

# 11. Arms production

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## I. Introduction

Arms production takes place in some form in most countries, but large arms-producing companies are located in a small number of countries. In terms of value, the overwhelming share of the production of military goods and services takes place in China, Europe, Russia and the United States. This chapter focuses on the arms industry in the Euro-Atlantic region. Appendix 11C describes recent developments in the Russian arms industry and also provides brief accounts of developments in Belarus and Ukraine.

Section II of this chapter presents a summary of the main trends in arms production on the basis of the developments among the 100 largest arms-producing companies on the SIPRI Top 100 list. It describes an industry in transformation, trying to adapt to ongoing changes in military technology, and focuses on the United States, where these trends are most pronounced and visible, and where there is a deliberate policy to promote this kind of change. In Europe the main target of restructuring continues to be industrial consolidation. Section III reviews the impact of the 2003 war in Iraq on the arms industry and relates it to these broader trends. Section IV discusses the dynamics of internationalization in the arms industry, focusing on developments in the West European arms industry and in transatlantic military–industrial partnerships. Section V identifies technology transfer issues in transatlantic relations, their consequences for armaments cooperation and the ways in which both US and European governments have addressed related matters. The conclusions are presented in section VI. Appendix 11A lists financial and employment data on the 100 largest arms-producing companies in the world (excluding China). For the first time, this table includes Russian companies, although the data for these companies are still approximate. Appendix 11A also provides the sources and methods used in the data compilation. Appendix 11B lists the major national and international acquisitions of arms-producing activities by North American and West European companies in 2003. Appendix 11C is an account of developments in the arms industry in the Russian Federation, Ukraine and Belarus.

## II. Trends in arms production

The upper segment of the global arms industry, as represented in the SIPRI Top 100 list, is characterized by three dominant trends: (a) increasing arms sales; (b) continuing concentration; and (c) changing dynamics of growth and restructuring.

**Table 11.1.** Regional/national shares of arms sales for the top 100 arms-producing companies in the world excluding China, 2002 compared to 2001

Figures do not always add up because of the conventions of rounding.

Number of companies	Region/ country	Arms sales <sup>a</sup> (US \$b.)		Change (%) <sup>b</sup> 2001–2002	Share of total arms sales (%) 2002
		2001	2002		
<b>42</b>	<b>North America</b>	<b>[98.4]</b>	<b>120.8</b>	<b>[23]</b>	<b>62.8</b>
2	Canada	0.7	0.7	– 4	0.3
40	USA	[97.7]	120.1	[23]	62.5
<b>38</b>	<b>Europe</b>	<b>52.2</b>	<b>57.9</b>	<b>11</b>	<b>30.2</b>
11	UK	23.1	23.8	[3]	12.4
8	France <sup>c</sup>	[11.3]	13.9	[24]	7.2
1	Trans-European <sup>d</sup>	5.5	5.6	2	2.9
3	Italy	3.7	4.9	34	2.5
5	Germany	3.6	4.1	14	2.1
6	Russia <sup>e</sup>	[2.3]	2.8	[21]	1.5
1	Sweden	1.1	1.3	24	0.7
2	Spain	0.6	0.8	29	0.4
1	Switzerland	0.5	0.5	4	0.2
1	Norway	0.3	0.3	32	0.2
<b>10</b>	<b>Other OECD</b>	<b>[7.2]</b>	<b>[7.4]</b>	<b>[3]</b>	<b>[3.9]</b>
7	Japan	5.9	5.9	– 1	3.1
2	South Korea <sup>e</sup>	[1.0]	[1.2]	[13]	[0.6]
1	Australia	0.3	0.4	25	0.2
<b>10</b>	<b>Other non-OECD</b>	<b>6.3</b>	<b>6.0</b>	<b>– 4</b>	<b>3.1</b>
4	Israel	3.2	3.2	2	1.7
3	India	1.9	1.6	– 17	0.8
1	Singapore	0.8	0.8	4	0.4
1	South Africa	0.4	0.3	– 9	0.2
<b>100</b>	<b>Total</b>	<b>[164.1]</b>	<b>192.1</b>	<b>[17]</b>	<b>100.0</b>

[ ] = Totals that include estimates for one or more companies; OECD = Organisation for Economic Co-operation and Development

<sup>a</sup> Arms sales include both sales for domestic procurement and export sales.

<sup>b</sup> The percentage changes are based on figures for arms sales that are not rounded.

<sup>c</sup> The total for France in 2001 includes an estimate of the arms production value for DCN.

<sup>d</sup> The company classified as trans-European is the European Aeronautic Defence and Space Company (EADS), which is based in 3 countries—France, Germany and Spain—and registered in the Netherlands.

<sup>e</sup> Data for Russian and South Korean companies are uncertain, and data for Russian arms sales in 2001 are estimated on the basis of the trend in their total sales.

Source: Appendix 11A, table 11A.1.

### Quantitative trends: the top 100 arms-producing companies

Quantitative changes in global, regional and national aggregate arms sales are difficult to assess owing to the lack of comprehensive and consistent data. Most countries do not provide data on total arms sales or on the total value of

arms production in their arms industry. SIPRI therefore compiles data on company arms sales rather than on national arms sales. SIPRI data for the major arms-producing companies in the countries for which such data can be obtained are provided in the list of the top 100 arms-producing companies in 2002 in appendix 11A and summarized in table 11.1. These 100 companies account for a large share of total global arms production,<sup>1</sup> and their developments thus provide a rough indication of arms industry trends in the major arms-producing countries. China, however, is the one major exception, and Chinese companies are not included in the list because no comparable data are available for them.<sup>2</sup> This year the SIPRI Top 100 list includes companies in two countries, South Korea and Russia, that were not included when it was last published.<sup>3</sup> While the data for these companies are less reliable than for other companies on the list, they nevertheless provide an approximate indication of the size of their arms sales.

The total arms sales of the top 100 arms-producing companies in the world (excluding China) amounted to \$192 billion in 2002. US and West European companies accounted for the majority of total sales. Forty US companies on the SIPRI Top 100 list accounted for 62.5 per cent of total top 100 arms sales, and 32 West European companies accounted for 28.7 per cent of the total, including 6 Russian companies which account for 1.5 per cent of total arms sales. Ten companies in other Organisation for Economic Co-operation and Development (OECD) countries had a 3.9 per cent share of the total in 2002, and 10 companies in non-OECD countries other than Russia accounted for 3.1 per cent of the combined arms sales of the top 100 arms-producing companies.

In 2002 there was a significant increase in the arms sales of the top 100 arms-producing companies compared to 2001. All indications are that this trend continued in 2003, in particular in the USA, where government allocations for arms procurement rose considerably. The companies on the 2002 SIPRI Top 100 list increased their combined arms sales by 17 per cent in current dollars, from \$164 billion in 2001 to \$192 billion in 2002. This rate of increase represents a slight overstatement of the general trend in industry, since it includes some new entrants on the list which had much lower arms sales in 2001.<sup>4</sup> If the comparison is instead made with the companies on the

<sup>1</sup> In 1997 the companies on the SIPRI Top 100 list accounted for roughly 75% of global arms production. Sköns, E. and Weidacher, R., 'Arms production', *SIPRI Yearbook 1999: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1999), p. 387.

<sup>2</sup> There may also be companies in other countries that would be included in the SIPRI Top 100 list, if data were available, e.g., some of those in the Czech Republic, Kazakhstan, Poland, Taiwan and Ukraine.

<sup>3</sup> Weidacher, R., 'Arms industry data', *SIPRI Yearbook 2002: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2002), pp. 357–63.

<sup>4</sup> Trends in the SIPRI Top 100 list are difficult to analyse owing to the rapidly changing composition of the list. New companies enter the list through increased sales or because they have been divested from other companies, and companies no longer on the list have become acquired by other companies. For new companies, comparable data for 2001 are not always available and estimates have to be made. Even so, the data in table 11.1 provide a rough indication of actual trends because the effect of the changing composition is relatively small on a one-to-one year basis.

**Table 11.2.** Companies with the largest increase in arms sales, 2001–2002<sup>a</sup>

Figures are in US \$m., in current dollars.

Company	Country	Sector <sup>b</sup>	Arms sales (\$ m.)		Change 2001–2002	
			2001	2002	%	\$ m.
<i>Companies with the largest absolute increase in arms sales (ranked by \$ increase)</i>						
Northrop Grumman	USA	Ac El Mi SA/A	10 580	17 800	68	7 220
Boeing	USA	Ac El Mi	18 000	20 500	14	2 500
General Dynamics	USA	A El MV Sh	7 790	9 820	26	2 030
L-3 Communications	USA	El	1 720	3 020	76	1 300
Thales	France	El Mi SA/A	5 630	6 880	22	1 250
Computer Sciences	USA	Comp	1 770	2 900	64	1 130
Lockheed Martin	USA	Ac El Mi	17 860	18 870	6	1 010
Raytheon	USA	El Mi	14 340	15 250	6	910
Finmeccanica	Italy	Ac El MV Mi SA/A	2 860	3 720	30	860
United Technologies	USA	El Eng	3 800	4 550	20	750
Mitsubishi Heavy Ind.	Japan	Ac MV Mi Sh	2 270	2 780	22	510
<b>Total for 11 companies</b>						<b>18 560</b>
<i>Companies with the largest relative increase in arms sales (ranked by % increase)</i>						
Irkut <sup>c</sup>	Russia	Ac	[210]	510	[143]	[300]
L-3 Communications	USA	El	1 720	3 020	76	1 300
Uralvagonzavod <sup>c</sup>	Russia	MV	[160]	270	[69]	[110]
Northrop Grumman	USA	Ac El Mi SA/A	10 580	17 800	68	7 220
General Motors	USA	El Eng MV Mi	540	900	67	360
Moog	USA	Comp (El Mi)	180	300	67	120
Computer Sciences	USA	Comp (Oth)	1 770	2 900	64	1 130
Dassault Aviation	France	Ac	730	1 140	56	410
Alvis	UK	MV Oth	220	340	55	120
Veridian	USA	Comp (Oth)	330	500	52	170
Fiat	Italy	Eng MV SA/A	490	720	47	230
Fincantieri	Italy	Sh	320	470	47	150
Ufimskoe <sup>c</sup>	Russia	Eng	[220]	320	[45]	[100]
Oshkosh Truck	USA	MV	420	600	43	180
DaimlerChrysler	Germany	Eng	680	920	35	240
VT Group	UK	Sh	490	660	35	170
SEPI	Spain	Sh	290	390	34	100
Titan	USA	Comp (Oth)	550	730	33	180
Kongsberg	Norway	El Mi SA/A	250	330	32	80
EDO	USA	El	220	290	32	70
United Defense	USA	MV	1 320	1 730	31	410
Finmeccanica	Italy	Ac El MV Mi SA/A	2 860	3 720	30	860
Aerokosmicheskoe ob. <sup>c</sup>	Russia	El	[370]	480	[30]	[110]
CACI	USA	El	330	430	30	100

<sup>a</sup> Companies that increased their arms sales by at least \$500 m. or 30% in 2002.<sup>b</sup> For sector code abbreviations, see appendix 11A.<sup>c</sup> For the Russian companies, the change in arms sales between 2001 and 2002 is estimated on the basis of the trend in total sales for each of these companies.

Source: Appendix 11A.

SIPRI Top 100 list in 2001 (i.e., those which had the highest arms sales in 2001, and excluding Russian companies), the increase is somewhat smaller: 14 per cent in current dollars.<sup>5</sup>

Thus, although the exact, or most representative, rate of increase is difficult to estimate on the basis of these data, it is clear that in broad terms the arms sales of the top 100 arms-producing companies increased in 2002. Preliminary reports for 2003 indicate that the increase in arms sales continued in 2003.

On a national basis, the greatest increase in arms sales in 2002 took place in companies based in Australia, France, Italy, Norway, Spain and Sweden (table 11.1). In these countries, the increase in arms sales exceeded 20 per cent in current dollar terms. The combined arms sales of the six Russian companies on the SIPRI Top 100 list also exceeded 20 per cent, but this figure is less certain because it is estimated on the basis of the trend of total company sales, not just arms sales. In four countries—Canada, India, Japan and South Africa—company arms sales decreased in 2002.

At the company level, there were many cases of extraordinary growth in arms sales in 2002 (table 11.2). In volume terms, the largest companies also had the largest absolute increases in arms sales. The SIPRI Top 100 list covers a diverse group of companies whose arms sales range from \$230 million for the smallest to \$20 500 million for the largest company. The 11 companies listed in table 11.2 which had the largest absolute increase in arms sales accounted for two-thirds (\$18.6 billion) of the total increase of the top 100 arms-producing companies (\$27.9 billion). However, many of the smaller companies also experienced significant growth. Eleven US companies and 9 West European companies increased their arms sales by 30 per cent or more in current dollars.<sup>6</sup> Four Russian companies also belong to this category, assuming that their arms sales grew in line with their total sales.

These growth rates include the effect of both inflation and exchange rate fluctuations. The impact of exchange rate fluctuations on non-US companies is relevant because many of these companies operate in the international market and are exposed to international competition. For example, European companies have suffered from the impact of fluctuations in the US dollar rate. In 2003 foreign exchange fluctuations for the French company Thales reduced its revenues by €378 million (*c.* \$420 million).<sup>7</sup>

## Concentration

Since the mid-1990s, the arms industry has been characterized by increasing concentration through mergers and acquisitions (M&As). This trend has been most pronounced in the USA. In Western Europe the concentration process has been much slower because it has reached its national limits in most areas,

<sup>5</sup> The total arms sales of the top 100 companies in 2001 amounted to \$168 billion.

<sup>6</sup> However, 2 of the 3 major European arms producers—BAE Systems and EADS—experienced reduced arms sales in 2002, both in dollar terms and in local currency terms.

<sup>7</sup> 'Thales 03 revenue EUR10.6 billion', *Dow Jones Business News*, 13 Feb. 2004, URL <[http://biz.yahoo.com/djus/040213/0155000093\\_6.html](http://biz.yahoo.com/djus/040213/0155000093_6.html)>.

while at the same time cross-border consolidation has confronted a number of obstacles, such as differing national procurement requirements and preferences, which result in a fragmentation of European arms production.<sup>8</sup>

In the USA concentration activity peaked in the second half of the 1990s. The data of Infobase, a commercial producer of statistics on worldwide M&As in the defence and aerospace industry, indicates a strong downward trend between 1999 and 2002, the most recent year for which data are available. Infobase's data show a decline in the total value of global M&A deals from \$65.9 billion in 1999 to \$27.2 billion in 2002.<sup>9</sup> This trend is likely to be strongly influenced by developments in the US arms industry. In its July 2003 semi-annual report, Infobase reported 129 acquisitions of defence-related firms in the first half of 2003, a 30 per cent increase in M&A activity compared with the first half of 2002,<sup>10</sup> but this was a trend in the number of acquisitions, not in their value, and thus could include a large number of small acquisitions.

Data from the US Department of Defense (DOD) support that conclusion. DOD data indicate that, while the number of M&A transactions registered by the DOD has increased, there is a trend towards lower values for each of these and a shift in transactions from the prime contractor level towards the sub-contractor level.<sup>11</sup> By early December 2003, the DOD had registered 37 M&A transactions for 2003, a high number compared with the annual average of 23 M&A deals in the 10-year period 1994–2003. However, the combined value of these 37 M&A deals was only \$8 billion, and only one-eighth of the value of the 28 M&A deals in 2001.

SIPRI data also indicate continued concentration activity at relatively high rates in the USA in 2002 and 2003, although at a much lower level than during the peak period of the late 1990s. This is reflected in the growth of company arms sales in 2002 (table 11.2) and illustrated in the list of acquisitions in 2003 (appendix 11B).

As shown above (table 11.2), 11 companies on the SIPRI Top 100 list in 2002 accounted for two-thirds of the total increase, thus raising the rate of concentration among the top 100 arms-producing countries considerably: 8 of these were US companies. Part of these increases is the result of organic growth (increased sales of existing units), but many of these companies increased sales primarily through their acquisition of arms-producing units

<sup>8</sup> This is described in the abundant literature on the topic. See, e.g., Hartley, K., 'The future of European defence policy: an economic perspective' *Defence and Peace Economics*, vol. 14, no. 2 (Jan. 2003); Heisbourg, F. *et al.*, 'European defence: making it work', *Chaillot Paper* no. 42 (EU Institute for Security Studies (EUISS): Paris, Sep. 2000); Howorth, J., 'European integration and defence: the ultimate challenge?', *Chaillot Paper* no. 43 (EUISS: Paris, Nov. 2000); and Schmitt, B., 'The European Union and armaments: getting a bigger bang for the euro', *Chaillot Paper* no. 63 (EUISS: Paris, Aug. 2003).

<sup>9</sup> 'Defense mergers & acquisitions tallies \$27 billion in deals in 2002', PR Newswire, 24 Jan. 2003, URL <[http://www.findarticles.com/cf\\_dls/m4PRN/2003\\_Jan\\_24/96806858/p1/articlejhtml](http://www.findarticles.com/cf_dls/m4PRN/2003_Jan_24/96806858/p1/articlejhtml)>.

<sup>10</sup> 'Defense mergers & acquisitions tallies nearly \$10 billion in dealmaking in first half of 2003', PR Newswire, Infobase Press Release, 24 July 2003, URL <<http://www.infobasepub.com/>>.

<sup>11</sup> US Department of Defense, Deputy Under Secretary of Defense (DUSD) for Industrial Policy, Remarks at the Defense Manufacturers Conference, Marriot Wardman Park Hotel, Washington, DC, 2 Dec. 2003, URL <[http://www.acq.osd.mil/ip/speeches/defense\\_mfg\\_conference-12-2-2003.pdf](http://www.acq.osd.mil/ip/speeches/defense_mfg_conference-12-2-2003.pdf)>.

from other companies. The main examples in the USA include Northrop Grumman's acquisition of the information technology (IT) and space company TRW in a major deal valued at \$7.8 billion; L-3 Communications' acquisition of Raytheon Aircraft Integration Systems for \$1.13 billion; and General Dynamics' acquisition of General Motors Defense in Canada for \$1.1 billion.<sup>12</sup> In Western Europe, Finmeccanica acquired Marconi Mobiles for \$557 million in 2002. Other West European companies listed in table 11.2 which grew through major acquisitions in 2002 include Alvis, Thales and the VT Group (previously Vosper Thornycroft).

Concentration activities also continued at a relatively high rate in 2003. Appendix 11B, table 11B.1 shows the major acquisitions in the North American and West European arms industry in 2003. It includes a large number of acquisitions in the US arms industry, four of which had a deal value of around \$1 billion or more: one by Computer Sciences Corporation, two by General Dynamics, and one by Lockheed Martin. However, towards the end of 2003 commercial and industrial interest in M&As seemed to be declining. Analysts in the US investment sector predicted that high-value 'defence M&As' would slow down as a result of cooling 'defence stocks', a rising potential for deals in commercial aerospace and a resurgence of commercial IT firms, which would draw investors away from the military-industrial sector.<sup>13</sup>

In the West European arms industry there were few major acquisitions in 2003. The most important deals were Italian Finmeccanica's acquisition of Aermacchi for \$176 million and the purchase, by the European Aeronautic Defence and Space Company (EADS), of BAE Systems' 25 per cent share in Astrium, making it the sole owner of this previous joint venture company.<sup>14</sup> The latter acquisition paved the way for an integration and restructuring of EADS' space activities worldwide and also facilitated a merger with another major European satellite manufacturer, Alcatel Space, which was under consideration in 2003.<sup>15</sup> The British Department of Trade and Industry decided not to refer the case to the British Competition Commission, provided that EADS remedied security concerns relating to the confidentiality of sensitive information and to the maintenance of British capability to develop, operate and maintain military communications.<sup>16</sup>

The main development in transatlantic acquisitions in 2003 was the acquisition of two major European producers of aircraft engines, FiatAvio and MTU Aero Engines, by US companies (see section IV), and US General Dynamics'

<sup>12</sup> See the tables on mergers and acquisitions in Baumann, H., 'Tables on national arms production', *SIPRI Yearbook 2003: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2003), table 11A.5, pp. 407–408.

<sup>13</sup> 'Defense mergers slow down: few big deals due as investors eye tech, commercial aerospace', *Defense News*, 8 Dec. 2003, available at URL <<http://www.defensenews.com/storyphp?F=2449596&C=thisweek>>.

<sup>14</sup> EADS, 'EADS completes full acquisition of Astrium', Press Release, Schiphol Rijk, 26 May 2003, URL <[http://www.eads.net/en/press/eads/20030526\\_astrium.xml](http://www.eads.net/en/press/eads/20030526_astrium.xml)>.

<sup>15</sup> ' wooing Alcatel', *Aviation Week & Space Technology*, 5 May 2003, pp. 25–26; and 'Alcatel to start talks on space links with EADS', *Air Letter*, 1 May, 2003, p. 7.

<sup>16</sup> British Department of Trade and Industry, 'Sutcliffe's decision on space systems merger', Press Release, 2 Sep. 2003, URL <<http://www.gnn.gov.uk/gnn/national.nsf/0/D1AD53AD0CCA184780256D950053B93C?opendocument>>.

acquisition of the Austrian producer of military vehicles, Steyr Spezialfahrzeug. European acquisitions of US-based companies were smaller deals, and were made primarily by British companies (see appendix 11B).

Long-held plans to restructure the Russian arms industry were further developed in 2003, when the government announced a new plan for consolidating the aircraft industry. It foresees the merger of the major Russian aircraft design bureaux—Ilyushin, MiG, Sukhoi and Tupolev—into a large aircraft corporation by 2007. The new company, provisionally named United Aircraft Manufacturing Holding (UAMH, known as OAK in Russia) is described as similar in structure to the trans-European company EADS. It will also include the manufacturing enterprises such as Irkut, which produces Sukhoi aircraft under licence, but will exclude aero-engine and helicopter companies.<sup>17</sup> Sukhoi is likely to be the lead company because it has been selected to develop the fifth generation of Russian combat aircraft.<sup>18</sup>

### **The direction of restructuring**

The direction of arms industry restructuring has changed considerably since the period of downsizing that occurred during most of the first decade of the post-cold war period. Although changes vary between regions, it is clear that restructuring and company strategies are increasingly driven by recent developments in the application of military technology and by forecasts of future trends in these areas. While there are still sectors in which restructuring is propelled by a need to adjust to a lower level of demand, such as the European military shipbuilding industry, the pressures for downsizing and rationalization are no longer the predominant driver in the restructuring process. Acquisitions and company strategies are increasingly driven by the desire to obtain capabilities in growing sectors, such as electronics, communications, IT and services. This process is based on long-term trends in the development of military technology and the transformation of military forces that emerged in the 1990s. However, this trend has been accelerated significantly by the increase in US procurement spending after 11 September 2001. Companies are moving with great speed into areas where procurement budgets are rising.

The US DOD is implementing an active policy to facilitate and promote industrial transformation in this direction. This policy includes purchases from and cooperation with foreign companies in order to acquire new technologies.<sup>19</sup> The boom in the US 'military market' also attracts non-US companies, which have adopted a variety of strategies to access the US market. In Europe, developments are taking place in the context of the European Security and Defence Policy (ESDP),<sup>20</sup> the European Union (EU) and the North Atlantic

<sup>17</sup> Pronina, L., 'Aviation industry to go private', *Moscow Times*, 1 Dec. 2003; and 'Rosaviakosmos to merge five aerospace firms', *Air Letter*, 17 Dec. 2003, p. 7. See also appendix 11C in this volume.

<sup>18</sup> Pettibone, R., 'Sukhoi hopes to head Russian consolidation', *Forecast International*, 19 Dec. 2003, URL <<http://emarketalerts.forecast1.com/mic/eabstract.cfm?recno=101734>>.

<sup>19</sup> For a description of this policy, see chapter 9 in this volume.

<sup>20</sup> See also chapter 1 in this volume.



Treaty Organization (NATO) rapid reaction forces (and crisis management resources generally) and the perceived need associated with this for common procurement and joint production capabilities. This has now led to the first-ever decision to set up an armaments-related agency in the EU framework.<sup>21</sup>

### *The expanding sectors*

The main expanding sectors are military electronics, communications, IT and various types of services. New demand is being created in these sectors by developments in military technology and military operations, such as systems integration and network-centric warfare (NCW). A second source of demand is the increased government spending on homeland security and intelligence activities. A third increase in demand is being generated by governments' increased outsourcing of services to private industry, making the provision of services a growing sector in industry. New companies that specialize in the provision of services to defence ministries and the armed forces are being formed and the established arms-producing companies are developing services businesses, either by building up such capabilities organically or through acquisitions of services companies. These services are of various types, ranging from repair services and logistical services to actual combat services. Most of them are focused on peacetime activities, but some such services are also intended for wartime conditions.<sup>22</sup> Thus, following the process of privatization of state-owned production in the 1980s and 1990s, there is a new wave of outsourcing of these kind of activities, which is likely to continue. Hard figures are difficult to obtain, but the DOD is reportedly contemplating outsourcing up to 226 000 jobs by 2008,<sup>23</sup> and, according to some estimates, the size of the private military industry could double in the next 10 years.<sup>24</sup>

The SIPRI Top 100 list includes a number of companies which specialize in services or which have a major share of their military activities in the services sector. These include CACI International, Computer Sciences Corporation (which has acquired Dyncorp) and Vinnell, which was acquired by Northrop Grumman in 2003. In some cases, companies are being formed by divesting units from defence ministries. This is the case with British QinetiQ, which was

<sup>21</sup> Council of the European Union, 'Council decision of 17 November 2003 creating a team to prepare for the establishment of the agency in the field of defence capabilities development, research, acquisition and armaments', 2003/834/EC, *Official Journal of the European Union*, L 318, 3 Dec. 2003, pp. 19–21. See also 'EU agency gets go ahead', EUobserver.com, 17 Nov. 2003, URL <<http://www.euobserver.com/index.phtml?sid=13&aid=13577>>; Thurston, M., 'EU agency aims to boost bloc's military muscle', *Defense News*, 17 Nov. 2003; and Tigner, B., 'Europeans bicker over arms agency set-up', *Defense News*, 17 Nov. 2003, p. 4.

<sup>22</sup> Schwartz, N. D., 'The war business: the Pentagon's private army', *Fortune.com*, 17 Mar. 2003, URL <<http://www.fortune.com/fortune/articles/0,15114,427948,00.html>>.

<sup>23</sup> Segal, G. F., 'DOD aims to compete', *Privatization Watch*, June/July 2003, p. 7, URL <<http://www.rppi.org/junejuly03pw.pdf>>.

<sup>24</sup> Private military firms (PMFs) have become an integral part of the armed forces, particularly in the USA. As the military was downsized in the 1990s, many jobs were outsourced to PMFs. According to one estimate, the DOD planned to spend 8% of its total budget (at least \$30 billion) on PMFs in 2003. Singer, P. W., *Corporate Warriors: The Rise of the Privatized Military Industry* (Cornell University Press: New York, 2002), cited in 'Warfare goes private: government outsourcing creates growing military industry sector for service firms', *Defense News*, 21 July 2003, p. 48.

created in July 2001 from a major part of the Defence Evaluation and Research Agency (DERA) of the Ministry of Defence (MOD).<sup>25</sup> QinetiQ's services are of a broad variety, including strategic military consulting, military research and development (R&D), logistics support, tactical intelligence services, network services and military training.<sup>26</sup> Among the established companies, the following have developed significant capabilities in the area of services: BAE Systems (United Kingdom), Babcock International Group (UK), Boeing, EADS, Lockheed Martin, Northrop Grumman, Raytheon and the VT Group (UK). Over a period of a few years the VT Group developed from a major shipbuilding company (Vosper Thornycroft) into a company specialized in services, which accounted for 80 per cent of its sales in 2002.<sup>27</sup> Many of these companies also exhibit the strongest growth in arms sales among the companies on the SIPRI Top 100 list (see table 11.2 and section III).

An even more important group of companies is those involved in military electronics, communications and IT. The pattern of growth in US company arms sales and the direction of restructuring of the US arms industry is strongly influenced by the growth in these markets. Companies that specialize in command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) technologies and specialized technical services increasingly find themselves the target of acquisitions by bigger established companies. Major examples in 2003 were General Dynamics' acquisition of Veridian for \$1.5 billion and Lockheed Martin's acquisition of Titan for \$2.4 billion. Other major IT-specialized companies are Anteon, L-3 Communications, Science Applications International Corporation and Silicon Graphics, most of which made major acquisitions in these sectors in 2002 and 2003.

### *Policies to promote industrial change*

The DOD review system for M&As in the arms industry no longer appears to impose any major constraints on concentration. In 2003 only one M&A transaction was denied.<sup>28</sup> Previous concern about monopolistic tendencies arising from M&As seems to have vanished. The relaxation of the US review process for M&As is motivated by the DOD's vision for 'the twenty-first century defence industrial base', on the basis of 'war fighting capabilities', which requires transformation of the structure and capability of the arms industry. As part of this transformation, the DOD aims to introduce measures to stimulate and facilitate the emergence of new suppliers.<sup>29</sup> In 2002 the Joint Staff<sup>30</sup>

<sup>25</sup> In Feb. 2003 the British Government sold a 33.8% share in the company to the US investment company The Carlyle Group.

<sup>26</sup> Sköns, E. and Weidacher, R., 'Arms production', *SIPRI Yearbook 2002* (note 3), pp. 341–46. Table 7.7 provides a list of companies providing such services.

<sup>27</sup> 'Warfare goes private' (note 24).

<sup>28</sup> US Department of Defense (note 11).

<sup>29</sup> This is not a new idea. On the contrary, it was one of the major ideas of Jacques Gansler, who served as the Under Secretary of Defense for Acquisition and Technology in the Clinton Administration. However, this strategy proved difficult to implement because it would have required termination of contracts for a number of traditional weapon systems, which proved politically unfeasible at that time, in a period of declining spending on arms procurement.

<sup>30</sup> The Joint Staff is a group of officers which assists the Chairman of the Joint Chiefs of Staff.

developed a ‘new war fighting vernacular’<sup>31</sup> for the intended transformation of the arms industry and developed five so-called ‘functional concepts’ for this purpose—battlespace awareness, command and control, force application, protection and focused logistics—as first outlined in the DOD’s *Transforming the Defense Industrial Base: A Roadmap*, in February 2003.<sup>32</sup> These concepts are meant to serve as a basis for the DOD in its review of acquisitions.

In 2003 the DOD began a process of assessing the capabilities of the arms industry using the new war-fighting vernacular. The first assessment was completed in 2003 and presented in a January 2004 report on one of the five functional concepts: battlespace awareness.<sup>33</sup> In the period up to early 2005 the DOD will undertake similar assessments on ‘defence industrial base capabilities’ for the other four functional concepts. The aim of this series of assessments is ‘to redefine and reassess within this new architecture which industrial base capabilities are truly critical to the war fighter . . . and help to focus our manufacturing base to the challenges of 21st century warfare’.<sup>34</sup> The hope is that in future the new entrants into the arms industry will create increased competition. However, there is also a strong tendency in the opposite direction, in that the level of M&A activity is likely to be less constrained by considerations relating to competition and instead driven by the need for new war-fighting capabilities. This conclusion is shared by Infobase: ‘This is an Administration that wants warfighting tools, and it’s willing to accept M&A activity as a legitimate means to that end’.<sup>35</sup> Whether this policy will be successful is still not clear, since it will depend on the continuous availability of large allocations for funding these capabilities. In particular, there are two factors that may make this problematic: (a) the distribution of procurement funds between new capabilities and cold war-era systems which are of questionable utility in the current security environment; and (b) the persistent mismatch between future defence plans and probable future budgetary resources for funding these plans, which may increase in view of the unsure economic and political sustainability of even the current US defence budget plans.<sup>36</sup>

### III. The impact of the war in Iraq on the arms industry

Final assessments of the impact of the war in Iraq on the arms industry cannot yet be made. Assessments in 2003 were divided into two broad categories. On

<sup>31</sup> US Department of Defense (note 11).

<sup>32</sup> US Department of Defense, Office of the Deputy Under Secretary of Defense (Industrial Policy), *Transforming the Defense Industrial Base: A Roadmap* (US Department of Defense: Washington, DC, Feb. 2003), available at URL <<http://www.acq.osd.mil/ip>>. See also Sköns, E. and Baumann, H., ‘Arms production’, *SIPRI Yearbook 2003* (note 12), pp. 373–403.

<sup>33</sup> US DOD, Deputy Under Secretary of Defense for Industrial Policy, ‘Defense industrial base capabilities study: battlespace awareness’, Jan. 2004, available at URL <<http://www.acq.osd.mil/ip/>>.

<sup>34</sup> US Department of Defense (note 11).

<sup>35</sup> Stuart McCutchan, head of Infobase, the publisher of the Defense Mergers & Acquisitions Newsletter, cited in ‘Defense mergers & acquisitions tallies \$27 billion in deals in 2002’ (note 9).

<sup>36</sup> Gold, D., ‘The coming Bush defense budget train wreck in historical perspective’, Paper for the Study Group on the Economics of Security in the post-9/11 world, New School University, 14 Nov. 2003, URL <<http://worldpolicy.org/projects/arms/study/>>. See also chapter 10 on military expenditure in this volume.

the one hand, the 'network centrists' pointed to the quick victory as vindication of the focused procurement of network-centric warfare and argued that this will accelerate the move towards faster, lighter forces that can rapidly be deployed anywhere. On the other hand, were those analysts who asserted that existing military planning, and thus equipment requirements, will not be significantly affected by the war.<sup>37</sup> They pointed to the key role played by older traditional, cold war-type weapon systems. Long-range bombers dropped approximately 28 per cent of the munitions used in the war,<sup>38</sup> and Abrams and Challenger tanks were highly valued because of their armour and survivability.<sup>39</sup> However, when considered in a longer perspective, these views do not appear contradictory. The conflict served to highlight key developments in the arms industry, but these trends have developed over several years. In that perspective, the long-term impact of the war on arms producers is likely to be limited. Even so, the fierce debate over arms procurement priorities will probably continue because of the parallel success of both traditional and non-traditional technologies in the Iraq war and the uncertainty of future threats.

The first way in which the Iraq war demonstrated a pervasive trend in the arms industry relates to the structure of the industry itself, as discussed in section II. The boundaries of the 'arms industry', as traditionally defined, are rapidly expanding because defence departments have increasingly outsourced tasks to companies which specialize in the provision of military services. In the Iraq war there were about 20 000 contractors in the region, performing numerous tasks such as servicing equipment and providing logistical support.<sup>40</sup> The war demonstrated how far the 'privatization' of the US Armed Forces has progressed. A brief overview of the value and type of contracts awarded to private military firms (PMFs) is useful in understanding the extent to which the DOD relied on private contractors in the 2003 Iraq war. These private sector companies are of different kinds.<sup>41</sup>

Kellogg, Brown and Root, a subsidiary of Halliburton, was awarded a contract in December 2001 to provide logistical support for US Army field operations. The agreement, known as a Logistics Civil Augmentation Program contract, is a 'cost plus award fee' contract, which means that the total value is open-ended and dependent on military requirements. The US Army issues a 'task order' when it needs a service performed. Kellogg, Brown and Root is paid for the cost of the service provided, plus a percentage fee. According to

<sup>37</sup> 'Our basic thesis is that the war doesn't matter', Chris Mecray, Deutsche Bank, quoted in Mulholland, D., 'Who will profit from the war in Iraq?', *Jane's Defence Weekly*, 23 Apr. 2003, p. 20.

<sup>38</sup> Spiegel, P., 'The technology is put to the test', *Special Report: Defence Industry*, *Financial Times Insert*, 19 Nov. 2003, p. 1.

<sup>39</sup> Mulholland (note 37).

<sup>40</sup> Segal, G. F., 'Contractors at war', *Privatization Watch*, June/July 2003, p. 4, URL <<http://www.rppi.org/junejuly03pw.pdf>>.

<sup>41</sup> One classification of PMFs identifies three broad types of such firms: 'military provider', 'military consulting' and 'military support' firms. Singer, P. W., *Corporate Warriors: The Rise of the Privatized Military Industry* (Cornell University Press: Ithaca, N.Y. and London, 2003).

the Center for Public Integrity, by September 2003 the company had been awarded orders in Iraq amounting to a total of \$2 billion.<sup>42</sup>

Vinnell Corporation, a subsidiary of Northrop Grumman, was awarded a \$48 million contract to train the new Iraqi Army.<sup>43</sup> The instructors are civilians, but the majority of them are former US military personnel.<sup>44</sup> In April 2003, DynCorp, a subsidiary of Computer Sciences Corporation, won a contract worth \$50 million to train the Iraqi police force.<sup>45</sup> Under the terms of the agreement, DynCorp would supply up to 1000 civilian advisors. Several British PMFs were also involved in post-war Iraq during 2003. As of September, Global Risk Strategies had 1100 employees in Iraq, mostly former soldiers.<sup>46</sup>

The integral role of PMFs in conflict zones had, however, been established before the Iraq war. For example, DynCorp won a contract to provide security for Hamid Karzai, Afghanistan's president. The armed DynCorp employees were former members of elite US Army units.<sup>47</sup> The use of PMFs to train armed forces had a long history prior to Iraq. As early as 1975, Vinnell Corporation was engaged in a similar project in the Middle East, training the Saudi Arabian National Guard. That relationship has continued. Under an \$800 million contract with the Saudi Government, Vinnell also provided training to the Saudi military forces in 2003.<sup>48</sup>

The second way in which the Iraq war highlighted an important development in the arms industry relates to military technology. As the line between work performed by contracted companies and the military has shifted, so has the line between 'commercial' and 'military' production. The armed forces would be virtually unable to function without the expertise of electronics, communications and IT companies. This calls into question the issue of what a 'defence' company actually is. The war in Iraq highlighted the importance of companies that manufacture the electronics components on which C4ISR technologies rely.

The proven success of new technologies on the battlefield<sup>49</sup> also has important short-term implications for the arms industry, since it will probably reinforce spending on C4ISR capabilities in the next few years.<sup>50</sup> However, the

<sup>42</sup> Center for Public Integrity, 'Windfalls of war: Kellogg Brown and Root: background', 4 Feb. 2004, URL <<http://www.publicintegrity.org/wow/bio.aspx?act=pro>>.

<sup>43</sup> 'US firm to rebuild Iraqi army', BBC News Online, 26 June 2003, URL <<http://news.bbc.co.uk/1/hi/business/3021794.stm>>.

<sup>44</sup> 'Pentagon: a third of Iraqi army troops quit', CNN.com, 11 Dec. 2003, URL <<http://www.cnn.com/2003/US/12/11/sprj.nirq.new.army.ap/>>.

<sup>45</sup> 'CSC's Dyncorp International awarded \$50 million contract to support law enforcement functions in Iraq', Computer Sciences Corporation Internet site 'News and events', 18 Apr. 2003, URL <<http://www.csc.com/newsandevents/news/2072.shtml>>.

<sup>46</sup> Catan, T and Fidler, S., 'The military can't provide security', *Financial Times*, 30 Sep. 2003, p. 13.

<sup>47</sup> Schwartz (note 22).

<sup>48</sup> Center for Public Integrity, 'Windfalls of war: background: Vinnell Corporation', 4 Feb. 2004, URL <<http://www.publicintegrity.org/wow/bio.aspx?act=pro&ddlC=64>>. Thomas Fintel, Vinnell's CEO, served in the US Army for 27 years.

<sup>49</sup> For a discussion of the technological impact of the Iraq war, see chapter 12 in this volume.

<sup>50</sup> In a May 2003 speech to the Senate Appropriations Defense Subcommittee, Secretary of Defense Rumsfeld highlighted the importance of intelligence in the Iraq War 'and the ability to act on that intelligence rapidly . . . The success of these efforts in Operation Iraqi Freedom validates the

movement towards NCW is a medium- to long-term trend. The importance of information dominance had already been conclusively proven in the 2001 war in Afghanistan, where US forces used communications technology 'to find and strike targets with unprecedented speed and accuracy'.<sup>51</sup> In 1999 in Kosovo there was also large-scale use of 'smart' weapons. Future demand for precision weapons and sophisticated electronics can be attributed just as much to their success in those wars as to the most recent conflict.

This is not to say that the Iraq war had no impact on the arms industry. It generated contracts which would not have been awarded otherwise. Several companies won orders to replenish stocks of weapons. For example, in April 2003, Raytheon received a request from the US Navy to accelerate the production of Tomahawk tactical missiles.<sup>52</sup> Companies currently 'in favour' with investors are of two types: those that produce C4ISR technologies; and those that provide logistical support and other services to armed forces. These companies have recently enjoyed a large share of military spending, but some of this is owing more to ongoing long-term trends of privatization and modernization trends in the arms industry than to the Iraq war.

While the supplemental appropriations, totalling \$127 billion, for the wars in Afghanistan and Iraq<sup>53</sup> released funds that would not otherwise have been available, a relatively small share of these funds will be spent on procurement. They are likely to have a short-term impact. However, the arms industry is based on long-term contracts spread out over a long period of time. The major companies are large and are usually involved in several areas of industry, so these contracts will account only for a small share of their revenues. Even in the short term, 11 September had a greater impact than the Iraq war. One indication of this is that defence stocks surged 40 per cent in the months after 11 September, in anticipation of major spending increases.<sup>54</sup> The gains made after the invasion of Iraq were far more modest and can to a great extent be explained by improvements in the overall global economic situation.<sup>55</sup>

recommendation in this budget for increased investments in command, control, communications, intelligence and persistent surveillance'. Rumsfeld, D. H., 'Prepared Statement for the Senate Appropriations Defense Subcommittee: 2004 Defense Budget Request', Washington, DC, 14 May 2003, URL <<http://www.defenselink.mil/speeches/2003/sp20030514-secdef0202.html>>.

<sup>51</sup> Krane, J. 'Pentagon could debut new weapons in Iraq', GlobalSecurity.Org, 13 Feb. 2003, URL <<http://www.globalsecurity.org/org/news/2003/030213-newweapons01.htm>>. See also chapter 12 in this volume.

<sup>52</sup> Holmes, S. *et al.*, 'More chips, fewer choppers', Business Week Online, 14 Apr. 2003, URL <[http://www.businessweek.com/magazine/content/03\\_15/b3828610.htm](http://www.businessweek.com/magazine/content/03_15/b3828610.htm)>.

<sup>53</sup> See chapter 10 in this volume.

<sup>54</sup> 'Wall Street Week: talk of war isn't helping defense stocks', *Reno Gazette-Journal*, 1 Mar. 2003, available at URL <<http://www.rgj.com/news/stories/html/2003/03/01/35736.php>>.

<sup>55</sup> The S&P Aerospace and Defense Index gained 10% between Jan. and Nov. 2003. However, it actually lagged behind the Standard & Poor's (S&P) 500, an index considered to be a benchmark of the overall US stock market. During the same period, the S&P 500 gained 20%. See 'Defense stocks gain during US election years: study', *Forbes.com*, 7 Nov. 2003, URL <<http://www.forbes.com/markets/newswire/2003/11/07/rtr1140596.html>>

## IV. The dynamics of internationalization

### The US arms industry in the context of 'globalization'

Discussion of the globalization of the arms industry has become commonplace, and the literature on the topic continues to expand. However, globalization is seldom defined clearly in terms of what characterizes it or what drives it. In particular, an analytic framework does not exist that places developments in the arms industry in the broader context of globalization, rather than focusing more narrowly on the arms industry.

The extent to which globalization is taking place in the US arms industry remains a significant point of contention. What is clear is that domestic actors in the military–industrial establishment are consciously adopting strategies to cope with globalization. They either seek to move with and potentially shape those forces or to isolate themselves from them. Domestic actors that deal with arms industry-related policy issues—such as industry consolidation, cross-border M&As and international armaments collaboration—have become entrenched in a globalizing policy process. In this context, the military–industrial establishment has opted for certain 'global' restructuring and cooperative transnational initiatives while avoiding others.<sup>56</sup> US efforts to exploit foreign sources of technology, while simultaneously protecting the USA from becoming too dependent on foreign sources of military technology and equipment, provide an example of the move both towards and away from global approaches. One element of the DOD's military–industrial transformation is its assessment of the contribution of the global arms industry to supporting US war-fighting potential. To this end, the DOD plans 'to craft cooperative development and testing activities with foreign countries and companies where their technology is critical to our war fighters'.<sup>57</sup>

Nonetheless, careful assessments are made to ensure that such activities do not lead to detrimental dependency on foreign suppliers. One example of this is the US DOD study, undertaken in 2003 in the aftermath of the Iraq war, to review the extent to which it depends on foreign suppliers for operationally important military systems. The study was initiated because the 'recent operations in Iraq had caused concern that foreign nations might restrict or preclude shipments of defense articles for DOD applications during internationally unpopular engagements'.<sup>58</sup> One particularly controversial incident, in which a Swiss company refused to supply vital components, sparked a 'buy American'

<sup>56</sup> Lavalley, T., 'Globalizing the Iron Triangle: policy-making within the US defense industrial sector', *Defense & Security Analysis*, vol. 19, no. 2 (June 2003), pp. 149–64.

<sup>57</sup> US Department of Defense (note 11). On foreign competitive testing see also chapter 12 in this volume.

<sup>58</sup> US Department of Defense, Office of the Deputy Under Secretary of Defense for Industrial Policy, 'Study on impact of foreign sourcing of systems', Jan. 2004, p. iii, available at URL <<http://www.acq.osd.mil/ip/>>.

**Table 11.3.** US dependence on foreign suppliers for operationally important military systems, 2003

Weapon system	Description	No. of foreign subcontractors	Value of foreign subcontracts as a share of		
			\$ m.	Total sub-contracts, %	Prime contract value, %
JSLIST	Chemical protection clothing	8	35.0	62.5	12.5
PAC-3	Surface-to-air missile	25	23.1	12.3	6.2
F-414	Aircraft engine	4	19.1	10.9	4.6
Predator	Unmanned air vehicle	5	1.0	14.5	3.3
WCMD	Bomb/munition dispenser	11	2.0	4.3	3.2
Tomahawk	Land-attack missile	3	6.8	5.5	2.8
SFW	Bomb/munition dispenser	4	2.9	7.8	2.5
GMLRS	Multiple-launch rocket system ammunition	3	2.6	6.1	2.3
SLAM-ER	Land-attack missile	5	1.0	3.3	1.6
ATACMS	Tactical missile system	3	2.2	3.8	1.5
PAVEWAY	Laser-guided bombs	1	0.7	0.4	0.2
JSOW	Glide bomb	1	0.1	0.1	0.1
<b>Subtotal without JSLIST</b>		<b>65</b>	<b>61.5</b>	<b>6.6</b>	<b>3.2</b>
<b>Total</b>		<b>73</b>	<b>96.5</b>	<b>9.8</b>	<b>4.3</b>

Source: US Department of Defense, 'Study on impact of foreign sourcing of systems', Office of the Deputy Under Secretary of Defense for Industrial Policy, Washington, DC, Jan. 2004, p. 33, available at URL <<http://www.acq.osd.mil/ip/>>.

debate in the US Congress.<sup>59</sup> The study focused on those items that were or would be in high demand and/or consumed in similar future operations—a total of 11 weapon system programmes (table 11.3) which have a combined value of contract awards of \$2.23 billion and a total value of subcontracts of \$986 million. The study found that foreign sources provided limited amounts of materiel for the identified weapon programmes. The 73 foreign subcontracts involved in these programmes accounted for 9.8 per cent of the total value of subcontracts and 4.3 per cent of the total value of prime contract awards for these programmes—and even less if the chemical protection clothing programme (JSLIST), which has the highest share, was excluded.

<sup>59</sup> Gertz, B., 'Swiss delay of military parts sparks "buy American" push', *Washington Times*, 25 July 2003, URL <<http://www.washtimes.com/national/20030724-113347-4214r.htm>>. The debate did not, however, result in introduction of any major restrictions in US legislation. In 2003, the chairman of the House Armed Services Committee Duncan Hunter proposed amendments to the National Defense Authorization Bill for Fiscal Year 2004 aimed to extend the buy American provision to new goods and reduce the foreign content of US-procured armaments from 50 to 35%. URL <[http://thomas.loc.gov/cgi-bin/cpquery/?&dbname=cp108&maxdocs=100&report=hr106.108&sel=TOC\\_657531&](http://thomas.loc.gov/cgi-bin/cpquery/?&dbname=cp108&maxdocs=100&report=hr106.108&sel=TOC_657531&)>. The final bill does not contain any of the restrictions as originally proposed, although watered down versions of certain provisions were retained. This includes a preference for use of US produced machine tools, URL <<http://thomas.loc.gov/cgi-bin/query/D?c108:7:./temp/~c108UkrEla:>>.



The DOD concluded, consistent with its previous studies on foreign sourcing, that its utilization of these foreign sources does not have a negative impact: it does not impact the long-term readiness of the US Armed Forces; it does not impact the economic viability of the national technology and industrial base; and, in most cases, domestic suppliers are available for the materials provided by the foreign sources. In another DOD report, foreign sourcing was determined to have a negligible impact on the US military–industrial base. The report noted that ‘contracts with a place of performance outside the United States’ amounted to \$7 billion and accounted for 4 per cent of total DOD prime contract awards in fiscal year (FY) 2002 (totalling \$170.8 billion), but only 23 per cent of foreign contracts were for military hardware. The rest were for fuel, construction services and other non-military items.<sup>60</sup>

The DOD also identified some positive consequences of foreign sourcing, including the following: it permits the DOD to access non-US state-of-the-art technologies and industrial capabilities; it promotes consistency and fairness in dealing with US allies; it encourages the development of interoperable systems; it facilitates the development of mutually beneficial industrial linkages that enhance the access of the US industry to global markets; and it exposes US industry to international competition, helping to ensure that US firms remain innovative and efficient.<sup>61</sup>

### **The European arms industry in the context of European integration**

The West European arms industry has undergone a considerable transformation since the end of the cold war, and internationalization has been a dominant element of this transformation. However, its development has been uneven and problematic. A mix of international armaments collaboration, cross-border joint ventures and acquisitions, and governmental and intergovernmental policy decisions has changed the structure of the European arms industry from a large number of small, distinct companies (primarily for domestic, national supply) to an industry dominated by three major arms-producing companies—BAE Systems, EADS and Thales—which operate in broader markets. EADS has a more transnational structure, but BAE Systems and Thales have a strongly multinational organization owing to their cross-ownership with other companies and their large number of foreign subsidiaries. While the main catalyst of these developments was the decline in military spending after the end of the cold war, four additional factors have been identified as key determinants in this process: developments in the US arms industry; the impact of military technology; general economic restructuring in the EU; and the creation of the ESDP.<sup>62</sup> During most of the post-cold war period, this process has largely been driven by industry, but in recent years the EU has taken an increasingly

<sup>60</sup> US Department of Defense, *Department of Defense Fiscal Year 2002 Purchases from Foreign Entities*, available at ‘IP products’ at URL <<http://www.acq.osd.mil/ip/>>.

<sup>61</sup> US Department of Defense (note 58), pp. 33–35. See also chapter 19 in this volume.

<sup>62</sup> The role of these factors is further elaborated in Guay, T. and Callum, R., ‘The transformation and future prospects of Europe’s defence industry’, *International Affairs*, vol. 78, no. 4 (2002), pp. 757–76.

active role. In 2003 several initiatives were taken in or with the cooperation of the EU to promote and facilitate harmonization among European governments in arms procurement and integration of the European arms industry.

On 17 November at its meeting in Brussels the Council of the European Union decided to set up a team to prepare for the establishment and functioning of a European Armaments, Research and Military Capabilities Agency, with a view to adoption of the necessary decisions by the Council in June 2004.<sup>63</sup> The agency will fall under its authority and be open to participation by all EU member states.<sup>64</sup> Norway, which is not an EU member, indicated on 18 November that it wished to be involved in the planning for the agency.<sup>65</sup> US Secretary of State Colin Powell also gave his support to the establishment of the agency at a meeting with EU foreign ministers the same day.<sup>66</sup>

The European Commission is seeking to enhance its role in the area of armaments and has taken a number of initiatives regarding industrial, economic and competition policy. The Directorate-General (DG) for Enterprise has simplified its strategy for the defence-related industry into two basic principles for transformation: (a) expansion of the EU common market rules to the defence sector, in particular to arms procurement, technical standards and licensing; and (b) an investment strategy that requires further concentration and rationalization.<sup>67</sup> In March 2003 the European Commission released a Communication on the industrial and market issues involved in a European defence policy.<sup>68</sup> It proposed action in seven areas of arms procurement, production and transfers: standardization, monitoring defence-related industries, intra-community transfers, competition, procurement rules, export control of dual-use goods, and research.

In January 2003 the European Commission, in cooperation with the European Space Agency (ESA), published a Green Paper on European *space policy*. It proposed to make space research an EU policy area and stressed the importance of including a security dimension in any future European space policy. In May ESA approved the Galileo Programme, a global navigation system of up to 30 satellites, which is an important element in a European space policy and which is also perceived as a challenge to the Global Position-

<sup>63</sup> See note 21.

<sup>64</sup> For a recent analysis of the issues involved in providing the military-industrial capabilities for EU crisis management, see Mawdsley, J. and Quille, G. (eds), *The EU Security Strategy: A New Framework for ESDP and Equipping the EU Rapid Reaction Force* (Bonn International Center for Conversion (BICC) and International Security Information Service (ISIS) Europe: Brussels, 2003).

<sup>65</sup> 'Norway wants role in EU arms agency', EUobserver.com, 18 Nov. 2003, URL <<http://www.euobserver.com/index.phtml?sid=13&aid=13610>>.

<sup>66</sup> 'Powell positive on EU defence plans', EUobserver.com, 18 Nov. 2003, URL <<http://www.euobserver.com/index.phtml?sid=13&aid=13605>>.

<sup>67</sup> See, e.g., Merritt, G., 'Europas Skepsis gegenüber einer grenzüberschreitenden Zusammenarbeit' [Europe's scepticism about transnational cooperation], ed. K. von Wogau, *Auf dem Weg zur Europäischen Verteidigung* [The path to a European defence] (Herder: Freiburg, 2003), pp. 255–73. DG Enterprise has a special unit for the arms industry. See the DG Enterprise/E5 Defence Sector Internet site at URL <[http://europa.eu.int/comm/enterprise/defence/def\\_teamlist.htm](http://europa.eu.int/comm/enterprise/defence/def_teamlist.htm)>.

<sup>68</sup> European Commission, 'European defence-industrial and market issues: towards an EU Defence Equipment Policy', Communication from the Commission to the Council, the European Parliament, The European Economic and Social Committee and the Committee of the Regions, COM (2203) 113 final, Brussels, 11 Mar. 2003.

ing System (GPS) operated by the US Armed Forces. This was possible after Germany and Italy reached agreement in March on the financing and sharing of work in the €3.6 billion (\$3.9 billion) Galileo Programme. The agreement will result in a 21 per cent share of both financing and work for Germany and 16 per cent for Italy, with the remaining shares allocated among other ESA member states, including France and the UK.<sup>69</sup> The main company, Galileo Industries, will be located in Germany, and a second base, responsible for systems engineering, will be located in Italy.

In October 2003 the European Commission released a Communication on the European *aerospace* industry which identified the steps needed to improve the political and regulatory framework affecting the competitiveness of the aerospace industry in the EU.<sup>70</sup> These steps included the creation of a 'European defence equipment market', the launch of a 'preparatory action' on security research, and the development of a European space policy and a plan for European defence aerospace R&D.<sup>71</sup> In November the Commission issued a White Paper on European space policy.<sup>72</sup>

Expanding EU common market rules to encompass the arms-producing sector may create problems for governmental control of arms production. This was reinforced by a Court of Justice of the European Communities verdict on 13 May 2003, which set out the full consequences of privatization and which will have consequences for all EU member states. In two parallel rulings—on a British case and a Spanish case<sup>73</sup>—the ECJ held that once a government has privatized a company, it can no longer seek to control it through special laws, obscure articles in statutes or 'golden shares'. Retaining government control, by formal means, over privatized companies will thus be much more difficult after this verdict.<sup>74</sup> Under current conditions, the Commission would not rule against golden shares in arms-producing companies, but, if EU rules were to apply equally to the defence sector, this would become possible.

Three US acquisitions during 2003, two in the aero-engine industry and one in the shipbuilding industry, drew attention to the lack of consolidation in the European arms industry. In the competition to acquire Italian Fiat Avio, the fourth largest aero-engine manufacturer in the EU area, the Snecma Group (France), which is Europe's largest engine company, lost to a joint bid by the Carlyle Group (USA) and Finmeccanica (Italy). Carlyle is a US equity firm with a portfolio of companies worth more than \$16 billion, primarily in military aerospace and electronics. It has been buying and selling arms-producing

<sup>69</sup> 'Galileo deal sets EU up to rival US on space', *Financial Times*, 29/30 Mar. 2003, p. 7.

<sup>70</sup> European Commission, 'A coherent framework for aerospace—a response to the Star 21 report', Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM (2003) 600 final, Brussels, 13 Oct. 2003, available at URL <<http://europa.eu.int/comm/enterprise/aerospace/>>.

<sup>71</sup> See also chapter 9 in this volume.

<sup>72</sup> European Commission, 'Space: a new European frontier for an expanding Union: An Action Plan for implementing the European space policy', White Paper, COM (2003) 673, Brussels, 11 Nov. 2003, URL <[http://europa.eu.int/comm/space/whitepaper/whitepaper/whitepaper\\_en.html](http://europa.eu.int/comm/space/whitepaper/whitepaper/whitepaper_en.html)>.

<sup>73</sup> European Court of Justice, cases C-98/01, *Commission v. United Kingdom* and C-463/00, *Commission v. Spain*, both of 13 May 2003.

<sup>74</sup> 'Court order to cut apron strings will reverberate throughout EU', *Financial Times*, 14 May 2003, p. 3.

companies, mainly in the USA, but is increasingly exploring assets in the European arms industry. In 2002 Carlyle acquired a one-third share of QinetiQ, the privatized former R&D agency of the British MOD. The Italian Government tried to block the bid by Carlyle, but in the end Fiat participated in the acquisition.<sup>75</sup> The EU Commission cleared the way for the acquisition with the motivation that the deal did not cause concern as regards competition because the activities of the parties did not overlap.<sup>76</sup> Carlyle will be the largest shareholder in Fiat Avio (70 per cent), but Finmeccanica will hold veto rights over major strategic decisions. This deal put an end, at least temporarily, to a three-way alliance in Europe between Snecma, FiatAvio and the German MTU Aero Engines.<sup>77</sup> Instead, MTU Aero Engines was acquired by another US company, Kohlberg Kravis. Carlyle had also made a bid for this company but withdrew its bid after the German Government launched a review of the proposed sale, specifically to study the consequences of MTU's sensitive technology leaving German control.<sup>78</sup> The acquisition by Kohlberg Kravis was finally approved by the EU competition authorities in December.<sup>79</sup>

The prospects for the consolidation of the European naval shipbuilding industry under European control, which appeared favourable for a time in 2003, were again uncertain at the close of the year. In early 2003, the US owner of German Howaldtswerke Deutsche Werft (HDW),<sup>80</sup> a leading producer of conventional submarines, announced that it was putting the company up for sale. In 2002, the US investment banking company One Equity Partners (OEP) had acquired HDW, but when it became known that the German Government disapproved of sales of German submarine technology to Taiwan, OEP appeared to have lost interest in HDW. This led Thyssen Krupp, the owner of two other German major shipyards, Blohm + Voss and Nordseewerke, to take the lead for a potential consolidation of the shipbuilding industry. Thyssen Krupp made a bid for HDW, which it planned to merge with its own shipyards to create a new company, in which Thales would also participate.<sup>81</sup> This would have begun the implementation of a plan to establish a European shipbuilding group, which had long been supported by the German and French governments, with strong interest from the Spanish Government.<sup>82</sup>

<sup>75</sup> 'Brussels to probe Italian groups' aid', *Financial Times*, 23 Sep. 2003, p. 34.

<sup>76</sup> 'Fiat Avio sale gains EU competition clearance', *Air Letter*, 21 Aug. 2003, p. 6.

<sup>77</sup> 'Snecma sees no role in consolidation', *Air Letter*, 11 June 2003, p. 6.

<sup>78</sup> In 2003 the German Government proposed a change of law to require its permission for a foreign acquisition of shares in a German company that develops or produces armaments or cryptotechnology, unless the acquired share is less than 25%. See *BICC Bulletin*, no. 29 (1 Oct. 2003), available at URL <<http://www.bicc.de>>. The text of the proposed law (Deutscher Bundestag, Drucksache 15/2537 of 18 Feb. 2004) is available at URL <<http://www.bundestag.de>>.

<sup>79</sup> Reuters, 'EU clears Daimler's sale of MTU aero engine unit', 22 Dec. 2003, URL <[http://wardsauto.com/ar/transportation\\_eu\\_clears\\_daimlers/](http://wardsauto.com/ar/transportation_eu_clears_daimlers/)>.

<sup>80</sup> See Sköns and Baumann (note 32).

<sup>81</sup> 'Thyssen Krupp beschleunigt den Konzernumbau' [Thyssen Krupp speeds up restructuring of the group], *Frankfurter Allgemeine Zeitung*, 7 Oct. 2003, p. 21.

<sup>82</sup> 'Konkurrenz und strategische Allianzen (IV)' [Competition and strategic alliances (IV)], *Informationen zur Deutschen Außenpolitik*, 15 July 2003, URL <<http://www.german-foreign-policy.com/de/news/article/1058225131.php>>.

However, in October, OEP decided not to sell HDW.<sup>83</sup> This decision is likely to delay, although not stop, the plans to consolidate the European naval shipbuilding industry. In the meantime, various types of cooperation are being considered, which eventually may serve to facilitate consolidation.

A major example of intra-European work-sharing in shipbuilding was the joint contract announced in January 2003 between two major competitors, BAE Systems and Thales, to build two new aircraft carriers for the British Navy.<sup>84</sup> The deal was valued at £2.9 billion (\$4.7 billion). BAE Systems was selected as the prime contractor with responsibility for project and shipbuilding management, while Thales UK was chosen to provide the ship design. BAE Systems would be guaranteed at least £1 billion worth of the £2.5 billion construction work at its shipyards in the United Kingdom.<sup>85</sup>

The French Government is also concerned about US acquisitions in the European arms industry. In June 2003, French Defence Minister Michèle Alliot-Marie initiated an investigation into US investment firms buying into the European arms industry.<sup>86</sup> The British Government holds a diametrically opposed view: that the ownership of its arms-producing companies is no longer a key issue. In a speech in the summer of 2003, British Defence Procurement Minister Lord Bach stated that the government was more interested in where the technology was developed and where jobs were created. 'So the ownership of companies is frankly no longer the most important thing to us'.<sup>87</sup> However, he stopped short of saying whether the government would remove a shareholding limit on BAE Systems. The current 15 per cent share-ownership limit on that company has been viewed as a possible barrier to any takeover or merger. BAE Systems has been considering establishing a transatlantic link with a contractor in the USA.

## V. Technology transfer issues in transatlantic defence–industrial relations

In order to meet the equipment needs of their armed forces, governments in Europe and North America have emphasized the need for greater cooperation among suppliers. At the same time, these governments have committed themselves to exercising control over international transfers of goods and technologies which can contribute to the military capabilities of other countries.<sup>88</sup> The most efficient use of resources and effective technology transfer control are shared objectives, but there is no harmonized view on how to achieve these

<sup>83</sup> 'Care-Paket für HDW' [Care package for HDW], *Tageszeitung*, 21 Oct. 2003, URL <<http://www.taz.de/pt/2003/10/21/a0231.nf/text>>.

<sup>84</sup> For a recent analysis of the naval shipbuilding sector in the EU see Bauer, S., 'Naval shipbuilding in the EU—escaping cross-border consolidation?', Unpublished paper, June 2004.

<sup>85</sup> 'BAe, Thales set to share UK defence deal', *Air Letter*, 28 Jan. 2003, p. 4.

<sup>86</sup> 'Brussels to probe Italian groups' aid', *Financial Times*, 23 Sep. 2003, p. 34.

<sup>87</sup> 'UK says ownership of firms not a key issue', *Air Letter*, 11 Sep. 2003, p. 6.

<sup>88</sup> Technology transfer controls are also used as an instrument to prevent the proliferation of dual-use items that can contribute to the acquisition of nuclear, biological and chemical weapons as well as missile delivery systems for them. These controls are not considered in this section. See chapter 18 in this volume.

goals. In addition, there are sometimes tensions between the policies pursued to that end by the various countries in the Euro-Atlantic region.

Technology transfer issues have been a point of contention in transatlantic relations since the 1950s, the period in which the number of international collaboration projects began to grow significantly. However, finding an effective approach to managing the problem has become both more urgent and more difficult. The increasing importance of items in military production that were not specially designed for military use has blurred the boundary of what constitutes military technology. The international concentration of the arms industry has increased the extent of cross-border cooperation at the company level, although intra-European collaboration has been far more extensive than collaboration on transatlantic projects. Modern design and production methods have increased the number of 'intangible' technology transfers (ITT)—that is, transfers by electronic means that do not involve the physical movement of items across borders. In addition, organizational processes designed during the cold war have been maintained, although the focus has shifted to non-state based security threats. Companies have complained that the evolution of control systems has not kept pace with these changes and that out-dated regulations are an obstacle to transatlantic armaments cooperation.

The USA has the world's largest arms industry and is the main centre of military technology development. It therefore has the largest number of items to control and the greatest amount of information to protect. The United States also has a different legal and constitutional framework from that of European countries. The laws that establish the national export control system require the executive branch of the government to consider foreign policy, national security and issues related to economic security when taking each licensing decision. The executive branch is required to make regular and detailed reports to the legislative branch, which scrutinizes implementation. The complicated and comprehensive US export control system has been criticized by companies that find it excessively restrictive, difficult to understand and expensive to comply with.<sup>89</sup> Practical outcomes of policy reform efforts have been very limited. Pressure from industry to facilitate technology transfers is enhanced by the practice of offering such transfers as part of offset agreements to increase the chances of winning a contract in the current buyers' market. Reform is required to reconcile these free trade interests with those of control.<sup>90</sup>

In contrast, European export control laws give the responsible officials greater discretion to interpret broad policy guidelines when considering export licence applications. While the degree of transparency and parliamentary scrutiny has grown considerably in recent years in some European countries,<sup>91</sup>

<sup>89</sup> In a recent example, regarding the export to Germany of the design of a night-vision system for military helicopters, the company concerned claimed that it lost a major value portion of the contract because it did not obtain authorization to export certain manufacturing know-how. Mulholland, D., 'UK and US export-control disarray worsening', *Jane's Defence Weekly*, 26 Nov. 2003, pp. 24–25.

<sup>90</sup> On offset agreements and policies, see Brauer, J. and Dunne, J. P., *Arms Trade and Economic Development: Theory, Policy, and Cases in Arms Trade Offsets* (London: Routledge, 2004).

<sup>91</sup> See chapter 12 in this volume.

European practice is generally less comprehensive than that of the USA in this respect. This lack of clarity and accountability, combined with a more limited approach to end-use controls, has raised concern in the United States about the quality of European controls.

The following section outlines the mechanisms employed by the US Government to control technology transfers in the framework of international acquisition programmes—defined as armament cooperation that involves an element of co-development and co-production.<sup>92</sup> The consequences of such controls for armaments cooperation between US and European companies are also identified, and ways in which both US and European governments have addressed related issues are summarized.

### **US restrictions on technology transfer**

Technology transfer controls in the framework of an international programme encompass a number of elements. When US-origin items that were specially designed, developed or modified for military use are transferred to foreign partners, export controls are required by the 1976 Arms Export Control Act and its implementing International Traffic in Arms Regulations (ITAR).<sup>93</sup> If the items are designated as ‘dual-use’ (i.e., not specially designed or developed for military use but possible to employ in an armaments programme), they are subject to control under the Export Administration Regulations (EAR).<sup>94</sup> The transfer of classified information to foreign partners is governed by two presidential decisions,<sup>95</sup> which create a framework for determining whether items (goods, technologies and information) should be provided to foreign partners. That determination is based on two types of calculation of interest. First, is it in the interest of the USA (a calculation that takes into account military, economic and political factors) for the foreign partner to have access to the item? Second, can the foreign partner protect the item to ensure that it is not used in an unauthorized manner or distributed further without US consent? When evaluating a partner prior to allowing a re-export, US authorities apply the same standard for protection that would apply if considering a transfer from the USA.

Under US law, the definition of transfer of articles and services to which controls apply extends beyond the export of physical items from US territory.

<sup>92</sup> Controls on purely national arms exports are outside the scope of this chapter. See chapter 18 in this volume.

<sup>93</sup> For additional information on the ITAR, which includes the Munitions List, see URL <<http://www.pmdtc.org/reference.htm#ITAR>>.

<sup>94</sup> The Commerce Department is responsible for items controlled under the EAR. The Export Administration Regulations are available at URL <[http://w3.access.gpo.gov/bis/ear/ear\\_data.html](http://w3.access.gpo.gov/bis/ear/ear_data.html)>.

<sup>95</sup> Executive Order (EO) 12958, URL <<http://www.whitehouse.gov/news/releases/2003/03/20030325-11.html>>; and National Security Decision Memorandum (NSDM) 119, URL <[http://www.fas.org/sgp/library/ipshbook/Chap\\_01.html](http://www.fas.org/sgp/library/ipshbook/Chap_01.html)> and <<http://www.disam.dsca.mil/Research/Presentations/11%20TechTranExportControls.ppt>>. The National Disclosure Policy is implemented by National Disclosure Policy (NDP-1) and Department of Defense Directive (DODD) 5230.11, ‘Disclosure of classified military information to foreign governments and international organizations’, URL <[http://www.fas.org/irp/doddir/dod/d5230\\_11.htm](http://www.fas.org/irp/doddir/dod/d5230_11.htm)>.

The term 'defence service' includes the provision of technical data in intangible form. The transfer of technical data, including in oral or visual form, to foreign nationals is therefore considered to be an export even if it takes place on US soil.<sup>96</sup> Similarly, the training of foreign nationals in the United States is considered provision of a defence service.

Recipients of controlled items and classified information must undertake to use them only for the purposes agreed with the USA, not to transfer them to a third party without US approval and to provide the same degree of security as would the USA. The United States invests significant resources in enforcing these end-use provisions, including information gathering by national technical means and conducting visits and inspections. If a company (intentionally or unintentionally) fails to comply with its undertakings it may incur a range of sanctions. For example, it may be barred from receiving US-controlled items for a certain period of time or from competing for contracts awarded by the US Government. For companies which depend on US technology, these sanctions are an effective deterrent.

When an international programme includes acquisition of a product by the US Armed Forces, it is subject to rules on classification and use. When such a programme involves the transfer of technology to a US partner, that technology must be safeguarded in line with the National Industrial Security Operating Manual (NISPOM).<sup>97</sup> These rules also apply to US-based subsidiaries of foreign companies, and the implementation of the NISPOM may require such subsidiaries to alter their management structure. Handling classified information may require personnel to be US citizens and necessitate the creation of an information 'firewall' between the foreign parent company and its US subsidiary, including alterations to internal electronic wide-area networks.

Making this system work requires cooperation between various parts of the US Government. The State Department implements the ITAR, often in consultation with the Defense and Commerce departments and with other relevant departments such as the Energy Department and the Justice Department. The Department of Commerce is responsible for implementing the EAR but often does so in consultation with *inter alia* the departments of Defense and State. The Office of the Secretary of Defense is responsible for implementing measures to ensure the security of classified information.

### *US restrictions on acquisition of foreign technology*

The United States Congress plays a central role in the procurement process through its detailed control of the budget and through the annual defence appropriation and authorization process. Domestic sourcing requirements, commonly referred to as 'buy American' provisions, restrict the acquisition of

<sup>96</sup> This kind of technology transfer is known as a 'deemed export'.

<sup>97</sup> The NISPOM is available at URL <<http://www.dss.mil/isecc/nispom.htm>>. Extensive information about industrial security provisions is available at URL <<http://www.dss.mil/seclib/>>.



foreign technology in order to minimize dependence and maximize the security of supply and control.<sup>98</sup>

For foreign companies, the only way to access the market may be by producing items in the USA through a subsidiary company or by supplying articles to US firms that, in turn, contract with the US Armed Forces. However, in order to succeed with such strategies it is necessary to obtain technical information from the US Government and technology from a US partner company, and these are subject to the controls described above. The US foreign technology thresholds can therefore also limit the opportunities for foreign companies to participate in co-production with and subcontracting for US partners. These rules apply even when the US companies have initiated cooperation.<sup>99</sup>

Although recent efforts in Congress to extend protective measures to ensure domestic preference for US procurement have failed, they indicate a tendency among legislators to try to control the budget process so that the armed forces are encouraged or obliged to purchase equipment produced in the USA.<sup>100</sup>

Foreign governments and companies,<sup>101</sup> the DOD,<sup>102</sup> numerous US companies and many members of Congress have opposed these actions for various reasons. First, the USA does not produce the entire range of technologies and products required to meet the needs of the armed forces in a timely, cost-effective and innovative manner. Second, such provisions hamper or may even prevent international cooperation projects. Third, European reactions and trade retaliation could damage US companies' interests in defence and other, unrelated areas. Fourth, interoperability with NATO and other allies may be affected,<sup>103</sup> an argument which some experts have stated does not hold up under scrutiny.<sup>104</sup>

A 'buy American' policy primarily benefits small- and medium-sized businesses without foreign subcontractors. However, it may be disadvantageous to the US Armed Forces and to US citizens (in their role as taxpayers and individuals seeking physical security) to the extent that it reduces efficiency in procurement and limits access to advanced technologies. Moreover, larger US companies, which are also more likely to be engaged in international cooperation projects, prefer to choose their partners and suppliers on other grounds.

<sup>98</sup> US Code of Federal Regulations, Title 41, Section 10a to 10d, URL <[http://uscode.house.gov/title\\_41.htm](http://uscode.house.gov/title_41.htm)>.

<sup>99</sup> E.g., US companies and investment funds have purchased European producers of technologies not available in the USA, such as those needed to build conventional submarines. Sköns and Baumann (note 32), pp. 385–86.

<sup>100</sup> See note 59.

<sup>101</sup> Society of British Aerospace Companies (SBAC), 'SBAC Policy Brief: the "buy America" provisions of the US 2003 Defence Authorizations Bill', 1 Dec. 2003, URL <<http://www.sbac.co.uk/newsview.asp?n=728>>.

<sup>102</sup> Matthews, W., "'Buy-American" bill thwarted, but expected to resurface', *Defense News*, 22 Dec. 2003, pp. 28, 30.

<sup>103</sup> Matthews, W., 'U.S. industry tries to kill buy-American bills', *Defense News*, 7 July 2003, p. 6.

<sup>104</sup> Smith, D.M., 'U.S. arms exports and interoperability: fighting with each other', eds T. Gabelnick and R. Stohl, *Challenging Conventional Wisdom: Debunking the Myths and Exposing the Risks of Arms Export Reform* (Federation of American Scientists and Center for Defense Information: Washington, DC, 2003), pp. 65–85.

The European Commission's 2003 Report on United States Barriers to Trade and Investment expressed various concerns with regard to the US preference for domestic defence procurement, many of which refer to technology transfer restrictions. In line with the view of many European companies and governments, the Commission perceives such restrictions as trade barriers that are unwelcome or even a violation or abuse of international trade agreements.<sup>105</sup>

### US technology transfer issues in transatlantic armaments cooperation

Two sets of issues have emerged in the discussion of technology transfer controls in the context of transatlantic armaments cooperation: how to manage international armament programmes, and the bilateral issue of how to access US technology and equipment. The following examples illustrate the extent to which problems can arise even in programmes conducted by the USA and close allies, such as the UK.

The Joint Strike Fighter (JSF), a multi-role fighter aircraft,<sup>106</sup> is a large and critical cooperation project that primarily involves the USA and the UK, but to whose development a number of NATO countries and Australia have also contributed financially.<sup>107</sup> Although it was initially presented as a prototype of transatlantic cooperation, British companies expressed concern that technology transfer restrictions would reduce their role to assembling parts rather than developing leading-edge technology. The UK and other European allies have complained that, owing to security restrictions imposed by the US Government, they will not obtain access to sensitive technologies as anticipated or be able to perform their subcontractor role because their contribution will involve obtaining data which the US Government considers classified.<sup>108</sup>

The State Department has argued that contracts awarded to foreign companies to build individual components do not require their access to data on the overall functioning of the aircraft or certain of its parts. A new kind of export licence, the *Global Project Authorization* (GPA), was created to facilitate the transfer of unclassified material to foreign partners and was issued for the first time for the JSF.<sup>109</sup> However, the JSF licence has not proved as great a benefit to the European partners as hoped. In their view, provisos attached to the licence restrict its utility. For example, it covers only a small percentage of unclassified data. Foreign companies have not generally been awarded contracts for tasks involving the transfer of classified military information from

<sup>105</sup> European Commission, 2003, 'Report on United States Barriers to Trade and Investment', Brussels, Dec. 2003, available at URL <[http://trade-info.cec.eu.int/doclib/docs/2003/december/tradoc\\_115383.pdf](http://trade-info.cec.eu.int/doclib/docs/2003/december/tradoc_115383.pdf)>.

<sup>106</sup> Hagelin B., et al, 'International arms transfers', *SIPRI Yearbook 2002* (note 3), pp. 395–400.

<sup>107</sup> 'Partners' are divided into 3 levels of financial involvement, which result in varying degrees of personnel integration in JSF teams and industrial participation: Level I (about 10%): UK; Level II (about 5%): Italy and the Netherlands; Level III (c. 1–2%): Australia, Canada, Turkey and Denmark/ Norway (joint contribution), URL <<http://www.jsf.mil>>.

<sup>108</sup> At the end of 2003, Danish companies threatened to pull out of the programme, Agence France-Presse, 'Danish firms mulling leaving Joint Strike Fighter jet program: report', 7 Jan. 2004.

<sup>109</sup> The Global Project Authorization is discussed further below.

US companies to foreign partners,<sup>110</sup> although a technology transfer to the main partner, BAE Systems, was negotiated at the end of 2003.<sup>111</sup>

Transatlantic cooperation on the Medium Extended Air Defense System (MEADS) is another case in point. Controversy arose *inter alia* over US insistence to conduct on-site inspections in the other countries involved (Italy and Germany) and over a ‘black-box’ (i.e., without revealing software source codes) approach to transfers of US classified technology to European partners.<sup>112</sup> As of March 2004 agreement had not been reached on programme-specific conditions governing such technology transfers.<sup>113</sup>

German efforts to acquire the Global Hawk unmanned air vehicle (UAV) through a joint venture involving Northrop Grumman and EADS illustrate the potential impact of technology transfer controls on bilateral cooperation. The German Government would prefer a *Direct Commercial Sales* (DCS) agreement under which EADS would buy components directly from Northrop Grumman. The US DOD would prefer to manage this cooperation through the *Foreign Military Sales* (FMS) programme under which it would buy the necessary items from Northrop Grumman on behalf of the German customer and then supply them to the customer in the framework of a government-to-government agreement.<sup>114</sup>

A DCS purchase would probably be cheaper for Germany because FMS deals involve a surcharge to cover the administrative costs of the US Government.<sup>115</sup> A DCS programme would also be faster and involve a less complicated management structure. At the same time, the DCS agreement would be less transparent to the US Government and, in particular, would provide less information to the DOD.<sup>116</sup>

### **Efforts to address technology transfer issues in cross-border cooperation**

In order to reduce potential disagreements, US and European governments have explored reforms to harmonize the scope of export controls and make

<sup>110</sup> Merle, R., ‘Allies feel left out in fighter-jet program: Lockheed, Pentagon urged to share data’, *Washington Post*, 2 Jan. 2004, p. D10.

<sup>111</sup> O’Connell, D., ‘BAE clinches key accord on Joint Strike Fighter with US’, *Sunday Times*, 30 Nov. 2003, URL <<http://www.timesonline.co.uk>>.

<sup>112</sup> James, A. D., ‘The prospects of a transatlantic defence industry’, ed. B. Schmitt, *Between Cooperation and Competition: The Transatlantic Defence Market*, Chaillot Paper no. 44 (Western European Union Institute for Security Studies: Paris, Jan. 2001), pp. 97–98.

<sup>113</sup> Agüera, M., ‘U.S.–European consortium hits a bump on MEADS’, *Defense News*, 1 Mar. 2004, p. 10.

<sup>114</sup> Agüera, M. and Kaufman, G., ‘Germany, U.S. spar over Global Hawk tech transfer’, *Defense News*, 22 Dec. 2003, p. 4. For a presentation of these US export methods, see *SIPRI Yearbook 2003* (note 12), appendix 13E, pp. 550–54.

<sup>115</sup> ‘Why FMS? Why DCS? A comparison of foreign military sales (FMS) and direct commercial sales (DCS) procedures for the acquisition of US defense articles and services’, *Military Technology*, 10/2003, pp. 76–81.

<sup>116</sup> All transfers under a DCS agreement would be licensed by the State Department after consultation with the DOD. While the State Department has the full legal authority to issue a licence, it is very unlikely that it would do so over the objection of the DOD. Transfers under an FMS agreement would also all have to be licensed by the Department of State. However, the programme would be managed by the DOD—thereby providing direct control and full access to all information related to the programme.

existing controls function as quickly and efficiently as possible. The May 2000 *Defense Trade Security Initiative* (DTSI) comprises 17 proposals, which aim to 'promote efficiency in export licensing, to encourage interoperability and standardization among NATO Allies, to facilitate transatlantic industrial joint ventures and to raise the common standards for technology protection'.<sup>117</sup> In 2001, the DTSI was extended to include a non-ally, Sweden.

Attempts to simplify the rules for technology transfer in order to make the licensing process faster and more efficient have included exemptions to the ITAR. An ITAR waiver has been in place for Canada since 1940, and Canadian companies are considered part of the US industrial base. A Canadian subsidiary of a US company can move goods and technology freely within the company and vice versa, thus facilitating cross-border integration of arms-producing companies. Economic integration and close intelligence and customs cooperation between the two countries have enabled such an agreement to be set up and maintained.<sup>118</sup>

In the context of the DTSI, the ITAR exemptions 'would be extended to countries that share with the United States congruent and reciprocal policies in export controls, industrial security, intelligence, law enforcement, and reciprocity in market access'.<sup>119</sup> Such exemptions would be limited to exports of unclassified controlled information and are 'contingent upon establishment of appropriate international agreements on end use and retransfer of defense items, services and technical data and on close conformation of essential export control principles'.<sup>120</sup>

This illustrates the rationale underlying US technology transfer controls: the USA seeks to avoid losing or reducing control over exported technology and can do so because of its political and economic power and state of technological advancement. An ITAR exemption is therefore granted on the condition that it does not increase the likelihood that goods and data which originate from the USA will end up with undesired end-users or in undesired products. The impact on US competitive advantages is also considered.

Other countries appear less concerned that they lose or reduce control over items once they leave their territory. Many European countries have no legal basis for controlling transfers of many kinds of ITT, although the EU has passed common legislation that regulates exports of intangible dual-use technology. However, individual EU member states are responsible for controlling the export of munitions and many of these states have not passed laws requiring licences for ITT or for 'deemed exports'.

In the past, the USA has expressed concern about European export policy. For example, the July 2000 Framework Agreement to facilitate armaments

<sup>117</sup> White House, Office of the Press Secretary, 'Fact Sheet: Defense Trade Security Initiative extended to Sweden', 14 June 2001, URL <<http://www.pmdtc.org/reference.htm#ITAR>>.

<sup>118</sup> CSIS Military Export Project, *Technology and Security in the Twenty-First Century: U.S. Military Export Control Reform, CSIS Panel Report* (Center for Strategic and International Studies: Washington, DC, May 2001), p. 9.

<sup>119</sup> 'Seventeen agreed proposals to Defense Trade Security Initiative', available at URL <<http://www.pmdtc.org/reference.htm#ITAR>>.

<sup>120</sup> 'Seventeen agreed proposals to Defense Trade Security Initiative' (note 119).

cooperation between six major arms producers in the EU<sup>121</sup> has raised concern in the US Government because components for co-produced equipment could 'free-flow' between participating states. In 2004 the USA intends to discuss the implications for end-use agreements with the countries which are party to the Framework Agreement.

The USA initiated negotiations for ITAR waivers with Australia, Japan and the UK. The Australian and British defence ministers signed *Statements of Principles for Enhanced Co-operation* with the USA in 2000,<sup>122</sup> and Sweden followed suit in 2003. These declarations outlined the steps necessary to reassure both parties regarding security of supply and to elaborate and implement export procedures for the purpose of facilitating cooperation and meeting the control requirements of both parties. In part, these undertakings motivated the UK's fundamental revision of its export legislation in 2002 and 2003: for example, to enhance control of ITT and of arms brokering.<sup>123</sup> Although agreements with Australia and the UK were concluded in 2003, ratification was held up in the US Senate in November 2003, again illustrating the powerful role of Congress.<sup>124</sup>

In general, states have tended to require authorization for each individual international transfer of items that are specially designed or developed for military purposes. They have also avoided using general or global licences that pre-authorize certain types of transaction or multiple shipments to multiple end-users. However, in order to increase the speed and efficiency of processing licence applications, this practice of requiring individual licences is being modified.

The Global Project Authorization issued for companies involved in the JSF is one example of how such licences may come to be used more extensively in future. It allows licence holders to move items freely to project partners without further authorization during the period for which the licence is valid. The items, partners and duration of the licence are specified in the document. The licence holder is required to keep records of each transfer made using the licence and to make these records available to export control authorities on request. Periodic audits of licence usage by authorities function as an enforcement mechanism. The use of these licences is connected to the procedures put in place by companies to satisfy export control authorities that they are able to effectively regulate controlled items and technologies in order to ensure compliance with existing laws. If companies can demonstrate that they have effective procedures, the use of such licences may become more widespread.

<sup>121</sup> Anthony, I., 'Multilateral export controls', *SIPRI Yearbook 2000: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2000), pp. 635–38.

<sup>122</sup> Hagelin, B. *et al.*, 'Transfers of major conventional weapons', *SIPRI Yearbook 2001: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2001), pp. 342–44.

<sup>123</sup> Chuter, A., 'U.K. tries to rein in technology transfers', *Defense News*, 1 Dec. 2004, p. 4.

<sup>124</sup> Opposition was largely due to arguments that ITAR waivers would weaken export controls, while terrorist threats mandated stricter controls, 'Congressman opposes White House proposal to relax export controls', *Global Security Newswire*, 1 Dec. 2003.

## VI. Conclusions

Developments in arms production in 2003 confirmed and reinforced two basic trends in the arms industry. First, the downsizing phase that began with the end of the cold war is gradually coming to an end in many countries. Second, the characteristics of the arms industry are changing so as to make it more difficult to define, both as regards national boundaries and as regards its product output.

Concentration activities are continuing to take place but their purpose and direction are changing. Acquisitions are no longer driven primarily by a need for downsizing but rather by a need to adjust company capabilities to emerging, new national and international opportunities for major contracts.

A military–technological environment in which electronics, communications and IT are increasingly employed has led to greater use of commercial technology and privately supplied services. Thus, many company acquisitions are oriented towards these sectors. In a security environment in which the boundaries between military security and internal security, and between national security and international security, have become more blurred the traditional arms industry is moving into a new range of security products in a grey zone between military and commercial sectors. The military strategy environment is increasingly oriented towards international military activities—whether peace-keeping or international coalition wars—and the trend towards internationalization of company structure and ownership, and of international armaments collaboration, is being reinforced. Although the ‘arms industry’ or the ‘defence industry’—regardless of the term used—has never been a clearly defined sector, these trends combine to further complicate its definition. Which companies are defined as being involved in ‘arms production’ and what part of a given company’s activities can be defined as such is becoming moot.

The Iraq war provided a telling insight into some of the key issues affecting the arms industry, including current trends towards privatization and modernization. However, it is unlikely to have a major long-term impact. Rather it reflected and reinforced existing trends.

These trends have fundamental implications for the control of technology transfer, in particular for intangible technology transfers, because they make it more difficult to implement control measures. Successful military–industrial collaboration between the USA and its European allies will require change on both sides of the Atlantic: a reform of restrictions governing armaments collaboration with friendly nations, notably through ITAR exemptions and the use of global project licences by the USA, and a tightening of end-use and ITT controls by Europe. The USA exercises far greater control in current collaboration projects. Technology transfer issues therefore can only be comprehensively addressed in the broader context of transatlantic relations, which have been characterized by US dominance and unilateralism.