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NATIONALISM, INTERNATIONALISM AND THE EUROPEAN DEFENCE MARKET

— William Walker & Philip Gummett —

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William Walker & Philip Gummett

PREFACE

The Institute has had a small study group working on problems of European defence industry over the last three years, under the direction of Juan de Luis. As a culmination of our work in this field, we asked William Walker, Senior Fellow and Director of Research at the Science Policy Research Unit at the University of Sussex, and Philip Gummett, who is Reader in Government and Technology Policy at the University of Manchester, to prepare a paper for us which was discussed at an enlarged workshop held at the Institute in April 1993. In the light of discussions at that meeting the authors have revised their paper and we are pleased to be able to present it to a wider audience.

The changes in the security environment in Europe, reduced defence budgets and a wider range of challenges have had important implications for defence industries. At the same time, the WEU's Maastricht declaration raised again the question of more effective collaboration in the field of armaments in Europe. This paper examines these problems and we hope will contribute to the further discussion of the themes they raise.

John Roper
Paris, September 1993

Nationalism, internationalism

and the

European defence market

William Walker & Philip Gummett

INTRODUCTION

The plight of the European defence industry is usually described in economic terms. Its markets are in recession, there is severe overcapacity, it needs to improve its productivity, and it is heavily protected. The industry, it is widely said, needs to be down-sized and restructured, and its domestic markets liberalised.

This is all true. But there is much more to the story than this. The industry and the political arrangements underpinning it were substantially creatures of the Cold War. The quantities and kinds of equipment that were purchased, the industry's domestic legitimacy and access to funds, the industrial stances adopted by different countries, the international linkages and export policies--all were conditioned by the geopolitical circumstances of the time. Furthermore, the industry's function and standing in the international economy of the 1950s, 1960s and 1970s reflected the unusually progressive role played by military innovation in that period. Whole new industries were founded upon the technological developments spawned by the Cold War and the two world wars which preceded it.

The scene is now very different. The end of the common threat has shaken the industry's foundations, even if the shock is nothing compared to that experienced by defence industries in Eastern Europe and the former Soviet Union. Companies and procurement agencies are having to learn to operate in novel and less predictable domestic and international settings. Furthermore, the greater scale and dynamism of civil industries have weakened the military sector's claims for special status, while increasing the costs of maintaining its distinctive position outside the main international frameworks within which economic activity is conducted and regulated. Paradoxically, this has coincided with the perception, encouraged by the Gulf War, that a new era of military technology has opened up.

The challenges now facing the European defence industry and government policy-makers cannot therefore be assessed just in economic terms. The political surroundings have changed out of all recognition. Governments are struggling to find credible approaches to unfamiliar security problems, in the former Yugoslavia and elsewhere, and to recast the domestic and international `settlements' upon which the old security order was based. The roles assigned to military forces, their structures and missions, and the technological capacities at their disposal, are just some of the issues on a long and often confused agenda.[(1)] At the same time, both firms and governments are having to decide how they can organize and sustain dynamic defence industries, and stay on the high ground in new areas of technology, at a time when less money is available for defence procurement.

These issues can be seen as part of a deeper set of problems that are besetting industrial societies. In many areas of economic and social activity, the modern age is characterised by a combination of globalisation and turbulence: globalisation, in the sense of the complex interrelationship of actors and events; turbulence in the sense that maintaining order and predictability in domestic and international affairs has become more difficult.[(2)]

Two political scientists wrote recently that `a globalising imperative is evident in each of the key institutional domains--the political, the legal, the economic and the military.'[3] But they went on to say that this did not necessarily result in greater integration. Rather than giving rise to a political order marked by the development of a unified society and institutionalised polity, `these processes generate both fragmentation and unification'. This, in a nutshell, is the problem faced in the European defence sector. Economic and technological forces are driving it towards greater internationalisation, but it is simultaneously being constrained by demands that it should serve *local* interests and sentiments, and that the international diffusion of its products and technologies should be more tightly constrained. Whereas the European Community's rules and procedures stand in the way of a reversion to protectionism in civil markets, the defence sector lacks this kind of regulatory strait jacket. Torn between internationalisation and protection, governments are finding it difficult to achieve consistency in their policies,[4] let alone to reach agreement amongst themselves.

Just when there are pressing economic reasons to internationalise defence R&D and production, governments are finding that the political wind has begun to blow in an unhelpful if erratic direction. Against a background of recession and difficulties over the Maastricht treaty and GATT, the talk is again of protecting national interests. It is hard to say whether this bout of national introspection and defensiveness, further encouraged by President Clinton, will last, but it spells trouble for those advocating greater integration in defence markets. Market integration implies willingness to accept a redistribution of capabilities which favour the strong at the expense of the weak, the dynamic at the expense of the static, and an acceptance of the fact that jobs will be lost in sectors where industries are uncompetitive. But an open market can only function in an area like this if there is mutual trust between nations (since they have to accept interdependence), and thus if basic political objectives are held in common. It also requires governments to submit to a form of arbitration which diminishes their individual command over the industrial assets most closely associated with notions of sovereignty. This would be a tall order even at the best of times.

The defence sector's problems are compounded by Europe's technological weaknesses, especially in the field most pertinent to contemporary military innovation--electronics. Moreover, Germany, the European country with the strongest technology base (although it too is weak in electronics), is at present the least willing to play a leading role in the military area. While Britain and France seem prepared for the moment to carry on devoting substantial resources to defence R&D and production, partly to shield companies from failure, it is doubtful whether Europe's international position in this industry can be sustained without Germany's active participation. Hence there are signs of a growing disjunction within Europe between capabilities and commitments which, if it persists, could stand in the way of deeper collaboration in military R&D and production. This disjunction was very evident in the different stances taken on the *European Fighter Aircraft* during the project's re-negotiation in 1992.

Difficult though it may be to achieve, internationalisation in the spheres of both production and regulation provides, in our view, the only way forward. There is no other satisfactory way to meet military requirements for new equipment in the

difficult economic conditions that lie ahead. By internationalisation we do not mean cooperative arrangements that simply preserve national capabilities and traditions: there must be an element of real *integration*, involving industrial specialisation, competition, and the collective identification of operational requirements. In addition, internationalisation does not just mean Europeanisation: while Europe may with reason try to integrate its defence industries and markets, it cannot afford to reject cooperation with the United States, nor to substitute for the materials, components and sub-assemblies that are increasingly being drawn from Japan and elsewhere.

However, we are sceptical that internationalisation can take place fairly and efficiently without the development of regulatory institutions which have some transnational powers. Within Europe, the regulation of defence markets and industries is today handled either domestically, or through gentlemen's agreements and *ad hoc* bargaining between governments. So long as this is the case, it will be difficult to remove the heavy national imprints from the defence sector.

HISTORY

The postwar industry: national autonomy, international alliances

Western European security in the postwar era has rested on cooperation in two distinct spheres--military and economic. The central institutions have been NATO and the European Community. Both had a double purpose from the outset: to counter the threat from the East, and to create harmony and prosperity within Western Europe after two devastating wars. However, they were very different in character.

NATO has always been a transatlantic *alliance* of sovereign nation states. After the failure to set up a European Defence Community in the early 1950s, military forces assigned to NATO remained national entities which would come under US leadership only in the event of war. The stances of European countries within this alliance were the result of domestic and international `settlements' worked out in the 1950s and 1960s (and later in the case of Spain). They involved Germany's rearmament and the formation of the *Bundeswehr*, that unique institution with its constitutional restriction to territorial defence. They involved the acquisition by Britain and France of nuclear deterrents, their focusing on security within and around Europe after a period of colonial retrenchment, and their gradual working out of post-imperial identities--the one as the favoured partner of the United States (within NATO), the other as the champion of non-alignment (outside NATO's command structure). And they involved the general acceptance of a military strategy based ultimately on massive (nuclear) retaliation, and on the stationing of US troops in most West European countries and in Turkey.

By contrast, the three legs of the European Community (the Iron and Steel, Atomic Energy, and Economic Communities) were defined in West European terms alone. Moreover, the ultimate purpose was economic and even political *integration*, so that the Community involved much more than the formation of alliances. A common regulatory body, the European Commission, was established and given its own budget together with rights of enforcement in certain areas of economic policy, rights which were enshrined in a European law which took precedence over domestic law in important fields. Membership of the Community therefore entailed the partial waiving of national sovereignty. The relationship with the United States was also very different in the economic sphere, being competitive as well as cooperative. While sharing the same capitalist values and benefiting from access to the US market and from US investment in Europe, the Community increasingly took upon itself the role of countering US and Japanese industrial superiority. The `défi Américain' in the 1960s, and the fear of being left behind in the 1980s, acted as spurs to further economic cooperation and integration behind European frontiers.

The defence industry straddled both spheres of cooperation. It drew on civil technology, and producers of military equipment usually supplied both civil and military markets. Nevertheless, the industry belonged more to the military than to the economic domain of European cooperation. In the defence sector, the international conflicts of previous decades cast long shadows: great stress was placed on security of supply, and defence industries were everywhere regarded as prized *national* assets. In addition, World War II had demonstrated the close links that now existed between

technological development and military advantage. Although other industries (notably the utilities and energy industries) came under the wing of the state in the years after 1945, governments in the defence area retained exceptional freedom to pursue autarkic policies, a freedom acknowledged in the exclusion of the defence sector from the main international agreements governing international commerce (notably GATT and the Treaty of Rome).

The smaller European countries may have lacked the resources to sustain large defence industries of their own, but the instinct in every country in the years following World War II was to internalise the development and manufacture of military equipment. Even where national self-sufficiency was an unrealistic goal, governments strove to raise domestic production by demanding offsets in purchasing agreements. With the exception of the defeated powers, governments also retained the freedom to define their defence export policies in terms of national interests. The export trade in arms was subject to little international regulation beyond the agreement to embargo communist countries. For Britain and France, as for the United States and the Soviet Union, the export of military equipment came to be regarded as a necessary instrument of foreign policy. As the foreign policies of European countries were largely uncoordinated, defence export policies therefore remained national preserves.

On the other hand, the 1950s and 1960s were the decades in which governments showed the keenest interest in using technologies of military origin to achieve broader economic purposes. The military sector existed to meet purely military requirements, but the new technologies generated by it spilled over into civilian activities.(5) The early histories of the aerospace and electronics industries would have been very different without the stimulus of military procurement. The military sector's technological leadership meant that it did not have to justify its separate regulatory treatment. Its special status appeared to have no serious disadvantages--on the contrary, it gave governments freedom to `drive' new technologies into the civilian economy.

European cooperation in military technology began in earnest in the 1960s, for two main reasons. It was given impetus first by concerns that national markets, and the share in export markets that could be gained by European producers, were too small to cover the rising unit costs of high-performance military equipment (particularly fighter aircraft). Cooperation would tie two or more governments to the purchase of a given item of equipment, costs and risks would be shared and, once projects were launched, they would be less prone to cancellation. Second, international collaboration provided Germany and Italy with the means of gaining entry to areas of military production that had hitherto been barred to them. Collaboration was both a learning strategy, and a strategy for establishing capabilities in sensitive areas of military technology without setting alarm bells ringing in Moscow and in European capitals. For France and Britain, it also provided bridges into European markets that had been largely supplied by the United States since 1945.

The *Jaguar* and *Tornado* fighter aircraft programmes were examples of the collaborative projects launched in this period. But they remained exceptions to the rule. Most military equipment continued to be developed and produced in autonomous national programmes, and in some sectors (e.g. warships and main battle tanks) there

was little or no collaboration. Furthermore, the examples of collaboration that developed were essentially *alliances* of national producers and of national consumers (the ministries of defence). Design and production shares were usually allocated in strict proportion to participants' financial stakes and purchasing requirements. The requirement for a *juste retour* percolated into every area of design and production, limiting efficiency and increasing technological complexity.

The European collaborative projects established in the 1960s and 1970s did not therefore involve a true integration of defence markets. In important respects they were substitutes for integration. They allowed the larger nations in particular to develop and maintain more or less autonomous industries, they strengthened the polynational supply structure, and for the time being they seemed to avoid the need for a trans-European division of labour. If anything, they exacerbated problems of industrial overcapacity in Europe, while their cost advantages were seldom clear-cut.

The 1980s

Until the end of the decade, the 1980s saw no substantial change in the political environment in which decisions on military procurement were made. The Cold War intensified in the late 1970s and early 1980s, and new deployments of nuclear missiles on either side of the Iron Curtain heightened the mood of military confrontation. Although in the second half of the 1980s increasing thought was given to constructing a European `pillar' within NATO, probably based on Western European Union (WEU), NATO remained the pre-eminent instrument of security cooperation in western Europe.

In contrast, major changes occurring in the economic arena had important repercussions for the defence sector, encouraging it to make `concessions' that would bring it closer into line with developments happening in the economic sphere of European cooperation. In particular:

- Revolutionary changes in technology were taking place, particularly in the field of electronics and in the organisation of design and production. Their loci were mainly outside the defence sector. As civil high technology industries expanded, and as the kinds of quality control practised by defence industries spread into the civil sector, military production became an increasingly small and in some contexts even a marginal part of high technology activity.

- A change in economic praxis accompanied the technological revolution. It went furthest in the United States (Reaganomics) and United Kingdom (Thatcherism), but its effects were felt throughout the western economies. Rather then intervening on the supply-side, the establishment of competitive markets, and the lessening of public control over the means of production (amounting to privatisation in some contexts), came to be regarded as the priorities for governments.

- Spurred partly by fears of US and Japanese domination of the new industries, the Single European Act was negotiated in the mid-1980s. It embraced liberal economic practices and aimed to bring about a deeper integration of the West European economies. Moreover, it sought an end to national protection of public markets such as energy and telecommunications, making the status of the defence sector appear

increasingly anomalous, and in any case having indirect effects on defence markets through its impact on companies that operated in both the civil and defence sectors.

- The 1980s had begun with substantial rises in military budgets, and in procurement expenditure in particular. Amid the desire to reduce public expenditure, defence ministries became increasingly preoccupied with bringing costs under tighter control. Furthermore, the new technologies often seemed to exacerbate problems of cost control within the military sector. They tended to increase the complexity of projects, and their inclusion in major systems based largely on high technology gave rise to unexpected design and managerial difficulties (viz. the problems that led to the cancellation of the *Nimrod* early-warning and reconnaissance aircraft in the UK).

These pressures led to three significant changes in the way in which the European defence sector organized its affairs. In the first place, efforts were made to reform procurement practices in Britain and France, and to a lesser extent in other European countries.(6) The most sweeping reforms occurred in Britain, driven by the Thatcher government's liberal economic zeal. The essence of the `Levene reforms' was that prime contractors should bear more of the risks of failure, and that the defence market should wherever possible become more competitive or `commercial'. Although these goals were in some degree contradictory, since firms will instinctively try to kill competition if faced with greater risks, they were pursued with great determination. One consequence was that all large British defence contractors, except those involved in nuclear weapons production, had been returned to the private sector by the end of the decade (and even nuclear activity is now managed by a private firm). In France, defence manufacturing remained largely state-owned, but steps were also taken there to create more distance between government and industry, allowing firms greater freedom of action in return for the acceptance of greater responsibility. Thus the two leading weapon producers in Europe accepted, in their different ways, that relations between the state and the defence industry would have to change.

The second major change was the attempt to open the European armaments market in the second half of the 1980s. The Independent European Programme Group (IEPG) commissioned a report on the defence industry which was published in December 1986 as the Vredeling Report.(7) It highlighted the threat that would be posed to European defence industries by US competition if internal barriers to trade were maintained within Europe, and if there were not greater cooperation in technological development. The `Action Plan on a Stepwise Development of a European Armaments Market' launched in 1988 contained the following main elements:

Opening markets to competition. Obstacles to `border-crossing' competition would be diminished, enabling contracts to be placed `more readily with suppliers in other countries'. Steps would be taken to define the areas of technology which would be opened to competition, and to provide fuller and fairer access to information about tendering opportunities.

Juste retour. In order to `gain the support of the member countries for a border-crossing competition', a `pragmatic and flexible system' of juste retour would be operated so as to ensure fair returns in the long run, which would include the establishment of a recording system for cross-border contracts.

Technology transfer. Where technological development was financed by governments, intellectual property rights would be more widely shared among member countries.

Research and technology. `Besides the border-crossing competition the comprehensive and systematic cooperation in research and technology would be the centre piece for the creation of a European armaments market.' This led to the creation of the EUCLID (European Cooperative Long-term Initiative for Defence) programme of cooperative research in defence technology.

Countries with developing defence industries (DDI). Special assistance and protection would be given to Greece, Portugal and Turkey. In effect, their industries would be accorded infant-industry status.

Again, Britain and France were the main protagonists (amongst other countries, Holland most actively promoted the Action Plan), although there was a marked difference in the emphases they placed on the measures outlined above. The British government stressed the importance of trans-European competition (partly to justify industrial concentration at home), and the French government the importance of cooperation in technological development. Both hoped that the Action Plan would enable their industries to extend their influence across the European market and beyond, and to keep abreast of technological developments in the United States and USSR.

The third major change occurred in the structure of the defence industry, and particularly in its electronics and aerospace sectors (in some sectors, such as main battle tanks, there was little structural movement). Structural shifts occurred both within and across sectors. Particularly in the electronics sector, second-tier firms found themselves increasingly disadvantaged and several were swallowed by larger producers or vacated the market. And as electronic hardware and software increasingly became the core technology in weapons systems, aerospace firms tried to extend their command over electronics technologies, while electronics firms, including some operating primarily in civil sectors, tried to gain entry to market segments formerly dominated by aerospace and other platform suppliers (missiles and shipborne communications systems being examples). In addition, electronics and aerospace firms were undergoing major structural changes due to developments in civil markets, the most significant being the pressure to extend activities across Europe in response to Japanese competition and the Single European Act.

As East-West relations improved and export markets declined after the Iran-Iraq war, the leading defence firms also had to adjust to diminishing markets at home and abroad. For all these reasons, there followed a wave of reorganisation in the defence industry. The main trend was towards concentration behind national boundaries. Thus the mid-1980s and late-1980s saw in Germany the absorption by Daimler-Benz of Dornier, MBB and defence-related parts of AEG; in Britain, the acquisition of Royal Ordnance and a string of smaller companies by British Aerospace, and GEC's purchase of Ferranti; and in France, the fusing of Thomson-CSF's and Aérospatiale's avionics divisions. Slightly later in Italy, Selenia and Aeritalia merged to form Alenia,[8] FFV Ordnance and Bofors joined forces in Sweden, and in June 1992, Spain's leading public sector electronics firm, INISEL was merged with the private

sector CESELSA. But there was also action across national boundaries. For example, GEC and Daimler-Benz acquired share-holdings in Matra, Siemens and GEC divided up Plessey's defence assets, and Thomson-CSF and GIAT purchased or gained shares in defence firms in various European countries.

During the 1980s, therefore, two important thresholds were crossed. One involved a retreat, albeit limited, from national protection of defence markets within Europe, and the first attempt to develop a common approach to defence R&D. The second involved the breaching, again limited, of the sanctity of national ownership. Perhaps most significantly, joint European companies began to take shape, usually binding together divisions of the large conglomerates (e.g. Matra-Marconi Espace, Eurocopter). They were accompanied by attempts to rationalise the design and production of specific military products across company and European boundaries. We shall return to these developments below. They appeared to mark the first hesitant steps towards a real integration of defence manufacturing within Europe.

Apart from these industrial developments, the changes that occurred in the defence sector in the late 1980s were not dramatic. In many respects it was `business as usual'. National markets still remained heavily protected, budgets seemed relatively stable, and decisions on military purchasing were still based on Cold War thinking, despite the rapprochement between East and West after Gorbachev's accession to power. Five other points can be made about the moves made in this period to establish a European armament market.

First, behind the rhetoric about the armaments market lay the idea that the internationalisation of R&D and production in this sector would largely take the form of *Europeanisation*. Preference would be given to intra-European linkages. However, this could not disguise the fact that a growing proportion of materials and components were being drawn from non-European sources, including US and Japanese multinationals which were locating production in Europe. Moreover, by their actions, European defence firms indicated that they would develop relations with producers in other parts of the world when that served their commercial purposes. Particularly in the mid-1980s, several firms (including French firms) had made strenuous efforts to increase their positions in the US defence market, resulting in a string of company purchases and joint ventures. Had they not been confronted by increasing protection of US assets and markets by the Pentagon, they might have been less willing to give their backing to European initiatives.

Second, the IEPG was given no teeth. It had no legal basis such as that which the Single European Act provided for the European Community, and was thus not binding on IEPG member countries. With no equivalent of the European Commission to support it, responsibility for the Action Plan's execution remained in the hands of national defence ministries, which retained complete discretion. This was deliberate; governments were still not prepared to cede control over procurement decisions, and some were eager to ensure that Article 223 of the Treaty of Rome, which provided the legal grounds for protection, was not abandoned or amended. The Action Plan looked forward to a partial, gradual, negotiated liberalization of the armaments market. Although their economic objectives may have been similar, the Single European Act and the IEPG Action Plan were different in kind.

Third, the Action Plan's architects implicitly proposed that countries would gain balanced access to one another's markets (they were careful not to make it too explicit) through the practice of juste retour. The key word here is `balanced'. The French would gain a share of the British market, the British of the French, the Italian of the Spanish, and so on--reciprocal moves that would maintain the *status quo* in terms of the broad distribution of defence capabilities, or would at least ensure that change occurred at a sufficiently slow pace to avoid political upset. The balanced access to markets went hand in hand with a balanced integration of industries, at least among the leading players. By the end of the 1980s, the principal defence contractors in Britain, France and Germany (notably GEC and British Aerospace in the UK, Thomson-CSF, Aérospatiale and Matra in France, and Daimler-Benz in Germany) had begun to engineer a set of triangular arrangements which seemed to offer stability to the new situation. Concerns that this was leading to the cartelisation of European defence markets appeared to have some justification. As the EC's Competition Directorate had no rights to intercede in defence markets, and the IEPG was powerless to act, governments often found themselves promoting open competition and acceding to the curtailment of competition at one and the same time.

As a result, this would not be a market in which the survival of the fittest would lead to a rapid re-division of the market based on competitive advantage. The increase in competition envisaged in the Action Plan was heavily qualified. Five years after the Action Plan was launched, it is now open to question whether this balanced adjustment can be realised. As we shall see, the `dynamic asymmetry' of the leading players is becoming more pronounced, and more difficult for governments to contend with, in a declining market. Ironically, if cost reduction is a priority, this could accelerate moves towards *real* market integration as the prospects for a negotiated integration diminish.

Fourth, the Action Plan was made possible by desires in London and Paris to strengthen the Anglo-French axis in European defence cooperation. This had both political and industrial roots. There was concern in both capitals that US troop reductions would weaken European defences (this was before the Berlin wall came down), so that greater military cooperation would soon be required, possibly extending to nuclear as well as conventional forces. France was also particularly concerned about the difficulty of forming collaborative ties with a then resurgent German industry. There were fears, justified or unjustified, that Germany was trying to gain ascendancy in civil and military aerospace markets. Hence the negotiation of the Anglo-French Reciprocal Purchasing Initiative which was concluded in 1987 and thus preceded the Action Plan.

Fifth, while seeking greater cooperation in Europe, governments--and especially the British and French governments--were competing hard to secure export orders for their industries. One reason for the fall in French and Italian export orders in the second half of the 1980s was the aggressive push by the British defence industry, encouraged by the British government, into Middle Eastern and East Asian export markets. There was little constraint, and little effort to develop a common defence export policy.

Post-1989

During the 1980s, changes thus occurred in the structure of the European defence industry, and in the handling of its transactions with governments at national and European levels. But the broad political and security frameworks remained the same: the threat came from the East, taking the form of a sudden massed invasion with conventional and nuclear weapons; and it was a threat that could only be countered by a heavily armed transatlantic alliance, with its members taking on specific, well-rehearsed roles. Although military strategies and force structures were certainly not fixed in their tracks, the final `market' for defence products still seemed quite stable. No great changes were foreseen in the levels and patterns of demand for military equipment, at least within NATO markets (Third World markets were much more volatile).

With hindsight we can now see how mistaken this was. The security situation was profoundly altered by the collapse of the Soviet empire, the unification of Germany, the Gulf War, civil wars in Yugoslavia and around the old Soviet periphery, the growing tensions in East Asia--in short by the demise of the postwar international order. For a brief period the trend towards deeper integration in the European Community proclaimed in the Maastricht treaty seemed immune to these upheavals. That also turned out to be an illusion.

The early 1990s therefore brought a downward pressure on defence budgets in all European countries. The expectation quickly took hold that security could be achieved at much lower levels of armaments, and that military spending by the end of the century could fall to as low as one-half the levels pertaining during the Cold War. The calls to reduce military spending were accentuated by other demands on public resources, resulting in particular from the unification of Germany, the costs of meeting growing unemployment in the Community, and unrequited demands for expenditure on health care and other social objectives.

At the same time, governments were suddenly forced to rethink their military policies, and indeed to reconsider their whole approach to international security. A huge agenda opened up in each European country, embracing the future scale and structure of armed forces, their roles inside and outside Europe, the function and make-up of international alliances and, for Britain and France, the future of the nuclear deterrent. Nowhere was the problem of adjustment so acute as in Germany. The German government and political parties had to contend with unifying the FRG's and DDR's armed forces, managing the withdrawal of Soviet troops from the former East Germany, and beginning the difficult task of re-defining the Bundeswehr's objectives and responsibilities. Two tough political issues loomed: the future of conscription; and the involvement of the Bundeswehr in military operations outside the NATO area, possibly entailing the amendment of the *Grundgesetz* (Basic Law).

Three observations can be made about the broad political changes that occurred in the early 1990s. First, the political settlements underpinning European defence policies were having to be thoroughly recast for the first time since the 1950s. In many respects, the tasks facing governments in the 1990s seemed even more daunting than in the earlier period. The international situation looked increasingly unstable and unpredictable, the United States could no longer take the lead in sorting out Europe's

problems, and it was difficult to know how to address conflicts erupting in the Balkans, let alone the upheavals that might lie round the corner in the former Soviet territories and in other parts of the world. While it was anticipated that threats (or `risks' in the new language of defence ministries) could be countered with lower levels of military force than in previous decades, the great variety of possible forms those threats might take implied that a wide range of capabilities would have to be maintained.

This posed an organisational conundrum: how, with reduced budgets, to maintain a spread of military forces without so diluting each capability that it became ineffective? An obvious solution was to encourage specialisation so that individual European countries could focus resources in specific areas--resources which could then be pooled as military demands required. By and large, this did not happen. Despite the strengthening of WEU and its new role set out in the Maastricht treaty, the transformation of the Franco-German Brigade into a full Corps, and other initiatives at the European level, military reorganisation was handled largely in national terms, without significant attempts being made to coordinate changes in force structures. The reasons were understandable. Political and security integration had not proceeded nearly far enough to allow governments to fashion a common approach, at least in the short time in which they felt required to act. Furthermore, the setbacks to the Maastricht treaty, the teething troubles facing the WEU, and uncertainties over the part Germany might play in military operations outside NATO, stood in the way of joint action. The implication was that, without a concerted move towards specialisation in military force structures, and hence in requirements for matériel, it would remain difficult to make a breakthrough at the industrial level.

Secondly, the priority given to military procurement on national and European agendas fell as governments wrestled with these larger political issues, except where pre-determined timetables required decisions to be made on specific projects (the *European Fighter Aircraft* being the notable example). Procurement budgets were also squeezed as governments gave manpower priority over equipment and tried to soften the political and social impact of troop reductions. The numbers of weapons due to be purchased were reduced in the case of many types of weapon, and few orders for new equipment were placed. The prospects for opening markets to greater international competition seemed to deteriorate as a result. The pressure on governments to protect jobs in an increasingly beleaguered industry became more intense.

Thirdly, the effects of the changes in defence markets on national economies, regions and firms were very uneven. Among West European countries, Britain and France had the largest defence industries, which were also important earners of foreign revenue. Unless their industrial economies could be diversified quickly, they would suffer substantial losses of productive capacity and rises in unemployment. This is indeed what happened.[(9)] The ability of firms to handle the changes varied with their reliance on defence markets. Moreover, while there has been much talk of `defence conversion', this has not in general been an option strongly favoured by European defence firms. They have mainly followed the path of rationalisation through down-sizing or diversification through acquisitions, rather than through conversion or organic diversification.[(10)] (The alternative strategies for lessening dependence on defence markets will not be discussed further in this paper.)

What is important to note, however, is that while military production forms a secondary activity for all but a few European defence contractors, their vulnerability depends particularly on the strength of their civilian businesses. Their differing strengths in this regard were well illustrated by the very different consequences for Britain and Germany that would have followed had the *European Fighter Aircraft* (EFA) project collapsed in 1992. Although the German government was concerned about its budgetary implications, the EFA project would have represented a much smaller part of German than British industrial activity. And although Deutsche Aerospace would have suffered, the future of its huge parent company, Daimler-Benz, would not have been imperilled. This was not the case for British Aerospace, whose corporate demise was widely predicted if the project floundered. This is why the British government and opposition parties all found themselves supporting the EFA project, in some respects against their better judgement. Besides the industrial consequences, the collapse of Britain's largest high technology company would have been a political disaster for the government.

In contrast to Germany and other West European countries, the British and French industrial economies were thus deeply affected by the downturn in defence markets, which depressed activity and threatened to destabilise some leading high technology companies. While Britain and France might benefit in the longer term from a shift of resources into civilian markets, in the short term it exposed the vulnerability of firms which had been propped up by military purchasing and whose position in the international league-table of civilian producers had worsened. More fundamentally, it threatened to upset further the balance of industrial power among Europe's largest nations, a balance that had partly been maintained, in perception if not in reality, by Britain's and France's high profile in defence markets.

STRUCTURAL FACTORS AFFECTING PROSPECTS FOR INDUSTRIAL INTEGRATION

Besides the political and economic pressures which have encouraged both the integration and continuing separation of defence industries in Europe, actions are constrained by important structural factors. Two will be emphasised here: disparities in the size and scope of national defence sectors, and disparities in relations between government and industry across Europe.

Disparities in scale and scope between countries

It is easy to slip into the habit of speaking about `a European defence industry', although no such entity exists at present. We have used it here as a term of convenience while being aware that the defence industries still differ enormously across Europe (see Table 1), reflecting the sizes of countries, their position in the postwar international order, and their distinctive industrial skills. Moreover, the most visible structural changes within this European industry have principally involved firms in the four nations with the largest defence expenditures (France, Germany, Italy and the UK). The effects on the smaller countries have often been to disadvantage them. However, the roles of the latter should not be understated, not least because their consent is required before a common European armaments market can be established. If the choice facing the smaller countries is *either* to buy European defence equipment that is more expensive than similar equipment which they could buy from the United States, *or* to sacrifice their own industries, jobs and capabilities on the altar of some supposedly greater European good, then their compliance cannot be taken for granted, even at the price of weakening Europe's overall capability.

Despite the increasing trend towards international collaboration in recent years, the defence industries of Europe still bear strong national imprints. Grouped by country, they fall into five broad categories (yet more categories would be required if Eastern European countries were included):

- *Countries with nearly comprehensive, largely autonomous defence capabilities, including nuclear weapons capabilities* (Britain and France). This shows up in the continuing high commitment of resources to defence R&D. The main difference has been that Britain has accepted dependence on US technology in some areas (e.g. ballistic missiles) in order to limit expenditure, whereas France has tried to achieve economies of scale through a strategy of maximising exports (although Britain followed the same approach in the 1980s). France spends less on conventional weapons than Britain, and is now making a marked shift in spending from nuclear to space.

- *Countries with large but incomplete defence manufacturing capabilities, and with quite high but diminishing dependence on imports of American technology and equipment* (Germany and Italy, with Spain aspiring to join this group). Although not involved in nuclear weapon technology, Germany and Italy have gradually caught up with, and in some areas surpassed, Britain and France across a wide range of technology and have become major exporters in their own rights. Due to political

constraints on exporting outside NATO, Germany has also placed emphasis on foreign investment and licensing (e.g. in Argentina, Brazil and Turkey) and on trading as a partner in international collaborative projects (e.g. sales of *Tornado* aircraft to Saudi Arabia, and MTU diesel engines in French *Leclerc* tanks for export to the UAE[11]). Spain, meanwhile, has followed a strategy of collaboration as a means of building technological strength. Molas-Gallart argues that this strategy explains the heavy Spanish investment in EFA, which alone absorbed over a third of planned Spanish investment in military R&D for 1990-92.[12] Indeed, he contends that Spain has seen EFA more as a vehicle for acquisition of skills and know-how than in terms of production economies. Spain is also reported to have set a target for national production of 75-80% of all acquisitions by the year 2000.[13] Hence, while a supporter of a European market, Spain also considers that a period of transition is needed for the adaptation and internationalisation of its predominantly state-owned defence industry.

- *Small countries with sophisticated but highly specialised defence industries, and which import or manufacture under licence the bulk of their defence equipment* (Belgium, Denmark, the Netherlands, Norway and Switzerland). Although their defence industries are small,[14] they have been significant producers in niche markets: for instance, Belgium in small arms, the Netherlands in naval communications, Switzerland in artillery, and Norway in anti-ship missiles. Outside their areas of specialisation, they have operated relatively open markets and have tended to purchase more from the United States than from other European countries (tanks, where Germany has been the preferred supplier, being the main exception). In the case of Belgium, there has been a loss of political interest in maintaining national ownership of the defence sector, which is now largely French owned. The Netherlands went through a phase of opening its defence industry to foreign competition and ownership. One of the jewels in its defence industrial crown, Hollandse Signaalapparaten (HSA), was sold by Philips to Thomson-CSF in 1990. With a defence industry turnover about one-twelfth that of France, the Netherlands depends heavily on imports. This trend will continue under a new procurement policy announced in late 1992, the effect of which will be to concentrate Dutch resources even more strongly on a limited range of capabilities, including ships, naval combat systems, command, control and communications (C3), and simulator technology. The new armaments director, J. Fledderus, has said that naval sensors, weapons and command systems now far exceed in value the cost of the hull itself. He points to HSA as one of the few Dutch firms with a full R&D capability in this area, and has said that `maintaining this centre of excellence' is of `strategic importance' (with no mention made of the firm's ownership). The general argument is that it is necessary to maintain Dutch strength in some niche areas in order to have sufficient bargaining power within the European armaments framework, which would henceforth form the basis of Dutch procurement.[15]

- *Countries with weak industrial infrastructures* (Greece, Portugal, Turkey). These countries have tried to acquire defence industrial capabilities, both to gain greater independence and to encourage wider appreciation of the possibilities offered by high technology. They nevertheless remain highly dependent on foreign technology, and especially on US technology. Greece and Turkey are also major importers, and have large *per capita* military commitments.

- *Sweden, which has been sui generis*. With a defence industry about one-fifth the size of the French, Sweden has attempted to retain autonomy in the design and manufacture of main weapons systems through a policy of imitation and exploitation of foreign technology (including imports of components and sub-systems, and operation of a sophisticated `technology intelligence system'). It has also done this with an entirely Swedish-owned industry, half of which has been in state hands. In the past few years, Sweden has, however, taken steps to internationalise its approach to the acquisition of military technology, especially by looking for opportunities to engage in European collaborative projects or acquisitions. Thus Ericsson, by holding a majority share in the Italian FIAR, was able to enter the EFA radar programme via the Ferranti consortium. Sweden's main defence group, the state-owned Celsius (which also owns Bofors), is also being privatised, and this may open the way to foreign partners for the first time. The question of Swedish membership of the IEPG (even though it is not a member of either NATO or WEU) has also been raised.(16) It is thus possible that, as Sweden becomes more closely involved in European defence policy and industrial networks, its choices over where to place its industrial weight might affect the balance among the existing networks.

In 1988, as today, the first of the above categories of countries accounted for close to 60 per cent of military production, and the second category for a further 30 per cent. Thus Britain and France have exceptional weight in the European industry, while trading little with each other or with the other members of the Community, except within the framework of collaborative projects.(17) Their supply patterns are in some respects extremely anachronistic. In contrast to the intense European inter-trading that has developed in civil markets, they more closely resemble the old imperial practice of trading in areas of influence. At the other end of the spectrum, the smaller European countries, and the countries with weak industrial infrastructures, find themselves doubly disadvantaged by the small size of their domestic markets and by the barriers to trade with the larger countries. The strategy of building large, specialized companies (like Philips, ASEA-Brown Boveri, or Volvo) with stakes in many civil markets inside and outside Europe, which have given them the economies of scale required to compete with companies rooted in the larger economies, has not been open to them in the defence sector. The preponderance of military output in the smaller European countries is also in the `older' sectors of munitions, land vehicles and shipbuilding. Aerospace and electronics are largely the preserves of Britain, France, Germany and Italy, although the Netherlands is strong in naval electronics and systems, and Sweden in electronics.

Disparities in state-industry relations

The other respect in which countries differ is in their organisational `styles', particularly with regard to the ways in which state-industry relations are conducted. The extent of public ownership, conceptions of industrial policy, the prevalence of fixed-price or cost-plus contracts, the differing social and educational background of decision-makers, the amount of traffic through the `revolving door' (the recruiting of former civilian or military defence ministry employees by industry)--all are indicative of the range of bureaucratic cultures that have evolved in European countries over decades and even centuries. France and Britain provide the two poles, the one with its interweaving of industry and state, the other trying, if not always succeeding, to maintain a distance between them.

The closest links between state and industry, and the most powerful armaments agency, are found in France. The Délégation Générale pour l'Armement (DGA) is one of the strongest elements within the French state, the pivot, as Chesnais and Serfati argue, of the defence procurement process, with the decisive voice in its affairs being that of the Ingénieurs de l'Armement.(18) The claim is sometimes heard that the DGA has excessive power. Kolodziej, for example, suggests that the corps of armaments engineers `competes as an equal' with the military chiefs,(19) although as Hébert puts it,

`the DGA's `excessive' powers stand in sharp contrast to the inadequacy of debate . . . by the nation and its elected representatives on questions of defence and armaments.'(20)

Likewise, `Jean d'Albion' (a former senior official writing under a pseudonym), while arguing for a redistribution of power such that the `Chief of Defence Staff has real powers of arbitration between the armed forces and [equipment] programmes', so that `he can lay down operational priorities and carry weight *vis-à-vis* the Délégué général pour l'Armement',(21) also recognises that

`the area under the DGA's supervision is without doubt the only one in which a state industrial policy has yielded positive results; the high quality and reliability of the corps of armaments engineers, but also the permanence of defence policy, explains this phenomenon in the face of the inconsistency of policy changes at the Ministry of Industry.'(22)

As that quotation suggests, the DGA's influence also arises from its considerable industrial responsibilities, first for the supervision of nationalized defence companies (such as Aérospatiale and Thomson-CSF), which constitute the major part of the defence sector in France, and second for substantial production facilities which it manages directly. Notable among these until recently was the tank and armaments manufacturing group GIAT (Groupement Industriel des Armements Terrestres), which was `privatised' into a public company in 1990. Still run by the DGA are naval construction facilities, though there are signs that consideration is being given to placing these on the same footing as GIAT.(23) Overall, only about 40 per cent of armaments workers are in private firms. These industrial responsibilities give the DGA considerable influence over the structure of the French defence industry. An important part of France's technological capability thus comes under its sway.

In Britain, procurement responsibility is concentrated in the Procurement Executive of the Ministry of Defence. However, this body lacks the centralised authority of the DGA. There is no professional corps of armaments engineers, but rather a rotating stream of technical and generalist civilian officials and military officers. A key role in setting requirements is played by the Defence Staff, as distinct from the Procurement Executive: they are the customer in a very real sense. And although there is a `revolving door' out into industry, relations between the Ministry and industry, especially since the introduction of the Levene reforms in the mid-1980s, have become less comfortable than hitherto. In addition, the industry is now mainly in private hands. In contrast to France, there is also no equivalent to a state-owned bank like Crédit Lyonnais wielding influence as a major shareholder even in private firms.

This said, the tradition of state support for the defence sector is an ancient one, and it could as readily be said of the UK as of France that the most constant element in the whole field of industrial and technology policy for many decades has lain in that support.

In the other European countries, procurement policy lies somewhere between these two. Denmark and the Netherlands tend towards the British tradition. The Mediterranean countries tend towards the French tradition. Thus, in Italy, the state sector dominates the industry, and the state (and political party) links to firms have been strong, though changes are likely as party structures are reformed and the state grapples with the defence industries' large debts and losses. On the other hand, Italy does not have a strong procurement agency; instead, matters lie more in the hands of the individual armed services. In between lie Belgium and Germany. The latter, as the third largest defence industrial power in Europe, nevertheless differs not only from France in having no professional corps of armaments engineers, but also from Britain in the low-key, almost apologetic, air that surrounds defence procurement in Bonn--a legacy of history. At the same time, the German defence industry, while private, is more highly concentrated than in France or the UK, with DASA accounting for 40-50% of defence contracts.(24) Moreover, while there is less scope for a defence industrial policy within a liberal economy, a French observer has noted what he calls a `secret circle', the Rüstungsmitschaftlicher Arbeitskreis (Rü-AK), a private body which periodically brings together senior officials from the defence ministry and the chief executives of the major arms firms.(25) The industry has rarely acted without government consent.

Governments are therefore confronted with two fundamental issues which affect their abilities to agree on how European defence markets should be regulated, and on how procurement policies should be put into effect. The first is distributional: the effects of market arrangements on the distribution of capabilities within the industrial `core' (Britain, France, Germany and Italy), between the `core' and the `periphery' (the smaller European producers), and between Europe as a whole and the United States (and Japan?). The designers of the IEPG Action Plan hoped that the distributional effects within the core would be politically neutral due to the `balanced integration' alluded to above, and that those between core and periphery would be overcome by incorporating rights of *juste retour*. Theyhad little idea how to handle the relationship with the United States. In each respect, however, the asymmetries seem to have become more marked since the Action Plan was launched. The British defence industry seems more vulnerable to recession than its French and German counterparts, not only because of government policy but also, in contrast to German private sector firms, because the fact that its shareholders are widely distributed makes companies more susceptible to takeovers. The smaller countries, meanwhile, are struggling to help their industries avoid becoming too small to survive, while the United States's technological capabilities and market power seem more formidable than ever, even without President Clinton's promises of support for American industry.

The second obstacle is the clash of bureaucratic traditions and interests. Conflicts have been avoided in the past partly because states have been pragmatic, and partly because they have `agreed to differ' on the fundamentals. Hence, their sovereignty over decision-making in this area, and thus the sanctity of their institutional traditions,

has been upheld. Matters may become more complicated if pressures mount to unify procurement and industrial policies.

It should be noted that in the civilian context, the Single European Act of 1986 required a decision in each capital that these distributional and bureaucratic disparities would no longer be allowed to hold sway over economic relationships. By outlawing tariffs, preferential purchasing, and national standards, the allocation of resources would henceforth be influenced primarily by competitive advantage. By concentrating regulatory authority in Brussels, the relevance of national traditions was diminished, albeit with transitional arrangements.

MODELS OF INDUSTRIAL INTEGRATION IN EUROPE

The efforts made in the second half of the 1980s to establish a European armaments market have established a framework (the IEPG Action Plan) for intergovernmental cooperation , and many firms have acted to strengthen their positions across the European market. But progress towards an open market has been slow. Perhaps this should not surprise us. Besides the difficulties of overcoming habits that have developed over generations, the long lead-times (the time from the statement of a military requirement to the entry into service of an equipment) of military equipment programmes mean that considerable inertia is built into the system. changing such a system is a 20- or 30-year process. Initially, governments and firms are always operating on the margin: new projects and procurement procedures can only affect a small proportion of work in progress.

This said, industrial strategies can be given a powerful steer by R&D programmes, and by perceptions of how markets will develop and how governments will manage transactions. One of the main difficulties today is that so few major development programmes are being launched, and so little new equipment is being ordered. In such a flat market it is hard to facilitate change beyond the rather destructive cost-cutting that firms and governments find themselves undertaking. But while governments can procrastinate, companies are under pressure from shareholders and financiers to act promptly.

The objective of all European governments is nevertheless to maintain efficient, technologically dynamic, defence industries which are able to produce equipment that defence ministries wish to buy. But how can this be achieved now that markets have shrunk and the technological challenge appears to have increased? Carrying on as before may be the easy option, but there is a risk that it will lead to higher costs, narrower choices, reliance on second-best equipment, and increased dependence on US technology (and possibly on Japanese and other East Asian technology in the longer term).

How might industrial structures evolve? A great variety of organizational forms are found in the European defence industry. Specific approaches depend, among other things, on the industrial sector, the product's complexity and political sensitivity, and the history of corporate and state-industry relations in the area in question.[(26)] Over the past thirty years, two trends have nevertheless been apparent:

- a strong trend from national autarky to the *poly-national* structures underpinning *collaborative*projects;

- a weaker trend involving *integrated trans-national* joint ventures and firms.

In the former case, national identity is still strongly maintained at both governmental and corporate levels. In the latter, the straightforward identification of firms with states begins to break down in a way that is already familiar in the commercial sector, but which is still novel in the defence sector.

At present there remain some areas of defence autarky, but they are diminishing. Where they exist, as in tanks and (for France) fighter aircraft, there are indications that they will be superseded when the next generation of technology is developed.(27) The main question, therefore, is whether the trend from polynational to trans-national supply structures will continue and even intensify, or whether it will lose impetus in the face of national and regional obstructions.

Before considering approaches involving international cooperation, we should briefly consider the antithesis--the situation where suppliers can control markets without recourse to cooperation.

Cooperation versus market dominance

It is important to recall why firms cooperate, rather than seeking to establish dominance on their own terms in international markets. There are two main impulses. Firms wish to share risks and costs, and they wish to gain access to `complementary assets' held by competitors which are out of reach or too costly to acquire.(28) In the defence sector, the complementary assets that firms most desire are technological expertise, employment in the purchasing country, and `insider knowledge'. The first expands the range of expertise that can be brought to the market; by engaging local resources, the second reduces political resistance to purchasing from abroad; and the third provides contacts in government and the armed forces, and thus increases the chances of selling goods to national bureaucracies with their distinctive habits and predilections.

Pressures to combine technological expertise have undoubtedly increased with the difficulty and cost of maintaining technological excellence in all areas involved in the development of modern technology systems. Advances in communications and in design techniques have also reduced transaction costs for firms engaging in cooperative ventures. However, this is by no means the only, or even the primary, factor leading to the expansion of inter-firm cooperation in the defence sector.

The need to engage the second and third types of assets--local employment and insider knowledge--depends on the degree of technological advantage held by the firm, and on the strength of protective barriers. There are few areas in which firms in any one European country have such a clear competitive advantage that they can surmount the entry barriers into other European countries, let alone the United States, without engaging in cooperation. Most such examples are found at the component and sub-system levels (e.g. flight control computers and diesel engines) where there is less political sensitivity to dependence on foreign suppliers, and where technologies are often dual-use and less amenable to national protection. The only example that comes to mind of a large system producer thoroughly dominating its niche internationally, and it is not European, is Boeing with its AWACS.

The irony should not escape us. Cooperation is partly driven by protection. To be more specific, *industrial* cooperation is in part a reaction to the shallowness of *political* cooperation. That is to say, a truly open defence equipment market would require sufficient political integration to enable defence equipment to be treated like any other tradeable commodity.

Such a development might well lead to a reduction of industrial cooperation as individual suppliers, no longer needing to compromise to gain access to markets, tried to establish their supremacy. If the goal is integration, governments should in some contexts even be trying to create the conditions in which industrial cooperation is no longer necessary. Although considerable cooperation would still occur for financial and technological reasons, a competitive European market would also entail specialisation, product differentiation and inter-trading. At the same time, *extra*-European cooperation might be sought more by European firms if the US market, among others, remained protected while Europe's was opened up. Conversely, if Europe's market were opened only to internal competition, while maintaining barriers to outsiders, then we could imagine US firms seeking entry via transatlantic partnerships.

Advances in design and production technologies

Attempts by governments in recent years to reduce equipment costs have tended to focus on reforming procurement policies and on nurturing cross-border arrangements. There has been a tendency to forget the lesson from history that the most significant long-term changes in cost structures come firstly from advances in design and production processes, and from the organisational innovations associated with them, rather than from adjustments to the relations among leading producers; and secondly from military technology's interaction within the high technology system in general.(29)

In both regards, fundamental changes have been taking place. Due to developments in information technology, a new manufacturing `paradigm' has been taking shape. Various fashionable phrases have been used to describe it, including `flexible manufacturing', `just-in-time manufacturing', and most recently `lean production'. Essential features are the integration of design and production processes, their increased flexibility, and the minimization of buffer stocks. Where applied effectively, they result in sharp reductions in costs and lead-times, and greater ability to match products to specific consumer requirements without sacrificing economies of scale.

The techniques have been pioneered, especially in Japan, in mass production industries like automobiles and consumer electronics. They are now being applied across a wider range of industries. Unfortunately, studies have not been carried out to ascertain how extensively they are being used in defence industries. While there is evidence of substantial productivity gains in recent years as companies have sought to reduce costs, the impression is that these gains have come mainly from shedding under-employed labour. The more radical transformation in production processes has yet to occur on a significant scale in this industry.

It is interesting to note that the US Air Force has recently asked the team directing the International Motor Vehicle Program at the Massachusetts Institute of Technology, which has led the way in studies of `lean production' techniques, to extend its inquiries to the aerospace industry (it has been christened the Lean Aircraft Initiative!). Worried as always by the spiralling costs of aircraft design and production, the US Air Force has come to believe that one of the solutions may be to

persuade the defence industry to adopt the new techniques. It hopes that this approach will allow some of the most intractable problems that have dogged equipment purchasers to be addressed, including long lead-times, design inefficiencies and inflexibilities, and the difficulties of managing relations between prime contractors and their legions of suppliers.

The second context in which change has been occurring has been the relationship between civil and military technological activity.[30] With military R&D and production making up a smaller and smaller part of high technology activity, technological performance is coming to depend increasingly on firms' success in managing the interface between civil and military technology. They have to become more adept at assimilating civil hardware and software into military equipment, at organising R&D programmes around dual-use technologies, at learning to apply the design and production techniques discussed above, and at transmitting knowledge and expertise across the civil-military divide.

Some argue that the United States and Europe may soon be taught a lesson by Japan on how to manage the civil-military relationship. Friedman and Samuels have written of the thorough `inter-diffusion' of civilian and military technologies that is being achieved in Japanese firms:

`The result is a cadre of multi-functional design and manufacturing specialists who understand their application area comprehensively and who are expected to systematically diffuse their accomplishments company-wide....In the United States prime contractor defense production is something to protect, isolate and classify within the firm. Defense designers only design; process engineers focus only on production. But in Japan, defense production is like any other resource for advanced basic and process technologies within a firm from which technological wisdom is mined and integrated within the firm.'[31]

In all but the final assembly stage, little distinction is thus made between civil and military activities within firms in Japan. This approach has not been developed in response to the special problems of managing the civil-military interface, but has grown out of the Japanese commitment to disseminate technology as broadly as possible. As Friedman and Samuels point out, this commitment remains a central feature of the Japanese `ideology' of economic development.

In our view, too little attention has been given to these issues affecting the techniques and organization of defence R&D and production. There has been insufficient incentive for firms to modernise their design and production processes, and for governments and firms to redraw the boundaries between civil and military activities. Policy-makers need to ensure that Europeanisation is not being pursued merely in order to evade essential reforms. Securing orders through collaboration may seem less risky and painful than confronting entrenched practices.

Concerns are also being expressed that Japan is pushing up `from below' into systems design and manufacture. Its commanding position in component, material and other constituent technologies may give it a long-term advantage, particularly as those technologies become increasingly `systematized' (e.g. with ever more complex functions being incorporated on single semiconductor chips). If this is the case,

Europe's relatively weak presence in these areas of technology could end up sapping its systems capabilities.

Europe therefore has to be alive to the possibility that other countries, now including Japan, may make rapid progress in these respects, creating both productivity and technology gaps. This is one reason why European suppliers have to be open to new ideas from external sources, given that Europe seems unlikely to be in the vanguard of new developments. There is a risk that European best practice could fall behind international standards if collaboration with non-European suppliers is frowned upon.

Traditional European collaboration

Turning now to the forms of cross-boundary activity that have evolved in the European defence sector, collaboration in the form of `arranged marriages' is still the most common organisational approach in Europe, especially where the manufacture of large complex systems is involved. The attraction of collaborative projects is that, once arranged, everyone is kept moderately happy. Risks and costs are shared, the preservation of capabilities, employment and value added are guaranteed in participating countries, some standardisation of equipment across armed forces is achieved, and firms have secure income and a base from which to export. The main feature of such collaboration is that it entails agreement at all levels, from governments down to subcontractors, on the division of the profits. It is an arranged market as well as an arranged combination of productive resources. In most cases, *ad hoc* agencies are also established to implement the agreements. Although not independent from governments or firms, they ensure that a professional cadre of managers, drawn from the participating countries, is able to run projects without undue interference. To a degree, they `de-nationalise' project management.

This said, international collaborative projects of this sort have well-known disadvantages. They are difficult and time-consuming to set up, and inflexible once in place; their products are either a compromise between the partners' requirements, therefore risking being second-best in combat, or are customised by each partner, thus losing many of the benefits of collaboration ; and they are intrinsically monopolistic. Paradoxically, they help preserve national capabilities and institutions. By allowing everyone a role, they discourage rationalisation.

There is another problem. Collaboration is easiest to arrange when one of the partners enjoys a lead over the other(s), or when it has a much larger requirement for the product and thus bears most of the cost. Collaborations in this sense are not equal partnerships. The nearer capabilities and market requirements are to equality, the more difficult it can be to decide the allocation of resources and design leadership, even if collaboration between equals can have more far-reaching consequences if it forces participants to rationalise their activities. This is one reason why large-scale collaboration between Britain and France has been rare, and why collaboration with an increasingly capable and ambitious German defence industry has become more difficult to negotiate. The history of the commitment phase of the *European Fighter Aircraft*, when France decided not to participate, confirms these points well.

Thus there have been two grounds for dissatisfaction with this form of European cooperation. There has been concern that it is inefficient and blocks industrial

rationalisation; and dividing up the share of work when countries have nearly equal technological capabilities has at times stretched the ingenuity of the most skilled negotiators (as the complexities consequent on the 1992 re-negotiation of the EFA project show). The way forward may lie less in abandoning collaboration than in bringing more fluidity to the industrial arrangements associated with it. The key seems to lie in creating greater distance between governments and the projects they are supporting, and in trying to avoid the detailed reckoning of *juste retour* that has afflicted collaboration at every level of activity.

At prime contractor level, allocative arrangements may persist, at least where very large projects are concerned, although they too may become more fluid, depending on how the relationships between the main European defence contractors evolve. But below this level, something more akin to a market could operate in which firms, acting singly or jointly, bid for contracts on their merits, without pressure to cut the cake according to rules laid down in the capitals. For this to happen, governments need to become less involved in the selection process at every level, as has already been happening in some degree as firms are given greater responsibility for deciding who they work with and purchase from. Related to this political principle is an organisational point: lessons from past collaboration also suggest the importance of governments either keeping their distance once the requirement has been set, or defining clearly the conditions under which they retain the right to intervene once projects are under way.

Joint ventures

During the 1980s, joint ventures and other cooperative arrangements became increasingly common in the defence sector, if less common than in the civil sector (Table 2 gives a recent selection). They were not invented in the 1980s, of course: a notable predecessor is Euromissile, a cooperative arrangement involving MBB and Aérospatiale, dating back to 1972, and set up to provide a joint focus for responding to a series of Franco-German collaborative missile programmes.(32) They were driven by the need to exploit technological complementarities in a period of rapid technical change, by financial pressures, and by the desire to gain access to markets hitherto closed to foreign suppliers. Pitale makes a further useful distinction, between cooperative arrangements which involve technology *addition* (where firms contribute technologies in modular fashion to a joint activity, with minimal sharing of the knowledge or capability), and those which involve technology *integration* (where a real sharing of knowledge and capabilities takes place).(33) We shall return to this distinction later.

Whereas governments have been prominent in negotiating the collaborative projects discussed above, in the case of joint ventures it is more usually industrial managers rather than ministries who have taken initiatives, even if government consent is usually required before arrangements can be implemented (and despite, in France, there being evidence of a clear ministerial role in promoting certain domestic joint ventures).(34) Furthermore, it can be seen that managers are taking initiatives at two levels: at corporate level, where firms engage in broad strategic alliances; and at divisional level, where relatively specialised operational units join forces across boundaries, temporarily or permanently, to serve specific defence markets. The consolidation of industrial resources in large conglomerates in the 1980s was

accompanied by some loosening of organisational hierarchies, with firms being allowed greater freedom by governments to negotiate cooperative agreements with other firms, and divisions being allowed by boardrooms to negotiate with divisions in other companies.

In three other respects, these cooperative arrangements have marked new departures. First, they have involved a loosening of ties between governments and national entities. In many areas, governments have found themselves having to deal, individually and collectively, with suppliers that are increasingly organising themselves on a transnational basis. This has resulted in some weakening of the formal practice of *juste retour*. This is not to deny its continuing importance, as is evident in the formation of consortiums which involve production facilities in each of the purchasing countries. But once the primary organisational responsibility is passed to firms, the allocation of production shares is less strictly tied to specific countries' financial commitments than is usually the case.

Second, such arrangements also involve a loosening of ties between prime contractors and *national* sub-contractors and component suppliers. The market for components and sub-systems has always been more international than that for large systems (viz., the extensive foreign content in Sweden's fighter aircraft). But cooperation in system-building has encouraged lower-tier suppliers to go still further in internationalising their activities, even if proximity to prime contractors and defence ministries still counts in their favour, particularly where governments insist on national second-sourcing.

Third, consortiums including US as well as European partners have begun to take shape. The irony is that the more governments give firms the freedom to decide industrial arrangements, the less European the internal market may become at an industrial level. Looking at this question from across the Atlantic, now that US firms are also struggling to survive in a diminishing home market, they have greater incentive than before to internationalise their activities.(35)

Grand corporate alliances?

The 1980s saw a wave of instances of concentration at the national level in the defence sector. In Britain and Germany, the concentration of ownership can in most areas go little further. British Aerospace and GEC-Marconi, and Daimler-Benz, dominate their respective aerospace and electronics markets. The French industry is still relatively fragmented, though the new Dassault-Aérospatiale link may change this. However, with the exception of Matra, it is largely state-owned, and the traditional French administrative practice of allocating monopolies has meant that there is little duplication between the firms (missiles being a notable exception, although even here, as we have seen, rationalisation is now being discussed). In Italy, the creation of Alenia and the absorption of EFIM by Finmeccanica repeated the same pattern. Following the consolidation of national industries, attention has increasingly turned to the cross-frontier relationships between the dominant firms.

There has been speculation that these firms are beginning to form distinctive `clusters'. Steinberg, for example, has written about the three clusters of Deutsche Aerospace and Aérospatiale; GEC, Siemens and Matra; and British Aerospace and

Thomson.[36] We are more sceptical. While some durable alliances have formed at the project and divisional level, there are as yet few signs of formal alliances at the corporate level. Communication between the leaders of these companies, and at various levels in their managerial hierarchies, may have intensified, but this does not imply a fusion of strategies. Indeed, all these firms are engaged in a bewilderingly complex set of entanglements.

Thus, British Aerospace and Dassault have been engaged in talks about future aircraft projects, while British Aerospace and Thomson-CSF failed to complete a planned merger of their missile divisions into a new firm, Eurodynamics. GEC-Marconi and Aérospatiale have reached an agreement on missiles. GEC has another agreement with Dassault on avionics, and has discussed with Thomson-CSF plans for radars for the next generation of fighter aircraft. In addition, plans by the French government to merge the missile activities of Aérospatiale, Thomson-CSF, and Matra Défense, which we have already mentioned, held the potential to lead to subsequent cross-border activity. Matra was also known to be talking to British Aerospace and DASA about the possibility of international convergence. In May 1993 an agreement was announced between Matra and British Aerospace to merge their guided weapons activities into joint company. This prompted press speculation about whether Aérospatiale and DASA might form a separate joint venture, or seek to join the BAe-Matra group, which would create a near monopoly in tactical missiles in Europe, and raise an interesting test case over competition policy.[37]

The point to note is that all these moves (or failures to move in the case of Eurodynamics) cross-cut the simple clusters model. The situation instead resembles the fluid and shifting alliances of the Concert of Europe. Firms will work together where it serves their individual purposes and helps to maintain a `balance of power' within the oligopolistic supply structure. Stable grand alliances at the full corporate level seem less likely.

Developments at divisional level are in some ways the more interesting pointers to the future. Complex, shifting webs of alliances between divisions of firms are evident in many areas of activity. The diversity of defence products, and the uneven distribution of technological capabilities among defence contractors, ensure that different cooperative solutions will often be sought for different projects. Promiscuity is commonplace: firms working together in consortia in one context are competing in another. While this may be an effective mechanism for combining diverse technological capabilities, and for combining resources to increase political and institutional leverage in contests for orders, it is unclear how efficient these joint ventures are in bringing down development and production costs, and in enhancing technological performance. Nor is it clear, to return to Pitale's distinction, how far the alliances involve only technology addition--the exchange of technology modules--which he regards as the characteristic of alliances formed opportunistically in response to an invitation to tender; and how far they involve instead true technology integration via shared development, with its deeper commitment to an enduring partnership.

Nevertheless, there have been signs, at the divisional level, of islands of stability taking shape. Many firms have become accustomed to working together at this level, while still engaging in polyvalent links at the corporate level, and have taken steps to

formalise their relationships. Hence the phenomenon of the `Eurocompany' (some examples are listed in Table 2). Although not independent of their parents, these companies have begun to act as distinctive industrial entities, much as Airbus Industrie has in the civil field. While specialised, they need to encompass a range of products and markets to withstand ups and downs in ordering. Thus the two most notable examples, Eurocopter and Matra-Marconi Espace, have broad product ranges and have positioned themselves to sell into both civil and military markets.(38)

In addition, firms are joining together to mount cooperative R&D programmes, sometimes in advance of specific requirements being decided by governments, and usually supported by a mixture of public and private finance. A good example is the cooperation between GEC-Marconi and Thomson to develop a phased-array radar.

Are these the first real steps towards a true European defence industry--one with no distinctive national affiliations, and in which the location of R&D and production are decided on techno-economic rather than national-political grounds? It is too early to say. The examples given here are still exceptions to the rule, and for every Eurocompany or long-term cooperative agreement that is established, others are aborted or not even attempted. Companies worry in particular about the loss of flexibility that may result from the negotiation of permanent arrangements. Furthermore, these Eurocompanies still seem to be polynational rather than pan-European entities, in the sense that their home markets are the national markets where their parent companies are located, rather than the European market taken as a whole. It remains unclear how far true specialisation in R&D and production is occurring within the new companies, as opposed to a tacit agreement to keep all assets in play as the price to be paid for cooperation. Research has yet to be carried out into these questions.

We should also note that the stability of transnational industrial arrangements ultimately depends on the underlying strength of the constituent companies, taking all their activities into account. We considered earlier the rather different implications that would have arisen for British Aerospace and Deutsche Aerospace if the EFA decision had gone the other way, or if Saudi Arabia had cancelled its order for *Tornado* aircraft. What will happen to Thomson-CSF if its losses in civil electronics cannot be stemmed? The internal stability of the large conglomerates which form the core of the European defence sector, and the stability of their interrelationships, cannot be taken for granted. (Note again how quickly the British Aerospace/Thomson-CSF missile joint venture folded, following lengthy negotiations and after winning the approval of the governments concerned). This stability is contingent in particular upon governments supporting large projects that employ a sufficient proportion of the firms' defence assets, and upon the firms' performance in civilian markets. It also depends upon the degree and nature of firms' `embeddedness'(39) in national networks of governmental and other supporters, notably banks and other financial institutions, trade and other `lobbying' organisations, supplier and customer links, and on patterns of ownership (state versus private; concentrated versus dispersed shareholders). All these features of embeddedness influence the strategic behaviour of firms, affecting their scope to invest for the future, their capacity to ride out rough passages, and their perception of the balance of costs and benefits of different organisational forms. The national environment, in short, remains extremely important.

THE EMERGING POLICY FRAMEWORK

Europe is going through a profound change in security arrangements. No clear new policy framework has yet emerged, but pieces are being put into place and problems that require solutions are coming into sharper focus. This section discusses several aspects of this emerging policy framework.

Rethinking budgets, missions and industrial requirements

Defence spending, and thus spending on defence equipment, is being reduced everywhere. Statistics are unreliable, as one set of cuts overtakes another, but annual reductions of the order of 3-4 per cent are occurring in world defence markets.(40) Although there is considerable variation between countries, the rates of change in Europe seem close to the world average.

The problem is, however, that decisions about equipment requirements, not to mention how to meet those requirements organisationally, are having to take second place to time-consuming and politically sensitive decisions about reorganising armed forces and redefining military strategies and missions. Simultaneously, countries are trying to find a new architecture for European foreign and security policy, a task which would be difficult enough with the existing membership of the principal institutions (NATO, EC, WEU), let alone with the issues raised by the addition of new members of an enlarged `Europe'.

Even if there were a clear and stable foreign and security policy framework, it is not self-evident that governments would be able to agree on which kind of defence industrial structure they would like to see emerging. Differences in industrial policy and in domestic agendas would still have to be overcome. But it is clear that without such a framework, agreement on issues relating to the defence industry will be doubly difficult.

There does not appear to be any clear view, either at national or European levels, of the kind of industrial structure that policy-makers would like to see emerging. In Britain there is a view of the *processes* that should be followed, in terms of competition and seeking value for money, but no apparent vision of which configurations of firms, and in what roles, would be preferred. France is perhaps the nearest to having such a vision, albeit a confused one. We have already given examples of French government-inspired restructuring. In addition, a senior official in the DGA remarked in January 1992 that `we strongly believe that economic considerations should not be allowed to override political and security factors'; and that any drift towards an international division of labour at the main contractor level would be dangerous. `Instead, what is needed is an association of companies by sector', preferably with at least two big groups in each branch of the market, although it would be impossible to meet this criterion at prime contractor level in all sectors.(41)

In the absence of clearer policy objectives, firms are often left free to take their own initiatives, and these are mainly of a `negative' kind: closing factories, sacking people, exiting from the defence sector, or trying to reinforce their position within the sector through new alliances. Not that everyone associated with the defence sector is

necessarily displeased at this state of affairs: some (but certainly not all) stock market analysts consider that these restructured and downsized firms might give higher yields to investors than was previously the case.(42) Nevertheless, from the perspective of firms, the current uncertainties are extremely unsettling. Some speak of the defence sector as being in `free fall'. Others argue that without clearer guidance from governments as to the prospects for the sector, it will be difficult for firms that have freedom of manoeuvre to continue justifying a commitment to the defence sector. All say that the timescale for resolution of these issues is shorter than governments seem to think.

In some contexts, governments are being pressed politically to react to the social distress caused by the decline in the market, and to the destabilising effects on large companies (EFA and British Aerospace again). But the responses are being made case-by-case, without a clear overall policy. Accordingly, the difficult questions of how to meet equipment needs with reduced budgets, and how to respond to new technological opportunities, have still to be addressed adequately.

The regulatory regime

Governments are today caught in a regulatory no-man's land. Faced with all the cross-border activity by defence firms, governments can react today only with domestic instruments, which is not the case in the civil area, where European Community treaties and regulations can offer additional support. In both its former incarnation and in its new position within the WEU (see below), the IEPG has lacked regulatory authority. In the defence sector there are significant `regulatory deficits' regarding competition, industrial and trade policies.

But what does regulation mean in the context of a European arms market, in terms of the internal operation of that market and its relations to the rest of the world? As Henderson has observed, a single regional market can mean two quite different things: either a market with common rules of competition for those inside it, but protected against the rest of the world; or one that is open to global multilateral competition on the same terms throughout the region.(43)

The Single European Act points in the latter direction. It has opened up civil public procurement markets to international competition. However, even here the transition to an open market will take time (some believe that the process will never be `completed'); and in any case, the customers in those markets are either in the private sector or are semi-autonomous public utilities or Postal and Telecommunications Administrations. In contrast, in the field of defence, only governments can be the final customers, so that the problems of eliminating scope for preferential deals are especially difficult.

Three aspects of competition policy are significant here: regulation of industrial structures; ensuring fair play in tendering and contract awards; and control of subsidies. There is, however, a fundamental division of views on the question of whether regulation in these terms at the EC level is appropriate without the prior establishment of a `level playing field' between Europe and the United States. For some, particularly in France, the most urgent issues are the creation of European firms big enough to match the Americans and the agreement to allow reciprocal access by

European and American firms to each other's markets. On this view, intra-European constraints on industrial concentration would threaten the survival of the European industry; and restrictions on subsidies would disadvantage European firms vis-à-vis US firms. Moreover, unless reciprocity in market access were achieved, there should also be a `préférence européenne' in procurement. Thus, Heisbourg foresees that the Americans and the Europeans will `embark on a collision course' as the European institutions begin to harmonise procurement procedures and dual-use technology controls, and more generally aim to build their own arms market.(44) He concludes that conflict may only be averted if the US opens its market to European suppliers. Similarly, Denis Verret, executive vice-president of Thomson-CSF, has argued that there is scope for the EC to intervene more in the defence domain, but in the sense of demonstrating `the ability to recognise the special needs of the European defense industrial base, and the compatibility of those needs with broader European security interests.' He also argued that the EC `must demonstrate the ability to resolve the [military] trade imbalance with the US'.(45)

The opposite view, heard particularly in Germany, argues that a `préférence européenne' would amount to national protectionism and would perpetuate a European market divided on national lines. Those holding this opinion argue that the safeguards afforded to the defence sector by Article 223 of the Treaty of Rome have served their purpose. What is now needed is a defence industrial `Big Bang' to spur the creation of a genuine European market, and the way to do this is by abolishing Article 223. Protagonists of this view also argue that the process of industrial concentration need not be impeded by the application of EC competition policy. In reviewing merger and acquisition proposals, the Commission always considers their effect on competition in the `relevant market'. This could, where appropriate be the global market, and this might justify the creation of a European monopoly.

Others stand between these two poles. Some (as in Spain), insist on transitional support for their domestic industry. Others (as in the UK), favour fully-fledged intra-European competition but, like France, are unwilling to yield their national prerogatives to Brussels through the abolition of Article 223, though they may be open to the suggestion that the scope of the Article be reduced through amendment of the list of products attached to it. Another possibility is that the WEU, which has a legal base, should be given regulatory powers. It could assume some or all of the directives in the Treaty of Rome, which would overcome some of the objections to the European Community gaining a role in the defence area.

Given, in particular, the conservatism of the two largest defence industrial countries in these regards, the odds must be against rapid movement from the *status quo*. The question therefore remains whether, in the absence of a supranational regulatory regime, the temptation to favour national interests will undermine moves towards a genuinely European defence industry.

A buyer's market?

One attraction of competition is that it gives buyers more bargaining power in their relations with suppliers. But the decline in defence spending throughout the West might suggest, prima facie, that the balance between buyers and sellers has in any

case shifted strongly in favour of buyers (governments). In which case, why continue to worry about competition?

The problem is more complex, however. Firms are undoubtedly hungrier for contracts than previously (and European firms fear renewed competition from the United States), but they are also downsizing in response to what they regard as the new volume of demand. Moreover, where there are monopolistic supply structures, it is irrelevant whether it is a buyer's or seller's market. In addition, governments can find themselves trapped into helping companies out of fear of the political consequences of not supporting them--they can be held to ransom by companies' weaknesses rather than their strengths, particularly at a time of general industrial recession. This problem can become more acute as the number of companies in a sector falls, and the symbolism of threatened closure of the remainder grows more powerful, not to mention the possible strategic consequences.

For governments, these political difficulties are partly alleviated by the multinational nature of the industrial teams that now bid for major contracts. The networks of overlapping partnerships can now mean that whichever consortium or joint venture wins the order, the awarding government can be confident that its own national firms will be represented. Indeed, some firms have become adroit at joining several of the consortia bidding for a contract. Thus, in the case of the current competition to supply the UK army with an attack helicopter, the Westland helicopter company was in the, now abandoned, four-nation Light Attack Helicopter project, and has an agreement with McDonnell Douglas to produce its AH-64 *Apache* should this be the eventual choice. The snag is that these cooperative ploys often stand in the way of rationalisation--they serve to maintain the poly-national structures discussed above.

A European arms procurement agency?

The declaration by WEU member states on the occasion of the Maastricht treaty in December 1991 called for a study on strengthening cooperation in the field of armaments, with a view to creating a European Armaments Agency. In March 1992, the IEPG ministers, meeting in Oslo, agreed to analyse the future role of the IEPG in the new European security architecture. At their Petersberg meeting in June 1992, WEU ministers welcomed the Oslo decision. They noted that this decision was in accordance with the objective that they had set themselves in Maastricht, and they proposed that WEU and IEPG experts should prepare a report for consideration.[(46)] In December 1992, in Bonn, the IEPG ministers decided upon the transfer of IEPG functions to WEU. The armaments cooperation forum of the 13 European NATO nations would become the Western European Armaments Group (WEAG), overseen by WEU defence ministers and with National Armaments Directors forming its operational core.

The idea of rationalising European arms procurement through an international agency dedicated to this purpose is also back on the agenda. Questions immediately arise about the membership and institutional auspices of such an agency, and about its terms of reference. These questions are linked to the future of WEAG, in the context of moves towards a European Common Foreign and Security Policy, particularly in the light of the WEU's post-Maastricht bridging role between NATO and the European Union, and consequent changes in its membership. Some countries are

happy to treat these questions as different parts of the same issue. Others see the future of WEAG as distinct from the question of an armaments agency.

At the time of writing, these arrangements are in a state of transition. While the IEPG functions and Panels have been transferred to WEU, the Secretariat is until January in Lisbon. It appears that WEAG continues much as the IEPG did previously in operational and formal decision-making terms. This arrangement has at least one advantage: those IEPG members who are now associate (Norway, Turkey) and observer (Denmark) members of WEU, and so lack full rights on the WEU Council, have votes within WEU on WEAG matters. Discussions over further action are continuing at the level of National Armaments Directors. One of the issues at stake is how to effect a closer linkage to the European Union while at the same time keeping all the NATO allies (whatever their status *vis-à-vis* WEU) fully engaged in armaments cooperation. The most difficult problems arise over Turkey.

Although the machinery remains somewhat inchoate, the character of the discussions that occur within it appears to be changing. The increased role of WEU is drawing in a wider range of national officials. In particular, foreign offices are playing a bigger part, and wider political currents are washing around the shores of armaments cooperation. The old arrangement whereby the IEPG machinery served, in a sense, to insulate defence ministries from these currents, appears to be breaking down, and we can expect that in future armaments cooperation may become linked to larger questions of European foreign and security policy and, indeed, to the future of the European Union itself.

Within this more turbulent context, debate about the specific question of the Armaments Agency has, unsurprisingly, receded a little. There has, in any case, been considerable difficulty in reaching a common view on what precisely the Agency might do. Some argue that the Agency should not duplicate existing national or intergovernmental arrangements, and that it should offer greater efficiency and effectiveness than existing arrangements. Others believe that defence procurement in Europe must be managed in future in a way that is radically different from in the past, and that, without being clear about the details, the establishment of the Agency would mark a commitment to step across the threshold of new possibilities.

Various suggestions have been made regarding the Agency's functions. The least sensitive solution would be to give it responsibility for overseeing joint R&D programmes, including EUCLID (see below), and for providing a secretariat for other continuing activities of the former IEPG. Some existing co-development programmes could also be placed under it, and it could be made responsible for oversight of joint programme bureaux. The bureaux for new collaborative programmes, or even for WEU-wide programmes (for example, an anti-tactical ballistic missile system, as some are now proposing to the WEU) could begin systematically to be collocated with the Agency. In this way, its portfolio of responsibilities might grow gradually, but with acceleration, in step with its growing experience and size (though on these points it is salutary to reflect on the difference in scale between any imaginable Agency in the foreseeable future and that of, say, the DGA in Paris or the Procurement Executive in London).

The suggestions above involve only intergovernmental, not supranational matters. This is a result of the reluctance of various governments to see the Agency acquire a supranational role. More ambitiously, however, the Agency could become responsible for regulating defence trade within and beyond WEU, and could liaise on this matter between its members and the European Commission. It could even be given responsibility for negotiating contracts on behalf of countries whose machinery is less developed for this purpose. And it could become the focal point for defence trade negotiations with the United States. These functions might require that the Agency be legally incorporated as a `subsidiary body', as allowed for in Article VIII, 2 of the modified Brussels Treaty. Beyond these suggestions is the idea that the Agency might play a role in the regulation of industrial structures, and of competition and mergers policy, again representing the WEU to the Commission. Most ambitious of all is the idea that the Agency become responsible for common procurement of all military equipment for all the WEU countries--possibly moving towards this position by the stepwise assumption of responsibility for ever more sectors of defence equipment.

There is another setting in which common procurement is beginning to be debated--the United Nations. The effectiveness of peacekeeping operations is being seriously affected by the profusion of equipment types used by troops assigned to the UN. Whether it is the UN, NATO or WEU that is involved, joint intervention in areas like Bosnia and Cambodia is going to require greater standardisation if it is to become more effective, especially if real military action has to be taken.

Most of these possibilities will have to await the resolution of the larger questions of foreign and security policy cooperation, and even then they might still prove intractable. In the meantime, the WEU has begun to acquire a modest capability in the procurement field. Since June 1991, it has been managing the implementation of the decision of the WEU Council to establish a satellite data interpretation centre in Torrejon, Spain, including the responsibility for letting contracts and overseeing the work. At a cost of 30 million ecu, this is the largest operational task of its type ever undertaken by WEU. WEU has also completed the first stage of a study of an autonomous European intelligence satellite system, for treaty verification and crisis management. The system could begin to be operational by the year 2000 at a cost of up to $3.8 billion.[47] But with enthusiasm for a European satellite capability varying between countries, and given also the political sensitivity of any decision to establish a capability independent of the United States, reaction to this proposal will be an interesting indication of the new politics of European security and procurement.

Research and development

One of the more straightforward of the proposals for a European Armaments Agency is that it should assume responsibility for joint R&D programmes, including those already begun under the IEPG umbrella in the form of the EUCLID programme.

EUCLID is a programme begun as a French initiative in 1989 and launched in February 1990, with a Memorandum of Understanding between 13 nations being signed in November 1990. The programme is structured around 13 Common European Priority Areas, within which Research and Technology Projects are organised. Participation is *à la carte* (not via common funds, as some had hoped), and each participating nation pays its own national firms and laboratories for the

government-funded element of projects in which it is participating. Industrial contributions are sought, of varying size according to different national practices.

Initial funding was thought likely to amount to about 120 million ecu. In the event, it took a considerable time to resolve what the British Ministry of Defence called `preparatory work on procedures necessary to reconcile the interests of a range of potential participants in a wide variety of possible programmes',(48) a particular problem being that progress can be made only at the pace of the slowest participant. The result was that no EUCLID contracts were signed until August 1992.(49) Since then, however, the number of contracts has grown to seven. Implementing arrangements for yet more programmes are under consideration.

After a slow start, therefore, EUCLID seems finally to be under way. Nevertheless, the difficulties that it has encountered, and the low level of funding relative to national defence research budgets, suggest that even if the responsibility for EUCLID were transferred to a European Armaments Agency, it should be seen more as an acorn than as a fully grown oak tree. Nor is it clear whether the EUCLID budget could ever amount to even 10 per cent of expenditure on European military research.(50) It is also debatable whether the strict *juste retour*that is practised within EUCLID is desirable, given the need to reduce surplus capacity in R&D as well as in production.

All the same, the significance of even this much cooperation should not be underestimated. It is frequently argued that difficulties over international harmonisation of requirements (particularly over the timing of orders, and the strategic concepts for which the equipment is required) can only finally be solved if the harmonisation process goes right back to the laboratory. Whether EUCLID will prove the principal route forward, or whether bilateral research links (as, for example, those which are being developed between Britain and France) will offer a more effective path to economies of effort and perhaps also an international division of labour, remains to be seen. Here, too, is an area of potential transatlantic collaboration, made attractive for the European countries by the fact that the pace setter in the advance of military technology will for the foreseeable future continue to be the United States.

Arms export policy

After the Gulf War, restraints on arms exports became the subject of widespread political discussion. Since then, however, something close to business as usual has resumed. With diminished domestic markets, European defence firms will naturally turn to exports as part of their strategic planning. Nevertheless, they will be doing this in a context which is significantly different from that which has obtained in the past.

For most European countries, exporting arms has long been a means of reducing production costs and acquiring income to support technological development. Economies of scale have come from extra-European trade more than from internal trade and specialisation (except for Germany which has exported mainly to other NATO countries). The risk today is that arms exporting will be a substitute for industrial restructuring in domestic and European markets. For firms, it will offer a way of living to fight another day, though with the added complexity that some

governments, keen to dispose of items surplus to the limits set by the Conventional Forces in Europe Treaty, are themselves entering export markets in competition with their own firms. But Europe's security interests will hardly be served by a free-for-all in world arms markets. So there is a clear conflict of interest here, with firms and those parts of governments concerned with economic matters favouring arms exports, those concerned with foreign and security policy opposing them, and defence ministries torn between adding to their military problems and maintaining their defence industrial bases.

At the European level, several problems arise. First, if Europe is to mount any sort of credible common foreign and security policy, a common arms export policy will surely have to be part of it. Second, the functioning of the Single European Act, with its abolition of internal barriers, requires a common policy for the import and export, if not of armaments, then certainly of dual-use technologies. Third, unless arms export policies are harmonised, firms and countries may be discouraged from working together. Given the trends in favour of collaboration on individual projects, the formation of trans-national industrial groups, and even perhaps some of the potential roles of a European Armaments Agency, discord over export regulations could be seriously damaging. Concerns have been expressed, particularly in Germany, about the consequences of its own tighter regulations for its industries' abilities to enter cooperative arrangements.

There is another point. Government support for arms exports is one way of increasing firms' competitive advantage in internal markets. It is unlikely that fair play within an open European market could be achieved without some limitation of governments' freedom to provide export credits and other forms of patronage.

Even if there were the political determination to develop new regulations, which European institutions are capable of developing them and guiding their implementation? A study for Saferworld argues that there is a good case for an EC initiative (and certainly, given the limited progress with the WEU Agency, it is hard to see that forum taking on this role for some time).[(51)] But the way ahead is not easy.

In a tidy administrative world, suggests the Saferworld report, it would make best sense to construct a single control regime for arms and dual-use items. However, the Treaty of Rome excludes arms export controls, and until the review of the links between WEU and European Union scheduled for 1996 under Article J.4 of the Maastricht treaty is carried out, it is hard to see how an arms export control regime could be put together other than by a collective declaration by the Twelve. Additional complexity--but also urgency--arises from the prospect of enlargement.

The Commission has been active on the development of a common policy on dual-use products, having presented a communication to the Council in January 1992,[(52)] and published a proposal for a regulation in August 1992. At that time it appeared likely that a list of controlled items would be agreed, and a programme drawn up to bring all countries to the same standard of customs controls, but that agreement on a list of proscribed destinations seemed more difficult. By the end of the year the news seemed even less optimistic, especially on the question of an agreed list of sensitive countries, absence from which would entitle a country to simplified export procedures,[(53)] and at the time of writing progress continues to be slow.

On arms export regulations, the proposal put forward by the Commission, during the Intergovernmental Conference on Political Union, to abolish Article 223 would have brought this matter within the Community's purview, but this proposal was rejected. Nevertheless, France, Germany, Italy, the Netherlands and the UK all submitted memoranda or proposals that appeared to envisage the possibility of closer coordination of arms export policies, among other areas of security coordination. Article 30.6 of the resulting Single European Act, with its references to closer coordination on the `political and economic aspects of security', and maintenance of the `technological and industrial conditions necessary for their security', appears to open the door to coordination of arms export regulations if countries so desire. It is perhaps more likely that WEU would be given the lead. Under Article J.4 of the Maastricht treaty, WEU is requested `to elaborate and implement decisions and actions of the Union which have defence implications'. Lastly, work has in fact been undertaken in the Political Committee of European Political Cooperation on developing common criteria for arms export controls, but so far these have not been agreed. So there is no shortage of mechanisms. What is lacking is the political desire to make them effective.

It may, however, be considered unlikely that European governments will take any major initiative until the success of the UN arms register, just coming into effect at the time of writing, has become clearer. More importantly, their attitudes will depend on the willingness of the US and Russian governments to rein in their arms exports. With Moscow and Washington apparently bent on maximising their arms sales, it is hard to be optimistic at present.

US-European relations

The changes in the European defence market are being matched by major restructuring and downsizing in the US market, most dramatically with the merger of the aerospace businesses of Martin Marietta and General Electric, and the sale of the fighter division of General Dynamics to Lockheed. The pressures acting on the US market have inevitable consequences for developments in Europe and for US-Europe relations, and demand brief attention here.

It is important to recall that US procurement spending in recent decades has dwarfed that of individual European countries; indeed, the procurement expenditure of the US has been more than twice that of the European members of NATO combined (see Table 1). US military developments have set the standard in most technological areas, and US procurement spending has been sufficient to support some domestic competition in most major weapons systems. Thus, while the US has exported huge quantities of arms, individual firms have not had to depend on export markets to the same extent as their European counterparts. Nor, until recently, have they shown much interest in international collaboration.

During the second half of the 1980s, however, and as part of a general internationalisation of industrial activity that was taking place, US defence industrial networks began to include foreign actors, from Japanese suppliers of microchips, to European partners in co-development projects, foreign owners of US defence subsidiaries, and other forms of teaming arrangement. The number of such deals has

increased noticeably as market conditions have tightened. Thus, the Office of Technology Assessment lists 32 cooperative agreements between US and European defence firms in 1989, compared with 6 in 1986.(54)

Two key questions arise for Europe. How will the US behave in future in relation to European defence industrial interests? What will be the consequences of government policy changes as regards the defence technology base under President Clinton?

On the first question, various approaches can be imagined. US firms, backed by their government, may attempt to tighten their grip on global export markets, while at the same time lobbying to restrict access by European firms to the US market. Signs of this have already appeared in the Middle East, especially Kuwait, though unsuccessfully in Saudi Arabia, where a substantial British arms deal was confirmed in early 1993.(55) Alternatively, they may seek to enter foreign (especially European) markets in partnership with selected European firms, which would get a share of the work.(56) Or, in a variation of this strategy, they could trade limited access to the US market by European firms for US access to the European market.(57) Boeing's recent attempt in civil aerospace to draw the Airbus partners into feasibility studies of a super-jumbo, with the possible implication of offering teaming arrangements that could undermine concerted Airbus opposition, shows the possibilities.(58)

A more formal version of the third strategy was evident in US NATO Ambassador Taft's proposal for a transatlantic defence GATT.(59) As Steinberg observes, this proposal may in theory offer considerable economic benefits, but it would be extremely difficult to implement. It would have to overcome European fears of domination by the larger and technologically more sophisticated US firms; and as GATT itself shows, it is difficult to develop unambiguous criteria for `fair competition', particularly where choices are affected by military traditions and requirements, and where security interests can be invoked to justify a lack of transparency. Even in civil areas, the long-running argument about subsidies for Airbus illustrates how difficult it is to reach agreement on what constitutes fair practice.

All three strategies are essentially marketing strategies. How far US firms would *need* to go in the direction of technology-sharing strategies remains unclear, but it is not likely to be very far. What *is* clear, however, is that European firms will regard willingness to share technology as an acid test of US seriousness about collaboration. As Steinberg again notes, if US firms wish to move towards greater transatlantic collaboration and trade, they will have to overcome their reluctance to share technology.(60) In addition, European (and especially British) firms are sensitive to the impact of greater European integration on their positions in the US market and on their relations with US firms. Many European firms have, for instance, licensing arrangements with their US counterparts that they do not wish to upset.

It also bears saying that different interests in government and industry will hold various views on the attractions of these strategies. Some, within government and industry, will seek to keep Europeans out of US markets and away from US technology. Others (again in government and industry), seeking to contain costs, may favour selective use of European suppliers. Yet others (more probably in industry than

government), anxious for access to European markets, may favour transatlantic collaboration.

Investment and trade policy will be important in this regard. Reports circulating in October 1992 suggested that European aerospace companies were likely to face stiffer barriers to both direct investment and export possibilities in the United States. The hostile US reaction earlier that year to the attempt by Thomson-CSF to buy the missile interests of LTV--which led to a rejection, ostensibly on the grounds of French state control of Thomson--was seen by Matra as likely to apply to it also, despite its entirely private ownership, thus suggesting a lack of clear criteria on this subject.(61) Complaints over trade policy, particularly from French firms, began to be heard at about the same time, the contention being that the US was using undue political leverage in third country markets. These intensified into the new year, with talk of a coordinated European backlash.(62) Interestingly, the US-based *Defense News*, in a leading article, saw the US as the country most reluctant to adopt the Taft code of conduct for intra-NATO defence trade, and called on the new president to `snuff out the interagency squabbling in Washington . . . that could still undercut progress'.(63) The point to note here is that European suspicion of US intentions remains high, as does uncertainty over the terms governing investment in the US, and the degree to which political pressure will be used to thwart European arms sales to the US and third country markets.

The US government's policy towards its defence technology base has been the subject of much attention in recent years.(64) In theory, a reduction in spending on defence technology could be compensated for by an increase in the resources devoted to civil technology. However, the United States has no tradition of formal industrial policy, although many would argue that the heavy governmental spending on defence R&D has been a surrogate technology policy. During the Reagan and Bush years, such ideas were at variance with economic liberalism, although that did not often stand in the way of interventionism in the military context (viz. the huge Star Wars programme which was launched partly as a subjective response to Japan's mounting technological challenge). The more protectionist rhetoric of President Clinton opens up at least the possibility of change. Clinton has, in addition, spoken of the need to take the defence industrial base into account in making defence cuts, and during the election campaign he proposed a defence industrial strategy designed to maintain key production capabilities and to sustain R&D as the top priority.(65) The scale of defence cuts that he has now begun to seek will complicate the task,(66)but the emphasis, as seen from Europe, remains one of continued, and possibly enhanced, federal support for high technology in both the civil and the defence sector, thus reducing the prospects for transatlantic cooperation. Despite its emphasis on civilian technologies (including dual-use of all applicable Defense Department R&D), elements of the Clinton plan `Technology for America's Growth: A New Direction to Build Economic Strength' will probably fuel European anxieties about the extent of federal support for high technology in general and the aerospace sector in particular.(67) European governments will also watch, with interest and some anxiety, the outcome of new approaches in the US towards the maintenance of defence capabilities, such as the idea of `prototyping plus'.(68)

To sum up, there are contradictions within US thinking. The future is likely to see a mixture of fierce protection of certain defence assets, the aggressive pursuit of

European and third country arms markets, and some willingness to share technologies and trade market access in order to spread risks, cut costs, and gain access to complementary technologies. But the balance between these elements is likely to be unstable. The position of different firms, and different parts of the federal government, will not be uniform. US firms may also try to entice key European firms into links with them, rather than with other European firms, thus undermining moves towards a European armaments market and presenting European governments with a delicate problem. Despite these contradictions, however, the sheer weight of US defence activity and technological superiority, even after the planned cuts, is so great that the bargaining power of European firms and governments over access to the US market, or to third country markets in which the US chooses to compete, is bound to remain limited. Equally, the competitive threat from across the Atlantic, combined with aggressive protection of US technological assets, may reinforce pressures on governments to find European solutions.

CONCLUSIONS

In the late 1980s, policy-makers appeared to have a reasonably clear view of where the European defence sector and its regulatory apparatus were heading. Today, clarity has given way to confusion. One of the main reasons is that there is no longer a clear definition of `need'. What kinds and quantities of weaponry are really needed? More fundamentally, why do European nations any longer need large-scale military industries?

States have three main motivations for supporting military industries (we are here following Krause's classification[(69)]):

- *Pursuit of victory or survival in war*, meaning benefits for national security, such as independence of arms supply; a contribution to collective security; and being able to match equipment supply to specific national requirements.

- *Pursuit of power and identity*, meaning influence over elites in recipient states in pursuit of the supplier's foreign policy objectives; symbols of security commitments and national status; the creation or maintenance of a balance of power or regional presence; and access to strategic resources.

- *Pursuit of wealth*, meaning a range of economic benefits including foreign exchange and balance of trade; maintenance of employment/infrastructure; recovery of R&D costs; and the use of military production to drive economic development.

Most European governments now have difficulty in articulating why their military industries deserve public support, at least on the present scale. In each of the above respects, the claims made for the industries seem to have weakened, resulting in a loss of status for the arms manufacturers, coupled with enormous, and unsettling, uncertainty over market opportunities. Wars are on the increase around the periphery of Europe, but a general war engaging the entire military resources of the Atlantic Alliance no longer seems credible. European nations are presently too weak, or too constrained, to take much interest in global power games. And the economic benefits from military production are dubious.

As always, military expenditure in peacetime is an insurance policy. But what eventualities are being insured against, and what premiums should be paid? Answers to these questions are not easy to find. In these circumstances, many structures are being held in place more by inertia than by rational calculations of their costs and benefits.

Europe is not alone in facing these problems. The US defence sector is also going through a period when old assumptions are having to be re-examined, and the situations in Europe and the United States are easy compared with those being faced in the former Soviet Union and in Eastern Europe. What is unique to Europe is the question of integration--the degree to which policies, industries and regulatory institutions could or should be fused across national boundaries.

In the second half of the 1980s, there were two main developments in Europe. Firstly, the ownership of industrial resources in the military field became more concentrated, mainly within national frontiers. The resulting buttressing of national champions was, however, accompanied by increasing international linkages at all levels of production, even if it still fell far short of a true integration of market structures. Secondly, a tentative opening of European arms markets took place. It became possible for producers in one country at least to bid for orders in another. A first, albeit tentative step was taken to dismantle the ancient barriers to trading in military artefacts within Europe.

The immediate difficulty facing policy-makers is that further integration in the defence sector is now at the mercy of forces that are substantially beyond their control. Four stand out:

- *Maastricht*: as in so many other areas, a great deal hangs on the entry into force of the Maastricht treaty and how far it is implemented. If governments try to give fresh impetus to political integration when all have ratified it, various possibilities for institution-building at the European level may be opened up. If there are more upsets around the corner, it may still be necessary to return to the drawing board. Either way, significant initiatives, particularly in defence cooperation, cannot be contemplated until the outcome is clearer.

- *The condition of European economies*: the scale of funds available for defence procurement will depend heavily on economic recovery in Europe, and on the containment of fiscal imbalances. Particularly in Germany, the room for manoeuvre with regard to defence procurement is being heavily constrained by the condition of the federal budget and by concerns not to keep inflation in check.

- *The external security environment*: a change in government in Russia, or the worsening of conflict within Russia or between Russia and the other former Republics, could provide the kind of external shock that might lead to calls for an arms build-up in Europe, or at least for a halt to the policy of retrenchment (without returning to the *status quo ante*). Such developments might also give fresh impetus to West European efforts to devise common security policies, especially if they were accompanied by further reductions in the US military presence in Europe and problems in US-European relations.

- *The stability of large defence contractors*: faced with reductions in defence ordering, and with pressures of competition and recession in civil markets, the large defence conglomerates which make up the core of the European defence industry are looking less resilient today. The demise of one or more of them could put quite a different complexion on the restructuring of European defence industries.

The context in which decisions on the defence sector will be made is thus extremely volatile. Understandably, the instinct of policy-makers in government will in these circumstances be to `wait and see'. However, firms are finding the need for decision to be increasingly urgent. And for governments the fundamental economic and structural challenges facing the European defence sector will not go away: how to prevent costs increasing as markets are reduced in size; how to overcome the overcapacity that bedevils many areas of military production; how to improve

Europe's technological capabilities; and how to contend with long-term trends involving the internationalisation of R&D and production, and shifts in the relationship between civil and military technology (including developments in Japan).

It is sometimes said, particularly in Britain, that industry is best left alone to sort out its difficulties. There is some truth in this. However, the manner in which the industry copes may well not be to governments' liking. The result could be a deepening of corporate collusion and monopolistic practices, under-investment in new technological capabilities and the widespread scrapping of R&D and production capacities without consideration being given to strategic implications. In short, the changes could turn out to be more chaotic than orderly. Furthermore, in the absence of coherent procurement and restructuring policies, governments may find it increasingly hard to resist calls for an expansion in arms exports, regardless of the security risks they may engender.

For all these reasons, it is likely that governments will sooner or later have to return to the issue of European integration in the defence sector. Without radical changes in the political outlook, it seems unlikely that there could be a defence industrial Yalta, in which governments agreed to an international partition of the industry with, say, Germany becoming the tank maker of Europe, France the aircraft manufacturer, Britain the shipbuilder, Italy the helicopter supplier, and the other countries playing their parts producing smaller systems and components. Such a scenario implies a willingness to give up a wide range of capabilities and to accept dependence on others. Although this might be the most logical way forward from the viewpoint of industrial efficiency, there is little sign of it being feasible at present. A re-distribution of large systems capabilities across Europe may occur, but only slowly, and probably more in response to specific industrial crises than by design. The question is therefore whether cooperation in large systems can be made more efficient and a truer market integration achieved in relation to smaller-scale systems and to sub-systems, sub-assemblies and components.

In our view, the present intergovernmental arrangements are not capable of implementing even this integration effectively, nor do they give confidence that governments will be able to bargain effectively with trans-European defence contractors possessing monopoly powers. Whatever may be required to achieve closer integration and market regulation--the rescinding of Article 223 of the Treaty of Rome, the establishment of strong regulatory mechanisms and/or a procurement agency within the WEU, or other possible innovations--some transnational institution-building seems required to overcome the regulatory `deficits' that now exist in this area in Europe.

The reasons go beyond needs to maximise allocative efficiency. There are now significant asymmetries within the European defence sector which will make it *politically* very difficult to avoid continual disagreement and even paralysis if everything is left to inter-governmental negotiation. Without transnational mechanisms to help with market regulation and industrial restructuring, it will be hard to overcome the force of national preferences and traditions. We end by noting three of these asymmetries.

The first concerns the balance of capabilities between Germany on the one hand, and France and the UK on the other. Whereas the latter countries have the stronger defence industries (with notable exceptions such as main battle tanks), their industrial economies, and the companies which are the principal defence contractors, are considerably weaker. Hitherto, Germany has been the hub of cooperative arrangements in the European defence sector. There were signs in the early 1990s that Paris-London was replacing Paris-Bonn and London-Bonn as the main axis for defence industrial cooperation in Europe, though after the April 1993 election there was talk in Paris of revitalising French links with Germany. Along with concerns in Germany about how defence export policies are disadvantaging its industry, and with severe pressure on German defence budgets, the risk that German industries will become disengaged is a real one. Yet it is hardly conceivable that a strong *European* defence sector can evolve without full German participation, given Germany's greater industrial strengths and resources. This participation may be more easily attained through market-opening, and through a move towards common export policies, than through bilateral and multilateral negotiation.

The second asymmetry concerns the very different views of defence industrial policy held in London and Paris. The British government holds to the opinion that the state's primary task is to ensure a competitive market which will bring choice and exert pressure on companies to improve their performance. Even though the state inevitably remains the final purchaser, it should try to retain a distance from suppliers and allow them to make the main structural decisions. The French government, by contrast, sees its role as being primarily allocative and `constructive'. In partnership with suppliers, it can help build capabilities and shape structures, and it does not trust the market to do so of its own accord. It cares less about competition, relying instead on a community of interests between policy-making élites within government and industry to take the steps necessary for the achievement of dynamic efficiency. Moreover, despite a shared aversion to rescinding Article 223 of the Treaty of Rome, Britain and France disagree profoundly over the concept of a `préférence européenne' and all that it implies about the nature of the European arms market.

It seems unlikely that substantial progress can be made towards the construction of an effective armaments market in Europe unless there is some dilution of these contrasting positions. It was noted earlier how the Single European Act amounted to an agreement in the civil sector to transcend such national traditions. While it may not be possible to go so far in the defence sector (imagine, as an indication of the structural and behavioural gaps between the defence and civil markets, what it would take for a defence multinational to function in Europe in the same way as, say, the Ford motor company), the progressive ceding of responsibilities to European institutions would help lessen the effect of this clash of traditions on the prospects for market integration.

The last asymmetry concerns the balance of advantage between the `core' (notably Britain, France, Germany and Italy) and the `periphery' in the European defence sector. In important respects, the core has increased its hold over the periphery while the periphery has been unable to engage effectively in the larger markets. The same phenomenon has been evident in the core countries where smaller producers have often found themselves disadvantaged. In the absence of open access and market specialisation, competitive advantage has come to depend increasingly on institutional

`mass'--in particular, on the ability of large conglomerates to muster resources and control access to markets. It is questionable whether the consent of smaller European countries and suppliers to market integration can be gained if there are no effective regulatory mechanisms to ensure fair play. Their sensitivities may be increased if it is perceived that the large firms are beginning to exert substantial influence over the shaping of European institutions in this field, such as the proposed European Armaments Agency, and are blocking countervailing measures to limit their market power.

To end on a philosophical note, a senior DGA official quoted approvingly from St Thomas Aquinas in a speech last December on the theme of European arms integration:

`Harmony is not born of an identity of thoughts but of an identity of wills'.[70]

The question is, how far can Europe go at a functional level without addressing the more profound differences that exist between its members? Is an identity of wills (or caprices?) sufficient if substantial structural, procedural and ideological differences remain?

Table 1. European defence production, trade and R&D, 1990

Country	Defence **spending (%GDP)(a)**	Equipment **procurement ($bn)(b)**	Defence R&D/ total govt. R&D (%)	Defence **trade ($m)(c)** **Imports** **Exports**	Import penetration (%)(d)
United Kingdom	4.0	7.0	44.8	687 3107	8
France	3.6	7.5	37(e)	146 3981	2
Germany	2.8	7.6	13.5	748 1375	9
Italy	2.2	4.3	10.3(e)	262 627	5
Spain	2.0	1.2	18.4	674 340	23
Belgium	2.4	0.37	0.4	312 167	63
Denmark	2.0	0.39	0.4	121 34	33
Netherlands	2.7	1.3	3.3	541 387	42
Norway	3.3	0.81	6.4	265 38	37

Greece	5.6	0.81	2.1	677 30	36
Luxembourg	1.3	0.03	n.a.	6 -	30
Portugal	2.9	0.18	n.a.	85 138	52
Turkey	4.4	1.0	n.a.	868 32	n.a.
NATO Europe Total	3.6	30.4	n.a.	5392 10256	11
Sweden	2.5(f)	1.1	23.6	113 374	9
Switzerland	1.8(f)	0.82	n.a.	478 258	n.a.
United States	5.9(g)	76.9(g)	62.6	2145(h) 12968	1

Notes: (a) Defence expenditure according to NATO definitions to give comparability. Note that they usually differ from expenditure figures recorded in national accounts.

(b) Figures for France, Sweden and Switzerland are estimates.

(c) Average 1985-89, constant 1989 prices.

(d) Imports divided by procurement expenditure (figures in both cases for 1988).

(e) Data for 1989.

(f) Data according to national, not NATO, definitions.

(g) Data for 1991.

(h) According to revised definition first used in 1990, including equipment supplied directly to overseas forces.

Sources: *The Military Balance 1991-1992*, International Institute for Strategic Studies, 1991; *World Military Expenditures and Arms Transfers 1990*, United States Arms Control and Disarmament Agency (ACDA), 1990; *NATO's Sixteen Nations*, vol. 38, no. 1, 1993; *Main Science and Technology Indicators*, OECD, Paris, 1991.

Table 2. Selected joint ventures and `Eurocompanies' formed in the defence sector (1989 - September 1992)

Company	Country	Year	New organisation	Purpose
Aérospatiale	France	1989	Eurosam	Development of new family of anti-air missile systems
Alenia	Italy			
Thomson-CSF	France			
CESELSA	Spain	1990	Aeronautical Systems Designers	Development of systems for fighter aircraft
SD-Scicon	UK			
Ferranti	UK	1990	Ferranti-Thomson Sonar Systems	Development, production and marketing of sonar equipment
Thomson-CSF	France			
Aérospatiale	France	1991	Eurocopter	Development, production and marketing of helicopters
MBB (DASA)	Germany			
GEC-Marconi	UK	1991	GTAR (GEC-Thomson Airborne Radar)	Development of phased-array radar systems for fighter aircraft
Thomson-CSF	France			
Alenia	Italy	1991	Euroteam	Development of automated test systems for military and civil aircraft
BAe	UK			
CASA	Spain			
Inisel	Spain			
MBB (DASA)	Germany			
GEC-Marconi	UK	1991	Matra-Marconi Space	Development, production and marketing of space
Matra	France			

				systems
chantiers de l'Atlantique	France	1992	Eurocorvette	Marketing of jointly designed BRECA family of ships
Bremer Vulkan	Germany			
Elettronica	Italy	1992	Eisys	Development of missile software
Syseca	Spain			

Source: Derived from Elizabeth Sköns, `Western Europe: internationalization of the arms industry' in SIPRI, ed. Herbert Wulf, *Arms Industry Limited* (Oxford: Oxford University Press, 1993).

1. Ian Gambles, `European security integration in the 1990s', *Chaillot Paper* 3 (Paris: WEU Institute for Security Studies, November 1991) and René Van Beveren, `Military Cooperation: What Structure for the Future?', *Chaillot Paper* 6 (Paris: WEU Institute for Security Studies, January 1993).

2. The terminology is owed to Professor Miriam Campanella, University of Torino. See her `The effects of globalization and turbulence on policymaking processes', *Government and Opposition*, vol. 28, no. 2, 1993, pp. 190-205.

3. D. Held and A. McGrew, `Globalization and the liberal democratic state', *Government and Opposition*, vol. 28, no. 2, 1993, pp. 261-288.

4. The British decision in February 1993, contrary to all expectations, to keep open the naval dockyards at *both* Devonport and Rosyth despite overcapacity, illustrates the point well. *Financial Times*, 10 February 1993.

5. Economic and Social Research Council/Science Policy Support Group *Future relations between defence and civil science and technology* (London: Science Policy Support Group Review Paper no. 2, 1991, ISBN 1 873 230 02 8), written for the UK Parliamentary Office of Science and Technology; and J. Alic et al., *Beyond Spinoff: military and commercial technologies in a changing world* (Boston, MA: Harvard Business School Press, 1992).

6. See W. Walker and P. Gummett, `Britain and the European armaments market', *International Affairs*, 65, (1989), pp. 419-442; A. Moravcsik, `The European armaments industry at the cross-roads', *Survival*, vol. 32 (1990), pp. 65-85; T. Taylor, `Defence industries in international relations', *Review of International Studies*, vol. 16 (1990), pp. 59-73; and M. Brzoska and P. Lock (eds.), *Restructuring of Arms Production in Western Europe* (Oxford: Oxford University Press for SIPRI, 1992).

7. *Towards a stronger Europe*, Report by an Independent Study Team established by Defence Ministers of Nations of the IEPG (Brussels, 1986).

8. The concentration process in Italy has now gone even further. In February 1993, Finmeccanica, the state-controlled holding company, which already controlled Alenia, also assumed management responsibility for several firms consequent upon steps to liquidate the other major state holding company, EFIM. In taking over Agusta, SMA, Galileo and OTO Melara, Finmeccanica now controls nearly all Italy's state-owned aerospace and defence manufacturers. This move also represents the rupture of the old division between IRI-Finmeccanica and EFIM, the former being tied to the Christian Democrats and the latter to the Socialists. See G. de Briganti and A. Politi, `Italy continues to reshape defense industry', *Defense News*, 22 February 1993, p. 6.

9. A study by the European Commission showed that of the top 12 industrially defence-dependent regions in the EC in 1992, all but two (Bremen at number 3, and Liguria at number 7) were in the UK or France. The Cumbria region in the UK, home of Vickers Shipbuilding and Engineering Limited, was the most industrially defence-dependent region by a factor of more than two over the next ranked region. Source: Commission of the European Communities, *The Economic-Social Impact of Reductions in Defence Spending-Military Forces on the Regions of the Community*,

executive summary, Doc. P/92/64, available from the Commission's UK Office, London, December 1992. We offer these findings without having seen a full explanation of how this study was done. Of crucial importance will be the matter of how reliably jobs were attributed to the categories of `defence' and `civil'.

10. See P. Gummett, `Restructuring of the arms industries in western Europe: market rationalisation rather than conversion', paper presented to conference on *Conversion of Military Production*, Bratislava, 16-18 November 1992.

11. *Financial Times*, 16 February 1993.

12. J. Molas-Gallart, `Spanish participation in the international development and production of arms systems', *Defense Analysis*, vol. 6, no. 4, pp. 351-365, 1990, figure 1.

13. F. Garcia et I. L'Ebrellec, `L'industrie de défense en Espagne', *L'Armement*, no. 33, July 1992, pp. 116-120, at p.118.

14. And probably shrinking faster than anywhere else in Europe: during the last decade, employment in the Belgian defence industry has fallen from 45,000 to 15,000. See P. De Vestel et R. Fohn, `L'industrie de défense dans la Communauté européenne, aux Etats-Unis et au Japon de 1980 à 1991', in *Memento défense-désarmement 1992 : L'Europe et la sécurité internationale*(Brussels: GRIP, 1992), p. 258. See also `At the heart of Europe', *Jane's Defence Weekly*, 30 November 1991, pp. 1036-1041.

15. *Jane's Defence Weekly*, 3 October 1992, pp. 17 and 62. See also ICA R. Moine, `L'industrie de défense des Pays-Bas', *L'Armement*, no. 31, February 1992, pp. 122-130.

16. IPA R. Moine, `L'industrie de défense de la Suede', *L'Armement*, no. 35, December 1992, pp. 115-124; also B. Hagelin, `Sweden's search for military technology', in M. Brzoska and P. Lock (eds.), *Restructuring of arms production in Europe* (Oxford: Oxford University Press, 1992); and `75% of Celsius stock offered to investors', *Jane's Defence Weekly*', 22 May 1993.

17. The Defence Committee of the UK House of Commons reported in late 1991 that, even under the terms of the Anglo-French Reciprocal Purchasing Initiative, only 3 per cent of UK overseas purchases of defence equipment came from France. The reciprocal French figure was even smaller. House of Commons, Defence Committee, *Anglo/French Defence Cooperation*(London: HMSO, HC 91, 1991), para. 71.

18. F. Chesnais and C. Serfati, *L'Armement en France: genèse, ampleur et coût d'une industrie*(Paris: Nathan, 1992), pp. 65-73.

19. E.A. Kolodziej, *Making and marketing arms: the French experience and its implications for the international system* (Princeton, NJ: Princeton University Press, 1987), p. 277.

20. J-P. Hébert, *Stratégie Française et Industrie d'Armement* (Paris: Fondation pour les études de défense nationale, 1991), p. 303.

21. J. D'Albion (pseudonym), *Une France sans Défense* (Paris: Calmann-Lévy, 1991), p. 326.

22. Ibid., p. 323.

23. J.-P. Hébert, `Restructuration et rôle de l'Etat', *Le débat stratégique*, no. 6, January 1993 (Paris: CIRPES).

24. J.B. Steinberg, *The transformation of the European defense industry: emerging trends and prospects for future US-European competition and collaboration* (Santa Monica, CA: The RAND Corporation, 1992), p. 33.

25. J-H. Monier, `L'industrie de Défense en République Fédérale d'Allemagne', *L'Armement*, May/June 1992, no. 32, pp. 166-175.

26. For discussions of sectoral differences, see J. Huffschmid and W. Voss, *Militärisches Beschaffungen-Waffenhandel-Rüstungskonversion in der EG. Eine Studie im Auftrag des Europäisches Parlamentes*, PIW-Studien no. 7 (1991).

27. Even in relation to nuclear weapons, it is possible that Britain and France will soon begin to pool their resources.

28. See Teece, D., `Profiting from technological innovation: implications for integration, collaboration, licensing and public policy', *Research Policy*, vol. 15, no. 6, December 1986, pp 285-305; and G. Pisano, M. Russo and D. Teece, `Joint ventures and collaborative arrangements in the telecommunications equipment industry', in D. Mowery (ed.), *International collaborative ventures in US manufacturing* (Cambridge, MA: Ballinger, 1988).

29. See W. H. McNeill, *The Pursuit of Power* (Oxford: Basil Blackwell, 1983); and M. Roe Smith, *Military Enterprise and Technological change: Perspectives on the American Experience*(Cambridge, MA: MIT Press, 1985).

30. From many references, see P. Gummett and J. Reppy (eds.), *The Relations between Defence and Civil Technologies* (Dordrecht: Kluwer, 1988); J. Molas and W. Walker, `Military innovation's growing reliance on civil technology: a new source of dynamism and structural change', in W. A. Smit et al. (eds.), *Military technological innovation and stability in a changing world* (Amsterdam: VU Press, 1992); and M. Pianta, `The relationship between civilian and military technology: the experience of advanced countries', Rome: National Research Council, Institute for Studies on Scientific Research and Documentation, paper presented to ISODARCO Winter School, Folgaria, 1993.

31. D. Friedman and R. Samuels, *How to succeed without really flying: the Japanese aircraft industry and Japan's technology ideology*, MIT-Japan Program Working Paper, January 1992.

32. J. Thyrard, `Euromissile: 20 ans de coopération franco-allemande', *L'Armement*, no. 32, May 1992, pp. 148-155.

33. J.E. Pitale, `International joint ventures in the US defense industry' (Washington, DC: Georgetown University, mimeograph, 1992). We are grateful to Professor Judith Reppy for drawing this paper to our attention.

34. For example, the steps taken in December 1992 to bring Dassault and Aérospatiale closer together are widely reported to have been at the initiative of the defence minister, or his ministry. The same applies to schemes to merge the missile activities of Aérospatiale, Thomson-CSF and Matra Defense; and to concentrate the rocket motor and tactical weapon propulsion business around Aérospatiale and SNPE in France, and DASA and Bayern Chemie (already DASA-controlled) in Germany. See A. Rawsthorn, `Dassault and Aérospatiale to link under French government scheme', *Financial Times*, 24 December 1992; and C. Reed, `Missile giant in the making', *Jane's Defence Weekly*, 23 January 1993.

35. Pitale counted 63 international joint ventures by US firms between 1987-1992, of which 53 per cent were with European firms, (followed equally by the Middle East and Asia-Pacific regions). But note also that the number of agreements per year between 1988-92 varied only between 5 and 6 (having been 3 in 1987), so that there is no sign here of any sharp increase. Britain, France and Germany accounted for 54% of the agreements. In addition, US firms were the minority partner in two-thirds of the cases. Pitale, op. cit. pp. 8, 11 and fig. 1.

36. Steinberg, op. cit., section 5.

37. J. Lewis, `Matra to consider missile alliances', *Jane's Defence Weekly*, 13 February 1993, p. 18; D. White and P. Betts, `Missiles industry locks on new course', *Financial Times*, 5 May 1993; C. Covault, `British Aerospace, Matra seek missile system merger', *Aviation Week and Space Technology*, 10 May 1993; G. de Briganti, `BAe-Matra plan presages merger trend', *Defense News*, 10 May 1993; C. Reed, `Aerospatiale, DASA in missile merger talks', *Jane's Defence Weekly*, 15 May 1993.

38. For another recent addition to the list of Eurocompanies, see G. de Briganti, `French, German firms to merge on vehicle venture', *Defense News*, 15 February 1993. This is a report of plans by GIAT and Mercedes-Benz to `cooperate' (a weaker word than the headline implies) in order to bid together for the prime contractorship of a new Franco-German family of armoured vehicles, following a recent intergovernmental agreement to set a joint specification. The report refers to the main vehicle as the VBM (Véhicule Blindé Modulaire). In confirmation of our thesis about the promiscuity of inter-firm liaisons, the report adds that it is unclear how the new agreement will affect an existing GIAT-Krauss Maffei agreement to cooperate on this programme, or a GIAT-GKN agreement to join on development of new medium-weight armoured vehicles.

39. The term is taken from Razeen Sally, *States and Firms: the political economy of French and German multinational enterprises in international competition*. Unpublished PhD thesis, London School of Economics, 1992.

40. Herbert Wulf, `Arms industry limited: the turning point in the 1990s', in H. Wulf (ed.), SIPRI, *Arms Industry Limited* (Oxford: OUP, 1993).

41. `France stands firm on defence', *Jane's Defence Weekly*, 4 January 1992, p. 26.

42. `Market Focus', *Aviation Week and Space Technology*, 1 March 1993, p. 9.

43. D. Henderson, `International economic integration', *International Affairs*, vol. 68, no. 4, October 1992, pp. 633-653, at pp. 648-9.

44. F. Heisbourg, `The European-US alliance: valedictory reflections on continental drift in the post-Cold War era', *International Affairs*, vol. 68, no. 4, October 1992, pp. 665-678, at p. 673.

45. D. Verret, *Aviation Week & Space Technology*, 14 December 1992, pp. 66-67.

46. Text of Western European Union Council of Ministers, Bonn, 19 June 1992, Petersberg Declaration, paragraph 13.

47. G. de Briganti, `WEU's satellite system may fly in 2000', *Defense News*, 1-7 February 1993, p. 4.

48. Statement on the Defence Estimates 1992 (London: HMSO, Cmd. 1981, 1992), para. 355.

49. Oxford Research Group, *Military R&D in Europe: collaboration without control?* (Oxford: Oxford Research Group, Current Decisions Report no. 11, 1992), chapter 6.

50. The contracts signed so far amount to only about 30 million ecus, or about one-twentieth of British defence research spending alone.

51. *Arms and Dual-Use Exports from the EC: a common policy for regulation and control*(Bristol: Saferworld, 1992).

52. The text is in GRIP, *Memento défense-désarmement 1992 : L'Europe et la sécurité internationale* (Brussels: GRIP, 1992), pp. 310-315.

53. David White, `Single market fears on weapons', *Financial Times*, 11 December 1992.

54. US Congress, Office of Technology Assessment (OTA), *Global Arms Trade*, OTA-ISC-460 (Washington, DC: US Government Printing Office, 1991), pp. 14-15; see also J. Reppy and P. Gummett, `changing military industrial structures: implications for national technological capabilities', paper presented at International Political Science Association conference, Buenos Aires, July 1991 (being revised for publication). Note that the OTA's use of the term `cooperative agreements' is broader than that used by Pitale (note 35). Data collected by Reppy on transatlantic industrial links shows 20 US-Europe teaming arrangements in 1990 compared with 13 in 1986 (`teaming' meaning *ad hoc* collaboration); 6 joint ventures in 1990, compared with 0 in 1986; and 10 acquisitions, compared with 2 in 1986. See J. Reppy, `Defense industries in the US and Europe: shrinking, not converting', paper presented to the International Studies Association, Acapulco, March 1993.

55. D. White, `Arms sales emerge from desert mirage', *Financial Times*, 30 January 1993.

56. Reppy has collected data for the period 1980-1990 which demonstrates the tension for European firms between intra-European and transatlantic links. Throughout that decade, the numbers (and growth) of teamings, joint ventures and mergers and acquisitions were roughly the same in both the US-Europe and intra-Europe categories, except for 1990 when intra-Europe acquisitions jumped to 25, compared with 13 in 1989, and 10 with the United States. See Reppy, 1993, op. cit.

57. In the words of US NATO Ambassador Taft, architect of the idea of a transatlantic defence GATT, `What needs to be grasped is that access to the European market is worth the price of opening up our own'. *Financial Times*, 20 February 1991. Cited in Steinberg, op. cit., p. 109.

58. P. Betts, `Go-ahead for super jumbo study', *Financial Times*, 28 January 1993.

59. W.A. Taft IV, `Standing together: defense security and industrial cooperation in the new NATO', *NATO's Sixteen Nations*, November 1990; cited in Steinberg, op. cit., p. 109.

60. Steinberg, op. cit., p. 110.

61. A. Velocci, `Foreign investment in US facing stiffer barriers', *Aviation Week and Space Technology*, 26 October 1992, pp. 26-28.

62. `French say US trade policy threatens NATO arms contracts', *Aviation Week and Space Technology*, 25 January 1993, p. 52.

63. `Adopt the Trade Code', *Defense News*, 25 January 1993, p. 22. Of course, the difficulties being experienced over concluding the Uruguay Round of GATT itself provide an unhelpful context to these ideas. As a NATO official is reported to have told *Defense News*, 15 March 1993, p. 29: `If GATT goes to hell in a handbasket, then [transatlantic] defense trade is dead.'

64. See, for example, US Congress, Office of Technology Assessment, *Holding the Edge: Maintaining the Defense Technology Base* (Washington, D.C.: USGPO, 1989); US Congress, Office of Technology Assessment, *Building Future Security: strategies for restructuring the defense technology and industrial base* (Washington, D.C.: USGPO, 1992); and J. Alic et al., op. cit.

65. `Clinton: Refocus military role', *Defense News*, 26 October 1992, p. 20.

66. G. Graham, `Clinton seeks further defence cuts', *Financial Times*, 5 February 1993. The report says Clinton is seeking to cut a further $10bn from the $280bn budget submitted to Congress by Bush in January. It referred to additional troop reductions and further cuts in SDI as the main targets.

67. Described in *Aviation Week and Space Technology*, 1 March 1993, pp. 18-19.

68. `The continuous development of prototypes and, in selected cases, limited production for operational and field testing'. On financial grounds, this would be very difficult to contemplate in the present fragmented state of the European defence industry. See Office of Technology Assessment, *Building Future Security:...*, loc. cit.

69. K. Krause, *Arms and the state: patterns of military production and trade* (Cambridge: CUP, 1992).

70. Speech by J.-P. Gillyboeuf, Chef du Service Centrale des Affaires Industrielles de l'Armement, DGA to the 7th conference of European armament engineers, Madrid, published in *L'Armement*, no. 35, December 1992, Supplément Rédactionnel, p. 40.