is, you trade it off in order to get enough food to stay alive. But you reach a turning point. At that turning point, higher income generates higher environmental quality, so almost everything we can measure — not everything, but many things — begins to improve at that turning point. So it is income-driven. It is knowledge-driven as well. So as we get population concentrations, we get additional use of environmental assets, we get crowding, we begin imposing costs on each other and then as our incomes go up, we look for different solutions.

An interesting feature of our saga is that if you go back and study the Clean Air Act as it was passed, it started as a process statute. Senator Muskie — it's coming from his committee — is challenged by Ralph Nader saying he's being soft on pollution. They rewrite the statute; it becomes a systems approach. This is in conjunction with Earth Day: The world changes, the politicians respond.

As we look at other countries, we see similar patterns.

There's Japan's passage of major environmental statutes almost head-on with ours and very similar. In other places, France took a process approach to water quality. Germany did. In France today, every river is managed as a river basin association where you pay to discharge into the rivers or pay to withdraw from the rivers. The same thing was true in what was West Prussia going back into the 1800s: They incorporated the rivers, they made them corporations, managed them as corporations, and set out cost, holding the shareholders responsible. This occurred after they had some terrible typhoid epidemics. So you see different approaches. The process approach for water quality can be demonstrated to be a lower-cost alternative.

RF: Is there a stronger case for the systems approach where there is a possibility of a catastrophic event, as the Japanese faced at the Fukushima nuclear reactors?

Yandle: Probably. We would want to look at history as best we can, to see what were the incentives in place that we might be dealing with or that we might buttress. Given that you have earthquakes, do you indemnify builders of nuclear-generating plants by statute as we have in the United States and as they did in Japan so that they will only be liable for this much damage? Or do you say, sorry, your liability is basically unlimited if you want to build a nuclear plant on top of a location where we have earthquakes? That's a very different incentive package. If something terrible happens, the cost could be horrendous. I don't know of any insurance company that would write you an insurance policy. If you were trying to do that as a private agent, you would say, "Well, I don't think I will build a nuclear-generating plant, thank you."

We had the same kind of thing with the oil spill in the Gulf of Mexico where, by statute, we limit the liability. Changing those rules, given a high-risk situation, perhaps ought to be considered as we go forward. That could lead to a relocation of those kinds of facilities whether you make it open or whether you raise those liability limits.

Having the limits is a kind of systems approach. A process approach says you will be responsible for the cost you impose on your neighbors.

RF: Why does the public seem to be skeptical of the process approach?

Yandle: When we talk about a market process, we cannot identify ex-ante winners and losers. We cannot identify ex ante what the solution would really look like. We say, "Let's just leave it to the market and we've got to have faith." You hear statements like that. "I believe that the market can handle this problem." When we're talking about something which has potentially a high price tag, in terms of social costs associated with it, people want to see something that is more concrete. What will this do to South Carolina or what is this going to do to Kansas, and what about this Yucca

Mountain solution to nuclear waste? I want to know exactly the way the trucks are going to run, where they are going to carry it, how deeply it's going to be buried, and so forth. As opposed to saying, let's just let states bid competitively to provide storage locations for nuclear waste and see what the market delivers, which may be an illustration of what we're talking about here.

People are very passionate about themselves and their health and many are very passionate about natural resources and the environment. I think that's a wonderful aspect of human behavior that you do have that passion.

What is truly extraordinary is when you find people who are passionate about the environment who are looking for a low-cost solution to the problem, as opposed to simply celebrating when you get a statute passed.

The Nature Conservancy is one group that has promoted the use of conservation easements and environmental trusts, perpetually managing resources in kind of a positive cash-flow environment. The National Wildlife Federation is another one that has looked for solutions. There are organizations in the West that have developed interesting insurance schemes, for example, in an effort to try to reintroduce wolves free into the wild. So that if any farmer or cattleman has a loss that can be directly attributed to a wolf, they will pay him off. By working with the farmers and the ranchers and the people who just love wolves, they arrive at a partial solution. The people who love wolves put money in the kitty to run the insurance mechanism. Then the cattlemen who despise wolves are told if you ever have any damage, you will be made whole, so please don't shoot that wolf. That's an example of what I'm talking about.

RF: You've argued that the systems approach to environmental protection tends to favor established firms over newcomers. Why is that?

Yandle: That's a feature of our law. It's not a vice of having a systems approach per se. It's a systems approach where there is a differential standard. There are stricter standards for new sources than for old sources in our statutes in the Clean Water Act and in the Clean Air Act. When you have a differential standard that raises the cost to new competition, old firms love it. Now you have a cartel that is enforced by the U.S. government.

I was working on the White House staff reviewing newly proposed regulations during the end of the Ford administration and the first part of the Carter administration, in a unit of the Council on Wage and Price Stability. My beat was the EPA. I reviewed the copper smelter standards. I would get their big regulatory bundles and review them, and we would make comments in an attempt to try to reduce the cost of accomplishing the goal. EPA had an excellent economic analysis. The last section said when this regulation becomes final, there will never be another copper smelter built in the United States of America. How would you feel if you had a copper smelter? You'd just

been told you will never have any new competition.

RF: That's not too far from the parable of the bootlegger and the Baptists from your famous *Regulation* article.

Yandle: Yes, it was like the coalition of the bootlegger and Baptists. That was the story of two groups who favor restrictions on the sale of alcoholic beverages on Sunday. The Baptists take the moral high ground; they would like to see a diminution in the consumption of alcoholic beverages. The bootlegger just wants to get rid of competition one day a week. I called it bootlegger and Baptists for alliterative purposes. It could have been called "bootlegger and Methodists" and you would have the same story.

Probably one of the most extreme public choice stories in environmental economics had to do with the 1977 amendments to the Clean Air Act, which required scrubbers to be installed on all modified and newly built coal-fired electricity plants in the United States. You could have accomplished the environmental goal by saying we don't care where you get your coal or how you produce; you've got to achieve a performance standard. What we worry about is what comes out of the pipe, not what you put in your plant called a scrubber. Coal from the West was clean and could have accomplished the same goal as burning eastern coal with a scrubber. The Eastern coal workers happened to be organized, which gave an advantage in terms of collective decisionmaking and public choice. The Western coal workers were not. You had a wonderful senator from West Virginia who was chairman of EPA's oversight committee. EPA internally fought against it, the White House fought against it. They lost.

RF: You made a transition when you took emeritus status at Clemson. I know you're keeping very busy, but was that harder than you expected?

Yandle: I failed retirement the first time. I retired in 2000 as a faculty member and then came back. They had a need in 2005 in the College of Business and Behavioral Science and asked me to come back to serve as dean for two years, which I did. So I've gone through that transition twice.

Some people are very good at retirement and I admire them. There are people who have all kinds of things just waiting. It's going to be a new life, literally. They walk the gangplank and they land out there in a sailing boat and now

Bruce Yandle

► Present Position

Dean Emeritus, College of Business and Behavioral Sciences, Clemson University; Distinguished Adjunct Professor of Economics, Mercatus Center, George Mason University

► Previous Faculty Appointment

College of Business and Behavioral Science, Clemson University (1969-2000, 2005-2007)

► Education

A.B. (1955), Mercer University; MBA (1968), Georgia State University; Ph.D. (1970), Georgia State University

► Selected Publications

Author or co-author of numerous books, including *Common Sense and Common Law for the Environment*, *Taking the Environment Seriously* (with Roger E. Meiners), and *Regulation by Litigation* (with Andrew P. Morriss and Andrew Dorchak), as well as articles in such journals as *Public Choice*, the *Eastern Economic Journal*, the *Journal of Risk and Insurance*, and *Regulation*.

they are sailing the coastal waters of Florida, then they're going up to New England. I wasn't that guy. What I have done, whether it's good or bad, is to carry with me pieces of work and activities that I truly enjoyed in my life as an economist, as a teacher, and I've kept those going.

I don't have the luxury of having undergraduate students around me at 9:05 Monday, Wednesday, and Friday any more, but I do have the luxury of engaging with undergraduate students in different settings on a fairly regular basis. I don't have to grade papers, and I don't have to go to faculty meetings, and I still get paid.

I don't know what's typical, but I think that maybe more for economists than some disciplines, there seems to be a tendency for economists to be economists, whatever happens to them. They may be out with their lawnmowers cutting grass, but they're thinking about some kind of economic problem; they're still economists.

RF: What is your advice for economists who are approaching that stage of their careers, who can see that gangplank in the distance?

Yandle: The question is how deeply in love are you with your discipline and what you do. If you have a deep passion and love for it, I would suggest you stay active with some professional association or organization where there are people you like who you would be associating with. If you like that wonderful experience of seeing a young scholar come alive and maybe bloom, or on some days wilt, try to establish an adjunct position with your university or the university close to where you will live so that you might have that privilege of being on a master's thesis committee or dissertations in your field.

Another thing is don't be too stingy with respect to paying your way to things that you really enjoy, such as professional meetings. One of the challenges is that we are accustomed to someone else paying our professional travel expenses. When we're retired, there's not anybody to pay our travel expenses, so there's something in us that says, well, therefore, I won't go. You may be denying yourself some real pleasure for relatively modest amounts of money.

If you like to write, then pick up your pen or get to your computer and make some connections with newspapers, magazines, blogs, and turn out something so that you're still playing with ideas and getting them out there. I guess those are the things that I think about.

RF