GLOBAL COLLECTIVE ACTION

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Future Perfect

Suppose that we could time travel, as envisioned by H. G. Wells, to the year 2025. As we disembark the time machine, we investigate which global and transnational problems have been addressed successfully and which have not. For example, what will be the state of the HIV/AIDS epidemic by then? From 1982 to 2002, twenty million people died from AIDS and twice that number became infected.[1] Will a vaccine have been developed by 2025, or will the disease have decimated parts of Africa and Asia, thereby curtailing the projected population growth in the developing world? Will transnational terrorism by independent groups be the number one security concern in 2025 as it is today? Will so-called rogue states that operate outside of the norms of the global community have acquired weapons of mass destruction that they then use to threaten other countries? By 2025, will the corn belt of the American Midwest have moved northward into Canada as global warming heats the atmosphere? Such a visit to the future would provide insights about those problems where actions have occurred and those where they have not. For the former, one must identify what factors promoted action and, for the latter, what considerations inhibited solutions.

The greatest discovery and insights from time traveling would involve two types of observations. First, one would learn in this "future-perfect" exercise what problems will have emerged that no one foresees today. These may involve technological impacts that nobody has been clever enough to portend, or they may include stresses on the ecosphere that appear only after an unforeseen threshold has been surpassed.

[1] See *The Economist* (2002a) on the current state of the HIV/AIDS epidemic.

Foreknowledge of these future exigencies would allow humankind to act today either to inhibit the problem from emerging or to limit its magnitude when it eventually surfaces. In the latter case, actions today could also forestall the *onset* of the crisis. Second, the time traveler would learn which of today's problems had been exaggerated. For example, the planet may be more resilient to global warming, or perhaps other phenomena may offset the effects of greenhouse gases (GHGs) (for example, sulfur emissions may reflect sufficient solar energy to limit atmospheric heating). Moreover, the current heating trends may be due to natural cycles that are poorly understood and unrelated to global warming. Some of today's "crises" may dissipate with time because there may be the proper incentives to act so that these threats are addressed. Technological breakthroughs may handle some exigencies – new technologies may greatly curb GHGs from internal combustion engines.

In lieu of time traveling, we must use our ingenuity to leap forward in time to anticipate which challenges will be long standing and which will be self-correcting owing to appropriate incentives for action. In some instances, modest institutional changes at the supranational level may be sufficient to provide better incentives for actions; modest changes are favored because the international community has shown little capacity for a great deal of integration. An ultimate task is to ascertain global challenges not yet brought to light. The purpose of this book is to investigate a host of global challenges using modern economic reasoning and methods. In particular, I apply modern principles of collective action, where the efforts of two or more agents (e.g., individuals, firms, institutions, or nations) are required to accomplish an outcome.[2] The focus will be on global exigencies that require joint actions by nations. In a nonalarmist way, I try to identify the forces at work that either promote or inhibit action. This is an important exercise because resources are scarce and must be primarily directed to those concerns where incentives for tackling the problems are perverse. Thus, the tools of collective action serve as the time machine for shaping and predicting the prospects and realities of tomorrow's global community.

[2] In his seminal book, *The Logic of Collective Action*, Mancur Olson (1965) puts forth essential principles of collective action. These principles have been updated and expanded in Hardin (1982) and Sandler (1992). More recently, these principles have been applied to global contingencies by Sandler (1997, 1998) and Sandler and Hartley (2001).

Market Failures and the Need for Global Collective Action

When guided by Adam Smith's "invisible hand," the unfettered pursuit of self-interest by individuals results in an efficient outcome. This reassuring guidance hinges on many understood or unstated assumptions, which have increasingly been shown by modern-day economics not to hold.[3] In particular, markets must be *complete* in the sense that things with value must be traded competitively. Competitiveness means that there must be a sufficient number of buyers and sellers to a transaction so that no one has a measurable influence on price. For complete markets, my actions as a producer or consumer must not have negative or positive consequences on others that go uncompensated. Moreover, information on prices, workers' effort, product quality, and output must be observable with little or no search costs or bribes to those in the know. The failure of these underlying assumptions to hold is easily understood during a walk in any city when taking a deep breath or listening to the surrounding sounds – uncompensated actions of others that dirty the air and make noises abound and affect one's well-being. Information imperfections arise when workers' efforts are unobservable, but they must later be compensated for their output, which may vary owing to random events – for example, Internet outages and faulty raw materials – beyond their control. Often, information is asymmetric in that one side of a transaction is knowledgeable while the other is not. For example, a person seeking insurance coverage knows the likely risks that he or she poses but has no incentive to reveal this information to the insurer. Uncompensated interdependencies and asymmetric information lead to market failures because resources do not go to their most-valued use.

Just as market failures plague exchanges among individual agents, they also plague transactions among nations, so that resources are misallocated internationally. Such market failures take varied forms including the depletion of the ozone layer, transference of transnational terrorism, failure to contain contagious diseases, abuse of antibiotics, and underinvestment in research and development. Many such challenges confront society regarding health, security, knowledge creation, and the environment. A portion of these exigencies is related to the process of globalization, which refers to the significant rise in transboundary transactions.

[3] See Stiglitz's (2000, 2002a) Nobel Prize lecture and an earlier paper on the increasing importance of market failures.

Globalization is an ongoing process of increasing transnational flows that fosters greater interdependence among nations, their people, and institutions. Globalization not only takes the form of transfrontier economic flows of goods and financial instruments but also consists of noneconomic exchanges (e.g., pollution, cyber viruses, revolutions, and information). Advances in technologies have shrunk the world and accelerated these transnational flows and interdependencies. For example, the increase in commercial air travel allows passengers to carry a deadly virus to cities near and far, so that plagues can disseminate rapidly. Moreover, computers facilitate the formation of terrorist networks that can coordinate swarm attacks globally. On the positive side, medical breakthroughs can benefit patients worldwide at a much faster rate than ever before owing to enhanced communication networks. Market failures at the international level are behind the need for global or transnational collective action where nations address concerns together.

Global Action or Inaction

Global contingencies may be met with action or inaction and, in both cases, the response may be either appropriate or inappropriate. If, for example, an alleged rogue nation really has no intention to threaten other nations or does not have the means to pose a real threat, then the best response is inaction by a superpower or the global community. In studying global contingencies, one must realize that action may be automatic in some circumstances owing to incentives. Following the four simultaneous hijackings on 11 September 2001 (henceforth called 9/11), many nations acted to address the al-Qaida threat: some countries froze assets of organizations suspected of supporting al-Qaida, while others took part in the US-led attack on the Taliban and al-Qaida in Afghanistan. Still others redoubled efforts to capture al-Qaida cells or share intelligence with the United States. Many nations showed their support by not condemning the US-led attack on Afghanistan. These acts of support were quite out of character with past reactions – for example, France required US planes to avoid its airspace during the US retaliatory raid on Libya on the morning of 15 April 1986,[4] which made for a more involved and dangerous

[4] The US raid on Tripoli and other Libyan targets, including Muammar Qaddafi's residence at the Azizyah barracks, was in response to Libyan involvement in the bombing of the La Belle Discothèque on 4 April 1986 in West Berlin. On the Libyan raid and the discothèque bombing, see Mickolus, Sandler, and Murdock (1989, Volume 2, 365–7, 373–4). On the effectiveness of the raid, see Enders and Sandler (1993).

mission. By the summer of 2002, this international support was waning on the part of some nations.

Another successful response to a global challenge involves actions to eliminate the use of chlorofluorocarbons (CFCs), which deplete the stratospheric ozone layer that protects living organisms from harmful ultraviolet radiation. On 16 September 1987, the Montreal Protocol was framed and set explicit limits on ozone-depleting substances such as CFCs. This treaty entered into force on 1 January 1989 after the primary consumers and producers of CFCs had ratified the Protocol.[5] In the ensuing years, amendments to the treaty made much more stringent the required limits to CFC use. The number of nations ratifying the treaty grew until most had agreed to the Protocol's provision. More than most international agreements, the Montreal Protocol demonstrates that global collective action can be achieved under the right conditions, even if nations must sacrifice some autonomy. Any cheating on the treaty can be primarily traced to individual smugglers, rather than nations, who profit by selling CFCs below their high tax-inclusive price during the phasing-out period.

As international transactions have grown in recent decades, the global community has had to provide infrastructure to facilitate these exchanges.[6] International transportation and communication networks have had to address a number of collective action issues – system interoperability, accidents and mishaps, jurisdictional rights, and competitive practices (Zacher, 1996). In international shipping, the International Maritime Organization oversees international trade and institutes conventions on accidents and their prevention, innocent passage, pollution, and other issues. The International Civil Aviation Organization enacts regulations to promote air traffic flow and to maintain safety in the skies. For telecommunications, the International Telecommunication Union (ITU) establishes practices to curb signal interference and allocates the frequency bands of the electromagnetic spectrum to various specific purposes. The ITU also promotes the adoption of standardized equipment, which fosters interoperability.

For these regulatory regimes and others, nations have cooperated in not only providing a universal set of rules, but also in sacrificing some of their autonomy. A significant factor inducing nations to establish these international institutions and to submit to their regulations involves mutual self-interest in achieving the free flow of trade and communication among

[5] See Benedick (1991) and Barrett (1999) on ozone diplomacy and the Montreal Protocol.
[6] See Sandler (2003a) on the need for supranational infrastructure.

countries (Zacher, 1996). Apparently, the loss of autonomy is modest, so that the gain from the conventions does not have to be large to garner each nation a net gain. Because most nations already had similar regulations at home (e.g., allocating frequencies among alternative uses, procedures to avoid accidents at sea), the adoption of universal standards did not mark much of a departure from the status quo. Such conventions have more to do with restricting the way that firms and individuals can act rather than with restricting the autonomy of the participating governments, which had to approve the conventions. Governments saw greater national income coming from their adoption of uniform standards as trade and capital flows increased. By instituting common practices, these international regimes also limited the transaction costs by removing trade and communication impediments.

These examples demonstrate the possibility of global action under fortuitous circumstances that include the recognition of a shared threat in the case of 9/11, leadership by dominant nations in the case of the Montreal Protocol, and sufficient mutual self-interest for participants in the case of transnational infrastructure. Despite numerous obstacles, sovereign nations have achieved a wide range of coordinated actions on diverse issues. These successes provide encouragement.

The continued inability of the global community to develop a plan of action with respect to curbing the accumulation of GHGs indicates that some global challenges are very difficult to address. Another seemingly intractable contingency concerns reducing the income gaps between poor and rich nations. By the late 1990s, the richest 20% of nations earned 86% of the world gross domestic product (GDP), leaving the poorest 20% of nations to earn just 1% of the world GDP (United Nations Development Program, 1999). Virtually, any measure of economic activity – for example, world export market share, foreign direct investment, and communication infrastructure investment – would reflect similar disparities between the richest and poorest countries. This disparity has worsened by many measures in recent years. As increased demands surpass an ecosphere's regenerative capacity, increased environmental degradation will become a greater concern and reality. In some cases, environmental crises and resource scarcity (for example, with respect to water, strategic metals, and energy) may even result in war owing to the large consequences for the involved nations.[7] To address such crises and scarcities may require

[7] Such concerns are documented and expressed by Klare (2001) and Reuveny (2002).

losses in autonomy or else a degree of cooperation that nations have, heretofore, been unwilling or unable to accomplish. The large benefits associated with avoiding conflicts may result in tighter ties among nations than seen before or thought possible.

Global inaction may be based on a number of factors. First, the country-specific costs of action may dwarf the country's share of the resulting benefits. This scenario is likely when the country's action does not provide any actor-specific benefits that bolster the agent's share of group gains. Second, an absence of information is anticipated to inhibit decisiveness especially when actions require expenditures that are unnecessary under some resolutions of uncertainty. If these costs from action today are sufficiently great, inaction may be a more desirable response until the uncertainty is resolved. Third, global inaction is difficult to overcome when there is no leader nation that plays a major role in the contingency. Fourth, global inaction is more probable when a large number of nations are required for an effective solution. Fifth, the associated loss of autonomy that action necessitates is a crucial factor behind inertia because nations are loath to give up autonomy. To limit such sacrifices, nations introduce escape clauses into collective agreements that allow them to ignore an unanticipated and costly outcome. For instance, nations have left open the option not to abide by World Court judgments that are adverse, while permanent members of the Security Council can veto resolutions. Such clauses make some agreements virtually meaningless as instruments of cooperation.

Two Extreme Scenarios in a Global Village

One extreme vision of integration might best be characterized as the "Star Trek" scenario, where nations join larger collectives until a world federation evolves. Under this scenario, nations sacrifice some autonomy and grant a global body select authority over allocative and other economic policies with global consequences. With the rise of regionalism,[8] there has been a growth of regional collectives [e.g., the Andean Community, Central American Common Market, European Union (EU), and Mercado Común del Sur] that provide some regionwide services, such as monetary union, infrastructure, and a common trade policy. In the Star Trek scenario, these regional collectives would acquire greater power over

[8] On the new regionalism, see Dodds (1998), Hettne, Inotai, and Sunkel (1999), and Stålgren (2000).

more economic decisions with regionwide consequences. Thus, regional trading blocs would become custom unions with responsibility for harmonizing a wider range of trading and taxing issues. In the long run, these custom unions would be transformed into more unified regional conglomerates that supply regional public goods whose benefits are received by member nations. As their responsibilities grow, such conglomerates would also address income redistribution (as has been true of the EU), stabilization policies, and growth issues. *Networks* of these regional collectives could constitute the global governance body at the peak of the federation. The nation would focus on those issues with just national consequences, leaving decisions with wider consequences to regional institutions or their network.

At the opposite extreme to the Star Trek solution is the *anarchic* supranational community where nations act independently in a Lockean natural state. Therefore, this view of transnational collective action has nations maintaining as much autonomy as possible. This so-called realist depiction casts nations as the main players. Any treaties or international organizations will remain weak and powerless to guide collective action and address resource misallocations that stem from uncompensated interdependencies. The need for greater cooperation on some issues, raised by globalization, is met with nations shunning cooperative responses. The most powerful nations will control the agenda and will agree to join only loose arrangements that maintain their autonomy and further their agenda. The number of nations will continue to increase and this growth in the number of agents will only heighten the difficulty of cooperation and the preservation of uncoordinated pursuit of national priorities. Such an anarchic state is not an equilibrium because the most powerful nations will serve to legitimize rules and institutions to limit the need to protect one's assets from plunder through conflict, pollution, or other means.

Given these two polar scenarios, what is the likely outcome of increased transnational flows in a globalized society? Neither extreme applies in practice: although nations will stay important and essential agents, they will sacrifice some autonomy to regional partnerships and, in a few select instances, to global collectives. Past examples provide a pretty good glimpse into tomorrow, not unlike a time travel. If a nation is *not viewed* as having sacrificed much autonomy with an agreement, then the circumstances for a collective agreement is conducive even when, in fact, a good deal of autonomy has been lost. That is, appearances matter greatly.

Thus, agreements on standards of commerce that augment a country's markets is likely signed even if the nation had utilized much different standards prior to the agreement, because the nation's concessionary behavior may be characterized by the world community as not surrendering much autonomy.

To illustrate the appearance issue, consider the Basle Capital Accord of July 1988 among the Group of 10 (G-10) nations, which sought to avert a "race to the bottom" in terms of falling capital requirements and supervisory practices (Arce and Sandler, 2002, p. 25; Reinicke, 1998, pp. 103–5). Prior to the Basle Accord, international banks practiced financial regulation arbitrage to augment their lending funds through weaker capital requirements and less stringent regulatory practices. As a consequence, banks exploited differences in margin and capital requirements, thus exposing depositors to greater risks. Among G-10 countries, the Basle Accord removed *competitive deregulation* used by banks of member nations to augment their loanable reserves. Nonmember nations of the Basle Accord became compelled to adopt identical requirements and practices to maintain the appearance of solvency. Such practices served as a solvency signal so that nonmembers mimicked the signatory countries' behavior. Among G-10 countries, the Basle Accord could be viewed as little loss in autonomy because all agreed that some level of capital and margin requirements was necessary, so that it was just a matter of agreeing on an acceptable standard.

Most importantly, existing banking practices in G-10 countries meant modest change in their status quo. The Basle Accord had more effect on those non-G-10 countries that took advantage of the lack of rules. Such countries de facto have to abide by the Basle Accord to attract deposits to their banks. In essence, the Basle signatories gave up little autonomy in the hopes of constraining the nonsignatories to hold up the same standards. Such actions by G-10 countries are a clever means for imposing governance without appearing to do so. A treaty among G-10 countries would gravitate toward the lowest common denominator among member states, while the same treaty among many more countries would likewise focus on the lowest common denominator of this larger set. By deciding capital requirements among just G-10 countries, the Basle Accord achieved a greater restriction than would have been achieved had a wider consensus been sought from a more heterogeneous group. The new regulation then became de facto the standards that nonsignatories are obliged to follow to signal their creditworthiness.

This tendency for agreements to be driven by the least willing or cooperative nation means that collectives are most apt to form among a small group of select, but similar, countries. This similarity may be founded on geography, level of development, language, shared values and culture, and common experiences. As such, there is a logical justification for the regionalism and regional collectives that have appeared increasingly during the last decade. Global collectives are harder to form unless a global contingency provides a set of essential participants with a large net gain from cooperation.

When nations seek collective solutions for some contingencies, two behavioral patterns are anticipated. First, new collectives may begin small, representing regional or key interests. This local origin highlights the need to understand the new regionalism and to bolster the capacity of regional banks (e.g., Inter-American Development Bank, Asian Development Bank, and African Development Bank) to finance region-based projects. Although small compared to the World Bank, these regional banks are uniquely positioned – owing to propinquity, shared values, and language – to support regional collectives (Sandler, forthcoming). Second, there may be continued reliance on a few global multilateral institutions (e.g., the World Bank, World Health Organization, and the United Nations) with which client states have a great deal of past experience in addressing collective action problems, though not always successfully.[9] These global collectives can draw finances from a large number of rich members, while limiting transaction costs of additional tasks by utilizing common infrastructure.[10] At the global level, collective action can arise from either networks of regional collectives or global collectives. The Montreal Protocol represents the latter, but one must remember that only eleven ratifiers were initially required for this treaty to enter into force. Fewer than twenty countries originally ratified the Protocol (Benedick, 1991; Congleton, 1992). A common message of this book is to begin modestly with collective institutions and to let them evolve as a core of essential participants gains experience with cooperation. Even very humble cooperative frameworks permit enhanced actions over time.

[9] In the case of supporting development, the World Bank has met with mixed success (World Bank, 1998).

[10] The resulting savings on common costs give rise to economies of scope or a fall in the average cost as more tasks are done in the same institution.

Premise of the Book

There is a human proclivity to draw stark distinctions and to represent complex reality with a simple characterization. Thus, the two polar views of transnational collective action – that is, the Star Trek global federation and fully sovereign nations acting independently – are often put forward. Idealists ascribe to the former and its promise of collective optimality, while realists believe in the latter and the absence of true collective action. Neither is very descriptive of how nations have tackled collective concerns. This book focuses on how nations actually address situations where action by two or more of them is necessary – that is, how collective action is accomplished at the transnational level. Modern principles of collective action, derived from Olson (1965) and the research that his seminal work spawned, can inform us about global futures regarding a host of contingencies that are both real and imagined.

Collective action prescriptions and predictions hinge on at least six primary considerations: (1) the size of the group, (2) the composition of the group, (3) the rules governing the interaction (e.g., institutional arrangements), (4) the strategic nature of the interaction (e.g., is it recurring or once over), (5) the underlying information of the participants, and (6) the sequence of interactions. Olson investigated just the first three influences, while subsequent analyses examined all six factors.[11] As political economy becomes more interested in strategic behavior, it is inevitable that strategic interactions, information considerations, and the sequence of actions gain prominence. The classic influences of group size, group composition, and institutional rules may, at times, be turned on their head owing to these latter considerations. For example, we shall later discover that whether or not the large nation is exploited by the small in regard to collective action may hinge on who acts first. As such, additional factors enriched the study of collective action; simple rules of thumb are less apt to hold. Thus, greater group size may not be a clear recipe for collective action failure. Despite a larger number of scenarios, clear-cut cases do exist for drawing definitive conclusions. There are just more such cases.

A clear example of this enrichment has to do with the underlying games associated with collective action concerns at the national and transnational levels. Even twenty years ago, collective action problems were

[11] This is clear from Hardin (1982) and Sandler (1992), as well as the vast literature that these books surveyed.

equated with the Prisoners' Dilemma game, where agents are motivated by self-interest to settle on a strategy from which all players can improve their welfare had an alternative strategy been chosen (see, for example, Hardin, 1982). The study of collective action now recognizes that many game forms may apply. Moreover, some forms may be quite optimistic in their prediction of successful outcomes. In some instances, institutional rules can be tailored to induce a supportive strategic interaction, thereby eliminating the need for further policy intervention.[12]

The modern view of collective action is that not all such problems abide by the same rules or prescriptions because strategic interactions may differ drastically even when the problems appear to be very similar. Moreover, a proactive design of the rules may foster cooperation without the need for costly government intervention or structures. Any explanation of transnational collective action must account for the rich set of players, such as nongovernmental organizations (NGOs), charitable foundations, multinational firms, regional trading blocs, and multilateral development institutions. Efforts to identify some guiding principles for action and inaction are needed to deal with global contingencies. One must not lose sight that inaction may, under some circumstances, be the best response. By identifying those cases where incentives are not supportive of an effective response, analysts can direct resources to the most recalcitrant interdependencies where payoffs are high and cooperation is unlikely.

A Word of Caution

Many transnational concerns are not well understood. As already mentioned, a good example is global warming where natural cycles of atmospheric cooling and warming have not been fully identified. In addition, other factors integral to the process have not been properly explained so that the extent of global warming and its geographical distribution are still conjecture. Few people dispute that the accumulation of GHGs will eventually heat the atmosphere, other things being constant. Nevertheless, the temporal and spatial dimensions of this heating are not really known. There may even be intervening considerations that may delay global warming well into the future. Since action has some irreversible and costly implications, it may pay to delve deeper into the issue

[12] This is the message contained in Sandler (1998), in which institutional innovations are related to the underlying game.

before embarking on a course of action.[13] Such uncertainty is frequently an impediment to collective action.

Much uncertainty involves resource scarcity. The discovery of oil reserves during my lifetime has continuously caused oil scarcity to be revised. Even the natural cycles involving the replenishment of underground aquifers are poorly understood, so that dire predictions have been revised. I cannot overemphasize the importance of information acquisition and the need for skepticism when investigating global challenges. The reader should not conclude that I view all such global challenges as true crises. "The jury is out" on many global concerns until much more is known. For such issues, the discussion involves the prognosis for action once the uncertainty is eventually resolved.

Intended Audience

This book is intended for a fairly broad readership comfortable with elementary economic principles. This reasoning is at the level of a good introductory course where the student learns the workings of markets. Nevertheless, I will review essential concepts to ensure that readers have the same definitions in mind. In short, I do not assume much economic sophistication on behalf of the reader.

As needed, I will introduce simple notions of game theory and strategic behavior because these concepts are essential to the understanding of how independent agents interact in an interdependent world. For Adam Smith, strategic behavior was not essential because he primarily examined competitive economies where the behavior of an individual agent has no strategic value as the agent's actions are swamped by the actions of so many other agents. The workings of the invisible hand require that the actions of everyone bring about a desired outcome – the good of society – that no single individual's action can achieve or undo. When Smith's invisible hand applies, no one has a rationale to unilaterally change behavior because there are no better terms of trade. Competitive markets eliminate the strategic value of individual actions. Although Smith recognized strategic interactions for noncompetitive markets, he did not provide a careful study of such interactions. For transnational interactions, however, individual behavior – say, of a nation or a regional trade pact – has a discernible influence on the actions or reactions of similar agents. As

[13] On the delay of investment decisions, see Ko, Lapan, and Sandler (1992).

such, these strategic interdependencies are important to investigate if likely outcomes are to be anticipated. For the purposes of the book, only elementary game-theoretic notions are required in which no foreknowledge of these tools is presumed. When appropriately applied, game theory can be enlightening.

The analysis in this book should interest economists, political scientists, lawyers, social scientists, and others who want to learn about international contingencies, both real and imagined, that are newsworthy. In recent years, a host of global challenges have occupied not only policymakers but also citizens who are trying to understand the growing number of transnational exchanges. The book may also provide insights to policymakers and the many dedicated people at NGOs and multilateral aid institutions who address international problems. To be an informed citizen in today's world requires knowledge of global contingencies, their implications, and their resolution. By analyzing these issues, this book should have wide appeal.

Plan of the Book

The remainder of the book contains eleven chapters. The next three chapters are concerned with putting forth the underlying analysis that is then applied to the study of global challenges. In Chapter 2, the principles of collective action are presented in their classical and updated forms. Elementary game-theoretic notions are also introduced. Chapter 3 presents the modern analysis of market failures where the need for collective action is prevalent. Market failures involve pure public goods whose benefits are nonrival among recipients and available to payers and nonpayers alike. Other important market failures requiring transnational collective action include noncompensated interdependencies (known as externalities), open-access common property, and asymmetric information. In Chapter 4, the analysis is extended to include transnational public goods whose benefits spill over international borders so that two or more countries are affected. This chapter focuses on how these goods are financed. Jurisdictional and institutional issues are also considered. How supranational institutions are designed in practice is presented by examining how real-world institutions (for example, the International Monetary Fund and United Nations) finance their supply of transnational public goods.

The next seven chapters are devoted to the application of the analysis to specific global issues. Global health is the focus of Chapter 5. Health practices in one country can have profound implications for neighbors and even the world community; for example, global actions are needed to eradicate diseases or to redress poverty-based diseases. The need for collective action for global health transgresses both political and generational borders. In Chapter 6, the issue of foreign aid is investigated. The good intentions of wealthy countries to foster development and curb global inequality has had very mixed success. Chapter 6 evaluates past, current, and future strategies to bolster development.

Chapters 7–9 concern security worries during a time when the United States represents the only superpower. Even though the end to the Cold War promised a safer world, security risks abound with rogue nations, transnational terrorism, and civil wars. Chapter 7 addresses the issue of rogue states that allegedly pose a threat to other nations through their weapons of mass destruction. How the world community confronts such states represents a tricky collective action dilemma. In Chapter 8, the threat of international terrorism is analyzed. Although this threat has been a worldwide concern since the Israeli–Arab conflicts of the late 1960s,[14] the events of 9/11 underscore the destruction that terrorist incidents can wreak. International terrorism represents a collective action conundrum insofar as terrorists have formed effective networks while targeted nations have not. As a consequence, terrorists are able to utilize their strongest components to attack the most vulnerable points within targeted nations. Chapter 9 investigates the challenges posed by civil wars. In 2001, there were 34 armed conflicts, of which all but the India–Pakistan conflict over Kashmir were civil wars (Gleditsch et al., 2002, pp. 615–6). These conflicts present security risks not only to neighbors but also to the world at large. Global security can be affected by a disruption of the supplies of essential raw materials, the dissemination of terrorists to foreign capitals, or the spread of the conflict to other regions. The decision to intervene and the form of such intervention are difficult collective action problems that the world has increasingly had to face since the end to the Cold War (Sandler and Hartley, 1999; Shimizu and Sandler, 2002).

Chapters 10 and 11 concern the environment and resource issues. In Chapter 10, atmospheric pollution is studied so as to contrast the success

[14] Mickolus (1980) presents a chronology of international terrorism events for 1968–79. The birth of modern-day transnational terrorism started in 1968 (Hoffman, 1998).

of the Montreal Protocol on limiting stratospheric ozone-depleting substances and the failure of the Kyoto Protocol on stemming the rate of emission of GHGs. The comparison of these two cases illustrates that two seemingly similar global public good problems may have vastly different collective action prognoses owing to institutional and other relevant factors. By identifying these factors, I am able to isolate parameters that distinguish global action from inaction. At the end of the chapter, a similar exercise involves a comparison between the success in stemming sulfur emissions and the much more modest success in curbing nitrogen oxides emissions; both kinds of emissions lead to acid rain. Chapter 11 on the "final frontier" examines collective action problems concerning outer space and its resources, where market success and failures are relevant. From space platforms for warfare to the diversion of asteroids on a collision course with earth, outer space offers many collective action issues.

Chapter 12 not only summarizes the basic messages of the book but also looks to the future. Thus, likely institutional changes are discussed and tomorrow's global challenges are predicted. Finally, the chapter speculates on the future of globalization.