A New Look at the Old Problem of *Externalities*

by Alan Randall

Economists have long been aware that things don't always go well in the public sphere. Public goods don't always get provided, and people have a way of dumping their wastes in the public pond. In agriculture, examples abound: too much soil erosion, nonpoint source pollution, and livestock wastes; and too little provision of natural habitats to support biodiversity.

Market failure, government fix

For the first half of this century, the progressive movement dominated thinking about the role of government in society. While basic policy objectives were the proper province of politics, questions of an instrumental nature were best handled by neutral technical experts. In this way, scientific government would improve the lot of humankind. To this progressive agenda, economists contributed the concept of market failure, and the keystone of market failure was externality. When externality was present, prices would not reflect the real costs of (for example) pollution, and even a fundamentally competitive economy would fall short of efficiency. The progressive solution called for government to regulate the externality, or tax it into submission.

The notion of market failure has been having a difficult time lately. It has long been resented by other social scientists for its implicit assumption that markets are always the institution of first resort, and policy is justified (only) when markets fail. More recently, it has come under scathing attack from libertarians arguing that individual initiative secured by enhanced property rights, not an activist government, provides the appropriate policy response.

The resurgence of individualism

We are now in an era of resurgent individualism and concomitant skepticism about public institutions. This shift in thinking was surely boosted by the events of 1989, when the massive experiment in Soviet-style collectivism was exposed as bankrupt, but it began much earlier. Intellectual roots can be found in the work of economists Kenneth Arrow, Charles Tiebout, and Ronald Coase during the 1950s, as well as the popular writings of Ayn Rand during the same period; and the Goldwater nomination in 1964 provided an early indication that individualism was starting to catch on with the public.

Coase's Nobel Prize–winning analysis of externality focused on nonattenuated property rights—that is, fully specified, enforced, and transferable—as a sufficient condition for efficiency. Externality, according to this line of thought, is not sustainable unless accompanied by nonexclusiveness (that is, the inability to exclude unauthorized users). Therefore, regulation of externalities is not essential; privatization is the appropriate policy.

This emerging focus on property rights undermined not only the analytics of the market failure paradigm but also its progressive government activism. As the individualistic resurgence gained pace, it was argued with increasing generality that inadequate property rights are endemic in the public sector itself: government failure is a problem even

more pervasive than market failure. It follows that a sustained posture of government activism to rectify market failure is not merely unnecessary, it is undesirable.

The isolation paradox

Nevertheless, an essential reality remains: there exist many situations, called *isolation paradoxes*, in which individual action fails but (it is possible to find a cost allocation so that) everyone would be better off with coordinated action than with no action at all. Insistence on individual action or none at all leaves everyone isolated and ineffective, but the search for arrangements that make cooperative action beneficial to all concerned may be rewarding.

The intuition that, for an important set of economic problems, coordinated action is essential and may well be stable is hardly new. In 1776, Adam Smith discussed the case of one hundred farmers in the upper end of a valley, beyond the reach of the existing barge canal. While all would benefit from extending the canal, none could bear the cost alone. Yet every single one of them would enjoy benefits larger than one percent of the cost. Acting alone, each can do nothing, but everyone could enjoy a net benefit from coordinated action. *Isolation paradox* is the general name given to problems of this kind. An isolation paradox is present whenever individual action fails but there exists a cost allocation (not necessarily an equal sharing of costs, as in Smith's example) such that all parties would be better off with coordinated action than with no action at all. The essential idea is that, where an isolation paradox exists, there is in principle the possibility of converting a conflict situation into a sustainable cooperative solution, and that we may benefit from exploring that possibility.

Research in game theory, principal-agent modeling, and related fields has demonstrated that, for several important classes of isolation problems, coordinated strategies permit stable, efficient cooperative solutions. While this is an important insight, it is not entirely comforting. Coordination is likely to be a costly activity, and complete coordination, especially if it requires consultation among all participants, may be prohibitively costly. Private goods markets work well because prices convey, in simple signals, sufficient information and incentives to accomplish coordination, and neither centralized management nor direct consultation among all market participants is necessary. The working hypothesis that motivates research on principal-agent models is that signaling devices can be developed for adequate and cost-effective coordination so that cooperative arrangements in large organizations dealing with nonexclusive and public goods are reasonably stable and efficient.

Acting alone, each can do nothing, but everyone could enjoy a net benefit from coordinated action. Isolation paradox *is the general name given to problems of this kind.*

Rather than a simplistic dichotomy of market or government, the isolation paradox concept suggests an openness to solutions that invoke a variety of institutional forms: private enterprises, voluntary associations, and government from the most local level to the national scale and beyond.

Isolation paradoxes abound in agriculture. Examples include pollution, where the difficulty of monitoring nonpoint sources has thus far precluded the public from enjoying the benefits of adequate controls and farmers from profiting from gainful permit trades, and biodiversity and habitat protection, where fragmentation of land into private parcels and failure to

devise incentives for cooperation among landowners have denied the public adequate provision for biodiversity and farmers the opportunity to profit from the potential value of their land as habitat.

Institutions to solve the isolation paradox

Solutions that break the isolation paradox do not necessarily involve government or (even worse, in today's political environment) big government. Individuals may act together to form and maintain clubs in order to get the job done. Many entities that call themselves clubs, for example, the local health and fitness club, are actually private, for-profit enterprises. Today, one can readily imagine a private entity resolving the canal extension problem profitably, an option that did not occur to Adam Smith, just as "city water" is in fact delivered to my home by an investor-owned corporation.

The isolation paradox concept, then, suggests an openness to solutions that invoke a variety of institutional forms: private enterprises, voluntary associations, and government from the most local level to the national scale and beyond. Given the centrality of information and coordination, the array of feasible institutions is continually shifting as information, communication, and exclusion technologies develop. For particular problems, the appropriate institutions will be consistent with the dimensions and scale of the problem itself, and with the prevailing technologies and political realities. To protect biodiversity, for example, one can conceive of private, for-profit genetic reserves; nature reserves operated by corporations, voluntary associations, or governments; clubs supported by members and donors operating in markets to enhance both private and government conservation efforts; and government operating as facilitator of consensual agreements among stakeholders, as well as legislators, regulators, and resource managers. Flexibility is the key, in both institutional forms and the incentives those institutions transmit.

Building on a combination of abstract theory (from game theory, political science, and economics, perhaps among still other disciplines) and emerging experience, it is possible to identify some of the characteristics of policies and policy processes that are effective in breaking the isolation paradox.

1. *Seek problem-scale solutions.* National, one-size-fits-all solutions to local and regional problems are currently out of fashion, and for some good reasons: sometimes the solutions themselves don't make sense in the local context and, regardless of that, solutions imposed from distant capitals seldom enjoy the local commitment necessary for their success. Indeed, it makes sense to seek solutions scaled to the problem at hand and, to a considerable degree, fashioned by those involved most directly.

Nevertheless, a framework of national laws and policies remains necessary, to provide parameters within which local solutions can be negotiated. A major element of this framework is property rights. In light of the present public debate about property rights, it is important to remember that property rights are the creation of the government which defines and secures them, and they evolve over time in response to changing circumstances. The current "property rights movement" is not really about promoting the efficiency advantages of nonattenuated property rights in general. Nor is it about protecting existing property rights. Instead, the main agenda is to extend them in ways quite inconsistent with recent political history: broadening the conditions under which property owners may demand compensation for private losses due to regulation in the public interest, and reversing the quarter-century-old principle of "polluter pays."

More generally, there is an inherent tension between the advantages of problem-scale solutions and the need for national policy. Nationally and internationally mobile industries, for example, have proven more than willing to use the current enthusiasm for state and local institutions to create prisoners' dilemmas for their own benefit. We observe this when states and localities find themselves in destructive competition to attract firms with tax abatements and/or relaxed enforcement of environmental controls.

While this problem must be taken seriously, we should not make too much of it. The "race to the bottom" has its limits. Assume that the public likes a clean environment, a considerable array of services provided by state and local governments, and low taxes. Then, a jurisdiction will find that a strategy of preferential tax treatment and weak environmental policy to attract business is undercut, to some degree, when mobile workers demand higher wages to compensate for the less-attractive environment, poorer services, and/or higher taxes on households that will inevitably result from such a strategy.

An effective policy process encourages problem-scale solutions within a framework of national policy; it does not simply set states and localities adrift and wish them well.

2. *Establish a long-term process involving all of the legitimate interests.* Since the 1970s, public participation has been an important part of the process for resolving resource management issues. Since the 1980s, involvement of all significant stakeholders has been considered essential. What is relatively new is the notion, supported by the theory of repeated games and by practical experience, of committing the participants to a long-term, continuing process. Rather than merely commenting on a so-

Alan Randall is professor and chair of the Department of Agricultural, Environmental, and Development Economics at The Ohio State University.

lution proposed by professional managers (a typical way of implementing public participation), participants actually work out, over time, solutions to the problems at issue. A long-term, continuing process has obvious advantages—it allows time for participants to develop an understanding of each others' interests and objectives, gather and interpret essential information, and develop solutions that will be broadly acceptable—but also an advantage which might not be quite so obvious: after a few rounds, individuals tend to become committed to bringing the process itself to a successful conclusion. If the default outcome is recognized broadly as unsatisfactory, and participants come to see the failure of the process as bad in and of itself, conditions are favorable for a successful process.

3. *Establish a shared vision.* The process starts by defining goals at the community level and the values that underlie those goals. The objective is to develop and articulate a shared vision: a statement of what it is that the community values and seeks to become. During this process, stakeholders whose most immediate interests would seem to be in conflict frequently discover that their basic values and vision of the future are in fact quite compatible. At this stage, it helps to define the problem set broadly: what does this community seek to become, and how can it get there?

4. *Use all of the tools for achieving consensus: deliberation, persuasion, and negotiation.* Structured discourse and deliberation can often undermine conflict, and careful consideration of information can erode firmly held priors and open up new possibilities. It would be a mistake—one than an economist might easily make, but still a mistake—to underestimate the value of deliberative processes. Nevertheless, negotiations, real trades, and win-win solutions are often essential to break impasses. Flexible incentives are often an important element of the package, in that they tend to reduce sharply the costs of meeting environmental policy targets, encouraging win-win solutions and easing the pain of compliance in cases where win-win proves impossible. Depending on particular circumstances, purchases of land or easements, land swaps, mitigation banking, and resources-for-resources compensation can be both efficacious and fair: they help move things toward real solutions that benefit all parties directly concerned. A broad definition of the problem set is helpful at this stage, too, because it increases the scope of potential trades and win-win solutions. As with all negotiations, however, it pays to proceed cautiously. It is not uncommon for parties to proclaim a secure status quo or default position that may in fact be quite shaky, or to exaggerate the costs and adverse employment impacts of proposed environmental policies.

Industrial discharge makes its way to a nearby river outlet.

The argument in a nutshell

Faith in the legitimacy and efficacy of scientific government has declined precipitously, and ideological individualism is on the rise. Big government finds few vocal defenders, while privatization is all the rage but leaves us in isolation paradoxes of various kinds. The answer seems to lie in institutional innovations based on some of the lessons of game theory and communitarian political theory: innovations that seek problem-scale solutions and replace existing conflict with win-win incentives for sustainable cooperation. The irony is that, especially at the state, local, and grass-roots levels, people are inventing such institutions and making them work, while mainstream economists, bogged down in their market failure paradigm, have (once again) barely noticed what is going on. ◘

■ For more information

Randall, A. "Providing for the Common Good in an Era of Resurgent Individualism." *Flexible Incentives for the Adoption of Environmental Technologies in Agriculture.* F. Casey, A. Schmitz, S. Swinton, and D. Zilberman, eds., forthcoming.