

THE DRAMA OF THE COMMONS

Committee on the Human Dimensions of Global Change

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The “tragedy of the commons” is a central concept in human ecology and the study of the environment. The prototypical scenario is simple. There is a resource—usually referred to as a common-pool resource—to which a large number of people have access. The resource might be an oceanic ecosystem from which fish are harvested, the global atmosphere into which greenhouse gases are released, or a forest from which timber is harvested. Overuse of the resource creates problems, often destroying its sustainability. The fish population may collapse, climate change may ensue, or the forest might cease regrowing enough trees to replace those cut. Each user faces a decision about how much of the resource to use—how many fish to catch, how much greenhouse gases to emit, or how many trees to cut. If all users restrain themselves, then the resource can be sustained. But there is a dilemma. If you limit your use of the resources and your neighbors do not, then the resource still collapses and you have lost the short-term benefits of taking your share (Hardin, 1968).

The logic of the tragedy of the commons seems inexorable. As we discuss, however, that logic depends on a set of assumptions about human motivation, about the rules governing the use of the commons, and about the character of the common resource. One of the important contributions of the past 30 years of research has been to clarify the concepts involved in the tragedy of the commons. Things are not as simple as they seem in the prototypical model. Human motivation is complex, the rules governing real commons do not always permit free access to everyone, and the resource systems themselves have dynamics that influence their response to human use. The result is often not the tragedy described by Hardin but what McCay (1995, 1996; McCay and Acheson, 1987b; see also Rose, 1994) has described as a “comedy”—a drama for certain, but one with a happy ending.

Three decades of empirical research have revealed many rich and complicated histories of commons management. Sometimes these histories tell of Hardin’s tragedy. Sometimes the outcome is more like McCay’s comedy. Often the results are somewhere in between, filled with ambiguity. But drama is always there. That is why we have chosen to call this book *The Drama of the Commons*—because the commons entails history, comedy, and tragedy.

Research on the commons would be warranted entirely because of its practical importance. Nearly all environmental issues have aspects of the commons in them. Important theoretical reasons exist for studying the commons as well. At the heart of all social theory is the contrast between humans as motivated almost exclusively by narrow self-interest and humans as motivated by concern for others or for society as a whole.¹ The rational actor model that dominates economic theory, but is also influential in sociology, political science, anthropology, and psychology, posits strict self-interest. As Adam Smith put it, “We are not ready to suspect any person of being defective in selfishness” (Smith, 1977[1804]:446). This assumption is what underpins Hardin’s analysis.

Opposing views, however, have always assumed that humans take account of the interests of the group. For example, functionalist theory in sociology and anthropology, especially the human ecological arguments of Rappaport and Vayda (Rappaport, 1984; Vayda and Rappaport, 1968), argued that the "tragedy of the commons" could be averted by mechanisms that cause individuals to act in the interests of the collective good rather than with narrow self-interest. Nor has this debate been restricted to the social sciences. In evolutionary theory, arguments for adaptations that give advantage to the population or the species at cost to the individual have been under criticism at least since the 1960s (Williams, 1966). But strong arguments remain for the presence of altruism (Sober and Wilson, 1998).

If we assume narrow self-interest and one-time interactions, then the tragedy of the commons is one of a set of paradoxes that follow. Another is the classical prisoners' dilemma. In the canonical formulation, two co-conspirators are captured by the police. If neither informs on the other, they both face light sentences. If both inform, they both face long jail terms. If one informs and the other doesn't, the informer receives a very light sentence or is set free while the noninformer receives a very heavy sentence. Faced with this set of payoffs, the narrow self-interest of each will cause both to inform, producing a result less desirable to each than if they both had remained silent.

Olson (1965) made us aware that the organization of groups to pursue collective ends, such as political and policy outcomes, was vulnerable to a paradox, often called the "free-rider problem," that had previously been identified in regard to other "public goods" (Samuelson, 1954). A public good is something to which everyone has access but, unlike a common-pool resource, one person's use

of the resource does not necessarily diminish the potential for use by another. Public radio stations, scientific knowledge, and world peace are public goods in that we all enjoy the benefits without reducing the quantity or quality of the good. The problem is that, in a large group, an individual will enjoy the benefits of the public good whether or not he or she contributes to producing it. You can listen to public radio whether or not you pledge and make a contribution. And in a large population, whether or not you contribute has no real impact on the quantity of the public good. So a person following the dictates of narrow self-interest will avoid the costs of contributing. Such a person can continue to enjoy the benefits from the contributions provided by others. But if everyone follows this logic, the public good will not be supplied, or will be supplied in less quantity or quality than is ideal.

Here we see the importance of the tragedy of the commons and its kin. All of the analyses just sketched presume that self-interest is the only motivator and that social mechanisms to control self-interest, such as communication, trust, and the ability to make binding agreements, are lacking or ineffective. These conditions certainly describe some interactions. People sometimes do, however, move beyond individual self-interest. Communication, trust, the anticipation of future interactions, and the ability to build agreements and rules sometimes control behavior well enough to prevent tragedy. So the drama of the commons does not always play out as tragedy.

This volume examines what has been learned over decades of research into how the drama of the commons plays out. It should be of interest to people concerned with important commons such as ecosystems, water supplies, and the atmosphere. In

addition, commons situations provide critically important test beds for addressing many of the central questions of the social sciences. How does our identity relate to the resources in our environment? How do we manage to live together? How do societies control individuals' egoistic and antisocial impulses? Which social arrangements persist and which do not? In looking at the long sweep of human history and the thousands of social forms spread across it, these questions may become unmanageable to study in a systematic manner. The commons, however, provides a tractable and yet important context in which to address these questions. Just as evolutionary and developmental biology progressed by studying the fruitfly, *Drosophila melanogaster*, an organism well suited to the tools available, we suggest that studies of the commons and related problems are an ideal test bed for many key questions in the social sciences.²

As is evident in the chapters of this volume, commons research already draws on most of the methodological traditions of the social sciences. There are elegant mathematical models, carefully designed laboratory experiments, and meticulous historical and comparative case studies. The statistical tools applicable to large or moderate-sized data sets also are being brought to bear. As we will detail, research on the commons attracts scientists from a great diversity of disciplines and from all regions of the world. Advances in the social sciences are likely to come from just such an admixture of methods and perspectives focused on a problem that touches on core theoretical issues of great practical importance.

This volume presents a series of papers that review and synthesize what we know about the commons, integrating what in the past have been somewhat disparate literatures and pointing directions for the future. It has several goals. First, for those not familiar with the rich literature since Hardin's 1968 article, it is intended to provide a sound grounding in what has been learned. Second, for researchers in the field, it offers a state-of-the-art review that spans the field and shows connections that may not have been obvious in the past. Third, for researchers and those funding research, it conveys a sense of what has been accomplished with relatively modest funding and indicates the priorities for future work. Finally, although it is not a management handbook, it provides some guidance to those who design and manage institutions dealing with the commons by compiling the best available science for informing their choices.

This chapter offers a brief history of research on the commons, starting with Hardin's influence but also acknowledging his predecessors. It describes the synthetic work that occurred in the mid-1980s. Building on that work, it clarifies the key concepts involved in understanding the commons. One of the major contributions of commons scholarship has been to make much clearer which concepts must be brought to bear and which distinctions made in understanding the commons. These include the crucial distinction between the resource itself, the arrangements humans use to govern access to the resources, and the key properties of the resource and the arrangements that drive the drama. The chapter concludes by sketching the plan of the book.