

The Military Industrial Complex

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Abstract

This paper reviews the origin and theoretical foundation of the concept Military-Industrial Complex and explains the key issues involved in the literature on the MIC in the Cold war context. It then considers the implications for the MIC of some main post-Cold War developments, with particular emphasis on the arms industry, its structure and effects. It then assesses the degree to which the end of the Cold War may result in a fundamental change of the MIC.

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1. Introduction

When the size of the military sector in a country and its importance to the economy, or indeed its cost to the economy, come under scrutiny the existence of a 'Military Industrial Complex' (MIC) is often alluded to. In general it is meant to represent the groups within society that benefit from military spending and its growth, but what is meant by it is often vague and sometimes inconsistent (Fine 1993). Despite being most used in critical analyses, the source of the term is more conservative. It was introduced by Dwight Eisenhower, an ex-military Republican President of the USA, who was concerned about the combined power of the large military establishment and the arms industry, which he called the military-industrial complex (Albertson 1963).

This was later developed by social scientists framing it as coalitions of vested interests within the state and industry, which could lead to decisions being made which were in the interest of the coalition members and not necessarily in the interests of national security. These coalitions could include some members of the armed services, of the civilian defence bureaucracy, of the legislature, of the arms manufacturers and of their workers.

Much of the work on the MIC sees it as a fairly clear and constant feature of the Cold War, when in the absence of a 'hot war' between the two super powers to test the strength of the adversary, it was possible to overemphasize and exaggerate threats to justify high levels of military spending. Since the end of the Cold War, there have been profound changes in the international security environment. World military expenditures began to fall in the late 1980s, at first gradually for a couple of years with improving East-West relations, then sharply in 1992 after the disintegration of the Soviet Union in 1991. At the same time, the fixed costs of R&D for major systems continued to grow, both for platforms and for the infrastructure (e.g. satellites, strategic air assets) and the information-based systems needed to support network-centred warfare. These trends in military expenditures and technology have led to considerable changes in the Defence Industrial Base (DIB) and in the relations between it, the state and the military. This does mean that the MIC has changed, but it does not mean it has disappeared or even become less powerful.

The next section considers the origin and theoretical foundation of the concept MIC. It is followed by a review of the actual features of what is generally understood as the MIC, as it developed during the Cold War. The chapter then considers what a number of major developments in the post-Cold War period imply for the MIC, with particular emphasis on the arms industry, its structure and effects. Finally, it assesses the degree to which the end of the Cold War has resulted in a fundamental change of the MIC and its implications.

2. Theorising the Military Industrial Complex

The idea of a MIC in the US was introduced by President Dwight Eisenhower who in his 1961 farewell address warned against the potentially strong influence and power generated by the ‘conjunction of a immense military establishment and a large arms industry’ that had been created through the massive military mobilization during World War II, which led him to plead that ‘we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise or misplaced power exists and will persist’ (Eisenhower 1961).

While constituting a potentially important set of economic actors, there have been limited attempts by economists to analyse the MIC. As for mainstream economists, the existence of an MIC is seen as something of an anomaly. The neoclassical economics approach is based upon the notion of a state with a well defined social welfare function, reflecting some form of consensus, recognising some well defined national interests, and threatened by some potential enemy/ies. Governments allocate military budgets to deal with perceived threats and there is a trade off between ‘guns’ and ‘butter’ (Dunne and Coulomb 2009). This implies that national governments make decisions about the need for defensive and offensive capabilities, decide the best way to achieve these in terms of force structures and weapons procurement and then decide on the form of DIB required. Thus, for input budgeting and for programme or output planning, the problem is seen as finding the most efficient means of producing aspects of national security. Ideally, the DIB should then be the most efficient way of supporting the production of the optimal level of security (Hartley and Sandler 1995).

One problem with this perspective is that it ignores the political and social dynamics of the arms production and procurement systems. The size and importance of the DIB within many countries has inevitably led to it linking into other parts of society and the economy. Once we move beyond seeing the DIB as a passive capability to provide weapon systems and recognise the fact that it may have proactive tendencies (rent seeking and efforts to capture the customers/regulators), these linkages become important. More recent neoclassical literature has addressed these issues and attempted to integrate political factors, such as bargaining and interest groups, which determine sources of weapons and levels of protection. But this still represents a partial analysis focusing on particular aspects of the process. It does not address the complex dialectical interaction between the demand side and the supply side, in which both will influence each other and set the parameters for decision making, which can be a complex dynamic process that can be both contradictory and conflictual (Dunne 1995).

More general analyses locate the DIB firmly within the context of the wider MIC and relate it to the functioning of the capitalist economic system. The MIC represents a set of interests which might diverge from the interests of capitalism, what Smith (1977) characterises as the liberal or institutional perspective. This view hinges on the nature of an MIC as composed of conflicting interest groups and institutional linkages. The MIC becomes a self generating structure (agency) which embodies the interests of various groups in society. The strength of these vested interests and their competition for resources leads to internal pressures for military spending, with external threats providing the justification. The MIC imposes a burden on the rest of society and has

adverse effects on the civilian sector. It crowds out civilian resources, and the companies involved develop a culture which leads to inefficiency and waste and an increasing reliance on defence contracts as they become less able to compete in the civilian market (Dumas 1986; Melman 1985). The theoretical underpinnings of this approach were originally based on C Wright Mill's analysis of the power elite (Mills 1956), but there are also variants, which follow a Weberian focus on the role of bureaucracy and the work of John Kenneth Galbraith on coalitions (Slater and Nardin 1973) and, in the US context, the work of Veblen on the importance of the military 'waste' to the ideological and institutional structure of the US economy (Cypher 2008).

There is also a considerable amount of work undertaken from a Marxist perspective. While this approach is often typified as focussing on a ruling class concept of the MIC (Brunton 1988), it is more varied than this suggests. The role of military expenditure in the development of capitalism is seen as wider and more pervasive than in the institutional approach, but with the MIC constrained by the laws of motion of the capitalist system. Within the Marxist approach there are a number of strands which tend to differ in their treatment of crisis and in the extent to which they see military expenditure as necessary for capital accumulation (Dunne 1990).

The underconsumptionist approach developed from the work of Baran and Sweezy (1966) sees military spending as important in preventing realisation crises (crises caused by difficulties in selling products due to deficient demand, which means that profits cannot be realised). Unlike other forms of government spending, it allows the absorption of surplus without increasing wages, and so maintains profits. In this way the MIC provides a valuable service to maintaining capitalism. A similar perspective focuses on the tendency for capitalist economies to overproduce. In this theory, military expenditure is wasteful and the allocation of resources into it prevents overheating. Thus the inefficiencies of the MIC and the DIB play a positive role in capitalist development creating the 'permanent arms economy' (Howard and King 1992). Empirical work, starting with Smith (1977), has, however, failed to find support for the underconsumptionist approach and its prediction of a positive economic effect of military spending (Smith and Dunne 1994).

This overview shows that there is no clear theoretical conceptualisation of the MIC. Indeed, the concept appears to be of most value as a descriptive rather than an analytical concept (Fine 1993). This has led some researchers to focus on the dynamics of the MIC at an empirical level. Smith and Smith (1983) argue that the MIC should be seen as a coalition of interests and that the focus should be on the structural pairings that have developed between particular sections of private industry and particular parts of the military, which have inevitably led to mutual interests. In contrast, Brunton (1988) argues that the MIC should be seen as an evolving system of institutions rather than focusing on individual components. While the MIC is not a clear theoretical concept, it is apparent that there is a MIC that can influence policy on military spending. There are some similarities with other 'industrial complexes' in areas such as health and education, but there are important differences in detail, in particular the fact that the arms industry produces the means of violence.

3. The Cold War Military-Industrial Complex

When Eisenhower referred to the unwarranted influence of the MIC, he was focusing on something historically specific. In the past there had been large US and international defence companies but their size and their relations with the state differed markedly. During the First World War, arms production was largely dealt with by Government arsenals and until the beginning of the Second World War there was no real national planning for defence and so no dependence of major US companies on military spending. The coming of the New Deal in the 1930's had led to federal government taking on more roles and responsibility and to the use of national economic planning for economic and military security (Schwartz, 1990). The start of the Second World War spurred unprecedented technological innovations and created huge demand for industry. Industry, universities and the military were linked and huge government funded R&D efforts led to patents which were then given to companies, with aircraft and electronics production given special status. This represented a fundamental change in attitudes and at the end of the war procurement cuts led to this new defence industry lobbying for arms procurement to maintain its size. The fall of the 'iron curtain' answered their calls, with the Soviet Union threat requiring the maintenance of a permanent army and a permanent defence industry to protect US interests. The Soviet nuclear explosion of 1949, the Communist take-over in China in the same year, and the Korean War (1951-1953) contributed to halting the downward trend of US military spending and set the scene for the development of a mature MIC (Chapman and Yudken 1992, 2).

A number of developments assisted the new defence industry. A new Department of Defense (DoD) in the US in 1947 introduced civilians into the defence bureaucracy, particularly in the aftermath of the New Deal, and changed the focus of concern from purely military ones to the attendant economic impacts of changes in the defence budget, the standing army and the defence industry (Schwarz 1990). The management of the DOD was no longer only in the hands of military personnel, but also corporate executives, who provided what was seen as important expertise, by moving from their companies through a 'revolving door' that would see them work in the Pentagon before going back to their companies. In 1961 McNamara left the presidency of the Ford Motor Company to become Secretary of Defence, to bring modern corporate techniques to the conduct of military affairs. In addition, the Cold War saw the continued development of links between universities and the military, with the Pentagon becoming an important source of funds for research (Chapman and Yudken 1992, 3; Giroux 2007).

Within the military there had been a number of important changes in the Second World War. The increasing importance of advanced technology, particularly in the new aerospace industry, saw the need for the military to engage with industry. The professionalization of the forces, moving to volunteer armies, with a standing army in peacetime led to unforeseen problems. In wartime, military officer's status and rank are generally gained through military achievement, but in peace time it is more likely to be by pleasing superiors and advancing weapons systems and programmes. There are numerous examples of how such careerism in the military services led to continued support for unsuccessful systems, tied in with the interests of particular officers involved in procurement with particular contractors and even government officials (Chapman and Yudken 1992). Examples also abound of troops being

provided with expensive and poor equipment, when better alternatives existed, as Page (2006) illustrates for the UK. In addition, inter service rivalry led to some less than sensible decisions on procurement of weapons systems (Chapman and Yudken 1992, 5-10). A technological arms race erupted from the standoff with the Soviet Union and the DoD's increasing budgets were justified by alleged capability 'gaps' in missiles, bombers, warheads and a general over representation of Soviet military prowess –all of which are now known to have been illusory (Chapman and Yudken 1992).

Within this Cold War context, the national governments were clearly the main customers of the defence companies and this meant that the arms market evolved into a monopsonistic structure, a market with one dominant customer and a number of suppliers. This was bound to influence the behaviour of the firms as they moved from being more general manufacturers to become defence specialists, because of the high potential returns, and started to become experts at getting money out of the government rather than competing in the market. They had to deal with the elaborate rules and regulations on contracts, that were needed to compensate for the absence of any form of competitive market and to assure public accountability. The 'revolving door' facilitated linkages, with military personnel and civil servants moving to defence contractors they had had dealings with and staff from defence contractors moving into the bureaucracy (Adams 1981; Higgs 1990).

Companies sought involvement in the development programmes for technologically advanced weapons systems as the best means of obtaining the subsequent production contracts. This led to 'buy ins', where firms understated risk or cost to win initial contracts, with a view to making up the losses later. They could rely on risk being borne by government, which often financed R&D and in some cases provided investment in capital and infrastructure. This led to an emphasis on performance rather than on cost of high-technology military systems, with more concern with how good it sounded than whether it worked. Early versions of cruise missiles are a case in point. In addition, programmes saw 'gold plating', where the military continually requested extras or continuous technological improvements over the contract period, so allowing renegotiation of contracts or additional payments, usually to the advantage of the contractor (Dunne 1995).

Operating within a market with these peculiar characteristics was bound to influence the nature of the companies and this led to both barriers to entry and to exit. Market, technological and procedural barriers, meant that not only was it difficult for companies to enter into the defence sector to produce weapons systems, or to upgrade from subcontractor status, but also that it was difficult for the defence companies to leave the industry. Thus the Cold War DIB showed remarkably stability in terms of its composition of main contractors. In most countries the main contractors had a monopoly or near-monopoly position and in many cases were state owned. Such markets structures, combined with high military spending, lobbying, regional dependence, limited transparency and oversight, created incentive structures that led to high weapons costs, corruption and inefficiencies within the arms producers that were argued to have externality effects on civil industry (Dumas 1986; Melman 1985).

These conditions and processes make up what is commonly referred to as the MIC – a powerful set of actors with vested interests in high military spending that in the specific ideology of the Cold War could marshal resources to pursue their particular interests.

Much of the discussion about the constitution, mechanisms, processes and behaviour of the MIC refers to the particular US situation. In Europe things were rather different, with state ownership, more direct state involvement in the arms industry and much smaller domestic defence markets. Some have argued, however, that the basis for a form of MIC with similar dynamics could be identified in the UK and other countries (Dunne 1995; Lovering 1990).

4. Post Cold War Developments

Since the end of the cold war, there have been a number of developments that have had implications for the nature of the MIC. Certainly, the end of the Cold War saw profound changes in the international security environment. World military expenditures peaked in the late 1980s, fell gradually between 1989 and 1990 with improving East-West relations, then dropped sharply in 1992 after the disintegration of the Soviet Union in 1991. The international arms trade dropped by a half between the 1982 all-time high and the 1995 trough, has then fluctuated somewhat until it began to increase consistently in 2003 (The SIPRI Arms Transfers Database). Procurement of weapons also fell sharply, with SIPRI (Sköns and Weidacher 2000) estimating that arms production (domestic demand plus exports minus imports) in 1997 was 56% of its 1987 level in the US, 78% in France and 90% in the UK. These changes had a direct impact on the demand for the products of the MIC and the environment in which they operate, calling into question the ability of even the major countries to maintain a comprehensive domestic defence industrial base. Governments found it harder to justify previous levels of support for the industry and 'competitive procurement policies aimed at value for money were introduced in a number of countries' (Dunne and Macdonald 2002).

In the US, however, there have been developments that went against this trend and had important impacts on the US military establishment and arms industry. Most importantly, while there was an initial period of military expenditure cuts and arms industry downsizing, military spending began to grow again in 1999 and has increased rapidly since 2001, due to the massive spending made possible under the 'global war on terror' label (Sköns Chapter in this volume) and justified primarily with the wars in Afghanistan and Iraq. Contrary to previous US funding practice, these wars were funded through supplemental appropriations outside the regular annual defence budget requests. This was not only for the initial period, when it might be justified by the fact that war costs are difficult to predict, but continuously for 5-6 years, with some correction only after repeated critical reviews by the US Government Accountability Office (GAO 2008) and requests from Congress. This practice had two important implications: it produced an overly optimistic picture of the funding requirement for the war and reduced the level of legislative oversight, since requests for supplemental appropriations go through a less comprehensive process than regular defence budget requests (Kosiak 2008, 48-49). In addition, the scope of what could be included in the supplemental was successively increased by the Bush Administration

not only to cover incremental costs directly related to operations, as traditionally would have been the case, but also to cover the cost of other programmes and activities that were, at best, only indirectly related to the wars. In 2006, new DoD guidance for war appropriation requests made it possible for the armed services to include virtually anything in their requests for war-related appropriations. (Kosiak 2008, 53). This is likely to have reinforced linkages between the military and the arms industry, since it provided scope for adding on non-war related items in a rapidly expanding defence budget (Sköns Chapter in this volume). In addition, Congress was criticized for becoming a spectator rather than a check on Presidential power, with some members supporting crucial decisions to direct war funding to their home districts. In 2002 Congress abandoned its duty to deliberate a declaration of war on Iraq and handed the administration a blank cheque (Wheeler , 2004).

In addition to the changes in the levels of demand for arms, new technologies have enabled new types of warfare and changed the nature of the demand. Communication and control technologies have become increasingly important in the theatre of military operations. Network-centred warfare, the use of satellites, communications equipment and multi-node networks changed the nature of demand -part of the Revolution in Military Affairs (RMA), a term used to emphasise the way that improvements in information technology, precision targeting and smart munitions created the possibility of a new form of warfare, network-centred warfare. The internet came to play an important role in the development of communications, but it also provides a further area of potential security threats. While it is unlikely that the US and Europe (NATO) will face an enemy that can provide a symmetric response, this is unlikely to stop arguments that other countries, such as China, may well do so in future. For now, the most likely strategic concerns will be with more informal guerrilla-type conflicts, with different implications for weapons systems required (Dunne et al 2006). This uncertainty about the enemy and the growth of 'homeland security' are also adding on new types of demand. In particular they are making communications and surveillance technologies increasingly important (Smith 2009).

NATO and EU troops are also increasingly involved in peacekeeping roles around the world. Apart from changing the nature and structure of the forces, and possibly creating somewhat different military systems requirements (although some successful lobbying to maintain the use of systems already in production has taken place), it will require interoperability between armed forces from different countries and therefore greater harmonisation in military systems, in particular for information and communication. NATO enlargement has also required countries joining the alliance to replace old and Warsaw Pact systems with new US and European ones and has, consequently, increased demand.

On the supply side there were a number of important developments including increased concentration, technological change, subcontracting and internationalisation. The end of the Cold War did not bring about the expected diversification of the defence industry. Instead there was a rapid process of ownership concentration through mergers and acquisitions. In the US there was a striking change in industrial policy. During the Cold War industrial planning was undertaken through the Pentagon, but this was only an implicit industrial planning (Markusen and Yudken 1992, 51-55). In 1993 a merger wave was stimulated by the 'last supper' when Pentagon Deputy Secretary, William Perry, told a dinner of defence industry

executives that they were expected to start merging. It ended when the Pentagon decided it had gone far enough and blocked the merger of Lockheed Martin with Northrop Grumman in early 1997 (Page 1999, 213-214). This left four major contractors and the only major change since then was the takeover by Northrop Grumman of the aerospace and information technology company TRW, making them the third-largest US arms producer after Lockheed Martin and Boeing (SIPRI 2002). This led to a massive increase in the size of the major defence companies, which is also likely to lead to an increase in their power. To the extent that it also resulted in an increased specialization on defence, as argued by Markusen and Costigan (1999), it is also led to an increased interest in lobbying for major defence contracts. In an environment of growing budgets this could mean further growth in the size of the industry, as well as its dependence on the domestic arms market, more efforts to influence government decisions, including more pork barrelling.

The increased fixed costs in production that assisted industrial restructuring also led to arms producers resorting to commercially available civilian technologies and products. This was a marked change, as from the end of World War II to the 1980s military technology had tended to be in advance of civilian technology, but by the 1990s in many areas, particularly electronics, military technology lagged the civilian sector. This was largely because the long lead-times involved in military procurement meant that much of the technology was obsolete before the system came into service (Smith 2009). Whereas in the past the spin-off of military technology to the civilian sector was an important argument for the value of military production, now there is more spin-in of civilian technology to the military. Many areas of technology which were once the preserve of the military and security services, such as cryptography, are now dominated by commercial applications. Increased numbers of components that go into the major weapons systems are commercial 'off-the-shelf' (COTS) products, produced by manufacturers who would not see themselves as part of the arms industry (Dunne 1995). This has also meant that subcontracting has become increasingly important for arms producers as they can generally get components that are not defence specific at cheaper prices from the specialist producers. This means they outsource work to other companies, increasing the links with the civil sector and bringing new types of company, particularly from the electronics and IT sectors, into the defence industrial base (Dunne et. al., 2007a,b). This means it has become less clear which companies benefit from defence contracts, reducing the visibility of the defence industrial base has been reduced. Subcontracting has also reduced the degree of in house manufacturing for the main arms producers, changing the nature of the companies. They have tended to lose some of their direct manufacturing capacity, retaining mainly design, R&D and integration skills –in addition to the skills required to gain and negotiated contacts with government (Markusen and Costigan, 1999).

Another important factor has been the internationalisation of arms production in the post-cold war period. This has taken two forms, the internationalisation of ownership and the internationalisation of supply chains. Although defence companies still rely on domestic support through procurement and support for exports, governments have been increasingly willing to recognise that the costs of high-technology research and development when combined with smaller national production runs have made it more necessary to make economies of scale through international collaboration and industrial restructuring. This has led to marked increases in cross border mergers and acquisitions and cross ownerships in the arms industry, with considerable

internationalization of the content of advanced weapons systems (Dunne and Surry, 2006). As early as 1985 the Congressional Defence Joint Oversight Committee on Foreign Dependency, found that the guidance system of an air to air missile had 16 foreign produced parts. Contractors have continued to identify preferred suppliers and to use a wider range of them (Dunne, 2006a; Hayward 2001).

Despite the degree of internationalisation it is not clear how much it has changed the dynamics within the MIC. Companies appear to remain significantly dependent on the government of the country in which they are located, regardless of ownership relations. International supply chains provide flexibility and potential cost reductions for firms, but could make them more vulnerable if they become dependent on international subcontractors. They also reduce the visibility of the defence industrial base and could lead to governments and workers from other countries being involved in lobbying for orders

A major reason for the relative stability of the cold war DIB was the existence of barriers to entry and exit. The industry has gone through changes, but barriers to entry are likely to remain considerable as the marketing of military products differs from commercial products and personal contacts and networking are likely to remain more important than general advertising. Market demand for arms is also limited by government and is likely to be inelastic. This means that entrants cannot rely on an expansion of the market to accommodate them as prices are reduced, but are likely to have to fight against and replace incumbents. There is also likely to be considerable brand loyalty given the nature of the products. Customers may require compatibility with previously purchased weapons systems, or may provide follow-on orders from previous contracts. Barriers to exit are also likely to remain as price competition makes the civil market place very different to the world of defence companies. Defence contracts can be safe and profitable and often involve long-term commitments. The market is cyclical and even in lean spells it may be worth staying in the market in the expectation of better times, particularly as government is still likely to bail out major contractors in trouble. Furthermore, when there are cuts in domestic sales, governments are likely to provide assistance for foreign sales (Dunne and Surry 2006). This suggests that the industrial component of the concept of an MIC may still see a relative stability in the core actors –with changes on the periphery.

One major development that has introduced some new faces is the significant expansion of the military services industry since the end of the cold war. This has been the result of the outsourcing of functions that once were provided by military forces or defence ministries to private companies and was expanded greatly during the war in Iraq (Singer 2003; Wulf 2005). The military services provided by private industry include not only the provision of armed security, the most publicized activity of this industry, but a wide range of other services. These include research and analysis, various types of technical services—such as information technology, system support, and maintenance, repair and overhaul of military equipment—and operational support, including logistics and intelligence services. While some of these services, such as equipment maintenance have been an integral part of the arms industry for a longer time, the expansion has seen a growth in the number of companies specializing in military services. This has been a significant change in the both the structure of the DIB, with new companies, such as KBR, previously owned

by Halliburton, becoming a major DoD contractor for its provision of construction in conflict zones (Briody, 2004) and in the nature of the MIC, as companies providing military services are often engaged directly in conflict zones giving them a direct vested interest in the continuation of armed conflicts. In this way, their interests are different and more problematic than the vested interests of military goods-producing companies, whose products are also in high demand during peace-time (Perlo-Freeman and Sköns 2008, 13).

Military production has developed a very specific geographical distribution in most countries, as the location of factories and facilities has historically reflected security concerns rather than just economic ones. This has led to large defence dependent communities in various locations within any country with a large defence industry. The changing nature of the industry and of security has had implications for the geographical pattern of production and closures cause considerable problems for communities as often the jobs lost are rather different to those available. While evidence suggests that defence workers, given their high skills, find new jobs relatively easily, it is usually lower-paid work and there is considerable disruption. The increased internationalisation of the supply chain also has implications for the geographical distribution of production and employment, reducing the major contractors' impact on their traditional local economies. This can also impact upon local politicians interests in the defence budget (Dunne, 1995).

5. European Dimensions

The concept of an MIC was developed in the US and is most readily applied there. In the post Cold War world the process of restructuring in Europe was more complicated, since restructuring necessarily involved cross-border mergers, which raised political issues. The major players in Europe also had quite different ownership structures, including a substantial degree of state ownership in France. Both factors made a financially-driven merger boom of the US type more difficult. Nonetheless, there was an increase in concentration and by 2005 the West European restructuring process had resulted in a web of cross-border ownership and collaboration relationships in aerospace and electronics. Concentration in the defence industry is still not as high as in comparable high-tech industries, however, suggesting that market forces have not been allowed to work freely in the procurement, production and sales of weapon systems. This could also be the result of a segmentation of the arms industry with strong concentration in aerospace and electronics and less in other defence industrial sectors. At the systems level in aerospace and electronics oligopolistic tendencies are emerging at the international level, while in other sectors industry remains nationally fragmented (Dunne 2006b; Sköns 2005).

In addition, the privatization of previously state-owned companies impacted on the integration of the West European defence industry as previously state controlled companies were forced to operate according to corporate business principles. The true impact on government influence and control is less clear, however, and differs across countries depending on their government's policy towards their private defence industry. What may turn out as being more important in the long run is the emergence of a security industry outside the traditional defence industry: the privatized military industry engaged in outsourced military services that has previously been provided

within the military establishment, and the security industry engaged in the provision of goods and services for personal safety, primarily to the private sector but increasingly also to the government sector (Sköns 2005).

In the UK most of the defence industry has been privatised, while in the rest of Europe the state still owns much of the industry, but has been changing. Privatisation is taking place and the UK Government's Public Private Partnerships (PPP) policy, launched in 2000, is having considerable influence. One part of this is the Private Finance Initiative (PFI), where the public sector contracts to purchase quality services on a long-term basis so as to take advantage of private-sector management skills which are stimulated and focused by having private finance at risk. PFI can include concessions and franchises, where a private-sector partner takes on the responsibility for providing a public service, including maintaining, enhancing or constructing the necessary infrastructure. This initiative is having an important impact on relations between state and industry in the UK and is influencing government policy abroad (Dunne 2006b).

In Europe, efforts were made to create both harmonisation of requirements (demand side) and a more open defence market (a 'level playing field') (supply side). The European Defence Agency (EDA) was created to help EU Member States develop their defence capabilities for crisis-management operations under the European Security and Defence Policy. It was intended to encourage EU governments to spend defence budgets on meeting future challenges, rather than past (Cold War) threats and to help identify common needs and promote collaboration. Article 296 of the EC Treaty, restricts cross-border competition by allowing Member States to claim an exemption on national security grounds from normal EU public procurement rules. The EDA Code of Conduct on Defence Procurement launched in 2006 deals with cases where exemptions are invoked, which has been the case for more than 50% of defence equipment purchases. It is intended to ensure that there is transparent and fair competition. In 2009 the European Parliament adopted a Directive to complement this, which recognises the specific features of the defence and security markets and which might lead to a weakening of competition. (Dunne 2006b; EDA website).

All of these developments have led to a set of state-industry relations that look rather different to those of the old Cold War MIC, but they still suggest a dominant role for national governments and continuing close links between government, industry and the military. In Europe privatisation has reduced direct state links, but indirect ones remain powerful, though in some ways less visible, as in the US. The structure of the MIC has changed and expanded, but its component parts would still seem to remain powerful lobbying groups in all countries (Dunne 2006b).

6. Conclusions: Continuity and Change

The concept of a Military Industrial Complex was a useful vehicle for understanding the success of the military establishment in receiving unprecedented government budget allocations in the US and other advanced economies during the Cold War. It is a problematic concept theoretically but retains some useful descriptive value, in particular in assisting in an evaluation of the changes that have taken place since the end of the Cold War.

What Eisenhower referred to as the MIC developed into a powerful and idiosyncratic structure, with strong linkages between elements within the military, government, legislature, capital and labour and the dynamics of the Cold War provided justification for the unprecedented growth of military spending without any obvious change in threat. The Cold War defence industry is a very specific industry, its size, structure, trade are all determined by government policy with an emphasis on performance rather than cost, risk borne by government, elaborate rules and regulations on contracts, and close relations between contractors, procurement executive and military. As a result there were strong barriers to entry and barriers to exit, which led to the Cold War DIB showing remarkably stability in terms of its composition of main contractors.

With the end of the Cold War there were a number of important developments that impacted upon the MIC. There were significant cuts in demand for arms, with the reductions in military spending and trade. Coupled with the introduction of competitive practices the power of the MIC in many countries was reduced. In the US, however, there were developments that went against the trend, with military spending starting to grow again in 1999 and increase rapidly in 2001, with the 'war on terror'. In addition, there were changes in the manner in which wars were funded, which introduced flexibility to arms procurement and reduced Congressional oversight. The result of this was to strengthen linkages between the military and the arms industry in the US.

There were also changes in the nature of the demand in the arms market, with the have been changes in the demand side of the arms market, with the Revolution in Military Affairs (RMA) making communication and control technologies increasingly important in the theatre of military operations. Strategic concerns shifted to asymmetric warfare, with different implications for weapons systems required, while the growth of 'homeland security' also added new types of demand. In addition, the increasing involvement of NATO troops in peacekeeping roles has implications for force structures, arms and military systems requirements. The implications of these developments for the industry can be overstated. There is still lobbying for the maintenance of Cold War legacy systems – e.g. arguing that peacekeepers need the systems being developed and that NATO may face new superpowers, such as China, in future and it has had some success.

The end of the Cold War did not bring about the expected diversification of the defence industry. Instead there was a rapid process of ownership concentration in the US through mergers and acquisitions. This led to an increase in the size and power of the major defence companies. Increased fixed costs in production led to arms producers resorting to commercially available civilian technologies and products, spin-in replaced spin-off and many areas of technology that were once the preserve of the military are now dominated by commercial applications. Subcontracting has become increasingly important, bringing new types of company, particularly from the electronics and IT sectors. This makes it has become less clear which companies benefit from defence contracts, reducing the visibility of the defence industrial base.

Within all major producing countries internationalisation of ownership and supply chains took place. European producers sought US defence companies to try to break

into the growing market, though only the UK was successful, and major producers sought component producers worldwide. Nevertheless companies remained dependent on their home government, regardless of ownership relations, but these developments did further reduce the visibility of the defence industrial base and in some cases led to governments and workers from other countries being involved in lobbying for orders

A major reason for the relative stability of the cold war DIB was the existence of barriers to entry and exit. The industry has gone through changes, but barriers to entry are likely to remain considerable and this suggests that the industrial component of the concept of an MIC may still see a relative stability in the core actors –with changes on the periphery. One major source of new companies was the significant expansion of the military services industry since the end of the cold war. Companies have been providing military services directly in conflict zones giving them a direct vested interest in the continuation of armed conflicts.

Marked changes have taken place in Europe, with privatisation and EU level legislation are changing the state industry relations, but their impact can be overstated. Certainly change is likely, but whether that is in the direction of a European –wide MIC is unclear. At present the transatlantic links would seem to be US-UK and while privatisation of European companies is changing the state-industry relations closer to that of the US, it is not clear that that will reduce their influence.

Overall, it is clear that there has been considerable change in the nature and extent of the MIC but it is unclear exactly what the implications of this are. The Defence Industrial Base has certainly seen some considerable restructuring and concentration worldwide, with increasing US dominance and US and European links developing. Old arms contractors have changed, becoming systems integrators, outsourcing nationally and internationally, spinning in civil technologies and components, rather than spinning off innovations for the civil sector. But despite some new players, the old specialist military companies remain dominant and are engaged in takeovers to acquire expertise in new areas. There is little evidence to suggest that the links between the industry, the military, government and the legislator have weakened and it would still seem that it is a political rather than economic logic that controls the international arms market. Probably the best way to describe the changes that have taken place is that there has been change, but also a remarkable degree of continuity within the MIC. The concerns of Eisenhower are certainly still relevant as the post war restructuring may well have left an MIC that is just as pervasive and powerful, more varied, more internationally linked and less visible.

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