uses of space. He even speaks of "outer space becoming cluttered with reconnaissance satellites" without acknowledging the important, even crucial, role that such "national technical means of verification" have played in making the SALT agreements possible. On the other hand, I believe he understates the potential danger of President Reagan's Strategic Defense Initiative in bringing weapons to space, although to be sure he makes but passing reference since this subject goes beyond the time-span of the book. (On a minor point, one of the few factual errors is a footnote reference [p. 404] to a "large number" of Soviet launchers once constructed for a fractional orbital bombardment system; the number was only 18.)

Arms control policy-making and negotiation are at least as much a matter of internal deliberation, maneuver, and decision as of international negotiation. Seaborg's detailed account is particularly rich in bringing this internal dimension into focus. He has strong if not unique qualifications for examining the interface of scientific-technical and political considerations. He also had a very useful vantage point as one of the players in the political arena during the Johnson years. He draws on both of these strengths to advantage in this study. He gives examples (Pentagon devotion to MIRV as well as the previously noted AEC interest in Plowshare and State Department interest in the MLF and allied sensitivities) of instances in which legitimate but parochial interests may have stymied progress in arms control more than, in retrospect, they should have. Above all, as he rightly stresses, while all considerations should be brought to bear, there is an essential need for a personal and positive interest by the president in order to crystallize decisions and realize arms control potentialities. Demonstrating that lesson, so relevant to the situation today, is itself a major contribution of this excellent book.

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A New Specter

Preventing Nuclear Terrorism. The Report and Papers of the International Task Force on Prevention of Nuclear Terrorism. PAUL LEVENTHAL and YONAH ALEXANDER, Eds. Lexington (Heath), Lexington, MA, 1987. xviii, 472 pp. $56; paper, $22.95. A Nuclear Control Institute Book.

Preventing Nuclear Terrorism is the product of a massive undertaking by the Washington-based Nuclear Control Institute and the Institute for Studies in International Terrorism at the State University of New York. The effort began with a major international conference in 1985, which led to a "task force" on nuclear terrorism made up of 26 experts from nine countries. The book contains the task force's final report and 26 background papers on terrorism involving stolen nuclear weapons or nuclear-weapon materials or attacks on nuclear facilities.

The study's conclusions can hardly be characterized as alarmist: "The good news is that the probability of terrorists turning to nuclear forms of violence is low. The bad news is that it is increasing" (p. xi). Indeed, the report notes that "as yet there are no public signs that any terrorists have the essential combination of capability and will to engage in an act of nuclear violence" (p. xii).

Why then the fuss? Is nuclear terrorism indeed, in the report's words (p. 14), "a real threat to civilization"? Vice President Bush (not a contributor) provides part of the answer: "Although we have so far been spared the terrible specter of nuclear terrorism, that doesn't mean that we don't need to begin addressing this problem" (p. 383).

Since nuclear terrorism is a relatively new concern in both academic and policy circles, the editors prudently went about "addressing this problem" by selecting authors from diverse professional backgrounds, including industry, government, research groups, and academia. The papers cover all levels of governmental activity—state and local, national, and international.

Despite the diversity of approaches, the group was united in endorsing the deferral of commercial uses of weapons-grade nuclear materials until national and international defenses against nuclear sabotage, terrorism, and theft are considerably improved.

Their findings make it clear that there is no "quick fix" to the problem of nuclear terrorism: nuclear facilities are vulnerable to truck bombs and insider sabotage; greater security is needed for nuclear weapons based on U.S. naval vessels and in countries where terrorism is prevalent; and transportation is the "weak link" in controls over international nuclear commerce. The study urges greater U.S.–Soviet cooperation and information sharing through such forums as "nuclear risk reduction centers," as suggested in the paper by Senators Sam Nunn and John Warner.

The timing could not be better for such a book. First, the Reagan Administration will soon be implementing its policy of "programmatic prior consent," under which certain U.S. nuclear trading partners will be exempted from case-by-case reviews for the physical security of weapon-grade nuclear material produced from exported American technology or nuclear fuels. The effect of this policy will be to facilitate, rather than delay, international commerce in such materials. In Japan alone, this would mean transcontinental shipments of ton quantities of spent nuclear fuel to Europe and, eventually, ton quantities of plutonium from Europe back to Japan without case-by-case physical-security reviews by the United States.

Second, the superpowers are finally approaching agreement on the reduction and possible elimination of intermediate-range nuclear forces in Europe and perhaps Asia. The United States, under encouragement by friendly NATO governments, is seeking to keep over 4000 tactical battlefield nuclear weapons in Europe as a means of compensating for Soviet advantages in conventional forces and as a way to achieve a closer "coupling" of the United States to the defense of Europe. The safety and security of these tactical weapons are an important concern of this book.

The book is not without some rough edges. A great deal of empirical evidence on this delicate subject matter is classified, a problem that will continue to hamper the development of comprehensive databases. Moreover, analytical rules to guide the collection and interpretation of the evidence remain very inadequately defined. One contributor (Konrad Kellen) is brutally candid about the analytic shortcomings of research on the motivations of potential nuclear terrorists; he warns analysts of nuclear terrorism (a concept he terms "bottomless") to be conscious that they are "wading into a morass of confusion and fuzziness" (p. 106).

Given the lack of stable methodology, some contributors rely upon frameworks of analysis whose usefulness and relevance may in some cases be open to question. One contributor (Luis René Beres) asserts that "the principal grievance that potential terrorists have against the United States concerns misguided elements of U.S. foreign policy" (p. 146). Working from this premise, he offers the following dubious requirements for reducing nuclear terrorism: U.S.–Soviet nuclear disarmament, the demise of "anti-Sovietism" in U.S. foreign policy, and an end to U.S. support to "authoritarian regimes."

Others rely upon their past work on nonnuclear terrorism to provide considerable data on terrorist groups in regions ranging from El Salvador to Armenia, without firmly establishing the relevance of these data to nuclear terrorism. Yet the country with the highest incidence of attacks on nuclear facilities—Spain—receives very little attention. Although a methodological *sauve qui peut*

may be justified during the early stages of analysis of a tough multidimensional problem, a comprehensive political strategy to "prevent" nuclear terrorism must await further progress in data collection and analysis.

In one of the report's more controversial recommendations, the authors urge that "U.S. PAL [permissive action link] technology should be shared prudently with other nations possessing nuclear weapons to protect against unauthorized use by military personnel or terrorists" (p. 16). Yet the wisdom of sharing highly classified U.S. nuclear-weapon safety systems with such nations as Pakistan, India, Israel, South Africa, or other countries that may soon have nuclear weapons is seriously open to question. States that are considering nuclear-weapon options should harbor no illusions that any technical fixes will be provided to facilitate the acquisition or deployment of nuclear weapons.

Moreover, the consensus report states that progress on U.S.–Soviet strategic arms control is closely linked to the risk of international nuclear terrorism (p. 32). I cannot understand how deep cuts in these strategic arsenals will have any effect at all on reducing the attractiveness to terrorist groups of symbolic attacks on nuclear fuel-cycle facilities, or on the interest of such groups in stealing weapons-grade nuclear materials.

Despite these minor shortcomings, *Preventing Nuclear Terrorism* is destined to become the principal shelf reference on the subject for some time to come. It will structure public policy debate, and it offers great insights into avenues for further research. Above all, the authors deserve praise for their foresight in identifying this major public policy issue without the prior occurrence of a catastrophic nuclear-terrorist action.

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Eminently Minimal Policies

Energy and the Federal Government. Fossil Fuel Policies, 1900–1946. JOHN G. CLARK. University of Illinois Press, Urbana, 1987. xxiv, 511 pp., illus. $39.95.

This is an exhaustive, highly original contribution to the study of federal fuel policies during the first 50 years of the 20th century. The first to consider government regulation of coal, oil, and natural gas in a comparative context, John Clark challenges accepted views of business-government interaction and breaks new ground by evaluating policy from the perspective, given all too little consideration at the time, of the nation's changing energy mix. As few fuel studies have done, *Energy and the Federal Government* scrutinizes the mind-set and behavior of public officials, big business and small, labor, and energy consumers as it probes the problems of policy formulation, relating the economic history of each industry to the complexities of the ongoing energy transition.

Clark's research in over 30 archival collections and a broad array of public documents testifies to the hesitant role of the federal government even as the performance of the fuel industries became subject to intense public scrutiny and, from the 1920s, increasingly identified with the public interest. Characterizing policy from 1900 to 1946 as "unsystematic, vague, and eminently minimal" (p. 381), Clark makes clear how prevailing particularist criteria, by confining decisions to specific fuel sources, precluded the possibility of coherent energy regulation. Apart from the limits imposed by a fuel-by-fuel approach, decision-making was fragmented by an evaluative framework that generated discrete regulatory patterns for each stage of energy system operations—production, processing, transportation, and distribution. Adding to this parochialism, fuel politics produced legislation reflective of the priorities pushed by dominant groups within each industry.

But as this comprehensive investigation demonstrates, the absence of balanced policy to insure efficient energy use and long-term resource protection was in no sense synonymous with federal inaction. Clark provides the most detailed account we have of government intervention during recurrent, if quite different, types of crises. World War I witnessed unprecedented federal and local emergency controls over fossil fuel supplies and consumption, extending to the geographic redistribution and price-fixing of coal, the nation's major fuel source. The supply disruptions and price hikes that followed some 3600 strikes in 1919 (involving 4 million miners) and the walkout of bituminous and anthracite workers in 1922 again forced federal action, bringing temporary piecemeal return of wartime controls, if not the executive or congressional leadership necessary to remedy the coal industry's basic problem from the 1920s, competition from oil. A decade later, when depression produced a wide array of reforms from a newly empowered central government, what distinguished New Deal fuel policies was that they served industry interest groups and short-run political goals. After bonanza oil finds depressed crude prices in the late 1920s and early 1930s, independent producers called for federal action, including import quotas, but the efforts of the majors brought state production controls and only weak federal monitoring of interstate "hot oil" shipments. Mobilization for World War II again meant significant intervention. Here Clark's detailed treatment reveals inadequate centralized authority, bureaucratic proliferation, jurisdictional conflict, gross ineptitude, and the social costs of disregarding the lessons of the previous and more successful wartime fuel initiative.

Differing from the accepted interpretation, which traces business-government cooperation to the progressive era and sees it as a response to later crises, Clark views these short-lived alliances much as he does the fuel industries' rhetoric of laissez-faire, as defensive tactics intended to prevent undesired federal mandates. While expediency and practical goals shaped the inconsistent response of fuel interests, throughout this period federal authorities failed to define the "public interest" as it applied to the most basic of all national resources, energy. And this, as Clark reveals, was despite the availability of a theoretical framework established successively in the recommendations of the Federal Oil Conservation Board and the National Resources Committee. The FOCB, created by President Coolidge in 1924, identified end-use analysis, energy efficiency, and conservation as integral components of responsible energy policy formulation. The following decade the National Resources Committee similarly emphasized the interrelatedness of all fuels and the superiority of different fuels for different end uses. Warning against the accelerating consumption of nonrenewable oil, the NRC prepared cohesive, comprehensive policy proposals that were "ignored in principle and flouted in practice" (p. 295).

Historically, the idea of the public interest has been intrinsic to the conceptualization of the purpose of public policy of the United States. It was largely disregarded in the case of fossil fuels during a period of cheap energy and expected abundance. As we approach the coming half century there is much to be learned from this important study of policy failure.

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