Double-Edged Diplomacy

International Bargaining and Domestic Politics

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UNIVERSITY OF CALIFORNIA PRESS

Berkeley Los Angeles London

University of California Press
Berkeley and Los Angeles, California

University of California Press, Ltd.
London, England

Library of Congress Cataloging-in-Publication Data

Double-edged diplomacy: international bargaining and domestic politics / edited by Peter B. Evans, Harold K. Jacobson, Robert D. Putnam.
p. cm.—(Studies in international political economy; 25)
Includes bibliographical references and index.
ISBN 0-520-07681-8 (alk. paper).—ISBN 0-520-07682-6 (pbk.: alk. paper)
1. International relations—Case studies. 2. Diplomacy—Case studies. 3. Political science—Case studies. I. Evans, Peter B., 1944– . II. Jacobson, Harold Karan. III. Putnam, Robert D. IV. Series.
JX1395.D65 1993
327'.0722—dc20 92-23297
CIP

Printed in the United States of America

9 8 7 6 5 4 3 2 1

The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984 ♾

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PREFACE

This book was conceived in the course of a project on domestic politics and international relations conducted at the Center for Advanced Study in the Behavioral Sciences in Stanford, California, during 1988–89. Harold Jacobson and Robert Putnam proposed the project. David Cameron and Peter Evans joined as sponsors, and the four of us collectively led the project.

Tracing the lineage of intellectual works, however, is never uncomplicated. The project might not have occurred, and certainly would not have taken the form that it did, had not Robert Putnam written "Diplomacy and Domestic Politics: The Logic of Two-Level Games."[1] This piece became the point of departure for the Center project and ultimately for this book. Putnam's article was an outgrowth of the book that he wrote with Nicholas Bayne,[2] which in turn was an outgrowth of his experiences on the staff of the National Security Council during the Carter Administration. The other three project leaders also had long-standing interests in the interaction between domestic politics and international relations: Cameron's stemmed from his study of comparative electoral systems; Evans' from his perspective on development and dependency; and Jacobson's from his interest in international cooperation. Over the years, Jacobson and Putnam had intermittent conversations on the topic.

The Center project considered two basic questions: first, whether Putnam's insights and generalizations could be applied to negotiations that included non-Western countries; second, whether they could be applied to negotiations about other topics than economic issues. Beyond seeking answers to these questions, we wanted to explore the extent to which Putnam's metaphor or model could be developed, enhanced, and expanded.

During the year at the Center, we and other fellows met regularly in

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Armaments Among Allies

European Weapons Collaboration, 1975–1985

Andrew Moravcsik

For European governments, the arguments in favor of multinational collaboration to produce armaments appear compelling.[1] Politically, arms collaboration cements multilateral bonds among members of the European Community and NATO, as well as bilateral partnerships between countries like France and West Germany. Militarily, collaboration promotes rationalization, standardization, and interoperability (RSI) among military allies, recognized since 1949 by NATO defense planners as a primary Western objective. Economically, collaboration reduces defense expenditures by amortizing the enormous fixed capital and research and development (R&D) investments of high-technology weapons production over longer production runs and by exploiting "learning economies" in the manufacture of complex products. The wastage due to redundant defense-industrial capacity in Europe today totals an estimated 35 billion dollars—27 percent of total European defense spending in 1987.[2]

The world's most intensive efforts at armaments collaboration have taken place between France, Germany, and other European countries. In the decade between 1975 and 1985, Franco-German negotiations included the European Fighter Aircraft (EFA) project, which sought to add France to the Anglo-Italian-German consortium that had produced the Tornado fighter in the 1970s; the Franco-German tank project, which foresaw joint production of a main battle tank; and the Franco-German helicopter project, which envisaged a common family of anti-tank and air-to-air combat helicopters. Each of these weapons was an expensive, technologically sophisticated system in which the potential for economic gains through collaboration could be measured in hundreds of millions or even billions of dollars. Together, these projects raised

the prospect that an entire European generation of the weapons most essential to a modern military force would be developed multinationally.

This prospect was not realized. Negotiations over the EFA collapsed in 1985, with the French opting for independent production of their own fighter plane, the Rafale. The German government quietly withdrew from the tank project in 1982 rather than honor a preliminary agreement with France. Only the helicopter project was launched, leading to the formation of Eurocopter GmbH, a multinational joint venture.

What accounts for these varied negotiating outcomes? More generally, why do so many armaments collaboration projects fail, despite the apparent advantages?

FACTORS IN ARMAMENTS COLLABORATION

The most widespread explanation for the failure of armaments collaboration begins with the assumption that in "high politics," the "national interest," calculated in Realist terms, determines state interests.[3] From this perspective, the source of opposition to collaboration is unambiguously military. "States do not willingly place themselves in situations of increased dependence," writes Kenneth Waltz. "In a self-help system, considerations of security subordinate economic gain to political interest."[4]

In studies of arms collaboration, this argument has been advanced with varying degrees of precision. Some observers simply invoke the allegedly universal instinct to protect "national sovereignty." Others stress distinctive national strategic doctrines, such as France's Gaullist legacy of "national independence." Still others point to divergent military priorities, stemming from different operational specifications and geopolitical positions. Each of these explanations assumes, with Realist theory, that the politico-military leadership controls the state apparatus and responds purposively, even rationally, to an anarchic and potentially hostile international security environment.[5]

The case studies in this essay belie this common perception. Far from being an example of high politics, in which decisions are made by the politico-military leadership alone, arms collaboration generates a great deal of domestic conflict, in which government bureaucracies and private interest groups assume important and unexpected roles. Governments oppose such projects, I will argue, not because collaboration poses a threat to national autonomy or security as classically defined, but because they are unable to negotiate arrangements for apportioning research, development, and production tasks that satisfy powerful domestic economic interests.

To account for national policies, an alternative theoretical explanation

for success or failure is thus required, one that takes into account the domestic distributional issues that arise from international interdependence on domestic politics.[6] I argue that in international negotiations over the allotment of industrial tasks in collaborative projects, the economic interest of arms-producing firms are decisive: when domestic arms producers oppose collaboration, they are almost always successful, regardless of the interests of the military or the chief executive. When firms favor a collaborative project, they are equally successful. In turn, these interests for or against collaboration reflect the position of the firm in oligopolistic global export markets. This is true of both France and Germany: despite divergent national-security rhetoric, governments and arms producers of both countries respond almost identically to similar external incentives. Despite the persistence of Gaullist beliefs, for example, the fundamentals of French policy toward European armaments collaboration differs in no essential way from that of its neighbors.

THE ACTORS AND THEIR INCENTIVES

To highlight the decisive determinants of success or failure of negotiations over arms collaboration, it is useful to begin with a schematic model of the key domestic actors and their incentives.

Domestic decision-making over armaments collaboration involves three categories of actors: chief executives (the French President or German Chancellor); top Ministry of Defense officials (the "MoD"); and the main arms producer(s) that contract with the government ("domestic firms"). Chief executives initiate negotiations and intervene intermittently thereafter. High officials plan and execute the negotiations. In the language of the "two-level games" metaphor, domestic producers "ratify" the results. Other domestic actors are rarely involved.

To understand the dynamics of domestic politics, we need to specify the preferences of each group and the external incentives to which they respond. The model developed here assumes that heads of government stress political interests, both international and domestic; MoDs stress the national military interests; and domestic firms stress their own particularistic economic interests in oligopolistic markets.[7] Although the three sets of actors appear to be pursuing qualitatively distinct types of goals, their motivations can be simplified considerably by assuming that the domestic cleavages in negotiations over defense collaboration are not between groups with different diplomatic and strategic priorities, as Realists would have it, but between groups with different economic interests in collaboration. Both the procurement procedures of MoDs and the competitive strategies of domestic industries can be understood as a function of the costs and benefits for each from integration with the global economy—an approach Peter Gourevitch has termed "the second-image-reversed," or "production profile," approach.[8]

The argument here can be summarized as follows: The economic costs and benefits of collaboration can be divided into positive-sum and distributional components. The interest of the military leads them to act as rational consumers for the society as a whole, seeking *positive-sum* gains with their foreign counterparts, while the interests of domestic firms requires the maintenance of their relative position in oligopolistic global markets, leading them to focus on interstate *distributional issues*. The chief executive adjudicates between these competing interests. While chief executives themselves generally accept the military, economic, and diplomatic arguments for collaboration, they are primarily interested in their domestic political position, a situation which grants armaments producers a de facto veto over the ratification of collaboration agreements. Let us now consider the preferences and incentives of each group in more detail.

The Ministry of Defense and Positive-Sum Gains

MoD officials are primarily concerned with the provision of national security.[9] This leads the military to support procurement from the source that can deliver the appropriate weapons on time at the lowest cost ("more bang for the buck"). In contrast to the U.S. Pentagon, which enjoys domestic economies of scale large enough to render autarkic production (and indulgence in interservice rivalry) considerably more affordable, European planners face a steep *trade-off* between autarky and efficiency. European MoDs must pay a much higher price in economic efficiency for policies designed to assure security of supply.[10]

The preference of European MoDs for cost-effective procurement leads them to act, to a first approximation, as rational consumers seeking to exploit the common gains from collaboration.[11] MoDs are primarily interested in the positive-sum gains from collaboration. For military planners, collaboration is a solution to an international collective-action problem, in that it ameliorates the poor efficiency of uncoordinated competition under conditions of surplus capacity. These gains accrue most directly to MoDs, which procure armaments, and thence, one assumes, to taxpayers.[12] Given their preference for cost-effective procurement, MoDs—as distinct from European states and governments as a whole—tend to oppose collaborative ventures only when there is reason to believe that they will not generate the appropriate weapons at lower cost than through domestic production. The greater the economies of scale to be exploited through shared research, development, and production, the greater the incentive to collaborate. High unit cost, small pro-

duction runs, and high R&D-intensity—hallmarks of the production of tanks, aircraft, and helicopters—signal the possibility of large potential economic gains through collaboration.

Armaments Producers and Distributional Conflict

Domestic armaments producers seek no general social goals; as firms, they engage instead in strategic behavior aimed at maximizing their private gain. Maximizing turnover can be used as a proxy for this interest.[13] For most high-tech armaments, the market is far from perfectly competitive. Firms are nearly always monopolists in their domestic markets and oligopolists in global markets characterized by market imperfections such as increasing returns to scale, learning economies, massive overcapacity, government intervention, and a small number of firms. With fixed costs of R&D and production increasing at double the rate of increases in military spending, many product lines in the armaments industry are approaching conditions of "natural" global oligopoly—in which economic forces would reduce the number of profitable worldwide firms to a handful or, in extreme cases, to a single global monopolist.[14]

Imperfections in domestic and global markets force firms to think strategically. In particular, they must consider the distribution of the costs and benefits from collaboration, which results primarily from the international allocation of future production. Costs and benefits of this sort accrue directly to firms and those in society dependent on them. Firms thus tend to be concerned with their relative position in world markets—and thus with the relative gains, in terms of market position, from collaboration. Collaborative projects are market-sharing cartels, in which shares of research funding, production, and sales are carefully negotiated. If firms gain from a cartel, they will seek to join it; if they lose, they will oppose it. The advantages and disadvantages for firms, and hence their levels of support for collaboration, vary with world market position.

Firms seek to preserve two sorts of competitive assets: technological capabilities, which permit the production of sophisticated products, and export market niches, which permit the amortization of costs over a larger market. To see how global market position, in terms of technology and export shares, translates into corporate strategy, consider two firms, one stronger and one weaker, one "leader" and one "follower." Collaboration can influence the competitive position of leader and follower firms in three ways.

First, *the transfer of knowledge in international collaboration tends to benefit followers at the expense of leaders.* Collaboration forces leaders to share third-country export markets and technical knowledge with followers.

In many civilian areas of the economy, larger, stronger, and more international firms support international cooperation. In an armaments collaboration project—which, in this regard, functions not solely as an agreement to internationalize production, but also as a market-sharing cartel—it is precisely those firms with technological and market assets who have an incentive to block international agreements. Moreover, the more focused a firm's activities are in R&D, the greater the potential conflict with other firms, and the less likely they are to support collaboration.

Second, *the more closely matched firms are technologically, the greater the potential for conflict between them.* The more technologically competent the follower firm, the greater the share of the development work in high value-added core technologies it will demand, and the greater the potential threat it poses to the market position of the stronger firm.[15] Development of such technologies is the source of competitive advantages in these sectors. Very weak followers will be satisfied with a "co-production" project, where they produce components of a product designed by the stronger firm and act as de facto subcontractors. Stronger followers, on the other hand, will demand a "co-development" arrangement, in which major design tasks, as well as production, are shared.

Third, and most important, *the greater the differential between the level of exports of the firms, the less likely is the leader to favor collaboration.* Relative technological position, discussed above, is one determinant of firm preferences toward collaboration, but its explanatory power is limited. Technological capabilities can be exploited economically only if firms can use them to increase turnover, which, in an industry with greater surplus capacity, generally requires an expansion of global market share. In situations where neither of the two countries exports weapons, technological leakage poses relatively little risk to leaders, since governments maintain firm control over domestic markets. With optimal economies of scale in arms production surpassing the domestic market of any single European country, however, export markets have become the key to independent survival. Exports permit firms to amortize fixed costs and increase turnover, as well as in themselves constituting an unregulated, and hence particularly profitable, form of sales.

Exports pose a particularly difficult problem, because any scheme to divide tasks according to levels of domestic procurement effectively transfers a proportion of the export revenues from firms with established export markets (in the previous technological generation) to those without them.[16] Most co-development arrangements are organized according to "*juste retour*" ("just return" or, more colloquially, "you get what you pay for"), a norm whereby development costs, production workshares, and the return from export sales are distributed in proportion to levels

of domestic procurement.[17] Firms successful in export markets will thus have a strong incentive to oppose *juste retour* collaboration. While in theory one might negotiate side-payments to counteract the transfer, they are difficult to negotiate, since the uncertainty in predicting future export market position is great. Established exporters tend to overestimate the prospects for future sales. Moreover, in an environment of slack demand, a "fair" split—according to the new market power of the weaker firm—often means a decline in production for the established power.

To summarize: Firms considering collaboration take into account the balance of technological competence and export shares. Firms with the technological competence to produce a weapon on their own, *and* with established export markets to amortize the costs, tend to oppose collaboration, unless they can dominate it through co-production or licensing. Firms that have the technological competence to produce a product, but no established export markets, tend to cautiously support cooperation, if it can be negotiated on a relatively equal basis. Firms that are not capable of self-sufficient production favor collaboration, and negotiate workshare arrangements roughly proportional to their share of total production. There is little conflict in such cases, since the tasks allotted to the weaker firm would often otherwise be subcontracted. These firm-level incentives are summarized in Table 1.

TABLE 1. Predicted Relationship Between International Market Position and Firm Preference for Collaboration

	Position of Firm One		
Position of Firm Two	Firm with Competence and Exports	Firm with Competence without Exports	Firm without Competence without Exports
Firm with competence and exports	MODERATE TO HIGH CONFLICT: Firms cautious unless they have equal export shares.	HIGH CONFLICT: Firm with exports will oppose cooperation.	LOW CONFLICT: Firm without exports will negotiate a workshare proportional to procurement share.
Firm with competence but no exports		LOW CONFLICT: Workshares divided according to national procurement.	LOW CONFLICT: Workshares divided according to national procurement.
Firm without competence or exports			COLLABORATION TECHNOLOGICALLY IMPOSSIBLE

Chief Executives: Balancing General and Particular Interests

The "two-level games" framework suggests that chief executives are "Janus-faced," uniquely responsible for balancing domestic and international concerns. As Woodrow Wilson observed, and Liberal theories of international relations more generally reiterate, the chief executive has the task of balancing general and special interests.[18] In the case of arms production, chief executives balance the general interest in national security and fiscal responsibility, represented by the military, with the particularistic interest of those who profit directly from armaments production, represented by firms. Individually, chief executives generally accept the economic and military justifications for collaboration, and they see collaboration as an important element in strengthening interstate relations, in this case Franco-German friendship. For this reason, they are likely to be agenda-setters, promoting armaments projects in their early stages. Chief executives tend to be "doves"—their "acceptability-sets" are more conciliatory than those of the ratifying elements in domestic society.

But chief executives are also—and, in this case, primarily—accountable to particularistic domestic constituencies. Their political future depends on their ability to function as *domestic* political actors. As arms collaboration negotiations progress, the details of proposed agreements become more precise and the domestic implications of collaborative agreements become clearer. Domestic groups mobilize, and the conflict between "domestic" and "international" imperatives itself becomes a source of domestic conflict.

In the conflict between general and special interests, theories of collective action suggest that concentrated groups have decisive advantages over diffusely distributed groups.[19] When seeking to implement two-level strategies, chief executives find themselves in a role analogous to what James Q. Wilson, following others, terms a "policy entrepreneur."[20] When the effects of a proposed agreement are certain, concentrated, and heavily biased toward one side of the issue, heads of governments are unlikely to enjoy great leverage, and influence attempts are likely to be costly and difficult. The latter is the situation facing statesmen in arms collaboration negotiations, where, in Wilson's typology, benefits are diffuse and costs concentrated. Wilson concludes that in such situations the side opposed to the policy generally mobilizes and captures regulatory agencies, unless a salient external event allows politicians to mobilize a large percentage of the general public around an issue.

Not only is opposition to collaboration concentrated; it tends to be intense and focused on a short time horizon. The concentration and intensity of opposing interests helps explain why domestic armaments producers, if so inclined, can successfully resist collaboration. Here the

comparison with the military is instructive. MoDs are equally concentrated, but they lack equally concentrated, intensely committed political constituencies. The interests of domestic groups involved in armaments procurement, by contrast, are grounded firmly in the domestic political economy. Oligopolistic or monopolistic firms, few in number, encounter little difficulty overcoming the collective action problems of interest-group organization. Even the workforce in most French and German armaments firms can be quickly mobilized to influence collaboration decisions—a fact which helps explain the strong overt support of the French Communist Party for national arms projects, even where they must coordinate their activities with Gaullist businessmen. The knowledge of technological possibilities and true cost estimates held by arms-producing firms can also be an important asset in negotiations. With corporate autonomy or survival potentially at stake in a single decision, corporate preferences are immediate and intensely felt. Since high-technology weapons are large, lumpy goods, often with life-cycles spanning a decade or more, the "shadow of the future" tends to be short, unless the firm involved is a large, diversified company.

Armaments producers thus enjoy decisive advantages over taxpayers on specific procurement issues such as collaboration. Militaries and MoDs, while themselves concentrated, must find support largely among diffuse interest groups, opponents of high defense spending, and supporters of cooperation for purely internationalist reasons. Armaments producers, on the other hand, can draw on direct political influence wielded by concentrated business and labor groups with a strong interest in maintaining domestic production. Businesses and workers disadvantaged by a collaborative project can pressure the government through campaign contributions, elite networks, labor protests, and electoral mobilization against restricting production. At times, they may also exploit a residual sense of nationalism.[21]

Domestic arms-producing firms and their allies in society—including labor unions and parliamentarians—wield more concentrated political power than the MoD, and their views generally prevail. The approval of armaments producers can be viewed as the relevant process of domestic "ratification." It follows that the decisive variable explaining which negotiations succeed and which fail is the global market position of domestic arms-producing firms.

THE CASES: FIGHTERS, TANKS, AND HELICOPTERS

To test this model, we now turn to the three Franco-German negotiations. The fighter plane, tank, and helicopter projects followed a common trajectory. In each case, chief executives launched the negotiations and top MoD officials carried them out—both groups being positively inclined toward collaboration. Major intermilitary disagreements over operational specifications arose early, but were resolved either by the MoDs themselves or at the direct command of heads of government.

Discussions then commenced over the quantitative and qualitative distribution of economic production. In each case, this appears to have been the critical point. If the leader firm did not have a strong third-country export position, it was generally willing to consider cooperation—as was Aérospatiale in the case of helicopters—and the negotiation succeeded. If the leader firm enjoyed a strong export position, it tended to oppose the agreement, as did Dassault in the case of fighter planes and Krauss-Maffei in the case of tanks. Such firms were able to spearhead domestic opposition to ratification, and these negotiations failed. The predictions of the model and the empirical findings are summarized in Table 2.

TABLE 2. Domestic Interests and Cooperation: Predictions and Findings

	Predictions and Findings			
	Predicted Firm Preferences	Observed Firm Preferences	Predicted Outcome	Observed Outcome
Cases				
Fighter Aircraft	Dassault opposed; Rolls-Royce and BAe willing to cooperate on an equal basis; MBB, MTU favorable.	As predicted	France opposed; Britain cautious; Germany favorable.	As predicted
Tanks	Krauss-Maffei opposed; GIAT favorable.	As predicted	Germany opposed; France favorable.	As predicted
Helicopters	Aérospatiale cautious; MBB favorable.	As predicted	France cautious; Germany favorable.	As predicted

Now let us examine the cases in more detail.

The European Fighter Aircraft (EFA), 1975–1985

Discussions beginning in 1976 revealed that the MoDs of France, Germany, Britain, and Italy all favored a collaborative project to fill a common fighter-aircraft requirement for the 1990s. (Spain joined the negotiations later.) When detailed discussions commenced in 1981, disagreements emerged over military specifications, such as combat role and capabilities, size, and weight. These were resolved in a compromise

agreement on operational requirements reached at a December 1983 meeting of air force chiefs of staff in Köln. The most important compromise concerned weight: the French desire for an extremely light fighter (an empty weight of 7.5 tons) and that of the others for a somewhat heavier design (9.5 tons) resulted in a compromise at 8.5 tons. Each country's needs were estimated—330 aircraft for France, 250 for Britain, 200 for Germany, and 150 for Spain and Italy—with cost and workshare to be divided proportionally.

While the initial agreement at the level of military staffs offered a compromise solution to the conflicts over operational specifications, the struggle over industrial advantages continued between the leading European firms, pitting British Aerospace and Rolls-Royce, the British airframe and engine producers, against their French counterparts, Avions Marcel Dassault and Societé Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA). On the surface, the persistence of disputes over the precise weight of the aircraft, which was repeatedly reopened, as well as design leadership and the organization of the project, were still couched in terms of their military significance. In fact, however, these disputes reflected underlying conflicts between national champion firms over leadership and control of the design and production of the airframe and engines. The positions of these firms, as we shall see, were those predicted by the theory of corporate preferences presented above. The disputes proved intractable and ultimately led to the dissolution of the collaborative coalition.

The industrial issues can be divided into two categories: disputes over the airframe and disputes over the engines.

Airframe Design Leadership. By 1978, Britain, Germany, and Italy had collaborated for ten years on the Tornado multi-role combat aircraft, and had jointly invested in prototypes for the new fighter. Meanwhile, Dassault in France built the ACX/Rafale, its own prototype based on the Mirage 4000—a design developed and abandoned in the early 1980s due to the lack of export opportunities. The British and French designs were to a large extent incompatible. The negotiators were thus divided into two camps from the start, with the Germans trying to mediate between the two, but somewhat closer to the British.

The main obstacle to agreement came from Dassault, a small family firm run by Marcel Dassault, a legendary figure in French industry and politics, and his son Serge. Dassault was the French monopoly producer of fighters. As a technologically competent firm exporting 70 percent of production through the 1970s, Dassault was implacably opposed to collaboration with foreigners. Not only was Dassault a large exporter, but it produced almost exclusively military aircraft, specializing primarily

in their design and integration, while subcontracting 75 percent of the actual production to other firms. Because of its dependence on high value-added design tasks in a single sector, any compromise of design leadership by Dassault could not be compensated through subcontracts or civilian-side benefits. As a result, Dassault, unlike any other leading European aerospace firm, had never initiated a collaborative project, although it had inherited a few in the late 1960s through merger with another French producer. Dassault had withstood pressure for collaboration by building small, light, lower-performance fighters (the renowned "Mirage" series), developing successive generations of the Mirage design incrementally, and marketing planes among less-developed countries that could or would not procure from the United States or the Soviet Union. In this way, Dassault had achieved respectable economies of scale.

The decisive concern for Dassault, and thus for the French government, was the effect of collaboration on its export share in third countries, which it calculated as follows: with the exception of Thomson, which had informally been named producer of the radar, French firms expected to gain more from producing 100 percent of the 335 aircraft expected to be procured by the French government, plus 100 percent of French exports, than by producing 25–30 percent of the 800–1,000 European aircraft plus only 25 percent of whatever exports were generated. Unless the EFA generated four times as many exports as Dassault's previous aircraft, or extraordinary side-payments were offered, the French producer would face a substantial loss of turnover. The dismissal of 5,000 workers was predicted and, accordingly, the Communist unions and party (despite ideological disagreements with the Conservative Dassault family) actively joined Dassault in opposing cooperation.[22]

British Aerospace (BAe) and Messerschmidt-Bölkow-Blohm (MBB), by contrast, built more advanced fighters largely for the NATO front, were diversified within and between product lines, were publicly held, and had a history of collaboration. BAe had the technological capability to launch a classic fighter project on its own, but had not done so since the late 1950s. It was a highly diversified firm with extensive civilian interests, and had collaborated with Germany and Italy on the Tornado and with the United States on the Harrier. None of these products had been successful on export markets.[23] MBB had never produced a fighter on its own, and there were doubts whether it had the systems-integration capability to do so. As a result, BAe and MBB proposed institutionalized collaboration on a *juste retour* basis, as had been done through the joint subsidiary Panavia with the Tornado.

As a result of the divergence between the corporate strategies of Dassault and the others, the dispute over the operational specifications of the airframe refused to die, despite the 1983 agreement between MoDs.

British and German industry continued to favor a design with high-performance specifications designed for the military missions in NATO, while their French counterparts preferred a simpler, lighter, and cheaper fighter suitable for export. Technical advisers tended to favor the British design, which used more advanced fly-by-wire technology. Indeed, British industry accused the French of deliberately employing simpler technology in the ACX/Rafale in order to increase its export chances. French officials, on the other hand, mistrusted Britain's pre-existing industrial ties with Germany through the Tornado program. The German government tried to assuage these fears by suspending industrial collaboration with the British for a year and a half. The lack of a comparable response on the part of the French, however, led British officials to suspect that Dassault had no intention of sticking with the project, but simply wanted to stall the negotiations as long as possible before they collapsed, in order to protect sales of the Mirage 2000 and to allow the Rafale to get a jump on the EFA in export markets.[24]

Engine Design Leadership. Both Rolls-Royce and SNECMA, monopoly producers of engines in Britain and France, respectively, viewed participation in the engine design as a key objective, both in its own terms and as a "technology driver" for civilian activities. Rolls-Royce, the leading engine manufacturer in Europe, saw no reason to grant equal place to the ailing SNECMA, a firm with very weak export and technological performance on the military side.[25] Moreover, Rolls-Royce and SNECMA were export-market competitors on the civilian side, via SNECMA's alliance with General Electric. British negotiators feared that SNECMA would exploit the co-development scheme to accumulate proprietary information on Rolls-Royce's engine designs and then, at its own insistence or under pressure from Dassault, pull out of the project.

Rolls-Royce, a strong leader, was suspicious of collaboration unless it was granted a dominant role; while SNECMA, a weaker firm technologically, but a strong exporter by virtue of its connections with Dassault and GE, opposed collaboration unless granted an equal role. Given its technological weakness, SNECMA was willing to consider collaboration with Rolls-Royce on the engine; as one official put it, "Better 30% of an engine than none at all." SNECMA did not actively oppose the project, nor did it support it. But as long as the French project was alive as an alternative, and as long as Rolls-Royce denied an equal place to SNECMA, it would quietly continue to "drape itself in the tricolor." The German engine firm Motor-Turbinen-Union (MTU), the smallest engine manufacturer in Europe, unable to produce a fighter engine on its own, supported collaboration.[26]

The British government, looking for a way to compensate for slower-

than-expected production of the Rolls-Royce motors used in the Tornado, called for the use of engines in the EFA that could also be used to re-engine existing Tornados.[27] This seemingly sensible demand for compatibility exacerbated the conflict of interest, because it excluded SNECMA, which was incapable of designing an engine large enough to power the much heavier Tornado. For this reason, the linkage of the EFA engine to Tornado re-engining was rejected by the French, who preferred the M-88, SNECMA's less powerful engine. Moreover, Rolls was now doubly skeptical, since collaboration would mean sharing the lucrative re-engining contracts for the Tornado with the French, who did not fly the plane. Germany welcomed the compatibility condition, since MTU had established itself as a subcontractor in the design of Rolls-Royce military designs.

The engine design dispute drove renewed disagreements over weight, which, despite their resolution to the satisfaction of the military in 1983, continued to resurface as the most salient issue in the negotiations. The French favored a total weight of 9.25 tons and the British 9.75 tons, but much of this turned on the engine design. Acceptance of the French figure would have prohibited the use of a British engine compatible with the Tornado, while acceptance of the British figure would have prohibited the use of the weaker French M-88 engine.

The Collapse of the Negotiations. After the 1983 agreement, the negotiations repeatedly stalled over industrial issues, only to be relaunched each time by MoD officials. The French vacillated. When the French MoD reached a compromise, Dassault would raise new demands or reopen old issues. Dassault continued to claim that its experience with delta-winged aircraft with canard foreplanes entitled it to leadership in every area of the project, while the other nations called for equal sharing of responsibility. French officials even complained that Dassault was withholding essential technical information. The British, while of course preferring British leadership, would settle for no less than a multinational consortium along the lines of Panavia. German industry, which had insisted all along that any agreement must make Germany a full partner, including technology transfer from France to Germany, rejected any proposal that would reduce their role to that of a subcontractor, including one proposal that would have given the British and French 33 percent each at the expense of the German share.

German Defense Minister Manfred Wörner, representing the country with the most immediate need for aircraft and the least advanced aeronautics industry, was pressed to defend the stalled project before the Bundestag. In an attempt to break the impasse by restoring Britain and France to a position of equality, he declared that Germany would partici-

pate in the project only if the entire aircraft design was new, rather than derived from an existing prototype. French Minister of Defense Charles Hernu immediately responded with the diplomatic dexterity for which the French are celebrated, drafting an open letter to Dassault declaring that the Rafale was not a prototype, but a "technology demonstrator."[28]

In March 1985, the French MoD, which had previously resisted such demands, pressed Dassault's ultimatum that the chief engineer, lead firm, and overall design and management responsibility all be French, that the headquarters be located in France, and that all planned exports be added to the French workshare, thus allowing France 46 percent of the work, Britain 22 percent, Germany 16 percent, and Italy and Spain 16 percent between them. The Germans were alarmed by the French turnaround on issues that they had thought to be settled, as well as by the alarming drop in the German workshare—inspiring a top German procurement officer to call the French "the European Americans."[29]

When the five defense ministers and their military chiefs of staff returned to the negotiating table in May 1985, yet another apparent compromise was reached. France reaffirmed the Anglo-German preference on the weight of the aircraft and its primary air-to-air mission, in return for which the other four governments agreed to include in the calculation of *juste retour* the 85 planes to be procured for the French Navy (in addition to the 220–230 for the French Air Force), thereby raising the French share to 32–35 percent.

Even this was not enough. The breaking point was reached at the meeting of armaments directors on August 1, 1985 in Torino, where the representatives of France and Spain announced that they would not accept the final, "non-negotiable" compromise proposed by the British, Germans, and Italians. The compromise called for an aircraft weighing 9.75 metric tons, powered by an engine with 9.2 tons of thrust, to be produced under the aegis of a multinational organization similar to Panavia. While this was closer to the British position, France was offered a 42 percent workshare—a remarkable concession in a world of *juste retour*. With the engine question unresolved and Dassault still opposed, France refused. French Defense Minister Hernu shuttled to Madrid to coordinate policy, but on September 2 the Spanish government announced that it would join the EFA consortium, which could afford to offer more generous terms. In an October 1985 speech before the National Assembly, Minister of Defense Paul Quilès launched an all-French Rafale project.

The Aftermath. The French Rafale and, to a lesser extent, the EFA have both been in crisis since their launching. Rising cost estimates for both aircraft have been the source of constant political controversy. A French parliamentary report analyzed the cost structure of the Rafale and pronounced it "unfinanceable" without international collaboration. Yet repeated attempts to find foreign partners have failed. The French Navy launched an unprecedented campaign to avoid procurement of a French aircraft, publicly advocating off-the-shelf procurement of American F-18s instead. A scandal, quickly dubbed "l'affaire Rafale," broke out when the government suppressed unfavorable cost estimates, during which Prime Minister Michel Rocard openly dubbed the project "a disaster." When the French government moved to consider canceling it, however, business and labor moved in unison: while the representatives of Dassault were meeting with the Prime Minister's staff, hundreds of workers picketed the courtyard of the Hôtel Matignon. The project was saved, yet remained financially troubled.[30]

Exports promised no relief. A few weeks after the French withdrawal, Saudi Arabia surprised European producers with the announcement that it would purchase hundreds of Tornados instead of the Mirage 2000s—a sale called by some the "deal of the century." The sale would tide British producers over from production runs of the Tornado for European deployment to the first production runs of the EFA. This was a major blow to Dassault, whose new-order books have remained nearly empty ever since. Some analysts believe this deal signaled the beginning of a permanent decline in Dassault's export performance, due to stiffer European competition, greater indigenous production in the Third World, and the reentry of the United States onto world markets.

The EFA limps along with less fanfare. The costs, shared among four countries, are more manageable, but in an era of declining defense budgets, rising budgetary estimates have nonetheless forced the German government to cancel or delay more than one hundred other programs. By late 1992, in the face of severe fiscal constraints, Defense Minister Volker Rühe appeared to have convinced his government to try to scale back the EFA project significantly. The Germans have repeatedly threatened to withdraw from the project and seek a more cost-effective aircraft in collaboration with the United States. Yet, as the economic incentives would predict, it has failed to do so.[31] Nevertheless, the EFA, which already appears too expensive to challenge the American competition, will probably not be the beneficiary. Without collaboration, all European countries lose in the long term.

The Franco-German Tank, 1977–1983

Among arms-collaboration projects, a common tank is perhaps the oldest dream of European military planners. In 1956, the Finabel committee, comprising the army chiefs of staff from France, Germany, Italy, Belgium, Holland, and Luxembourg, met to set standards for a common

NATO tank. A bilateral accord on a common tank signed in 1957 between French and German MoDs reiterated the NATO specifications. The following year, NATO authorized the construction of two national prototypes.

By 1960, it had become clear that the two prototypes could not be integrated, whereupon the respective MoDs agreed to form a tripartite committee, with an Italian as chairman, to choose between them. However, two months before the competition, scheduled for September 1963, Germany and then France each announced their intention to build their own tanks—the Leopard I and the AMX-30, respectively—regardless of the outcome. A major reason for the split was the commercial rivalry, with each side hoping for export sales that would justify their decision to support an autarkic program.[32]

The German hopes were vindicated. Over the following fifteen years, the German Leopard I became a worldwide success and netted large profits for two German firms: Krauss-Maffei, the main contractor, and Krupp MaK, its leading competitor and major subcontractor. The Leopard I was considered by many to be the world's best tank in its class, with nearly half of production exported to seven NATO countries.[33] As with the French firm Dassault in aerospace, the dependence on military production, on design tasks, and on exports was clearly reflected in Krauss-Maffei's bottom line. By the late 1970s, Krauss-Maffei had become dependent on military products for nearly 95 percent of sales, of which the Leopard tanks constituted over 75 percent. The Leopard II contract in the early 1980s, which had been heavily supported by industry as a "follow-on" to avoid idle capacity after the Leopard I, transformed several years of losses into consistent profits.[34] Krauss-Maffei focused primarily on design, subcontracting more than half of production to other firms, including Krupp MaK. Krauss-Maffei's corporate structure resembled that of Dassault in aerospace. Like Dassault, Krauss-Maffei is essentially a design firm, employing seven engineers for every skilled assembly worker.[35] It is also a family firm, with 95 percent of the stock held by the influential Flick family, which had gained considerable notoriety through a campaign-financing scandal. As with Dassault, Krauss-Maffei's close informal ties with the German government helped it to resist efforts to merge its operations or divide its role as main contractor with Krupp MaK.[36]

The French tank program was far less successful. The French tank, the AMX-30, was designed and assembled by Groupe Industriel des Armaments Terrestres (GIAT), a state-owned armory that was successfully resisting, with strong support from Communist unions, the general trend toward privatization of defense production. (Many of the subcontractors, however, were important private firms.) By the late 1970s, no country could sustain an economic level of tank production without exports, and only the Germans and the Americans had made consistent inroads into important third-country export markets.[37] The AMX-30, militarily far less impressive than the Leopard, was exported to only one client: starting in 1977, 900 tanks had been delivered to Saudi Arabia.[38] By the 1980s, the French tank industry, according to the estimates of the French General Philippe Arnold, lagged two technological generations behind that of the Germans.[39] GIAT was committed to exports, but had been relatively unsuccessful at promoting them. It supported cooperation on an equal basis, with the clear intention of employing German technology to construct a tank that could be exported more profitably to the Third World, particularly to turbulent areas to which the German government banned official exports.

The Negotiations. In 1976, the French government began to consider options for replacing the AMX-30. The MoD strongly supported a joint Franco-German program. Tanks and helicopters were the key equipment priorities for the French Army. With tight budgets, particularly after the Socialists came to power, a joint program seemed to promise a state-of-the-art tank while economizing on R&D and obtaining some development work for domestic producers.[40] At a tripartite ministerial meeting on November 3 and 4, 1977, the three governments launched formal negotiations on a joint project to develop a successor tank to the German Leopard I, the French AMX-30, and the British Chieftain, for deployment in the 1990s.[41]

The British, who had only recently ended unsuccessful negotiations with the Germans and had no immediate requirement for a tank, quickly dropped out.[42] Helmut Schmidt and Valery Giscard d'Estaing, however, remained positively inclined toward a joint project, as much for symbolic as for economic reasons. With the exception of a few Franco-German summit meetings, however, the talks were carried out by the MoDs, represented by their national armaments directors. Initially, the German MoD, led by Armaments Director Hans-Ludwig Eberhard, cautiously supported the project. The decision to replace half the force with Leopard II and half with the Franco-German tank made sense, since the latter was seen in German eyes as an improved and modified version of the former. An impasse in the negotiations between MoDs over the detailed operational concept for the tank was broken in 1979 when Schmidt and Giscard simply ordered their respective military officials to reach an agreement. This display of political will at the highest levels resulted in the signing by the respective national armaments directors, Hans-Ludwig Eberhard and Henri Martre, on January 31, 1979, of a statement of intention to reach agreement on a common tank concept.

In February 1980, at the Franco-German summit in Paris, the negotiations were given another high-level impetus by an agreement between Schmidt and Giscard to promote the tank project as a symbol of bilateral solidarity. Various points of disagreement were addressed at the summit, most importantly the question of exports. The most visible problem with exports concerned the sensitivity of the German government, particularly in the SPD, to arms exports. German arms-export control legislation is strict and had been applied with particular stringency to the export of tanks—a notorious symbol of German technical expertise.[43] Nonetheless, the heads of government resolved the issue in the same way that it had been dealt with in previous projects, namely by Germany deferring to the French demand that each country be permitted to export its production according to its own laws. Because of the sensitivity of tank exports, a special provision was added allowing either side to call for bilateral consultations to discuss individual cases.[44] The compromise was codified in an agreement between the respective defense ministers, signed on February 5, 1980. German Defense Minister Hans Apel opposed the project, but was kept uninformed until a few days before the summit and then obeyed a direct order from Schmidt to sign.[45]

Industrial Interests. With the disputes over military specifications enroute to resolution, industrial issues rose to prominence. For Krauss-Maffei, the Franco-German project posed two concerns. First, a Franco-German project would cede half of the gains from supplying the NATO market, where the Leopard was dominant, to the French partner. Krauss-Maffei feared that France would export at subsidized prices to the Third World (where German export restrictions blocked direct exports) and then, perhaps, challenge German exports to their traditional NATO "club." At the very least, the Franco-German tank might compete directly against the Leopard II, undermining hopes that it, like the Leopard I, would become the standard tank for continental Europe. These fears appeared to be confirmed when shortly after the announcement of the Franco-German project, the Belgian government—Belgium being a nation where much of the defense industry is dominated by links to French firms—declared that it planned to switch from the Leopard to the new product. The importance of exports and industrial development to the French was also demonstrated by their insistence that no American parts can be used, so as to circumvent any U.S. export-control problems, while the Germans favored procurement of the most economical components. A 1980 internal French memorandum concluded that greater exports and turnover were possible with a jointly produced tank than with a follow-on to the AMX-30.[46]

German industry also worried that the exchange of technology would favor the French—a view shared by many French experts. French industry sought to acquire German technological know-how in areas such as diesel-engine technology, chassis development, and armaments, and the long-term effect might have been to bring the French up to world standards in tank production. Although the market position of the Leopard series, and the acknowledged superiority of German armor, suggested German leadership in the project, French industry lobbied heavily for an equal share in a wholly new, co-developed tank, rather than a role as licensee for a modified Leopard II. French firms had done a considerable amount of R&D, some of it utilizing spin-offs from aerospace, which they felt entitled them to an equal share in the project. In a series of articles in the French press concerning the engine, turret, hydraulic suspension, and particularly electronics, French industry stressed its ability to contribute equally to the project. There was widespread (and, in retrospect, justified) skepticism from German industry about these claims, because the promising, but piecemeal French R&D on tanks had never been integrated into a workable, let alone marketable, product.[47]

Krauss-Maffei's major interest was to preserve its global market position by opposing any cooperative venture involving an equal division of design tasks. Nonetheless, Krauss-Maffei initially gave its cautious support to plans for collaboration, since the proposed venture seemed to resemble a co-production rather than co-development scheme, not unlike those which Germany had arranged with other NATO countries, in which the end-product would be an improved version of the Leopard II—a Leopard "II½," as it came to be called. Such a project would grant German firms access to the large French market and secure development funding, estimated to total 1.5 billion deutschmarks, to further improve the Leopard II.[48]

The Collapse. As negotiations between MoDs continued, contentious issues, ostensibly concerning technical specifications, were focused increasingly on the underlying industrial conflict. In late 1980, it became clear that the German government was standing by its producers' preference for co-production of a modified Leopard II over co-development of a new tank. The Germans favored retaining and improving the chassis of the Leopard II, with common work proceeding on the turret, while the French wanted a wholly new design.[49] Another disagreement emerged over weight. With the budget constraints of the Third World export market in mind, the French favored a light tank chassis (less than 50 tons), while the Germans who employ a large number of their tanks themselves on the European central front and exported only to NATO countries, favored a heavy one (closer to 60 tons).

By the second half of 1980, disagreements over the nature of the final product, as well as project leadership, had dissipated the initial interest of German industry. Wolfgang Raether, the Krauss-Maffei board member

responsible for armaments technology, publicly conceded that the respective militaries were overcoming their differences, and that a European solution would permit the exploitation of greater economies of scale. But the French solution of "starting over from Adam and Eve" with a new design, he argued, would be far less economical than building an improved Leopard II. German manufacturers would also have to give up the production of certain components, which Krauss-Maffei firmly opposed. The French proposal to take over electronics, an increasingly important part of tank production, Raether argued, did not reflect "German technical ability." In vain, French diplomats argued that exports via France to Third World countries where direct German exports were restricted might actually increase the turnover of German firms. One French lobbyist in Bonn enthused that "a combination of French genius and German perfectionism would be unbeatable on world markets." But German firms considered the political and industrial risks too high.[50]

Despite the increasingly skeptical posture of German industry, the two MoDs, with support from both heads of government, pressed ahead. In February 1981, an agreement was signed on the definition phase, which called for a common turret to be mounted on two separate chassis. The French also agreed to produce a heavier tank, with independent work to continue on a lighter chassis. This in turn sparked further disagreements on whether the new turret would be optimized for the Leopard II or for both designs. An initial production run of 4,500 was foreseen, with 2,500 for Germany, 1,500 for France, and 450 for the Netherlands. The costs were estimated at a minimum of 22.5 billion French francs, or about 5 million FF per tank. R&D costs and project leadership were to be split evenly.[51]

The French, who had no intermediate-generation tank analogous to the Leopard II, continued to favor the date of 1991.[52] Outside of the Communist unions, who had always supported autarkic production in state-owned armories, and the nationalist right, French support for the agreement continued to be broadly based. As the negotiations dragged on, Mitterrand pressed Schmidt for a definite decision, which had to pass through the German Bundestag.

In November 1981, the Germans began to question the calendar for procurement. This concern, though ostensibly military, resulted primarily from the underlying industrial conflict. If the tank was to be a new design and not an improved Leopard II, the German government favored a later date for bringing it into service, around 1995 or 1996. The German military worried that a tank designed for the 1991 date would be outmoded by the time the German procurement began. A number of issues finally combined to sink the tank in the Bundestag. Among German parliamentarians, support for the project was waning, with all three

major parties—the CDU, SPD and FDP—eventually officially opposing the project. The Defense Committee resented not having been consulted by Schmidt throughout the negotiations. This opposition resulted in a series of negative reports by the Bundestag in late 1981 and early 1982. Cost constraints and scheduling issues were important to the Budget Committee. Given the military budget crisis, the German government was hesitant to fund a new tank project when the Leopard II has just entered into service. On balance, the military felt that if the project were more than an improved Leopard II, they would prefer to postpone the development in order to assure a more technologically sophisticated tank. Moreover, the FDP and SPD were traditionally suspicious of arms exports, which might increase via French factories. The most decisive issues, however, appear to have been industrial. Leading defense experts from the CDU and SPD on the Defense Committee of the Bundestag stressed the risk of surrendering Germany's clear technological lead to France, only to have it exploited on export markets, as the most serious reason for their skepticism. Germany, a leading SPD defense analyst declared, must fight for its "rightful interests."[53]

Schmidt failed to gain the support of his own party in the Bundestag, let alone the opposition, and upon his departure from office in September 1982 the project seemed dead. On November 30, 1982, French Prime Minister Mauroy announced before the Senate that France would go ahead alone with its tank, named the "Leclerc," but the French government still hoped that collaboration could be arranged. The MoD stalled for time by announcing a modernization of the AMX-30, while continuing to look for European collaborative partners with whom to pursue the new tank project. Mitterrand raised the issue again with the new Chancellor Kohl and his Defense Minister Manfred Wörner, but the negotiations lapsed for good in 1983.[54]

The Aftermath. The launching of the Leclerc tank failed to silence domestic critics who argued that the French Armée de Terre is falling still further behind in armored technology. In an unusual breach of the strict *"devoir de réserve"* imposed on the French officer corps, General Philippe Arnold, former Aide-de-Camp to Giscard and Commander of the 1st French Armored Division, publicly deplored the failure of the Franco-German tank project and criticized the French government for fielding armored forces inferior to those of Germany and the United States. Although General Arnold was suspended from his duties for speaking out, his comments were widely considered representative of majority opinion in the French military.[55] In 1987, GIAT unveiled its prototype of the Leclerc, scheduled for 1991 production. Experts consider it substantially inferior to the improved Leopard II or the American

Abrams M-1. The continuing weakness of the French tank production was demonstrated on export markets. When the Saudi government announced its intention to procure a new generation of tanks, the French did not even make the short list, despite the fact that Saudi military was already using the AMX-30. With the Germans refusing to enter the competition, the finalists were the American M-1 and the Brazilian Osorio.[56]

The Franco-German Helicopter, 1985–1990

France, Italy, Germany, and Britain held exploratory discussions in 1975 about co-development of a day/night all-weather attack helicopter. In November 1976, France and Germany signed a Memorandum of Understanding to begin conceptual studies.[57] As in the other two cases, heads of government and MoD officials in both countries favored the project, and they were to intervene twice more, once in 1982 and once in 1986, to revive it.

Differences between the French and German military over the operational specifications of the helicopter were, as in the other two cases, the first issues to be raised. French tactical doctrine called for teams of two light helicopters, one to perform anti-tank missions and the other to defend the mission against attacking helicopters; German doctrine called for a single heavy helicopter to perform both tasks. Accordingly, the French favored a lighter helicopter with a single engine and the Germans a heavier helicopter with two engines. Also, the French military favored a configuration with the two-man crew sitting side-by-side, while the German military favored a configuration with one crew member sitting behind the other. Finally, as in the tank case, there were differences over replacement schedules, with the Germans requiring the helicopter before the French. Indeed, in the early stages of the discussions, the German military favored licensed production of the U.S. Hughes AH-64 Apache.

These differences between the MoDs over military specifications and scheduling were as great or greater than in the cases of tanks and fighters. Despite their seriousness, however, they were overcome, like previous disagreements, through compromise, often backed by direct pressure from heads of government. It was agreed to pursue the German conception of a heavier helicopter with the two crew members sitting one behind the other. The case of helicopters differs strikingly from those of tanks and fighters, however, in that producer interests converged. From the moment the German military issued its requirement, Aérospatiale in France and MBB in Germany were interested in collaborating on the project. At three key points in the negotiations—during the years 1982, 1985, and 1986—industry kept the momentum going when officials seemed unable to come to an agreement.

Industrial Interests. These convergent corporate strategies are grounded in the global market position of the two firms. Most important, neither national champion was established in global markets for military helicopters. Aérospatiale was somewhat more technologically advanced than MBB and had exported some military helicopters, but the product line was not a priority for the firm. Moreover, its history of collaboration with Westland (UK) in the previous generation meant that the collaborative venture would involve no reduction in market share over prevailing levels.[58] Both firms, moreover, were highly diversified across product lines. Aérospatiale's diversified production base permitted it to use the technological and financial gains from collaboration to bolster its preeminent position in the production of civilian helicopters, in which it was a world leader and MBB was not a significant player. Hence Aérospatiale (unlike Dassault or Krauss-Maffei) tended to think long-term, taking into account the possibility of iteration and linkages between product lines. Aérospatiale's corporate commitment to international collaboration was broad-based; 60–75 percent of its business, including the Airbus family of commercial jetliners, already came from collaboratively produced products. The two firms were already working together on a range of projects, including some helicopter subsystems, joint missiles, and civilian airliners. As the theory of corporate preferences outlined above would predict neither Aérospatiale nor MBB pushed for a national project.

Discussion over industrial issues still provoked conflict. French industry and government saw the project as a source of technology and exports. As in the case of fighter planes, France seemed more willing than Germany to sacrifice performance to keep costs down, and to guarantee domestic production and exports by avoiding American components. The most important industrial conflict involved electronic systems, particularly the optronic systems—night vision, target acquisition, and fire-control technology—to be employed in the helicopter. While the German government favored procurement of an American-made system that had already been tested, so as to reduce the cost, risk, and duration of development, French government and industry insisted on a system developed and produced entirely in Europe and employing infrared technology. French industry, led by Aérospatiale and Thomson, argued that an independent technological base was needed to be competitive on global export markets. This industrial dispute also helps explain the tenacity with which each country defended certain operational specifications, such as the seating configuration, which were related in a complex way to the radar dispute. German industry had no strong interest one way or the other.[59]

The Negotiations. In October 1979, a Memorandum of Understanding specifying an 18-month period to define the project was signed. No further agreement was reached, however, and in late 1981 the two national armaments directors turned the project over to industry. Aérospatiale and MBB presented two proposals, one resembling the French plan, the other the German. Both were rejected by the opposing government. The project appeared dead. Industry explored other options, but continued to press for a multinational project.

In early 1982, with Bundestag opposition to the tank project becoming insurmountable, the German government searched for a symbolic security project with which to smooth political relations with Paris. At the suggestion of the German Armaments Director, who sought above all to avert yet another attempt to revive the ill-fated battle tank, the German government proposed to resuscitate the helicopter project. At the Franco-German Summit in October 1982, Kohl and Mitterrand sought a collaborative project to symbolize renewed Franco-German military cooperation, and the joint project was announced shortly thereafter.[60]

A year later, in November 1983, the respective ministers of defense, Wörner and Hernu, signed an agreement announcing their governments' intention to launch the development phase. Negotiations over military specifications continued until May 1984, when an accord was signed on joint development and production. The agreement, which reflected compromises reached during the preceding year, called for three versions of the helicopter to be produced from a single airframe. A family of three helicopters—the HAP (Hélicoptère d'appui et de protection), the PAH-2 (Panzerabwehrhubschrauber, zweite Generation), and the HAC-3G (Hélicoptère anti-char, troisième generation)—were planned. The agreement also called for the construction of seven prototypes.

Disagreements over the electronic systems remained. The May 1984 agreement permitted each country to choose its own electronic subsystems, but continuing complications over the seating appeared to render this solution unworkable. In November 1987, the German military, under pressure from Chancellor Kohl, finally acquiesced in outfitting the helicopter with a Franco-German, rather than an American, radar.[61] The May 1984 agreement also gave program leadership to MBB, despite the technological superiority of Aérospatiale, on the grounds that the French had been granted project leadership on the Alpha Jet project and that a 1978 agreement between France, Britain, Germany, and Italy had designated Germany as the European leader for anti-tank helicopters. Oddly enough, this arrangement was not supported by its main beneficiary, MBB, which feared that Aérospatiale, a more technologically advanced firm, would withdraw from the agreement, and hesitated in any case to accept legal responsibility for the entire project. MBB and Aérospatiale circumvented these problems on their own by turning the entire project over to a common jointly held subsidiary, Eurocopter GmbH, under whose supervision the project has advanced steadily. In mid-1990, joint participation through Eurocopter in another helicopter project, the NH-90, was announced. The integration of French and German military helicopter production in Eurocopter GmbH appears to mark a decisive transformation of industrial structure.[62] Thus, although the initial military objections were strongest in this case, the doubts about the financial soundness of the project remain, the helicopter collaboration must be judged a success.

The Future: A Two-Level Strategy for the European Armaments Industry?

By the late 1980s, in the wake of the negotiations on the three projects examined above, European statesmen stood at an impasse. Efforts to entice unwilling national champion producers into collaborative armaments projects had proven difficult, and the results varied greatly across sectors. In some sectors, such as helicopters, bilateral consortia (Franco-German and Anglo-Italian) compete against one another; in others, such as fighter planes, the continent's leading producer continues to battle a growing consortium of competitors; in still others, such as tanks, there is almost no collaboration. Armaments producers have often thwarted attempts to use domestic policies such as nationalization or concentration to undermine their opposition to collaboration.

In light of the failure of many attempts at collaboration—as well as the budget crisis and, more recently, the decline of the Soviet threat—European procurement officials are coming to accept the need to treat armaments collaboration as something akin to a two-level game. Initially, such efforts took the form of attempts to undermine domestic opposition to collaboration through greater government control over, and in France, nationalization of, national champions. This strategy was ineffective, particularly in France, since the same underlying industrial interests remained. As a result, governments turned in the late 1980s to strategies that use international arrangements to undermine domestic constituencies. Such efforts have centered on proposals developed by two organizations: the Independent European Programme Group (IEPG), a group consisting of all European NATO members, and the European Community (EC).

In November 1988, after a decade of inactivity, the IEPG approved an "Action Plan" aimed at creating a "common European arms market."[63] The IEPG reform package can be seen as an effort by defense ministers and national armaments directors, working in concert, to alter the incentives facing European defense producers. The IEPG plan com-

prises a number of reforms, including open competitions for smaller contracts, subject to the proviso that the gains from all projects should balance one another out over an "appropriate period of time." This proposal builds on the experience of France and Britain, who have implemented a similar bilateral program of monitored "cross-purchasing" over the past few years.

The French government has proposed, and the IEPG has authorized, a common European military research program modeled on the civilian EUREKA program. This program, called EUCLID, will offer financial incentives to multinational research consortia working on areas such as advanced micro-electronics, artificial intelligence, and composite materials. One purpose of the program is to accustom European firms to collaboration and "prime the pump" for future projects. MoD officials hope that collaboration in early stages of a project will foster cooperation in later stages of weapons development.[64]

The IEPG reforms have taken place in an economic environment influenced by "European 1992"—the attempt to complete the liberalization of the Common Market, which includes a proposal to open public procurement.[65] The push to rationalize civilian industries, particularly electronics, has had the side-effect of changing the incentives facing domestic armaments producers. In sectors with considerable spillover from civilian to military technologies, international mergers and diversification on the civilian side create incentives for similar cooperation on the military side. This process has dovetailed with a more permissive attitude on the part of MoD officials toward foreign participation in domestic firms. A rash of international mergers, acquisitions, and investment has followed (e.g., Siemens-GEC-Plessey, Thomson-British Aerospace). Armaments producers increasingly face market incentives to increase efficiency. Private firms, like the French missile producer MATRA, have aggressively pursued multinational mergers and collaborative ventures.

The prospects for IEPG and EC efforts to promote international cooperation remain unclear, but their intent is unequivocal. In the blunt language of a high French MoD official, they constitute "an attempt to regain control of our own industry."[66] Liberalization of procurement for smaller goods, common R&D programs, and the possibility for cross-national investment and takeovers are all deliberately designed to undermine the opposition of domestic armaments producers to their own governments by creating common institutions and a competitive international environment. Such strategies are promising because, while a frontal assault by governments on domestic monopolies may fail, firms can be enticed, through positive incentives, to embark on policies that alter their long-term corporate strategy. It is too early to know whether such efforts will succeed.

TWO-LEVEL GAMES AND ARMS COLLABORATION

Support for the Proposed Model of Collaboration

Both the process and the outcomes of the three negotiations examined in this chapter confirm the theory of collaboration outlined in the initial section. Chief executives and MoDs are inclined to support armaments collaboration. MoDs often have technical disagreements, but they inevitably resolve them on their own or at the direct order of the head of government. Chief executives act as agenda-setters, but their influence declines as ratification nears and agreements become more concrete. In each of the three cases, the "acceptability-sets" of heads of government were consistently closer to one another than the two domestic win-sets, which are determined by the dominant social actors who "ratify" agreements, namely, defense producers and their allies. The interests of producers reflect their position in global export markets.

The three cases discussed here suggest that armaments collaboration is possible only when the leading industrial firm in Europe does not need to defend export interests, and therefore chooses not to oppose the agreement. In the aircraft and tank cases, strong leader firms (Dassault and Krauss-Maffei) blocked collaboration with weak leaders for fear of surrendering technological and market pre-eminence. In the case of helicopters, Aérospatiale enjoyed a stronger world market position than MBB, but its weak overall export position in military helicopters, as well as its previous experience with collaboration and its fortuitous pattern of diversification into civilian sectors, led it to support collaboration. MBB, with no plans for independent export expansion, was accommodating. In short, the public gains from collaboration cannot be achieved unless firms anticipate private gains. The importance of firm preferences holds cross-nationally: France and Germany, however different their foreign policy priorities and military doctrines, react similarly to similar situations.

In the process of interest formation, domestic conflict was important and, in this descriptive sense, the state is a non-unitary actor. Yet it is essential to distinguish between the *existence* of domestic divisions and their *importance as explanatory factors*. The nature and outcome of the domestic conflict, while important as a "transmission belt" between international incentives and political outcomes, can be predicted by employing a unitary-actor assumption, namely, that the state will eventually pursue a policy that reflects industry preferences. Since industry preferences are based on the global market position in that sector, and industry tends to get its way, there is little need to invoke an independent theory of domestic politics. A pure "second-image-reversed" approach, in which

domestic conflicts mirror global market position, provides an adequate explanation.[67]

To be sure, this situation is unsatisfactory for governments. In recent years, governments have thus turned to two-level strategies, such as the nationalization of recalcitrant domestic firms. These policies not being entirely successful, governments are now working together to restructure the international incentives facing firms. Policies to promote transnational corporate restructuring, diversification, and collaborative R&D are the result. By offering short-run incentives to domestic firms, governments can induce them to change in such a way as to alter their long-run behavior. Once domestic opposition has been quelled, governments hope to achieve their international goals.[68]

Five Hypotheses About Two-Level Strategies

Why did two-level strategies play a marginal role in the case of armaments collaboration? And insofar as they were attempted, why were they relatively ineffective? The evidence presented here permits us to decisively reject one obvious answer, namely, that this was a case of security cooperation, in which there were few important domestic conflicts. The MoDs favored collaboration, but industry often opposed it. The symbolic importance of armaments production for national security, the legal power and access to high-quality information enjoyed by national executives, and the monopsony position of governments would seem to permit them to mobilize domestic society more or less as they wish. Policies of targeting side-payments to particular subcontractors, suasive linkage between collaboration and Franco-German relations, and/or collusion between statesmen could be predicted. Although some of this took place, it was ineffective at promoting cooperation.

The following five hypotheses are drawn inductively from this case, but appear to be of sufficient theoretical interest to warrant further consideration in other, similar cases. In general, they suggest some of the limitations of two-level strategies in cases such as armaments collaboration.

1. *The existence of strong, concentrated opposition does not expedite successful two-level strategies to reshape "win-sets."* The efficacy of the instruments at the disposal of a "policy entrepreneur" to shift win-sets and create coalitions is related to the nature and distribution of domestic and foreign interests. Specifically, the prospects for successfully employing the strategies outlined in the introduction—suasion, targeting, tying hands, cutting slack—rest on the existence of malleable domestic actors. In each case, new actors must be mobilized or existing actors must be confronted with incentives to act differently than they otherwise would. Attempts to manipulate domestic actors in this way will be most effective when their interests are uncertain or weak, their knowledge is incomplete, their power is marginal, or their interests are balanced. Targeting and linkage, for example, are more effective strategies when they can be focused on swing groups.[69]

There were similar limitations on two-level effects such as "targeting" and "tying one's hands." Such efforts remained relatively rare and enjoyed little success. In the fighter-plane negotiations, for example, the Germans and British hoped to gain support for the project from the powerful French firm Thomson by pre-committing themselves to procurement of a French radar. But Thomson was in a weak domestic position, since its potential main contractor in a national project, Dassault, was threatening to turn to a subsidiary, Electronique Serge Dassault, for electronic components. Thomson refused to step out of line. Negotiators also attempted to convince others, in both domestic and international fora, that win-sets were linked. The future of Franco-German relations, it was argued, rested on projects like these three. Such claims—while given wide circulation in the *Economist*, *Le Monde*, and *Frankfurter Allgemeine Zeitung*—appear not to have impressed influential domestic groups.

2. *In cases of concentrated opposition by economic interest groups, fundamental social restructuring may be the only way to create the political preconditions for collaboration.* As we have seen, it is difficult for statesmen to "reshape the win-set" when the interests of social groups are concentrated and well organized, as in the case of armaments collaboration. A tenacious statesman may be forced to adopt a strategy of socioeconomic reform. In the case of arms collaboration, chief executives have recently attempted to design policies to eliminate or dilute the power of concentrated arms-exporting firms. The French governments of Giscard and Mitterrand both attempted to nationalize Dassault or to merge it with the more collaboratively inclined Aérospatiale. In France, such frontal attacks were blocked, although the expansion of British Aerospace and the creation of Deutsche Aerospace suggest that it may have been more successful elsewhere. More recent attempts to coordinate cross-purchasing and cross-investment agreements on a Continental scale demonstrate that in an interdependent world, statesmen will turn to two-level strategies where domestic policies fail. Only changes in industrial structure, whether through corporate collaboration in Eurocopter or as a byproduct of Europe 1992, promises to undermine industrial opposition.

3. *When negotiations involve public or widely dispersed benefits, suasive strategies will be used; when they involve privatizable and more concentrated benefits, targeting will be used.* Firms mobilize for or against collaboration in response to the desire to capture specific private goods, while the public and its representatives mobilize for or against collaboration in

response to the potential public good of more efficient procurement, a stronger national defense, or more responsible fiscal management. To implement a targeting strategy, statesmen must be able to identify specific private goods characterized by excludability and rivalry. A suasive strategy is generally more appropriate where there is a broad, diffuse commitment to a certain end, often a public good. The evidence presented here suggests that when statesmen attempt to undermine a private interest, such as corporate opposition to an arms project, by tying it to broader issues, such as the future of Franco-German relations, they are likely to fail.

4. *Cross-national discrepancies in information about ratifiability are nonexistent, at least among democracies, and hence cannot be exploited to gain diplomatic leverage.* The two-level games model suggests that a statesman might gain a more advantageous agreement by exploiting—or, more subtly, by feigning—a small win-set. The former strategy is recognized, and the evidence in this study, particularly the generosity of the final offer to France in the EFA negotiations, suggests that these predictions are correct. The latter strategy, one of duplicity, rests on the existence of "informational discrepancies" (or "asymmetries") regarding domestic ratifiability between chief executives. Statesmen must be better able to assess their domestic constraints than their counterparts abroad. The evidence here suggests that interstate informational discrepancies regarding the ratifiability of agreements hardly exist among European democracies, even in the relatively secretive matter of armaments. This is the only way to account for the otherwise paradoxical empirical finding that statesmen were not always the best judges of their own domestic situation. The estimates of skeptical foreign firms like BAe about the size of the French win-set, while perhaps based on less hard information, appear to have been more accurate than those of the French government. Statesmen appear to misjudge their own domestic constraints as often as do foreigners.

In the case of fighter planes, the French government did attempt to exploit Dassault's intransigence (i.e., the small French domestic win-set) to extract a larger workshare for French firms—a tactic that appears to have succeeded insofar as the final offer to France gave Dassault a disproportionate share of the contracts. But this result is explicable largely by the fact that the threat of French defection was real. Insofar as the French negotiators attempted to extract more concessions from the Germans and British by exaggerating the extent of Dassault's intransigence, the strategy backfired, for such tactics can be exploited by domestic actors against their own government. After the negotiations broke down, French negotiators felt that they had tried to extract too much compensation in exchange for Dassault's participation, and had exhausted foreign goodwill and empowered their own firm in the process.[70] Dassault and, to a lesser extent, BAe also attempted to undermine their governments' will to collaborate by pre-committing the government to autarkic policies. The two firms rushed the testing of high-visibility prototypes, seeking to accumulate sunk development costs, create nationalist sentiment, and demonstrate their ability to lead the project alone.

These cases suggest that, among modern information-rich democracies, it is extremely difficult for negotiators to mask their true domestic win-set, even in a sensitive area of national security like weapons procurement. Situations in which vital information about ratifiability is in the hands of only one party are rare. Statesmen have numerous independent means of assessing the domestic constraints faced by their counterparts, including diplomatic information-gathering, reading the commercial press, or hiring consultants, all of which are employed by European governments. Unless one or both statesmen are actually in a position to decisively reshape their domestic win-set through sudden, unforeseen action—a rare state of affairs in a democracy—attempts to dissemble will be detected.

5. *Statesmen are less aware of and less constrained by their domestic constituencies during early stages of negotiations, which may lead them to misjudge domestic constraints.* As negotiations progress, societal actors reveal their preferences and domestic constraints become more apparent. In the cases of armaments collaboration, domestic actors appear to have understood more clearly than their governments whether agreements were ratifiable. The ability of domestic groups to disguise their preferences and provide selective information affords them some influence over the way governments conduct negotiations. In the fighter case, for example, British observers claimed that Dassault cynically encouraged pro-collaborative forces in the French government simply in order to delay the launching of a collaborative project they had no intention of joining. While Dassault may have deliberately manipulated the French government, Krauss-Maffei appears simply to have withheld judgment until the precise details of the agreement became clear, at which point the firm voiced its opposition. Schmidt had already invested considerable political capital in a project that his government was then unable to ratify, just as French negotiators invested a great deal in the fighter negotiations, only to see them fail. These misjudgments confirm that there may be high uncertainty inherent in judging domestic constraints early in the negotiating process, but that interest alignments become clearer during the course of a negotiation.[71]

CONCLUSIONS

The three cases examined in this chapter demonstrate both the importance of two-level-games strategies and the difficulty of employing them.

While national chief executives occupy the critical position of gatekeepers, adjudicating disputes between international and domestic imperatives, their autonomy is nonetheless constrained. Many of the limitations of two-level strategies *as policy* permit us to better understand the two-level-games approach *as theory*. For example, among information-rich democracies, it appears to be nearly impossible to disguise the size of the win-set. Also, as the two-level-games approach predicts, statesmen can act autonomously to set the agenda for international negotiations, but their autonomy shrinks as ratification nears and the terms of the agreement become clearer.

The specific key to cooperation or conflict in the armaments sector is the primacy of concentrated domestic interests over a diffuse national security interest. This theoretical approach—which contrasts the domestic organizational capabilities of different groups—is normally associated with Liberal theories of trade disputes and other manifestations of "low politics."[72] Since the approach illuminates a "high politics" case of considerable military and economic importance, there is reason to believe it is also widely applicable in cases—such as civilian high-technology production—where we would expect international imperatives to be less compelling.

NOTES

1. The theoretical analysis and empirical research contained in this chapter is drawn from work in progress on the political economy of international cooperation in strategic industries. See also my articles, Moravcsik, "The European Armaments Industry at the Crossroads," *Survival* 32 (January–February 1990): 65–85, and "Arms and Autarky in Modern European History," *Daedalus* 120 (Winter 1991). For comments and suggestions on various parts of this project, I am grateful to Anne-Marie Burley, William Jarosz, Robert Keohane, Fareed Zakaria, and members of the project. For logistical assistance, I thank the Program on International Politics, Economics, and Security (PIPES) at the University of Chicago.

2. Western European Union, Document 1119, par. 7, 11 May 1987. See also C. Julien, "Les armes de l'Europe," *Le monde diplomatique*, January 1988: 22, cited in Jonathan Story, "La communauté européenne et la défense de l'Europe," *Studia Diplomatica*, March 1988: 274. Classified estimates by the French National Assembly suggest that the unit price of the Rafale would be some 25 percent cheaper if produced on a European collaborative basis; Michael Bernard, "Projet de Rapport d'Information sur L'Avion de Combat Tactique" (Mimeo., Paris: Assemblée Nationale, February 1988). A recent European Community study suggests that the savings would be 40 percent or more: Aviation Week and Space Technology, 3 September 1990, 69. For a rebuttal of counterclaims that the inherent inefficiency of collaborative projects soaks up the potential gains, see Moravcsik, "European Armaments Industry," pp. 74–76.

3. See, for example, David Garnham, *The Politics of European Defense Cooperation: Germany, France, Britain, and America* (Cambridge, Mass.: Ballinger, 1988), pp. 67–68, 70; Jérôme Paulini, "Politique spatiale militaire française et coopération européenne," *Politique étrangère* 52 (Summer 1987): 443. On the wartime importance of domestic modification capabilities, see Trevor Taylor and Keith Hayward, *The UK Defence Industrial Base: Developments and Future Policy Options* (London: Brassey's, 1989), pp. 102–103. In his classic work, Henry R. Nau, *National Politics and International Technology: Nuclear Reactor Development in Western Europe* (Baltimore: Johns Hopkins University Press, 1974), generalizes this line of argument in his analysis of variations in cooperation on high technology, which he attributes, at least in larger countries, to political interests.

4. Kenneth Waltz, *Theory of International Politics* (Reading, Mass.: Addison-Wesley, 1979), p. 107.

5. For further implications, see Joseph M. Grieco, "Anarchy and the Limits of Cooperation: A Realist Critique of the Newest Liberal Institutionalism," *International Organization* 42 (Summer 1988): 485–508.

6. Elsewhere I have argued that this is characteristic of the "Liberal" approaches to international politics. See Andrew Moravcsik, "Liberalism and International Relations Theory" (Cambridge, Mass.: CFIA Working Paper 92–6), 1992.

7. For analyses that relate conflicting priorities to conflicting interest groups, see Christian Schmidt, "A la recherche d'une economie politique des programmes d'armament," *Chroniques d'actualité de la SEDEIS*, 15 June 1987, pp. 226–233; Michael Brzoska, "Economic Problems of Arms Production in Western Europe—Diagnoses and Alternatives," in Helena Tuomi and Raimo Väyrynen, eds., *Militarization and Arms Production* (London: Croom Helm, 1983), pp. 59–92; Edward A. Kolodziej and Frederic C. Pearson, "The Political Economy of Making and Marketing Arms: A Test for the Systemic Imperatives of Order and Welfare" (paper presented at the International Studies Association convention, London, 1989).

8. Peter Gourevitch, *Politics in Hard Times: Comparative Responses to International Economic Crises* (Ithaca, N.Y.: Cornell University Press, 1986).

9. Herbert Wulf, "Europäische Zusammenarbeit in der Rüstungsproduktion: Ziele, Probleme und Perspektiven," in Luther Brock and Mathias Jopp, eds., *Sicherheitspolitische Zusammenarbeit und Kooperation der Rüstungswirtschaft in Westeuropa* (Baden-Baden: Nomos Verlag, 1986), pp. 107–128. This assumption may seem strange to the American reader. In the United States, the interests of individual services play a more important role, in part because of the lack of a civilian procurement agency such as the French Delegation Général pour l'Armament, and in part because of the greater economic means at the disposal of the military. Moreover, given the extreme resource constraints under which European countries function, efforts to strengthen the equipment base of their particular service often lead to the same outcome.

10. For a more detailed derivation and an evaluation of the concept as a source of insight across modern European history, see my article, "Arms and Autarky."

11. Some may view this as a reckless assumption, but the negotiating history

of these projects bears it out. I present additional evidence, drawn from national defense plans, procurement policies, and negotiating histories, in the final section of "Arms and Autarky" and in "European Armaments Industry," pp. 66–67, 76.

12. It is also possible that the reduction in cost will increase exports enough to offset the loss of domestic market share. But the elasticity of third-country demand for weapons is not so steep as to facilitate this trade-off.

13. Cost-plus pricing, widely used in Europe, means that increases in turnover generate increases in profits. Under fixed-price contracting, however, the same rule of thumb applies.

14. Timm Meyer, "Collaboration in Arms Production: A German View," in Karl Kaiser and John Roper, eds., *British-German Defense Cooperation: Partners Within the Alliance* (London: Royal Institute of International Affairs, 1988), p. 246. On the pressures facing the industry, see Moravcsik, "European Armaments Industry," pp. 67–69; and Michael Moodie, *Defense Implications of Europe 92* (Washington, D.C.: Center for Strategic and International Studies, 1990), pp. 7–12.

15. Cf. Jonathan B. Tucker, "Partners and Rivals: A Model of International Collaboration in Advanced Technology," *International Organization* 45 (Winter 1991): 83–120. This incisive and rigorous analysis, which appeared after I had completed several drafts of this chapter, uses a comparison of the Alpha Jet and European Fighter Aircraft projects to support the hypotheses that relative advantages in technological competence are both the primary objective and the primary cause of international conflicts in this area. Tucker focuses on technological leakage, not conflict over high value-added production. We also differ on specification. Tucker's model does not distinguish theoretically between the interests of domestic actors, nor does it incorporate export shares, which I believe to be the central distributive concern of these firms, even more important than technology.

16. Side-payments are, of course, a possible solution to this problem. But there are three reasons why they rarely permit governments to overcome the problem: (1) exports are unpredictable, and it is difficult to calibrate such side-payments precisely; (2) high levels of exports amortize the fixed costs of production and development, thus creating less economic pressure to collaborate; and, most important, (3) the technological levels of weaker firms are generally rising of their own accord, due to the diffusion of technology, creating surplus capacity and a vested interest in defending sunk costs and existing market shares. For the latter reason, market leaders are almost always declining, which makes it difficult for them to accept a realistic side-payment.

17. Jonathan Tucker argues, in "Partners and Rivals," that if technology levels differ greatly, then the weaker country will sometimes pay a premium for cooperation. But this is by no means generally the case. A small country willing to produce low-technology portions of the plane is often an asset, helping to finance high-technology production in other areas.

18. Moravcsik, "Liberalism and International Relations Theory."

19. Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, Mass.: Harvard University Press, 1965).

20. James Q. Wilson, *Political Organizations* (New York: Basic Books, 1973), p. 196.

21. Charles E. Lindblom, *Politics and Markets: The World's Political-Economic Systems* (New York: Basic Books, 1977), pp. 170–188. It is also true that the higher the exports, the less costly is autarky. But it would seem implausible to attribute the view that cooperation is not worthwhile to statesmen who have elected to invest in lengthy negotiations.

22. Interview with Ingenieur-Général de l'Armament Henri Conze, Paris, 15 December 1988.

23. BAe had produced the vertical take-off Harrier, the second generation of which was co-developed with McDonnell-Douglas, as well as trainers.

24. Fly-by-wire technology links mechanical parts of the plane electronically, thereby permitting more sophisticated aerodynamic design. British industry believed that it was technologically infeasible to meet the common performance targets with an aircraft of the weight proposed by France. Interview with Martyn Bittleston, British procurement official, International Institute for Strategic Studies, London, May 1989; also Keith Hayward, *The British Aircraft Industry* (Manchester, Eng.: Manchester University Press, 1989), p. 182.

25. SNECMA was involved as a financially equal partner in an immensely successful civil engine consortium with General Electric, while Rolls-Royce produced its own engines, as well as participating in a corporate alliance with Pratt and Whitney on the civilian side, and with the other Tornado countries on the military side.

26. Guy Doly, "De l'avion de combat Européen à l'avion de combat tactique" (unpubl. paper, Paris: Institut Français de Relations Internationales, n.d., probably 1985–86), p. 1, bases this analysis on interviews. This interpretation is supported by Conze, the French chief negotiator.

27. While BAe and Rolls-Royce preferred to develop a wholly new engine (the "X-40") for the plane, they viewed a derivative of the RB-199 originally developed for the Tornado (the "XG-20") as a second-best alternative. The push to include a clause on compatibility with the Tornado in the agreement was spearheaded by Michael Heseltine who, despite his later pro-European sentiments, drove a hard bargain.

28. He also threatened to move forward with McDonnell-Douglas and General Electric to develop a German-American fighter plane.

29. Doly, "De l'avion," p. 4.

30. Interview with Marisol Touraine, aide to Prime Minister Rocard, Paris, 1989.

31. On the potential consequences for German industry, see *Aviation Week and Space Technology*, 3 September 1990, 69. On delays, see Moodie, *Defense Implications*, p. 17.

32. *Le Monde*, 24 March and 25 July 1963; *Le Journal de Genève*, 10 October 1962 and 5 August 1963; *L'Express*, 23 October 1967.

33. *Handelsblatt*, 22 June 1977. Krauss-Maffei gains a greater share of production on exported tanks than on domestically procured ones.

34. Exports rose from 13 to 26 percent of turnover. While Krauss-Maffei itself provides only 10–20 percent of the value-added, its profits from that proportion are thought to be disproportionately large. Krauss-Maffei produces the chassis of the tank, as well as performing the integration and part of the final assembly. Interestingly, the number of workers at Krauss-Maffei actually decreased as its turnover and exports increased. *Handelsblatt*, 10 February 1983; *Rheinische Post*, 19 March 1977; *Unsere Zeit*, 27 August 1981; *Die Zeit*, 30 September 1977.

35. This means, as in the case of Dassault, that sharing of design tasks cannot be compensated by an allocation of production tasks: *Blick durch die Wirtschaft*, 6 December, 1977. Krupp's subsidiary, MaK, is dependent on military sales for about 50 percent of turnover: *Die Zeit*, 30 September 1977.

36. Krauss-Maffei is a subsidiary of the conglomerate managed by Friedrich Flick. Moreover, the firm is based in Bavaria, and thus profited from the support of Franz-Josef Strauss: *Die Zeit*, 30 September 1977. Because of the importance of electronics in the Leopard II, a plurality of the production takes place in Nordrhein-Westfalen.

37. Independent French and German tank production, alongside the British, American, Swedish, and Swiss programs, contributed to massive overcapacity worldwide. The United States deploys 7,000 tanks, as opposed to 1,500 French, 3,000 German, and about 1,000 or more by other Europeans. See Gilles Marcoin, "L'echec du projet franco-allemand sur le char des années 90" (mimeo., Paris: Institut Français de Relations Internationale, 1986).

38. *Le Figaro*, 8 January 1982. France exported AMX-13s to Greece, Spain, Saudi Arabia, and some South American and South Asian countries.

39. See Christian Muguet, "Rüstungsindustrie und Kooperationspolitik: Erfahrung und Reichweite der deutsch-französischen Zusammenarbeit," in Brock and Jopp, eds., *Sicherheitspolitische Zusammenarbeit und Kooperation der Rüstungswirtschaft in Westeuropa*, p. 135.

40. *L'Express*, 8 October 1982. On the focus on tanks and helicopters, see the statements of Charles Hernu in *Le Figaro*, 29 November 1982.

41. This account draws on Marcoin, "L'echec du projet"; Cathleen Fisher, "Franco-German Armaments Cooperation," in Robbin Laird, ed., *Strangers and Friends: The Franco-German Security Relationship* (London: Pinter, 1989), pp. 72–85; Stephen Kocs, "France, Germany, and the Politics of Military Alliance, 1955–1987" (Ph.D. dissertation, Dept. of Government, Harvard University, 1988), pp. 306–313.

42. Mark Metcalf and Martin Edmonds, "RSI and the Main Battle Tank, 1970–1980," in Martin Edmonds, ed., *International Arms Procurement: New Directions* (New York: Pergamon, 1981), pp. 148–152.

43. Stephen Kocs points out that the German arms-export policy was particularly restrictive for armored vehicles. In "France, Germany," p. 308, Kocs cites Eckhart Ehrenberg, *Der deutsche Rüstungsexport: Beurteilungen und Perspektiven* (Munich: Bernard and Graefe, 1981), pp. 100–101.

44. Kocs, "France, Germany," p. 310; *L'expansion*, 18 November 1983, cited in Muguet, "Rüstungsindustrie," p. 135. A 1972 agreement between France and Germany permits each nation to export jointly produced arms according to its own laws. Had the export question remained a serious issue, further disagreements might have been addressed through clauses in the agreement limiting exports to specific countries. This had frequently been done before, as in the limitations of sales of Alpha-Jets to Finland.

45. Kocs, "France, Germany," p. 310. Apel opposed the tank not because he opposed collaboration, but because he faced unexpected budget constraints and also because he felt that in future combat, tanks, like tactical aircraft, would be supplanted by rockets and wheeled vehicles: *Berliner Morgenpost*, 12 February 1981.

46. Marcoin, "L'echec du projet," p. 5; *Der Spiegel*, 23 April 1979; cf. *Le Figaro*, 10 March 1981.

47. See, for example, *Le Figaro*, 21 December 1981 and 8 January 1982. Krupp MaK had developed plans for revolutionary new technology to replace the classical tank turret, which also would have stripped the French of their only area of apparent comparative advantage: *Libération*, 9 September 1980.

48. *Süddeutsche Zeitung*, 26 January 1961; *Der Spiegel*, 11 February 1980.

49. Marcoin, "L'echec du projet," p. 4. The chassis is the one major subsystem actually produced by Krauss-Maffei.

50. ". . . und das ist schlecht," Raether concludes in no uncertain terms: *Die Zeit*, 25 July 1980. The first hint came when the heads of state also agreed to place political and industrial coordinating committees, based in Hamburg, under the control of a Paris-based steering committee. Cf. *Süddeutsche Zeitung*, 9 February 1980; *Frankfurter Allgemeine Zeitung*, 8 February 1980; *Liberation*, 9 September 1980. I also draw on an interview with François Heisbourg, Devon, England, October 1988.

51. The turret compromise was suggested by West German representatives, and agreed to by both sides in December 1980. See Fisher, "Franco-German Armaments Cooperation," p. 96; Kocs, "France, Germany," p. 309; *Quotidien de Paris*, 2 November 1985.

52. Marcoin, "L'echec du projet," pp. 3–4; *Quotidien de Paris*, 2 November 1985; Muguet, "Rüstungsindustrie," p. 136; *Süddeutsche Zeitung*, 29 November 1982.

53. See the statement by Carl Damm, CDU, and Herman Schmidt, SPD, members of the Bundestag's defense committee, in *Die Zeit*, 25 July 1980. Apel opposed the funding and tried to cut it out of the defense budget in March 1981: Marcoin, "L'echec du projet," p. 7. Wörner opposed it as well: *Süddeutsche Zeitung*, 29 November 1982. The German armaments director told his French counterpart that the Bundestag opposed a new tank because the Leopard II had just entered into service: Marcoin, "L'echec du projet," pp. 3–4.

54. *Le Figaro*, 30 November 1982; Kocs, "France, Germany," pp. 312–313; *Le Monde*, 19 March 1983.

55. On "l'affaire Arnold," see *Le Monde*, 2, 4, and 20 November 1985; *Le Figaro*, 4 November 1985. When General Dalaunay, the previous Chief of Staff of the Army, termed Arnaud's criticisms "things everyone already knows," no one in the French government offered more than a pro forma response.

56. *Libération*, 18 February 1988.

57. Discussion of the Franco-German helicopter is based on Henri Louet, *Rapport d'information par la Commission de la défense nationale et des forces armées sur la coopération industrielle franco-allemand en matière d'hélicoptères de combat* (Paris: Assemblée Nationale, troisième session extraordinaire de 1985–1986, no. 249); Fisher, "Franco-German Armaments Cooperation," pp. 98–100; Kocs, "France, Germany," pp. 320–327; Gustav A. Bittner, "Deutsch-Französische Rüstungsproduktion: Eine positive Bilanz," in Karl Kaiser and Pierre Lellouche, eds., *Deutsche-Französiche Sicherheitspolitik* (Bonn: Europa Union Verlag, 1986).

58. This suggests that once European firms have developed products collaboratively, they are more likely to collaborate in future generations of that product line. The reason is not because institutions have their own independent power to shape incentives, as "modified Structural Realists" would argue, but because firms alter their corporate strategies and productive investment in light of existing possibilities.

59. Fisher, "Franco-German," p. 98. The French system of a mast-mounted system permitted a seating configuration side-by-side, while the Martin Marietta system favored by the Germans, which would have to be mounted in the nose, required that the two crew members sit in a tandem configuration, one in front of the other.

60. Kocs, "France, Germany," p. 323; interview with Hans Rühle, former German National Armaments Director, Washington, D.C., 2 May 1990. The European Fighter Aircraft project was not far enough along to be relied upon, and lacked the symbolic value of a bilateral program.

61. The financial protection afforded by a joint company was particularly important to MBB, because for the first time it was being held to fixed-price contracts on a large international collaborative project.

62. *Armed Forces Journal International*, May 1990: 37; *Interavia* 45 (July 1990): 544–548; Kocs, "France, Germany," p. 325. The responses of Aérospatiale and MBB to this situation of technological asymmetry are difficult to explain without understanding the lack of interest by both firms in third-country export markets.

63. On this plan, see Moravcsik, "European Armaments Industry," pp. 69–71.

64. Moodie, *Defense Implications*, p. 27–28.

65. Moodie, *Defense Implications*. On the negotiation of the European Single Act, see Andrew Moravcsik, "Negotiating the European Single Act: National Interests and Conventional Statecraft in the European Community," *International Organization* 45 (Winter 1991): 19–56.

66. Interview with Philippe Roger, Sous-Directeur Alliance Atlantique, Délégation aux Relations Internationales, Ministry of Defense, Paris, 16 February 1989.

67. On transmission-belt theories, see the Introduction to this volume.

68. This new strategy, one might argue, is also explicable in terms of the international level alone, since it involves the use of one international strategy to undermine domestic opposition to another. The new reforms do not directly alter the nature of domestic politics (i.e., the fact that firms get their way), only the international environment in which domestic politics occurs. While I am sympathetic to this argument, it is important to remember that one must use a theory of domestic politics to explain why the state, while unable to directly force firms to collaborate, can employ instruments to slowly alter the incentives facing firms. The answer appears to lie in the different incentives to firms (positive inducements in the R&D programs vs. negative inducements in collaboration) and the divergent time-horizons of governments and firms.

69. This line of argument follows from studies of interest-group activity based on theories of collective action. See Olson, *Logic of Collective Action*. For a more recent application to trade policy, see Joanne Gowa, "Public Goods and Political Institutions: Trade and Monetary Policy Processes in the United States," *International Organization* 42 (Winter 1988): 15–32.

70. Interview with François Heisbourg, Director, International Institute of Strategic Studies, London, October 1988.

71. This finding may also reflect a number of other possible causes, or simple case-selection bias; see Introduction to this volume.

72. See my "Liberalism and International Relations Theory."