

Transatlantic Defence Industry Integration

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Discourse and action in the organizational field of the defence market

TRANSATLANTIC DEFENCE INDUSTRY INTEGRATION

*DISCOURSE AND ACTION IN THE ORGANIZATIONAL FIELD
OF THE DEFENCE MARKET*

Martin Lundmark



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Preface

This doctoral thesis was written at the Center for Marketing, Distribution and Industry Dynamics at the Stockholm School of Economics (SSE). The research project has been conducted in combination with the author's position as defence industry analyst and deputy research director at the Swedish Defence Research Agency, FOI.

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The author has been entirely free to conduct and present his research in his own ways as an expression of his own ideas.

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PART I Introduction

Part I introduces the empirical observation that triggered this thesis, and sets the thesis' problem into the context of the defence market and the defence industry. Before more specifically discussing the theoretical framework, it is seen as important to establish a few starting points.

Chapter 1 will first broadly discuss the development of the transatlantic defence industry integration during the last 100 years and the empirical observation that triggered this thesis. After this, there is an account of how the transatlantic defence industry integration has been analyzed previously. The next section discusses how a market that is deeply politically influenced likely will influence the nature of the industrial integration, and the view of the defence market as an organizational field will be adopted. This is followed by a presentation of the corporate cases that are studied in the thesis. Thereafter, a definition of the central theoretical concepts of the thesis. After this, the research question and purpose of the thesis are defined. Finally, the thesis' disposition is presented.

Chapter 2 discusses the specific nature of the defence industry, and how and why governments tend to have a strong interest in the domestic defence industry. After this, previous research on military production is presented. This is followed by a discussion on the development of the concept of the so-called Military-industrial complex (MIC) and a brief discussion on how a defence industry is regarded to be a component of national security policy. This leads us into governments' policies for regulating and influencing the defence-industrial integration. Before moving to Part II of the thesis, finally the perspective of the thesis as presented in Part I is summarized.

Chapter 1 The challenges of the transatlantic defence industry integration

“If the U.S. becomes dependent on other countries it adds uncertainties. Uncertainties must be avoided at all costs.” U.S. Senate interview, 2001

“International defence industry cooperation requires political will and military programs.” Interview at GICAT, French defence industry interest organization, 2003

“The U.S. is very defence-minded; there is a fundamental difference. The U.S. is at war, Europe is not at war.”
Interview at UK Foreign and Commonwealth Office, 2002

“The U.S. is very good at not understanding Europe.” Interview at Pentagon, 2004

“The biggest concern of the transatlantic defence industry collaboration is to take care of the soldiers. The industrial view is another thing.” Interview at Raytheon, Washington D.C., 2001

“In order to be present in the US, Thales has to buy SMEs that have not yet received a U.S. defence R&D order. So they have to buy three, and maybe one is successful.” Interview at Thales, Paris, 2009

1.1 Starting point

The initial empirical observation that triggered this thesis was that, on the one hand, there is a continuous debate of why transatlantic defence industry integration should be increased. On the other hand, there was a common understanding that companies integrated to a much lower extent than what the debate expressed. The quotes above illustrate some of the potential tensions and obstacles in operation here. Analysts (e.g. Scherpenberg, 1997; Ashbourne, 2000; Adams, 2001; James, 2001:a, 2006; Cornu, 2001; Gholz, 2002) observed a clear discrepancy between a *discourse*, discussing increased transatlantic defence industry integration, and an industrial *action* which was much more limited. The discourse reveals a multitude of incentives and arguments from governments and companies, arguments for and against transatlantic defence industry integration. The question was what kind of integration did occur, and what factors could explain the suggested discrepancy between discourse and action.

Initial studies of published material did not explicitly distinguish between political and corporate arguments, and most of the identified analyses focused on aspects derived from other scientific domains: political science, government policy or macroeconomics – but not from corporate strategy. Previous analyses, in my view, were largely related to a more general discourse about the functioning of a yet-to-be-seen transatlantic defence market – a discourse that seemed not to match the nature of the actual integration.¹ These observations and analyses have intrigued me and inspired me to address the issue differently. This thesis suggests a way to reach an understanding of and explanation for this process from a different angle. A brief description of my approach follows below.

The defence industry in Europe and in the U.S.

Until the early 20th century many larger nations saw war as a more or less natural act in order to further the nation's powers and territory or as the means to defend itself when other nations wanted to further their powers. After WWI and WWII (World Wars I and II) and the global devastation that followed, military force became more centred on territorial defence, power projection² or intervention – rather than on expansion.

States generally regard indigenous production of arms and war materiel as an asset that strengthens a nation's military and security posture. Defence production was until WWII largely a national affair where each nation's military defined its own needs, and domestic industrial facilities were assigned to produce it. Larger nations overall had a production that satisfied their own defence needs. Defence companies (except the aircraft producers) were for the most part based on centuries of defence production and were seen as expressions of the nation's proud military heritage. The defence production was often deeply institutionalized into the national traditions of defence production for the national military. Each nation had its own path-dependent organization of defence production in private, semi-private, state or military production facilities, or some other indigenous variant of arsenals and armouries. Aircraft production originated during WWI and has – as will be seen – had a different impact on and role in the defence-industrial development than the traditional army and navy production.

During WWII the U.S. and UK started to cooperate in order to counter Germany and the other enemies, and the U.S. at the end supplied large amounts of arms, ships, tanks, planes etc. to many of its European allies. Defence production had during the war become an integrated part of the entire society, fully engaging the research community and scientists: the R&D, production, bureaucracy and planning had thereby become highly sophisticated (Giovachini, 2000; Schmitt, 2000, 2001:a; Hébert, 2003). The Cold War that came out of WWII created two opposing, enormously powerful military blocs (NATO and the Warsaw Pact) that set the political agenda for the rest of the world.

Since the end of World War II, the defence industries in the U.S. and in Europe have developed both jointly and separately. During the Cold War, the U.S. massively supported

¹ In Chapter 2 there will be an account of this previous research where we will pinpoint critical points of departure.

² 'Power projection' concerns when a nation sends troops, military aircraft or most typically large naval ships to a troubled region far away from its own territory and through this appearance shows its military capability and thereby tries to influence the situation in a preferred direction, or simply to prevent war. This is also called 'gunboat diplomacy'.

the growth of a European defence industry in the main European allies' national defence industries in the 1950s and 1960s in order to add greater impetus in counteracting the Soviet Union and the Warsaw Pact, in what was to become NATO. Germany had now in NATO joined its previous enemies. Gradually, the European nations that received the U.S. aid developed national defence industries that started to stand on their own – built on the facilities and the domestic knowledge that were left from the pre-war period and the following war. The U.S. gave financial aid, sold defence materiel at low cost and shared military technology in order to support growth of domestic defence technology capacities in NATO member states. The re-created defence industries in especially the UK, France, Germany and Italy gradually became competitors or at least alternatives to the U.S. companies that had participated in the build-up (Giovachini, 2000; Schmitt, 2000, 2001; Hébert, 2003; Geiger, 2003).

In the 1960s, the initial decision to create a European military identity triggered processes that led to the creation of European, non-NATO military capacities within the European Community as well as industrial competitors to the U.S. companies. European armaments cooperation in the 1960s gradually, but slowly, strengthened in the decades to follow and has developed into a number of autonomous companies involved in defence production. These companies include Airbus, EADS and MBDA. The U.S. has consistently had a much higher level of defence expenditure and has mainly developed its defence material under its own auspices, relying on domestic industrial capacity. Alongside this development there has been a constant line of arguments advocating the expansion and intensification of industrial integration between the U.S. and Europe (enforced by joint military armaments development), i.e. more transatlantic defence industry integration (Schmitt, 2000, 2001; Hébert, 2003; Bialos et al., 2009).

The traditional reflex of each nation-state autonomously securing its own defence needs however became less self-evident. NATO members saw a need to be able to operate together militarily (to be 'interoperable'), which put demands on standardization, communication and coordination. The increasingly sophisticated defence products had also become highly expensive to develop, which created incentives for cooperation between nations in order to share development costs and thereby lower the unit cost.³ Paired with this, a need for a more autonomous European defence capacity was starting to be formulated. In the process, the unfamiliar situation arose that defence companies, militaries, the political and bureaucratic establishments had to negotiate between nations on how they should collaborate in defence production – and all parties had to be included in the negotiation. The development of defence products also showed increasingly long time periods, which demanded that nations' defence communities had to maintain such difficult cooperation for five, ten, maybe twenty years. This demand for border-crossing cooperation in defence production saw its light during the 1950s (*ibid.*).

³ 'Collaboration' is the most common word for such government-initiated border-crossing shared work. For rigor in the thesis we will use 'cooperation' as the concept that covers both collaboration and cooperation. When necessary we will specify whether the cooperation is more strictly company-company-initiated, or government-government or military-military.

The initial attempts at such cooperation could be based on several combinations of actors. The U.S. and the UK seamlessly continued their cooperation after WWII, enhancing what Churchill called the 'special relationship' between the two. Different combinations of France, the UK, Germany and Italy started cooperation, mostly bilaterally, in especially aircraft and missiles. France was most active, preferably with Germany. The U.S. dominant position became permanent and more pronounced in NATO, and the U.S. was by far the most powerful and resourceful defence producer in the Western community. There was also a small extent of other transatlantic defence industry cooperation outside of NATO between the U.S. and Europe or with single European nations. The U.S., NATO Europe and some other European nations (especially Sweden), however, still strongly prioritized and structured their domestic defence production based on each nation-state's self-defined needs and specifications. The preferred alternative was always domestic production. There was thus a permanent incentive to cooperate, paired with strong national incentives for nationally defined defence needs and solutions. A domestic capacity for defence production was – and has always been – seen as a strong emblematic symbol of national strength and prestige (*ibid.*).

Alongside transatlantic defence industry integration there has also been a process of European defence industry integration, as well as intra-U.S. defence industry integration. Within the EU this process has been fuelled by the political process of creating a closer and more harmonized European defence identity. This is a part of a wider 'Europeanization' process primarily driven inside and by the EU. The process was initially intergovernmental and not supranational, but the supranational, federal EU element is slowly increasing. This creates a convergence of defence-industrial policies in Europe, as the member states adjust their national policies in relation to supranational EU accords (Sandström, 1997; Mörth, 2003, Britz, 2004, 2010; Schmitt, 2005; Fligstein, 2008; Hartley, 2008; Bekkers et al., 2009)⁴. With this policy integration process follows – as in other industries – a consolidation and restructuring process.

The research for this thesis started in 2000. The initial empirical observation that triggered the thesis was that, on the one hand, there was a continuous argumentation for why there should be increased transatlantic defence industry integration. The argumentation involved representatives from firms, politicians, government experts, and different military branches as well as think-tanks. A wide spectrum of incentives for transatlantic defence industry integration was identified in the argumentation. On the other hand, it appeared that companies integrated in a less extensive and different way than what the argumentation expressed. Analysts (Scherpenberg, 1997; Ashbourne, 2000; Adams, 2001; James, 2001:a; Cornu, 2001) pointed to what will be referred to here as a *discourse* discussing increased transatlantic defence industry integration, and a corporate integration (an *action*) which seemed to emerge quite differently. A discourse is a type of conversation, a public conversation which can be seen as the sum of all specific conversations about a certain

⁴ It should be noted that in the process of strengthening the European defence identity we must make a few distinctions. First of all, 'European' in this sense normally refers to processes within the EU member states. Secondly, 'integration', when used in analyses made by political scientists, normally refers to the integration of state policies, i.e. some form of harmonization (see e.g. Britz, 2004). In this thesis, 'integration' refers to the integration of corporate entities, as described and defined in the text.

phenomenon (Foucault, 1971/1993; McCloskey, 1986; Furusten, 2007). In this case the phenomenon in question was an intensification of transatlantic defence industry integration.

A discourse about a certain phenomenon reflects the specific environment in which the discourse takes place. The view of the defence market as an 'organizational field' will be used in order to specifically understand the discourse. A company's closest and most formative environment can be described as an organizational field. Organizations, as a whole, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies and organizations that produce similar output (DiMaggio & Powell, 1991; Fligstein, 1991). The discourse for a certain industrial change in a specific organizational field will be shaped by the conditions that characterize the organizational field. The conditions for cross-border corporate integration will follow generic rationales over different markets, but each market is only one part of the organizational field. There will be market-specific conditions for the integration. A political influence which is another aspect of the organizational field can also be expected to occur. The organizational field will be described in the thesis as consisting of a corporate and a government field. The interface between the corporate field and the government field is viewed as the central node of interaction between corporate and political incentives and priorities. The interaction between actors in the organizational field can be expected to reveal conflicting 'institutional logics' (Friedland & Alford, 1991; Thornton & Ocasio, 1999) that compete for dominance. An analysis of this interface in the organizational field is, in my view, central for understanding how the field determines the discourse and shapes the integration.

The questions that intrigued me were what kind of integration really did occur and what factors could explain the nature of this integration. Previous analyses of transatlantic defence industry integration (described under 1.2) were not performed within the domain of business administration theory. They did not, in my mind, offer the kind of explanation that may follow from an analysis closer to the actors. My overall impression was that predominant business administration theories, most often based on assumptions of decision-making rationality, did not offer appropriate tools for analyzing the phenomenon. Therefore, I chose to create my own model, synthesizing a broader range of theories, from several domains in business administration theory – especially theories from neo-institutional organizational analysis and on the nature of integration. In parallel with this, I searched for a more thorough description than what was found through secondary sources. I therefore interviewed more than 100 people in the U.S., France, the UK and the Netherlands with insight into the transatlantic defence industry integration.

The thesis concerns transatlantic corporate integration in the defence industry. From a rational business administration point of view, the defence industry structure suggests that there is considerable potential for greater efficiency through increased cross-border integration and the creation of international supply chains that would create economies of scale, shared R&D costs, synergies, widened markets etc. The research examines why on the one hand the discourse related to this market suggests deeper industrial integration, and yet on the other hand the outcome of industrial integration appears to be quite different.

To define and compare costs for the development of defence products is difficult. Several resembling definitions exist. In the U.S. the predominant concept in the government is

'RDT&E' (Research, development, testing & engineering). Basic defence research may also in the U.S. fall under 'S&T' (Science & technology) programs. Nuclear research falls under the Department of Energy, not the Department of Defense (Bialos, 2009). In the publications from EDA (European Defence Agency, a European Union authority), EDA uses 'R&D', 'R&T' (Research & technology), 'R&D (including R&T)' and 'Investment (equipment procurement and R&D)' for comparing nations' defence expenditures (Defence Data, 2011). Other publications may use similar but not identical definitions. Nations also define costs and phases in the development differently. It is therefore difficult to compare national expenditure for developing defence materiel. This thesis does not focus on clarifying such differences in definition. When defence R&D is discussed, the thesis will primarily focus on comparing significant national differences in e.g. collaborative share of defence R&D or levels of defence R&D expenditure. For simplicity, the concept 'R&D' will be used, which is the concept utilised by SIPRI⁵.

This thesis will study the nature of transatlantic defence industry integration and the forms it has taken. Integration refers to the ways organizational entities are fused into a new entity (*organizational integration*) and how the operations and processes in separate organizational are integrated (*operational integration*). A distinction between these two related concepts is, as will be shown, of central importance to the thesis: the cooperative mode appears to become a compromise between corporate rationality and political limitations and control.⁶ In parallel with this account of the integration, there will be a description of the regulatory tools used by governments in order to steer and monitor the border-crossing industrial integration.

Integration can be understood as the ownership integration of corporate entities, whereby a decision is announced that companies merge, a joint venture is created or one company acquires the other. Clearly, this does not guarantee that operational integration follows naturally from *ownership* integration. It may be very difficult to combine the operations, supply chains and other activities of the entities that are fused together. There are many examples of ownership integration with the expected synergies and potential for rationalization not coming to fruition. Experience indicates that previous cooperation and interaction between companies increase the probability of successful ownership integration. Firms tend to gradually increase their foreign expansion, and companies may gradually become closer to each other as a relationship develops (Johanson & Vahlne, 1977; Johanson & Mattsson, 1992). The networking between companies and the successive mutual endeavours will create "relationship sediments" that can form a basis for trust in a more formal, institutional integration (Agndal & Axelsson, 2002). The thesis will analyze to what extent the ownership integration really leads to operational integration between the corporate entities, or perhaps the other way around.

However, the cross-border integration of defence companies is a classified process that falls under rigorous national legislations and monitoring. Having mentioned ownership

⁵ SIPRI (Stockholm International Peace Research Institute) statistics and its Year Book is the primary reference in academia for data on defence industry, defence production and defence export. (www.sipri.org)

⁶ According to empirical observations made in this research.

and operational integration, it should be emphasized that I have not focused on the interpersonal interaction in cross-firm integration; it would be very difficult to get access to empirical data.

Defence (or other) companies may integrate in the sense that they enter into joint ventures or they merge or acquire each other. A continuum of increasing commitment in relation to different forms of *integration* can be observed, reflecting the rational reasons for different choices (Lorange & Roos, 1991 & 1992).

In business administration theory there are established theories of what the incentives behind company integration within an industry are. Such theory is based on observed general patterns of corporate behaviour. At the same time, each industry has its specific patterns and conditions which in some way create a specific pattern for integration in that particular industry.

The defence industry is stated (by e.g. Markusen, 1999; Hayward, 1999, 2000; Masson & Paulin, 2005; Neuman, 2006) to be an industry in which integration and cooperation largely do not fit in with the general theories of how companies integrate and co-operate. Still, defence companies are private enterprises which need to be profitable and generate shareholder wealth. They integrate, merge, co-operate and acquire among existing companies. Thus, they are in several core respects similar to any firm, and in some respects unique.

It is clear that defence companies act within a market that is very much politically controlled and influenced. It can therefore be assumed that the resulting impact on the nature of defence companies' integration comes from a combination of driving forces and inhibitors based on corporate rationality and priorities, as well as political incentives. The driving forces and inhibitors are in this thesis divided into corporate driving forces and inhibitors on the one hand and, on the other, government driving forces and inhibitors.

In the thesis, some empirical accounts are based on geography: the U.S., UK and France. This geographical presentation is chosen since the influence of the nation-state is seen as fundamental for defining the functioning of the market and the organizational field.

1.2 Previous analysis on the transatlantic integration of defence companies

In the defence community (military, political, corporate, policy, academic) there is considerable interest in the transatlantic defence industry integration. With a focus on an explanation of why the integration turns out as it does, and on an account of the arguments for and against transatlantic defence industry integration; what explanations have been put forward?

Broadly, previous analyses have presented one of the following three general conclusions:

- *There is little integration and the two political contexts are so different that they will always stay apart.* Usually, this conclusion is based on one of the following lines of reasoning. The conclusion could be based on a U.S. view, which is sceptical towards cooperation with other nations; it would not contribute to promoting U.S. interests and it would reduce U.S. control of U.S. defence technology. The conclusion could also be based on a perspective in Europe that European political interests and condi-

tions are so different from U.S. political interests that integration cannot occur. (Ashbourne, 2000; Sapolsky, 2001; Gholz, 2002)

- *If the two sides could harmonize in certain ways (normally with higher defence budgets in Europe and/or less scepticism in the U.S. vis-à-vis Europe, or harmonized military requirements), integration will occur.* This is the kind of discussion that has repeatedly been put forward for decades at conferences and in contextual debate and discourse. If the two sides could harmonize their priorities more clearly, transatlantic defence industry integration will follow.⁷
- *There is actually integration between companies – integration that is pulling the two political contexts closer.* In this case, companies do integrate and co-operate within the narrow confines created by the integration between the U.S. and Europe in a government context. In short, James (2004) claims that governments do not drive corporate integration; companies drive integration by exploiting the possibilities that governments offer and create. Companies do not follow schemes set by governments; they interpret the opportunities differently compared to governments (see also James, 1998, 2001, 2004; Jensen, 2001).

James' analysis is consistent with business administration theory, but is not reached through any particular explicit theory from business administration, performed with a developed theoretical framework.

There are many processes that affect the development of transatlantic defence industry integration. Cevasco (2009) discuss the impact of defence export control systems and how they limit technology transfer. Adams (2001) and Ashbourne (2000) show that there are reciprocal deficiencies of knowledge of the other side's agenda and priorities (U.S. vs. Europe), and how this makes integration highly cumbersome. Scherpenberg (1997) stress how the power imbalance between the U.S. and a non-harmonized Europe makes the U.S. exploit the natural competitive advantages that follow, and that this will prevail unless a drastic geopolitical change occurs. James (2006) stresses that the U.S. spends around 5-6 times more on defence R&D than all of Europe's defence R&D, and therefore the U.S. develops in a different and faster direction. Bialos et al. (2009) see no shared views of the threat and joint solutions, technology sharing and economic ties. Bialos (2009) and Grant (1999) underline that there was and is a marked technology lead on the U.S. side, and that Europe should strive to decrease that gap in order to make itself relevant for the U.S. Hayward (1999) states that the general globalization of industries and economies will force defence companies and nations to accept increasing globalization as well as to embrace the advantages that come from globalized sourcing. Many sources point to an extremely protectionist, nationalistic and sceptical attitude towards transatlantic defence industry integration in the U.S. Congress. Others (e.g. Keller, 1994) suggest that the U.S. should be very restrictive in transferring attractive defence technology to any other nation, since it dilutes U.S. defence advantages and it means unnecessary risks of the technology coming into the hands of potential adversaries. Gholz (2000, 2002) sees little relevance in

⁷ As a reference for this, the thesis discusses in Chapter 7 the discourse in secondary, published sources concerning transatlantic defence industry integration.

transatlantic defence industry integration, since he does not believe that it will truly affect the companies' operations and rationalization.

The above arguments, which do not cover the entire breadth of arguments, add to the complex picture of the transatlantic defence industry integration. The thesis will analyze the contextual factors that may underpin the arguments. My impression is that a sufficient explanation requires a thorough description and analysis, and thus an understanding of the interplay between corporate strategy and focused corporations' interaction with actors in a surrounding political environment. It has already been mentioned that a broader range of theories of corporate activities will be utilized than what normally is the case. One measure along these lines is to adopt the view of the defence market as an organizational field, which consists of a corporate field (the companies) and a government field with a multitude of actors that influence the companies' actions (DiMaggio & Powell, 1991; Fligstein, 1991; Meyer, 2007).

The above description of previous analyses of transatlantic defence industrial integration points to the fact that the phenomenon has almost always been analyzed without an elaborate theoretical framework and, as far as we have been able to detect, not one academic analysis has been identified that has utilized theory that falls under business administration. Therefore, we expect a more theoretically driven analysis based on business administration theory to offer deepened insight into and explanation of the chosen problem area.

In this thesis, corporate strategies are of greater interest than government priorities. However, corporate strategies are not believed to be sufficiently understood and explained if we do not clearly relate them to government priorities concerning transatlantic defence industry integration. The organizational field view stresses such a relation.

An important starting point for the thesis is that in order to fulfil the purpose we must achieve a sufficient understanding of one key part of this organizational field: the defence market. It will be given specific attention in order to be able to explain the problem under examination. We will revert to this starting point later.

1.3 Industrial integration in a politically influenced market – an important feature of this organizational field

We will now turn towards a more general discussion of politically influenced markets.

Societal institutions have been defined as sets of belief about the world which generate rules about how to act. Modern institutions may exhibit considerable inconsistency between belief and practice. We can observe that standard belief systems about markets and organizations may deviate considerably from a great deal of local market and organizational practice. Alongside the belief systems there is a corresponding pattern of action, which in turn strengthens the belief and the rules. Some modern institutions may be highly consistent with institutionalized rules and beliefs, others less so (Berger and Luckmann, 1966, Brunsson, 1996). The belief systems express incentives for change and reform. The incentives are expressed in a discourse related to the empirical phenomenon in focus (Foucault, 1971/1993; McCloskey, 1986; Furusten, 2007).

There is a need to discuss the nature of the defence market, since it is generally described as being very different from other markets. If we were to analyze, for example, integration

between a defined group of companies in the automotive market, the need would be considerably less articulated, as this market is well known.

The defence market deals with the acquisition of complex, technology-intensive products – systems that will be operated for decades and where acquisitions are strongly governed by political demands and specifications. The supply chains and the industrial landscape are mainly made up of large, technology-intensive companies, and research and development require major investments. Companies mainly sell to other companies as subcontractors or to the end-users – governments – in the form of military or defence-oriented authorities.⁸ In order to describe the context of this research – the defence industry – the perspective will include aspects of heavy political influence with national (and patriotic) connotations. Judging from this, the defence market is highly influenced by politics. We can relate this to other theoretical concepts for such contexts, e.g. 'political economy' (e.g. Cox, 1996 and Lehne, 2001) or 'political market' where government policy for the functioning of a certain market and the existence of an associated industry is in focus.

States have an interest in the well-being and international competitiveness of certain industries, and will support them by economic and diplomatic means. The domestic conditions and institutional infrastructure are clear competitive aspects of the strength of domestic defence industry structures (Stopford and Strange 1991; Goldstein 2001). Porter (1998) examined in a seminal study how different states seek to promote their industries in order to advance government interests through corporate international expansion. Fligstein (2001) underlined a sociological view of market activities, which stressed how markets and states are intimately linked. An institutionalized market will create a market structure centred on social relations: a market embedded in its institutionalized environment (Granovetter, 1985; Fligstein, 2001).

Examples of other politically influenced markets include energy, agriculture, infrastructure, and railways. A common denominator is that market logic is very much affected, or even governed, by political considerations. In this kind of organizational field the political impact needs to be taken into consideration.

A certain pattern of development in a market and a related industry may be supported, questioned, opposed – or left to 'the invisible hand'. Whether a market should be more integrated across borders, and in what ways such integration should occur, will be formulated in different ways depending on the interests or beliefs of the parties that put forward such an argument. Some arguments, and the substance they are built from, will in this thesis be labelled *driving forces* for a specific industrial change; other arguments will be *inhibitors* to such change. The arguments will be identified through an analysis of the published discourse (Chapter 7) and an analysis of respondents' accounts of the discourse (Chapter 8). (A more elaborate discussion is presented in Chapter 3, Theory, concerning what constitutes a driving force and what constitutes an inhibitor.)

⁸Admittedly, there exists an illegal arms trade to buyers other than these. For this thesis, however, such illegal trade is excluded from the analysis. The assumption is that such trade is not performed by the companies in focus, or that trade in such a case is conducted through further distribution and reselling from the official buyers.

Companies and individual decision-makers will, in a discourse related to a certain phenomenon, promise or suggest certain action, or that they will support certain developments. What they actually do, the action, regularly deviates from what they say or state in published, written texts. In this thesis, discourse concerns rhetoric and argumentation for or against transatlantic defence industry integration. Action will be defined as the extent of cooperation, joint ventures, mergers, acquisitions etc. – what is actually being done and in what way these events have developed. An example is whether the action shows a distinct pattern of industrial restructuring through mergers and acquisitions. More precisely it can concern whether the company ownership has changed; that there is a typical setup of cooperation or joint venture; that there are specific and distinct ways of government regulation of the ownership integration and operational integration.

If a market is governed strongly by political influence, it is reasonable to assume that an analysis based only on the corporate agenda for industrial integration would offer insufficient understanding and explanation of the dynamics of industrial integration, especially if compared to an analysis that includes the influence of the corresponding institutional and political agenda for the conditions of the companies. It is likely that corporate actions regarding integration are not only driven by rational incentives; they are clearly affected by accommodation to the possibilities that the political environment allows.

The politically influenced market can thus be assumed to display a certain specific logic for industrial change. Through the study of transatlantic defence industry integration, the research is expected to add to the understanding of corporate strategy regarding transnational company integration in a politically influenced market.

1.4 Corporate cases studied

It is neither meaningful nor possible to attempt to study an entire industry, i.e. all companies. We analyze the transatlantic defence industry integration within the defence market and exemplify with a choice of companies. Our examples will be the largest defence companies, the so-called prime integrators. The ‘prime integrators’ or ‘primes’ refer to a group of 4-6 companies in the U.S. and 4-5 companies in Europe. This choice of companies relates to the concept of a ‘strategic group’: a group that has certain specific, common characteristics which make an analysis of this group of companies interesting (Harrigan, 1985; Porter, 1986; McGee & Thomas, 1986; Söderlund, 1993; Oster, 1999; Lipszynski et al., 2005). We will particularly look into a selection of events, namely cases where one or more of these companies have been involved.

Illustrative cases

Integrative events (mergers, acquisitions, joint ventures, alliances, collaborative programs, R&D collaboration etc.) within the transatlantic defence industry have been studied. An extensive list of sources has been studied.⁹ Chapter 6 describes the nature of this out-

⁹ Sources: SIPRI Yearbook (1991-2010), Kolodziej (1987), Heisbourg and Creasey (1988), Serfati (1992), U.S. Congress (1992), Matthews (1992), Wilén (1992), Hooper (1992), Brzoska and Lock (1992), Sköns (1993), Ministerio de Defensa (1996), Hayward, K (1997), Dussauge/Cornu (1998), Hébert (1999), Markusen and Costigan (1999), Hébert & Hamiot (2004), Hébert (2000, 2001,

come. By more deeply studying a selection of three integrative events (Chapter 9) we can analyze in greater depth and – hopefully – also improve our understanding of the nature of transatlantic defence industry integration. These cases have been chosen in order to touch on central aspects of integration and the institutional aspects that are central to the thesis. The first case, *NFR-90*, was at its time in the 1990s a collaboration of an unforeseen magnitude and number of nations. It may be even more interesting since it failed. The second case, *ThalesRaytheonSystems*, was seen as pioneering at its inception in 2001 as being a *strategic* joint venture. The third case, *Joint Strike Fighter*, involves the U.S. and several European states; it is also the largest defence program ever, at around \$300 billion. By discussing these cases we can expect to cover relevant aspects across the continuum of increasing integration as described by Lorange and Roos (1991, 1992) and Yoshino & Rangan (1995), as well as to what extent ownership integration leads to operational integration.

Level of analysis

The presentation of the integration that has occurred, the action, concerns a part of the defence industry: the primes. They are the companies on the top of the integration hierarchy within the defence-industrial supply chains. Serfati (1992, 2000) describes the defence industry in France as a community on the meso¹⁰-level, a distinction that we will utilize in this thesis. It will be argued that the defence market's organizational field is most pronounced on the meso-level; this is where the corporate policy and the political influence are determined. In relation to the companies, we will analyze their relation to their organizational field on a meso-level. The implications of this distinction will be discussed further in the thesis.

Geographical presentation of empirical accounts

In the thesis, some empirical accounts are presented on the basis of geography: the U.S., UK and France. This concerns Chapter 5, Creation of national defence industries in the U.S., UK, and France, and also Chapter 8, Driving forces and inhibitors for transatlantic defence industry integration.

This geographical presentation is chosen since the influence of the nation-state is seen as fundamental for defining the functioning of the market and the organizational field. The choice will be discussed in Chapter 4, Methodology; and in Part IV, Analysis we will critically evaluate this choice of presentation.

2002, 2003), EADS (2003), Pommerin (2003), Masson (2003), www.ixarm.com (2004), Bialos et al. (2009), Bitzinger (2009) as well as numerous web searches.

¹⁰ 'Meso' is Ancient Greek for 'intermediate'. In economics, the general division of analytical levels is micro-meso-macro. Micro is within one organization or company and macro is on a national level. Meso comes in between, and can be applied e.g. to an industry, a market or some other distinguishable sub-unit of the macro level. In this thesis the meso unit is the defence industry and its closest environment, seen as an organizational field.

1.5 Central theoretical concepts

Under this heading, we will briefly summarize the most central theoretical concepts in the thesis. An elaborate discussion on these concepts will follow in Chapter 3, Theory.

Assuming that business administration theory seeks to understand and explain corporate behaviour, we should be able to identify an element of rationality and an explanation of why companies act as they do, and why they make the decisions that they do in their specific organizational field. The politically influenced market can, as mentioned, be assumed to deviate in its market behaviour from generally utilized assumptions about corporate economic rationality in a competitive market. We will need to analyze and take into account the distorted corporate behaviour (distorted vis-à-vis generic economic rationality) in our analysis of transatlantic defence industry integration. An analysis solely based on assumptions of narrowly defined economic, corporate rationality for integration and cooperation (e.g. Harrigan, 1985, 1986; Lorange & Roos, 1991 & 1992) is not believed to be fruitful in offering a sufficient or plausible explanation of the level of transatlantic defence industry integration.

Action – Integration

Action concerns what actors actually do. The discourse discusses a specific, suggested industrial change. This thesis focuses on a specific aspect of border-crossing integration: transatlantic defence industry integration. How this integration actually turns out is in this thesis the action.

Integration is a multifaceted variable which we will have to disentangle into several components. Mattsson (1969) sees three separate forms of integration. Integration in its institutional form concerns the amount of formal, legal power that one organization has which allows it to influence the behaviour of another. The more one organization can influence the other's activities, the stronger the integration. The integration is generally reciprocal; the integrated entities influence one another. Decision integration is defined as the degree of centralization of a decision process and who controls what in the relationship. The more centralized the decision process is under the mutual, integrated entity, the stronger the integration. Execution integration, finally, refers to the way activities are executed and the characteristics of the flow of activities. The more the flows of the separate entities have been unified and become interdependent, the stronger the integration (Mattsson, 1969; Hertz, 1992, 2001). Note that 'institutional' in this context does not refer to the same phenomenon as in neo-institutional theory.

Integration may be measured as to what extent companies integrate institutionally, with a structural commitment ranging from a low commitment in the form of a Memorandum of Understanding (MoU) or an alliance, to a continuum over joint ventures, cooperation up to the full structural commitment of mergers and acquisitions (Lorange & Roos, Cateora & Graham, Yoshino & Rangan). There is also a problem with such measures. As mentioned, a merger or an acquisition does not have to signify that the operations of the integrated firms become highly integrated. We cannot settle for the structural integration of companies. We must therefore in a more refined way understand and explain the nature of the industrial change – the action. We must find a measure of what type of change has occurred. The thesis' focal measure of the integration will be *ownership* integration and *operational* integration.

Organizational field

A company's closest and most formative environment can be described as an organizational field. Organizations, as a whole, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies and organizations that produce similar output. Within the organizational field, there will be institutionalized behaviour and some degree of isomorphism. Isomorphism concerns a similarity of the processes or structure of one organization to those of another, be it the result of imitation or independent development under similar constraints. There are three main types of isomorphism: normative, coercive and mimetic (DiMaggio & Powell, 1991, Fligstein, 1991, 1993). Meyer (2007) describes an organizational field as a field of actors that is characterized by a single predominant institutional order or logic, or by multiple and potentially competing institutional orders or logics.

Industries are in varying degrees affected by political forces. Some industries act under conditions that are fundamentally created and steered by an influence of political forces. The interaction between the companies and the political sector creates an organizational field with strong interdependence between on the one hand a *government field* and on the other a *corporate field*. The government field consists of politicians as well as authorities and public servants. There are also other actors in the organizational field that influence the industry's conditions and development (unions, trade organizations, specialized lobbies). All the actors will express arguments in the discourse concerning a specific change within the industry.

The Military-industrial complex, MIC, is a much-used concept that describes the particular and common institutionalized behaviour within a nation's military-oriented industry, its associated government actors and the research community (Mills, 1956; Melman, 1974; Rosen, 1973; Goldstein, 2001). We will use the concept of MIC as a point of reference for the nature of the organizational field of the defence market, as it stresses the nation-state's influence on the functioning of the defence market. The MIC is not a powerful theoretical concept – it will be used as a metaphor that is seen as adding explanatory power.

Discourse

A *discourse* is, as mentioned, a type of conversation – a public conversation which can be seen as the sum of all specific conversations about a certain phenomenon. In the institutionalized environment of an organization or of a clearly distinct market, there will be an established form of referring to a certain phenomenon. It may e.g. concern deregulation, harmonization or globalization. The discourse refers not only to spoken conversation, but also to texts of different kinds. A discourse is aimed towards a specific phenomenon that has attracted the interest of many actors involved in it; in our case the specific phenomenon is transatlantic defence industry integration. The discourse must have mutual points of reference in order to become more widespread, e.g. reference to an industrial change process that concerns many companies, industries, nations, NGOs, nations or continents. Within the wider discourse there may be local discourses that have slightly different points of reference or preferences (Foucault, 1971/1993; McCloskey, 1986; Furusten, 2007).

Driving forces and inhibitors

In the discourse we can identify how actors express arguments for or against the integration. These arguments represent incentives as formulated and interpreted by actors involved in the discourse. The actual incentives for transatlantic defence industry integra-

tion can be labelled *driving forces*. A driving force expresses either a wish for the change to occur, or a statement of why the change will occur. Arguments against change can be labelled *inhibitors*. An inhibitor expresses either a wish for the change not to occur, or a statement of why the change will not occur.

The discourse will be contrasted and compared to the action, and we will aim to understand and explain the magnitude and nature of the discrepancy between them.

The concepts organizational field and discourse are used as tools for being able to understand and explain the transatlantic defence industry integration. This thesis focuses on using them as two of several tools for reaching the purpose. This means that ‘discourse’ and ‘organizational field’ could have been penetrated deeper, if they would have been the sole focal concept. The Case Study model together with the concepts integration, discourse and organizational field *in combination* form the analytical tool for reaching the purpose.

We will now turn to defining the research question and the purpose of the thesis.

1.6 Research question and purpose

This thesis strives to find an explanation for an integration pattern within a market that has quite specific characteristics. The integration concerns a group of companies which has certain specific, common characteristics that make it of interest to concentrate the analysis on this group of companies.

Research question

How can the proposed discrepancy between the discourse concerning, and the actions of, the transatlantic defence industry integration be explained?

The **purpose** of the thesis is

to formulate an explanatory model for comparing the discourse concerning and the action of a specific industrial change

and with the aid of that model

to understand and explain the level of transatlantic defence industry integration and its driving forces and inhibitors.

The explanatory model is designed for the particular environments of politically influenced, institutionalized industries.

This leads us to address the following specific tasks in order to examine the purpose:

- Present a description of the defence industry contexts which are concerned in three MICs (U.S., UK and France) and which are seen as being necessary in order to understand the broader developments and priorities that act as a driving force behind the development of the defence market.
- Assess the integration pattern of transatlantic defence industry ownership integration and operational integration. How does it relate to generally established taxonomies of integration?

- Identify what are seen by government and corporate decision-makers as the driving forces and inhibitors for transatlantic defence industry integration – the discourse.
- Show how the model that compares the corporate and government discourse regarding transatlantic defence industry integration with the transatlantic defence industry action can explain the discrepancy between discourse and action.
- Suggest how an understanding of the government context for transatlantic defence industry integration contributes to a better explanation of corporate decision-making with regard to transatlantic defence industry integration.

It is expected that applying a new theoretical framework to an empirical research area (the defence market) will point to important aspects that would not have been distinguished in the conclusions of previous analyses based on different theory.

There is a process of Europeanization of the European defence equipment market (EDEM) and the European defence technology industrial base (EDTIB) driven by the EU and its member states. An analysis of the transatlantic defence industry integration must relate to this process. However, the discussion of Europeanization is outside of the scope of the thesis, since an inclusion of this process in my research problem would make the thesis unmanageable. The European market integration will however be discussed in Chapter 13.

1.7 Disposition of the thesis

The thesis consists of four parts: Part I Introduction, Part II Theoretical and methodological framework, Part III Transatlantic defence industry integration, and Part IV Results.

In Part I, in the continuation of the first chapter we will outline the overall dynamics of the industry in question and the central aspects of the research approach. We will furthermore describe the research problem and clarify the research question and the purpose of the thesis. In Chapter 2, the characteristics of the defence market and the defence industry are discussed.

Part II presents the theoretical framework for the thesis in Chapter 3 Theory. In Chapter 4 the methodological outline is presented.

In Part III the overarching empirical case study of transatlantic defence industry integration is presented (there is also some empirical presentation in Chapter 2). In Chapter 5 is a description of the historical development of a key part of the organizational field: the military-industrial complexes of the U.S., UK and France. Chapter 6 presents a description of the action – what nature and extent of transatlantic defence industry integration have occurred. This is compared to the intra-U.S. and intra-Europe defence industry integration processes. There is also a discussion on governments' regulatory tools for controlling the defence market. Next, Chapter 7 gives an account of the discourse in transatlantic defence industry outcome, as identified in published texts (secondary sources). In Chapter 8 follows an account of the driving forces and inhibitors for transatlantic defence industry integration, as described by individual respondents interviewed during the study. Finally in Chapter 9, three specific cases of transatlantic defence industry integration (two coopera-

tive programs, one joint venture) are presented. In Chapter 4 Methodology there is an elaborated discussion on the role of each empirical part.

Part IV starts with Chapter 10, Understanding and explaining transatlantic defence industry integration, where the case study (Part III) is analyzed empirically. This is followed by Chapter 11, Implications of the transatlantic defence industry integration, which discusses the thesis' conclusions, the improved understanding of transatlantic defence industry integration, results compared to previous analyses, and an evaluation of the research design. This is followed in Chapter 12 by a discussion on what theoretical, methodological, empirical and possibly other contributions the thesis has produced. This chapter will also have a discussion on managerial implications and suggestions for future research. Finally, in Chapter 13 Postscript, there will be a contextual discussion related to the defence market that reaches wider than the thesis' scope.

Chapter 2 The defence market and the defence industry

The thesis is an effort to better understand and explain the degree and nature of transatlantic defence industry integration. In order to reach this ambition, we must first understand the characteristics of the defence market and the organizational field: the arena whereupon the defence companies operate. Based on that, we will better comprehend the discourse for transatlantic defence industry integration.

In this second chapter, which will conclude Part I of the thesis, we will first discuss the nature of the defence market, which is often referred to as being very different from most or even all markets. There will also be a discussion on the issue of how the defence industry is coupled to states' security policy, thereby relating to theories from political science. After this, we will discuss the meaning of the concept 'military-industrial complex'. Subsequently, there is an assessment of governments' regulatory tools for controlling the defence industry. Finally, we will present the focal companies in the study, followed by a summary of the nature and the conditions of the defence market.

2.1 The nature of the defence market

Most analyses of transatlantic defence industry integration tend to view defence companies as tools of government policy, treating corporate strategy as being of minor importance. This can to some extent be explained by the fact, mentioned in Chapter 1, that most academic analyses of this phenomenon are made by political scientists or economists, or from some vaguely defined theoretical and policy-oriented perspective – and not from theories focusing on the firm, such as much theory from business administration. The expectation is that the thesis will fill a gap in the sense of analyzing corporate behaviour in the defence industry.

The defence market is in many ways a “distorted” or “exaggerated” market that takes the impact of government influence and vested interests to extreme levels. In a case study, it can therefore be assumed that theoretical aspects of interaction between institutions in a specific organizational field will be unusually obvious. A case study on the defence industry could therefore offer specific insights that can contribute to certain, more general, theoretical aspects or constructs. Some of the most significant features of the defence market are:

- *Complex, costly products operated for decades*

Companies that engage in large industrial projects, often with other partners in consortia, are referred to in the defence industry as being engaged in '(defence) programs'. A program is in this context a major development of systems and competences into a larger solution for the customer. Generally, this could be in the form of creating an airport, a larger ferry, a train system, a hydroelectric dam or a fighter airplane. The primes that are dis-

cussed in this thesis achieve their identity as a prime by being able to manage and integrate such big programs, or at least being one of the few companies that co-ordinate the whole package. The programs are generally very long-term, 20-40 years or more being the duration from initial order through R&D, production, service and maintenance to the end of the program. Programs are always initiated by an order from one government or several cooperating governments – the companies do not autonomously develop e.g. a new submarine, airplane or tank (Gansler, 1980; Bitzinger, 2009). The customers strive for assurances that their suppliers will stay in the market for the entire life of the program for maintenance and upgrades.

- *Dominated by large, technology-intensive companies*

An industry can be described as a hierarchic structure where companies may have different roles in the supply chain, with differing degrees of ability for system integration. Hierarchy may also relate to ownership structures making other forms of integration possible. More about that later.

The majority of industrial companies today are a part of industrial structures that are characterized by specialized cooperation between a large number of companies which perform different development and production steps in an industrial value chain. A general division of roles between companies is that they are divided between end-product producers, system suppliers, subsystem suppliers and component suppliers. Between these companies, there is often a highly refined division of production, responsibility and risk (Clark et al., 1991; Karlsson, 2003; Sköld, 2008). As we will see, this general picture also largely applies to the defence industry.

There is no exact boundary showing which companies should be seen as a part of the defence industry and which are not. The market for defence materiel attracts products, services and competence from all sorts of companies. On the top of the defence industry hierarchy, a small number of companies are labelled as *primes*. A prime is equivalent to the generic concept of an OEM (original equipment manufacturer). In some joint programs, these companies participate as suppliers on lower tiers¹¹ or as subcontractors, but their main identity is in the form of primes (Bitzinger, 2009). The transatlantic defence industry consists of all tiers of companies, but, as already stated, we will focus on the integration of the primes.

Another characteristic of the defence industry is that there are practically no new companies which simply develop through organic growth from being small into one of the largest actors. All the larger companies¹² have been in existence for decades or are the result of mergers between larger companies.

¹¹ The defence industry hierarchy is often described in more defence-specific texts as a hierarchy of ‘tiers’. On the top of the pyramid are the primes. Below is the 1st tier, comprising the system providers, and below that a 2nd and 3rd tier. These lower tiers tend not to have defined characteristics, but the sophistication of the product or component falls as we descend the pyramid. However, the tiers below the primes are outside the focus of this thesis.

¹² Except L-3 Communications.

- *Governments are the only customers and set the conditions for the market – markets with a strong national impact*

The defence industry and the defence market practice are highly regulated by governments. To a large extent, their regulation is still mainly domestic. For example, production of defence goods requires government approval in each nation. Governments also, to differing extent, have a veto right over foreign acquisition of defence companies. Governments in most cases must approve of technology transfer to other nations, and these permits are extremely protective. Within the EU, since the beginning of the 2000s there has been an ambitious supra-national process of strengthening the European Defence Technology and Industry Base (EDTIB) and harmonizing the European Defence Equipment Market (EDEM) (Mörth, 2003; Britz, 2004, 2010; James, 2008; Markowski et al., 2010; Masson et al., 2010).

Regarding technology transfer, governments all have a legitimate concern for only allowing defence technology to be transferred between nations under very strict restrictions. The most legitimate concern is not to let defence technology come into the hands of direct adversaries or nations that by the international community are seen as unstable and hostile. Nations and companies also want to protect companies' competitive advantages, and the defence technology is primarily developed with government funding. A further incentive is to safeguard domestic companies and their employment. It is thus reasonable that nations are cautious towards defence technology transfer. As we will see, this cautiousness has important effects on the nature of the international defence market.

Companies mainly sell to the end-users – governments – in the form of military or defence-oriented authorities, or to other companies as subcontractors (Gansler, 1980; Hayward, 1999, 2000; Bitzinger, 2009).¹³ Defence companies are by definition dependent on governments as customers, and on governments as financers of defence R&D. The development of defence products and solutions is very costly, and private companies are not prepared to take such financial and technological risks as those associated with defence R&D. Defence product development primarily requires – almost by definition – government R&D funding.¹⁴ Defence companies work in close cooperation with the military in projects that last for many years, often decades. Defence companies are thus clearly dependent on and closely affected by the actions of governments and government bodies (Markusen, 1999; Schmitt, 2005; James, 2006, Hartley, 2007, Bitzinger, 2009; Bialos et al., 2009; Markowski et al., 2010). Defence companies are financed upfront or continuously for an order during the production.

¹³Admittedly, there exists illegal arms trade to buyers other than these. For this thesis, however, such illegal trade is excluded from the analysis. The assumption is that such trade is not performed by the companies in focus, or that trade in such a case is conducted through further distribution and reselling from the official buyers.

¹⁴ There are very few examples of companies pursuing development of defence solutions based purely on internal development money. Such a situation is almost non-existent. There are also new trends towards creating new business models for Public-Private Partnerships (PPP) or Private Finance Initiatives (PFI) in defence development, with companies being expected to engage in business models where they share the financing and the risks with the government as a partner. Such set-ups, however, fall outside the focus of this thesis.

States tend to have a preference for buying domestic defence products in order to e.g. promote the domestic companies competitiveness, set public funding into domestic industry, create jobs and also in order for being able to have a close relationship with companies, thereby being able to achieve custom-made products. The U.S. has a Buy American Act from 1933, which states that the government should prefer domestic products in its purchases. This act is still valid, and also applies to defence products. In 1941, The Berry Amendment was passed stating the Department of Defense should give preference in procurement to domestically produced, manufactured, or home grown products, most notably food, clothing, fabrics, and specialty metals. In 2007 and 2008, Congress allowed exemptions for certain COTS (Commercial-Off-The-Shelf) products.

States have always had a strong interest in the domestic production of defence materiel, and it is in practice very important for defence industries to present an image of having strong future links with the domestic demand. Otherwise, they become less attractive as potential collaborative partners and as investment prospects, since their future would be perceived as more uncertain. There are strict rules for how companies may interact, how they may integrate and co-operate, and how they are able to integrate with companies from other nations. Companies are not able to co-operate in certain areas due to restrictions on technology transfer or export control. Companies in most nations have restrictions with which companies they are able to co-operate. There is no globally shared legislation for such inter-firm interaction, but all nations regulate domestically in ways that have produced similar, restrictive conditions (Lundmark et al., 2000; Cevasco, 2009; Bitzinger, 2009). Thereby, the state has a strong impact on a wider environment that defines, limits and steers the possible and less possible business opportunities that will exist in the future.

- *Decreasing state control and companies becoming increasingly private*

The defence industry in most nations used to be a government-owned industry – or with strong government control and power over its actions. The defence industry during the 1990s gradually became predominantly privately owned, and is now subject to the priorities of the investors on the stock market (Masson, 2009).¹⁵ The states do not represent the corporate dimension – the initiatives of the companies and the links between them are what actually constitute the business activity and production of defence materiel (James, 2001:b). Defence companies for the most part are now private, autonomous actors. They have the corporate goals of being profitable, attractive to financiers, and satisfying to shareholders. Corporate actions and integration decisions can thus not be sufficiently understood and explained by treating them solely as tools of government policy. There is, however, considerable state ownership in the domestic defence industry in e.g. France, Italy, Spain, Denmark, Norway and Finland. Each nation with a state ownership has its idiosyncratic setup.

¹⁵ A small fraction of the defence production is still being produced by governments or government institutions.

In many industries there has in the last few decades been substantial privatisation of state-owned enterprises. This has also been the case in the defence industry. This privatisation has, however, followed quite specific sequences of development in each nation and has occurred during different time periods. For the defence companies this has meant that the corporate focus on rationality, profitability and shareholder value has increased or become completely new incentives in corporate strategies. They have also become less attached to national defence establishments and more autonomous. In many nations there are still strong bonds between the companies and the government defence establishments, and the support for non-profitable companies is in many cases quite clearly based on rigid political goals, which are generally detached from economic rationality.¹⁶ A Swedish study from 2006 indicates that foreign ownership has a limited impact on the domestic character of the companies' corporate strategies and the order book. Either that, or foreign ownership requires a very long time (more than ten years) to have an impact on the corporate strategies and the order book in a defence company (Axelson & Lundmark, 2006).

- *The defence market as an organizational field*

Companies and organizations in politically influenced markets must deal with and relate to several, parallel processes with different political agendas, norms and time scales. Such processes may intensify or slow down; they may appear to cease but be activated again (Jacobsson, 1994). Companies are agents in such institutionalized networks; they must relate to and act upon the conditions of the institutional processes (Oliver, 1991; Lawrence, 2008).

Mörth (2003) describes "organizing European cooperation on armaments" as involving two different organizational fields within the EU context: the defence field and the market field. The defence field is driven by one rationality through the European Security and Defence Policy (ESDP), and the market field by another rationality based on the European Commission's efforts towards the European technological and industrial competitiveness.

The organizational field of the defence industry is characterized by the fact that incentives emanate from a corporate field as well as a government field. We must have an understanding of the corporate incentives, as well as the political incentives. We must find a way to relate these two rationales in order to offer a credible explanation for the outcome of transatlantic defence industry integration within the strategic group. Within the government field, we distinguish the military incentives in a broader government field; the military field is a part of the state, but their incentives can be based on quite different priorities.

¹⁶ Examples of this include the sustained support for Kockums in Sweden, the British and U.S. military shipyards, and the French support for Giat (now Nextre) and DCN. In 1994 Giat had a loss that was higher than its turnover (!) – a loss that was covered by the French government. "After the end of the Cold War, Giat and DCN had no change in strategy for eight years." (Academic, Université Paris 1, 2003), "10 billion Euro had been pumped into DCN by 2003." (Armaris representative (company), Paris, 2003)

The defence industry is engaged in a global network, consisting of links between companies and groups of companies, as well as links with states or between states within different coalitions or alliances. Corporate strategy and state policy are dependent upon each other in the defence industry, and defence industry policy is a subset of broader state considerations regarding foreign, defence and security policy. Such state policies are increasingly becoming integrated, both within and between states. As governments cooperate in order to harmonize the defence market (as in Europe), the respective defence industry policies become increasingly dependent and convergent (Axelson & James, 2000; Lundmark et al., 2000; Axelson, 2001; Mörth, 2003; Britz, 2004; Schmitt, 2005; Neuman, 2006; Hartley, 2007; Bitzinger, 2009; Bialos et al., 2009; Markowski et al., 2010).¹⁷ Major defence programs are so pivotal that they shape the industry landscape and steer industry restructuring – thereby directly affecting corporate strategy options.

It is sometimes questioned whether the defence industry really is a market, and objected that it fails to function under rational principles of competition. I would say that it is a market, but with considerable market distortions. The customers are all large and tend to be very loyal. The defence market tends to expose a large degree of opportunism and egocentrism (Markusen and Costigan, 1999; Bitzinger, 2009). There is only one buyer in each country (monopsony), which makes this market different from most other markets. The buyers of the goods are procurement agencies¹⁸ and politicians. The end-users of the goods and services are government actors in the form of military forces.¹⁹ It is thus a field of very strong features.

2.2 Government interest in a domestic defence industry

The defence industry has by definition been closely linked to national government interests and policies. One can list a number of attributes or characteristics that a government usually associates with a domestic defence industry. The following tables are an account of subjective arguments concerning a domestic defence industry (Gansler, 1980; Hartley et al., 1987; Kołodziej, 1987; Molas-Gallart, 1992; Markusen and Costigan, 1999; Lundmark et al., 2000; Malminen, 2000; Hartley, 2007; Bitzinger, 2009; Bialos et al., 2009; Markowski et al., 2010).

¹⁷ Government ownership, partly or wholly, does in some companies clearly steer company strategy. In Europe, this is (concerning internationally active companies) most clearly the case in France. If companies entirely produce for domestic orders, the situation becomes different, but is outside of the focus of this thesis.

¹⁸ Such as FMV (the national defence procurement agency) in Sweden.

¹⁹ Many defence companies have in the last decade increasingly engaged in 'security', as in homeland security, societal vulnerability, security for large events etc. This emerging market is, however, outside the focus of this thesis.

What governments want to attain with a domestic defence industry	
<i>National strength</i>	Traditionally a strong emblem of national power and strength.
<i>Technology advantage</i>	To create defence technology which in defined respects surpasses assumed adversaries' military capabilities; to achieve a technology lead and superiority.
<i>Autonomy</i>	Can supply its own weapons.
<i>Employment</i>	Important; defence production creates many jobs. Either to keep facilities, or to ensure that new facilities can be created. The facilities at risk of being cut down are, in most nations, in regions with high unemployment. Defence industry in many cases stands for much of the employment in small communities, and therefore is politically very important.
<i>High technology</i>	It is claimed to create spin-off effects and new companies, and to benefit the technological level of the nation.
<i>Security policy strength</i>	A strong domestic defence industry is claimed to strengthen the nation's security policy posture, help it to defend its national interest, and strengthen military credibility.
<i>Export</i>	Export revenues.
<i>Tailor-made defence equipment</i>	The military forces can procure the materiel they need, suited for their military doctrine, the domestic weather and geography conditions.
<i>Share international goals</i>	The nation can participate in multilateral cooperation and contribute to common capabilities (UN, NATO, EU or other coalitions).
<i>Leverage</i>	To have a better national competence for judging defence materiel.
<i>To have a wide breadth of capabilities</i>	To finance a wide spectrum of capabilities in order to provide for all possible developments (this is only applicable to larger defence-industrial nations).
<i>Security of supply</i>	To ensure reliable deliveries of defence goods from companies when they are needed (in times of war or unrest).

Table 2.1. *Government interest in a domestic defence industry*

Governments' problems and concerns with a domestic defence industry	
<i>Dependence</i>	To have to trust that the suppliers will not change deliveries during war or unrest.
<i>High costs</i>	Domestic production in small numbers will be risky and costly.
<i>Inefficiency</i>	Small series, or too nationally unique solutions, risk becoming inefficient and non-exportable.
<i>Inferior technology</i>	To be unable to acquire foreign technology and have to do with less attractive domestic technology.
<i>Loss of technology</i>	That foreign collaborative partners will copy local technology and deteriorate the competitive advantage of the domestic industry.
<i>Loss of competitiveness and attractiveness</i>	That domestic companies, for many possible reasons, do not develop as their international competitors do, and that foreign companies and states do not want to cooperate with these companies.
<i>Technology in the wrong hands</i>	That attractive defence technology through export, license production or cooperation comes to competing, foreign firms or unwanted users.
<i>Public disapproval</i>	That the voters do not approve of defence production or certain exports.

Table 2.2. *Government problems and concerns with a domestic defence industry*

In the U.S., with its breadth of companies, a further concern is how to promote and maintain domestic competition in specific segments – in most other nations domestic consolidation has produced a single monopolistic national champion, or even one European champion (which can be said of MBDA).

“In the U.S. the defence dynamic is driven by the U.S. strong hegemony, in Europe through a mixed bag of national identities that each want to preserve their capabilities.” Professor, UK university, 2002

Thus, there are in general a number of government considerations and political connotations attributed to a domestic defence market. As we will see, such government priorities shape the government driving forces and inhibitors for transatlantic defence industry integration.

To sum up, the state strives overall to achieve the best possible defence technology and capability whilst avoiding or limiting dependence upon other nations. The U.S. is largely not dependent upon other nations; France accepts certain compromises. Other European states show a continuum of decreasing self-sufficiency in defence technology paired with increasing dependence upon others. The main constraint for domestic defence production is the cost, and the competition for taxpayers' money compared to the alternatives for public investments.

We have now discussed the general characteristics. In the following section we will discuss how the production of defence products previously has been analyzed.

2.3 Previous research on military production

Molas-Gallart (1992) discusses approaches to explain and understand military production from different perspectives. He divides studies into two main categories: Policy prescription and Theoretical research. He analyzes studies back to the 1930s, when this issue started to achieve analytical attention.

In Policy prescription, he sees two main strands: the managerial approach and defence conversion. The managerial approach deals mainly with optimising the allocation of resources to defence production. Defence conversion receives a cyclical interest, related to periods of decreased demand for military production, e.g. after the end of the Cold War (Molas-Gallart, 1992).

The second category, Theoretical research, deals mainly with analyzing the causes and consequences of the military economic effort. Within these studies, Molas-Gallart places investigations of military-industrial complexes. Another strand within these studies consists of econometric research on the macro-economic effects of defence production. A third strand that had its peak in the 1980s and 1990s was based on Marxist theory, and placed emphasis on the structural and domestic determinants of societal classes as main causes of military expenditure.

Group		Research problem
Policy prescription	<i>Managerial approach</i>	Optimising defence production through resource allocation
	<i>Defence conversion</i>	Converting industrial entities from military to non-military production
Theoretical research	<i>MIC</i>	Understanding the social forces that structure and withhold the “MIC”
	<i>Econometric</i>	What is the impact of military expenditure on macro-economic variables?
	<i>Marxist</i>	How do structural and class structures in society shape military production?

Table 2.3. *The economic aspects of defence: the theory* (Molas-Gallart, 1992)

Molas-Gallart’s assessment was made in 1992, and more recent theoretical analyses have been made. One area of analysis concerns defence production as ‘national systems of innovation’. It focuses on the contribution of military research and development programs to national innovation processes (e.g. Reppy, 2000; James, 2006). This group concerning national systems of innovation contains studies on how investments in military research, development and production contribute positively to national innovation systems, technology spinoffs and synergies, employment and other macro-level positive effects (e.g. Fölster, 1992; Eliasson, 2010). The analytical weaknesses of these latter studies are that the causal links to actual positive effects of defence R&D and defence production on other sectors are difficult to prove, and also that it is difficult to compare the effects of alter-

native investments of government funds with investments in military research, development and production. Several of these studies have received criticism for aiming to promote initially desirable conclusions about the positive synergies of large defence programs (Eriksson, 2005).

An academic field which has been established regarding defence production is 'Defence economics'. It falls under Molas-Gallart's 'Econometric' group in Table 2.1. This field has largely developed from and around the British professor Keith Hartley in a long and consistent stream of publications since the early 1980s. The field focuses on economic, econometric and cost-benefit analyses of defence production and related issues (e.g. Hartley, 1983; Hartley, 1991; Hartley & Sandler, 1995; Hartley & Sandler, 2007).

The issue of MICs is connected with the thesis' use of the organizational field as a theoretical variable. Molas-Gallart sees MIC studies as being 'theoretical'. In my view, these studies are in general rather descriptive in character; they identify social forces and actors, how they interact and how this shapes the outcome of defence production – but not based on a well-defined and shared theoretical core. Their strength is that they capture the nature of the defence-industrial long-term activities by stressing the adhesive interaction between the politicians, the military and the defence companies.

The study in this thesis does not fit in with any of these groups of analysis. None of them focus on the corporate strategies. There are analyses and studies of corporate strategies in the defence industry, but they are not based on theory from business administration, or the analysis is not based on a theoretical framework.

2.4 The Military-Industrial Complex

This section's discussion on the MIC concept serves two purposes. Firstly, the MIC concept is a widely used metaphor that is seen as useful for this thesis' analysis. Secondly, it links the organizational field concept to the specific conditions of the defence market.

The concept Military-Industrial Complex (MIC) has been widely used in analyzing or describing a process where interplay between military, political and corporate interests creates an insulated national system which safeguards its own interests and maintains military spending at a high level. The MIC concept is by definition nationally defined. MIC will be discussed in the following, and be used as an analytically pertinent concept that puts emphasis on important aspects concerning how the defence market functions, and how the MIC creates a specific organizational field with partly idiosyncratic driving forces and inhibitors for how the defence companies function, and are allowed to function. The overarching defence market compels national, rigid MICs to attempt to blend their interests, as national defence markets gradually have become integrated. The MIC concept therefore is seen as a tool for understanding and explaining the transatlantic defence industry integration.

“The nature of the military-industrial complex has given rise to one of those Great Debates that periodically appear on the American public scene. The issue is not so much the existence of a military-industrial complex – which few would deny – but to what degree it is an autonomous entity and to what purposes it is directed.” (Moskos, 1972)

For nations at war, industrial production will be organized and directed by the state. In the UK, William the Conqueror created arsenals for the needs of his army in the 11th cen-

tury (Higham, 1981). In France the production of gunpowder was set under state regulations in 1336 and saltpetre was disallowed for export in 1540 (Giovachini, 2000). In Sweden, certain oak forests were in the 16th century specifically designated for the production of military ships. Cities in Europe were built and planned based on their function as state arsenals for e.g. ships or cannons. The autonomy of the defence industrialists became gradually greater in the 19th century and their international export became more far-reaching (e.g. Krupp, Vickers and Bofors), but they existed in an interdependent relation with their home nation and their military.

Before WWII, national industries were mostly reorganized into supporting warfare when nations became involved in war, or if war was imminent (as in France in 1939). Germany became gradually more organized in the 1930s so as to build up and support a military strength. Governments reorganized drastically and took over private industry in e.g. France and the UK shortly before WWII. After WWII, the U.S. and the Soviet Union gradually created deeply institutionalized organizational constructs for military production, in order to create preparedness for a conflict that seemed highly probable due to the polarization between NATO and the Warsaw Pact.

At this stage, what happened was that in two cases, WWI and WWII, various nations did not see that the defence market was properly organized for the needs of the nation at war. The governments therefore started to coordinate and organize industry, defence technology development, defence procurement, the military and dawning defence bureaucracies – into a more integrated, regulated and planned system for supplying the nation with the products that the military needed.

Lasswell warned about the emergence of a world of ‘garrison states’ – a world in which the specialists on violence constitute the most powerful group in society (Lasswell, 1941). There were tendencies in the post-WWII world order and the Cold War that societies should be structured, planned and organized in order to first and foremost pre-empt the threat of the opponent, i.e. the U.S. or the Soviet Union.

Mills (1956) introduced the concept of a military-industrial complex. He describes a power concentration in the U.S. during the 20th century. Overall, Mills found that power as a result had been “nationalized and also interconnected”. Mills described how in the U.S. the economically privileged elite, the military officers, politicians, administrations concerning defence-related issues, defence companies, as well as parts of universities and of the research society, all together made up a military-industrial complex (MIC). Mills claimed that the “warlords”²⁰ had, during the 20th century, “marched into the political vacuum” and gained a position with large powers next to other power elites – politicians and corporate executives (Mills, 1956).²¹ States with large and diverse defence-industrial capacity are claimed to have a military-industrial complex (MIC). The larger the aggregate

²⁰ Mills’ expression.

²¹ Interestingly, some other commentators on the MIC (see e.g. Cooling (ed. 1981)) refer to the concept as coming for the first time from Eisenhower, and thus appear to be ignoring Mills’ discussion five years before Eisenhower’s usage of it. An assumption made here is that Mills (a professor of sociology at Columbia University) has been ignored by some because of his fundamental opposition to the power structure and capitalistic organization of U.S. society.

industrial base, the higher the MIC's importance. The best examples are the U.S. MIC and the former Soviet MIC.²² The term MIC entered popular discourse when President Eisenhower in his presidential farewell address in 1961 warned about the emergence of a MIC. He referred to one that would dominate over society's powers in order to safeguard the interests of maintaining a large military and defence-industrial 'complex' within the society.²³ In this thesis, the acronym MIC is seen as, and will be used as, a generally accepted term.

Mills' analysis draws, according to Sarkesian (1972), upon two anti-Marxist sociological schools. The first is Machiavelli's perspective on a ruling elite composed of governmental and political leaders. The second is Weber's (1924) perspective on the nature of authority in complex social organizations, where power is derived not only from ownership but also from occupancy of top positions in governmental bureaucracies (Sarkesian, 1972). Most analyses after Mills do not formulate such a firm historical perspective, but there is in my view an implicit, inherent legacy that follows Mills' analysis: that there is an institutionalized, interdependent power allocation within the MIC. The anti-Marxist perspective has also eroded since Sarkesian's analysis.

Moskos (1972) distinguishes three recurrent and analytically exclusive themes as determinants of the MIC. These derive from the military hierarchy, the administrative bureaucracy, or corporate wealth. Most analyses stress the military factors, followed by bureaucratic variables. Firstly, the analyses that focus upon the military hierarchy stress the non-rational and undemocratic influence of military interests and military power struggles, as well as how priorities are deeply influenced by aggressive military Cold War standpoints (Moskos). In my view, Moskos' and others' claim that there is an unwanted military influence is no longer challenged. The lion's share of U.S. MIC analysis was written in the late 1960s or 1970s, an era marked by the Cold War and the Vietnam War. The Cold War officially ended in 1989, which can be assumed to have decreased the interest in the MIC.²⁴

The administrative bureaucracy perspective was most ardently put forward by Melman (1974). Melman argued that "the military-industrial firm is no longer a private firm in that corporate decisions are now in the hands of government managers". For Melman, "the primary goals of the Defense Department are the expansion of its own power within American society". The third perspective according to Moskos focused on corporate wealth, and was initiated by the Marxist analysis of American society in terms of classes.

Regarding Moskos' three perspectives, the first is no longer challenged, the second is to some extent an aspect of this thesis' view of the MIC as an organizational field (thus in a different theoretical neighbourhood), and the third belongs to a Marxism-related academ-

²² The Soviet MIC was seen by the Soviet government as being the entire Soviet society, since practically all parts of society were dimensioned and geared towards supporting the military capability of the Soviet Union.

²³ Roland (2001) sees an irony in Eisenhower's popular statement since Eisenhower previously, as a military officer, on many occasions over several decades had advocated stronger bonds between the military, the state and the defence industry.

ic discourse²⁵. Moskos sees internal contradictions and makes ambiguous interpretations in each analytical strand concerning the MIC. All three perspectives (and Moskos' overview) have the weakness of solely analyzing the U.S. society and political setup. It is striking that Moskos' and others' analyses which aim to define the theoretical determinants of the MIC do not result in firm theoretical variables or models that can be applied for academic analysis. Analyses tend to end up at ideological standpoints or propositions. Despite this, the MIC is seen in the present thesis as a persuasive metaphor.

There are a number of other concepts that have been put forward in order to capture the nature of how U.S. society has been and is structured concerning its politico-industrial-military cohesion. Besides the military-industrial complex (MIC), we have the concepts military-industrial bureaucracy, Pentagon capitalism, state capitalism, military socialism, garrison society, weapons culture, military America, armed society, warfare state and national security state (Sarkesian, 1972). Another concept that resembles MIC is "Iron Triangle": the policy-making relationship between the legislature, the bureaucracy, and interest groups (McConnell, 1966; Adams, 1982). The Iron Triangle concept is often applied together with the MIC concept. Eisenhower also applied the expression "Delta of Power". We will use the MIC, since this is clearly the most widely used concept.

Rosen et al. (1973) decided to test Mills' theory about a MIC in the U.S. They were at first sceptical, seeing Mills as giving an overly conspiratorial description. However, they concluded that in both the U.S. and the Soviet Union there had developed entire industrial sectors totally geared towards military production. As a by-product, classes of individuals had developed that had high defence expenditures as their interests and driving forces. These scholars also showed that the industries which were dependent upon defence orders cooperated internally and were coordinated with the military and its surrounding bureaucracy, and that they acted politically in a coordinated way. Rosen also underlined that the U.S. MIC is best understood as a subtle interplay between interests and perceptions, and not as a conspiracy. Rosen also pointed to how defence contracts were awarded or created as soon as one of the main contractors' production lines was not busy enough (Rosen et al., 1973; Strandqvist, 2008).

Lens (1970), Koistinen (1980) and Gansler (1980, 1992) later discussed what components constitute the U.S. MIC. Lens described it as a large group of legislators, other government officials (in more than 50 agencies), the labour hierarchy and an important part of academia, and of course the defence industry itself. Koistinen discusses the MIC in terms of "political economy of warfare": "the method a nation has employed to mobilize its economic resources for defence and hostilities". Gansler described how in 1996 the activities of U.S. defence involved 150,000 acquisition personnel, and another 300,000 personnel were engaged to some extent in the acquisition.

Melman's (1974) picture of the U.S. MIC resembles the French MIC, which also has had an enormous centralized bureaucracy under DGA (*Délégation Générale de l'Armement*). In

²¹ The extreme increases in U.S. military spending after September 11, 2001, may revitalise this critical analysis, but that is outside the focus of the present thesis.

²⁵ This Marxism-related discourse appears to have ceased; it has no clear place in the present analysis of the defence market.

France, the power and influence of the state officials has been even greater than in the U.S. There is also a stronger tradition in France with state ownership and state control in industrial sectors seen as being of vital national interest. France has also developed a powerful bureaucratic corps of *ingénieurs de l'armement* (described in more detail in Chapter 6); no other nation has anything resembling it (Kolodziej, 1987; Serfati, 1992, 2000; Dussauge & Cornu, 1998; Giovachini, 2000; Lundmark, 2003, 2004; Bialos et al., 2009).

In this thesis, the MIC is generally seen as being united by a single logic. The environment will be permeated with 'vested interests' (Veblen, 1919; Ziegler, 1964), each aiming to attract resources and direct market actions based on its own priorities. Within a MIC, there will be constant rivalry between different vested interests competing for the resources, e.g. for the allocation of defence funds to different competing defence programs (e.g. submarines vs. fighters vs. tanks).

The MIC has since the beginning had a criticized, if not sinister, connotation. Mills and Eisenhower warned of its growing powers. Melman criticized the U.S. MIC in the early 1970s, a time when the Vietnam War was widely unpopular. Melman especially stressed the importance of the central bureaucracy in the Pentagon for the strength and cohesion of the U.S. MIC. Large firms became so dependent upon one central customer that the Pentagon became the real administrator of an enormous economic subsystem on which firms depended for their survival – what Melman called a “full-fledged centrally managed industrial system”. Melman argued that this elaborate system was detrimental to the U.S. economy, since it demanded such vast resources, and that there was not a cost-conscious attitude (Melman, 1974).

In discussions about the existence of MICs, it is often stressed that there is an alliance between the military, the defence industrialists and the politicians, and that the MIC has created its own, self-conserving inertia. However, in most nations the industrial entities geared for military production have in initial, defining phases often had strong political support from the highest politicians. These politicians, together with the military and industrialists, have created favourable conditions for military production. In the early, shaping stages of the establishment or strengthening of e.g. an aviation industry, there are different business interests and regional interests (employment, industrial development), as well as different interpretations of military threats and what the military and technological responses should be. Later on, these industrial capabilities tend to acquire a life of their own and the concept 'MIC' may become a suitable description. As the outcome of the power struggle between different interests and interpretations has become clearer, there will be a gradually increasing industrial mobilization and close working relationship between industry and its military customers. The MIC's institutionalized structure will thereby be increasingly cemented (Mrozek, 1974; Strandqvist, 2008), thereby showing characteristics of strong 'institutional logics' (Friedland & Alford, 1991; Thornton & Ocasio, 1999) and the 'organizational field'.

During the Cold War, the monopsonistic²⁶ structure of the market and the nature of the product led to emphasis on the performance of high-tech weaponry, rather than on cost.

²⁶ Monopsony: only one buyer in one market, in this case one national market.

Costs for development and R&D were borne by governments, as well as the financial risk. Elaborate rules for contracts and financing were developed – artificial instruments to substitute for competition and in order to create public accountability. Military contingency planning for the worst-case scenario led to ever-increasing demand to modernize equipment. In such an environment, close relations developed between contractors, procurement executives and the military – leading to “revolving doors” between them. The vested interests in military production thereby formed a powerful, cohesive and heterogeneous interest group – the MIC – pushing for increases in expenditure when increases in threat were not so obvious (Dunne, 2009).

The end of the Cold War was one major, worldwide shock to the dynamics of the MICs. September 11, 2001 and the subsequent U.S.-led wars became a second shock for the interaction between the European and U.S. primes, and to the transatlantic defence industry integration.

As an aggregate, the MIC is a strategic actor that wants to promote its interests and maintain its powers and influence. A MIC has, however, an internal diversity of interests and actors. It exerts power and influence based on varying vested interests. If we study the MICs of the main European counterparts to the U.S. – France, UK and Germany – we can see each of them as acting on behalf of the interests of the domestic MIC, as well as on behalf of the EU as an entity with defence-industrial interests. Such a diversity of separate and yet linked vested interests requires an analysis which treats the political institutions as demonstrating institutionalized behaviour (March & Olsen, 1996; Mörth, 1999).

MICs have different characteristics in different nations, but they show a tendency towards stability and reluctance to change. MICs demonstrate a common form of behaviour as an aggregate, but based on different conditions of institutionalization (Lundmark, 2004). This organizational field is highly regulated. We must identify in what ways corporate behaviour is governed and constrained by regulative forces in the organizational field.

MIC as an analytical tool

The MIC concept will be used in order to capture what is seen as specific to the organizational field of the defence market within a specific nation. MIC denotes the specific nature of a domestic defence market context, seen to some extent as being isolated from other national contexts. MIC is not based on theory from any particular scientific field, but is a commonly used metaphor or description of the national defence industry²⁷ context (Mills, 1956; Goldstein, 2001). The MIC as a phenomenon is a useful metaphor. It should not be seen as a theory, but rather as an observation of a certain institutionalized functioning of a meso-community within a nation that can be used as an effective analytical point of reference.

²⁷ Note that Mills, Melman and others refer to the MIC as a defence *industry* context. In this thesis, it is more appropriate to refer to a defence *market* context. I strive to maintain their wording when it refers to their texts, but within the thesis’ reasoning to discuss a defence market.

“The ambiguity of the military-industrial complex terminology has engendered an array of papers in the broad field of the political economy of defence.” (Matthews and Maharani, 2009)

MIC has in many analyses had an explicit or implicit connotation of a sinister societal phenomenon, seldom (if ever) as a positive phenomenon. According to the impression of my literature study, MIC studies have had peaks of interest in different nations. Eisenhower brought a widespread concern and interest to the MIC with his 1961 presidential farewell address. After this, there was in the U.S. a period of intensified academic and analytical interest for about 10-15 years. The end of the Cold War in 1989 created a new peak of interest, particularly in the UK, e.g. on how a ‘peace dividend’ and a ‘defence conversion’ should occur. The 1980s and 1990s experienced a wave of analyses based on Marxist theory. In France, it appears that there has been limited critical analysis of the domestic MIC. In the UK, the critical analyses seem to focus on the efficiency and functioning of the MIC, not on it being a potential danger to democracy.

In Chapter 5, presentations are given of the MICs in the U.S., UK and France, and there is some imbalance among the identified analyses: considerably larger numbers of analyses have been made in the UK, considerably more interest in the U.S. during the 1960s and 1970s, and only a few but comprehensive analyses of the French MIC (esp. Koldziej, 1987; Dussauge et Cornu, 1998; Giovachini, 2000). In most MIC studies in the U.S., there is an implicit analytical focus on the functioning of the U.S. defence community, but conclusions are made in a general manner. It may be argued whether such conclusions only apply to the U.S. and to its specific, domestic political conditions.

Strandqvist (2008) described the creation of the Swedish military aviation industry in 1944-51. This is an analysis of the emergence and creation of a MIC. In the present thesis, the research question rather concerns how established, highly institutionalized MICs react to impulses for change of their internal corporate anatomy – that there should be transatlantic restructuring and integration of companies.

How will the MICs be analyzed?

Based on the previous discussion of the MIC, and in relation to the thesis’ four central theoretical concepts, we will in Part IV analyze the descriptions of the development of the three MICs in Chapter 5, based on the following criteria.

- *Organizational field:* Of the four theoretical concepts, this one becomes most pertinent in the analyses of the MICs. The following group of propositions of what constitutes a MIC will be kept in mind: cohesive community on the meso-level; political market; government field and corporate field; acts cohesively and predictably in aggregate, but internally has rivalry over priorities and resources; regulative policy action; guided by a notion of national interest; self-conserving inertia; isolated from other national contexts; rivalry between vested interests; creates distinct classes of individuals.
- *Discourse:* Discourse cannot be precisely analyzed; the pieces of arguments in a discourse are too widely spread over time. The government’s references to national interests become marked, however, as they make certain important choices, for example to nationalize companies, force consolidation or promote multilateral cooperation.

- *Action/Integration*: Integration is portrayed as a historical development, and important shaping phases, events and decisions will be highlighted. In Chapter 6 Action, integration will be more precisely analyzed, focusing on a short time period.
- *Driving forces and inhibitors*: These cannot be fully exploited in Chapter 5, since the accounts are based on historical data, and sufficient detail is difficult to retrieve.

In the narratives of the development of the MICs in the U.S., UK and France in Chapter 5, we will empirically also touch upon different phases that have shaped and steered these MICs: when there was growth and contraction; phases of privatisation, nationalization and consolidation; the government's role; allocation of resources, the relationship and interaction between industry and government, defence innovation and how the governments regulate the defence industry's actions. Based on this, we can reach sufficient understanding of the context in the organizational field and the discourse for transatlantic defence industry integration, and for understanding the empirical data presented in Chapters 6-9.

2.5 The defence industry as a component of national security policy

We have now discussed the nature of a MIC. A discussion about the defence industry and a MIC also relates to certain theory from security policy and political science. This is needed in order to describe and understand the defence industry's resource dependence on its strongly politicized organizational field. The following discussion centres on a U.S. perspective, since the relation between the defence industry and military production is most clearly pronounced there.

Security policy refers to the policy that serves to secure the continued existence of a state by safeguarding the interests of the state. In general, security interests are protected through the use of economic, military and political power, as well as the use of diplomacy. Defence policy refers to how a state seeks to shape and organize its armed forces. Foreign policy refers to ways of safeguarding the interests of the state through its relationship with other states. (Goldstein, 2001)

The starting point for the U.S. government, as what should guide security policy and foreign policy, is the *national interest*. National interest can be seen as the basis when several important government bodies adopt and follow coherent policies, the most important ones being the White House and the Departments of State and Defense. The larger the number of other central agencies that follow these policies, the stronger is the national interest. Someone who stresses the importance of the national interest stresses that the U.S. must shape its foreign policy towards what is best for the U.S., and for the preferred U.S. view of the world (Krasner, 1978; Von Vorys, 1990; Posen & Ross, 1996; Trubowitz, 1998). Foreign developments (e.g. domestic conflicts, civil wars, coups d'état), seen as isolated from each other, may have certain preferred outcomes that could be said to serve the U.S. interest. However, with all such foreign developments taken together, some outcomes will clearly conflict with each other. Not all isolated national interests sum up to a

grand national interest: “Just as the national interest may not be found in the sum of sub-national interests, so it may likewise not be found in the sum of national objectives” (Reynolds, 1994). Thus, the “national interest” is a political phrase that will never be objective; there is always an interpretation, motive or vested interest behind it.²⁸ There is no generally applicable definition of the U.S. national interest; it appears to have a different meaning for different people, often emanating from a person’s interests or agenda.

France is the Western state that together with the U.S. most strongly expresses a national interest. France has for many centuries had an idiosyncratic attitude of being culturally superior to other nations. In defence issues, de Gaulle formulated in the 1950s the French aim of not becoming dependent on any other nation, after a number of humiliating French defeats (e.g. the Franco-Prussian war of 1870-71, the German invasion in WWII, Dien Bien Phu in 1954 and the Suez crisis in 1956). On this basis, France built up a very sophisticated and broad domestic defence technology base. This policy was shared between all political parties and kept alive by the government military engineers, *les ingénieurs de l’armement* (Kolodziej, 1987; Giovachini, 2000). The UK has over many centuries had a strong support for the Royal Navy, based on the needs of the British Empire and its colonies, and also for its merchant navy (Higham, 1981).

Kolko (1969) separated U.S. foreign actions into military and economic actions. He rejected the idea of a self-reinforcing military establishment, maintaining that U.S. foreign policy was guided by civilian authority and civilian-guided rules. These civilian interests, in their turn, were defined by who gained and lost as a result of the policies Washington pursues. The military establishment is then, according to Kolko, a means of pursuing such goals and policies.

2.6 Government policies for regulating and influencing company integration

Companies do integrate, and they do cooperate. However, their actions are highly regulated through state policies. We can separate these into the following categories: *export control*, *ownership of intellectual property rights* and *company control*. These tools are based on different national legal frameworks and regulations, hard law (national and EU law) as well as soft law (multilateral agreements that recommend certain behaviour and restrictions regarding defence technology and its transfer).²⁹ We will not describe these separate national legislations in detail, but rather aim to capture the primary characteristics of how governments regulate integration and cooperation.

A defence company (and its separate entities) is clearly defined as residing in a specific nation, and this nation controls all defence technology transfer in and out of the nation. A

²⁸ For comparison, a discussion on how the French national interest has steered the integration and the non-integration of the domestic defence industry is given by Lundmark (2004).

²⁹ The European Commission is gradually striving to move from soft law towards more hard law in the defence market. This is however a development that falls outside this thesis’ purpose. See e.g. Mörth, 2003; Britz, 2004; Bekkers et al., 2009; Markowski et al., 2010.

defence company that is acquired from another nation will still be treated as an industrial entity under the initial nation's jurisdiction and regulations.³⁰

"Export control governs how companies really interact." U.S. attorney, expert on export control issues

Export control: One important foundation, upon which nations build their global political influence and their military strength, consists of a strong integrated economy, a capable domestic commercial and defence technology, and an efficient and effective domestic commercial and defence industry. These three parts are closely interrelated. Technology, and control of this technology through intellectual property rights, is a foundation for the three. Any action that erodes, or even threatens to erode, one or more of the three components of the foundation will cause a diminution of the nation's influence (Cevasco, 2009). Sorenson lists six justifications for U.S. international arms sales: support to allied or friendly countries against a common threat; disposal of equipment no longer needed; increased profit for the military contractor; influence on recipient countries; reduction of cost of weapons; and offsetting a negative American balance of trade (Sorenson, 2009). In this sense, export control becomes an important tool for serving defence and foreign policy, as it safeguards a nation's intellectual property. In order to continuously control the flow of this technology and to block it from reaching competitors and unwanted nations, governments have created export control systems. A nation can thereby choose with which nations it wants to ally. Export control is a controversial instrument of national security policy which impacts a nation's relations to specific nations, and how it is viewed in the world. Nations with a broad and highly sophisticated defence industry (foremost the U.S., China, Russia, France and the UK) can thereby foster alliances with chosen nations, and influence local regional stability in order to serve their own national interests (Kapstein, 1992; Molas-Gallart, 2001; Adams, 2001; Clevström & Winnerstig, 2003; Sorenson, 2009; Cevasco, 2009; Markowski et al., 2010). For example, the U.S. supplies highly sophisticated military technology to Taiwan, Australia, South Korea and Japan in order to safeguard a security situation in this region which is in line with the U.S. national interest.

"Export control is the biggest impediment for the transatlantic integration." Manager, Smiths U.S.

Defence exports are regulated by government export control organizations, based on a combination of law, regulations and policies. The ultimate goal is not to monitor defence companies, but rather to control the flow of defence technology so that it serves a national self-interest. Companies do have a strong interest to export, but they are also concerned with not diluting their competitive advantages (based on intellectual property) over competitors. All export must be approved by the government agencies, and the further flow and re-export of technology will be closely monitored by the export control authorities. Companies have a responsibility (through various nation-specific principles and setups) to report their administration and control of the defence technology (Cevasco, 2009).

The implications of export control systems for company action are that their sales are completely monitored and controlled by export control authorities. The customers may

³⁰ Admittedly, some nations have less strict control, or perhaps implicitly accept covert defence technology transfer. The focus in this thesis is however on nations that we assume have a strict control of defence technology, and this is the case in the home nations of the focal companies in the strategic group.

also be denied acquisition of defence systems or defence applications if the host nation does not approve of the customer nation, if the defence technology is too sensitive, or if the host nation does not want to introduce “regional instability” (ibid.).

The export control system of the U.S. is described by all European analysts as being very protective and cautious, still shaped by forty years of Cold War. This reflects the importance the U.S. puts on arms transfer as an instrument of its global security interests (Ashbourne, 2000; Adams, 2001; Sorenson, 2009; Cevasco, 2009). In many cases it blocks acquirers of U.S. defence subsystems from further re-export when the U.S. does not share the buying nation’s perception of a third-party prospective buyer.

U.S. defence companies are less dependent upon export than their European competitors are, the U.S. companies with an average of less than 20% export, and the European companies with two-thirds export (Bialos et al., 2009; Cevasco). As the European nations also have had a much lower frequency of defence program introduction than the U.S., and the U.S. has had very high increases in defence R&D and procurement during the last ten years, there is an increased incentive for European companies to strive for export, and a lesser incentive for U.S. companies to strive for export.

Ownership of intellectual property rights: Defence companies rarely develop defence technology based on their own funding. The normal, almost exclusive case is that a state (or a coalition of states) in some form finances the development, and thereafter controls the transfer of the defence technology. The state can thereafter permit or restrict technology transfer. Intellectual property rights can also be a tool for protecting a defence company that has been acquired by a foreign company; the acquiring company cannot transfer the technology to another nation. The administration and control of intellectual property rights becomes a strategic subset of the export control systems.

Company control: States use a variety of tools for controlling, monitoring and steering the behaviour of defence companies and the interaction between defence companies. The following description is an accumulated account from interviews.

- *Permit to produce defence equipment:* In most nations, defence companies need a state permit to produce defence equipment, a permit issued after thorough scrutiny.
- *Golden shares:* States may have a contract or a clause written into the defence company’s permit to produce defence equipment, called a ‘golden share’. This gives the state a final say or outright veto power in certain specified, strategic decisions such as the existence of certain production lines, strategic repositioning, a sale of a subsidiary, cooperation with certain companies, or cooperation concerning certain technologies.
- *Company ownership:* In many nations the state owns defence companies, wholly or partly (e.g. in France, Spain, Italy, Norway, Finland). Such ownership is generally associated with some type of golden share or veto power. It also gives the state direct insight into company operations. The most sophisticated policy of state ownership is executed in France (Lundmark, 2004). The UK, U.S. and Sweden do not have government ownership in the defence industry. France, Spain and Italy have government ownership as a profound part of their defence industry policies. Germany has ownership from the *Länder* (the German states) and in family *stiftungs* (foundations) in a specific German set-up.

- *Company boards:* The state may exercise control over company boards in various ways. They may have one or several government representatives on the board, the board may need to be approved by the government, and the boards on foreign-owned defence companies may have restricted insight into and control over the defence assets. In the U.S., defence companies acquired by a foreign company may through an SSA (a Special Security Agreement) have a board appointed by the foreign mother company, with half of the members being U.S. citizens appointed by the U.S. government. When the board discusses issues with “possible national security implications”, the non-U.S. citizens are excluded from the discussions. This board will have very limited insight into and influence upon the company operations, and (with U.S. government approval) will only be able to suggest overarching strategic changes. For the most part, the board members can only monitor the company’s performance; they can see the financial results. The board will have very limited insight into the intellectual property of the company. There will also be a ‘proxy board’ composed only of U.S. citizens, which has to be approved by U.S. government agencies. The proxy board is the body which manages the company, and its interaction with the foreign owner is highly restricted (Ashbourne, 2000; Adams, 2001).
- *Domestic consolidation:* Larger national consolidations of defence companies require state approval in the states focused upon by this thesis. The state may, as is continuously and deliberately done in France, redistribute company shares between companies in order to force certain companies to cooperate domestically. Dassault and Thales are the companies most exposed to this policy – a policy last executed in May, 2009. There was massive nationalization of defence companies in the UK in 1977 and in France in 1981. According to a French representative at DGA in 2003, nationalization was still a possible option in France.
- *Acquisition of companies:* As previously mentioned, all acquisitions of defence companies must be approved by the state concerned. This is the case in all nations focused upon by this thesis. As has been shown, states are very restrictive in this regard. Sweden and the UK have, compared to other European nations and the U.S., been much more liberal in allowing foreign acquisition of defence companies. France is very restrictive – if not prohibitive (Lundmark, 2004; Bitzinger, 2009; Bilos et al., 2009).
- *Approval of interaction, cooperation and operational integration:* Defence companies that aim to cooperate with defence companies from other nations will, in all the nations concerned, need approval from their home government. Even for initial discussions with foreign companies, the companies must have state approval for a planned meeting. If the interaction continues or deepens, governments will repeatedly require information on what technology is discussed, and declare what technology cannot be discussed. Certainly, companies will meet with other companies anyway, as all steps cannot be controlled – but governments tend to want very close scrutiny of cross-border interaction. If the companies’ discussions evolve into a more formalized cooperation, they will have to pass a more formal threshold of approval for continued, deepened interaction. Further cooperation may also be disallowed, based on government considerations. Experienced companies will in different and informal ways test the governments’ propensity to approve, and may

choose not to formally apply for a cooperation that never would have been approved (according to interviews). A foreign company that has acquired a defence company will not have the possibility to merge technology, or extract technology from the acquired company unless approved by the acquired company's home government – and this is rarely approved. Almost invariably, the government will choose to withhold dearly financed domestic intellectual property, thereby highly limiting the acquirer's possibility to extract synergies (Axelson & Lundmark, 2006).

- *Semi-private status*: Several nations have semi-private, hybrid corporate forms that reflect stricter control by the government. Industrial facilities may be 'arsenals': a sort of public industrial facility, with different legal definitions in different nations. Companies can also be defined as 'non-public' or 'private', but with the state as the sole shareholder. In France, there are three types of public defence companies: *arsenals*, *établissements publics* and *sociétés nationales* (Lundmark, 2004). The majority of companies and industrial facilities are, however, private companies present on the stock market, which have to generate sufficient profit in order to create shareholder value.
- *Committees for control*: Governments will establish committees for overseeing and monitoring specific company cooperation, or the technology transfer between them. The companies may also be referred to standing committees that administer these sorts of questions. In Chapter 9, there are such examples in the case description of ThalesRaytheonSystems.
- *R&D funding*: Defence companies are highly dependent upon continued government R&D for being able to sustain capabilities in their market segments. Without R&D funds, they will not be able to keep their specialized development engineers, unless they can finance these from export. Thus, governments have strong power and influence over the companies' future in this regard.

These are the main government tools for controlling and monitoring defence companies. Hence, it is clear that defence companies' operations, business and interaction with other companies are meticulously controlled by governments in all the nations concerned.

2.7 The focal companies – the primes

<i>Company</i>	Company registered in	Revenue 2007 (world ranking)	% defence 2007	Revenue 2006 (world ranking)
Boeing	USA	30 480 (1)	46	30 690 (1)
BAE Systems plc.	UK	29 850 (2)	95	24 060 (3)
Lockheed Martin Corp.	USA	29 400 (3)	70	28 120 (2)
Northrop Grumman Corp.	USA	24 600 (4)	77	23 650 (4)
Raytheon	USA	19 540 (6)	92	17 610 (6)
EADS NV	Netherlands ³¹	13 100 (7)	24	12 600 (7)
Thales Group	France	9 350 (10)	56	8 240 (10)
MBDA	France	4 110 (17)	100	4 140 (16)

Table 2.3. *Primes in the transatlantic defence industry market* (Source: SIPRI Yearbook 2009. All figures are in millions of current U.S. dollars (2009). Annual revenue concerns defence)

In this thesis, the focus is on the ‘primes’ with regard to the transatlantic defence industry integration. Prime is the industrial concept often used within the defence industry in order to describe the largest defence companies. The companies labelled as primes in Europe are BAE Systems (UK), Thales (France), EADS (France/Germany/Spain) and MBDA (UK/France/Germany/Italy/Spain)³²; on the U.S. side, the companies are Lockheed Martin, Boeing, Northrop Grumman and Raytheon. None of them are solely active in the defence market; two of them (Boeing and EADS) have the majority of their business in non-defence areas. In 2001, when this research was initiated, there was in all texts a focus on the four U.S. companies (Boeing, Lockheed Martin, Northrop Grumman and Raytheon) and EADS, Thales and BAE Systems. Thereby the strategic group consisted of eight companies. The interviews were thereafter guided by this sample.

We will also comment in Chapter 6 on some other companies, and reflect in Part IV on whether the focal choice of companies was suitable for reaching the purpose of the thesis.

³¹ EADS is foremost a company with French, German and (less so) Spanish assets. The company’s headquarters is situated in the Netherlands for tax reasons (and probably also because it could not be in France or Germany for political reasons – one of the two would not accept that).

³² MBDA is a distributed group, a politically created conglomerate of British, French, Italian, Spanish and German missile producers. MBDA covers around 95 % of the missile production in Europe. The company headquarter is in Paris, but it is not a French company.

Table 2.3 is a brief background on the U.S. and European companies in focus in this thesis. The companies that are labelled primes have different backgrounds, but a common denominator is that the main growth factor has been growth by mergers and acquisitions within one of the two continents. Only BAE Systems clearly deviates through its substantial growth on the U.S. market by acquisition of U.S. companies paired with some European acquisitions, thereby growing on both continents (James, 1998; Lundmark, 2003).

The number of primes in the U.S. and in Europe has stabilized and generally consisted of the same companies since the creation of MBDA in 2001. Primes purchase other, lower-tier companies. They have also been divesting companies, in order to focus on core competences and satisfy the demands of the investor community, i.e. to create shareholder value.

There has been substantial concentration of arms sales towards the largest companies:

	Share of total arms sales (%)			
	1990	1995	2000	2003
Top 5	22	28	41	44
Top 10	37	42	57	61
Top 15	48	53	65	69
Top 20	57	61	70	74

Table 2.4. *Concentration of the arms industry, 1990-2003, in the SIPRI Top 100*³³ (Dunne, 2009, p. 21)

As we can see in table 2.4, the top five companies experienced from 1990 to 2003 a doubling (22 to 44 %) of their share of the total arms sales among the SIPRI Top 100, and there was an increase from 37 to 61 % among the top ten. Thus, we can see that the international defence industry restructuring led to a substantial concentration in the largest companies (i.e. the primes). However, this was a low degree of concentration compared to other globalized industries, where national governments had not inhibited the growth of very large multinationals, as in civil airliners and pharmaceuticals (Dunne, 2009). The big change occurred between 1995 and 2000. Since 2001, the top 20 companies have been quite stable, some of the largest of them merging or acquiring other large companies. The only new companies in the top ten during the very last years in the SIPRI Top 100 are L3 Communications and Halliburton (see Chapter 6), both from the U.S. There are thus practically no newcomers. The prime companies will be further described in Chapter 6.

³³ SIPRI (the Stockholm International Peace Research Institute) publishes in its yearbook a list of the 100 largest defence producers in the world. The SIPRI Top 100 is academically the primary reference for data on defence companies.

2.8 Summary

In order to analyze the transatlantic defence industry integration, we must understand the defence market as such. This chapter has described some of the general characteristics of the defence market, including the concept of a military-industrial complex. We have also briefly introduced the focal companies. The defence market is a market where the government's influence and the state's interest are highly pronounced. A domestic defence industry is believed to strengthen the home state's powers and prestige, as well as offering high technology development and employment. The defence companies' customers are only representatives of states, and there is only one customer in each nation. The defence R&D and technology development is almost entirely financed by states, and normally from the home state. The commercial conditions in the defence market are profoundly controlled and regulated by governments. However, most defence companies are private entities, present on the stock market. There is also a pronounced and rigid hierarchy in the defence market, where each company has an implicit role in the global industrial value chain.

By borrowing the concept of a military-industrial complex (MIC), the national and idiosyncratic patterns emerge. It is generally accepted that ambitious and elaborate defence production creates strongly institutionalized patterns of interdependence between the domestic politicians, military and defence industry.

The defence industry is closely connected to the security and defence policy of the focal states concerned with transatlantic defence industry integration. States with global security ambitions will strive to protect what they perceive as their national interest, and one part of this exercise of power is through military presence and force. If the state's military technology is optimally designed for its perceived, unique military needs and is superior to that of its adversaries; the state's security and military posture and its global influence are strengthened. A developed domestic defence industry is seen as supporting such military sophistication and ambitions.

Most markets and industries are primarily dictated by global commercial conditions based on private patterns of consumption. Some markets attract more pronounced political interest and regulation (e.g. energy, agriculture, transportation, infrastructure) and the defence market is perhaps the most politically influenced of them all. In this chapter a description was given of how governments regulate and monitor the defence companies' conditions and operations. This is done primarily through regulation in the following categories: *export control*, *ownership of intellectual property rights* and *company control*.

This general description of the defence market is an important and indispensable background for the upcoming chapters. The background is needed in order to have a sufficient understanding of the defence industry and its conditions.

In Part I the research question was formulated: *How can we explain the proposed discrepancy between the discourse concerning, and the actions of, the transatlantic defence industry integration?* The purpose is triggered by an empirical observation. We have explained how the empirical parts will contribute to reaching the purpose of the thesis. Through theory we will develop a Case Study model which suggests certain relations between the central theoretical concepts of the thesis, applied to the organizational field of the defence market. The methodology is designed in order to be able to test these relations, and empirical data are collected. The

Case Study model is tested on the empirical data. Thereby, we can determine whether the Case Study model offers a contribution to theory in general.

After the following theory and methodology chapter in Part II, there will be a more specific discussion in Chapter 6 concerning the national MICs as organizational fields.

Part II. THEORETICAL AND METHODOLOGICAL FRAMEWORK

In Part II, we will present and discuss the theoretical and methodological foundation for the thesis. The overall purpose of this part is to define the assumptions and choices of theory that guide the thesis' design. In order to execute the study, there is a corresponding sequence of methodological choices and work tasks.

Chapter 3 Theoretical framework defines the theoretical framework. In order to be able to understand and explain the corporate integration in the defence industry, an important starting point is established. A deeply politically influenced market as the defence market acts under conditions that deviate from certain ideal conceptions of corporate decision-making based on rationality, where companies can make rational assumptions on how to formulate its strategy, and thereafter pursue its strategic goals independently. The conditions of a 'political market' (where government decisions and political priorities deeply influence the conditions for the companies) must be understood regarding how it affects corporate strategy and action. The thesis' standpoint is that corporate strategy must be set in relation to the influence of the government perspectives. The chapter discusses how a perspective of viewing the defence market as an organizational field makes it possible to relate the 'corporate field' to the 'government field'. A perspective is put forward that the institutionalization within this organizational field must be understood, and that this understanding must be related to how the corporate field and the political field interact. The more theoretical concept of an organizational field is complemented with the defence-market specific concept of a 'Military-industrial complex' (MIC).

The actions that are central to understanding and explaining the transatlantic defence industry integration occur within this organizational field. Within the organizational fields, the actors in the corporate field and the political field engage in certain activities; the focus being firstly on the transatlantic corporate integration that occurs and the forms it takes, and secondly on the discourse that can be identified which relates to the phenomenon of transatlantic defence industry integration. The initial empirical observation that triggered this thesis, that there appears to a discrepancy between what is being said (discourse) and the integration that occurs (action) will be searched by comparing the empirical accounts of the discourse and the integration, thereby searching for an explanation for how the integration turned out.

The theoretical concepts of 'integration', 'discourse' and 'organizational field' are united in a Case Study model which will serve as the tool of analysis in Part IV.

Chapter 4 Methodology presents how the study has been conducted, and the different methodological choices that were made. It presents the different types of empirical data. The study has collected extensive empirical data from a wide variety of sources, and has included one long stay in the U.S. (2001) and one in France (2003). The interview design is explained, and how the respondents for the 102 interviews were identified.

A guiding principle for the methodology has been to reach understanding in order to be able to offer explanation. Understanding concerns understanding the institutional conditions of this organizational field, e.g. how governments regulate and control the actions of their domestic defence companies; in particular concerning how companies are allowed to merge and acquire, companies' roles and actions in multilateral armaments collaboration and the cross-border technology transfer between companies. This understanding is seen as a prerequisite for being able to explain the transatlantic defence industry integration.

Furthermore, Chapter 4 discusses how my professional role affects the conditions for making this study, the inductive-deductive aspects of the research design, the level of analysis, how we can generalize from the results of the study and finally how the empirical data sets relate to the Case study

After Part II, Part III will present the empirical results.

Chapter 3 Theoretical framework

The goal is to create a conceptual framework in order to describe the nature of the transatlantic defence industry integration. This framework should have some predictive and explanatory power. It is intended to offer an explanation that is truthful to the conditions of the defence companies, although the thesis probably theorizes the activity more than the companies' decision-makers do. It should also have a normative edge that has policy implications for policy communities and for political groups.

The perspective of the theoretical framework will be to view the defence market as an organizational field, and within this field there are certain actors that participate in discourse about a specific action; the corporate integration. Thus, the organizational field is the overarching concept which unites the empirical phenomena and discourse is a concept in order to understand the development of the most focal phenomenon; the corporate integration.

This chapter is divided into ten parts:

- What in theory is seen as 'rationality' in industries and how companies operate, and how corporate behaviour, based on different basic assumptions about corporate rationality, can be analyzed quite differently.
- A discussion of how companies' action can be understood as rational under the conditions offered by specific markets.
- The 'political market' seen as an organizational field.
- Based on the above, the neo-institutional theory about markets and environments understood as organizational fields is discussed.
- A discussion on discourse, and how discourse relates to action (what is being done).
- The concept of integration in relation to the perspective of the thesis.
- Driving forces and inhibitors for an industrial change.
- The concept of a military-industrial complex (MIC) and how it in this thesis is coupled to the concept of the organizational field.
- How the focal theoretical constructs are combined into a Case Study model that will be applied in the analysis of the empirical data of the thesis.
- Finally, a discussion on how this combination of theory will help to reach the purpose of the thesis.

The purpose of this model is to formulate an explanatory model for analysing the discourse concerning, and the action of companies within, an industrial change process for a strategic group of companies. The explanatory model is designed for the particular envi-

ronments of politically influenced, institutionalised industries. The chapter will end with a reflection on how this theory should contribute to fulfilling the purpose of the thesis.

The observation that has initiated the above theoretical framework is that there may be an apparent discourse for a certain reform or development, but the discourse is never manifested in action. Why is this – how can it be understood and explained?

3.1 A different rationality

Companies strive to use and combine their resources in the best possible way in order to perfect their competitiveness. How they do so has led to many “theories of the firm”.

According to the neoclassical economic theory of the ‘economic man’, companies base their priorities and strategy in a rational way on perfect information about prices of resources, capital and the companies’ products. Adam Smith’s (1776) ‘invisible hand’ of the market will see to that competition optimizes the allocation of resources to the production that makes the best use of them, based on the prices of labour, resources and capital. The organization of industry is based on contracts between resource-holders of labour and production assets (Friedman, 1953).

In a market, there are many activities and resources that must be coordinated in order to organize the flow of resources, labour and capital in the sequence from company to the buyer. A company may have incentives to control these activities and resources, instead of leaving the coordination to the market. The company may therefore choose to internalize activities and resources into the company, e.g. the distribution, the production of an important input of raw material, the selling and other activities that must take place in order for the product to be manufactured and ultimately to reach the customer. The company will decide whether to internalize activities based upon what is seen as most effective; it wants to avoid uncertainty and risk. Otherwise it has to make contracts with its business environment in order to reduce risk. If the market is perceived to organize activities better, the company does not have an incentive to internalize the activities. Thus, the market does not govern itself; companies must make a number of considerations. There are elements of uncertainty, and companies must make a prediction of what will serve them best. They must judge the ‘transaction costs’ in deciding whether activities should be internalised or not.

Firms exist because the firm is an efficient way to organize production where the price mechanism is not enough (Coase, 1937). Williamson developed Coase’s theory, stating that there is a rational interplay between market (that the market performs the allocation of ‘assets’) and hierarchy (that a hierarchy controlled by one company controls and organizes the use of some critical ‘assets’). The boundaries between market and hierarchy are a result of rational choices based on the assessment of transaction costs in order to optimize utility from the combination and use of assets (Williamson, 1975). In neoclassical economics, the firms will grow and reach a market share based on interplay between price, supply and demand. However, resources, labour and capital are not endless, and hence there will be limits to their access. Companies must therefore, under the restrictions of scarcity, make an assessment of how to optimize the use and combination of the firm’s controlled resources (Penrose, 1959).

Within the theoretical field of Industrial Organization (IO) a model was developed for how to assess competition within an industry. The model starts out from the neoclassical view of rationality. The main determinants of the industry's performance are structure, conduct and performance. Industry structure determines the behaviour or conduct (i.e. company strategy) of firms, whose joint conduct then determines the collective performance of the firms in the marketplace (Mason, 1959; Bain, 1968). This widespread model is known as the structure-conduct-performance (SCP) paradigm (Bain, 1972). But as structure thereby could be said to determine performance, conduct could be ignored; "it merely reflected the environment" (Porter, 1982).

The SCP paradigm is a cornerstone of IO. The model has developed further and incorporated aspects of 'imperfect competition', the impact of supply and demand conditions, and the influence of government policy. The initial normative SCP sequence from structure over conduct to performance has been complemented with feedback loops, for example the idea that companies' performance will impact back upon structure and supply conditions when the number of companies shrinks or when one company becomes dominant (Phillips, 1976; Clarke, 1985; Lipczynski et al., 2005).

In the view of SCP and IO, companies largely act independently, and the structure and government policy are primarily seen as exogenous factors that the company has to relate to. Matters of cooperation and interaction with other firms are seen as ways to distort and bypass the rational mechanisms. The company can make rational decisions based upon the offered conditions. Companies' rational decisions are in competition, however, since the competitors in their industry are also taking rational decisions (Lipczynski et al., 2005).

The SCP paradigm has its predictive and planning strengths, but has also been questioned and criticized for placing too much focus on industry structure, and too little on firm conduct. In the 'New Empirical Industrial Organization', more emphasis is put on company competitiveness, studying structure-performance relationships across a number of industries (ibid.). Porter has studied many industries in order to determine competitiveness based on developments of the SCP paradigm (Porter 1985).

One fundamentally different path to SCP and IO is that individuals do not have perfect information about e.g. prices and the dynamics of an industry. Simon (1947) declared that decision-making must be understood in terms of uncertainty; it is impossible to have perfect and complete information at any given time to make a decision. Individuals and organizations are limited in their decision-making due to 'bounded rationality' (the rational decision-making that takes into account the cognitive limitations of both knowledge and cognitive capacity), and to the fact that they make decisions in order to 'satisfice', not to optimize. Furthermore, they cannot predict other actors' actions perfectly; they must make assumptions. An additional complication is that decisions are made by individuals, and their judgement is influenced by lack of time and information; they also have their personal preferences, experiences and aspirations. Individuals must act upon bounded rationality, and will do so in a subjective manner (Simon, 1947).

An organization also experiences uncertainty about its environment, and strives to find ways to deal with this uncertainty through differentiation of its organizational structure. Organizations are dependent upon their environment for their survival, and will seek managerially to adapt to their environments (Lawrence & Lorsch, 1967; Aldrich & Pfeffer, 1976; Pfeffer & Salancik, 1978). Cyert & March noted that organizational behaviour

deviated markedly from the neoclassical view: “*Much of the decision making we observe reflects the routine way in which people do what they believe they are supposed to do. Much of the behaviour in organizations is specified by standard operating procedures, professional standards, cultural norms, and institutional structures. Decisions in organizations, as in individuals, seem often to involve finding appropriate rules to follow. The terminology is one of duties, scripts, identities, and roles rather than anticipatory, consequential choice.*” (Cyert & March, 1963.)

Organizations are not a conglomeration of utility- and profit-maximizing, perfectly rational actors. Richardson noted neoclassical economics’ assumptions about corporate behaviour and that “(neoclassical economics)...*ignores the existence of a whole species of industrial activity which, on the face of it, is relevant to the manner in which co-ordination is achieved.*” He saw that a company deals intensively with its interaction with other companies through activities of co-ordination and cooperation in order to organize what the market will not (Richardson, 1972).

The academic community that studies corporate and organizational behaviour comes to a crossroads here. Should we assume that individuals and companies act rationally, and that industrial behaviour is equally rational in aggregate? Or should we assume that individuals are socially interacting individuals with subjective and far from perfect information, that organizations and their environment are interdependent, and that individuals’ aggregate behaviour creates a shared, socially constructed reality? The latter perspective stresses the implications of patterns of interactive behaviour, and sees that individuals and companies act in what can be said to be a rational way, yet in quite a different way. This perspective rejects the outlook of neoclassical economics and the SCP paradigm as having a highly simplified view of individuals’ behaviour and decision-making, and of how these govern organizational and industrial behaviour and action.

This general perspective of bounded rationality and organizational behaviour has led to the development of many different theoretical schools. One of them is the institutional theory of organizational behaviour. One part of this school stresses that organizations are dependent upon their environment, and that patterns of behaviour between organizations will create institutionalized behaviour in the organization’s environment (DiMaggio & Powell, 1991; Fligstein, 1991; Scott, 2001). Organizations should be viewed as socially constructed; the interaction between individuals creates a shared view of the organization and its mission (Berger & Luckmann, 1966). This leads to an alternative perspective on rational behaviour. In relation to this thesis’ purpose, we will use the perspective of the organizational field’s influence on the defence market to search for answers to what kind of transatlantic defence industry integration has occurred, and why it has turned out this way.

The focus of this thesis will hereafter be on analyzing how organizations are dependent upon their environment(s) and how corporate behaviour can be understood and explained through this perspective.

The next section discusses how a specific market offers more or less specific conditions that foster a corporate rationality which becomes most successful in the market.

3.2 Corporate rationality in a specific market

A fundamental assumption in this thesis is that we must have an understanding of the corporate incentives as well as government incentives in the organizational field. We must find a way to relate these two rationales in order to offer a credible explanation for the outcome of transatlantic defence industry integration within the focal strategic group.

The functioning of a market may be sufficiently explained by solely analysing the actions of the industrial actors, by using theories that solely relate to industrial actors. In certain markets or market situations the actions may, however, not be sufficiently understood or explained without the inclusion of the impact of a wider institutional context. Institutional forces – e.g. legislation, government influence, or politically constructed market regulatory instruments – may be such strong forces that they must be included in order to understand and explain the market behaviour. Causal models for why companies e.g. strive for higher market shares, international collaboration or access to certain markets may offer directions for understanding and explaining the actions of the industrial actors. Each specific market, however, has certain institutional specificities that will offer certain institutional conditions. Each market will thereby have certain characteristics that give the industrial actions a market-specific “twist”.

In contradiction to theories of competitive markets, many markets have complex and stable social structures based on repeated interactions of buyers and sellers and on the status and reputation of market participants (Fligstein, 2001). This creates complex social structures between market participants. Sociologists disagree whether such social relations are efficient (Granovetter, 1985) or whether efficiency is a social construction (Fligstein, 2001). Complex, political market constructs with clear imbalances in state-related power distribution are hardly creating an efficient resource-optimizing market; they are rather the result of a particular mix of participants and conditions.

The political market can be assumed to deviate in its market behaviour from generally accepted beliefs about corporate economic rationality in a competitive market. We will need to analyze and take into account the distorted corporate behaviour (distorted vis-à-vis generic economic rationality) in our analysis of transatlantic defence industry integration. An analysis solely based on assumptions of narrowly defined economic, corporate rationality for integration (e.g. Harrigan, 1985; Lorange & Roos, 1991 & 1992; Yoshino & Rangan, 1995; Cateora & Graham, 2000) is not believed to be capable of offering a sufficient or plausible explanation for transatlantic defence industry integration.

How is corporate rationality to be defined? If a market is governed strongly by political influence, it is reasonable to assume that an analysis purely of the corporate agenda for industrial integration would offer less understanding and explanation of the dynamics of industrial integration compared to an analysis that includes the influence of the corresponding institutional and political agenda for the conditions of the companies. It is obvious that corporate actions regarding integration are not only driven by rational incentives; they are clearly affected by accommodation to the possibilities that the political environment allows. On the one hand, we have clear-cut rational objectives for promoting a company’s well-being. At the same time, the limitations placed on the company by the institution’s norms as well as cultural-cognitive and regulative forces will make certain corporate behaviour rational within that organizational field – a rational and functional compromise between demands from the corporate as well as the organizational field (Scott, 2001, p. 66). Instead of viewing the corporate behaviour as a passive participant in the in-

stitutionalised behaviour (as is sometimes the perspective in neo-institutional organization theory), we must pay explicit attention to the active agency and the strategic behaviours that organizations employ in direct response to the institutional processes that affect them. Such behaviour can be described as 'strategic responses to institutional processes' (Oliver, 1991).

Fligstein (2008) discusses the existence of concepts that deal with meso-level social orders which are related to, or resemble, an 'organizational field': sectors (Meyer & Scott, 1983), fields (Bourdieu, 1984; Bourdieu and Wacquant, 1994), networks (Owen-Smith & Powell, 2008). In the case of states, we may speak of policy domains (Laumann & Knoke, 1987). In population ecology, the focus is on niches (Hannan and Freeman, 1989). We may also, outside of Fligstein's overview, add the Markets-as-Networks view (Johanson & Mattsson, 1985; Håkansson & Snehota, 1989; Mattsson & Hultén, 1994), and Serfati's (1992, 2000) view of the French defence community as a cohesive system on the meso-level. Serfati also connects to the concept of 'national systems of innovation' (Lundvall, 1988; Nelson, 1993; Reppy, 2000) which focuses on the complex relationships between companies, academia and governments in national processes of innovation. In this thesis, the focus is on the meso-level since the impression is that the corporate-governmental interaction in the organizational field is most important and pronounced on the meso-level (as described by Serfati). In this range of constructs, our focal theoretical concept is the 'organizational field'.

The market relations, market stability and change are the result of intentional or unintentional relations between market participants. Markets are regulated by governments. Governments underwrite technology, regulate competition, and set the rules for competition and for integration and interaction between firms. Different states have different regulatory styles (Dobbin, 1994) and modes of intervention in market crises. Governments strive to create a stable market that is acceptable to taxpayers, companies and to political goals – an ongoing compromise. Government-firm relations must be understood in order to understand the functioning of the market. In a market that we can define as 'political', there is thus no equilibrium or natural state to serve as the view in economics (Fligstein, 2001).

The present state of a market as an organizational field is a product of social inventions as to how market participants should interact. The interaction has been gradually refined as society develops, and as goals are changed. This process in modern life has been going on for hundreds of years, creating a knowledge of how to make social arrangements, e.g. to promote certain types of legal forms for firms in order to promote competition or innovation. Markets may be described as 'fields' that are socially organized by sets of principles that organize thought, or by routines or practices that actors perform from day to day; and the social relations that constitute fields may or may not be understood by the actors (Bourdieu, 1977; Fligstein, 2001). A market is a social arena that exists for the production and sale of some good or service, and is characterized by a structured exchange. In order to qualify as a market, it is necessary that there is a situation with a distinguishable status hierarchy, and that the existence of leading sellers is reproduced on a period-by-period basis (Fligstein, 2001). The analysis of the organizational field must also include the social arrangement of the actors in the government field that are central to the functioning of the market.

In order to create a structured, social exchange in a market, Fligstein (2001) describes four types of rules: property rights, governance structures, rules of exchange, and conceptions of control. Property rights refer to rules that define who have claims on the profits of firms. Governance structures refer to the general rules in a society that define relations of competition and cooperation, and define how firms should be organized and manifested in (1) laws and (2) informal institutional practices. Rules of exchange define who can transact with whom, and the conditions under which transactions are carried out. This refers to a number of standards for commerce regarding weights, shipping, billing, contracts etc. Conceptions of control reflect market-specific agreements between actors in firms on principles of internal organization (e.g. hierarchy), tactics for cooperation or competition (i.e. strategies), and the hierarchy or status ordering groups of firms in a given market. Conceptions of control are historical and cultural products (Fligstein, 2001).

The composition of actors and their internal power and dependence structure in a market will create (as long as the conditions are fairly stable) stable social systems that pull together a wide variety of social events. The over-arching logic of these power-dependence relations will make the market and the social interaction predictable (Emerson, 1962). Different markets exist and develop in specific settings, and the industrial and institutional actors behave in a way that is dependent on the conditions that the social context exerts and on the business models that prevail. The conditions must be understood and described in a credible manner. Depending on certain chosen assumptions and theoretical definitions, the researcher can explain why certain developments or events occur (Arbner and Bjerke, 1994). It may also be important to strive to understand and explain why certain developments or events do *not* occur.

The next step discusses how a political market can be understood as an organizational field, a perspective that emphasizes the interdependence between a company and its environment.

3.3 The political market seen as an organizational field

We have in Chapter 1 described the political market. In the political market there is by definition a clear, declared interest on the part of government actors to influence the functioning of the market. The political market is an institution. The defence market fits well into this concept.

The government actors related to a political market consist of several agencies and ministries with their respective vested interests. There is no single and unanimous consensus regarding the development of an industry over which the government has a strong influence. There will be politicians as well as public officials who make decisions or influence the conditions of the defence industry. We will show, in the empirical assessment of driving forces and inhibitors, that there are quite different interests and actions on the government side of the organizational field; a spectrum of several, parallel institutional logics

Laumann and Knoke (1987) introduced the concept 'policy domain'. A policy domain describes "the anatomy underneath" the policy-making process. There is a structure of events which, taken together, constitute policies in e.g. the energy and health sectors. Apart from the politicians and the government officials, who have formal authority over the policy issues, there are other actors who shape these events. These persons are not re-

ally individuals; they are representatives of interests. There will be a policy outcome which is the result of a complex relation and interaction. Laumann and Knoke exemplify with the U.S. society, but similar complex policy relations are found in other nations, while driven by a different mix of forces and vested interests.

The defence market consists of different groups of actors. First of all, the defence industry consists of the companies. If we refer to a defence market, the sellers are the companies, and the buyers are the states in the shape of military organizations and the organizations they design in order to organize the defence procurement. The states are buyers as well as regulators.

A political market has an environment which steers and shapes the actions of its actors – an organizational field. The organizational field contains different actors: interest groups that represent defence companies or military interests, or perform lobbying on behalf of other actors (e.g. defence companies). The organizational field is shaped by factors that offer certain conditions for the market: politics, rules and regulations; technological development; market conditions and the institutionalised practices of the organizational field. In this view, the actions taken by the market actors are deeply influenced by the organizational field.

The concept ‘industry’ does not include the environment. ‘Market’ denotes a broader focus, in that it also includes the sellers. In a political market, the impact of the political institutions and other actors that influence the corporate is highly pronounced. The concept ‘organizational field’ stresses the dynamics over time between the sellers, the buyers and also the actors in the environment which most clearly affect the conditions of the market. ‘Market’ is not seen as sufficiently capturing how the environment outside the buyers and sellers can influence how business is performed. ‘Organizational field’ also stresses the continuity over time and how the institutionalization creates resistance towards fundamental change in the institutionalized structure.

The concept of an organizational field potentially consists of a wide variety of actors that can be seen as influencing the conditions for the market, and especially so in a political market. Apart from the governments, it also includes market-specific authorities (which may be responsible for regulatory powers) and authorities that are created solely for the specific market (e.g. for train traffic, energy, health care, agriculture, defence); there may be expert groups and lobbying agencies, and it may also attract organizations that have been created by citizens solely for one specific activity in society. All these actors are a part of the organizational field (with a specific composition in relation to each political market) and will influence the conditions for the market. These actors will not be the decision-makers for corporate actions, nor will they make the decisions of what will be acquired – but the actions and the input to the ongoing debate about the market will clearly affect the conditions of the market.

Regulation of corporate behaviour in a political market

Governments and their monitoring bodies may want to monitor corporate behaviour, so that companies conform to the rules and regulations formulated by the state. They may strive to create transparency of company operations through audits of what companies have done e.g. during a year. Companies may also be more closely monitored and controlled through continuous surveillance; they must report what they do, or even ask for permission to e.g. negotiate with another company. The degree of government influence

and control over corporate actions and behaviour will reflect the government's risk perception and willingness to accept uncertainty (Power, 2004; Djelic, 2006; Eriksson-Zetterquist, 2009). In a political market with a strong nation-specific institutionalization, we can observe a friction between trends of globalized transparency and standardization and the nationally created regulative microcosm that may be encountered in the defence materiel domain. Companies that aim to do business in other nations or acquire foreign companies will encounter a new, nation-specific jungle of regulations. The EU Commission is presently putting a lot of effort into a harmonization of defence procurement and defence market practice in Europe (Markowski et al., 2010).

We have established that companies in a political market with advanced technology development must manage the demands of the government field and political sector. They must also manage their role in the industrial value chain and its relations to other companies.

Markets-as-networks, distribution channels, the internationalization of the firm

The Markets-as-Networks (MaN) approach (see e.g. Håkansson, 1982; Håkansson & Snehota, 1989; Johanson & Mattsson, 1992; Axelsson & Easton, 1992), to some extent captures the stability of the focal organizational field in this thesis. This school analyzes, among others, the integration and sharing of technological knowledge in the multinational network (see e.g. Havila, Forsgren & Håkansson, 2002). Alderson (1965) noted that the management of relationships in distribution channels mostly was addressed as issues conflicting with corporate strategy. He argued that this analytical focus on conflict was detrimental to the cooperative issues that had to be handled, creating a need for coordination mechanisms. As such, coordination grows deeper and more repetitive; companies start to integrate their activities, which may lead to more formalized cooperation and integration (Alderson, 1965). A distribution-channel perspective analyses changes of distribution channels regarding e.g. the institutional or functional change (e.g. number of actors), the vertical or horizontal dimensions, within or between channels, and shifts in power between actors (Nyberg, 1998).

The above perspectives focus primarily on business-to-business relations between industrial companies, whereas the end customers of the defence prime companies by definition are governments (apart from when primes are subcontractors to other primes). The defence primes, most of all, have restricted relations to their peers among a stable group of competitors. Border-crossing technology sharing is primarily restricted by governments; the companies are captive under government-dictated technology governance. Thus, the organizational field is in this sense rather created by how the governments regulate and control the market behaviour concerning technology sharing. The defence industry has a distinct flavour of power, dominance and asymmetric dependences, which the model that is presented in this thesis aims to capture. The conditions of the defence market are seen in the thesis as best understood and explained by focusing on the interaction between the corporate and the political dimensions in the organizational field.

Based on a shared theoretical origin such as the Markets-as-Networks approach, other perspectives can also be seen that include the impact of the political environment in the 'market network'. Starting from the view of 'the internationalization of the firm' (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977) and network theory (e.g. Johanson & Vahlne, 1977; Håkansson & Snehota, 1989), the influence of political actors

can enhance the understanding of a firm's market behaviour. Studies of this interaction in political science tend to be led by economic terms and to disregard the true political actions of the business actors (Hadjikhani & Gauri, 2001). Foreign enterprises are seen as co-dependent with the political actors in the business environment, and larger companies will be pro-active in trying to influence political actors, while governments try to support domestic companies in their internationalization (ibid.; Porter, 1990). Hadjikhani & Ghauri (2001) state that there is a 'network arena' where business-politico connections and ideas are generated and developed – an 'agenda generation'. Boddewyn notes that companies therefore have two different but interwoven agendas – one political and one in the business arena (Boddewyn, 1988). The issues of network arena and agenda generation resemble the issues of organizational field and discourse. The perspective of this thesis differs in that it stresses a much stronger political impact on business activities and on market regulation, and also the specific fact that the defence companies' product development is financed by governments, the market practice is regulated by governments, and the customers are – governments.

Hadjikhani and Thilenius (2009) stress that business networks are better understood when broadening the scope to include non-business actors that influence a focal business relationship – thereby making the analysis more credible, but also more complex. If the firm and its competitors operate in an industry with strong political impact, they might share common interests providing other explanations than competition for the impact of connections on a business relationship. Hadjikhani and Thilenius stress that it is crucial to define what is inside and outside the relevant environment. They regard the focal business relationship as the 'primary' function, and the 'secondary' functions as the positive and negative effects of other actors, directly and indirectly connected to the focal relationship (ibid.; Håkansson & Johanson, 1993). Compared to Hadjikhani and Thilenius, this thesis' perspective is on a higher level of aggregation, focusing more on the market and industry level, and not on the political impact upon one focal B2B relationship. Thus, the thesis focuses on a market seen as an organizational field, on a meso-level.

The Market-as-Networks approach however has its limitations in capturing the functioning of a political market as the defence industry. Powell (1990) suggested that economic organization in networks is neither market nor hierarchy. Interorganizational arrangements between companies, research and concerned government bodies can also be described as networks (Powell, 1990; Powell, Koput & Doerr, 1996). In order to understand how governments shape and continue to influence markets, Fligstein & Sweet (2002) analyzed how the European Commission has shaped markets from two perspectives: a network perspective and an institutional perspective. They came to the conclusion that the development of markets may require government or supra-national regulation in order to optimize market activities (Fligstein & Sweet, 2002, Eriksson-Zetterquist, 2009). Networks of companies are intertwined with institutions in organizational fields. Resources are channelled through these networks, and its output makes sense to observers. Fields are associated with particular logics of action and it is these logics that make the networks efficient by determining possible relationships. Networks and institutions can thus be seen as co-constitutive (Owen-Smith & Powell, 2008). In the defence market, it is very obvious that the networks in corporate interaction are highly co-dependent with the stable institutions in the organizational field.

3.4 Institutionalization in the organizational field

Applying theory under the umbrella of ‘institutional theory’ cannot refer to the entire body of institutional theorists, as it is much too large and diverse. The heritage of institutionalism is difficult to grasp. It has resulted in many different traditions and has also fed into completely opposite lines of thought (Scott, 1995; Hultén, 2005). We will focus on institutional theories that describe the institutional environment as an organizational field. The ‘old’ and ‘neo’ institutionalists are not highly different, but one distinctive difference which is exploited in this thesis is that we will focus on an organizational field rather than on local, intra-organizational institutionalization processes. The most appropriate institutional theoretical umbrella for this thesis is ‘neo-institutional theory within organizational analysis’ (Greenwood et al., 2008). We will refer to this school as neo-institutional organization theory, for simplicity. Scott (1995) has put forward the following definition of institutions:

“Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour. Institutions are transported by various carriers – culture, structures and routines – and they operate at multiple levels of jurisdiction.” (Scott, 1995, p. 33)

The neo-institutional organization theory focuses on how repeated social patterns create institutionalized behaviour, where the concepts of institution, institutionalism and institutionalization become cornerstones. An *institution* is driven by “shared conceptions that constitute the nature of social reality and the frames through which meaning is made” or “an established order comprising rule-bound and standardized behaviour” (Scott, 2001, p. 15). *Institutionalism* is the process, as well as the outcome of the process, in which social activities become regularised and routinised as stable, social-structural features (Jary and Jary, 1991). Selznick (1957) coined the expression *institutionalization*, which refers to the organizational policies and practices that become “infused with value beyond the technical requirements at hand” (Jaffee, 2001). We will start out from the assumption that defence markets demonstrate institutionalised behaviour, based on the previous discussion of the nature of the defence market.

A strong institutional system will by definition have built-in mechanisms that allow incremental change, although these frameworks invariably favour some interests over others and exclude some parties entirely. There will in other words be resistance to more dramatic change. The companies will also react to institutional changes in ways that change the conditions of the industry and the market. We can speak of industry formation processes (Van de Ven and Garud, 1989; Aldrich, 1999; Scott, 2001).

Institutionalization and the organizational field

Meyer and Rowan (1977) stated that it is not only the organization that undergoes institutionalization; it is also its institutional environment. The stronger the interaction between the different actors and the more stable the interaction patterns, the more institutionalised the environment.

The institutionalized environment can be referred to as an ‘institutional field’ (Meyer & Rowan, 1977; DiMaggio, 1988). The term ‘organizational field’ (Scott, 2001) has become the accepted term for the constellation of actors that comprise the central organizing unit. A company’s closest and most formative environment can be described as an organizational field. The organizations involved, as a whole, constitute a recognised area of institutional life: key suppliers, resource and product consumers, regulatory agencies and organi-

zations that produce similar output. Within the organizational field, there will be institutionalised behaviour and some degree of isomorphism (DiMaggio & Powell, 1991, Fligstein, 1991). Meyer (2007) describes an organizational field as a field of actors that is characterised by a single predominant institutional logic or order, or by multiple, potentially competing ones. 'Organizational' field is thus more specific towards a specific field, compared to 'institutional' field (Wooten & Hoffman, 2008).

A company may be dependent on other actors in the organizational field. Lawrence & Lorsch (1967) described how companies or organizations may be resource-dependent. Thompson (1967) underlined that organizational behaviour is contingent upon the boundaries of the organization. This led to an analysis based upon 'interorganizational dependence', thus implying that a focal organization is not independent in relation to its environment (Mindlin & Aldrich, 1975). E.g. Aldrich and Pfeffer (1976) and Aldrich (1979) stress how environments' demands will favour certain types of organizations, and create adequate decision-making processes with the affected organizations. The theories of resource dependence (Pfeffer & Salancik, 1978), interorganizational dependence and environments' impact on organizational behaviour focus on the actions within one focal organization. This thesis focuses on the aggregate interaction between a distinguishable group of companies within a specific market: the defence market. Instead of hinting at the organization being dependent, we can look upon a market as being a social construction of many market participants' aggregate interaction, thereby searching for a higher order of explanation on the market level, rather than based on the individual organization's interdependence with its environment. We will thus search for a pattern that not can be identified from the actions of one single company.

In the defence market, the companies are dependent on financial resources from the buyers. There would not be much development or production of new products without government R&D financing or definite orders. One important aspect is that the first customer continuously finances defence companies' development and production up-front.

Institutions and change

The repeated socially constructed actions of an institution may stabilise and prolong power asymmetries. Incorporating power is critical to understanding how institutions operate in society and their relationships to organizations (Lawrence, 2008). If we consider the general development of the transnationalisation and globalisation of the defence industry, this organizational field strongly resists globalisation forces that otherwise have become almost regarded as laws of nature for economic development. Such blending of strong institutions into transnational, globally transformed structures (Djelic & Quack, 2008) meets in the defence industry perhaps the most sceptical and resistant of all organizational fields. Djelic & Quack define transnational institution-building as a process of institutional recombination that involves elements of different national and local institutional arrangements.

Institutions are thus generally seen as a source of stability and order. Institutions are, however, not fixed over time. They will eventually change due to changes in the conditions of the actors, populations, organizations, resources, technologies, politics or other factors that may deeply affect the institutional context (Scott, 2001, pp. 181-204). According to Scott, institutionalists have tended to focus on institutions as a factor of stability rather than on when and how institutions change. Such change may result in deinstitutional-

ization or restructuring (Oliver, 1991; Scott, 2001). Institutionalised systems rise and fall. Even highly stable and socially embedded fields supported by powerful constituents can be dethroned and dismantled. Eventually there will be some change in the internal or external conditions that will create some kind of deinstitutionalization. However, the institution is by nature and by definition an inter-organizational system which resists change. Hence, there will be resistance to change from within the institution. The problem specified in the thesis evolves within a strongly institutionalised context. This means that deeply rooted practices are challenged.

In highly institutional systems, endogenous change seems almost to contradict the meaning of an institution. If a clear mismatch arises between the corporate and the political levels, for example, they may grow apart and tension will become increasingly marked (Scott, 2001; Jaffee, 2001). The resistance to change can be described as institutionalised inertia (Weber, 1924; Mills, 1959; Granovetter, 1985; North, 1999, Lawrence, 2008).

Galbraith identified the self-regulating power of oligopolies: 'countervailing power'. Industrial concentration often creates strong buyers, which weakens the core essence of rational capitalism. Competition is not as strong a self-generating force. It will be difficult for newcomers to enter the market. Power is organized in response to a given position of power. Countervailing power is also a self-regulating force, and a curb on economic power. It is especially obvious in oligopolies (Galbraith, 1952). Djelic & Sahlin-Andersson (2006) stress that 'fields of transnational governance' are crossed and structured by powerful institutional forces. Institutions in themselves push and pull activities in certain directions; the forces are self-reinforcing, and they constitute 'the rules of the game'.

Change within institutions normally occurs on several levels. Therefore, an analysis of the organizational field should include analysis of more than one level. It will be crucial to identify the factors within the different levels which are the most important and which offer a bridge between the two levels. *"Although no single study can hope to definitively analyze all the causal connections across levels for a complex institutional arrangement, the most informative studies are those that identify and trace the effects of salient and influential processes across two or more levels"* (Scott, 2001, p. 196). In this thesis, the defence market is described as an organizational field, the national meso-level of the market is analyzed more deeply, and the actions of the focal companies in the industry are described.

We thus set out by regarding the defence market as acting within a highly institutionalised organizational field. The rationality that will drive corporate actions in the defence industry may therefore differ from general norms for corporate decision-making. How is corporate rationality to be defined? On the one hand, we have clear-cut rational objectives for promoting a company's well-being. At the same time, the limitations placed on the company by the institution's norms as well as cultural-cognitive and regulative forces will make certain corporate behaviour rational within that organizational field – a rational and functional compromise between demands from the corporate as well as the organizational field.

Institutional logics

Institutional change will occur when a stable composition of priorities, power structures and procedures is being challenged. Within the field of institutional theory, the aspect of 'institutional logics' has received increasing interest. Friedland & Alford (1991) suggested an explanation for institutional change. They proposed that modern capitalist societies

have central institutions that have ‘potentially incompatible’ institutional logics. This incompatibility of logics is what provides the dynamic for institutional change. (Friedland & Alford, 1991; Thornton & Ocasio, 2008)

Friedland & Alford (1991) saw the capitalist market, the bureaucratic state, families, democracy and religion as the core institutions of society – each of them having a central logic that constrain both the means and ends of individual behaviour and being constitutive of individuals, organization and society. However, while institutions constrain action they also provide sources of agency and change (Ibid; Thornton & Ocasio, 2008). Thornton & Ocasio (1999, 2004) defined institutional logics as ‘the socially constructed, historical patterns of material practices, assumptions, values, beliefs and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality’. Thornton & Ocasio (2008) see institutional logics as ‘the way a particular social world works’. A fundamental conflict of logics in a political market, and of the Case Study model in this thesis, is self-evidently the conflict between the logic of the corporate field and the logic of the government field. As we will see, however, especially the government logic encompasses many different, overlapping and contradictory logics.

Fligstein (1993) identified three competing conceptions of control that guide the governance of large industrial firms: the manufacturing, marketing and finance conceptions. Thornton & Ocasio (1999) identified a shift between competing institutional logics in the academic publishing industry: from an editorial to a marketing logic. Reay & Hinings (2005) described how two competing institutional logics (managerial and professional) co-existed in Canadian health care organizations. Lounsbury (2007) described competing trustee and professional logics in the mutual fund industry. We will search for competing institutional logics also in the defence industry, within the problem area of this thesis.

A core assumption of institutional logics is that the interests, identities, values and assumptions of individuals and organizations are embedded in prevailing institutional logics. Decisions and outcomes become the result of an interplay between individual agency and institutional structure (Jackall, 1988; Friedland & Alford, 1991; Thornton & Ocasio, 1999, 2008). This assumption is known as ‘embedded agency’ that stresses individual interests. Embeddedness of agency presupposes the partial autonomy of individuals, organizations and the institutions in society in an explanation of social structure or action. Society consists of three levels: individuals, organizations and institutions in contradiction and interdependency. These three levels are ‘embedded’ when organizations and institutions perform action through its individuals. (Friedland & Alford, 1991)

An institutional logic cannot be observed or identified in its initial stages – it can only be identified when it has grown to challenge or put into question the dominating institutional logic. An institutional logic may also exist for a long time in a subordinate position, but rise in influence due to e.g. radical macro-level, exogenous changes. Thereby, each identifiable institutional logic has a ‘historical contingency’; it has a history which can bring understanding and explanation to its present logic. For example, the financial logic and the efficiency logic have in the last decades radically grown in importance for the conditions of organizational decision-making (Friedland & Alford, 1991; Thornton & Ocasio, 1999). In the development of the defence market, there are certain contextually dramatic happenings; ‘critical events’ (Pride, 1995; Nigam & Ocasio, 2010), that since the 1930s radically have redirected the institutional logics of defence production: the radical increase

of scientific importance for defence production during WWII, the rise of the Cold War, the end of the Cold War, and the events of 9/11. Strongly institutionalized fields can be seen as consisting of historic sediments of previously dominant values and logics, therefore a historically centred analysis may reveal important explanations to present conditions (Barley & Tolbert, 1997).

Organizations tend to act in accordance with what the dominant institutional logic expects in order to render the organization legitimacy (Oliver, 1991; Fridland & Alford, 1991), what Oliver (1991) calls 'strategic responses'. Organizations will exist, be created and respond to a 'rationalized environment'; the wider instrumental beliefs and practices. Organizations are not responses that evolve as detached rational calculations. They reflect the institutional logics of the rationalized environment. The discourses reflect, construct and reconstruct the 'knowledge regimes' of the contemporary social world (Hasselbladh & Kallinikos, 2000). The logic that dominates is usually because of the powers that reside with its proponents. When there are several simultaneously contending logics, the field itself will be influenced, but with one dominant logic over a long time the field will become very stable (Reay & Hinings, 2005; Lounsbury, 2007; Eriksson-Zetterquist, 2009).

The belief systems and 'ways to see the world' may also be carried by specialized professions. As the status of a specific profession increases or decreases (or a new profession emerges) in an institutionalized environment, their underlying belief systems will come under scrutiny. The professionals will act as 'institutional agents'. (Scott, 2008)

In sum, the institutional logics approach views any context as potentially influenced by contending logics of different societal sectors (Thornton & Ocasio, 2008). In the defence market we can e.g. see conflict between autonomy or shared production, transatlanticism or Europeanization, government or corporate interests, and market harmonization or strictly domestic benefits.

Legitimacy

Actors within a political market will have to compete for resources. Political actors, government authorities or public servants must be convinced to whom the resources will go. According to Greenwood et al. (2008), a central question in institutional theory is '*How do organizations acquire, manage and use legitimacy?*' Legitimacy concerns the cultural support for an organization, a notion that traces its origins back to Weber (1924). A completely legitimate organization would be one about which no question could be raised. Legitimacy can be discussed in terms of the presence or the absence of questioning regarding its existence and actions. When an organization's institutionalized environment starts to question the organization, or seeks new alternatives, the organization's legitimacy is decreasing (Pfeffer & Salancik, 1978; Meyer & Scott, 1983; Deephouse and Suchman, 2008). In this thesis, the issue of legitimacy becomes crucial for a defence company that has a favoured supplier position. The institutional logic at hand may exert more or less explicit preferences for e.g. domestic suppliers, or disfavour certain types of corporate integration.

3.5 Discourse and action

In the organizational field we can distinguish between what is being said, *discourse*, and what is being done, *action*. There is an ongoing discourse about how the transatlantic defence industry integration should develop, a discourse that engages many different actors

in the organizational field. The action in terms of integration is performed by the corporations within the field. How the action can be executed is profoundly monitored and steered by actors in the government field. The action requires continuous approval from the government field.

'Discourse' can be defined and understood in several alternative ways. Grant et al. (2004) discuss a number of different approaches, e.g. sociological, socio-psychological, anthropological, linguistic, philosophical, communications and literary-based, social-constructivist studies of discourse (Grant et al., 2004, p. 1-2). This thesis does not probe *that* deeply into discourse. This thesis does not evaluate individual organizations discourse over time, nor does it identify individuals' communicative acts. The discourse is understood as an ongoing conversation about the transatlantic development of the defence market, centred on the level of the organizational field.

The communicative acts that constitute the discourse may be seen as 'texts'. Some approaches to analysis of discourse advocate that written communication, oral communication, artefacts symbols etc. *all* should be seen as texts. Texts in this sense do not have to be written; they may be spoken words, symbols, artefacts etc. Texts refer to various forms of meaningful interaction. Together, these texts may through their interrelationship constitute a discourse. Discourse refers to "an interrelated set of texts and the associated practices of production, dissemination and reception". The discourse acts in the social production and reproduction of institutions. Scholars may also see communication and action as being inseparable; that they together form what organizations and companies do (Czarniawska-Joerges, 1997; Alvesson & Kärreman, 2000; Phillips & Hardy, 2002; Phillips & Malhotra, 2008). In this thesis there is a deliberate emphasis on a dichotomy between a published, written discourse compared to a discourse as identified through interviews. There is also a dichotomy between the discourse (what is being said) and action (what is being done, in this case what ownership and operational integration that occurs between defence companies). These two dichotomies form a fundamental part of the methodology and the analysis in the thesis. We will now turn to a more developed definition of discourse and action in this thesis.

3.5.1 Discourse

Early works of institutional theory focused on the institutions' socially constructed nature, stressing that cognition is shaped by a meaningful interaction between actors. Simply stating that actors take part in social processes, obligations and actions that take on a rule-like status, an isomorphic behaviour, is not enough (Meyer and Rowan, 1977). We cannot settle for an observation that their behaviour shows a distinct pattern if we wish to understand why it does so. In order to understand how the behaviour is rational, an explanation can be sought in the forces that have shaped and still shape the institution. Simply calling something an institution because it results in conformity is not a sufficient explanation for why it actually does so, and even less sufficiently shows what it actually is (Phillips & Malhotra, 2008). If we have observed that actors appear to say one thing and their actions are markedly different, we may analyze what they say in the discourse and why.

A *discourse* is a type of conversation, a public conversation which can be seen as the sum of all specific conversations about a certain phenomenon. In the institutionalized environment of an organization or of a clearly distinct market, there is an established form of re-

ferring to a certain phenomenon. It may concern e.g. deregulation, harmonization or globalization. The discourse refers not only to spoken conversation, but also to texts of different kinds. The texts, publications, analyses, communiqués and so forth constitute, together with the communication between individuals, a product of the environment which becomes established in a wider context. A discourse is aimed towards a specific phenomenon that has attracted the interest of many actors involved in it. The discourse must have mutual points of reference in order to become more widespread, e.g. about an industrial change process that concerns many companies, industries, nations, NGOs, or continents. Within the wider discourse there may be local discourses that have slightly different points of reference or preferences (Foucault, 1971/1993; McCloskey, 1986; Furusten, 2007). The discourse in this thesis concerns a suggested change of the market's conditions – a change that will concern many of the actors in the organizational field.

So how does a discourse become established? It is seldom meaningful to seek a specific starting point, but we can discern certain events or occurrences that can be said to have contributed to its creation (Furusten, 2007). In the case of transatlantic defence industry integration, we can refer to the creation of NATO, the end of the Cold War, the development of NATO processes, the Europeanization process of defence issues within the EU, and the approach by different U.S. presidents towards Europe, as fundamentally affecting this discourse.

The conversation about a certain idea may be performed in several situations or places, or within specific professional groups. As the discourse develops, structures will develop in different social contexts concerning what aspects are seen as relevant. The structures become established through social interaction – a form of organization of structures. The organization of structures is spontaneous; there are no actors with a task to organize the discourse. Actors will certainly aim to influence and shape the discourse towards certain preferred outcomes and certain specific aspects of the idea (Furusten, 2007).

The discourse will show patterns of different aspects and priorities becoming more articulated, becoming replaced by others or showing peaks and troughs of interest. Such patterns of focused ideas can be called 'fashions'. As fashions become generally accepted points of reference and survive the fashion stage, they may become materialized into more structured forms – standards. This demands a systematic and more formal organization between groups of actors. These actors have become authorized to organize (Czarniawska & Jorges, 1996; Furusten, 2007).

Coupled to the focal phenomenon of the discourse, the actors concerned may separately create sets of rules, standards and regulations related to the idea, without engaging in a shared regulatory set-up. Nations may create national technology standards, trade barriers and tariffs or regulations for how e.g. companies are allowed to interact with companies from another nation or geographic region. Such local practices show that the implications of the discourse create different national or regional interpretations, or that the discourse has not yet produced mutually agreed standards of interaction.

A discourse may decrease in intensity as the question that triggered the discourse finds a solution, or if actors come to an agreement which makes it of less interest. A wider, global development can also alter basic conditions so that the discourse becomes irrelevant. If the discourse does not reach a solution, it may cease if the idea is no longer seen as prioritized or meaningful to the actors concerned. The dominant institutional logic may be chal-

lenged by a different institutional logic that increases in importance. If the discourse is still kept alive through communicative acts and interaction despite the focal problem not reaching a solution, it may be difficult to understand why there is no solution or why the actors cannot reach an agreement. It can also be difficult to understand why the actors keep engaging in the discourse.

In this thesis we search for an understanding and explanation through analyzing the institutional components that can be said to constitute distinct parts of the wider environment that the discourse involves. This means that we will analyze how sub-components of the environment related to transatlantic defence industry integration engage in the discourse, based on their interpretations of the suggested industrial change process. In other words, there are non-corporate actors that actively engage in the discourse concerning transatlantic defence industry integration. The question thereby becomes how and to what extent they affect the transatlantic defence industry integration.

This thesis' discussion about discourse focuses on a discourse about integration within the defence industry where states and companies are active in the discourse. This discourse has endured for many decades, with varying levels of intensity and slight shifts of focus. The discourse states that the integration and cooperation among firms in the market should develop in a certain way, but there appears to be a quite different pattern of industrial integration.

This discourse can be identified in published material about the transatlantic defence industry integration. The discourse can also be analyzed more individually as experts and decision-makers in the organizational field express their personal accounts regarding why there should or should not be integration. These two kinds of accounts may present different versions. We will analyze them and how they contribute to reaching the thesis' purpose. The accounts of the discourse must be related to the organizational field of the defence market.

Discourse is rational in its context

In the discourse concerning a specific strategic problem, e.g. transatlantic integration, certain norms for corporate behaviour prevail. These norms suggest certain – usually rational – decision-making. Brunsson (1996, 2002) discusses the situation where discourse promoting a certain development, e.g. increased industry integration, often differs from the actual action. This thesis seeks an explanation for the discrepancy between a discourse stating that integration should take place, and the integration that has occurred – the action. This explanation regarding the discourse will be based on the identification of corporate and government driving forces and inhibitors in the context of transatlantic defence industry integration. The discourse is expected to reflect the dominant institutional logic(s), and companies will act in order to receive legitimacy and resources in way that is rational seen through the institutional logic.

The outspoken discourse *for* integration may, in its view of the world, differ considerably from the view inherent in actual incentives emanating from vested interests that *oppose or retard* integration. It is therefore not expected that we will in the discourse find clear-cut, linked pairs of contradictory statements for or against a distinct choice.

Talk

‘Talk’ is an ideological output of organizations. Talk, in the broader sense of the spoken or written word, is produced not only for internal purposes but also and more importantly for the environment. Talk expresses expectations and suggests inclinations (Brunsson, 1989). However, Brunsson’s ‘talk’ denotes what one single person or organization says or articulates. Discourse is the aggregate discussion in the organizational field, the sum of many actors’ talk. Each actor interprets the specific problem (e.g. transatlantic defence industry integration) differently, but we may discern an aggregate pattern of rationality in the discourse.

Talk may have an important signalling effect: that the intended action conforms to the prevailing norms of the resource-controlling and decision-affecting environment (i.e. the dominant institutional logic). An organization shows with its talk, its decisions and its action that it has the structures, processes and results which satisfy the environment. An organization may perform its talk in several arenas in order to convince the necessary vested interests, project its decision in a smaller arena, and perform its action in a somewhat different environment. The organization will need to go through several phases in order to reach the action (Pfeffer, 1981; Rombach, 1986).

Talk may be described as ‘cheap talk’, meaning that it expresses a will but that it does not necessarily bind the sender to actually do what is suggested. The expressed intent may not even be true. Cheap talk will matter in a bargaining or negotiation process as the sender takes a position vis-à-vis competitors, vested interests in the environment, and an actor which has the power to transfer resources to other parties – e.g. money for an order or R&D funds. The sender thus has intentionality with the cheap talk. Cheap talk does not produce efficiency or offer clear-cut, true information, but it has a coordinating effect between the actors (Farrell, 1987; Farrell & Rabin, 1996). Companies may express far-reaching adherence to politically shaped goals, for example the positive impact of transatlantic defence industry integration, in order to please vested interests, but may at the end of the day be quite sceptical about the idea.

3.5.2 Action

Action is defined as an act that has occurred (Rombach, 1986; Brunsson, 2002). Symbolic gestures, ceremonies or promises to do something do not constitute an act. Decisions are an output different from discourse. Action is a third and distinctly different output. For the individual actor, we can distinguish between talk, decision and action.

When organizations and companies negotiate for a shared activity, e.g. a multilateral defence technology development, there will be domestic commitments towards certain preferred companies, solutions, technologies or processes. If these commitments are seen as strong and shared between actors in one nation, there will be considerable coordination problems vis-à-vis other nations. If such commitments cannot be sufficiently negotiated towards a shared goal, there will not be a shared process. The only action that takes place will be the negotiation.

If action is seen as only possibly being within a very narrow spectrum (e.g. performed at a certain location or facility, with a certain technology, and with certain actors or persons involved), there may be a process of creating a discourse that fits with the preferred action. For a company or organization acting in an environment or market where there is very lit-

the ambiguity and a more objective cause-effect relationship, the discourse and decisions and action will show considerable congruence. For an organization whose access to resources is deeply affected by political considerations in the environment, the discourse and decisions and action become less congruent. Thus, the latter organization can be described as experiencing an 'organization of hypocrisy' (Brunsson, 2002).

This thesis does not analyze the internal structuring of companies involved in transatlantic defence industry integration. The analysis focuses on how corporate action regarding integration with other companies is shaped by interaction with the organizational field and its nature of a political industrial market. Lawrence & Lorsch (1967) discuss how an organization's internal structure is shaped by the nature of the environment and the contingencies it brings. In a defence company, we may expect that the company's interface with the discourse of the organizational field will be quite different from the part of the company that is to develop and deliver a defence system – thereby relating to Burns and Stalker's (1961) concept of an organic and a mechanistic organization, or in Scott and Meyer's (1983) terms an institutional and a technical environment. Scott and Meyer thereby point out the repetitive character of the organization's interaction with the environment, making the actions institutionalised. In this thesis, the focus is not on the 'older' institutionalists' view of the environment's effect on an organization's local and more direct interaction with its environment. This thesis rather focuses on the neo-institutional interest of institutionalization above an organization, within the organizational field: an inter-organizational perspective (Johansson, 2002).

In order to survive, organizations require resources. Typically, requiring resources means that the organization needs to interact with others who control these resources. A company will need to convince different stakeholders and vested interests that it ought to receive these resources (Pfeffer & Salancik, 1978). The organization will thereby be involved in a discourse, which constitutes a negotiation with the environment in order to receive its resources. The negotiation will concern in what way, to what extent and under what circumstances the organization should receive these resources (Rombach, 1986; Brunsson, 1989; Jacobsson, 1994). As an organization is increasingly accepted by the resource providers, it will become embedded in the environment, and the environment will more readily provide it with resources, with less argumentation needed (Granovetter, 1985). In order to receive legitimacy and thereby resources, organizations may adopt what they perceive as the adequate, preferred behaviour. The organizations may become increasingly similar within the organizational field – a process of 'institutional isomorphism' (DiMaggio & Powell, 1983). Such similar behaviour will in this case create a discourse of similar arguments coming from many actors.

The concept of isomorphism has been criticised for not sufficiently identifying the acts of self-interest, agency, power and hidden agendas, thereby suggesting that organizations' acts within an organizational field are overly rational and predictable. We should understand corporate rationality more subtly if we expect to identify a corporate rationale driven clearly by self-interest. Corporate actions in their institutional context may be seen as 'strategic responses', thus making them rational in that context (Oliver, 1991; Eriksson-Zetterquist, 2009). Institutional analysis risks being marginalised if it does not incorporate the reality of purposive, interest-driven and conflictual behaviour (DiMaggio, 1988; Greenwood et al., 2008).

If the element of discourse (and of negotiation) becomes routinised, rule-bound and stable, and if it generally includes the same actors, there will be norms developing that make the discourse predictable to some extent; the arena for discourse and negotiation will increasingly evolve into an organizational field (Selznick, 1948; Scott and Meyer, 1983; Jary and Jary, 1991; Scott, 1995), and the discourse may emerge as we are able to define the focal problem and the scope of the organizational field.

If there is a recognised community of companies that regularly react to and send responses to an environment which functions differently but has a profound influence over the companies' actions, then we may see the interaction as non-institutional forces driving institutional change. There is an embedded agency of the companies which needs to be unravelled in order to profoundly understand the companies' actions regarding e.g. integration (Thornton & Ocasio, 2008).

A decision to integrate is not based strictly on straightforward, rational considerations concerning efficiency. In developed industries there are conditions for the industry, vested interests and 'corporate politics' which will create specific conditions for corporate decision-making. The integration outcome is thus a phenomenon resulting from several parallel processes (Jacobsson, 1994). If a certain change in industrial conditions or market behaviour is suggested, there must be certain reformers that put forward arguments for such a change. For the change to take place, the parties that will be affected by the reform must see benefits from the reform. If their interests are threatened, they will be less prone to support such a reform. In a highly institutionalised setting, the reform may challenge interests that are strongly manifested in the present power structures (Thornton & Ocasio, 1999; Reay & Hinings, 2005; Brunsson, 2006, Lounsbury, 2007). The MIC is often used as an example of an institutionalised setting that resists reforms.

Outcome of an industrial process

Brunsson (1996) discusses decision-makers demonstrating a *practice*: what actions they actually perform and what decisions they actually take. This practice will in most cases differ from the discourse. Therefore, we may observe a discrepancy between discourse and practice. Different actors can be assumed to understand and use general concepts, e.g. integration and cooperation, in different ways. We must also assume that the definitions and the use of these concepts in the thesis may not be the same as in the discourse. In this model, we will have an unclear causality between discourse and action and the nature of this causality will be an important part of the analysis in the thesis.

We may thus discuss an organization's behaviour as consisting of several phases. As an example, we will now concentrate on one single company, in order to distinguish it from other actors in an organizational field. Ideally, the company makes a *decision* and then acts or executes in accordance with the decision – it will do what was defined in the decision. However, the company is dependent upon receiving resources and legitimacy from its environment, and it will have to interact with its environment when performing the action. It will have to *talk* before reaching a decision, and interact with its environment in order to be able to do this. Since the conditions for the action must be approved, and there may be competitors for being awarded the resources, there will be an element of negotiation in order to be approved and to win the resources. In a simplified, general manner, we may thus picture the sequence of talk and action in the following way for the *individual actor*:



Figure 3.1. *Talk – Decision – Action for the individual actor* (inspired by Brunsson, 1996)

These different phases are not clearly defined, however, and cannot be objectively captured and separated. There will be a period of generation of ideas or options. Now, when many actors address a common problem, we see the sum of many actors’ talk as becoming a discourse. One company may initiate the discourse, or participate in its early stages. As discourse becomes established and different actors bring in their interests, there will be a stage of negotiation. When a decision has been taken, there may be continued negotiation on how to actually implement and execute the intended action, and new facts may enter into the process. Change of political power may fundamentally alter the conditions. The decision may express a will to do something, as when there is a decision to build a bridge or a tunnel which may be followed by a second phase of choosing suppliers or lead contractors. Discourse may thus appear to end at certain points in time, but it will mark the beginning of a new period of talk, based on the implications of the previous decision. Decisions may also be revised or annulled, and new decisions might have to be taken, replacing the previous decision. Action takes place in the here and now, while discourse and decision are often associated with the future (Jacobsson, 1994; Brunsson, 2002). Typically, the action will involve a much more limited scope than what the talk covered.

Thus, talk emanates from one actor, and discourse is a sum of many actors’ aggregated talk over time. A discourse must have some enduring life concerning a problem that has not reached a solution. We will focus on discourse as we in Part III present the empirical data on driving forces and inhibitors.

In a large company acting in a political market, there is one face of the company that will participate in the preliminary phases of discourse and negotiation: a political, discourse-oriented organization that has to convince different vested interests. The company will be awarded resources in order to fulfil its assigned delivery. When the company is awarded a contract, a different and slightly overlapping part of the company will execute the order – an action-organization. We may speak of an ‘organizational hypocrisy’: to talk in order to satisfy one demand, to decide in a way that satisfies a second, and to supply a product in a way that satisfies a third (Brunsson, 2002).

As we study the aggregate action among companies, we do not study individual decisions. We focus on the processes in the organizational field. Our focal analytical concepts are discourse and action. In the organizational field, our perspective thereby becomes

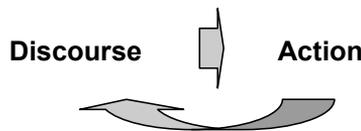


Figure 3.2. *Discourse – Action in the organizational field* (own illustration)

since the nature of the action influences the discourse as the discourse goes on for decades, with (what appears to be) little action occurring.

In Chapter 8 we will depict the discourse in terms of driving forces and inhibitors. These driving forces and inhibitors will be separated between corporate and government. The goal is that this separation will clarify how the government field and the corporate field confront transatlantic defence industry integration with partly similar and partly dissimilar arguments for reaching the same result. It is to some extent self-evident that the arguments will be different, but we will aim to identify them as clearly as possible in order to identify the differences. Thereby we should be able to understand more deeply how the transatlantic defence industry integration is affected by the organizational field. Different institutional logics are expected to emerge through this empirical account.

We may thus understand an organization to be rational in different ways in different situations or stages in a process of reaching its goals (e.g. a company winning a particular order). Seen over the different phases, the aggregate actions can be seen as rational – although the rationalities change over different phases. There will be a general and rational set of arguments which conforms with the prevailing norms of how a company should act and how the environment and the society expect it to act. The rationality in each phase becomes suitable to the intentionality (what it wants to achieve) of the company in that phase (Brunsson, 2006). The company may have to address partly different institutional logics over the sequence of phases in order to achieve the legitimacy it needs.

Depeyre, 2009 analyzed the U.S. defence industry and shares some of the theoretical and empirical focus of this thesis. Depeyre's analysis is based upon the theory of the capabilities of the firm (Richardson, 1972; Wernerfelt, 1984; Kogut & Zander, 1992): how firms organize and combine their internal resources into a unique competitive combination. As a part of her analysis, she examines (with a focus on the top five U.S. defence firms) the 'discrepancy' (*décalages*) between the firm's discourse and actions'. In her perspective, discourse denotes the official, external communication from the company about its strategy, which sends a message to its environment what the company will do. 'Actions' denotes the company's internal actions in combining its internal resources. The actions in her view becomes the non-observable (the internal strategy), and the discourse (the official, externally transmitted strategy) the observable. Depeyre sees the corporate strategy (discourse) as an observable and clear empirical phenomenon (Depeyre). This thesis differs from Depeyre's in that it focuses on the organizational field's influence upon the firm's action, while the firm's external communication that becomes a part of the discourse is not a message that conforms to the action (in my definition). My thesis further analyzes the firms, seen as an aggregate, and how they address and engage in a specific industrial change. Their contribution to this discourse is rather a series of arguments or comments in order to influence a collective and quite nebulous process. Depeyre's thesis thus (regarding discourse and actions) analyzes a discrepancy between externally communicated, more deliberate messages about what the company will do and its actions within the organization concerning combinations of internal capabilities – whereas my thesis analyzes the discrepancy between external, less exact messages that contribute to a discourse in the organizational field and an aggregate industrial change process in a politically defined market in which the individual company is only one of many actors. We will return to Depeyre's analysis in Part IV to see what further comparisons can be made.

The defence companies do not follow a 'generic' rationality, apart from basic premises of striving for competitiveness, efficiency and profitability. Their rationality, as manifested in discourse and action, is highly dependent upon, shaped by and formulated in order to suit their environment – their organizational field.

3.5.3 Negotiation

As will be seen, transatlantic defence industry integration requires that many actors in the corporate field and the government field must be convinced in order for action to occur. Before two or more actors can reach an agreement to cooperate or to integrate – if they are not forced to engage in it – there must be a phase of negotiation. Negotiation can be described as 'a method of social decision-making ... it consists of choices against another person or party'; 'Most negotiation situations contain elements of both bargaining and debate'; 'Negotiations consist of making concessions to achieve an agreement'; 'Negotiators act to increase common interests and expand cooperation as well as acting to maximize their own interests'. (Definitions compiled by Druckman, 1977, p. 41.) The negotiating behaviour is conditioned by the context for negotiation and the power balance between the negotiators (Druckman). In simple terms, negotiation is a process of combining conflicting positions into a common position, under a decision rule of unanimity – a phenomenon in which the outcome is determined by the process (Kissinger, 1969). The negotiation process is thus not just a sequence of actions; it defines the outcome (Zartman, 1993).

The type of negotiation referred to here is thus the more complex negotiation where companies over time strive to attain resources from their environment, and not a more straightforward face-to-face negotiation when business representatives sit down at a table and negotiate a business deal.

Companies, when they strive to reach a business agreement with a government or municipal counterpart, negotiate in order to reach a deal that fits with their corporate goals. The public counterpart is guided by (apart from its economic constraints) the will of the politicians to maintain, regulate and steer markets and market behaviour. This creates a 'negotiation economy' which requires other skills than on the market or in the bureaucracy. Companies therefore create an organization to handle the interface between markets and bureaucracy, an organization that is specialized in negotiation (Hernes, 1978; Jacobsson, 1994). It is essential for companies to create stable relations with the buyers and the regulators on the political-industrial market (Hägg and Johansson, 1982). Companies must also, in order to reach legitimacy, comply with different political demands such as gender equality and environmental concerns, as well as the consumers' expectations and demands on corporate governance (Sjöström, 2009). Companies must thus address several institutional logics in order to receive legitimacy from different actors or vested interests.

We will come back to the impact of negotiation on the transatlantic defence integration; it will be most apparent in Chapter 9 Cases. Negotiation will in this context primarily refer to the process where companies, military representatives, defence bureaucracies, researchers and other related actors in several states negotiate in order to reach an agreement to cooperate or to integrate – typically a bi- or multilateral development of a defence product or system. We will not, however delve into the actual negotiation situation; we will ra-

ther reflect upon the importance, the relative weight, of negotiation in creating cooperation or integration.

3.6 Integration

Companies strive to take advantage of local benefits in the globalised economy and to find competitive advantages through alliances, joint ventures, mergers and acquisitions or other integrative solutions in order to advance their position. We will focus on how companies in this particular market engage in transatlantic defence industry integration.

Mattsson (1969) and Hertz (1992, 2001) see three separate forms of integration: institutional, decision and execution integration. Note that this use of ‘institutional integration’ denotes a fusion of entities, and it is dissimilar to the use of ‘institution’ as used in neo-institutional organization theory. We will refer to the fusion of corporate entities (‘institutional integration’) as ownership integration.

Furthermore, integration cannot be treated as a discrete variable for which only a few outcomes are possible. Corporate entities can be integrated under different umbrellas (e.g. alliance, joint venture, merger), and within these categories we can see increasing integration and co-ordination over a continuum of increasing commitment (Mattson, 1969; Nyberg, 1998). However, the etiquettes for different forms of integration do not have to correspond to exact types of behaviour; companies may engage in integration with a partner as they please, under legal restrictions.

Integration will now be discussed, defined and related to some other connected concepts that integration is often confused with: consolidation, cooperation and restructuring. As we will see, the reverse, active decision *not* to integrate or the decision not to allow integration (as in the case where governments may veto proposed corporate integration) can be a deliberate choice that will impact on industrial conditions.

3.6.1 Integration and its cousins

Integration and related concepts such as cooperation, restructuring and consolidation are used in order to describe industrial change and dynamics. In order to be able to address the purpose of this thesis, the concept of integration will be defined and compared to these related concepts.

Cooperation can be defined as a choice by two or more actors to pursue a similar or common goal (Axelrod, 1984; Child & Faulkner, 1998). Easton and Araujo (1992) define cooperation as occurring when two or more parties have objectives which are mutually dependent, and when the parties may hold different superordinate goals but can best meet them by cooperating in meeting some lower-level goal. ‘Collaboration’ is sometimes used instead of cooperation, and no strict definition of it has been identified. In defence matters, arms development cooperation is often referred to as ‘collaboration’ when it is steered by governments. In this thesis, cooperation is seen as a synonym of collaboration, but we will utilize the concept of cooperation.

Restructuring is defined as the deliberate modification of formal relationships among organizational components (Cooper & Argyris, 1998).

Consolidation is also used in the sense of concentrating resources or one's abilities. It refers to the act of merging many things into one – in an industrial sense, to the mergers and acquisitions of many smaller companies into much larger ones. It can be defined as a concentration of resource control by fewer organizations (Pfeffer & Salancik, 1978, p. 50), or through the fact that, with consolidation, the combined market share of the largest companies will increase (Shepherd, 1985, p. 52).

If we study the following table, we can compare the four concepts. The definitions of integration differ from its related concepts – restructuring and consolidation – in that it is defined as a striving to increase effectiveness. Definitions have not been identified for restructuring and consolidation more exactly than as processes of change or transformation of relationships between components or companies. Restructuring is defined as a “deliberate” choice, but is generally less discussed and problematized than the concept of integration. Cooperation is something different from integration; it is an interaction between autonomous actors, rather than a structural transformation. Consolidation appears not to be used as an academic analytic concept. The definition of restructuring fits within the definitions of integration. Integration is the most widely used of the three concepts. Thus, firstly, integration is seen as a more distinct concept than restructuring and consolidation, and therefore most appropriate for the analysis. Secondly, cooperation falls within the definition of integration, but cooperation is, when needed, analytically separated from integration since they are describing partly different phenomena. The difference becomes crucial for governments that regulate defence-industrial integration.

A common denominator for all four concepts is some kind of rational incentive for efficiency, achieved advantage, or improved competitiveness, in a process where two or more actors' relationships in some way become more organized, closer or intimate.

The conclusion of the table below is that, of these four concepts, integration and cooperation are the most analytically exact. The concepts of restructuring and consolidation would not be better for reaching the purpose of the thesis; they are covered by the concept of integration. Consolidation will, however, be used for instance when the number of companies within an industry decreases as they merge or become acquired; it refers to a wider industrial trend or change.

To conclude this comparison, integration is the overarching concept. Cooperation is a concept which falls under the umbrella of integration. The concept of 'cooperation' will be used in order to stress certain specific aspects of the transatlantic defence industry integration.

As will be shown, the threshold between cooperation and the actual fusion of corporate entities, and the integration of companies' processes, is an important dividing question. Governments tend to be positive toward cooperation, but sceptical toward cross-border ownership integration and technology transfer.

Definition		Comment
Integration	<p>A common assumption is that the basic reason for actors to integrate is to enhance effectiveness. ... Integration can be defined in a general way as “forming a whole” out of separate components. The whole can consist of several autonomous sub-parts or sub-systems, but these are said to be under the supervision of the larger, integrated whole. <i>Hertz, 1992</i></p> <p>Integration concerns increasing effectiveness through reduced redundancy and duplication in the resources in order to fulfil a certain activity chain, to prevent duplication of activities as well as to achieve mobilisation of resources. If these purposes are fulfilled, the system is said to become more effective. <i>Pfeffer and Salancik, 1978</i></p> <p>The driving force for integration is to improve efficiency, create synergies, and get access to resources or markets – or a combination of these. There is interaction between differentiation – to shape the individual organization for each specific task in order to solve it efficiently – and integration – to tie together the entire organization so that the overarching objectives can be reached. <i>Lawrence and Lorsch, 1967</i></p>	
Cooperation	<p>Two or more actors that choose to pursue a similar or common goal. Why selfish actors that aim to pursue their own self-interest – under no central authority – choose to co-operate. In short, the two key requisites for cooperation to thrive are that the cooperation must be based on reciprocity and that the shadow of the future is important enough to make this reciprocity stable. <i>Axelrod, 1984</i></p> <p>When two or more parties have objectives which are mutually dependent. <i>Easton and Arjjo, 1992</i></p> <p>Cooperation is an interaction between different groups in order to control or exploit resources. It can be either for mutually owned resources (exchange) or for resources owned by neither of them (collaboration). ... Other types of cooperation are cartels and alliances. The goal of such collaboration is often to create a “negotiated environment”. <i>Abrne, 1994</i></p>	<p>An incentive for integration.</p> <p>A type of interaction.</p> <p>Requires negotiation between the actors concerned.</p>
Restructuring	<p>The deliberate modification of formal relationships among organizational components. <i>Cooper & Argyris, 1998</i></p>	<p>Fits within the concept of integration. Implies the actual “puzzling together” and transformation of intra-organizational links.</p>
Consolidation	<p>To join together a group of companies or organizations. <i>Longman Dictionary of Contemporary English</i></p> <p>The process when companies within an industry become fewer or the activities of companies become more interrelated. Market activities are concentrated to fewer actors. To combine into fewer or one actor(s). <i>Pfeffer & Salancik, 1978; Shephard, 1985</i></p>	<p>Fits within the concept of integration. Usually used as a result of many actors’ many acts, an outcome in an industry, rather than as the deliberate, single decisions of individual actors.</p>

Table 3.1. *Integration and related concepts*

Integration modes

The thesis will discuss what in strategy theory are seen as general modes of integration – alliance, joint ventures, mergers and acquisitions (Kogut, 1988; Lorange & Roos, 1991 & 1992; Garrette & Dussauge, 1996; Holmqvist et al., 1998; Cateora & Graham, 2000) – and compare these to integration modes within the defence industry. As we will see, there are forms of integration and cooperation that are more or less unique to the defence industry and do not conform to generally defined modes of integration.

Yoshino & Rangan (1995) created a ‘range of interfirm links’ (see Figure 3.3 below). They distinguish between ‘contractual agreements’ and ‘equity arrangements’. In their view, the concept ‘strategic alliance’ covers the division between these two, so there is no clear-cut boundary. In fact, companies may decide to use the term ‘strategic alliances’ as they please. In this thesis, however, we will separate cooperation and integration, the dividing line being whether equity is integrated or not.

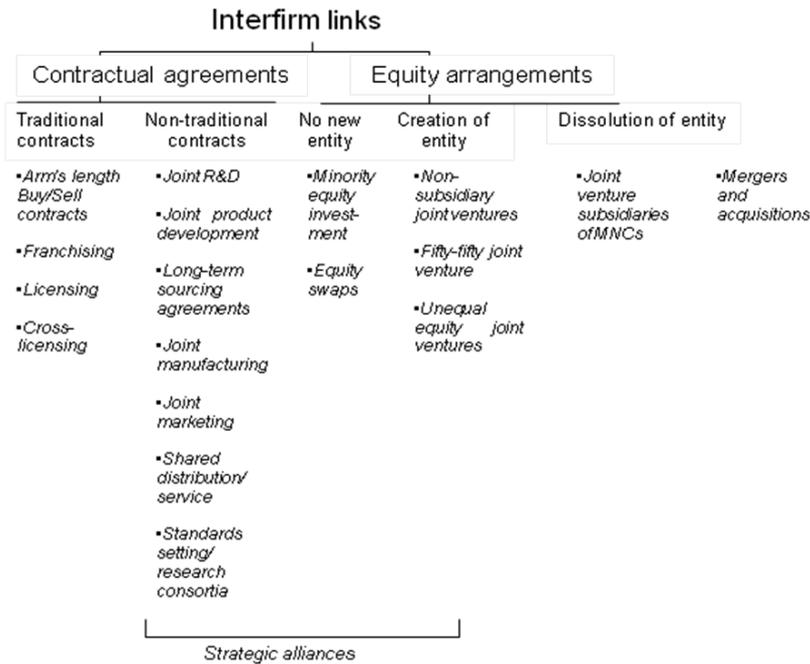


Figure 3.3. *Range of interfirm links* (Yoshino & Rangan, 1995)

In certain business administration theory, what we here label as joint ventures and cooperation may be included in the wider concept of 'strategic alliances'. Dacin et al. (2007) discuss under the umbrella of strategic alliances how companies' success in forming strategic alliances can be analyzed from an institutional perspective. They see that the legiti-

macy in this sense is defined as “a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, practices and definitions”. The companies’ structures and activities must conform to the demands of their economic and social environment (*ibid.*). We can relate this view to the concept of the demands of the organizational field and, in the context of the thesis, the demands of the MIC.

Integration may be measured as to what extent companies integrate their entities. A structural commitment may range from a low commitment in the form of a memorandum of understanding or an alliance, through a continuum of joint ventures and cooperation up to the full structural commitment of mergers and acquisitions (Lorange & Roos, 1991 & 1992; Yoshino & Rangan, 1995; Cateora & Graham, 2000). However, a merger or an acquisition need not signify that the operations of the integrated firms become highly integrated. We cannot settle for the structural integration of companies. We must in a more refined way understand and explain the nature of the industrial change – the action. We must find a measure of what type of change has occurred. This will be presented under 3.6.3 below.

Companies have an interest in promoting their interests through opportunities in the international marketplace and in the international industrial landscape. Dunning (1980) discussed how companies will choose whether to create foreign production or to acquire foreign companies based on ownership-specific advantages. We must not assume or believe that companies will always see deepened industrial, transnational integration as beneficial. They may lose or weaken advantages in the existing organizational field by doing so. They may also see very limited business prospects in a suggested co-operative venture that would primarily be favourable in order to fulfil political goals. Kogut & Singh (1988) found that companies choose between different entry modes in foreign markets based on the national culture. Gulati & Singh (1998) found that the magnitude of hierarchical control in contractual relationships such as alliances is influenced by the anticipated coordination costs and by expected appropriation returns. If the anticipated inertia or reluctance towards certain contractual relationships is substantial, they may settle for less control if the business case is still attractive enough. In the thesis we will discuss, in relation to the MIC concept, how different government regulations and defence traditions have an impact.

It is an established fact that the defence industry has high barriers for foreign acquisitions of defence firms (Markusen & Costigan, 1999; Adams, 2001; Bitzinger, 2009; Bialos et al., 2009). One important inhibitor to defence industry integration between nations is the restriction on defence technology transfer (Keller, 1994; Mörth & Sundelius, 1998; Molas-Gallart & Tang, 2006). However, defence companies do interact and we will endeavour to understand and describe the nature of this integration.

3.6.2 Integration outcome

In relation to the concept of integration, we can analyze within an industry whether the companies through their aggregate behaviour reveal a pattern regarding industrial integration. Such a pattern can be viewed as an outcome of the industrial and political processes within the organizational field. This pattern is thus the aggregate action to be compared with the discourse for such action to occur. It will be of interest to see how action com-

pires to discourse, and also whether the nature of the action has changed over time or has experienced special shocks. We will return to this aspect in Chapter 6 and in Part IV Results.

3.6.3 Ownership integration vs. Operational integration

In order to analyze the transatlantic defence industry integration, we must have a tool for measuring the type and extent of integration that has occurred, i.e. the action. In the following figure, ownership integration and operational integration are combined. These four outcomes will serve as a basis for analysis and discussion regarding the action.

We have discussed several definitions of integration. In this matrix, *ownership* integration denotes to what extent companies fuse two or more corporate entities (entire companies or parts thereof) into a new entity, which could be a merger or an acquisition of one company. Ownership integration can also be partial, when a company acquires a minority or majority share of the other company. Ownership is thus transferred from one party to the other, or from two parties into a new entity at a merger. It could also be that two companies create a mutual joint venture. *Operational* integration denotes how companies fuse their operations, that is, their business activities or processes. This could occur e.g. through integration of supply chains, within cooperative projects, R&D cooperation, technology interaction or different types of synergies.

It is important to note that ownership integration can occur without operational integration, and vice versa. As will be shown, this is an important characteristic of the defence industry.

The most apparent aspects that are addressed in the discourse for transatlantic defence industry integration are: to what extent companies are able to acquire or merge with others across the Atlantic Ocean; how the U.S. and Europe can integrate their markets regarding technology transfer and mutual defence product development; and how companies can get market access to the other side of the ocean. The matrix does not cover all these aspects, but will serve as a tool for analyzing these developments, on the basis of industrial action.

For clarity and simplification, the four different outcomes are depicted as extremes under each combination in Table 3.4. In actual business life, companies can engage in or end up in any kind of combination and design of the two aspects of integration. Within the parentheses under each outcome are listed aspects that can be said to occur, although this need not mean that each aspect does occur.

1. Companies merge or acquire each other to a low extent; their operational activities stay separated. Possibly non-globalization and non-integration of national and regional markets. (*status quo, atomistic competition*)
2. Companies merge or acquire each other to a low extent, but their operational activities become integrated. (*cooperation*)
3. Companies merge or one company acquires the other to a high extent, but the operational activities of the fused companies are integrated to a low extent. (*consolidation*)

4. Companies merge or one company acquires the other; their operational activities become integrated into a new overarching entity. Probably global integration of markets. (*search for synergies, rationalization, consolidation, globalization*)

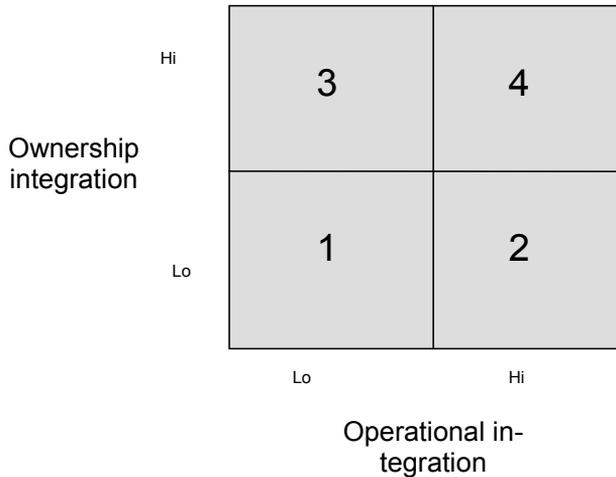


Figure 3.4. *Ownership integration vs. Operational integration in an industry*

This matrix refers to the industry – the seller side of the market. The market also includes the actors that organize the acquisition of their products. The organizational field further includes the market’s closest and most formative environment around the defence industry: the government field, which creates the market’s conditions.

We now turn to discuss driving forces and inhibitors – in our case for corporate integration.

3.7 Driving forces and inhibitors

We have established that in a market seen as an organizational field, certain actors will express arguments in a discourse concerning a certain industrial or market change. We may address the change in an industry from an angle other than an institutional perspective, and thereby identify forces that may act or counteract some sort of industrial development, e.g. transnational integration of companies within a certain industry. Change within industries can also be described as transformation, but transformation reaches deeper – it alters fundamental relationships and dependencies in the market. Transformation in this sense refers to how industries change in their composition and way of functioning. Transformation focuses on what is changing the contents of broad aggregates – changes over time within and between micro-entities (Dahmén, 1988).

Companies and strategic groups change their composition either in order to exploit business possibilities and opportunities, or to innovate; ‘positive’ actions. They can also adapt or react to altered conditions outside themselves; ‘negative’ actions. (Dahmén, 1988)

Whilst companies see incentives to for example integrate or co-operate, other influential actors or agencies may come to contrary conclusions. Companies and non-corporate actors may thus interpret institutional change differently. This is expressed by the actors in the discourse as what we will call driving forces and inhibitors.³⁴

On the government side, it is seldom possible to identify and state clear and contrasting forces versus contradicting forces (i.e. driving force versus inhibitor). The government arguments for and against increased corporate integration may, in the political market, be so numerous and multifaceted that we will on each side (for and against) see a handful of arguments that are more or less related.

Companies may expect advantages from acquiring other companies or internalising processes and activities into its own organization. Growth of the firm may be manifested primarily by acquiring other companies, or by companies merging (Coase, 1937; Penrose, 1960; Williamson, 1975). Firms can also further their interests through intermediate forms of action, falling somewhere between organic growth and mergers and acquisitions. Such forms may be alliances, joint ventures and different types of collaborative arrangement (Harrigan, 1985, 1986; Lorange & Roos, 1991 & 1992; Yoshino & Rangan, 1995; Holmqvist et al., 1998). Incentives for joint ventures may be to achieve internal, competitive or strategic benefits (Harrigan).

In the media discourse about a proposed merger or acquisition, top management of the concerned companies may have intentions and strategies for promoting their 'version of reality' in order to influence the opinion vis-à-vis a certain outcome. A typical strategy would be to try to define who is 'winning' and 'losing'. As the actual benefits of mergers and acquisition can often be contested, it may be seen as important for top management to influence the media discourse (Hellgren et al, 2002; Hellgren, Löwstedt & Werr, 2011). One source may describe a fusion of two entities as a merger, and another source may describe it as a forceful take-over.

In an industry, companies strive to be competitive. Porter formulated concepts of corporate strategy as a company's ability to manage and implement the concepts of portfolio management, restructuring, transferring skills and sharing activities (Porter, 1987). In entering a new market in a nation new to the firm, the firm will encounter certain barriers to entry (Porter, 1987; Sölvell, 1988). A market may show certain unique characteristics or conditions, so that the entry barriers may make firms choose (or be limited to) other modes of integration which are more or less specific to this market. This appears to be the case in the defence market.

An instance of driving forces could be that companies should integrate more since this would improve possibilities for synergy realisation between companies; companies should pool their projects in order to reach economies of scale. To illustrate inhibitors, companies should integrate to a lesser extent since the political influence is so strong that the increased administration would make cooperation inefficient; defence companies should not integrate to a larger extent since that would increase the risk of domestic defence

³⁴ Dahmén did not use the concepts of driving forces and inhibitors in his theory.

technology coming into the wrong hands. A driving force is thus an identified argument for a certain industrial change to occur, an inhibitor an identified argument for why the industrial change should not occur. A driving force can express the expectation that industrial change will occur due to external factors (e.g. globalization, change of political power, deregulation, change in commodity prices etc.) and an inhibitor can express the expectation that industrial change will not occur due to external factors (institutional resistance, bureaucratic difficulties, change of political power etc.).

Taxonomy of driving forces and inhibitors

In Chapters 7 and 8, we will systematize the identified driving forces and inhibitors with the aid of a taxonomy. This is a rather straightforward way of presenting the ones that were identified through interviews.

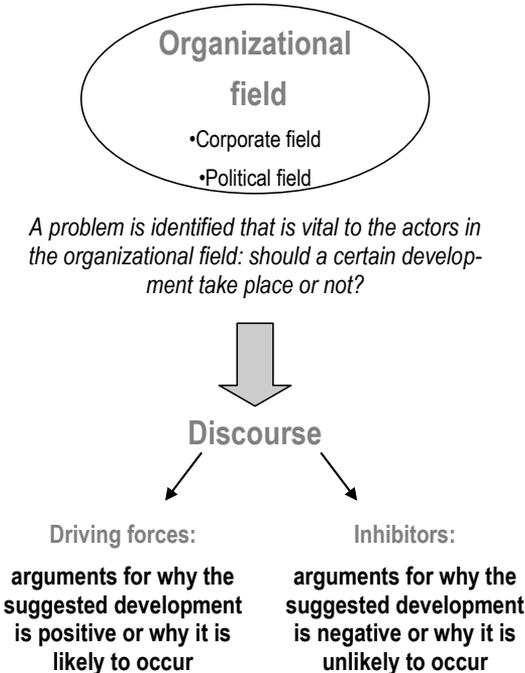


Figure 3.5. *Taxonomy of driving forces and inhibitors*

The taxonomy is thus a theoretically based illustration which pictures how there is a certain suggested development (e.g. increased transatlantic defence industry integration) that concerns the organizational field of a political market. The actors in the corporate and the government fields within the organizational field will put forward their arguments towards the suggested development, and the sum of these arguments becomes a discourse. We can sort these arguments as being, in principle, driving forces (positive to the development) or inhibitors (negative to the development). The driving forces and inhibitors are

in the empirical presentation separated between the corporate and the government field, since it is assumed that the driving forces and inhibitors will not be expressed in the same way in the corporate and in the government field.

The respondents' arguments concerning whether there should or should not be increased transatlantic defence industry integration may include arguments whether the specific respondent believes that it *should* occur or why it *should not* occur. They may also express why it *will* not occur, e.g. due to certain inhibiting forces in the organizational field – forces of a possibly less rational and more political nature.

The identification of a causality for integration, stating that driving force A leads to Y amount of integration, can however be difficult to prove for a political market. Firstly, if there has been limited integration over a long period of time, such causality is difficult if not impossible to prove. Furthermore, the interplay between the identified driving forces and inhibitors is an interplay between political and corporate incentives, and between societal as well as financial perspectives. The driving forces and inhibitors are thus not homogeneous enough to postulate a straightforward causality.

In Part III a number of identified inhibitors and driving forces will be presented. As two opposing collective groups, they together constitute an elaborate account of the discourse regarding increased transatlantic defence industry integration.

The identified driving forces and inhibitors will in Chapters 7 and 8 be further sorted in a 'discourse matrix', based on if the driving force or the inhibitor is seen as emanating from the corporate field, government field or the organizational field, and if it concerns ownership or operational integration. Chapters 7 and 8 will bring more clarity to this topic.

3.8 The Military-Industrial Complex – as a part of an organizational field

Each industry has certain characteristics that define or suggest its boundaries, such as the technology, the type of customer or a geographical domain. To some extent, an industry may be seen as specific, and in other respects it shares its characteristics with most other industries. There are general theories that can explain how an industry functions, and each industry will correspond to them in different ways.

For the further analysis, a MIC is defined as a nationally defined, institutionalized group of actors that are united in their role of supporting a national defence industry and the national military posture. It typically includes defence companies, the military and different sorts of government authorities. Together with this are diverse idiosyncratic, nationally defined, vested interests and political conditions and regulations.

We discussed the MIC concept in Chapter 2. The concept of an organizational field fits well with the characteristics of a MIC. The stability and inertia of a MIC suggest an organizational field that is reluctant to change. The actors, created hierarchy, pecking order, and distribution of resources can be assumed to be stable. We must not, however, be misled by such a preconceived assumption. The analysis in Part IV must aim to clearly describe and analyze the corporate actions in the organizational field.

A weakness of the MIC concept is that it is not strongly built on theory. It is mostly descriptive, and most analytical applications of the MIC concept have few theoretical building blocks or the building blocks are not theoretically defined with clarity. The descrip-

tions are generally persuasive, but rather intuitive, and tend to end up as ideology (see the previous discussion in Chapter 3). There is no standardised definition of a MIC.

With an institutional perspective, we must understand the MIC as an organizational field and see how it affects the conditions for change, in interaction with the companies' rational incentives for growth and profitability. We must therefore be able to determine what kind of 'animal' the MIC is – does it have specialised characteristics as is often stated? In Chapter 5, the historical developments of the MICs in the selected countries – the U.S., UK and France – will be presented. This will show the development of integration and point to the institutionalized nature of the organizational field in each country, how the discourse broadly has developed, and what the driving forces and inhibitors are in such a domestic context.

We must now fuse the focal theoretical concepts presented in this chapter and create a model that can help us in analysing the research problem.

3.9 Case Study model

Thus, **action** denotes how companies actually have engaged in **integration** of operations and/or the companies' assets in the transatlantic dimension. The **organizational field** comprises the company's closest and most formative environment – the actors and institutions that most clearly influence the functioning of the defence market (with a focus on the transatlantic aspect) – and is divided between a corporate field and government field. The **discourse** is the sum of the public conversation that takes place in the organizational field in relation to the transatlantic defence industry integration. The discourse contains different arguments for or against transatlantic defence industry integration, and these arguments are structured as **driving forces and inhibitors**, divided between corporate and political driving forces and inhibitors.

The organizational field is the overarching concept, which unites the concepts of discourse and action. The focal concept is the corporate integration, which according to this thesis' perspective is better understood and explained through the combination of concepts in the Case Study model.

This model strives to find an explanation for an integration pattern within a market that has quite specific characteristics. It should be helpful in analysing the discourse and the action of companies within an industrial change process. It is designed for the particular organizational fields of politically influenced, institutionalised industries.

Model perspective – frame of reference

The previous theoretical discussion links up to two interrelated empirical phenomena:

- the assessment of driving forces and inhibitors (the discourse)
- the investigation of the extent and nature of industry integration (the action)

There is often a weak or unclear causality between discourse and action. As part of the research we will strive for a deeper understanding of whether we can identify such causality. In order to understand the driving forces and inhibitors, they must also be seen in relation to the nature of the institutionalization of the organizational field.

An individual actor (company, person, organization etc.) will express arguments concerning general developments that affects it, based on its specific incentives and priorities. This is the talk expressed by that actor. The sum of all actors' arguments concerning a specific problem will constitute the discourse.

It will be a compromise between, on the one hand, corporate incentives for company competitiveness and success and, on the other hand, political goals, incentives and restrictions. In parallel, we can observe an action of industrial integration, which for this model is the aggregate action of Brunsson's 'practice'. Brunsson has a similar discussion in several articles stressing the discrepancy between talk and practice, or talk and action. We use the concept pair 'discourse and action' in line with the purpose of the thesis.

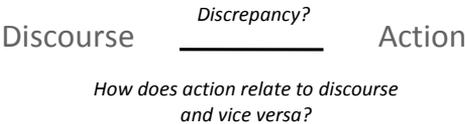


Figure 3.6. *Discrepancy between discourse and action* (inspired by Brunsson, 1996, 2002)³⁵

In the thesis' Case Study model, we can start out by stating that there is an organizational field which is the forming environment of the defence market. The actors in this organizational field will express, in a discourse, certain arguments regarding transatlantic defence industry integration, with driving forces and inhibitors. As an effect of the discourse and the influence of the organizational field, the companies will engage in transatlantic defence industry integration – if it furthers the companies' corporate interests in achieving business. What companies actually do is the action; there will be an empirical outcome.

In order to be able to find an explanation for the discrepancy between the discourse and the corporate action regarding transatlantic defence industry integration, we must according to the perspective of the thesis understand the impact of the organizational field.

Figure 3.7 states that the Case Study model starts out from an organizational field that, in line with the previous discussion, consists of a corporate field and a government field. A discourse can be identified concerning the transatlantic defence industry integration, and in this discourse more specific driving forces and inhibitors can be identified. The driving forces and inhibitors emanate from corporate decision-makers or spokespersons, and from many different types of actors in the government field. The action denotes the type and extent of transatlantic defence industry integration. A focal goal of the thesis is to describe the (perceived) discrepancy between discourse and action.

³⁵ Brunsson does not present his dichotomy in a figure; this is my interpretation.

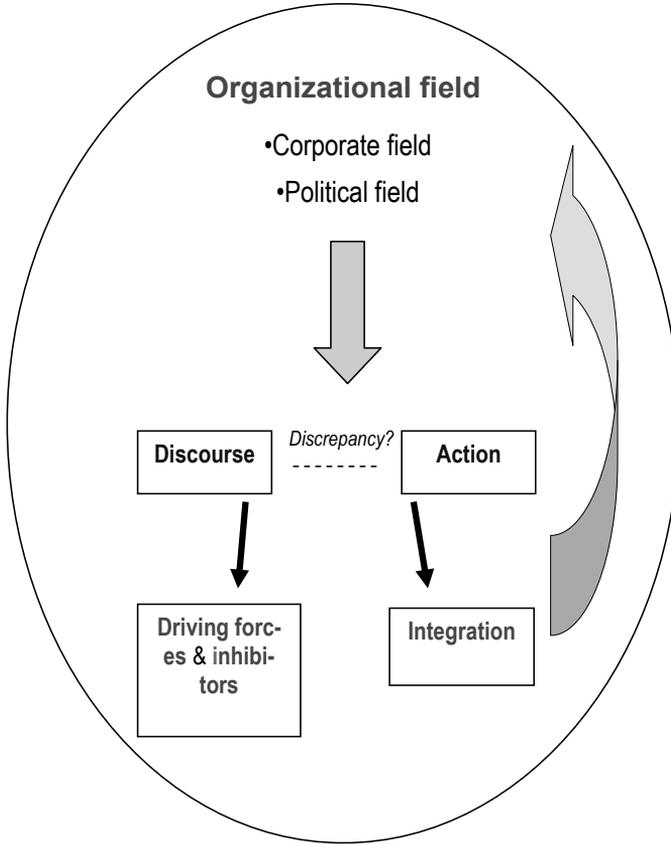


Figure 3.7. *Case Study model of the transatlantic defence industry integration*

There is no arrow from discourse to action in the model. This is because we must not be misled into assuming that there is a clear causality between what is said and what is being done. The nature of the connection and relationship between the two will be a focal point of discussion later in the thesis’ analysis.

The arrow on the right is directed from ‘Integration’ up to the ‘Organizational field’. The integration that occurs, or does not occur, will influence how the actors in the organizational field will relate to the transatlantic defence industry integration. The industrial map will have changed in some way, and this will change the composition of the organizational field. For example, if there had been extensive transatlantic defence industry ownership and operational integration over a time period, corporate strategy would achieve more impact and the influence of the nation-state would decrease, and the discourse that occurs in the organizational field would change in character.

We must be able to describe the discrepancy in relation to the nature of the discourse. Individual talk may be understood as primarily consisting of ceremonial, rhetorical gestures

in order to convince certain vested interests or decision-makers without an actual expectation that such actions will occur. The action could also be the result of considerable efforts that have not amounted to very much change, the result being only the best they were able to achieve. With the approach of this thesis, the understanding of the defence market and the accumulated impact of the empirical data in Part III, we strive to be able to explain these industry-specific aspects.

In a perfectly transparent, rational and logical world, the discourse would result in a matching action. This is, however, most likely not the case in the defence industry – nor in other industries. The discrepancy will be different in nature and scope in different industries.

What can this model do?

Based on the conditions in the defence industry that we can establish, and with the aid of the chosen theory and the model that the theory will relate to, how can we understand and explain the type of integration that we are seeking to identify?

An interesting aspect is that the arguments for certain events – in this case increased integration – may favour the idea that a certain causality should exist due to certain logical or rational arguments. The real action in the transatlantic defence industry integration may, however, suggest that the preferred causality does not occur or exist at all. A more valid question could thus be why certain events do *not* occur, and how that can be seen to express a certain causality: the factors X, Y and Z lead to a certain, preferred change not occurring. This must be seen in the light of other industries presumably integrating further and collaborating more openly and with less restriction. The non-occurrence of an event leads to the more valid question being the negative response: why does a change not occur? Scott stresses that the institution in itself becomes arranged so that it resists change and reform (Scott, 2001). We may therefore assume that the organizational field in the defence industry may have developed so much inertia that companies are successful in preserving themselves. The same companies (almost entirely) keep receiving orders and there are practically no newcomers among the companies. There seems to be implicit consensus among the actors in the organizational field on the logic of the national security and defence interests.

3.10 How will this theory help to reach the purpose?

The purpose of the thesis states that we must fulfil the following tasks:

- *Understanding*

The theory should help us to understand the specific nature of the defence market seen as an organizational field. This understanding is also necessary for accepting the subsequent reasoning in the thesis.

- *Formulation of an explanatory model*

The Case Study model will strive to capture the nature of the defence market's - *organizational field* and its corporate and political subfields, with regard to transatlantic defence industry *integration*. The model includes the *discourse* and its identified *driving forces and inhibitors* for this integration, and sets it in contrast to the *action*.

- *Understanding and explaining the nature of the transatlantic defence industry integration*

As stated previously, there is an underlying assumption in the thesis that in this specific market we will not obtain a credible explanation for industrial integration if we cannot reach a sufficient understanding of the defence market's organizational field and how it influences and shapes corporate behaviour. If we can present credible reasoning and empirical evidence for this interrelationship between understanding and explanation, the purpose will be fulfilled. One task that must be performed towards reaching understanding and explanation is to describe the nature of the transatlantic defence industry integration; how it materializes into ownership integration and operational integration.

We will now turn to discussing the methodology of the thesis in Chapter 4. After this we will present the empirical accounts in Part III.

Chapter 4 Methodology

In this thesis the purpose is to understand and explain, with the aid of the explanatory model, the discourse and action of the transatlantic defence industry integration, as well as to compare discourse with action. The aspect of understanding requires some reasoning. We will therefore discuss understanding and explanation later in this chapter, but first we will discuss the more systematic steps in the methodology.

The chapter starts with a discussion of the general research approach and design for the thesis. This is followed by a discussion of the empirical data and the interview design. Thereafter follows a section on how the methodology contributes to reaching the purpose of the thesis. The next section addresses the inductive and deductive character of the methodology. After this comes a discussion of the concepts of understanding and explanation, followed by a problematization of my professional role as a researcher employed by a Swedish governmental body, FOI (the Swedish Defence Research Agency). Then, there is a discussion on the focused level of analysis in the thesis followed by a discussion on the generalizability of the thesis. Finally, we will explain how the empirical data sets correlate with the Case Study model.

4.1 Research approach and design

The study on which this thesis is based was carried out at the Center for Marketing, Distribution and Industry Dynamics at the Stockholm School of Economics. I have been an industrial graduate student, as my employer is FOI. This slightly external position, combined with the study of the defence industry, has led to certain challenges.

My research for this thesis started with an empirical observation made in an FOI study about transatlantic defence industry integration. The observation was that there was much said about the need for increased for transatlantic defence industry integration, but much less integration appeared to occur. After this observation, I started to study literature that could offer theory which was suitable for analyzing and explaining why there seemed to be such a discrepancy between what was said and what was being done. The identification of Brunsson's (1985, 1989) writings on belief and outcome, and Adams' (1999, 2001) concept 'policy ambivalence', became important starting points for defining the theoretical framework for this thesis. This theoretical framework materialized into the Case Study model presented in Chapter 3. Together with this literature search, my ongoing studies at FOI about the international defence industry together with two periods as guest researcher at MIT (Massachusetts Institute of Technology, Boston) and FRS (Fondation pour la Recherche Stratégique, Paris) gradually helped to deepen my understanding of the conditions of the international defence industry.

When commencing this research, the impression was that it was difficult to identify a credible explanation for why the transatlantic defence industrial integration seemed to be limited. There was also an impression that corporate discourse and corporate goals were

largely left out, in isolation from government discourse and goals. This discussion did not offer sufficient detail and aspects to understand the functioning of the market. Therefore, an assumption that guided the methodology was that the government driving forces and inhibitors, as well as the corporate driving forces and inhibitors, needed to be identified in the discourse in order to be able to reach the purpose of the thesis. The defence market seen as an organizational field (as in this study) requires an analysis of the corporate field together with the government field. By analyzing the discourse and the action and the discrepancy between them, we expect to find a better understanding and explanation regarding transatlantic defence industry integration than what has been identified in other analyses.

Empirical data could be gathered based on a theoretical model, i.e. selected and shaped strongly by theory. Empirical data may also be analyzed and processed through an inductive approach. Such an approach may generate theory derived from the empirical data, a method called “Theory building from cases” (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). When analyzing data, there should optimally be several cases and first within-case analyses, followed by cross-case pattern search. The theoretically based ‘Case Study model’ presented in Chapter 3 resembles such an approach. The central notion is to use cases as the basis from which to develop theory inductively. A primary question is whether no existing theory offers a feasible answer. If not, theory building from cases may be appropriate (Eisenhardt & Graebner, 2007).

One strength of the case study method is its suitability to manage several different types of empirical material (documents, artefacts, interviews and observations). Case studies can be summarised by some key terms like the following: empirical, holistic, highlights meanings, flexible design, describes actor and motive, descriptive, inductive, multitude of data, and qualitative character. A case study involves ‘interpretation in context’ (Helmstadter, 1970; Wilson, 1979; Guba & Lincoln, 1981; Strauss and Corbin, 1990; Stake, 2000). The case study outline for the thesis fits in well with many of these traits. According to the ‘Theory building from cases’ methodology, there should be multiple data collection methods. In this thesis, the understanding of the research question has led to the standpoint that reaching the purpose demands combining several theoretical elements into a framework. In Part IV, we will see to what extent multiple data collections have contributed to deepened understanding.

4.2 Empirical data

The majority of analyses of transatlantic defence industry integration are based on secondary data about the actual alliances, joint ventures, mergers and acquisitions that have been officially announced. Few studies are based on primary data from interviews with industry representatives.³⁶ For this thesis, a choice was made to interview a large number of experts

³⁶ Andrew James’ studies, e.g. 1998, 2000, and 2004, are partly based on interviews. Also CSIS, 2003 includes panel discussions with corporate decision-makers.

with various specialties in the belief that this would enable a deeper understanding and a better explanation of the industrial integration outcome.

The empirical data are of several types: interviews, secondary sources (books, academic papers, newspaper articles, official documents from governments, published speeches, corporate external communication and documentation from military programs), and accounts of analyses from academia and experts. The overarching case of transatlantic defence industry integration is presented in five chapters (5-9) and each chapter will be referred to as specific 'empirical data sets'.

The secondary sources belong to two main groups. The first one consists of statistics concerning the integration action (i.e. which companies were acquired by which company, which joint ventures were created, what cooperation was established etc.). This information was obtained through studies of a large number of books, articles, journals and magazines, which has offered an accumulated assessment. No similar assessment has been identified, and I have asked several experts in Sweden, the UK, U.S. and France, none of whom had seen such an account. Together with other researchers, I have come to the conclusion that such an assessment can never be complete; not all mergers, acquisitions, minority share acquisitions, joint ventures, defence programs, R&D programs, cooperation etc. are public, or publicly announced.

The second group of secondary sources is composed of other analysts' or writers' analyses of the transatlantic defence industry integration. Extensive studies have been carried out in the U.S. and in France of secondary data regarding transatlantic defence industry integration.³⁷ These sources come from several scientific fields or policy fields. An account of their assessment is presented in Chapter 7 in the thesis. This account presents a picture of how the written discourse has developed and how the integration pattern is described. It also clearly enhanced my understanding of the institutional context of the organizational field.

Now follows a description and presentation of each of the empirical data sets.

- *Chapter 2 The defence market and the defence industry*

Chapter 2 described the specific characteristics of the defence market. The chapter is an account of other scholars' writings and analyses on the nature of the defence industry, the defence market, how governments regulate and influence the defence companies' operations, and a thorough literature search on the MIC concept. Thus, the data in Chapter 2 are primarily from previous academic analyses. One special point of interest is governments' policies for controlling and influencing the defence industry, a sort of regulatory governance. The chapter also conveys the understanding that I have reached during my role as defence-industrial analyst at FOI since 1998.

- *Chapter 5 The historical development of the military-industrial complexes in the U.S., UK and France*

Chapter 5 describes the historical developments of the MICs in the three focused countries U.S., UK and France. These three accounts compile many scholars' descriptions of

³⁷ Published as FOI reports in Lundmark (2003) and (2004), and at MIT in Lundmark (2002).

different time periods in these developments. The accounts primarily consist of historical and socio-economic analyses. Some of the data were gathered through the many interviews that were conducted during the work with this thesis, and important understanding was gradually reached during the periods as guest researcher in the U.S. and France. The aggregate accounts are discussed in relation to the thesis' Case Study model.

- *Chapter 6 Action: transatlantic, intra-European and intra-U.S. defence industry integration*

Chapter 6 presents what in the view of the Case Study model is seen as the 'Action'; what defence industry integration actually did occur. The transatlantic defence industry integration is compared with the intra-European and the intra-U.S. defence industry integration. The chapter describes the ownership integration (joint ventures, mergers and acquisitions) and the operational integration between the focal companies. Data for this chapter have been compiled in several ways. Some of the data have been collected in various FOI projects. Many hours have also been spent in order to identify the actually occurring acts of ownership integration and government-initiated cooperation. Other accounts that relate to the research area of this thesis have been studied, in order to form an aggregate account of the defence-industrial integration. This has been a difficult task since many acts of industrial integration or government cooperation (which creates industrial integration) are not publicly announced. Presentations of the focal defence companies have also been created through interviews, studies of other analyses, company websites, press releases and other sources of information.

- *Chapter 7 Driving forces and inhibitors for transatlantic defence industry integration – discourse as identified through texts*

This chapter presents a comprehensive empirical compilation of the discourse for transatlantic defence industry integration as identified in secondary sources; books, papers and other types of published texts. Different texts and the arguments they put forward for or against transatlantic defence industry integration are presented in a matrix combining the dimensions of *corporate field – government field – organizational field* and *ownership integration – operational integration*.

A specific discussion of the sources that were used in Chapter 7 is seen as needed in order to validate and make probable that the studied sources are the relevant ones for giving a truthful account of the published discourse. In Chapter 7, there are 60 cited references. First, there is a test of their citations on Google Scholar. Then, there are some comments on the publication years of the sources, and finally the main conclusions from the analysis of sources are presented.

These references have been checked on Google Scholar for number of citations (April, 2011). The top 20 are shown in Table 4.1. Below these 20 there is, according to Google Scholar, the distribution as shown in Table 4.2.

<i>Author</i>	<i>Year</i>	<i>Number of citations</i>
Markusen	1992	184
Andreani et al.	2001	62
Bitzinger	1994	54
Gompert et al.	1999	54
Heisbourg et al.	2000	49
Yost	2000	48
Mörth	2000	45
Hartley	1983	36
Markusen & Costigan	1999	35
Schmitt	2000	35
Keller	1994	27
Morgan & McGuire	2004	24
Deutch	2001	20
Deutch et al.	1999	16
Kovacic	1999	14
Sapolsky, Gholz & Kaufman	1999	14
Lorell et al.	2002	11
Bitzinger	1999	10
Adams	2001	9
Flamm	1999	9

Table 4.1. *Most cited references in discourse for transatlantic defence industry integration*

Number of citations	8	5	4	3	2	1	0
Number of references	3	1	3	6	5	4	18

Table 4.2. *Number of references corresponding to number of citations (below top 20)*

We can thereby see that more than half of the texts dealing with this topic have very few citations. Several of these are speeches from company executives, excerpts from conferences, or government-published material, where we would not expect many citations. Some of the texts are academic but still without many citations. Among those are texts that have in different ways – in my view – put forward some distinct and interesting arguments that have not, however, received justified attention. Scherpenberg 1997 (4 citations), Adams 1999 (3) and 2001 (9), Gholz/Gholz & Sapolsky (0, 2), Ashbourne 1999 (3) and 2000 (2), James, 2001 (4), Jensen 2001 (0) and Hébert & Hamiot 2004 (1) stand out in this regard. My question to twelve experts over e-mail regarding which were the most important references did not produce clear conclusions, but Adams, Ashbourne and James were specifically suggested by the experts. Five of the texts mentioned by the experts did not appear at all in Google Scholar.

Academically, the discourse for transatlantic defence industry integration appears to receive limited attention. The analysis indicates that the discourse occurs closer to the policy arena, rather than in a stricter academic arena.

The 60 texts that were identified were published in the following years (a few of the important texts that form a part of the literature study from years outside of the focal time period are also included³⁸):

<i>Year</i>	<i>Number of texts</i>
1983	1
1992	1
1994	2
1995	1
1996	2
1997	2
1998	3
1999	23
2000	11
2001	9
2002	1
2003	1
2004	2
2009	1

Table 4.3. *Publication year of texts in discourse for transatlantic defence industry integration*

We can see that the discourse for transatlantic defence industry integration more or less exploded in 1999, kept on well in 2000 and 2001, and then declined. The explanation appears to be the parallel occurrences of two aspects: the NATO Defence Capabilities Initiative (1999) and the discussions it created, and secondly the discussion about a transatlantic defence industry ownership integration when the intra-US consolidation had slowed down and the intra-European defence industry ownership integration was just about to begin. These two aspects will be discussed in more detail later.

- *Chapter 8 Driving forces and inhibitors for transatlantic defence industry integration II – discourse as identified through interviews*

³⁸ For example, Hartley, 1983; Markusen, 1992 and Bitzinger, 1994 tend to form a part of most later texts' body of references.

Chapter 8 presents an account of the discourse for transatlantic defence industry integration as identified in interviews. These data are presented on the basis of geography; the respondents are presented by nationality (American, British or French). The data are further separated within the nations between the corporate field and the government field.

- Chapter 9 Cases of transatlantic defence industry integration

Chapter 9 presents three case studies of transatlantic defence industry integration: NFR-90 (NATO Frigate for the 90s), TRS (ThalesRaytheonSystems) and JSF (Joint Strike Fighter). NFR-90 and JSF are case studies of development programs of defence equipment which show the interaction of the corporate and government fields in the development of defence products. TRS is a Franco-U.S. joint venture between Thales (France) and Raytheon (the U.S.). These three case studies show the conditions of the transatlantic defence industry integration. The case studies are primarily built upon empirical data from other analyses, statistical data, homepages, official documentation and texts. Supplementary interview data come from other interviews for this thesis that partly covered the cases. Two in-depth interviews were performed for NFR-90, and one interview with four respondents was made for TRS. Two e-mail interviews were made for JSF.

The following table summarizes the empirical data sets in the thesis:

Chapter	Empirical data set	Principle for presenting	Type of data
2	The defence market and the defence industry	General description of the characteristics of the defence market and the defence industry	Literature study, interviews
5	MIC	Geographic: US, UK, France	Literature study, interviews
6	Action	Geographic: Intra-US, Intra-European, transatlantic	Literature study, interviews, statistics
7	Discourse 2 nd	Driving forces and inhibitors sorted in a matrix between <i>ownership – operational integration</i> and <i>corporate, government and organizational field</i>	Literature study
8	Discourse 1 st	Driving forces and inhibitors sorted first geographically: US, UK, France, then further sorted in a matrix between <i>ownership – operational integration</i> and <i>corporate, government and organizational field</i>	Interviews
9	Cases of transatlantic defence industry integration	Cases that include and confront all above aspects of transatlantic defence industry integration	Literature study, interviews, web searches, statistics

Table 4.4. Empirical data sets

4.3 Interview design

Interviews were conducted in the U.S., primarily in 2001 but also in 2004. Interviews were also conducted in the UK in 2002 and in France in 2003. The interviews were with corporate representatives and with representatives from different government actors. Interviews were also made with different types of analysts and experts. Interviews regarding the NFR-90 case study were also conducted in the Netherlands in 2008. Interviews for the ThalesRaytheonSystems case study were conducted in 2009 in France. In all, 102 respondents were interviewed. The distribution of respondents per country was: the U.S. 61, France 29, UK 10 and the Netherlands 2. The imbalance of the number of respondents between the three focal countries (U.S., UK, France) is explained by the fact that the interviews in the U.S. and France were conducted as parts of other FOI studies³⁹ with a broader scope, but where those data could be used for this thesis (with some additional interviews). The UK interviews were entirely focused for the scope of this thesis. The Netherlands concerns only one case study (NFR-90).

A list of respondents is presented in Appendix 2.

Respondents

The aim was to reach both an understanding and an explanation. The common denominators were that the respondents should be one of the following: involved directly in corporate decision-making; directly involved in policy creation regarding the conditions in the defence industry; involved in defence procurement; or regarded as analytical experts in transatlantic defence industry integration, either in academia or in consultancy of some kind. These people were identified through several sources: recommendations by experts I knew; names previously identified in books, articles or the press; and help from Swedish embassies. Several names also came up as suggestions during the interviews.

These respondents differ in their proximity to the actual decision-making, either in companies or in government bodies of different kinds. One must therefore be aware that some decision-makers can be expected to be cautious about what they say. Others who do not make the decisions (e.g. academic experts) may have excellent knowledge of the industry, but they interpret the situations through different filters or 'glasses' compared to corporate decision-makers. Among the corporate respondents, the choice of respondents was governed by the aim of interviewing people who made decisions about, and/or were active in, the creation of transatlantic defence industry integration.

There is also reference in the thesis to other interviews from 2006, 2008, 2009 and 2010. These were performed under other assignments at FOI, and the empirical data in some parts proved to support the reasoning in this thesis.⁴⁰

³⁹ The U.S. study resulted in the report "Drivers and inhibitors for transatlantic defence industry integration – The U.S. perspective" (Lundmark, 2003). The French study resulted in the report "To be or not to be – The integration and the non-integration of the French defence industry" (Lundmark, 2004).

⁴⁰ In the FIND project within FOI, the following studies that relate to the defence industry have been published in recent years: The impact of foreign ownership of defence companies in Sweden (Axelson & Lundmark, 2006); The repositioning from OEM to supplier (Saab Aerostructures) (Axelson & Lundmark, 2009); The industrial effects of direct military offset from defence materiel export (Axelson & Lundmark, 2009); Implementation of international defence materiel cooperation (Axelson & Lundmark, 2010).

4.4 How will the methodology help to reach the purpose?

The interviews were performed as a gradual learning process. Interview questions were gradually refined and rephrased as understanding of the organizational field was deepened through the interviews. The process of gradually defining the driving forces and inhibitors through the interviews is believed to produce better results compared to using the same interview questions for all respondents. As contextual understanding increased, the ability to pose adequate questions was sharpened.

The defence market is sometimes claimed to be so different from most markets that a general model for market behaviour would not be possible to create from a study of the defence market. In this thesis, however, we will aim to direct attention to defence industry-specific driving forces and inhibitors for transatlantic industry integration. These findings are captured by the Case Study model, and we will inductively find a pattern in the actions of the defence companies. This pattern can then be compared with the established business administration models for corporate integration. The findings of the analysis in this specific market (the defence market) may further develop the Case Study model, and it can be used in analysis of other political markets; we may consequently find a broader use if the Case Study model is proven analytically successful.

Thus, the methodology was designed in order to gradually increase and refine the understanding of the research area and research phenomenon, enabling us in the end to better explain the transatlantic defence industry integration.

4.5 Understanding and explanation

There are two important aspects of reaching an understanding (*verstehen*) and offering an explanation (*erklären*) in the research for this thesis.⁴¹ Understanding concerns the researcher's striving to achieve convincing insight into the research area which can then be presented to the reader. Explanation concerns being able to present a plausible line of reasoning, based on theory, to explain the research problem (Arbnor & Bjerke, 1994).

Reaching understanding deals with a personal quest for understanding what actually drives transatlantic defence industry integration in particular. Understanding is clearly a subjective matter. Depending on one's basic scientific, epistemological, political or even moral views, the development of an industry and a certain group of companies can be explained in different ways. We will strive to offer a convincing explanation in Part IV Results, by applying the theoretical framework from Part II on the empirical results presented in Part III.

Different markets exist and develop in specific settings, and the industrial and institutional actors behave in a way that is dependent on the conditions that the social context exerts and on the business models that prevail. The conditions must be understood and de-

⁴¹ *Verstehen* and *erklären* as used by e.g. Weber and Habermas. See Alvesson & Sköldberg (1994).

scribed in a credible manner. Depending on certain chosen assumptions and theoretical definitions, the researcher can offer an explanation for why certain developments or events occur (Arbnor and Bjerke). To strive to understand and explain why a certain change does *not* occur, despite persistent discourse for it, may also offer improved understanding and explanation.

A certain combination of institutional components will as a whole – where the resulting functioning of the components is different from the sum of the parts – create some kind of systemic market behaviour (Arbnor and Bjerke, 1994). No market exists where industrial actors are able to enter or exit the market without affecting the functioning of the market. The aggregate corporate actions are what actually constitute market practice (Helgesson et al., 2004). This perspective, which emphasizes the impact of the environment on corporate actions, relates back to and matches the concept of an organizational field.

In the thesis, the underlying assumptions of the market under examination are outlined – in Chapter 1 with the discussion of the research problem, and also with the more specific depiction of the defence market in Chapter 2. This is seen as a necessary element in order to achieve sufficient understanding. Offering an explanation involves being able to find an explanation, supported by theory, for why integration turned out as it did. In this process, suitable theories and plausible explanations were found both in business administration theory and in political science theory. Theories in business administration are not predominantly developed from or easily applicable to the defence industry. In a market that is as politically affected as the defence industry, theory primarily emphasizing rational, efficiency-seeking corporate decision-making has its limitations. This leads to the task of trying to define how well the theory is capable of explaining the process. A follow-on question becomes what the theory does not explain. Is the process explained by political science theory, or should a synthesis of political science theory and business administration theory be created? Although this falls outside the aim of this thesis, these aspects will be touched upon in the final chapter of the thesis.

The defence industry is often described as not being a true market since it is too politically governed. One point of departure in this thesis is that it is definitely a market, but that it has some clearly distorted characteristics compared to the principles of an ideal market. Many other markets also have a clear political influence, and the defence industry perhaps exaggerates such aberrations to the extent that they become more apparent; the observations from the defence industry might thus be comparable to those from other industries. The defence industry may be seen as an 'exaggerated market', where corporate deviation from general corporate behaviour is enhanced and 'exaggerated'. Although this falls outside the purpose of this thesis, the hope is that the findings of the thesis will offer a model for understanding or explanation of similar markets or problems.

4.6 My professional role

I started to work at FOA (now FOI) in 1998, and have since been working with analysis of the international defence industry for the Swedish Ministry of Defence (MoD). Studies have also been performed for other Swedish defence authorities and increasingly for the European Commission. This research has meant continuous access to data on the development of the international defence industry and market. In my view, for the thesis, this

work has given me an advantageous position for getting access to empirical data and to respondents in the defence market's organizational field. The respondents have also clearly been more open with me in the interviews due to my affiliation with the Swedish MoD, than if I had been a graduate student with no affiliation to defence authorities.

Periods as guest researcher in the U.S. and France

In the spring of 2001, three months were spent in the Security Studies Program at the Massachusetts Institute of Technology (MIT) as 'visiting scholar'. During these months, and for three months afterwards, I received the 'Pentagon Early Bird', a news summary received early every morning over e-mail. Through this daily update, I could closely follow the debate regarding a number of issues related to transatlantic defence industry integration. The first six months of 2003 were spent in Paris, France as '*chercheur associé*' at a research institute: Fondation pour la Recherche Stratégique (FRS). These periods were instrumental for reaching increased understanding of the U.S. and French defence contexts.

It would have been more difficult to get access to these institutions without my affiliation to FOI and the Swedish Ministry of Defence (MoD). As I approached prospective respondents from these platforms, the combination of FOI/Swedish MoD and MIT or FRS proved to be a rewarding gate-opener. To gradually get access to more and more relevant respondents required very much footwork, so longer stays were needed. If I had tried to identify and contact respondents from Sweden, in order to spend a week in Paris or Washington D.C. for interviews, this would have been very difficult to organize. Especially in France, communication with high-ranked government officials is quite complex, bureaucratic and formal. Furthermore, the interaction at the office with colleagues at MIT and FRS brought two main advantages: Firstly, they were instrumental in improving my understanding of the national defence context, which in its turn greatly sharpened my research focus. Secondly, during our discussions they suggested respondents that suited my research focus, and assisted in contacting them.

This being said, my belief is that it would have been difficult for a graduate student with no affiliation such as mine to pursue this thesis with an identical methodological design. Primarily, it would have been a tremendous challenge to get access to some of the respondents, and even to identify whom to interview. The alternate methodology would have been to rely mostly upon secondary sources, which in my view did not offer sufficient explanation for the thesis' research question.

4.7 Induction and deduction

Traditionally, scientific approaches are seen as being more or less either inductive or deductive. The knowledge creation in this thesis has a deductive element (derived from accepted general laws or theories without support by personal observations) in that academically validated theories were used and other assessments were employed as a (perceived) sufficiently objective background. Based on academically validated theory, a Case Study model was deductively created and presented in Chapter 3.

This is complemented with an inductive element (based on reasoning from conclusions grounded in empirical observations) by gradually building up a knowledge concerning driving forces and inhibitors as well as arguments that were identified in the discourse. This gradual inductive learning was especially clear during my periods in highly specialized

academic communities at MIT⁴² and at FRS⁴³ where learning was achieved through the professional environment among the colleagues, at the same time as interviews were made. During the initial interviews, my understanding of the national organizational field of the defence market was less sophisticated than during the later interviews, and the interview questions and discussions therefore gradually became more elaborate. Respondents that more specifically suited my goals were also identified during the stays.

This parallel dialectic⁴⁴ between inductive and deductive reasoning enabled the two to complement each other, and to build up gradual refinement of my understanding, knowledge and ability to describe. Based on such a foundation, we may then attempt to produce an explanation of the observed empirical phenomenon. This is in line with the ‘Theory building from case studies’ approach described above (Eisenhardt, 1989; Eisenhardt & Graebner, 2007).

4.8 Level of analysis

The boundaries of a market are not self-evident. Which companies should be included, and where does one market end, and another one start? When aiming to describe the environment of a political market seen as an organizational field and which actors influence the conditions of the market, the focal empirical area becomes wider and less clear, and must be convincingly defined.

Macro, meso or micro?

We must clarify the order of magnitude in this perspective: what is our level of analysis? Serfati (1992, 2000, 2001) has studied the French defence-industrial system seen as a ‘*méso-système*’. The meso level lies between micro and macro; in my study it applies to the defence industry in one nation. The notion of the defence industry as a meso-system is based on its deliberate and elaborate place and role in the French, U.S. and UK economies. The meso-system is defined by its specific type of products or services. The meso-system is characterised by: a general consensus among successive government and political parties, its relative autonomy from the impact of economic recessions, its definition of being a central part of a nation’s technological and security posture, and its having strong social and economic cohesion (Serfati, 1992). The characteristics that Serfati awards the defence industry as a meso-system are most clearly applicable to France, but they are also attributable to the U.S. and UK, as we will aim to show.

⁴² At MIT, the specific academic institution was the Security Studies Program with around 20 scholars. “The Security Studies Program at MIT is a graduate-level research and educational program based at the Center for International Studies at MIT. The senior research and teaching staff includes social scientists and policy analysts.” It focuses on the security, foreign and military policy of the U.S. www.web.mit.edu/ssp/

⁴³ FRS is an independent think-tank in Paris foremost directed towards defence and security issues. “La Fondation pour la Recherche Stratégique is a foundation directed towards public utilities. As an independent centre of research, it performs studies for French ministries and authorities, European institutions, international organizations and companies. It contributes to the strategic debate in France and abroad.” (My translation.) It performs policy analysis and academic studies, and has around 20 permanent scholars and 20 associated scholars. <http://www.frstrategie.org/>

⁴⁴ ‘Dialectic’ as in recurrent interaction – not as in thesis, antithesis and synthesis.

The perspective on level of analysis in this thesis is the same as Serfati's, although this study differs from Serfati's studies: for instance, his are not in the academic discipline of business administration. This study is not a micro-level study of specific corporate decision processes. Nor is it a study of the defence industry as a whole; we have chosen a strategic group of companies. Put in other words, this thesis concerns the study of an organizational field defined on a meso-level (Serfati, 1992; 2001, p. 225), and within this organizational field a choice of companies – the strategic group (McGee & Thomas, 1986, p. 143). We do not only study the companies; we study an organizational field that contains a corporate field and a government field.

The choice of this perspective is based upon the firm belief that the meso level is the most fruitful perspective for describing the empirical phenomenon. The most important interface for understanding the organizational field resides on the meso level, between the companies on the one hand and the state actors and institutional actors on the other.

Organizational field, meso-system or MIC?

These three concepts overlap. My focal concept is the organizational field (DiMaggio & Powell 1991; Scott, 2001; Fligstein, 2001; Djelic & Quack, 2008). MIC is a useful and often applied metaphor (Mills, 1956; Rosen et al., 1973; Goldstein, 2001), which however lacks some theoretical stringency. Meso system (*'mésosystème'*, Serfati, 1992, 2000) is used in order to discuss at what level of analysis the defence industry is analyzed in the thesis.

Geographical presentation

The empirical data are presented partly on a geographical basis divided between the U.S., the UK and France. It is not self-evident to put such an emphasis on the geographical or country dimension. However, the impact of the nation-state is seen as so fundamental in the defence industry, and the inertia of the domestically created MIC as so great, that this geographical presentation is seen as vital. The adequacy of this choice will be discussed in Chapter 12.

4.9 Generalizing from the study

How can it be determined whether the results of this study and the case studies are generalizable? Generalization concerns to what extent the results can be used to predict results in similar cases.

One advantage with case studies is that they are useful for developing novel theory through in-depth investigation of constructs explaining a phenomenon. This is possible because they give the researcher a detailed understanding of the empirical data (Eisenhardt, 1989). In this thesis, a model based on a combination of established theory was created – the Case Study model. The Case Study model does not as illustrated (Figure 3.7) form a sophisticated theoretical representation. However, the Case Study model represents the institutional theory that in Chapter 3 defined the model's concepts and, most important, their reciprocal relationships. The model's concepts are not new; the model's contribution is the *combination* of concepts.

In Chapter 12 it is discussed whether the thesis' research design has been successful in answering the research question and reaching the stated purpose. The analysis and conclusions drawn are compared with previously offered explanations of the research phenom-

anon. In order to build a ground for theoretical generalization, it is necessary to design case studies so that they are likely to generate results which plausibly have explanatory value beyond the particular case or cases (Yin, 1994). In this thesis, three groups of case studies can be seen where there is cross-case analysis in order to identify empirical and theoretical implications:

- *MICs*: In Chapter 5 the historical developments of the MICs in the U.S., UK and France are described. Each case is thereafter analyzed, followed by a cross-case analysis.
- *Action*: In Chapter 6 there are descriptions of the transatlantic, intra-U.S. and intra-European defence industry integration. These three developments are compared in order to set the transatlantic defence industry integration in perspective.
- *Cases of transatlantic defence industry integration*: The three case studies of NFR-90, TRS and JSF are analyzed in-case and cross-case.

These three case study groups relate in different ways to the Case Study model. The model's three main theoretical concepts – integration, discourse and organizational field – direct the presentation throughout Part III, but the different empirical parts have varying emphasis on the three concepts. Each of the three groups offers, together with the other empirical data sets, an important contribution to the aggregate empirical puzzle in order to be able to use the Case Study model in the thesis' analysis.

The results from the analysis are also compared with previous analyses in order to enhance generalizability (Eisenhardt, 1989). However, since the Case Study model is a novel combination of theory into one model, and since the defence industry is seldom analyzed within the field of business administration theory, the issue of generalizability becomes less obvious than when there are several previous academic studies that are closely related empirically and theoretically. If the theories can support the findings, it is more likely that the results are valid for other situations than the studied ones alone. For example, implications for ownership and operational integration in the defence industry are likely to be relevant also to other markets seen as organizational fields, or in other markets with strong political and governmental influence.

4.10 The empirical data sets in relation to the Case Study model

If we relate to the Case Study model (developed and explained in Chapter 3 Theory), we can refer the empirical chapters (Chapters 2, 5-9) to different parts of the model (Figure 4.1 below).

- Chapter 2 offers a description and an understanding of the organizational field of the defence market.
- Chapter 5 presents the historical developments of three MICs and further develops the understanding and description initiated by Chapter 2.
- Chapter 6 constitutes the action, i.e. the transatlantic ownership and operational defence industry integration.
- Chapters 7 and 8 constitute two different accounts of the discourse. Discourse is not in itself a driving force or an inhibitor. Rather, within the discourse, arguments

are expressed that are understood as either being driving forces or inhibitors for transatlantic defence industry integration.

- Chapter 9, finally, presents three cases of transatlantic defence industry integration that show how companies engage in integration in this organizational field, and how different driving forces and inhibitors towards transatlantic defence industry integration can be identified.

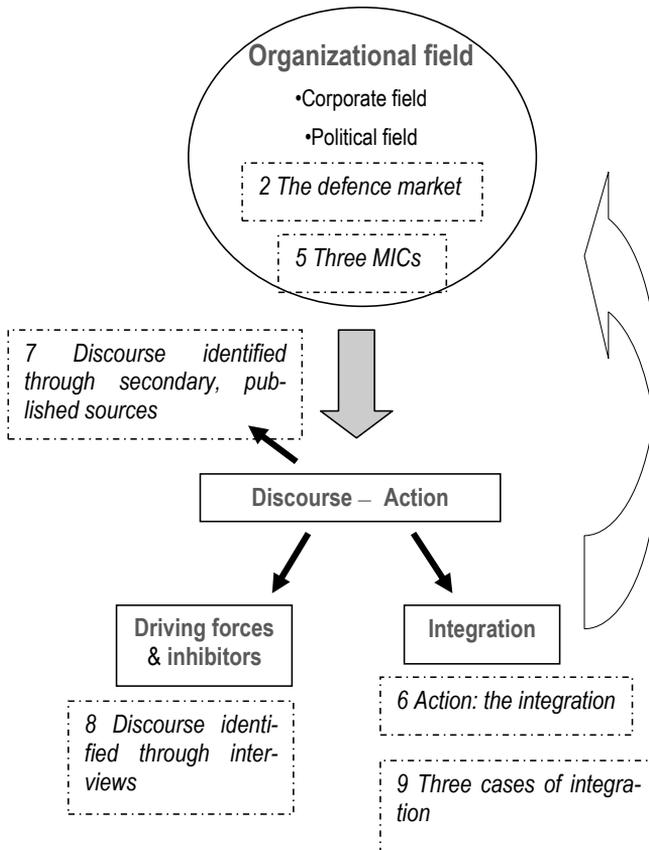


Figure 4.1. *The empirical data sets related to the Case Study model*

The arrow on the right is directed from ‘Integration’ up to the ‘Organizational field’. The nature and extent of integration that occurs, or does not occur, will influence the organizational field.

In Part I we have defined the research scope and direction of the thesis, as well as the specific characteristics of the defence industry and the military-industrial complex. Thereafter, Part II gave a presentation and discussion of the theoretical framework and methodological design of the thesis. In Part III the next step is to present the empirical findings regarding transatlantic defence industry integration.

PART III TRANSATLANTIC DEFENCE IN- DUSTRY INTEGRATION

Part III presents the empirical results of the study. It consists of five chapters, each of which contributes to reaching an understanding of the transatlantic defence industry integration.

Chapter 5 describes the development of the military-industrial complexes (MICs) in the U.S., the UK and France. When we previously discussed MIC (in chapter 2 and 3) it was in a generalized sense as a part of the kind of organizational field under study. Here we will look into the specific MICs connected to the specific complexes and fields studied.

Chapter 6 presents the action – the transatlantic defence industry ownership and operational integration that has occurred. The transatlantic integration is compared to the intra-Europe and the intra-U.S. integration.

Chapter 7 presents the discourse for transatlantic defence industry integration as identified in secondary sources (written, published texts).

Chapter 8 presents the discourse for transatlantic defence industry integration as identified in interviews performed for this thesis.

Chapter 9 presents three cases of transatlantic defence industry integration. In Part IV, these five chapters will be analyzed.

After Part III follows the final Part IV, which analyzes the empirical account, the conclusions and contributions of the thesis and finally a wider discussion on the future of the transatlantic defence industry integration.

Chapter 5 Creation of military-industrial complexes in the U.S., the UK and France

“In the U.S., companies are private. In Europe there is a lot of family and foundation ownership, and also state ownership. These two systems are institutionalized in different ways.”

Manager, United Defense (U.S).

In this chapter there will be descriptions of the historical development of the MICs in the U.S., United Kingdom and France. This will focus on different phases that shaped and steered these MICs, when there was growth and contraction, what the state’s role has been, and how it has shaped the present composition and conditions. In the design of this thesis, it is seen as of central importance to understand the historical development of the national MICs in order to understand their more recent functioning, since we analyze them as organizational fields which shape the discourse and action, and which set limits to the cooperation and integration with the defence industry. We must identify the focal actors or groups of actors, the vested interests that emerge and how they are manifested in driving forces and inhibitors, and how each MIC shows specific, national characteristics and patterns of behaviour. These descriptions are intended to increase the understanding of the MICs in order to better understand the following empirical chapters in Part III.

These three MICs will be further analyzed in Part IV Results.

5.1 U.S. MIC

Before the American Revolution in 1776, arms were mainly supplied from the UK, apart from local, simpler arms manufacturing. As tension grew between the UK and its North American colonies, the arms production gradually developed to supply the needs of the growing resistance. Military technology was rather primitive and varied little from what was produced in the peacetime economy. The economy was largely undeveloped, and the rebels had no government organizational or planning function that could organize more advanced arms production. Military and civil, private and public activities were therefore inextricably intertwined. *“Merchants simultaneously served as public officials and military officers while they continued to conduct their private business matters with an extraordinary mixing of financial accounts taking place”* (Koistinen, 1980, p. 7).

After independence was won from the UK, the U.S. weapons production was initially shaped by scepticism towards a federal army with overarching responsibilities. States⁴⁵

⁴⁵ Note that in this description of the development of the U.S. defence industry, ‘states’ denote a state such as Pennsylvania, Texas etc.

were supposed to rely upon local arms production. This soon proved insufficient, and the Congress established arsenals at Carlisle, Pennsylvania in 1776 and Springfield, Massachusetts in 1777. When the Articles of Confederation were replaced by the Constitution, a stronger state was created that could raise money and produce materiel for defence (Sorenson, 2009).

Naval production, however, was still in private hands. At first, the U.S. Congress took a clear stance that the U.S. should not be at war. But as its merchant ships were harassed by other navies, Congress authorized private entrepreneurs to start naval shipyards in Virginia and New Hampshire in the early 1800s. Naval shipyards were also created in Brooklyn, but acquired by the government in 1801. Five other shipyards were also authorized by the Secretary of the Navy in 1799 (Philadelphia, Boston, Portsmouth, Norfolk and Washington D.C.). The majority of the naval ships came from Navy shipyards. Much of the U.S. Army equipment came from Army arsenals (*ibid*).

In 1814, the British invaded and conquered Washington D.C. This was a serious blow to the young nation's pride. As a result of this (and other issues), President Monroe created in a speech in Congress the 'Monroe Doctrine' which stated that further efforts by European countries to colonize land or interfere with states in the Americas would be viewed by the United States of America as acts of aggression requiring US intervention. The Monroe Doctrine asserted that the Western Hemisphere was not to be further colonized by European countries, and that the United States would neither interfere with existing European colonies nor meddle in the internal concerns of European countries. The Monroe Doctrine also allocated funds to new facilities for military production, as well as a re-organization of the armed forces. The doctrine clarified and fortified the identity of the young nation, as well as the very expansive extension of American affairs to the whole Western Hemisphere. The doctrine isolated and insulated the U.S. from the rest of the world, and made the Americas its jurisdiction: "a policy not to have a foreign policy" (Kissinger, 1994).

With the Secretary of War from 1817 to 1825, John C. Calhoun, several new federal organizations were created that dealt with planning of arming its military forces. In 1846 the U.S. declared war on Mexico. The U.S. by then also had arsenals in Shuylkill, Pennsylvania, in Albany, New York and in St. Louis, Missouri. Equipment, however, reached the front lines late or far too late, and the U.S. war effort had big problems (Sorenson).

In the Civil War during 1861-1865, it became apparent that the industrial capabilities were crucial. The Union's economy by now had enormous production capacity; it was diversified and quite industrialized. There were also specialized functions in banking and marketing, and the federal government by now had developed abilities to handle emergencies effectively and efficiently. The North held a considerable advantage in industry, especially in having a tremendous dominance in steel production over the Confederacy. During the Civil War, the services had their separate acquisition, and these acquisitions were often also differentiated between the different state armies. Military procurement could not even largely be met by the arsenals, so there was considerable contracting to the private sector. However, the Civil War was rife with acquisition scandals of fraud, bribery and nepotism. The Civil War did show the dominance of steel ships over wooden ships in order to equip navies. Apart from being more vulnerable to bombardment, wooden ships could not carry the increased weight of the artillery and the motors. The South was considerably less

successful in organizing its production for its war needs and to mobilize its economic resources. This led to disastrous inflationary conditions (Koistinen, Sorenson).

For a long time during the late nineteenth century, the military services were in literal isolation in the United States. The nation was absorbed in growth, westward expansion, and industrialization. There was also very little risk of war. New technologies that formed new military applications – especially steel hulls for boats – drew the military closer to civil industry (Koistinen).

The Spanish-American War in 1898 revealed numerous shortcomings in weapons, which made Congress create further planning commissions for armaments production (Sorenson).

During World War I, the U.S. president Woodrow Wilson at first actively kept the U.S. outside the conflict. But when German submarines in 1916 sank U.S. merchant vessels (stocked with war supplies to Europe), the U.S. came to declare war upon Germany in April 1917. The U.S. military was not, however, prepared for war and had to rapidly create and build a vast acquisition organization. For the first time there was an attempt to mobilize the entire community towards wartime production, which meant forcefully converting certain parts of the industry. A War Industries Board was created in July, 1917. These efforts did not prove sufficient, and the U.S. Army had to depend greatly upon European-made weapons and aircraft (Koistinen, Sorenson). The U.S. also suffered tremendous losses in its first participation on the Western Front (Englund, 2008). After the war, U.S. arms merchants proved to have been selling arms to several nations on both sides, thereby prolonging the war. The effect of fighting incomprehensible wars in Europe with tremendous losses in human lives, and the scandals of the arms companies, created a general pacifist movement in the U.S. and elsewhere (Sorenson).

The War Industries Board (WIB) during WWI was mostly staffed with highly influential industrialists, who in parallel pursued their other economic interests. This naturally caused concern and criticism about how such private interests were obscured within wartime production. The federal government held no functions or capacities to organize the industrial production and saw no other solution. There was considerable friction between WIB and the War Department, and the military procurement was almost paralyzed. The industrialists in WIB suggested that all military procurement should be placed within WIB. President Wilson hesitated to place such mass concentration in the hands of these industrialists – who had previously proven to be ruthless exploiters in industry. Wilson did, however, force the War and the Navy Departments to reform their structure and operations and to integrate their personnel into WIB. Especially the Army was forced to organize its principles according to the potential of industry and the economy, instead of primarily basing its planning on military tactics and strategy. Thus, strong links between industry, government administration and the military became institutionalized during WWI, laying the foundation of what would later be termed the U.S. MIC (Koistinen).

Before WWI, aviation had begun to grow in the U.S., and soon thereafter in Europe. These companies were not bound by centuries-old traditions as the naval and army production was. Aviators and aircraft developers thereby came to create a rapidly growing industry with rapid innovation. Aircraft production increased tremendously during the war as the importance of aircraft in warfare became obvious. The Navy and the Army, however, had their separate coordination plans. At the same time, car manufacturing was

growing, and the advances of factory management and planning enticed car companies to become involved in the aircraft industry, making motors (Sorenson).

During the 1920s and early 1930s, several international treaties⁴⁶ held arms production at a low level internationally. The size and capacity of the U.S. armed forces shrank dramatically. The U.S. depression in the early 1930s further lowered the willingness to spend money on defence. The aviation component, though, was highly developed in close co-operation between aviators and private industry, which was an anomaly to U.S. arms innovation traditions primarily through arsenals and government shipyards. Private manufacturers of handheld guns and machine guns were rejected by the Army before WWI, as it wanted to create its own weapons. After European armies adopted these weapons, so did the U.S. Army. The Navy had developed the aircraft carrier, naval aircraft and other capabilities, but these were not produced; they were merely ideas or prototypes that had to wait until WWII (Sorenson). However, the massive production during WWI created bonds between industrialists, the military and government functions, which gave experiences and business ideas that could be reactivated if there were new massive demand shocks for weapons (Koistinen).

The U.S. industry had grown considerably since the early 1900s and had started to become a global competitor and innovator. The rapid development of industrial production had also created much more elaborate government functions and military planning. These three communities could therefore more easily shift into a joint mass-development model (Koistinen).

In the 1930s, the Senate created a committee to develop the munitions industry. From 1934 to 1936, the Nye Committee conducted a profound review of the U.S. munitions industry. According to Koistinen, this committee is sometimes put forward as a true example of selfless businessmen who, with a patriotic purpose, helped the nation in developing the munitions industry. On the other hand, within this committee there were extensive profiteering and questionable practices which did not at all reflect the nation's interest. "*Still and for all, on every key issue, industry and the military engaged in a practice of mutual support which reached proportions of irresponsibility for the nation as a whole*" (Koistinen, p. 13).

As Japan and Germany began to arm themselves in the early 1930s, President Franklin D. Roosevelt began to acquire more naval ships. In 1940, the Navy was set to increase by 70 %. After Japan's attack on Pearl Harbor in 1941, Roosevelt set highly ambitious goals for arms production. Funds flowed freely, and the defence industrial base grew rapidly. Factories were quickly converted to wartime production. The production quickly stretched the limits of the military arsenals and shipyards. In order to facilitate the needed growth of arms production, the contracting procedures were made much more flexible, and risk was also lowered for private companies through fixed-price contracts (Ibid).

WWII created an era of huge military budgets, a highly developed defence industrial infrastructure and an acquisition system that demanded a vast bureaucracy. There was considerable migration in the U.S. due to the local needs of war production, and since so

⁴⁶ The Kellogg-Briand Pact of 1928, for example, had attempted to outlaw war as an instrument of national policy.

many men were soldiers, Afro-Americans and women became new components of the work force. Many areas became dependent upon the new large employers. The Navy and the Army organized the innovation through their own facilities, arsenals and shipyards. Production (which they could not perform themselves) was implemented by the mass mobilization of civil industry (Ibid).

The U.S. exited the global war and entered a new world in which it became thoroughly engaged in international affairs, based on the assumption that a stronger U.S. could have prevented WWII. Soon thereafter, the opposition vis-à-vis the Soviet Union further supported the relevance of a national defence industrial base. Right after the war, arms production dropped sharply, but not in the same manner as after WWI. The defence business changed after WWII, as the U.S. stayed mobilized, maintained significant military capabilities, and remained engaged in world affairs. The arms production picked up again and reached new heights by the start of the Korean War in 1950. What used to be an episodic business at war became a significant and ongoing economic activity. Many of the firms called in for wartime production wanted to remain involved after the war. WWII had also attracted previously unforeseen mobilization of scientific talent on both sides of the Atlantic. Aviation had grown rapidly and dramatically changed the nature of warfare. The Cold War became a struggle of holding a technological edge over the potential opponent (i.e. the Soviet Union). The government-owned facilities had technologies for the old war, but not for the new ones. The U.S. defence budget was lower than during the war (at its peak it was higher than the GDP!), but was now always clearly higher than before WWII (Sorenson, 2009; Sapolsky et al., 2009).

In 1947 the Air Force was created, and in the Key West agreement in 1948, the Army's aviation role was restricted to propeller aircraft and helicopters⁴⁷. The naval aviation was restricted to roles supporting naval campaigns. These efforts were made in order to settle inter-service rivalry and to refine the role of a separate aviation service. The four Services (including the Marines), however, maintained strong competition between them, and also developed strong bonds with certain aviation companies, creating separate acquisition and innovation systems (Ibid).

The Eisenhower administration increased the influence of civil planning, bureaucratic and scientific analysis over military planning, thereby weakening the service authority. The Services came to ardently defend their slices of a shrinking pie. This further clarified the inter-service rivalry. The rivalry was also over military doctrine: the Services wanted to influence doctrine priorities, e.g. whether ballistic missiles should be fired from submarines (Navy) or from airplanes (Air Force), or whether the number and quality of main battle tanks were crucial (Army) (Sapolsky et al., 2009).

The Kennedy administration's secretary of defence, Robert S. McNamara, adopted 'systems analysis' as a method of defining and creating doctrine. McNamara created 'the strategic nuclear triad': long-range Air Force bombers, Air Force intercontinental ballistic

⁴⁷ The Army would be allowed only to retain aviation assets for reconnaissance and medical evacuation purposes.

missiles (ICBMs) and the Navy Fleet Ballistic Missile program for submarine-launched ballistic missiles (Sorenson).

Overall, the U.S. kept its system of arsenals and government shipyards until after World War II, and some elements continue on today. The high costs of the Cold War made the previously war-induced rapid expansions into a permanent state of affairs, thereby shifting the responsibility to civilians appointed by the president (Sapolsky et al. 2009, Sorenson). The U.S. MIC was established during WWII when the government created a huge planning system for the military acquisition, innovation and production. As this huge production setup was preserved after the war, the strong bonds and interdependence between the military, Congress and the private companies became permanent, thus creating what became known as the military-industrial complex.

Non-private factories with low efficiency were hardly compatible with American general standards of what the state should do or not do. The Army arsenals and Navy shipyards could be kept since they had their champions and protectors in Congress who valued the jobs they sustained. Robert McNamara centralised much of the dispersed arsenals and shipyards, putting them under central planning and scrutiny (Sorenson). With each budget downturn during the Cold War, government-owned facilities were closed down, but private facilities persisted and often acquired the government's closed-down facilities (Sapolsky et al).

Presently, there are still Army arsenals, Navy shipyards and Air Force bases with development and (limited) production. Some of these are owned by the Services, but run by private companies – they are called GOCOs (government-owned, contractor-operated facilities). Finally, there are the private companies (Sorenson).

“The inclination to exaggerate is reinforced by a political system that requires shouting to be heard. Interests pull in every direction. A bit of creative imagination is hardly a big stretch for those describing security threats in the competitive world of budget politics.” (Sapolsky et al., 2009)

According to Sapolsky et al (2009), the private firms that wanted to stay in business after WWII had several advantages beyond technological prowess. The defence industry came to develop its own style of business-government relations. Such skills were their responsiveness to the particular desires of their military customers, and their ability to operate in a complex environment that blended technological skill, economic investments and political aptitude. The private companies also had a hierarchy that made them more responsive to military desires. The arsenals had their separate military hierarchy which came into conflict with the military's. Further, the firms became very skilled in interacting with congressmen and senators in order to gain the mutual interest of maintaining certain facilities. Companies can also hire lobbyists and support political campaigns, which the military cannot. The defence contractors' deep knowledge of government procurement regulations is one of their key competitive advantages, which is helped by their inclination to employ retired military officers, thereby gaining insight into military priorities and thinking (Sapolsky et al).

Based on an analysis of structure, competition and innovation, Lorell described how the U.S. military aircraft industry from 1909 onwards experienced a sequence of technology phases⁴⁸, each interrupted by some revolutionary innovation, and how each such paradigm shift brought with it repercussions on industry structure and competition (Lorell, 2003). The private part of the U.S. defence industry has mostly grown out of the aviation industry that originated just before WWI. Gradually during the Cold War and afterwards, Army and Navy arsenals and shipyards have become private companies. Since the Cold War, most of these privatised arsenals have been acquired by companies stemming from early aviation companies, such as Lockheed, Martin, Northrop, Grumman and Boeing.

If we divide the defence industry broadly into naval, army and aviation companies, these have expressed quite different patterns and norms during the 20th century concerning development, innovation of relations with the military, and the government functions. The differences, according to Gansler, are largely attributable to their long-time traditions and developments. More recent companies in electronics and other “virtual” technologies thus lack such historic luggage.

After the end of the Cold War, the U.S. had an enormous military organization supported by an adjoining defence technology process and defence industry. This was no longer justified by the existence of an opposing, offensive superpower. The Clinton administration came to the conclusion in 1993 that it did not want to support the breadth and number of defence companies in the U.S. Defense Secretary Bill Perry invited a large number of defence company executives to a meeting in Washington D.C. Perry announced that the number of companies had to decrease. This meeting, afterwards nicknamed *The Last Supper*, initiated a wave of restructuring, mergers and acquisitions. “*We expect defence companies to go out of business, and we will stand by and let it happen.*” The defence companies were expected to become fewer, and to reduce their over-capacity. Soon afterwards, the merger and acquisition intensity increased rapidly, and the different defence sectors became much more concentrated (Jarlsvik, 1998; James, 1998; Markusen & Costigan, 1999). This concentration process was stopped by the blocking in 1998 of a merger between Lockheed Martin and Northrop Grumman. Gansler (1980) had seen that each rapid build-up and rapid sell-off after WWII had increased the concentration in the defence industry. According to Sapolsky et al (2009), over-capacity did not shrink. Companies in unison with individual representatives of Congress protected specific facilities adhering to the individual senators’ and representatives’ constituencies (Sapolsky et al., 2009). The concentration came to such a point that the proposed merger between Lockheed Martin and Northrop Grumman in 1998 was blocked due to anti-trust concerns.

Sapolsky et al. call several of the private companies ‘private arsenals’, since they have taken on the task of the old arsenals; but the government funding of their R&D and production removes much of the ‘privateness’ of the companies. The more official name for what Sapolsky et al. term an arsenal is a ‘depot’. The government becomes a technological entrepreneur that assumes the technological risks. The companies took over government

⁴⁸ Five principal U.S. technology areas and their innovation periods for fighters and bombers (airframe/engine) during 1909-2000: 1909-31 Biplane; 1931-45 Prop monoplane; 1945-53 Subsonic jets; 1953-81 Supersonic jet; 1981- Stealth (Lorell, 2003).

functions of organization, planning and technological integration. The government and the contractors are now very dependent upon each other, in what Price (1954, 1965) calls 'the Contract State'.

With the presidency of George W. Bush in 2001, a more unipolar U.S. security stance was declared. After the events of September 11, 2001, the U.S. started a massive military build-up. In the following years the defence expenditures doubled, and the defence industry flourished. At the same time, the interest in transatlantic defence cooperation decreased sharply. This development is described later in the thesis.

5.2. UK MIC

William the Conqueror started in the 11th century to build a system of royal arsenals in order to supply his small professional army. In the 14th century, powder production and cannon casting became crafts that the King could not organize by himself, and private entrepreneurs received contracts for supplying these crafts and such products.

After the Wars of the Roses in the 15th century, there was a steady demand for guns, and this role was given to the Royal Arsenal of Woolwich, which lasted well into the 20th century. The need for ships expanded and the Royal Dockyards were established in the 16th century in various parts of the kingdom, creating aligning networks of timber-seasoning, mast-preservation, shipbuilding and refitting. Royal dockyards built larger vessels, and private companies smaller ones. As shipbuilding became more advanced, the design of the ships became a function of the Admiralty (Higham, 1981).

From the 16th until the 19th century, the arsenals became more specialised and assembled guns and cannons from parts usually supplied by outside manufacturers and fitted together by royal workers. In the 19th century, Vickers became the leading global exporter of artillery, and later served as a warning example of "the merchants of death" who indiscriminately sold artillery to military forces all over the world, often supplying both sides in ongoing wars. Scott's of Clydebank became a shipbuilding firm that also exported heavily thanks to its pioneering propulsion systems (Higham).

International merchant companies like the United East India Company created their own dockyards, designing vessels capable of defending themselves against pirates. During the 19th century, several innovations (steam engines, steel ships, screw propellers, electricity and finally the internal-combustion engine) created several pulses of innovation and brought in new firms, making the centuries-old wood-centred dockyards less important and creating a lasting dependence upon private innovation and production. Scott's of Clydebank was one of very few naval dockyards that throughout the 19th century adopted new innovations in naval ships. It made a large part of the British warships in WWI and WWII, but its operations dried up in the 1950s (Higham).

Naval innovation was for a long time driven by the continuous wars with France. Thereafter the needs of the British Empire and the protection of British merchant ships pushed on. After WWI, the Royal Navy tried to maintain a sizeable British dockyard capacity, but there was considerable overcapacity. According to Higham, there was still "a cosy relationship" between the Royal Navy and the dockyards, since most of the managers came from the long-term stability of management and a naval elite. Retired naval officers also tended to end up in senior positions at the dockyards (Higham).

In the 19th century, Britain's capacity to produce equipment for its military forces depended essentially on the country's capacity to build ships and its expertise in the characteristics and fabrication of metals. Specialist munitions companies such as Vickers appeared, and chemical industries became important as manufacturers of explosives (Taylor and Hayward, 1989).

Before WWI

Aircraft production had commenced at the Royal Aircraft Factory, which however was soon attacked as incompetent. Private companies such as the Aircraft Manufacturing Company, Vickers and Handley Page overtook its production role (apart from blimp production). The growth of civil aviation was firm, but still much smaller than the WWI demand, so the Air Ministry worked to keep a nucleus of companies in operation until possible future rearmament. Nevertheless, there was no impetus in these shadow factories, and innovation stopped. So there was clear overcapacity in aviation as well as in ship-building after WWI (Higham; Edgerton, 2006).

The British aviation industry began by serving officers and gentleman adventurers who were allowed to conduct their activities and experiment at the balloon factory at Farnborough. In the first years there was rivalry and total separation between the Army's and the Navy's aircraft development. During WWI the balloon factory, now the Royal Aircraft Factory, was barred from production due to the chaotic organization of military procurement; and airframe and engine manufacturing was concentrated in private hands. At the end of WWI, there were around 60 new aircraft firms, compared to 16 at the beginning. The aircraft development largely came into private hands, in contrast with the Navy, which still produced the specifications and the design of its naval ships (Ibid).

WWI

In WWI, there was mass mobilization of the British society for arms production (albeit less than in WWII). After the war, there was a sharp drop in demand for tanks and naval vessels. The dockyards continued to produce smaller vessels and to refit major warships. The designs still came from the Admiralty (Higham).

Tanks were a new invention in WWI. The overall designs emanated from the Admiralty's Landship Committee, and then from the War Office, but were implemented by specialist private firms in the 1914-1918 war (Ibid).

Interwar years

During the interwar years, the tank production was shared between the Royal Arsenal at Woolwich and Vickers. The great expansion in demand during WWII brought in auto makers to match the enormous demand. The dockyards experienced a considerable rise in demand for commercial merchant ships during the 1930s, which saved them. The greater rise in commercial aviation came after WWII. In guns and artillery, the development has followed similar patterns as in naval production, with a responsive private sector doing a lot of production and including new innovations. In WWI, the state had created a system of arsenals, which could not be sold and were maintained by the state until WWII, an asset that gave the UK some readiness (Higham; Kennedy, 1983).

In the interwar period, Vickers became the totally dominant British supplier to the British army, supplying virtually all armaments from guns and tanks to artillery (also for naval vessels). Vickers had outlasted the demilitarization and the global pacifist movement of

the 1920s and early 1930s, and was ready when demand picked up in the 1930s. In the years between WWI and WWII, British aerospace manufacturers were highly successful in exporting aircraft. Vickers also had considerable export success (Higham).

Several analysts later claimed that the British defence industry fell to a level that was detrimental to Britain, and that this increased the vulnerability of the UK before WWII and also increased Germany's inclination to militarize towards WWII (Kennedy, 1981, 1983; Watt, 1990). Others argue that Britain's diminishing defence industrial capacity was a sign of the times in the strong pacifist and demilitarization movement that came after WWI. It was rather Germany and Japan that broke the trend, and their future adversaries in WWII later were forced to pick up on the remilitarization (Edgerton, 2006).

WWII

During WWII the UK economy became militarised to a substantial extent. After the war, military technology and military R&D experienced a continued positive attitude from the state. Thereby, several of the industrial entities (notably radar and jet engines) that were created by necessity during the war were transformed into companies. Several of these companies achieved a privileged, monopoly-like relationship with the state (Loving, 1990). The UK defence industry had traditionally operated in an environment vastly different from the civilian marketplace. Until the 1980s, most contracts were awarded by the state in a non-competitive procurement fashion according to actual cost, plus a profit markup. Companies faced few pressures to lower costs, and cost overruns were more the rule than the exception. Senior management was dominated by technical specialists rather than commercial business skills. As in many nations with a broad, domestic defence industrial capacity, a close and "cosy" relationship existed amongst management, the military and the state (Bishop & Williams, 1997).

As the scientific work and secret government testing had been perfected, private firms were called in to do the production. The Air Force strove during WWII to maintain a diversity of firms, and fifty-nine different designs for aircraft were reduced to eight. The production of these was distributed amongst the companies under the auspices of the Ministry of Aircraft (Higham). In two areas during the 20th century, the innovation was initiated and driven by the government: radar and jet engines during WWII.

Post-WWII

After WWII, the government dictated the work of most companies. It also forced mergers. After some companies went bankrupt in the 1970s, they were nationalised as the British Aerospace Corporation from 1978 onward with 140,000 employees, thus creating what was to be known as British Aerospace. Several bankrupt British dockyards were also nationalised in the 1970s (Ibid).

After WWII, the UK launched several large defence programs. As these entered service in the 1950s, it became apparent that UK defence production overall in many respects was costly and technologically unsatisfactory. As a response to this, a procurement reform was launched in the 1960s: the 'Downey System'. This system formalised the process of product development into a sequence of funding decisions designed to ensure that equipment was tailored to British Armed Services requirements. Contracts focused on major 'weapons systems', coordinated by prime contractors, and funded on a cost-plus basis. This system provided high levels of profit for the defence companies. The companies, however, complained about inconsistent government policy and that the peculiarities of the defence

procurement and technology development systems made them hostages of the defence system, unable to enter the non-defence markets as well (Lovering, 1990).

The British Defence Procurement Establishment had grown by 1976 to employing 55,000 people in twenty-four research and development establishments and a further forty out-stations as well as thirteen government factories. The UK defence bureaucracy was thus enormous; these 55,000 do not include researchers, military officers, other defence authorities and the defence industry (Edgerton).

Cold War swing

The Falklands crisis in 1982 made the Ministry of Defence (MoD) stress that the UK needed a “strong indigenous defence industrial base”. The UK had problems with acquiring some crucial components from non-British manufacturers during the crisis, and the MoD saw this as alarming (Hartley et al., 1987).

In the mid-1980s the Thatcher government adopted a new course that radically broke with established and stable British traditions in defence production. The changes were in line with an overall policy change in the UK to reduce public spending commitments and control. Defence spending was cut as an effect of this, not due to rethinking of the defence policy. Defence companies largely became privatised and defence contracts were awarded on competitive grounds, rather than to preferred suppliers with fixed-price contracts. Furthermore, the UK government stressed in 1983 the goal to receive ‘Value for Money’ from the defence equipment budget. Previously, cost overruns were quite prevalent and the government normally covered these overruns with increased funds. With Thatcher, there was a markedly decreased readiness to spend more money on defence. The stress on value for money produced three sub-lines of policy which were of consequence for the structure of the British arms industry: collaboration, competition and privatization (Taylor, 1992; Kenny & Stessen, 1996; Bishop and Williams, 1997; Lovering, 1999; Dunne and Macdonald, 2001).

Hartley et al (1987) made an assessment of what were the strategic objectives of national security which might be achieved with a defence industrial base (DIB). The UK had gradually, during the 1960s and onwards, created a complex and irreversible independence of the U.S. Regarding conventional (non-nuclear) weapons and platforms, the UK had by 1987 to a large extent a domestic capacity that covered its needs for weapons production. In small steps, however, the UK had developed complex interdependent relationships with both Europe (primarily France and Italy) and the U.S. By that time, they could not develop their own fighter aircraft without the support of U.S. technology. The U.S. was the provider of certain types of missiles. There was also a shared dependence with a few European nations regarding e.g. helicopters, transport aircraft and certain types of missiles. Tanks and armoured vehicles had not seen success in finding collaborative programs. Naval vessels were also practically exempt from multilateral collaboration, although the UK was dependent upon buying certain systems and technologies from other European states (Hartley et al., 1987).

As in many other nations, the governments had come to realise that they could not domestically finance armaments development since defence R&D costs had risen many times more than defence funds. Therefore, there had been an ongoing trend since the 1960s to pool defence programs between especially France, Germany, Italy and the UK. The Thatcher reforms increased the British involvement in such multilateral collaboration

(Taylor, 1992; Lundmark 2004; Hébert & Hamiot, 2004). As for competition, UK defence contracts were now awarded in competitive tenders where foreign companies were invited to bid. To introduce such new routines was a shock to British systems, having been domestically insulated for decades. Regarding privatisation, a handful of large British companies were privatised: Rolls Royce (jet engines and turbines), British Aerospace, British Shipbuilders, Royal Ordnance (e.g. ammunition, mines), Shorts (missiles). The companies reacted to these government initiatives by engaging in mergers and alliances, diversification, and rationalisation (Taylor, 1992).

After the Cold War

After the end of the Cold War and a few years of confusion, extensive collaboration started between the British government and military in order to facilitate arms export and thereby maintain the now over-sized British arms industry. Several export and domestic procurement scandals had now deteriorated the generally benevolent attitude towards the defence industry. New business practices and the domestic near-monopoly of British firms put the companies in new situations. Increased government scrutiny and influence on defence R&D, procurement and production severely diminished the long cosy, gentleman-like cohesion between the military officers and the management of the companies (Cooper, 1997; Lovering, 1999; Lovering, 2001; Dunne & MacDonald, 2001).

The end of the Cold War marked an external paradigm shift for the conditions of the defence industry in the UK and elsewhere; but prior to that, the Thatcher government had radically changed the conditions of the UK defence industry.

The end of the Cold War created a marked worldwide change in the relationships between states and arms industries (Dunne and Macdonald). Especially in the 1990s, there was much debate of whether defence companies (not just in the UK) should, thanks to the 'peace dividend' after the Cold War, engage in either diversification (i.e. also entering non-defence markets) or conversion (i.e. to exit the defence market and enter the civil market) (Lovering, 1990; Taylor, 1992; Kenny & Stassen, 1996). These visions generally came to nothing. The defence industrial production processes, technology development processes and labour structure were not easily converted, nor adequate for non-defence markets. Many of the companies instead chose to remain in their well-known market, albeit a market with a decreased overall volume. Most real attempts to enter non-defence markets were unsuccessful (Taylor, 1992; Bishop, 1995, Hayward, 2005).

The corporate strategy that ensured continued market presence was consolidation – to merge with others or acquire other companies. Associated with this is also the complex web of alliances, joint ventures and co-productions that gradually has taken over an ever larger share of the European defence production (Hartley, 1998; Hébert & Hamiot, 2004; Lundmark, 2004; Hayward, 2005; Bitzinger, 2009).

In the UK, a country with a long history of military arsenals and naval dockyards supported by the private manufacture of specialties, a natural military-industrial relationship has long existed and been governed by the mores and ethics of the society in which it flourished. It has had its ebbs and flows depending upon the demands of defence and commerce. In times of military or technological stress, the state has come to rely more on private resources. How the different military services reacted to innovations tended to vary with the state of the art and of the relationships between arsenal or dockyard and private industry in each field at the time, as well as with the political, social and economic connec-

tions of the entrepreneur at the time. According to Higham, even in periods of radical change – as when the internal-combustion engine, the submarine, the airplane or the radio appeared – the overall relationship between the state and the private entrepreneurs has remained stable. Higham further states that this is primarily because the inventors came from the upper or middle classes and were “*already imbued with British standards and values or they were soon associated with firms steeped in those traditions*” (Higham, 1981).

Far from the later ideas of a sinister MIC, Higham stressed the British weapons production as being a natural and complementary arrangement which suited most members of the society. Paired with military needs of British weaponry due to wars in Europe were the demands put upon the British Empire due to its global colonial reach – especially concerning its naval industry. The British Merchant Navy and the British Empire were dependent upon a symbiosis with, and defence by, British military vessels. There was also a general consensus in society that Britain should maintain and develop the reach of the British Empire, so there was a harmonious attitude especially towards the Navy (Ibid).

In general, the UK defence industrial community had a stable and beneficial environment from WWII until the 1980s. The main defence companies were by and large the same ones at the end of WWII as in the mid-1990s, albeit with different names (Lovering, 1990; Bishop & Williams; Taylor, 1992).

The UK has a history of strong government support for weapons, development and production. In the interests of national security and sustaining a viable defence industry base, the limiting of competition for the supply of equipment – often to the extent of single sourcing – has been a key strategy (Kenny & Stassen, 1996).

The UK government has since the 1990s been quite open towards foreign competition in UK procurement, as well as foreign acquisition of defence companies. Protected status has diminished and the evolving business environment has brought new demands on the management skills of those managing in the industry (Butler, 2005). Defence companies have more and more clearly been integrated into the general stock market, and thereby the investors’ demands on shareholder wealth and short-term profit have altered the management focus of the UK defence companies (Masson, 2006, Masson & Paulin, 2006).

5.3 French MIC

This description of the creation of the French MIC rests heavily upon Giovachini’s (2000) book about the growth of the French defence industry in the 20th century. If not otherwise stated, the reference is to Giovachini.⁴⁹

France, like all great European powers, has a long history of wars and the French state is steeped in customs of organising and influencing the domestic defence industry. There has been an unbroken tradition of *étatisme* in France regarding the relationship between the

⁴⁹ A more detailed translation to English of Giovachini’s book can be found in Lundmark & Giovachini (2004), *The development of the French defence industry in the 20th century*.

state and arms production (Clarke, 1981). The production of powder was set under state regulations in 1336 and saltpetre was disallowed for export in 1540. In the 18th century, monopoly for the production of explosives and powder was given to the *Régie royale des poudres*, transformed into the *Agence des poudres et salpêtres*. This state monopoly was upheld until 1970, when it was transformed into a commercial (but government-owned) company, the still existing *Société nationale des poudres et explosifs* (SNPE).

During the 16th to 18th centuries a system of state arsenals combined with private *armureries artisanales* (weapon arsenals) was established. The private entrepreneurs produced hand-held weapons, cannons and swords under state supervision. In return they got the benefit of the government guaranteeing that it would not buy from others and that others were not allowed to produce for it. In 1533, the first French arsenal for cannons was created in Paris.

In the naval sector, the first arsenal was created in Rouen in 1294. In the 17th and 18th centuries, further arsenals were created or declared in Brest, Rochefort, Toulon and Lorient. In the 19th century a further arsenal was created in Cherbourg, and Napoleon created arsenals in occupied territory in Venice, Anvers, Genoa and La Spezia. This was paralleled by the creation of several foundries for naval cannons.

Engineers

The French state created specialised armaments engineers, and several scientific institutions had a strong military orientation. *L'Académie des Sciences* was founded in 1666, and played an important role for the development of the defence industry. Louis XV later created the first engineering schools, primarily created for the needs of the military. *L'École de l'Artillerie* was created in 1720 and *École de la Génie militaire* (Engineering troops) in 1749. In 1760, *École Militaire* was created in Paris, along with ten *écoles royales militaires* in the provinces. The naval forces got their engineering schools in 1747 and 1765. *L'École Polytechnique* was created in 1794, a school that ever since has been almost the only place of recruitment for defence-oriented engineers. Napoleon I changed its status into a military school. Further categories of specialised engineers were created, such as the *Corps special des ingénieurs des poudres et salpêtres*, and the naval engineers in 1909.

Contraction, expansion and restructuring

After the Napoleonic wars, the defence industry had a period of contraction and consolidation as the defence budgets decreased. After 1840, a period of increased defence spending started. The humiliating defeat by Germany in 1870⁵⁰ was followed by a period of reorganising of the artillery and more efforts with artillery materiel (Clarke, 1981; Gio-vachini).

Between 1850 and 1900 a mixture of political, economic, social and technological changes forced the French army to completely reorganize the state industries. British and U.S. industrial transformations of the production processes, as well as technological breakthroughs, inspired reforms of the French defence industry in the late 19th century, thereby

⁵⁰ When France attacked Prussia, it was severely outgunned by the German artillery and lost Alsace and parts of Lorraine.

making mass production possible. This restructuring was also followed by a process of re-locating the means of production. The factories and foundries had previously been located near the North and East borders, i.e. close to the countries they usually fought. Factories were in this process moved to locations more centrally located in France. Naval arsenals in the late 19th century were brought under centralised planning. Reforms of industrialisation (as for the army materiel), however, were not implemented (Ibid).

A new law in 1885, *loi Farcy*, liberalised the production and the commerce of arms. The law was intended to inspire the private entrepreneurs to find customers abroad and to develop a more prosperous French defence industry. The primary initiative became to sell cannons. Certain targeted countries were chosen that wanted modern artillery, but lacked the industrial means – e.g. Russia, China, Japan, Spain, Balkan countries and South America. However, the customers were financially weak and unstable, and the competition from other foreign companies, primarily Krupp and Vickers, made the outcome of the export plans less prosperous than expected.

The birth of the aeronautical industry

At the turn of the century, the aeronautical industry began to grow. The French aeronautical industry was created by private entrepreneurs. In 1909, the army ordered its first aeroplane. *L'École supérieure d'aéronautique et de construction mécanique* was created the same year. In 1912 the *Centre d'aviation marine* was created in Fréjus. The artillery and engineering corps had their process of aeronautical innovation, and the navy had another – the processes were quite separate. But the aeronautical sectors were seen as inferior to the established military sectors; they were regarded as simply providing supplementary sources of information.

By the start of WWI, the private industry was in general furnishing less specialised materiel to the military than the arsenals did. It was also attempting to export, whereas the arsenals strictly produced for the French military. The influential corps of military engineers was a distinctive trait of the French system of armaments production, where the recruitment was still from only one school, the *École Polytechnique*. This made possible a strong unification and control of the armaments production.

WWI and the birth of the French military-industrial complex

During WWI, the French state gradually engaged in and organized the armaments production, driven by military needs. The French and the German military forces during the war invented, and caused each other to invent, both weapons and countermeasures or superior alternatives. France ordered its first battle-tanks in 1917 – two series of 400 from Schneider – seven months after the first British tanks entered the war. Military aviation grew rapidly. Airplanes gradually achieved a more and more offensive role during the war, especially once their machine-guns could be fired through the propellers and with the invention of bombs for airplanes. At the end of WWI, France had 12,000 military airplanes. Naval aviation grew later and more slowly than Army aviation. It consisted mainly of seaplanes, produced by e.g. Nieuport, Franco-British Aviation, Tellier, Donnet-Denhaut and Lévy-Besson. There were a few hundred aircraft in 1916, and 13,000 in November 1918. Overall and in all domains, the war was a major accelerator for the evolution of armaments technology. France's entire scientific and innovative resources were activated in this process.

Industrial mobilisation for WWI

The qualitative leaps in armaments production were also paired with unprecedented industrial mobilisation. An industrial policy was shaped for the military needs. A Ministry for armaments was created in order to centralise the state interests. The naval needs were conveyed through the Ministry of the Marine, however, and the aviation requirements through the War Ministry. During the war, the state came to the conclusion that it had to organize the industry and the incentive structure for mass production of armaments. The importance of logistics and industry in order to win a war was understood, and became more planned, organized and scientific than ever.

By the end of the war, ten new state production units had been created, there were 15,500 private companies, and the armaments sector employed 1,700,000 people. France had undergone rapid expansion during the war, and exported heavily to its allies by the end of the war. The private sector made up one fourth of the armaments production at the beginning of the war, and three fourths at the end.

The state organized, supervised and maintained the defence industrial production. It established production programs, made financial solutions for the entrepreneurs and helped with recruitment of personnel. The corps of engineers gradually gained influence at the expense of the military bureaucracies, which was also in the interest of the state. The rapid growth of the French armaments production created a multitude of committees, supervisors and new organizations.

The private industry created cartels, or larger groups were established. The state held a firm grip on the overall system, but denied strong socialist proposals for nationalisation of the industry. The state could not replace private initiative; the industry was seen as the motor of the economy. The state had to plan initiatives without taking the role of the companies. The production resources had to be oriented and co-ordinated. The industrial capacity was dimensioned for a nation at war, and therefore this structure deteriorated when the war ended. The state's role in this military-industrial complex (MIC) left important footprints in the defence industry structure and for the future role of the state.

Between WWI and WWII

After WWI, the UK and the U.S. to a large extent dismantled their armies, whereas France had the strongest armed forces in the world. In ten years' time, this force was gradually decreased. A large portion of the defence budgets went to the building of the Maginot Line. In the 1930s, due to Germany's general militarization and specific militarization of the Rhineland, as well as to the Spanish Civil War, rearmament and rebuilding of the defence industry began.

From 1919 to 1930, the defence materiel produced in France consisted largely of models used during WWI. A process of building prototypes was used (mostly tanks and airplanes), but they never came to serial production. The armed forces were also reluctant to change their doctrine and strategies in order to take advantage of the possibilities that came with new innovation. In the early 1930s, there was higher demand for more modern equipment, but the Maginot Line (finished in 1935) used up a large portion of the resources; only 10 percent were used to buy armaments. The private industrialists had to a large degree lost interest in the armaments market (Clarke, Giovachini).

The French aerospace industry collapsed after WWI, going from a workforce of 200,000 to 5,000 in 1919. A disparate and inefficient production of prototypes was its primary output (332 models from 1920 until 1930). In 1930 the workforce had risen to 15,000.

Military aviation was still not considered as important as the army and the navy, and had a weaker position in the military headquarters. There was distinctive separation between the three services.⁵¹ The military strategy was fundamentally defensive, manifested by the Maginot Line. Aviation was still given an information-providing role, and the navy only had light vessels for protecting commercial ships.

Nationalisation

As tensions in Europe grew, the government came to realise that France needed massive modernisation and military rebuilding. In 1936, the government of the *Front populaire* nationalised thirty-nine armaments factories, made possible by a new law. It also had an ideological character: the “merchants of cannons”⁵² should not be allowed to become excessively wealthy. The industrial capacity was also seen as highly insufficient for France’s needs. The land armaments concentration remained in this form until 1989, when GIAT became GIAT Industries. The aerospace industry was divided into six regional groups, classified as *sociétés nationales*, with their capital partly held by the private sector. The aerospace factories were also dispersed; their concentration to the Paris area made them vulnerable to German bombardment.

The private companies were closely controlled and scrutinised. The law passed in 1939 for the “armaments regime”⁵³ is still in practice. By nationalising and concentrating the defence industry, the state was now able to create larger armaments programs. In 1936, the military headquarters asked for funds of 9 billion francs, but were granted 14 billion, so the government was very serious about the armament. In 1939, it had risen to 21 billion. The rearmament focused on modernisation of the army (mainly tanks, anti-tank weapons and artillery) and on industrial mobilisation (Alexander, 2003; Giovachini).

France had created a considerable build-up of its defence industry from 1936 to 1939, but the German industry was in all respects qualitatively superior. The build-up of the defence industry, the organization of procurement, the research, innovation and control – the expansion of such activities was almost entirely made by armament engineers.

The period between the wars was characterised by a phase of decline and fragmentation, a phase of gradual industrial build-up, a phase initiated by a harsh nationalisation, and lastly a phase of faster industrial build-up. The French defence industry to a large degree remained fragmented and not subject to a national strategy. The nationalisation made programs possible that lasted for several years. Grave inefficiencies were apparent due to different perspectives and priorities between the military and the government, as well as to the output of prototypes rather than operational, modern materiel.

WWII

After the war started, France worked fiercely to build up its military and defence industrial capacity. An armaments ministry was created in 1939 that was in charge of all services’

⁵¹ More correctly two services and an auxiliary function, since an autonomous Air Force was not created until 1934.

⁵² My translation: *merchants de canon*.

⁵³ *Régime des matériels de guerre, armes et munitions*.

armaments. It controlled more than forty arsenals and factories and also supervised the activities in 12,000 private defence companies. Reserve officers from private industry took charge of the conversion of private industries to defence production. The generals' headquarters, however, had its own perspective, according to Giovachini. The armaments ministry received demands for munitions and materiel that were impossible to deliver. The French defence research was almost non-existent, and a lot was produced under foreign patent. The industrial productivity was still vastly insufficient, and in late 1939 some of the factories were given back to their owners before the nationalisation in 1936, under the condition that they solely directed their efforts towards armaments.

The French defence materiel proved to be vastly inferior to the German armaments when the Germans invaded in May 1940. The air force had 1,500 airplanes against the Luftwaffe's clearly superior 3,500. The German armed forces also proved to have superior military tactics and strategy. The French armed forces were defeated in one month and a half.

The humiliating defeat in 1940 was, according to Giovachini, an event that – along with the defeat at Dien Bien Phu in 1954 and the Suez Crisis in 1956 – motivated de Gaulle's later defence policy from 1958 onward, which to a great degree has been maintained by subsequent French presidents. The present-day relation between the ministries and industry has been extensively upheld from 1939 until today.

Post-WWII

The French state wanted after the war to restore the French armed forces to be a largely autonomous, modern and reactive military. Help from allies, the UK and primarily the U.S., was instrumental in the French build-up. After 1950, the U.S. aid was substantial in all areas. U.S. weaponry introduced new technologies to the French military. The French forces also became a part of the Atlantic forces. The first French steps towards a nuclear capacity were taken in October 1945. De Gaulle wanted a strong and responsive army, whereas the socialists wanted to decrease its size and make it primarily defensive.

The existing French defence industry in 1945 was very limited, and its technology content was largely outdated. In 1944-46, the production was inefficient and often abandoned. The naval arsenals were used in order to rebuild the commercial fleet. The aerospace industry was in better shape, partly because the Germans safeguarded it in an accord with the Vichy government. As before WWII, an active policy of building prototypes was started (around 40 each year between 1945-1950). Little military use came out of it, and primarily British planes were bought.

As international tension grew at the end of the 1940s, France committed itself more strongly to the Atlantic community, but was hampered in reaching its NATO ambitions due to its engagements in Indochina. France was given defence material from the U.S. under the "Mutual Security Act".

From November 1945 to January 1947, the armaments policy was centralised under one ministry of armament, but then converted back into three separate ministries for *Air*, *Marine* and *Guerre*. A centralised organization was not created again until 1961. The French Defence Minister in 1947 had only supervision over powder production and film entertainment for the troops; the rest was under three other ministries. The research under each ministry was conducted separately and isolated from the other ministries, sometimes producing dissimilar solutions for similar problems and demands.

The army built up a light air force, and the navy had an air force and an infantry. In 1948 a single Supreme Commander was created, and the three Services had to present armaments plans for a combined body. The industry, however, was not at all in synchronisation with the services. The land-oriented arsenals still made munitions for Navy cannons no longer in use, and the Air Force made air lifters for tanks no longer in use. In 1955 a structure similar to the one de Gaulle created in 1945 was created, but with little influence. Especially the Navy and the Air Force were vigorously against a common armaments agency, as they feared that they would lose influence and that their specific needs would lose to Army needs.

After WWII, the government concentrated on the build-up of society, rather than defence. The Cold War, however, increased the focus on defence. The French military build-up was steered by rearmament within the Atlantic community, but also by the goal to have a technological and industrial capacity in France. The French state made the strongest commitment to a build-up in missiles and aeronautics. Discreetly, a nuclear capacity was also being created.

The French aerospace industry in 1950 was still not internationally competitive. The Air Force wanted NATO interoperability, but the armaments engineers resisted since they feared that the French industry would disappear in an open competition within the Western community.

The French missile technology build-up was partly made possible thanks to German engineers who, after WWII, came to work for the French government. They were also instrumental in creating competence for submarine detection. At the end of the 1950s, the missile competence was divided by government decisions between three companies: air-air to Matra, air-ground to Nord Aviation and ground-air to Thomson (Giovachini, Hébert & Hamiot).

The nuclear capacity was gradually built up during the 1950s, aiming to build what de Gaulle named a *force de frappe*, a retaliation capability that would leave no other country willing to attack France. The first nuclear bomb was detonated on February 13, 1960 in Reggane, Algeria.

The 1950s were characterised by a multitude of projects and prototypes, and of inter-service rivalry as well as of intra-service isolation. New weapons (missiles, nuclear) were introduced and electronics became increasingly important. The engineers wanted French solutions and the officers wanted the best possible, thereby creating a dilemma of integration between French and non-French industries and research communities. The importance of exports also started to become apparent (Giovachini; Serfati, 2001; Dussauge & Cornu, 1998).

The golden age of the French military-industrial complex

From 1961 to 1980, a strong French defence identity was created, characterised by the influence of its armaments engineers who created a coherent administrative system. This system proved efficient during the Cold War, an era of high geostrategic stability, which favoured a homogeneous community. According to Giovachini, this development occurred with little public opposition or even interest.

DMA/DGA

The *Délégation ministérielle pour l'armement* (DMA) was created in 1961, thereby unifying armaments under one body, incorporating – apart from the three services' armaments development – also a smaller number of defence-oriented government agencies. The concentration of an inter-service armaments administration revealed that the armaments engineers had different traditions and careers. Therefore, the services as well as the armaments engineers had to be harmonised and made to function together. DMA was led by generals during 1961-1968, and thereafter by non-military managers in the form of public servants (*fonctionnaires*), all of them *ingénieurs d'armement*. As in many other countries, the managers had a background from different parts of the MIC, and after being heads of DMA/DGA they not seldom became managers of private defence companies. DMA was transformed into DGA (*Délégation générale pour l'armement*) in 1977.

In 1986, a modification of DGA was made. The DPAI (*Direction des programmes et des affaires industrielles*) was divided into two parts: DPA (*Délégué aux programmes d'armement*) and SCAI (*Service central des affaires industrielles*). DPA managed armaments programs and SCAI the governance of the defence industry. Thereby, a clearer separation was made between the procurement and the production.

De Gaulle's creation of DMA/DGA was, according to Giovachini, instrumental in creating France's *force de frappe* and also the size, breadth and export successes later seen by the French defence industry. Large armaments programs were created and managed⁵⁴. From 1960 onwards, programs and plans could be pursued for several consecutive years, thanks to the *loi de programmations militaires* (LPM, "law of creating military programs"⁵⁵). Thanks to this law, a far-reaching industrial policy could also be introduced, accompanied by a matching and corresponding defence research policy. Nationally strong defence companies were created and supported, each becoming specialists in its area.

In the *établissements d'État* especially, but also in the *entreprises publiques* and the private companies, a large part of the top management was recruited from the corps of armament engineers, thereby making the armament engineers increasingly present and dominant in the entire administration – the Ministry of Industry, DGA, industry, research etc (Ibid). The French MIC was thus more and more cemented.

European cooperation and international trade

In the 1960s some important European cooperation occurred, e.g. in antitank and surface-to-air missiles (the missiles Hot, Milan, Martel and Roland) and combat aircraft (Jaguar), transport aircraft (Transall, with Germany) and trainer jets (Alphajet). Other NATO countries relied more on intra-NATO programs, whereas France relied more on other constellations chosen among NATO countries in Europe.

⁵⁴ Especially the tank AMX 30 in 1966; the missiles Exocet, Hot and Roland in the early 1970s; nuclear attack submarines in 1983; the airplane Mirage 2000 in 1984; and in the space era, the satellites Syracuse and Hélios. All years indicate when they were put into operative use.

⁵⁵ *Loi relative à la programmation militaire* (LPM) is a government document published every sixth year, a seven-year defence programme planning process. It shapes in the medium term the detailed guidelines for the three services and the *gendarmerie*.

The French defence materiel export went from 8% of national industrial exportation in 1960 to 31% in 1990. This was helped by the number of countries that wished not to be dependent on the U.S. or the Soviet Union. The main buyers were Israel (until 1967), Iraq (until 1990) and Saudi Arabia.

The defence industry of the 1990s and onwards

Kolodziej (1987) described in detail the setup of the French defence industrial system. He presented it as both easy and difficult to tell why France makes and markets arms and military technology. Easy, because it fits well with the French national policy concerning national independence and security, economic and technological development, diplomatic influence and prestige. Difficult, since the systemic imperatives and the system dynamics are not evident. He also describes the French defence elites as consisting of:

“...a loose coalition of high bureaucratic functionaries, located primarily within DGA, military engineers, industrialists and armed services chiefs. This oligarchy is largely insulated from daily governmental direction and control and shielded from close public scrutiny. ... The leadership of the arms complex, primarily military technocrats occupying posts in the DGA, possesses the requisite powers and mechanisms to order its own affairs and to resolve internal conflicts that might prompt external intervention. It controls the recruitment, training and incentive structure...it commands impressive resources to advance its own interests...and to project a favourable public image. ...the DGA enjoys access to some of the most powerful emotive symbols of national pride and unity.”

In Lundmark (2004), it is shown that Kolodziej’s assessment still largely held true. The degree of insulation had decreased and the access to resources had become less generous. The very strong position of the *ingénieurs de l’armement*, however, persisted – a bureaucratic, engineering nobility and technocracy that has no similarity in any other country.

Most national defence industrial capacities were slow in changing after the Cold War. The higher pace of industrial regrouping started in the U.S. around 1994-1995, in the UK 1997-99, Sweden 1997-99, Germany 1999-2000 and France around 2000. France is different in Europe in that it has not allowed any substantial foreign acquisitions of domestic defence companies (Lundmark, 2004; Bitzinger, 2009).

France distinguished itself in the beginning of the 1990s by not lowering defence budgets at the same rate as the UK and the U.S., since it did not rule out the emergence of some hostile reincarnation of the Soviet Union. François Mitterrand described this as “not lowering the guard”. The maintaining of a high level of defence spending made it possible for the French companies to engage in numerous European alliances, thereby theoretically making it possible to continue all the large armaments programs started in the 1980s⁵⁶ and also to finance new priorities for space and reconnaissance.

In 1995, France had more prime contractors (Aérospatiale, Dassault Aviation, Matra, Thomson-CSF, Dassault Electronique, Sagem, Snecma, GIAT industries and DCN)⁵⁷

⁵⁶ Mainly the tank Leclerc, the fighter Rafale, next-generation nuclear submarines, the aircraft carrier Charles de Gaulle and the Tigre helicopter.

⁵⁷ Giovachini here uses the expression “*de premier rang*”, where the most common Anglo-Saxon expression is “prime” or “prime contractor”. From this standpoint, at least Dassault Electronique and Sagem cannot be said to be integrators on the same level as the U.S. primes.

than the U.S., after the U.S. government-initiated consolidation from around fifteen to four prime contractors (Lockheed Martin, Boeing, Raytheon and Northrop Grumman).

French attempts to gain a foothold on the U.S (Thomson-CSF/LTV) and the UK market (Thomson-CSF/British Aerospace) failed. Some European joint ventures were what brought the French industry into a European structure: Matra Marconi Space in 1990 (French-British), Eurocopter 1992 (French-German), Thomson Marconi Sonar 1996 (French-British) and Matra BAe Dynamics 1996 (French-British).

The French industry was also recommended to create an aeronautical and an electronics pole, thereby implicitly pooling Dassault Aviation with Aérospatiale and Dassault Electronique with Thomson-CSF. These processes were started in 1997. An electronics pole was created by pooling Dassault Electronique, Thomson-CSF and the military parts of Alcatel. The aeronautical pole was created by a fusion between Aérospatiale and Matra Hautes Technologies, and with the transfer of the shares (46%) held by the state in Dassault Aviation to Aérospatiale. Thomson-CSF and Aérospatiale were private companies, but the state held close to half of the capital in each company, and remained its foremost shareholder. Thomson-CSF and Aérospatiale thereby comprised over 90% of the French defence electronics as well as civil electronics industry, and over 90% of civil as well as the military aviation industry.

The French state has nationalised and fundamentally reorganized the defence industry in 1936, 1970 and 1981. Furthermore, the French state has on several individual occasions used its ownerships and authorised its powers in order to regroup companies, thereby re-shuffling the internal strategic balance within the French defence industry. There is also a stepwise continuum of semi-private corporate setups that offers the French state the possibility to modify its control over the companies' operations. This is a state policy still vigorously used in France, and the French state thereby differs from most other Western states in maintaining such a strong state impact on specific industries (Lundmark, 2004).⁵⁸

⁵⁸ In 1970, Aérospatiale was created by grouping Nord and Sud Aviation together with Sereb (a government company created in the 60s for ballistic missiles), thereby creating a company covering tactical and ballistic missiles, civil aviation, helicopters, satellites and space launchers. Dassault Aviation was "awarded" Breguet in 1967. The other industrial poles created were Thomson-CSF (systems and electronic equipment), Matra (tactical missiles and satellites), SNECMA (airplane motors), SNPE (1971, powder and ammunition) as a *société nationale*, GIAT (*Groupe industriel des armements terrestres*, 1971, armoured vehicles, artillery systems and munitions) and finally DCN (surface vessels, submarines and systems for naval combat). GIAT transformed into *GLAT industries* in 1989, in the form of a *société nationale*. (Giovachini)

At the end of the 80s, the residual national competition was reduced thanks to the co-ordinated specialisation of the national defence industrial poles. What was still seen as duplication according to Giovachini, was in tactical missiles and satellites (Aérospatiale and Matra), electronics (Thomson-CSF and Dassault) and in armoured vehicles (GIAT, Panhard and Renault). The third duplication was eliminated in a few years due the shrinking size of that sector, but the first two remained. DCN and GIAT were public arsenals in the form of *établissement d'Etat*, but GIAT changed its legal form in 1990 into a form less state-run (*société nationale*), but far from private. Aérospatiale was made an *entreprise publique*, with the capital entirely held by the state. Thomson-CSF became a public company in 1981, but the state withheld 56 % of its capital. Dassault and Matra were also nationalised in 1981, all three nationalisations largely resembling the nationalisations made in 1936 before WWII. The leaders of Dassault Aviation and Matra were not changed, since they were seen as responsible and suitable by the state, i.e. Marcel Dassault and Jean-Luc Lagardère (head of Lagardère which owned Matra). Matra became entirely private in 1988. (Ibid.)

“The state can control companies and who’s in which area by its control of the export. It can also force companies to cooperate and merge technologies between companies through redivision of the state’s shares.” DGA representative, Paris, 2003

“The state thinks that ownership matters, otherwise the companies would be in U.S. control.” DGA representative, Paris, 2003

The French state, since Mitterrand’s 1981 nationalisation of defence companies, has had a developed system of controlling French defence companies by regrouping shares between companies. The French state has grouped its ownership in a holding company, Sogepa. Through Sogepa, it exerts control and influence over the defence industry in France. It has repeatedly regrouped the industrial map and urged redivisions of assets between companies. This form of state control over the domestic industry is a typical trait of French industrial policy in general; the State actively supports and influences the development of industries that are seen as being of national strategic interest (Hébert, 1991; Dussauge & Cornu, 1998; Giovachini, 2000; Lundmark, 2004; Bialos et al., 2009).

France historically being a nation with high military traditions, there has been a number of humiliating military setbacks: against Prussia in 1870/71, the German invasion and rapid French capitulation in 1940, the defeat in 1950 at Dien Bien Phu in Indochina and the Suez Crisis in 1956. All this created a strong French consensus from de Gaulle onwards – that France should never be dependent upon another nation in military technology, and that France should be able to defend itself. Together with the French traditions of a strong state and state-organized industries, the strength, breadth and composition of the French defence industry after WWII are understandable. Together with this, there have during the 20th century been several nationalisations of defence industry as well as several state-orchestrated regroupings of defence industry (the latest regrouping in May 2009, with shares of Thales going to Dassault). The French state has also after WWII created an enduring setup of state ownership in defence companies, with golden shares (i.e. the possibility to veto mergers and acquisitions). Together with the internationally unparalleled creation and influence of its armaments engineers, the French MIC is truly a manifestation of very strong bonds between the state and the defence industry (Lundmark, 2004).

5.4 Conclusions

These narratives of the development of three MICs show how each MIC has been gradually built and developed under the powers of each state. The narratives will now be commented upon in relation to the thesis’ central concepts of integration, discourse and organizational field. We will start with the organizational field, since this most clearly touches upon the MIC concept.

MIC as an organizational field

In Chapter 2 there was a definition of how MICs would be analyzed. Of the thesis’ main theoretical concepts, ‘organizational field’ is most relevant to the empirical accounts of the MICs. In Chapter 2 it was stated that the following group of propositions of what constitutes a MIC will be kept in mind: cohesive community on the meso level; political market; government field and corporate field; acts cohesively and predictably in aggregate, but internally has rivalry over priorities and resources; regulative policy action; guided by a

notion of national interest; self-conserving inertia; isolated from other national contexts; rivalry between vested interests; creates distinct classes of individuals.

The descriptions of the three MICs show that all three are deeply influenced by a multitude of vested interests, manifested on the meso level, and phrased under a common denominator of what is crucial to the national interest. The actors share a sort of group-think about the outer world, which has the effect that it is implicitly understood that there is a need for a defence technology capacity of large size and sophistication. There is a corporate field which at certain crucial points in time will be deeply influenced by government decisions to steer and influence the future of the development of the defence industry. Outbreaks of war are self-evident pulses of government influence. Otherwise, governments have at certain times fundamentally altered the conditions of the defence industry: the U.S. consolidation demand in 1993, the French nationalizations and the UK nationalization, and also the decisions to consolidate and create large, border-crossing defence companies in Europe. There has also in all three MICs been a growth of a defence technology and defence materiel bureaucracy and administration, each one based on the traditions and the conditions of each nation. These defence bureaucracies tend to be highly technocratic and mainly concerned with planning, organization, threat assessment, operative needs, R&D, technology development and an overall scrutiny. The logic in the internal discourse of each MIC tends to be criticised for having an overly antagonistic view of the world, which serves to maintain the size and breadth of the MIC. France has a tradition of centuries of specially designated military engineers – *ingénieurs de l'armement* – who have come to embody and preserve the firm cohesion of the French MIC.

All three MICs reveal internal rivalry over resources (more so in France and the U.S.) between (mainly) Air Force, Marine and Army, but also based on different technology choices or military interpretations of what the military must do. As an aggregate, the MIC acts fairly predictably and conservatively, but under the surface there can be considerable controversy.

Integration

The descriptions of the MICs do not portray the development of the defence industrial development in detail; this is done in Chapter 6. If we turn to the thesis' concept of integration in a more general perspective, the MICs have experienced different paths. The U.S. defence industry has always been private, and it has gradually incorporated defence production facilities organized by state authorities or the military – a sort of ownership integration. The U.S. government and Pentagon for a long time actively maintained and financed a large breadth of companies in order to promote competition and innovation. This breadth was actively concentrated into fewer companies in the 1990s. There has been limited use of operational integration in order to alter the functioning of the defence industry; U.S. companies have domestically and internationally been quite autonomous.

France has had (and still has) the most proactive defence policy, clearly based on a national interest of a domestic defence industry, firmly directed by the state. At the same time as protecting and promoting the French defence industrial autarky and independence, France has also been the most active of all in incorporating defence production into border-crossing, multilateral defence materiel projects with what France sees as its European defence technology peers.

The UK falls in between. It has always had a large defence industry of about the same size as France. The UK has also invested in European cooperation, but has most of all directed its focus towards a close defence relationship with the U.S., a relationship that by nature becomes dominated by the U.S.

A special characteristic of defence production is that the innovation process gradually has moved from being inside the military and state-controlled facilities for military production, and the companies performing under strict specifications, towards the defence industry getting more and more responsibility for design, specifications, development and production. This is also paired with a generic development of states not performing industrial production or owning industry. France, however, still has a profound state control over its defence industry through ownership and several tools of power and influence.

Overall, these three nations (and other nations) through their defence bureaucracies closely steer and control development of the domestic defence industry, and the interaction between the domestic defence industry and the others. The operations of domestic defence companies are also regulated. The technology transfer in cross-border operational integration is restricted and regulated, thereby (it is believed) protecting the competitiveness of the domestic defence companies.

After the end of the Cold War, as domestic demand decreased, all three nations strongly promoted defence export as a means to be able to maintain the breadth of the national defence industry (a policy that was implemented in many nations). Through this, defence R&D and national acquisition would be co-financed through export revenues.

Before WWII, the typical cycle of growth and contraction was that the defence industry grew rapidly as war approached, became a dominant part of all industrial production during the war, and was thereafter reduced in size after the war. After WWII, as the Cold War emerged, the defence industry did not decrease in size, and instead was kept at a high level in all three nations with an unprecedented degree of sophistication and scientific support.

Discourse

Driving forces and inhibitors cannot be identified with any detail in the descriptions of the MICs in this chapter; the empirical search for discourse is presented in Chapters 7 and 8. In general, all three nations have (not surprisingly) seen a large and sophisticated defence industry as a central pillar in the nation's military and security posture. The defence industry has a nimbus of nationally undisputed importance, in the view of nations that regard themselves as having central international positions in global security. The U.S. goes as far as asserting that what is good for the U.S. national interest is good for the world.

In all three nations it is obvious that the growth of a strong military capacity has rested upon resembling institutional logics built upon the strength of the nation-state through military power. Until the early 20th century the military strength had an offensive and unilateral character. During the 20th century these nations first became militarily interdependent in the World Wars and the Cold War. Gradually, there has been a growing logic of military cooperation in arms development. As we will see in the case studies in Chapter 9, the institutional logic focusing on 'a national interest' will come in conflict with a multilateral perspective. Defence companies gradually have become less subordinate to national military priorities in a slow internationalization of their action and their business.

Thus, we can see that the existence, growth and safeguarding of a national defence industry strongly resonates with the described nations' security and military posture. The next chapter will describe the development of the transatlantic defence industry integration; what kind of ownership and operational integration has occurred between companies in these MICs?

Chapter 6 Action: Transatlantic, intra-European and intra-U.S. defence industry integration

This chapter presents the action of the transatlantic defence industry integration. Action concerns the nature and the extent of the transatlantic integration in the defence industry – acts that have occurred. As pointed out earlier, *ownership* integration concerns actual fusion of organizational entities through joint ventures, mergers and acquisitions. We made a distinction between dimensions of integration and cooperation; how companies' operations become integrated was defined as *operational* integration. By presenting the action we can later relate the action to the discourse.

The transatlantic defence industry integration will be described quantitatively and qualitatively. The quantitative description strives to capture and describe the extent of integration, which will include data on defence and R&D budgets. This part of the presentation primarily consists of statistics and tables. The qualitative description, in turn, will concern the nature of the created integration. The chapter is thus intended to provide sufficient understanding of the nature of the transatlantic defence industry integration in both quantitative and qualitative terms. It should, however, be mentioned that it will not be possible to capture the ownership and operational integration in exact detail. But we should be able to present the primary features.

The defence companies' operations are, in all respects of border-crossing integration, dependent upon and closely monitored by their home governments, as well as scrutinized by the governments in the nations where they wish to further their business. The governments' policies for regulating and influencing company integration were described in Chapter 2. These policies serve as a background to the context for defence company integration.

Chapter outline

This chapter will first describe the overall defence industry integration and distinguish the intra-U.S., the intra-Europe and the transatlantic defence industry ownership and operational integration.

This is followed by a description of the focal companies, and of the nature of these companies' operations.

Thereafter we will in more detail describe the qualitative nature of the transatlantic defence industry integration. Finally, there will be a concluding discussion about the transatlantic defence industry integration.

Operational integration firstly concerns the operational integration that occurs within government-initiated, border-crossing collaborative programs; how the companies' production and development is integrated. This could e.g. be a joint development of an aircraft or an armoured vehicle. There is self-evidently no such operational integration within the U.S. Secondly, operational integration could also concern the integration that com-

panies perform by their own decision without government-funded development or production. The latter form was however not searched for in this study, based on the assumption that governments do not encourage such company-to-company integration and that the companies therefore not would be prepared to openly discuss such inter-corporate integration. The implications of this delimitation will be discussed in Part IV.

6.1 Overview of the Intra-European, Intra-U.S. and Transatlantic defence industry integration

Under this heading, we will describe the nature and extent of the defence-industrial ownership and operational integration leading up to the primes. Most emphasis will be put on the transatlantic integration; the overviews of intra-U.S. and intra-European integration are intended to set the integration in perspective.

6.1.1 Intra-European integration

The national defence industrial entities in the Western nations in Europe that had participated in WWII were still clearly separated in the early 1960s. The operations and the technological development developed in separate, national tracks without much interaction. One common denominator was NATO defence led by the U.S., which expressed an incentive for closer interaction. The most influential European nations gradually started to cooperate among themselves in the 1960s. Germany and France were the first, starting with transport aircraft (Transall) and anti-tank missiles (Roland, HOT, Milan). There was also emerging cooperation between defence companies in the UK and France; France and Italy; and the UK and Italy. All such cooperation ventures had started as bilateral agreements between two countries and some of their military industries. The development typically shows that there were first military and/or political discussions concerning shared needs for military development. Thereafter committees or project organizations were organized, later followed by bilateral, publicly announced MoUs⁵⁹. This development mirrored a multilateral policy negotiation and took many years from initial discussions to production. There was considerable political symbolism in announcements of Franco-German cooperation, just two decades after WWII. MoUs were typically followed by the formation of production consortia (Schmitt, 2001; Masson, 2003; Lundmark, 2004; Hébert & Hamiot, 2004).

In the late 1970s until the early 1990s, numerous joint ventures were formed that sustained and strengthened previously established cooperation (which had started in the 1960s). Several of these joint ventures later led to the creation of independent companies such as Eurofighter (1986), Matra BAe Dynamics (1996), Airbus (2001)⁶⁰ and MBDA (2001), all of which were companies based in more than one nation. EADS was at its creation in 2000 largely a conglomerate of several such cooperative constructs (e.g. Eurocop-

⁵⁹ MoU: Memorandum of Understanding, a type of declaration of shared intent.

⁶⁰ Airbus as an industrial conglomerate was created in 1968, but was turned into a separate stock company listed on the stock exchange in 2001.

ter and Airbus) and shared ownerships that were concentrated into one company. In the period 1997-2001, there was substantial intra-European consolidation, creating large companies such as BAE Systems (1999), EADS (2000), Thales (2000), MBDA (2001), and in Sweden, Saab (1999) (Ministerio de Defensa, 1996; Tisnés, 2001; Masson, 2003; Mörth, 2003; Hébert & Hamiot, 2004; Lundmark, 2004).

France has over time had the highest cooperative share – measured as percentage of military budget allocated to joint, government-to-government military projects – of all European nations. This cooperation comes with different setups mostly with Germany, the UK and Italy, in that order, ranging between 15-30% of the total procurement budget each. Most multilateral European, military cooperation has had and has a French participation. The U.S. has in comparison, on average over the 1980s through the 2000s, allocated less than 2% for transatlantic cooperation out of its defence budget (Schmitt, 2001; Masson, 2003; Lundmark, 2004; Hébert & Hamiot, 2004; Bialos et al., 2009), 1.3% on average in 2003-2007 (Bialos et al., p. 146).

The European defence cooperation amounts to around 20% of all defence development, with France as the dominant collaborator. In 2006 to 2008, the share of European defence collaboration (EU nations) was 20.9, 18.9 and 21.2% of all defence development. Defence collaboration with nations outside the EU amounted to 2.0, 2.3 and 3.0%. The EU Commission has set a multilateral defence development share of 35% as its long-term goal (EDA Defence Data 2008). There is a pattern of increasing operational integration through government-led collaboration, leading to joint ventures that lead to autonomous companies. Several of these autonomous companies merged between 1998 to 2001 into the companies MBDA and EADS – a highly government orchestrated merger phase. This brief overview shows that there has been substantial ownership integration within the European defence industry, thereby creating a handful of European primes. EADS and MBDA have been created based on a multilateral perspective among the major EU defence nations. Thales and BAE Systems were created from national defence companies.

6.1.2 Intra-U.S. integration

In the U.S., there was domestic competition in all segments until the early 1990s. After the end of the Cold War the U.S. government under President Clinton, and especially the Department of Defense (DoD), decided that the domestic defence industrial base had to be consolidated. The government's conclusion was that they were financing too many similar production lines, and that a consolidation would save the DoD and the tax-payers money. At a meeting 1994, afterwards referred to as “the Last Supper”, the DoD instructed corporate leaders that it expected the U.S. defence industry to consolidate. This did happen, and in 1998 the four biggest defence companies were products of a group of fifteen in 1994 (James, 1998, 2000; Jarlsvik, 1998; Masson, 2003). The following table shows the U.S. companies in the largest defence industry segments in 1992, and the table thereafter depicts the U.S. consolidation 1993-2010.

	Combat Aircraft (fighters, helicopters, and bombers):	Missiles:	Land Warfare Systems:	Warships:	Defense Electronics (the largest companies):
Companies	Bell Boeing General Dynamics Grumman Aerospace Lockheed McDonnell Douglas Northrop United Technologies	Lockheed Hughes Loral Corp Martin Marietta Raytheon Rockwell International TRW	FMC Corp. Harsco General Dynamics	Bath Iron Works General Dynamics Tenneco Newport News Litton Industries NASSCO Avondale Todd Shipyards	Boeing Litton General Dynamics Lockheed Martin Marietta IBM E-Systems General Electric Corp. ITT Loral Westinghouse Electric Corp.

Table 6.1. U.S. defence companies in 1992 by primary segments (Source: Bitzinger, 2001)

From 1993 to 2007, the following consolidation occurred towards creation of the primes:

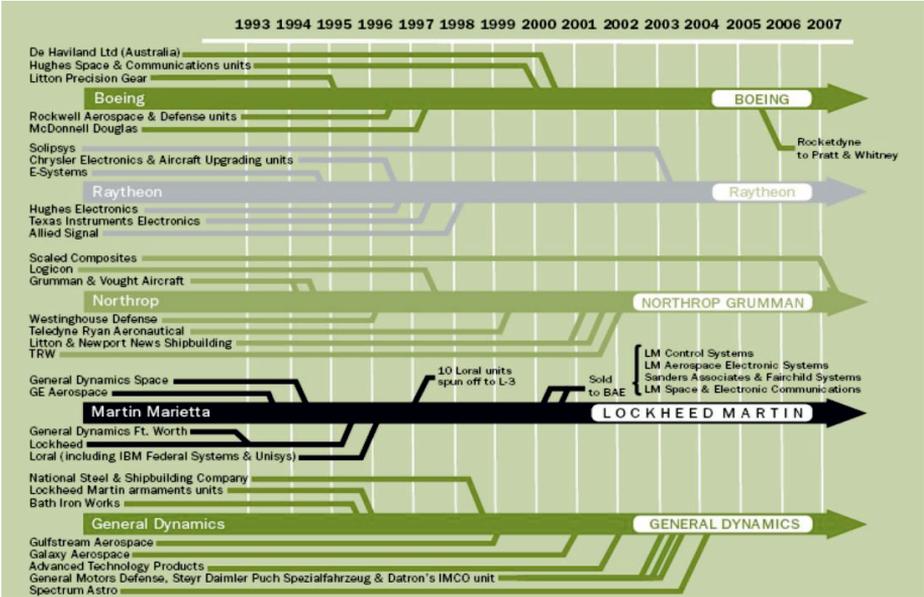


Figure 6.1. The U.S. defence industry consolidation on the prime level 1993-2007

The concentration in the U.S. prime group slowed down in 1998 when the merger of Lockheed Martin and Northrop Grumman was blocked by the U.S. government based on antitrust considerations (i.e. not to allow companies to become too dominant). L-3 Communications has since then risen from 40th to 9th place in 2008. Northrop Grumman has made a number of large acquisitions (especially TRW, Litton and Newport News). Otherwise the top U.S. companies have roughly been the same since 1998 (compare with Table 6.4).

Thus, the U.S. defence industry used to have a wide breadth of competitors in all segments. Since 1993 there has been considerable national consolidation, a process initiated by the Pentagon, but halted between primes in 1998 in order to prevent further concentration. The ownership integration was more dramatic in the 90s, but there also several large acquisitions in the 2000s, especially by Northrop Grumman and General Dynamics (James, 1998; Jarlsvik, 1998; Lorell, 2002; Masson, 2003; Bitzinger, 2009).

6.1.3 Transatlantic integration

In a discussion concerning a “transatlantic defence industry”, it is clear that the counterpart on the Western side of the Atlantic Ocean is the U.S. However, the European counterpart to the U.S. does not have a clear-cut definition or scope; what do we refer to as ‘European’? One may use the entire European continent as the scope, but this is rarely done, since the ex-Warsaw Pact defence industry is only marginally interacting with the NATO defence community (although recent NATO members aim to change this). We could also concentrate on NATO Europe, but we would then omit Sweden, Switzerland and to some extent France, since France is less integrated with NATO. The focus could also be on EU Europe, but we would then omit Norway and Switzerland. The most relevant scope seems to be EU Europe plus Norway and Switzerland, with the note that recent EU and/or NATO members only marginally affect the defence industrial community; they are in general at a much lower technological level than the LOI 6 (UK, France, Germany, Italy, Sweden and Spain) which altogether constitute around 95 % of the European defence R&D and production.

Bialos et al (2009) presented a comprehensive comparison concerning the transatlantic defence interface. In the statistics and data retrieved from Bialos et al., the main focus is what they call “Old Europe”; i.e. the main defence producers and the NATO members. This captures the relevant industrial entities for the focus of this thesis, especially since the primes in the focused strategic group are chiefly based in France, Germany and the UK. ‘

We will discuss the transatlantic defence industry integration under the following six headings: Industrial size and export orientation; export/import; defence spending; defence R&D spending; transatlantic operational integration (R&D, defence programs); transatlantic ownership integration (joint ventures, mergers and acquisitions). These headings are discussed with the common denominator of relating the Western European defence industry to the US defence industry.

- *Industrial size and export orientation*

In 2007 the U.S. defence export was \$14 billion, 51% of the total share of global defence export. The European defence export was \$6.0 billion, 22% of the global defence export, a decrease from 43% in 2002. The European companies had thus decreased their export, at the same time as their export's share of total revenues had increased or stayed flat, pointing to the sharp decrease in European procurement (Bialos et al).

Given the smaller and reduced size of defence budgets and markets in Europe compared to the U.S., European companies are in general more dependent on exports than U.S. companies are. Many U.S. companies get sufficient business from the U.S. orders, and exports (if allowed) can be seen as a bonus. Larger European companies typically receive 66-75% of their revenues from export. For the U.S. companies the export share is 15-30% (Bialos et al., 2009). Thus, it is natural to expect the export-oriented European primes to strive for increased market access on the by far more thriving market in the U.S., at the same time as the more domestically oriented U.S. companies have a less attractive market option in Europe.

- *Export/import*

In the 1950s until the 1970s, the U.S. was able to sell entire defence systems to Europe, completely developed in the U.S. The production was normally to some degree executed in the buying nation in the form of license production. Gradually, the European nations have, since then, either co-developed defence systems inside Europe with European industries only, demanded domestic systems in the product when buying from the U.S., or attracted U.S. systems to become suppliers to European projects. Thus, the U.S. presence in Europe has over the decades become less dominant (Markusen & Costigan, 1999; Hébert & Hamiot, 2004; Bitzinger, 2009).

From 2002 to 2007, the defence trade flows between Europe and the U.S. still (in spite of the above) show a persistent dominance of the U.S. We can also see that the total defence trade flow between the U.S. and Europe grew rapidly from 2002 onwards – reflecting the military operations in Iraq and Afghanistan.

\$ billions	2002	2003	2004	2005	2006	2007
U.S. export to Europe	1,2	2,0	3,2	5,8	6,2	5,2
European export to the U.S.	0,5	0,5	0,7	0,9	1,5	1,2
Ratio	2,4	4	4,6	6,4	4,1	4,3
Total trade flow	1,7	2,5	3,9	6,7	7,7	6,4

Table 6.2. *Defence export/import U.S.-Europe (billions of US dollars)* (Bialos et al., 2009)

From 2002 to 2006, there was clearly more export from the U.S. to Europe than in the opposite direction (table below). The sharp increase at the end is unusual in a longer time series, and the increased demand reflects a sharp decline in overall export at the same time as urgent demands arose related to the U.S.-led warfare in Iraq and Afghanistan (IISS Military Balance, 2008). The U.S. defence export as % of total U.S. defence exports

to Europe from 2002 to 2006 also rose sharply, which reflects the increase in warfare (SIPRI Yearbook, 2008).

	2002	2003	2004	2005	2006
% of total European defence export to the U.S.	3	2	3	12	26
% of total U.S. defence export to Europe	10	17	27	46	44

Table 6.3. *Transatlantic share of all defence export* (Bialos et al., 2009)

From 1987 to 1994 the U.S. defence import was 2-2.5% of the total U.S. defence procurement; 1-1.5%, i.e. around half of that, came from Europe. During 2002-2006, the foreign percentage was still at 2-2.5%, and the procurement from Europe during this period rose from 0.7 to just under 1.5%. In Europe, the U.S. imports as % of total European defence procurement from 1987-1994 were between 9 and 16%. Between 2002 and 2007, the percentage was 4, 6, 9, 17, 18 and 10% (IISS Military Balance, several years; from Bialos et al). This means that it has shown much greater variation lately than before, and that Europe imports much more defence materiel from the U.S. than the U.S. does from Europe. It also points to a slow intensification of the reciprocal defence trade.

- *Defence spending*

As can be seen below, the U.S. defence spending is on a much higher level than the aggregate EU spending, about 2.5 times higher. The defence spending per capita is almost four times higher in the U.S.

Billion €	2006	2007	2008
EU	201	204	200
U.S.	492	454	466
Ratio	2.45	2.22	2.33

Table 6.4. *The aggregate defence spending of the EU states⁶¹ compared to the U.S* (EDA Defence Data 2008)

⁶¹ In 2004 the EU Commission created EDA, the European Defence Agency. All EU member states except Denmark participate in EDA's work, so EDA's statistics cover the 26 pMS (participating Member States). Denmark has chosen to focus on NATO for defence matters.

Defence spending per capita, €	2006	2007	2008
EU	412	417	406
U.S.	1640	1 504	1532
Ratio	3.98	3.61	3.77

Table 6.5. *Defence spending per capita* (EDA Defence Data 2008)

Furthermore, we can see in the first table that the defence spending in the U.S. is much higher than in Europe, which reflects the much stronger U.S. emphasis on global military presence compared to Europe.

- *Defence R&D spending*

As can be seen below, the defence R&D spending has for the last years stayed at about 6 times higher in the U.S. than in Europe.

R&D, billion €	2006	2007	2008
EU	9,7	9,5	8,6
U.S.	58	56,5	54,1
Ratio U.S./EU	6,0	5,9	6,2

Table 6.6. *Defence R&D 2006-2008* (EDA Defence Data 2008)

Of the total U.S. defence budget, the cooperative RDT&E programs (Research, Development, Testing & Engineering) (\$75 billion) amount to around 0.4% in 2008. In the 2000s, the U.S. has started very few cooperative programs (Bialos et al., 2009). Thus, the U.S. spends six times more on defence R&D, but out of this massive R&D expenditure only 0.4% is shared in cooperation with other nations. This implies that if we assume that present R&D priorities and R&D allocation define future strategies and options, the long-term direction and vision of U.S. defence technology development include practically no interaction with the European defence R&D development.

- *Transatlantic operational integration (R&D, defence programs)*

Of the U.S. \$75 billion cooperative RDT&E budget, 87% was with European counterparts. Most of the presently ongoing transatlantic defence and R&D developments were initiated in the 1980s and 1990s, when the political climate in the U.S. was more positive

towards transatlantic cooperation. The Joint Strike Fighter⁶² alone accounts for 87% of the transatlantic defence R&D. If JSF is excluded, 1.3% of the U.S. defence R&D spending is spent in transatlantic, cooperative R&D programs (James, 2006; Bialos et al., 2009, Chapter 4).

The ‘transatlantic gap’ in defence R&D⁶³ has been an issue over more than five decades within NATO. In recent years, this difference has increased due to the dramatic increases in the U.S. as an effect of the U.S. warfare in Iraq and Afghanistan, and the increased demands that have been formulated in the U.S. During the Bush administration, there was a 75% increase in defence R&D expenditures from 2000-2005, whereas the European defence R&D budgets showed slight increases or remained flat (Flournoy et al., 2005; James, 2006; Markowski et al., 2010).

In Europe, the response to suggestions for increased defence R&D in order to match the U.S. has instead primarily been institutional reform. European nations have since the 1970s created a steady flow of acronyms in the form of multilateral committees (e.g. IEPG, EUCLID, WEAG, WEU, OCCAR, LOI, EUROPA, EDA) in order to coordinate defence R&D and to harmonise defence requirements. In this century, there has been a gradually deepening integration of EU defence policy through various intergovernmental documents (Mörth, 2003; Britz, 2004; James, 2006; Bekkers et al., 2009).

Defence R&D in Europe is highly concentrated; 99% of the defence R&D is shared between the UK, France, Germany, Italy, Sweden and Spain. The UK and France account for more than 60% of the total (Bialos et al).

The large difference in defence R&D spending can largely be explained by the quite different perceptions of international security threats in the U.S. compared to Europe. The U.S. has global ambitions to “sustain full-spectrum dominance” through technological superiority; this is at the heart of the U.S. military and security doctrine. European defence and security goals (as expressed within the EU Headline Goals) rather focus on peace-keeping and peace enforcement. The U.S. defence planning strives for “disruptive technological change” through broad defence R&D spending and dramatic steps of military transformation, whereas Europeans rather are in a continuous process of modernization. The U.S. is persistently dedicated to continuously maintaining a clear dominance over all potential adversaries – a “global technological leadership”. There is an implicit understanding in the U.S. that accepts levels of failure in defence R&D that would not be tolerated within European programs; the U.S. defence R&D programs take on more extreme challenges (James, 2006).

- *Transatlantic ownership integration*

⁶² Joint Strike Fighter is a U.S.-led cooperative fighter programme. It is the largest defence programme ever at around \$300 billion. It is described in more detail in Chapter 9.

⁶³ The ‘transatlantic gap’ refers in this context to the U.S.’ six times higher defence R&D budget compared to all of Europe, and to the fact that the U.S. thereby has a much higher pace of technology development.

In a GAO (General Accountability Office, the U.S. federal auditing authority⁶⁴) report from 2000, there is a table on the foreign acquisitions of U.S. defence companies “potentially affecting national security”. From 1988 to 1999, there were 7,371 acquisitions of companies with a defence-related content in the U.S. by companies from other countries; 1,258 were reported to the Commerce Department (which monitors the process), 17 acquisitions were investigated, 7 offers were withdrawn and 1 single case was blocked by the President.⁶⁵ In GAO reports, the evaluations of company acquisitions normally contain anonymous companies, so it is difficult to analyze these reports in that regard. There are thus acquisitions that concern national security. It should however be kept in mind that the extent of what could involve national security concerns reaches very wide in the U.S. Of these acquisitions, very few are primarily defence companies. Most of them are sub-contractors of dual use components (It is not possible for me to obtain more exact information than this).⁶⁶

According to interviews, there have also been an unknown number of cases where European companies have expressed intent to acquire U.S. companies with a defence content. They have “tested” the willingness of U.S. authorities for such an acquisition and have been advised not to go ahead. Therefore, there have been many more – unclear how many – cases of interest in European acquisitions of U.S. companies that were dismissed. It could in that regard be noted that British companies meet clearly less resistance regarding acquisition attempts.⁶⁷

“When Marconi bought Tracor, a new frontier opened up.” Responsible for international collaboration, Aerojet (U.S.)

There are some known precedence cases concerning European companies’ attempts to acquire U.S. companies. Thomson-CSF was denied to acquire the U.S. missile company LTV in 1992. Rolls Royce acquired the aero-engine company Allison in 1995. British GEC acquired U.S. Tracor in 1998, a foreign acquisition of unprecedented strategic relevance for U.S. national security. Tracor had among its competences highly sensitive technologies for ballistic missiles. BAE Systems was able to acquire GECs defence arm Marconi in 1999 (containing Tracor) and several other highly sensitive defence units (especially the two electronics divisions from Lockheed Martin in 2000 and United Defense in 2005). The U.S. acquisitions are made by BAE Systems North America, which is defined as a U.S. company, the UK part of BAE Systems only has limited control over and insight into over BAE Systems North America – which also has a much larger turnover than its mother company. The Dutch company ASM Litography was in 2001 after considerable scrutiny able to acquire a U.S. company, the Silicon Valley Group, involved in semiconductor lithography. This technology is not in itself military, but it is used in e.g. satellite

⁶⁴ GAO was named General Accounting Office until 2004. It is an agency that on the request of the U.S. Congress performs different studies, e.g. on how the costs of defence development programs develop.

⁶⁵ GAO/NSIAD-00-144, (2000) p. 8. The case blocked by the President was when a Chinese company wanted to acquire an unnamed U.S. aerospace company.

⁶⁶ GAO report and interviews at Department of Defense, June, 2004.

⁶⁷ According to interviews, 2001, 2004 and 2006.

reconnaissance and missile defence. The British company Smiths had gradually over many years, by continuously acquiring smaller aerospace companies, created a strong U.S. presence. Smiths however divested its U.S. aerospace assets to General Electric in 2007. German and French companies have only been able to acquire smaller aerospace dual use companies, or at least not companies that are seen as containing “sensitive” defence technologies “affecting national security”. The Italian company Finmeccanica acquired the U.S. company DRS Technologies in 2008, a company that Thales previously had failed to acquire. These are all the cases of European acquisitions that have occurred in tier 1 and above from 1990-2009⁶⁸ (GAO statistics; Bialos et al.). There is thus a clear dominance of the British companies in European acquisitions in the U.S.

The U.S. Department of Defense (Pentagon) presents statistics on acquisitions of U.S. companies that fall under the categories ‘dual use’ or ‘defence’. From this statistics we can complement the above picture by adding a more recent time period. From 2001 to 2008, European companies acquired forty-eight U.S. dual use or defence companies. Of these, twenty-nine were labelled as dual use and nineteen as defence. Twenty-nine out of the forty-eight were from the U.K., nine from France, three from Germany, two from Italy (the last two in the time period), one each from Denmark, Norway, Netherlands and Switzerland. Out of the nineteen specialised ‘defence’ acquisitions, fourteen were from the UK, two from Italy, one from France, Norway and Netherlands. Thus, there was also here a clear UK dominance regarding European firms making acquisitions of US military-oriented firms (Bialos et al., 2009).

In the opposite direction, the number of U.S. acquisitions of European defence or dual use companies over \$100 million was forty-seven in 2001 to 2008. Of these, fifteen were labelled as defence. Of those fifteen, eight were in the UK, four in Germany, and one each in Spain, Poland and Italy; 70% of the acquisition value was placed in the UK (ibid).

In Europe, there have been politically orchestrated, border-crossing mergers (MBDA, EADS). There have not been politically created mergers in the U.S., but the government in 1993 very clearly pointed out that consolidation and concentration had to occur in certain segments. There have not been any transatlantic mergers.

In a reply from the GAO on a question about statistics of transatlantic defence industry integration, it was stated:

*“I am not aware of any big studies that have truly captured the extent of transatlantic defence industry integration. I think there are several reasons for this: (1) lack of good data, (2) limited government visibility below the prime contractor level, and (3) no good definitions of what constitutes the “defence industry” (especially with the commercialization of companies) or even a “foreign” company (is it foreign ownership or where the work is performed that makes a company “foreign”?).”*⁶⁹

This indicates that the *total* transatlantic defence industry ownership integration, the integration on the top levels, is well documented, and described above.

⁶⁸ ASM Litography’s acquisition of the Silicon Valley Group was an acquisition below the prime level or 1st tier, but it received considerable media interest.

⁶⁹ E-mail from the General Accounting office (GAO), received April 13, 2003.

We cannot quantitatively capture the lower-tiered and dual use transatlantic defence integration; many sources have been searched and several analysts have been asked, and none have seen such an account. I therefore choose to rely upon the widespread assessment that the integration is more developed on lower tiers. In relation to the purpose of this thesis, we must therefore settle with the assessment that it is more developed than amongst primes. For the lower level, there is no comprehensive documentation (Jensen, 2001; Bialos et al).

6.1.4 Comparison

U.S. companies acquired a handful of medium-size European companies in 1995-2001, but none of the acquisitions concerned the European primes. The acquisitions were in Spain (Santa Barbara), Germany (HDW), Sweden (Bofors Defence), Austria (Steyr Puch) and Switzerland (Mowag). HDW was resold to Germany (Thyssen Krupp) in 2005 since the U.S. owners were not as intended able to transfer submarine technology to the U.S. There were no transatlantic mergers between primes. Thus, the transatlantic cooperation as well as integration is clearly less developed than the intra-U.S. and the intra-European on the prime level. On lower tiers (although the background data are sketchy) the ownership integration is more developed. The operational integration, however, is strictly limited through the regulatory tools described in Chapter 2. The integration that has occurred was on lower tiers of the industrial landscape; the primes remained separated. British companies (especially Smiths) had acquired several equipment suppliers in the U.S. British Aerospace (later BAE Systems) also gradually increased its U.S. presence through medium-size acquisitions. From other European nations with companies big enough to be able to acquire defence companies in the U.S., there were very few acquisitions from France, Germany, Italy and Sweden. The thesis' initial supposition that the transatlantic defence industry integration is limited rests on the accumulated assessment of all concerned and all the written material that has been studied for this thesis on the subject. It is not possible to establish more exactly and quantitatively how much less integrated it is (Bialos et al).

Within the larger European nations (UK, France, Germany and Italy in that order), the shared defence cooperation has reached 15-30% of defence procurement⁷⁰ each. Less than 2% of the U.S. overall defence procurement is performed through international cooperation. 'International cooperation' denotes government-funded cooperation, which could be performed with or without defence companies. This may seem a fair amount of cooperation and integration. However, the discourse from both sides of the Atlantic Ocean has constantly expressed with dissatisfaction that there 'ought to' or 'must' be much more transatlantic defence cooperation – as well as less redundancy in European defence research and development. The discourse will be presented in Chapters 8 and 9.

⁷⁰ 'Defence procurement' refers to the goods and services that are acquired (procured) for defence purposes by the government. 'Government' is in this sense either the military directly, a procurement agency or a ministry – the defence procurement is organized differently in different nations. The procurement costs can (based on the national choice of organizing the procurement) also cover cost for evaluating options and alternatives made by different types of specialized government services and personnel.

6.2 Development of the defence primes

The Stockholm International Peace Research Institute (SIPRI) has for many decades presented a yearly account of the world's largest defence companies, a list called the "SIPRI Top 100". This list is the foremost global reference (academically and otherwise) for an assessment of the largest defence companies. In the table below, we can see how the top 12 in the SIPRI Top 100 have developed from 1998 to 2008.

TOP 12 DEFENCE COMPANIES		2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
BAE Systems	UK	1	2	3	4	4	4	5	3	3	3	-
Lockheed Martin	USA	2	3	2	3	2	1	2	2	1	1	1
Boeing	USA	3	1	1	1	1	2	1	1	2	2	2
Northrop Grumman	USA	4	4	4	2	3	3	3	5	5	5	6
General Dynamics	USA	5	5	6	6	6	6	6	6	6	6	8
Raytheon	USA	6	6	5	5	5	5	4	4	4	4	3
EADS	F/G/Sp	7	8	7	8	7	8	8	9	7	-	-
Finmeccanica	Ita	8	10	10	7	11	10	10	12	13	13	14
L-3 Communications	USA	9	9	9	9	10	11	11	19	24	31	40
Thales	F	10	11	11	10	8	7	7	7	8	7	7
United Technologies	USA	11	12	12	11	9	9	9	8	11	9	10
SAIC	USA	12			12	12		12				
Halliburton	USA						12					
TRW	USA								10	10		9
Honeywell	USA								11			
Litton	USA									9	8	11
Mitsubishi Heavy Industries	Japan									12		
Aérospatiale Matra	F										10	
Daimler Chrysler DC	G										11	12
DASA	G										12	
British Aerospace	UK											4
GEC	UK											5

Table 6.7. *Top 12 defence companies 1998-2008* (Source: SIPRI Yearbooks "Defence Top 100")⁷¹

⁷¹ Notes Table 7.4:

1. British Aerospace was renamed BAE Systems in 1999, at the same time as merging with Marconi, GEC's defence arm (thus a merger between numbers 4 and 5 in the world in 1998).

Previously in this chapter, we have described the overall action regarding transatlantic defence industry integration. We will now turn to a more specific description of the companies that constitute the primes.

Table 6.4 starts out from the global top 12 companies in 2008. The ten-year period before this is also covered. Companies that, apart from the 2007 Top 12, also have appeared are marked in the table as well.

In 2001, the primes were in Europe defined as: BAE Systems (UK), Thales (France), EADS (France/Germany/Spain) and MBDA (France/Germany/Italy/Spain/UK), and on the U.S. side: Lockheed Martin, Boeing, Northrop Grumman and Raytheon. None of them are solely active in the defence market; two of them (Boeing and EADS) have the majority of their business in non-defence areas.

Sample of companies: primes

The companies that are labelled primes have different backgrounds and company history, but a common denominator is that the main growth factor has been growth by mergers and acquisition – mergers and acquisitions within *either* Europe *or* the U.S (James, 1998; Lundmark, 2003; Bialos et al).

-
2. Thomson-CSF changed its name to Thales in 2000. It was primarily the same company, but with the new strategically important acquisition Racal (UK).
 3. EADS was created in 2000, merging defence entities from Aérospatiale Matra (France), Daimler Chrysler, DASA (Germany) and CASA (Spain).
 4. It can be noted that Halliburton and SAIC are companies primarily engaged in management of defence programs, and not as producers of defence products.
 5. Northrop Grumman acquired TRW and Litton in 2000 and 2001.
 6. For the year 2006, BAE Systems became separated in the SIPRI statistics between its UK company (BAE Systems) and its U.S. operations (BAE Systems Inc). For 2008, they were united again in the SIPRI Statistics, and they are here treated as one company. In 2006 the number 8 company is missing, and in 2007 the number 7 company. The BAE Systems U.S. operations held those positions.

2008	Lockheed Martin	Boeing	BAE Systems	Northrop Grumman	General Dynamics	Raytheon	EADS	Thales	Finmeccanica	L-3 Communications	MBDA ⁷²
Turnover billion dollars)	42,7	61	31	32	29	23	58	18	19	15,0	4,3
Defence turnover	39	32	29	25	22,6	21	14	13	12	12,2	4,0
% defence	92	52	95	78	78	90	25	75 (?)	65	82	100
Employees	146 000	162 000	105 000	122 600	92 000	73 000	118 000 ⁷³	68 000 ⁷⁴	60 750	66 000	10 000
Main country/ies of operations	USA	USA	USA, UK, Australia, Germany, Sweden, South Africa	USA	USA, Canada, Switzerland, Austria, Spain	USA	France, Germany	France, UK	Italy, UK, US	U.S.	France, UK, Italy, Germany
% defence export (of defence sales)	15	10	n.a.	5,5	10 (from the US)	?	n.a.	n.a.	?	?	n.a.
% of sales to the U.S.	85	60	35	90	70	85	?	9	?	?	n.a.
Main customer	US	U.S.	U.S. (UK 18%)	US	US	US	France, Germany, UK, US ⁷⁵	France, UK	Italy	U.S.	France, UK, Italy, Germany

Table 6.8. *Prime defence companies in 2008* (Source: Bitzinger, 2009; Defense News “Top 100” 2008. Defense News figures differ somewhat from SIPRI).

We will now describe the focal companies’ development one by one. The information in these descriptions is retrieved from numerous web searches, articles and books (e.g. Markusen & Costigan 1999; James, 1998, 2000; Bitzinger, 2009).

⁷² MBDA is a politically constructed conglomerate with very limited public information on sales, strategy and exports.

⁷³ France 39 %, Germany 36 %, 8 % Spain, UK 13 %, USA 4 %.

⁷⁴ France 34 000, UK 10 000, Australia 3 600, USA 3 000, Canada 1 200 and in 7 more nations.

⁷⁵ France 25 %, UK + Europe 38 %, U.S. 9 %.

Boeing

Boeing was created in 1916 as Pacific Aero Products Co, and had its name changed in 1917 to Boeing Airplane Company. Through WWI, WWII and other wars, Boeing has consistently produced military aircraft for the U.S. military, alongside its growth in the commercial aircraft business. In 1960, Boeing acquired Vertol Corporation, thus entering the helicopter business. In 1996, Boeing acquired Rockwell's aerospace and defence units and later the same year McDonnell Douglas for \$13 billion. In 2001, Boeing lost to Lockheed Martin in the Joint Strike Fighter competition, an important setback. Joint Strike Fighter is discussed in detail in Chapter 9. Boeing's main business is in manned and unmanned aircraft, helicopters, missiles and defence system integration.

BAE Systems

British Aerospace was created in 1977 as the British government had nationalised a number of companies (British Aircraft Company, Hawker Siddeley Aviation, Hawker Siddeley Dynamics and Scottish Aviation) and created British Aerospace (BAe). The British state privatized 51.57 % of its shares in 1981, and the rest of the shares in 1985, apart from a £1 golden share, ensuring that the company stayed under British control. The company was reorganized in 1992, and divided into three divisions. BAe began to form a number of alliances with other defence companies in the larger defence-producing nations in Europe.

British Aerospace had planned to merge with DASA⁷⁶ in 1998, but as the British General Electric Company (not to be confused with the U.S. company GE) in December sold its defence electronics business Marconi Electronics, they decided to abort the DASA merger in favour of purchasing the British rival. British Aerospace and Marconi merged in January 1999 forming BAE Systems. In 2000, BAE Systems North America acquired Lockheed Martin's Aerospace Electronics Systems (\$1,627 million) as well as Lockheed Martin's Control Systems (\$510 million), thereby greatly increasing its U.S. presence. BAE Systems therefore has a highly developed U.S. foothold. Since 2002, the U.S. DoD is a larger customer than the UK MoD. In 2004 BAE Systems acquired British Alvis (including Swedish Hägglunds) and Vickers in the land systems industry, followed by the \$3.9 billion acquisition of United Defense (U.S.) in 2005 (bringing with it Swedish Bofors Weapon Systems). Then, with the 2007 acquisition of U.S. Armor Holdings in 2007, BAE Systems became the world's largest land systems defence contractor. BAE Systems became listed in 2009 as the world's largest defence company. BAE Systems is active in practically every segment on the defence market.

BAE Systems is much more involved in the U.S. defence market than the other three European primes. It had a clearly more developed own industrial capacity in the U.S. BAE Systems devotes most of its managerial attention to the U.S., since that is the primary

⁷⁶ DASA was the dominant German aerospace company, a result of the merger in 1989 between Daimler-Benz Aerospace AG and Messerschmitt-Böelkow-Blohm (MBB), Dornier GmbH, Motoren und Turbinen Union (MTU), and Telefunken System Technik (TST). DASA merged with Aérospatiale-Matra and CASA in 2000, thus creating EADS.

growth market in the world (esp. after September 11, 2001) (Bialos et al., 2009; Bitzinger, 2009).

Lockheed Martin

Lockheed, Martin and Marietta were all created during WWI. Martin and Marietta merged in the 1990s and Lockheed merged with Martin Marietta in 1994, a \$10 billion merger creating Lockheed Martin. The ten business segments that were divested by the two companies constituted the start of L-3 Communications. In April 1996, Lockheed Martin acquired Loral for \$9.1 billion. Lockheed Martin was denied to merge with Northrop Grumman in 1998, due to government concerns over the size of the proposed company. Lockheed Martin sold Lockheed Martin Control Systems to BAE Systems in May 2000, and in November 2000 sold its Aerospace Electronic Systems to the same company. Lockheed Martin is active in all sorts of aircraft, defence electronics and defence system integration.

Raytheon

Raytheon was founded in 1922 as the American Appliance Company. Raytheon acquired Hughes Missiles in 1997, thereby consolidating the main part of the U.S. missile industry, which explains the rapid increase in revenue from 1997 to 1998 (+136%). Raytheon later acquired Texas Instruments, Hughes Aircraft, Beech Aircraft, and E-Systems. Raytheon is the highly dominant missile producer in the U.S. It is also active in civil and military radar, air surveillance, electronics and underwater electronics.

Northrop Grumman

Northrop Corporation was formed in 1939 as an airplane producer. In 1994, Northrop merged with Grumman Aerospace to create Northrop Grumman. Westinghouse Electronic Systems was acquired in 1996, and Logicon in 1997. Logicon had previously acquired Geodynamics Corporation in 1996 and Syscon in 1995. After the denied merger with Lockheed Martin in 1998, Northrop Grumman acquired Teledyne Ryan, California Microwave and Data Procurement Corporation in 1999, together with a line of other, smaller acquisitions. In 2001, Northrop Grumman acquired Litton, a large shipbuilder and provider of defence electronics, followed by Newport News (shipbuilder) the same year and TRW in 2002. These acquired companies were in 2000 ranked worldwide as # 9 (Litton), 10 (TRW) and 15 (Newport News), having together 1½ times the revenue of Northrop Grumman in 2000. Northrop Grumman is primarily active in defence electronics, but also in aircraft, shipbuilding and defence system integration. Newport News was divested in 2011.

Thales

Compagnie Francaise Thomson-Houston (CFTH) was established in 1893. Thomson-CSF was created in 1968 when Thomson-Brandt merged its electronics arm with that of Compagnie Générale de Télégraphie Sans Fil (CSF). Thomson-CSF was renamed Thales at the same time as it acquired the British company Racal in 2000. Thomson-CSF/Thales

has for a long time practised its “multidomestic strategy”: the company has acquired nationally established companies in several nations in order to achieve a local presence. It has also created numerous joint ventures with companies all over the world, often combined with minority ownership in local companies. Thomson-CSF/Thales has in this regard enlarged its industrial footprint in a distinctive manner compared to the other primes. Thales created together with Raytheon the transatlantic joint venture ThalesRaytheonSystems in 2001, which is described in detail in Chapter 9. In 2006, Thales acquired Alcatel’s (France) space business. Thales is primarily active in defence electronics and communication systems of all kinds, air surveillance and radar. It does not produce aircraft, armoured vehicles or naval vessels.

Thales has many positions as subcontractor to U.S. programs. Thales has since the 1950s developed cooperation with U.S. companies in radar, sonar and air defence.

EADS

DASA (Germany) merged with CASA (Spain) in a MoU in June 1999. In October 1999, Aérospatiale merged with Matra Haute Technologie to create Aérospatiale-Matra (France). EADS was created in 2000 as these focal defence companies in Germany, Spain and France were put together. This conglomerate merger brought with it partial ownership in many different pan-European corporate constructs such as Eurocopter, Airbus, Matra BAE Dynamics. Airbus was transformed in January 2001 from a consortium to a formal joint stock company, owned 80% by EADS and 20% by BAE Systems. In 2003, EADS acquired BAE Systems’ 25% share in Astrium, the satellite and space system producer, and became the sole owner. In 2006, EADS also acquired BAE Systems’ 20% share in Airbus. EADS is active in practically all defence segments.

EADS had, as Thales, only subcontractor positions for U.S. defence programs at its creation. EADS has developed cooperation and a joint venture regarding airport traffic control together with Northrop Grumman. Since 2001, EADS has achieved large U.S. contracts for air refuelling, transport aircraft and helicopters in areas of military importance, but not for highly sensitive military technology.

MBDA

MBDA is a missile producer. In 1996, half of Matra Défense (France) and BAe Dynamics (UK) merged to form Matra BAe Dynamics (MBD). The other half of Matra’s missile business merged with state-owned Aérospatiale and became Aérospatiale-Matra Missiles in 1999. In 2000, Aérospatiale-Matra became a part of EADS. In 1998, GEC-Marconi Radar and Defence Systems and Alenia Difesa combined their missiles and radar activities to form Alenia Marconi Systems (AMS). In April, 2001, MBD and AMS were merged in order to form MBDA. Spanish Inmize Systems S.L. is owned 40% since 2002. German Lenkflugkörpersystem (LFK) was added in 2005, before that being a part of EADS. MBDA now unites German, British, French, Spanish and Italian missile production, a conglomerate highly orchestrated by political forces. It is the world’s second largest missile producer after Raytheon.

“MBDA is a part of a shared sovereignty (souveraineté partagée)”, MBDA spokesman, Paris, 2003

“MBDA is not concerned with exports, as opposed to Raytheon.” Merrill Lynch representative,
London, 2002

MBDA could at its creation in 2001 be described as a consolidated European future; most of the larger European missile programs were united within MBDA. However, the owners from Spain, Italy, Germany, France and the UK retained their respective shares of the total ownership, and the national production facilities were kept. Therefore, MBDA was at its creation an almost entirely European corporate creation. MBDA and Boeing signed in 2003 a contract for cooperation concerning the pan-European air-to-air missile Meteor. Otherwise, MBDA has very limited transatlantic business. MBDA is not listed on the stock market, and its operations and revenues are only partly public.

MBDA is the result of a politically orchestrated merger between the missile-producing companies in the UK, France, Germany, Italy and Spain. MBDA includes more than 95% of the missile production in Europe. Missiles are seen by governments as being among the most strategic defence technologies; missiles define much of the offensive and defensive capabilities of a military.⁷⁷

Thus, there is in the SIPRI Top 100 a clear dominance of the U.S. companies. They made up 60% of global arms sales (among the 100 largest companies) in 1990, and 63% in 2003, whereas the share of European companies shrunk from 33 to 29 percent in the same period. At the same time, the number of U.S. companies among the SIPRI Top 100 fell from 49 to 39, and for European companies from 40 to 36. This reflects the more dramatic U.S. concentration together with the increase in U.S. defence expenditures – thus making the restructuring processes quite different (Dunne, 2009). The increasing specialization of defence firms together with larger size makes it more difficult for newcomers to enter the defence market, facing increasing barriers to entry. The increasingly specialized firms, together with the very poor record for the companies that have tried to convert their defence production into non-defence markets (attempts were made in the 1990s), also create barriers to exit; companies are too specialized.

⁷⁷ MBDA has been difficult to analyze. In 2003, when interviews were performed in France, it was still a highly separated conglomerate of national missile producers in France, Germany, UK and Italy. My interviews at MBDA revealed very little concerning their strategies or their operations, nor did their homepage. MBDA was also created as a reaction to the potential world dominance of Raytheon. MBDA was by definition a European, non-U.S. creation, since it was created as a politically created company between the UK, France, Germany and Italy (later joined by Spain) in order to counter Raytheon's increasing world dominance. MBDA's web site has offered extremely limited information. Through interviews I had learnt that it “was mostly a conglomerate of separated national companies”. Therefore, my information about MBDA is scarce. In other interviews in 2010, I have learnt that the French and the UK missile production have strategically become highly integrated within MBDA, and that MBDA as much as possible avoids U.S. subcontractors in order not to risk any kind of dependence upon the U.S. MBDA is largely not included in the statistics and data that have been studied; its operations are within EADS, but not openly presented. Thus, I have not been able to gain more than superficial insight into MBDA's operational integration, apart from the fact that identified texts and respondents state that the operational integration is highly limited.

6.3 Forms of transatlantic defence industry integration

We will now turn to describing the forms of integration. As defined earlier, we will distinguish between ownership and operational integration.

Taxonomies concerning integration between companies (Kogut, 1988; Lorange & Roos, 1991 & 1992; Yoshino & Rangan, 1995; Garrette & Dussauge, 1996; Cateora & Graham, 2000) state that ownership integration principally concerns alliances, joint ventures, mergers and acquisitions. Yoshino & Rangan (1995) analyze the breadth of the concept ‘strategic alliances’, stating that it encompasses (under the category of contractual arrangements) a range from “non-traditional contracts” (joint R&D, joint product development, long-term sourcing arrangements, joint manufacturing, joint marketing, shared distribution/service, and finally standards sharing/research consortia) to, under the category equity arrangements, “no new entity” (minority equity investment and equity swaps) and “creation of entity” (non-subsidiary joint ventures, fifty-fifty joint ventures and unequal equity joint venture). In Yoshino & Rangan’s taxonomy, contractual arrangements equal operational integration, and equity arrangements equal ownership arrangements.

6.3.1 Industry-specific forms of operational integration in the defence industry

Defence development and production that concern several nations are meticulously organized between the participating nations. The governments concerned allocate considerable public funds and strive to maximize the utility and value received in the home nation. This involves e.g. high-technology production, technology development, employment and perceived spill-over effects to other industrial sectors from advanced technology development. Based on these strivings, there is practically always strong correlation between the national cost and the value of the expected work and technology creation (Hartley & Sandler, 1995).

In the defence industry, the operational integration between the defence companies tends to follow specific principles, principles created by governments. In Chapter 2, there was a description of government policies for controlling defence companies’ operations. With these in mind, we can describe how the operational integration is generally organized.

In a multilateral defence cooperation for developing a mutual product, there is a basic principle that each contributing nation will expect to receive research, development and production work largely in accordance with its financial contribution: this is referred to as a “cost share – work share” principle. For example, let us say that three nations decide to jointly develop a naval ship. One nation plans to acquire five ships, the second three ships and the third two ships. Typically, they will finance the development phase in accordance with their planned share of the production (50%, 30% and 20%). Each nation will take responsibility for a proportional ‘work share’ of the development. Each nation will have a specific company or group of companies that are designated for the nation’s work share. There will be negotiation between the companies concerned on how to distribute the responsibilities – for the hull, propulsion, hydraulic system, weapons integration, different

types of electronics, radar etc. Each company will normally receive a strictly defined and separated modular part of the total product (e.g. the wings of an aircraft or the propulsion of a boat). Each such module of development must be priced, and each nation will have one or several work packages that together add up to the value of its cost share (Bitzinger, 2009; Hartley & Sandler, 2007; Interviews, 2010).⁷⁸ There will also be a technology hierarchy between the different work packages, where some systems will be most attractive, and some manufacturing of e.g. metal parts less attractive. The companies must find a mutually acceptable solution to the distribution (Interviews, 2010). Most business in the defence market is a result of defence programs created by governments, and governments will typically have very strict demands upon how defence cooperation must be organized. In Chapter 9 we can see in the cases of Joint Strike Fighter and NFR-90 how nations and companies strive to organize the work share.

The resulting distribution of responsibilities in the multilateral cooperation will have one company designated as the 'lead' company. This company will typically receive a certain percentage of the order value for the coordination responsibility, 10% being a common share (Interviews at Saab, 2010).

However, if the distribution of the work share becomes politicized and subject to strong political interference, to create a mutually acceptable distribution of the work packages will become more difficult. For example, one nation may designate a company for the cooperation that is not seen as sophisticated enough by the other cooperating companies, or one nation may try to influence certain crucial choices of technology that would be more favourable (e.g. choice of diesel propulsion or radar technology). We will see examples of this in Chapter 9.

Based on the government policies for defence company integration explained in Chapter 2, we can understand how operational integration is regulated. Firstly, all border-crossing integration between defence companies is in principle subject to approval by the concerned nations' defence authorities; companies cannot autonomously integrate operations or share technology outside of government scrutiny. Such strategic integration without an order for production must thus be approved (this is exemplified in Chapter 9 concerning ThalesRaytheonSystems). Secondly, in operational integration that occurs within multilateral defence materiel cooperation, the operational integration normally becomes organized under cost share – work share principles. Thirdly, in defence export, the execution of the defence contract will be in accordance with the offset/countertrade agreement that will be negotiated. This thesis does not analyze operational integration through defence export and defence-related offset.⁷⁹

⁷⁸ Under the general principle of cost share – work share, there are several similar concepts such as '*juste retour*', and national definitions of work share.

⁷⁹ If a company exports to another nation, the production may be performed in the home nation of the company without any production in the buying nation. It is however more common that defence export involves some sort of distribution of the production between the selling company and the buying nation. The defence product may be produced in the buying nation under a license agreement. In many cases of defence export, the transaction will result in an offset arrangement where industrial activity in the buying nation has to be organized by the selling company. This thesis' purpose does not cover such offset implementation; the offset is seen as a part of the execution of a specific transaction and has not been studied. This is however a result of defence exports where there is an accord between governments on how and where defence production will be executed. This thesis fo-

Companies will aim to integrate operations as they create alliances, joint ventures, mergers or acquisitions. The companies' possibilities to create synergies and to rationalize through such ownership integration are, as was shown in Chapter 2, highly restricted.

We may also see consortia that are entirely shaped by government actors. Defence ministries, the military or some other government body will have suggested in a government-to-government negotiation that company A in one of the countries should jointly develop with company B in the other country. The companies are approached with an offer to engage in this production. This is thereby a government-orchestrated consortium (consortia often being labelled as 'teaming arrangements'). However, this type of almost complete government orchestration has become scarcer; such consortia have tended to have a very high cancellation rate. One striking example is when President d'Estaing and Chancellor Brandt in 1982 jointly and proudly announced that France and Germany would produce a joint Main Battle Tank. However, the respective military forces were never able to agree on specifications and technology choices, nor were the respective companies close to creating a credible consortium for this project. Thus, the project was aborted (Hébert & Hamiot, 2004).

6.4 Conclusions

This chapter has described the development of the transatlantic, the intra-European and the intra-U.S. integration outcome. It has presented an assessment of the defence industry integration to test whether the general view that the transatlantic defence industry integration is limited holds true. The assessment showed that the transatlantic defence industry integration indeed is limited compared to the intra-European and intra-U.S. integration. The intra-European and the intra-U.S. ownership integration have clearly been more developed. Compared to other comparable industries, the defence industry in general shows considerable separation between national industrial entities. Globalisation has been restricted in the defence industry, which is not surprising in itself, but the data in this chapter support this generally accepted notion.

Concerning integration, a number of deviations from general market behaviour and general industrial action have been described. These deviations are not secretive or classified outcomes; they are intricate integration outcomes in this industry resulting from fundamental and restrictive government influence. We can see how the defence industry, through all the restrictive government mechanisms (described in Chapter 2), shows a very different integration outcome than what is generally seen as how companies interact globally.

Governments fundamentally control and regulate the functioning of the defence market and the development of the industry (described in Chapter 2). The defence industry in

cuses on defence industrial cooperation and integration, not on defence export, so licensing and co-production fall outside the focus of the thesis. For many nations, however, offset-induced production becomes the major bulk of defence production, as they do not develop indigenous large defence systems, but will produce parts of imported systems and platforms from other nations. The offset may also be arranged so that the exporting company must arrange for imports of non-military goods (i.e. indirect offset) or investments in the buying nation's industry (Axelson & Lundmark, 2009).

each nation is largely dependent upon the support of the host nation and the conditions it offers.

Under President Clinton and based on the lessons from the Gulf War and Kosovo, transatlantic cooperation and NATO interoperability became much more prioritised: the 1990s thereby became a peak of the interest in transatlantic defence industry integration.

In 2001 the September 11 events created a completely new direction for the U.S. George W. Bush and his aides started enormous investments in defence technology, and a defence market growth not seen since WWII started in the U.S. The corporate rationale for driving forces and inhibitors for transatlantic defence industry integration was not altered in principle, but the growth in the U.S. created certain shifts. For U.S. companies, there was now almost more business and more R&D financing than they could handle. The European market became less attractive, and European companies became even more eager to have a presence on the U.S. market.

The primes in the strategic group have had quite different conditions. The U.S. companies exist in the far more rewarding U.S. defence environment. The European companies have their specific luggage of possibilities and restraints. *BAE Systems* has now grown to be the world's largest defence company. Its growth has primarily been through acquisitions of U.S. companies, with solid help from the fact of being British. *EADS* is a large company active in many nations. It does have disadvantages from its political construction with management shared between France and Germany. It has not been able to make any sizeable U.S. acquisitions. *MBDA* has proven to be a highly political construction, which represents practically the entire European consolidated missile demand and missile development. It has very limited possibilities to acquire U.S. companies (technology too sensitive) or to create sizeable business in the U.S. (the U.S. will choose domestic missiles). *Thales* has been able to spread its business in Europe and certain nations closer to the Western community (e.g. Australia). *Thales* has over several decades practiced its 'multi-domestic strategy': to create positions in many nations through joint ventures with and ownership in domestic defence companies. However, it has not been able to acquire any sizeable U.S. companies. The fact that *Thales* is French has probably been a clear inhibitor to achieving greater U.S. presence; there is deep-rooted scepticism towards France in parts of the U.S. defence community. The French state's ownership in *Thales*, *EADS*, *Snecma*, *Dassault*, *DCNS* and other companies also becomes an important inhibitor for the U.S.⁸⁰

What kind of integration has occurred?

⁸⁰ Table 6.4 showed the stability of the Top 12 companies. When this research was started in 2001, there was widespread consensus that the group of primes consisted of eight companies: Boeing, BAE Systems, Lockheed Martin, Raytheon, Northrop Grumman, Thales, EADS and MBDA, with perhaps less strong consensus on including MBDA. General Dynamics and United Technologies were described as platform producers, not prime integrators. Finmeccanica was described as not quite in the top group of primes, being more of a government holding company of Italian defence interests. Based on this, Finmeccanica, General Dynamics and United Technologies were not included in the strategic group. MBDA has, in retrospect, proved to constitute a consolidated pan-European order book rather than a strategically active player. L-3 Communications is a rising star in the table; it has primarily grown through numerous acquisitions, and has combined many electronics-related competences. The focal group of companies for my study has been Boeing, BAE Systems, Lockheed Martin, Raytheon, Northrop Grumman, Thales, EADS and MBDA.

Ownership integration: There has been considerable intra-U.S. ownership integration during 1993-98. An enormous breadth of companies in all segments was actively led into a consolidation process by the U.S. government in the 1990s. In Europe there has been considerable ownership integration and concentration during 1998-2001. The transatlantic integration is severely restricted in both directions. Transatlantically there has been considerable ownership integration between the U.S. and the UK, but little from other European states. U.S. companies have acquired several medium-size companies on the SIPRI Top 100 in Spain (Santa Barbara), Sweden (Bofors, Kockums), Austria (Steyr), Switzerland (Mowag), but fewer in the UK, Germany and France (none). When European companies acquire U.S. defence companies, the ownership is highly limited through proxy boards and firewalls. French defence companies cannot be acquired from abroad. Governments are generally very restrictive towards foreign acquisition. Transatlantic joint ventures are rare, and are also firewalled. Despite the proxy boards and extremely limited insight into acquired U.S. companies, European companies strive to buy U.S. companies; this strongly proves the attractiveness of the U.S. defence market. The transatlantic ownership integration is much smaller than the intra-U.S. and intra-European integration.

Despite government rhetoric in the late 1990s for transatlantic ownership integration between primes, this never occurred. With the shift to George W. Bush and the impact of September 11, 2001, the U.S. government interest in transatlantic operational integration through shared defence programs decreased dramatically.

Operational integration: Intra-U.S. operational integration has not been analyzed, although empirical data indicate that merged companies tend to remain quite separated. Within Europe, there has been substantial defence cooperation since the 1950s, which through deepening operational integration gradually has led to the creation of joint ventures, and later separate companies (Eurocopter, Airbus, Euromissile, MBDA) – and these have in many cases led to the creation of the present primes. This process lasted for roughly 50 years starting in the 1950s. This is most clearly the case with the process that has led to EADS and MBDA. The transatlantic programs that exist were almost exclusively created in the 1990s with a much more transatlantic-positive attitude under Clinton. The cooperation is performed with elaborate firewalls, and defence technology is only partly shared.

The most influential European states in defence have a cooperative share of their defence procurement between 15-30%, with France being the most active. Transatlantically, the operational integration is much less developed. The U.S. has just above 1% cooperative defence procurement (1,3% on average 2003-2007), 87% of this being in Joint Strike Fighter and with the UK. The transatlantic defence R&D cooperation constitutes a small share of the U.S. defence R&D budget (1.3%) (Bialos et al.).⁸¹

Operational integration in cooperative defence development programs is normally performed under a strict cost share – work share principle, with strong restrictions on technology flows and technology transfer, and with elaborate differentiation between different nations' work packages. The transatlantic operational integration is intensive in some are-

⁸¹ It has not been possible to quantitatively identify European nations' bilateral defence R&D cooperation with the U.S., since this becomes bilateral defence cooperation that is classified.

as between the UK and the U.S., especially aircraft, nuclear submarines and nuclear technologies. Otherwise in the defence cooperative programs, the corporate interaction is highly restricted and monitored, and results in defence-specific modes of cooperation based on the cost share – work share principle. These industry-specific forms are seen as a result of the nature of the organizational field. Governments, through their restrictive and inhibiting regulation, have set a clear threshold where cooperation is prioritised at the same time as they are suspicious of integration of their domestic defence industry assets with defence companies from other nations.

Within Europe, and between Europe and the U.S., there is cooperation between companies under the headings of government-to-government defence programs. Inside the U.S., there are also U.S. companies that cooperate between themselves. An important difference between intra-U.S. and border-crossing cooperation is that U.S. companies cooperate within a united political context and thereby do not have to deal with cross-border complexities. As for European companies, they have many different political contexts to deal with when cooperating or integrating inside Europe. In comparison, the U.S. defence market over time is 2–2.5 times larger in turnover than the EU defence market, and with a defence R&D budget that is six to seven times larger than the aggregate European defence R&D.

*Government policies for regulating and influencing company integration*⁸²

Governments control and shape the defence industrial integration through a number of tools and powers: corporate interaction and integration are meticulously monitored and steered. Companies do integrate, and they do cooperate. However, their actions are highly regulated through state policy. We can separate these into the following categories: *export control*, *ownership of intellectual property rights* and *company control*. The overarching instrument and tool of power is that governments control the technology transfer.

During the 2000s, there has been a slow but steady movement within Europe towards the creation of a harmonised and open pan-European defence market. This has to some extent diverted *government* interest from transatlantic integration to European defence market harmonisation. European *companies*, however, have seen the U.S. market as the road to profit and expansion, and that market has been the foremost priority.

As noted, the U.S. defence R&D is around six times higher than the entire EU defence R&D. The defence R&D processes are also largely separated transatlantically, but are increasingly becoming shared in Europe. Since defence companies' product development processes are primarily financed through defence R&D and national defence orders, the state-financed defence technology becomes nationally defined, and the limited integration of defence R&D between nations inhibits operational integration of defence companies (transatlantically, but also in Europe).

⁸² Primarily described in Chapter 2.

Conflicting institutional logics

If the corporate integration is compared between the three contexts, three conflicting institutional logics can be identified. Firstly, there is an intra-European logic that has slowly grown in importance since the 1950s, picking up speed in the 2000s. Secondly, there is an intra-U.S. logic which largely has been stable since the start of the Cold War. Thirdly, there is a transatlantic logic that after a long period of low activity became much more significant in the 1990s under Clinton. After Clinton, the transatlantic logic has decreased in importance, whilst the other two logics have become more dominant. Thereby, the transatlantic business opportunities for the defence companies have become fewer regarding operational integration. The ownership integration has experienced one government-initiated, massive consolidation pulse in the U.S. in the 1990s, followed by a similar intra-European pulse a few years later. The transatlantic ownership integration, however, has not been more than marginally affected by any government policy changes. It has overall shown a low and steady activity.

Chapter 7 Driving forces and inhibitors for transatlantic defence industry integration – discourse as identified through texts

In Chapter 6 the action was described. In this and the next chapter the discourse will be described. In Chapter 7 the ‘secondary’ discourse, the discourse as published in identified texts, will be described. In Chapter 8 the ‘primary’ discourse, the discourse as identified through interviews, will be described. The discourse is empirically presented as a dichotomy between secondary sources and interviews, based on the assumption that there is a discrepancy between the two, and that an analysis of this discrepancy is important for better reaching the purpose of the thesis.

The purpose, as stated, is partly to describe the discourse for transatlantic defence industry integration.

- The discourse is defined in my Case Study model as consisting of driving forces and inhibitors – arguments for or against a specific industrial change (in my case transatlantic defence industry integration). These arguments may state either why the change *will or will not* occur, or why they *should or should not* occur.
- Transatlantic defence industry is defined in my study as the defence industrial ‘primes’ in the U.S. and in Europe.
- Integration (the action) is analyzed as being either ownership integration or operational integration.
- In the logic of the thesis, the defence companies operate in a defence market that resides within an organizational field that is composed of a corporate field and a government field.

Thus, in this chapter we will identify, in the secondary discourse from 1994 to 2001 for transatlantic defence industry integration:

- driving forces and inhibitors, and how they are phrased;
- whether the driving forces and inhibitors refer to ownership integration or operational integration;
- whether the problem is defined as (or can be understood as) residing in the corporate field, the government field (political, bureaucratic, military) or the aggregate organizational field.

Timeline

The focus is on the time period 1994-2001. The reason for the starting year was that it was when the discourse for transatlantic defence industry integration started to become

influenced by the post-Cold War defence context. The end year 2001 marks when there had been an intra-US as well as intra-European ownership integration (i.e. consolidation and industry concentration). During these years, the discourse for transatlantic defence industry integration was at its most intensive level.

Disposition of data

In the texts, a number of driving forces and inhibitors emerged as the most articulated. Under each driving force and inhibitor, the development of each issue will now be described, as well as how they refer to ownership and operational integration, and where the problem mainly resides in the organizational field.

In order to structure the data, they will be discussed in relation to the following discourse matrix:

	Ownership integration	Operational integration
Corporate field	1	2
Government field	3	4
Organizational field	5	6

Table 7.1. *Matrix for sorting driving forces and inhibitors for transatlantic defence industry integration as identified in discourse*

Each driving force or inhibitor will be sorted based upon how it is phrased concerning, on the one hand, ownership integration or operational integration – and on the other hand, upon whether the argument mainly resides in, or is in the interest of, the corporate field, the government field or the organizational field of the defence market as a whole.

In Chapter 8 we will search for data concerning the same discourse, but as expressed by a large number of individual respondents. These data will also, at the end of the chapter, be sorted over the discourse matrix.

7.1 Choice of sources

The study of the secondary discourse in this chapter focuses on the period from 1994 to 2001. The cited texts have been chosen based on their relevance judged by citations according to Google Scholar. Some cited texts have been included that have a low level of citations, but which are seen as identifying important aspects of my research problem. Furthermore, there is reference to a small number of analyses made by government authorities. There are also references to a number of newspaper articles and published speeches. I have also sent an e-mail survey to ten scholars knowledgeable in the field, where I asked them to list the five most influential (in their professional opinion) texts regarding transatlantic defence industry integration from 1994 to 2002. At the end of this chapter I will further present the relevance of the texts based on this research.

The account in this chapter includes all the identified texts that are seen as relevant, i.e. a sufficiently developed reasoning and argumentation. Most of the texts are from think-tanks, specialized analysts or academia. Only three of the identified texts emanate directly from companies (CEOs from British Aerospace and, twice, Lockheed Martin). Several of the other sources from governments, analysts and academia refer to what *in their view* would be positive or negative for defence companies through a process of transatlantic defence industry integration. Corporate standpoints can thus be seen as underrepresented.

The secondary sources sometimes present a nationally based standpoint, e.g. French, or in some cases a U.S. standpoint or a UK standpoint. Arguments are also based on a NATO or EU perspective.

Among these references, none has been identified as academically published within business administration, organization theory or management. It may well be that some of the authors have academic education in these areas, but publish in other academic settings.

The majority of the writers are from security policy and political science (e.g. Bitzinger, Heisbourg, Yost, Mörth, Keller), but several of them with a corporate strategy focus (Bitzinger, James). There are a few economists (e.g. Markusen, Hartley, James), and a few from law (Cevasco, Kovacic) or engineering/natural sciences (Gompert, Deutch).

Several of the texts are written from a marked government policy or military standpoint, be it NATO, U.S., EU or some other (Andreani et al, Gompert et al., Heisbourg et al., Yost, Markusen & Costigan, Schmitt, Deutch, Deutch et al., Sapolsky & Gholz). This group tends to discuss, or relate to, the issue of transatlantic defence industry integration in a hands-on manner, directly related to policy without a firm theoretical framework guiding the analysis.

Thus, transatlantic defence industry integration is an issue that appears to be of very little interest to the academic fields of management, business administration and institutional theory. One exception is Mörth (2000), who (from political science) applies a perspective of the organizational field and institutional theory for an analysis of the EU armaments policy.

Chapter 8 will present a supplementary picture. Chapter 7 constitutes a first retrospective survey through secondary sources which leads into Chapter 8 based on interviews. Chapter 8 is intended to offer increased understanding in order to provide explanations fulfilling the thesis' purpose. Furthermore, we can compare in what way the interviews have offered a different or contrasting picture of the nature of the discourse.

The published discourse for transatlantic defence industry integration

The costs of arms development increased dramatically as the arms race between NATO and the Warsaw Pact developed. In NATO, there was an ongoing debate on how and why defence development and defence-industrial activities should be shared and integrated. NATO interoperability and general function should be improved through multilateral arms cooperation, leading to arms standardization, technology sharing and cost reductions (Hartley, 1983). The NATO arms cooperation was much less developed compared to the intra-European defence cooperation that was performed predominantly between the UK, France and West Germany (Schmitt, 2001; Hébert & Hamiot, 2004).

After the end of the Cold War, there was a new context for arms development and for the defence industry; the conditions of the organizational field had changed. The ‘Cold War Economy’ needed to be dismantled (Markusen 1992). The defence companies had to adjust their strategies and ways of doing business in a fundamentally transformed, increasingly global defence market (Bitzinger, 1994).

However, why should there or will there be transatlantic defence industry integration? Conversely, why should there or will there *not* be transatlantic defence industry integration? From what grounds, from whose perspective, do these arguments emanate? Now follows a presentation of the driving forces and inhibitors for transatlantic defence industry integration that have been identified in the discourse, as identified in published texts. They are presented in relation to the above matrix, in the order as noted 1 through 6.

7.2 Driving forces

1. Driving forces for ownership integration in the corporate field

Driving force 1.1: *The defence industry would benefit from transatlantic ownership integration by forcing industry to consolidate and rationalize.*

Practically all texts are highly supportive to increased transatlantic defence industry integration. The defence market and the transatlantic market interface are described as inefficient and ridden by limitations on business. Making the transatlantic defence market more transparent and allowing increased ownership integration of defence companies is believed to bring with it better business for companies, better innovation and more technology sharing.

There are very few published texts that are written by representatives of companies⁸³; the advantages of transatlantic defence industry integration are largely described by scholars, analysts and government officials. Only a minority of the texts are based on interviews with company representatives. John Weston (CEO of British Aerospace and later also CEO of BAE Systems) discussed in 1996 “The European Defense Industry in the Global Market – The Challenges of Defense Consolidation”. Weston saw European consolidation as a necessary first step in order to be able to create the necessary American links. He further wished for government actions guiding consolidation by awarding programs in a structure-shaping manner.⁸⁴

Several texts argued for consolidation, and thereafter rationalization in the U.S. and in Europe in order to facilitate transatlantic ownership integration (Weston, 1996). Others focused on either a U.S. ownership integration and consolidation in order to better meet U.S. military demand and thereby reach better business (Sapolsky & Gholz, 1999:b), or on the importance of European ownership integration in order to improve international competitiveness and decrease redundancies in industry and research (Schmitt, 2000; Heisbourg, 2001).

⁸³ Three speeches have been identified from company CEOs of Lockheed Martin (2) and BAE Systems.

⁸⁴ Weston, 1996, Center for Strategic Decision Research (CSDR), Menlo Park, California. www.csdr.org/96Book.htm.

The discourse picked up pace in 1999. The U.S. had now gone through a period of dramatic ownership integration. In Europe there was a lot of discussion on how to create larger pan-European companies that would be able to compete with as well as cooperate with the U.S. top four primes Lockheed Martin, Boeing, Raytheon and Northrop Grumman (Markusen & Costigan 1999).

Pages (1999) described the evolution of defence mergers from the mid-1980s until the late 1990s. Until the late 1980s, there were extremely “fat” years for industry. After the Cold War, the U.S. government (like so many other governments) fretted for a few years before reacting to the new environment. The government then vigorously encouraged consolidation, and by the late 1990s had to impede the degree of concentration when the number of prime contractors was about to go from four to three⁸⁵. Pages addressed how Pentagon had to change its interaction towards the defence contractors, and also that the U.S. had to change its international behaviour to better reflect the impact of the consolidated defence industrial base (Pages, 1999). Flamm discussed the problematic task of streamlining and prioritising in a further consolidation of the U.S. defence industrial base (Flamm, 1999).

Many writers stressed that companies through increased ownership integration would be able to benefit from business opportunities that would emerge from more globalized supply chains (Bitzinger, 1999; Hayward, 1999, 2000; Laird, 1999; Markusen & Costigan, 1999; James, 2001).

Markusen and Costigan (1999) addressed implications for defence cooperation in general and transatlantic cooperation in particular. A globalized defence industry context challenges security policy-driven incentives for U.S. domestic protection of the defence industrial base. Furthermore, when the defence industry is on the highly volatile stock market – competing for investors’ money – the shareholder initiative can come in stark contrast with the military priorities in case of war.

Jensen (2001) saw more transatlantic ownership integration ‘under the radar screen’ among smaller defence companies – these companies did not achieve as much political attention as the primes. James (2001) found that defence companies pushed the ownership integration as far as they were allowed by governments, but that companies gradually pulled ownership integration further, with the governments’ somewhat restraining policies.

Sapolsky and Gholz stressed the importance of restructuring the U.S. defence industry, primarily since the consolidation had not to any substantial extent reduced production capacity – it had rather united many production lines in fewer companies. Sapolsky and Gholz suggested that the U.S. government should quit maintaining the “self-equilibrating size of the MIC”; it should pay the bill for closing plant capacity, redirect the innovation process from automatically addressing the same old parts of the MIC, and instead create incentive structures for private firms to want to engage in the innovation process. The ex-

⁸⁵ Referring to the blocking of the merger between Lockheed Martin and Northrop Grumman in 1998 by the U.S. government.

isting defence innovation complex was seen as being far too big compared to what it produced. (Sapolsky & Gholz, 1999:i and 1999:ii; Gholz & Sapolsky, 1999:a)

Bitzinger also stressed that cross-border mergers and acquisitions in the defence industry in 1999 were quite a new phenomenon, and also with just a limited number of actual examples. Bitzinger pointed out that the effects of globalization fundamentally change the dynamics of the defence industry. Procurement agencies and governments must thereby address new challenges and opportunities, and defence companies are facing immense challenges in adjusting to the globalized environment as well as being offered countless possibilities to exploit the possible benefits of the globalized defence industry context.

Laird (1999) discussed “The inevitability of global defence industry alliances”, and posed the question whether the European prime contractors might have an advantage over the U.S. counterparts in being later in their consolidation. The European primes should thereby be better at responding to and encouraging the benefits of globalization, whereas the degree of U.S. prime consolidation should have decreased the possibilities to reap such benefits due to the U.S. consolidation into a more rigid, domestic structure.

Andrew James has written a number of books and articles concerning implications of the U.S. restructuring and consolidation. In a paper from 2001, he mainly discussed the processes of consolidation as regards mergers and acquisitions (M&A) of Lockheed Martin, Boeing and Raytheon and compares them with the European giants BAE Systems, Thales and EADS. James conveys lessons from the U.S. consolidation experience. In short, these are: closing a M&A deal is only one part of the process – a lot of work remains; integration processes after M&A absorb a lot of management time; new and effective reporting structures must be created; to realise benefits of new size and synergies might require organizational innovations; and finally, that M&A might be a prerequisite for survival, but is not a sufficient strategy in itself.⁸⁶

Driving force 1.2: *Transatlantic ownership integration would increase the competitiveness of the defence industry.*

Coffman, the Lockheed Martin CEO, in 1998 urged for increased ownership integration in order for companies to be able to reach synergies and business opportunities in a transatlantic market (Coffman, 1998). In a 2001 paper, Jensen discussed “Lower Tier Transatlantic Aerospace and Defense Business Activity”. Jensen analyzes in what ways the consolidation process of lower tiers fits into the process of prime contractor consolidation.⁸⁷ European companies have found, among the lower tiers, better possibilities to create market presence and get a better presence in the U.S. The U.S. prime contractors are simply too big for any European company even to consider as a prospect for acquisition. Acquiring and partnering with U.S. companies in lower tiers thereby becomes a possibility

⁸⁶ James, (2001:ii), “*Defence industry consolidation and post-merger management: Lessons from the U.S.A.*”, Aerospace Management. See also James (1998); James (2000) and James (2001:i).

⁸⁷ It should be stressed that in the general discourse, most of the coverage concerns the activities of the prime contractors and the more prestigious defence programs. Very little attention is given to the consolidation process in lower tiers.

for enhancing the corporate portfolio. Jensen sees four primary reasons for this activity: getting access to the large (and growing) U.S. defence budget; to be able to buy “under the media screen of the media and the regulatory authorities”; to build respect with U.S. regulators; and finally to obtain synergies, penetrate new markets and acquire economies of scale in order to compete more effectively on a global scale (Jensen, 2001). Grant (1999) stressed that a consolidation over the Atlantic would be guided by the NATO needs for increased interoperability and RMA, and that this would benefit all companies as their international competitiveness would improve.

2. Driving forces for operational integration in the corporate field

Driving force 2.1: *Transatlantic operational integration would bring with it several efficiencies: e.g. economies of scale, reduced costs, globalized supply chains, increased synergies, decreased redundancies.*

Practically all texts state that there was considerable room for increased operational integration through industrial cooperation and commercially based supply chains. This would bring with it rationalization of processes in cost and time, reduced costs, economies of scale, the benefits of globalized supply chains, and reduction of redundancies in industry as well as in defence research.

Markusen (1992) had stressed the need to “dismantle the Cold War economy” and to transform the defence development to a new security environment. Bitzinger (1994) foresaw the decline of wholly indigenous armaments development due to the altered security situation after the end of the Cold War, and that governments increasingly would search for increased ways to cooperate in armaments production, and also that a more transnational defence industrial base would ‘fundamentally affect the shape and content of much of the global arms trade’. The globalization of the defence industry would on the one hand bring with it new business opportunities for companies as well as a wider spectrum of options for governments. On the other hand, the globalization would force policymakers to engage in a globalized defence market.

The gradually globalizing defence industry would come to exploit benefits from a globalized supply chain and to find synergies with non-defence technology development, as non-defence technology had acquired a faster pace of innovation that was now leading the defence industry. A more open marketplace that could exploit the possibilities of a globalized market would also reduce redundancies in industry and defence research through rationalization and pooling (Hayward, 1999, 2000; Markusen & Costigan, 1999, Bitzinger, 1999).

3. Driving forces for ownership integration in the government field

To begin with, there has never been a truly shared government view or perspective. The U.S. government has acted upon its relative competitiveness and position in order to further the interests of its companies. Within Europe, different nations have different relations to the U.S. on the one hand, and certain mixes of relations to their European neighbours on the other hand. All states had their different stakes. A driving force in Europe was stated as follows.

Driving force 3.1: *Transatlantic defence industry integration would facilitate as well as force a European defence industry consolidation, which would be beneficial for governments.*

It was argued that transatlantic defence industry integration would draw a fragmented European defence industry into having to consolidate and rationalize. One issue that permeated the debate in 1999 was the creation of an *EADC* – a “European Aerospace and Defence Company”. The idea was to unite important parts of the British, French and German defence industries into one central European defence industry entity. This idea was never realised, but inspired the naming of the later *EADS* – European Aeronautic Defence and Space Company – in 2000 (which united substantial German, French and Spanish defence assets) (Ashbourne (ed.), 1999; Markusen & Costigan (eds.), 1999; Schmitt (ed.), 2001).

4. Driving forces for operational integration in the government field

Governments more readily expressed enthusiasm for transatlantic operational integration. These could be expressed under two interrelated driving forces:

Driving force 4.1: *Transatlantic operational integration would bring with it harmonization and standardization of military demand and procurement.*

This issue relates to NATO interoperability. However, governments may also cooperate outside NATO or may not be members of NATO. Transatlantic operational integration would bring with it benefits of more standardized military equipment, and also of more standardized military procurement. Also military procurement was largely national, with each nation having its idiosyncratic organization and principles. This standardization would bring with it efficiencies and reduced costs in several ways, as well as being a requisite for further increased operational integration. Earlier in the 1990s, a transatlantic operational integration was seen as posing challenges to governments (e.g. Boyer, 1994), and gradually over the 1990s the issues rather became seen as opportunities (e.g. Coffman, 1998; Volkman, 1999; Markusen & Costigan, 1999; Gompert et al., 1999) as the transatlantic focus increased at the expense of the national focus.

Some U.S. texts argued that European military forces should adopt U.S. technologies and standards, and accordingly acquire U.S. defence systems and platforms; thus magically reaching the goals of NATO interoperability (see e.g. the foreword in Gompert et al., 1999). However, European nations all had their own defence industries and political interests to safeguard these facilities and capabilities.

Pagoda & Weinrod (2001) saw a complex tapestry of government considerations concerning transatlantic defence industry integration. They put forward five trends that they saw as creating increased possibilities and incentives for enhanced business relationships between European and U.S. defence companies. These trends were: reduced defence spending; government policies on both sides encouraging consolidation; defence issues and capabilities on the EU agenda; concerns in the U.S. about continued access to European markets; and finally strivings within NATO to close the “technology gap”. They concluded by saying that all national considerations – in the U.S. as well as in Europe – must be weighed against how it affects the prospects of transatlantic cooperation.

5. Driving forces for ownership integration in the organizational field

The question of increased transatlantic ownership integration was rhetorically described as being in the interest of the entire transatlantic defence market. However, the power to

influence the development of the ownership integration was still decided upon by each nation regarding acquisitions or mergers of domestic defence companies. One cannot therefore clearly say that there were any driving forces for increased ownership integration that mainly resided in the organizational field. The organizational field did not constitute a decision-making actor; the decision-making belonged to each individual state.

6. *Driving forces for operational integration in the organizational field*

Driving force 6.1: *Operational integration will increase interoperability between NATO partners and other European allies.*

Reaching interoperability had for decades been a popular political point on the agenda in NATO (Hartley, 1983; Hébert & Hamiot, 2004). Military interoperability concerns the degree of commonality between the military partners, and how they can communicate and share data. There had been a strong tradition of nations inventing “their own wheels”, and the technical solutions may therefore not be interoperable. Increased transatlantic *military* technology cooperation would bring with it closer corporate contacts, and gradually increasing interoperability (Coffman, 1998). The interoperability discourse, however, had not been creating substantial *actual* interoperability within NATO until the mid-1990s. In theory, perhaps just in the discourse, it had been an important goal for increasing the quality of NATO, and also fostering stronger cohesion within NATO. National security concerns and myopic domestic priorities have been seen as impeding such needs. The industrial alliances – which are seen by some as imperative for actual interoperability going from discourse to results – were regarded as restricted by such security concerns.⁸⁸

NATO, in the Gulf War in 1991 and in Serbia in 1994, had experienced that there was a considerable ‘capability gap’ between the U.S. and its NATO allies. The rapid development of defence electronics had created what was called a ‘Revolution in Military Affairs’ (RMA) (Volkman, 1999; Gompert et al., 1999; Deutch et al., 1999). In 1999 NATO published its ambitious DCI reform (Defence Capabilities Initiative) in order to remedy the capability gap. Many texts were published in 1999 about transatlantic defence issues, most of them combining aspects of NATO interoperability, European consolidation, RMA and the competition between Europe and the U.S.

Bitzinger (1999) discussed “Globalization in the Post-Cold War Defense Industry: Challenges and Opportunities”. He underlined that the defence industry in many countries has been the most protected, coveted and non-disputed industry. The international arms co-operation was for a long time mainly driven by *strategic* rationales. Globalization and international détente have shifted the rationales to being more *economical* – thereby shifting “in-to higher gear”. Bitzinger saw benefits from cooperation that had been created by the same, less rigid and more economy-driven, defence industry context. Co-operation permits rationalization and sharing of R&D and development; cooperation can create greater economies of scale; the defence industry supply chain can outsource certain orders to regions or countries where labour costs are lower; countries can more easily get access to

⁸⁸ See e.g. “Security concerns impede alliances”, *Aviation Week & Space Technology*, 1999.

other countries' technologies; and finally, globalization can open up otherwise closed markets.

NATO integration of military activities, defence procurement, defence cooperation, and standardization would contribute to closing the 'technology gap' between the U.S. and its European allies. The technology gap made joint military operations more difficult as the technology levels were different, communication was cumbersome, and information-sharing was slow (among other inefficiencies) (Deutch et al., 1999; Gompert et al., 1999; Volkman, 1999; Pagoda & Weinrod, 2001).

Driving force 6.2: *Transatlantic operational integration would bring benefits of positive NATO development and a more shared global security assessment, and it would promote a shared reform for RMA and transformation.*

This driving force partly overlaps previous driving forces. However, NATO was a political actor with an influence over each member state's degree of operational integration within Europe, with the U.S. and within NATO. If common military programs were created or if NATO standardization were to occur, this would affect military procurement and companies would have a closer interaction through innovation and defence programs. Lessons from the Gulf War in 1991, Serbia in 1994 and the peace-keeping effort in Kosovo had shown that there was a substantial 'capability gap' between the U.S. forces and their European allies in NATO, especially regarding newer capabilities in electronics and 'RMA'. Several authors urged for an integration of acquisitions and an adoption of U.S. standards and systems in order to reduce the gap more quickly (Gompert et al., 1999; Deutch et al., 1999; C. Grant, 1999; Yost, 2000; Heisbourg et al., 2000).

Markusen (1992) had stressed the importance of transforming the Cold War economy. President Clinton pushed at the same time for transatlantic cooperation in order to seek cost reductions, R&D sharing and better business opportunities for U.S. companies. The Center for Strategic and International Studies (CSIS, 1996) urged for more transatlantic programs, without which the defence industries in Europe and in the U.S. would gradually drift apart due to the dominant defence spending in the U.S. (CSIS). The situation was commented upon in the following way:

There is an underlying message (that) if, at a minimum, U.S. and European governments and industry are unable to launch a small number of successful transatlantic collaborative programs over the next decade, then the chances of doing so in the longer term are negligible. ... Without the establishment of a more constructive relationship among the United States and Western European governments in the defense cooperation field, the Atlantic Alliance as a whole must accept wasteful and unnecessary duplication of R&D and production. ... it will be impossible to develop far-reaching solutions on reciprocal access for U.S. and European companies to each other's markets until this process is further advanced. (CSIS, 1996)

In other words, the prospects for transatlantic cooperation were in CSIS' view quite bleak.

Grant (1997) pointed to an increasing divergence within NATO, with the U.S. moving forward at a faster pace in a slightly different direction than other NATO members do. Due to falling defence budgets on each side of the Atlantic and a stronger, more consolidated U.S. defence industry, stronger transatlantic operational integration was needed in order not to further develop the intra-NATO divergence. He also saw considerable barriers to transatlantic armaments collaboration that needed to be considered. Defence indus-

trial ownership integration as well as operational integration ought to be guided by a transatlantic rationale, and not by European priorities, according to Grant.

The discussions regarding NATO interoperability, DCI, RMA etc. around 1999 defined NATO (with the U.S. as the leader) as an actor and an engine in reaching a more shared and stronger NATO military capability with a stronger industrial base (Gompert et al., 1999; Deutch et al., 1999; Grant, 1999; Pagoda & Weinrod, 2001).

Deutch et al. (1999) stressed that the costs of inaction in deepening transatlantic defence cooperation were costly to the health of the defence industry, and for NATO: “*Transatlantic defence cooperation is a little like the weather: everybody talks about it, but nothing much seems to happen.*”

With the parallel European development of an EU military capability, assessments were made of how the EU members could contribute to a NATO capability, as well as creating an EU military force (see e.g. Yost, 2000; Heisbourg, 2001; Heisbourg et al., 2003).

Driving force 6.3: *Transatlantic operational integration could contribute to opening up of the market and increase reciprocal market access.*

Weston (1996), from a corporate standpoint, urged for a more open transatlantic market. Many advocated that market access in the U.S. and in European nations should be “reciprocal”; there should be “a truly transatlantic market” and similar visions.

Charles Grant (1999) put forward reasons for encouraging transatlantic partnerships in the defence industry. The five reasons were: *political*: NATO requires political consensus or at least harmonization in these matters; *military*: multilateral coalition forces require interoperability; *a way around protectionist barriers*: partnerships are able to disarm political roadblocks; *maintaining competition*; and finally, because of the *RMA*. Grant stressed that the capability gap which became apparent in the Gulf War and in Bosnia revealed discomfiting capability differences between the U.S. and Europe.

It was clear, however, that despite policy promises for competitive defence acquisition, the access to other nations’ markets was highly politically distorted. European nations often used Article 296⁸⁹ in the Rome Treaty which allowed EU members to make exemptions from competitive defence acquisition and instead to choose domestic suppliers and solutions. The U.S. used its “Buy America Act” which stated that U.S. products should be prioritized. There was widespread offset use in Europe, and the U.S. demanded U.S. production of foreign-acquired defence products. Most European nations enacted highly protectionist defence industrial policies (implicitly or explicitly) making domestic companies very difficult to acquire, and in many European nations there was considerable state ownership in the defence industry. The U.S. allowed very few foreign acquisitions, and the acquisitions that were made were organized under strict firewalls that made border-crossing synergies almost non-existent. All this formed a market that was very far from open and reciprocal (Ashbourne (ed.), 1999; Ashbourne, 2000; Schmitt (ed.), 2001; Cornu, 2001). Therefore, increased transatlantic operational integration (initiated through

⁸⁹ Article 296 was initially Article 223 in the Rome Treaty, but the implications were identical. It is now Article 346.

companies or by governments) would have the potential of facilitating gradual relaxation of the closed market(s).

Thus, market access and operational integration were in the hands of the organizational field as a whole. Nations and companies were largely captive in a market situation that was the sum effect of all nations' protective and protectionist behaviour.

7.3 Inhibitors

1. Inhibitor for ownership integration in the corporate field

Inhibitor 1.1: *Increased transatlantic ownership integration would lead to an unwanted dominance of a few 'super-primers' with monopoly power resulting in a less competitive and innovative market.*

Practically all sources promote increased ownership integration in order to reap benefits from consolidation, economies of scale etc. Hitchens discussed the need for the U.S. government to realise the consequences of the creation of one dominant prime contractor in the transatlantic defence market, since that would lead to unwanted effects concerning decreased competition and efficiency. In her view, therefore, the Pentagon should strive to prevent the number of "megafirms" from becoming less than three (Hitchens, 1999). There was a process of ownership integration (consolidation) in the U.S from 1994 onwards, initiated by the Pentagon 'Last Supper'. In this process (described in Chapter 6) the number of prime contractors shrunk from fifteen to four in the U.S. As Lockheed Martin and Northrop Grumman wanted to merge in 1998, the U.S. government halted the process on anti-trust grounds; the concentration could go no further. Several authors argued that a far-reaching ownership integration of prime companies would create a very small number of overly dominant firms (probably American) with a de facto monopoly position in several segments. The degree of competition and innovation could thereby suffer in the defence market. The U.S. government came to a similar conclusion regarding the intra-U.S. defence market. (Markusen & Costigan (eds.), 1999; Kovacic, 1999; James, 2001; Schmitt (ed.), 2001)

2. Inhibitor in the corporate field for operational integration

Inhibitor 2.1: *International and transatlantic ownership integration will only lead to marginal effects of efficiency, cost reduction and rationalization due to defence companies' resistance to mergers.*

Gholz (2000) questioned the arguments in the general consolidation debate in a paper called "The Irrelevance of International Defense Industry Mergers". He questions whether the prime contractor consolidation in Europe really offers or creates any real benefits. He also counterattacks with the hypothesis that European procurement does not benefit financially or in efficiency; it is rather a question of companies simply resisting inevitable mergers. Gholz considers five "*conventional wisdom explanations of the benefits (for Europeans) of European defense industry mergers*": increased economies of scale; expanded market access; diversification of political risk; improved planning of R&D efforts; and finally, enhanced access to innovative technology. Gholz finds none of the arguments "very substantial". Neither does he think that the oft-used argument for interoperability will have any real impact. Gholz does not see that European mergers – as opposed to transatlantic mergers – would create any better benefits. He concludes: "*International defense industry restructuring will not make much difference, whatever form the deals take.*" Thus, Gholz does not see that increased ownership

integration will lead to more than marginal operational integration (Gholz, 2000). One may wonder why we should pay so much attention to the scepticism of a single person. However, Gholz' empirically based hypothesis conforms better to what companies had done, than did the many texts that urged for much more ownership integration (the "conventional wisdom explanations" in Gholz' words).

3. Inhibitors for ownership integration in the government field

Inhibitor 3.1: *Transatlantic ownership integration cannot occur more than marginally due to states' protectionism and institutionalized resistance.*

The consolidation wave in the U.S. started in 1994. Inspired by this, many articles urged for increased ownership integration over the Atlantic as well. However, there were clear barriers and inhibitors towards such ownership integration.

The U.S. General Accounting Office (GAO) discussed the possibilities for transatlantic integration and joint ventures in a 1997 report. An important conclusion from the report was that "transatlantic industrial partnerships appear to be evolving more readily than transatlantic cooperative programs that are led by governments".⁹⁰ The same conclusion was affirmed by Bjurtoft (1998) and James (2001). Furthermore, the export control systems and bureaucracies in the U.S. were very sceptical towards European ownership of U.S. companies. Acquisitions of U.S. companies did occur (especially from the UK), but the acquired companies had to be managed by U.S. citizens with very limited insight from the European owners.⁹¹ (General Accounting Office, 1997; Gholz, 2000; Ashbourne, 2000; James, 2001; Adams, 2001) In Europe there was also considerable inertia towards on the one hand transatlantic consolidation, and on the other hand intra-European ownership integration (Volkman, 1998).

4. Inhibitors for operational integration in the government field

Inhibitor 4.1: *Transatlantic operational integration is deeply restricted through the impact of the national export control systems for defence materiel and defence technology.*

Many texts argued for increased transatlantic operational integration during the Cold War in order to better reach NATO goals due to standardization and interoperability of defence materiel, as well as obtaining efficiencies and cost reductions (Hartley, 1983; Markusen & Costigan (eds.), 1999). NATO existed due to the polarized power struggle between NATO and the Warsaw pact – each side being firmly led by the U.S. and the Soviet Union respectively. There was a constant arms and defence technology race between the two, and each side allocated considerable efforts not to let defence technology slip into the hands of the opponent. The export control systems (i.e. systems for defence technology control) were nationally designed, and each nation was very restrictive in letting defence technology migrate to other nations. Apart from the risk of technology getting to

⁹⁰ "Defense Trade – European Initiatives to Integrate the Defense Market", GAO, 1997.

⁹¹ As described in Chapter 6.

the Warsaw pact, there was also an element of protecting nationally developed high technology. The export control systems were developed and refined over forty years of Cold War, and the overall function of the systems were very restrictive (as described in Chapter 6). (Hartley, 1983; Keller, 1994; Markusen & Costigan (eds.), 1999; Cevasco, 2009)

As these visions remained only ideas until the early 1990s, not much proof of inhibiting forces was identified. The inhibitor of transatlantic operational integration could be analyzed on the basis of the functioning of export control systems in Europe or in the U.S.

In *Europe*, governments in most nations protected the domestic defence industry from foreign acquisition by any other nation. Government ownership and ‘golden shares’ made government control visible. When defence companies did get acquired, governments utilized export control systems in order to limit transfer of domestically developed defence technology to the acquirer’s home nation or to other affiliates. Every European nation, however, had its own idiosyncratic export control system (with similarities only in broad principles). The U.S. had the most meticulous export control system, being described as extremely restrictive and extremely bureaucratic. As U.S. defence technologies dominated the defence trade within NATO and the supply chains of all Western European defence technology development, the U.S. export control system held a restrictive grip over all of Western Europe. The sum effect of the export control systems in Europe and the U.S. was described as highly limiting the possibilities for border-crossing corporate interaction (i.e. operational integration), as defence technology could only marginally be shared and create synergies. (Adams, 1999 & 2001; Ashbourne, 2000, Pagoda & Weinrod, 2001)

The perspective on how to achieve the goals of DCI was phrased quite differently on the two sides of Atlantic. In Gompert et al. (1999) the European states were expected to adopt U.S. technological solutions and standards. A ‘Fact sheet’ from the U.S. State Department in 2000, “Expedited License Review Process for Defense Capabilities Initiatives”, said: *“In the past year, several allies have encountered delays and difficulties in completing the purchase of U.S. equipment to fulfill DCI objectives. This impedes DCI progress and undercuts effective U.S. government leadership within the (NATO) Alliance.”* This phrasing points to how the U.S. failed to (or chose not to?) take European strivings for sovereignty into serious consideration. European governments would never accept such explicit hierarchy. To adopt U.S. technologies and standards in the manner proposed by the U.S. State Department would be to willingly accept an industrial position under the U.S. companies. (Boureau, 1999; Ashbourne, 2000)

Inhibitor 4.2: *Transatlantic operational integration is restricted through the impact of the functioning of the U.S. political system and the actions of the U.S. Congress.*

Sapolsky and Gholz’ previous frustration over the non-consolidation of the U.S. defence industry led Sapolsky to address the subject anew in 2001. Under the title “Buying Weapons Without an Enemy”, he claimed that the U.S. still had not found its proper role in a world of tamed enemies and weaker allies. The RMA was also seen as something quite nebulous that offered no direction for further policy or consolidation. Peace in itself is also a poor guide in directing efforts within a defence industry – which exists as a response to military needs that exist in response to achieving certain capabilities, in relation to a certain doctrine that corresponds to interplay between threat assessments and the U.S. self-image of its role in the world. Sapolsky suggested that the military – through its needs – should acquire a larger impact on the restructuring of the defence industry. *“The U.S. pays*

*too much for its weapons because it builds them inefficiently in too many underutilized facilities. These excess facilities are sustained because we lack a clearly identified enemy.*⁹²

Ashbourne (2000) pointed to how the U.S. domestic politics fundamentally influenced the prospects of transatlantic defence industry integration. Senators and congressmen mainly prioritized benefits to their home constituencies regarding employment through defence production. They rhetorically dressed these arguments in a general gospel of what was “in the national interest”. The sum effect of the behaviour of the senators and congressmen was that defence companies had to prioritize action and apply a rhetoric that pleased these politicians. In general, senators and congressmen were, according to Ashbourne, highly sceptical towards transatlantic defence industry integration.

Pagoda and Weinrod (2001) also stressed some U.S. considerations as steering the U.S. transatlantic policy: national security; the Exon-Florio Review; industrial security/safeguarding classified information; protection of U.S. security; U.S. export controls; military/defence exports – the State Department; and finally, dual-use exports – the Department of Commerce. They further showed how the Pentagon, through its report on globalization through the Defence Science Board⁹³, suggests (among other things) shifting from technology protection towards capability preservation and facilitating transnational defence industrial cooperation. They also discussed the initiatives (DoP, DTSI and ITAR⁹⁴) from the U.S. with several “Western governments” to harmonize regulations that are seen as impeding the possibility of further defence industry cooperation.

Inhibitor 4.3: *Transatlantic operational integration is restricted because of the concerned nations’ national focus in defence planning.*

Many texts refer to how governments focus on a domestic perspective in defence planning. A domestic focus had been self-evident for centuries, so this was not surprising. Despite decades of rhetorical commitment in NATO and in the EU, the domestic focus was still predominant. However, if nations are to cooperate militarily, the defence planning must open up for a shared focus (e.g. GAO, 1997; Taylor, 1999; Markusen & Costigan, 1999; Bitzinger, 1999; Heisbourg, 2001).

Inhibitor 4.4: *Politicians and other representatives of states show a ‘policy ambivalence’ towards transatlantic operational integration.*

Adams (1999) further stressed the ‘policy ambivalence’ on both sides of the Atlantic Ocean, where governments preach the transatlantic gospel with one hand, and protect the domestic industry with the other. Heisbourg (2000) stressed that there was a ‘policy ambi-

⁹² Sapolsky, 2001.

⁹³ Defense Science Board, (1999).

⁹⁴ DoP (Declaration of Principles) and DTSI (Defense Trade and Security Initiative) were two U.S. initiatives for creating harmonized defence technology interfaces between Europe and the U.S. ITAR (International Traffic in Arms Regulations) is a list of defence items and technologies that the U.S. has put restrictions upon regarding international transfer. DoP was initiated by the Department of Defense; DTSI and ITAR are issued by the State Department.

guity' in Europe regarding whether to focus on a national, an EU or a NATO defence posture. Victor Ciardello of the Pentagon Office of Financial & Economic Analysis, in 2000, presented the subsequently popular metaphor of describing the U.S. defence industrial complex as one iceberg, and the European as another. "*Like an icefloe viewed from a passing ship*", the icebergs appear to be completely independent – emanating from few formal linkages, limited cooperation and few opportunities to eliminate excess capacity.⁹⁵ Keith Hayward then developed this metaphor further by (apart from adding Eskimos and penguins (!) to the icebergs) describing the icebergs as tiered collaborative structures. The visible – undeveloped – part of the iceberg was what lay above the political radar sensitivity level. Below the surface were lower levels – further down the tiers of the supply chain – with more elaborate structures of cooperation.⁹⁶

In sum, governments praise the importance and priority of border-crossing cooperation, at the same time as they exercise political action that is national in character. Admittedly, the issue of 'policy ambivalence' was not put forward in many texts, but this argument became an important influence for this thesis.

5. Inhibitors for ownership integration in the organizational field

In 1999, Al Volkman of the Pentagon commented upon "European Restructuring and Transatlantic Linkage". He saw it as important that the defence industrial base on both sides of the Atlantic ought to better reflect that military requirements are driven by the demands of coalition warfare. NATO members should therefore strive to synchronize coalition needs with defence industry policies. In order to be able to reap the possible benefits of such transatlantic unison, Volkman stated that e.g. common requirements, best acquisition practices and firm interoperability commitment must take place. Volkman also stated: "*We recognize that globalization is a reality. One that presents opportunities, but which also presents significant challenges*". With these words, he said that he looked forward "to the restructuring of the European Defense Industry".⁹⁷

Clark (1999) discussed the "Dangers of defence industry consolidation". In this sense, Clark discussed the disadvantageous effects of an increasing monopoly situation and the fact that there are so few options that state interference becomes pivotal. The European corporate perspectives were described as quite different from the U.S. corporate perspectives, mainly emanating from their respective – and quite different – institutionalized contexts "back home". Countries also phrase the transatlantic defence industry problems differently, and governments see their responsibilities as quite different as well. There is on the one hand a rift between the U.S. and Europe, but on the other also important differences between European governments.⁹⁸

⁹⁵ Ciardello, presentation April 3, 2000, at 2nd PEO/SYSCOM Commanders' Workshop.

⁹⁶ Presentation by Keith Hayward of the Society of British Aerospace Companies (SBAC) given at a conference, "Reshaping business strategies in the European defence industry", in London, January, 2000.

⁹⁷ Volkman, 1999. Speech at Les Echos Conference on Restructuring & Transatlantic Links, April 15, 1999.

⁹⁸ Clark, *ibid.*, pp. 16-21.

Luc Boureau offered a French voice concerning defence restructuring. He pinpointed the often – in the U.S. – underestimated argument for sovereignty: “*Any country which has a thriving defence industry sees it as an important part of national sovereignty*”.⁹⁹ In order to understand the European priorities, this is really fundamental.

To sum up, the organizational field does not “own” the issue of ownership integration. The organizational field consists of diverse, domestically oriented governments with an imbalance between national focus and power. There is no shared view on ownership integration. Ownership integration is decided upon by companies, with government consent.

6. Inhibitors for operational integration in the organizational field

Under this heading are listed inhibitors that are described as being a sum effect of the entire transatlantic defence market, which in this thesis’ perspective becomes the functioning of the organizational field.

Inhibitor 6.1: *Operational integration is hampered by the imbalance (size, home market, R&D funds, technology sophistication, speed of innovation) between U.S. defence companies and European defence companies.*

The U.S. defence materiel development during 1994-2001 was constantly much better financed than the European defence materiel development. As a domestic market, it was much bigger than any European national market. The defence R&D funding was much more ambitious, risk-taking and exploratory than in Europe. The U.S. defence technology, due to the previous factors’ influence (over many years), was as a whole clearly more sophisticated than the European, and with a wider spectrum. The speed of innovation was described as being much higher in the U.S. thanks to the much more ambitious U.S. government support (Weston, 1996; Taylor, 1999; Ashbourne, 2000).

Inhibitor 6.2: *Transatlantic operational integration is difficult to agree upon due to the dominance of the U.S. as a customer and concerning its impact upon military specifications.*

Scherpenberg (1997) discussed “Transatlantic competition and European defence industries: a new look at the trade-defence linkage”. He stressed in an elegant way – in relation to the global dominance of the U.S. defence companies – that:

American defence companies are no more than vigorously exploiting – as always – what they perceive to be their obvious competitive advantage in the global marketplace. The same is true – not quite as always, however – of the administration’s policy of promoting American civil and defence exports. It is simply treating the monopoly status of the United States as the sole superpower as a major competitive advantage in furthering the performance of American business in international trade and as a great opportunity to make the U.S. taxpayers’ enormous investments in advanced defence technologies pay off in terms of growth employment and current account balance effects. Such competitive behaviour would not be very remarkable if displayed by other industrialized countries. In the U.S. case, however, it amounts to no less than a clear commitment in international economics as well as security matters.¹⁰⁰

⁹⁹ Boureau, *ibid.*, pp. 36-39.

¹⁰⁰ *Ibid.*, p. 118.

According to Scherpenberg, this left Europe with two alternatives: either to challenge the U.S. hegemony by spending vastly more on defence *or* to submit to the role of sub- or niche-contractor. Scherpenberg envisioned the need for European defence companies to become large and sophisticated enough to become attractive collaborative prospects for partnership for the U.S. giants. Thereby mutually beneficial cooperation and integration could be achieved. If Europe did not try to challenge – and become equal to – the U.S. giants, Europe would also lose importance in global economy and security policy.

“Arming the Future: A Defense Industry for the Future” (1999) was published by the Council on Foreign Relations (CFR) and it penetrated many issues that affect the transatlantic defence (industry) interface. The editors – Markusen and Costigan¹⁰¹ – address the fundamental challenges of the defence industry (“The Military Industrial Challenge”) in 1999 (still as applicable), being how nations must relate to their defence capacities. They posed the following questions: Should defence production lines be kept “hot” in order to be prepared for radically increased demand? Should sophisticated weapons be developed now, but the production delayed until later? Why should the U.S. and the European Union pursue military innovation, given their military superiority and the absence of adversaries? Should Europe and the U.S. compete or co-operate? Should nations buy domestically or internationally? Should nations relate to defence industry as to any other industry? It should be noted that the book had a clear and open U.S. focus.

Markusen and Costigan further discussed the effects of the U.S. prime contractors in the mid-1990s being consolidated from 15 to 4 in just a few years, thereby unbalancing the entire dynamics of the MIC. Furthermore, the increasing importance of commercial technologies created new problems to solve for the U.S. government, especially since many of the technologies are products of global supply chains. Another question is whether the U.S. should try to achieve better economies of scale by exporting the U.S.-developed systems and products. Yet another question is from whom the Pentagon should buy.

Markusen and Costigan also stressed the fact that the post-Cold War environment caused substantial overcapacity in Europe and in the U.S. The response was to try – in a more open and liberalized world – to export more to third-party countries. The companies in the West thereby became more rivalrous.

Inhibitor 6.3: *Transatlantic operational integration is hampered by the fact that the defence trade flow is much larger from the U.S. to Europe, than from Europe to the U.S.*

The transatlantic defence trade flow was 4.4 times in favour of the U.S. in 1984, 5.9 in 1994, and 6.1 in 1997 (Cornu, 2001). This imbalance made the issue of a harmonization of the transatlantic defence market very difficult to agree upon between governments. This issue was not a new fact around 2000 and 2001, but it was something that became more widely discussed as a result of an intensified, general discourse about transatlantic defence industry integration (Adams, 2001; Ashbourne, 2001).

¹⁰¹ Markusen and Costigan (1999), pp. 3-34.

Inhibitor 6.4: *Transatlantic operational integration is inhibited by the low level of technology sharing between the U.S. and Europe.*

National export control systems on both sides of the Atlantic were in place in order to stop nationally developed defence technology from coming to unwanted nations or to foreign companies that were competitors to the domestic defence industry. Forty years of Cold War had made these control systems very effective: defence technology was by definition protected and withheld domestically. The U.S. export control system was widely described as being the most restrictive. When multilateral defence cooperation was established, the distribution of work was made under a highly differentiated cost-share–work-share system: each nation would receive a work share exactly proportional to its cost share in the development, and the technology in each nation’s work task would be fire-walled vis-à-vis partner companies in the partner nations. (Boyer, 1994; CSIS, 1996; Coffman, 2000; Ashbourne, 2000) Defence technology was thereby only marginally shared between companies, which made operational integration difficult to establish. The NATO DCI reform more clearly put the focus on this aspect.

In 2000, Coffman of Lockheed Martin commented at a Washington D.C. conference on “The Defence Industry Today: Implications for Transatlantic Cooperation”. He discussed the problems that Lockheed Martin experienced in three ongoing teaming arrangements – MEADS, Tracer, and frigates for the Norwegian Navy – and how a future project, Joint Strike Fighter (JSF), could be affected. In MEADS, technology sharing had been a point of dispute. Concerning Tracer, he saw it as troublesome that the parties concerned (the U.S. and UK) had an opportunity to develop a set of common requirements for modernization, thereby enabling the formation of transatlantic teams, but that this opportunity was never exploited. Coffman concluded by stating that two areas were most important in order to improve transatlantic defence cooperation: that the U.S. must streamline its export control regime and that market access and reciprocity must be created, based on “principles of equality and fairness”.¹⁰²

Inhibitor 6.5: *European policy fragmentation between states inhibits possibilities of transatlantic operational integration.*

The discourse for transatlantic defence industry integration developed alongside an intra-U.S. ownership integration, and a commencing intra-European ownership integration. The European states that were central to the issue of industrial integration, however, had different policies about EU-driven European ownership integration and also about transatlantic ownership integration. No single state could reform the market, as their stakes, goals and relations to the U.S. were different. The UK companies also had a much more favourable situation due to closer bonds with the U.S. Thus, as long as European nations could not sufficiently harmonize their policies, the positions will remain fixed. Operation-

¹⁰² Coffman, 2000. Tracer was later closed down, and MEADS is often referred to as a warning example of malfunctioning transatlantic defence collaboration.

al integration and companies' operations would not become more integrated (Boureau, 1999; Heisbourg, 2000; Heisbourg (ed.), 2000; Schmitt, 2000).

Inhibitor 6.6: *Transatlantic operational integration is inhibited by the existence of a 'Fortress America' and a 'Fortress Europe'*

A widely used metaphor in the discourse was the existence of 'fortresses'. This metaphor encapsulated a variety of aspects that all summed up to an inertia on both sides of the Atlantic Ocean – an inertia that resisted operational integration within the defence industry. On the U.S. side, the international hegemonic posture of the U.S. in foreign, security and military policy paired with the many facets of imbalance vis-à-vis Europe was described as creating an insular attitude and an unwillingness to accommodate other nations. In Europe, the gradually strengthening EU security and military posture, the intra-European ownership integration in the defence industry, and the increasing European armaments collaboration all created a stronger European identity and cohesion that challenged a NATO perspective on the future of the defence industry. (Grant, 1997; Markusen & Costigan, 1999; Clark, 1999; Boureau, 1999; Adams, 1999; Ciardello, 1999; Hayward, 1999, 2000; Gnesotto & Kaiser, 2000 (in Heisbourg (ed.), 2000); Schmitt, 2000; Mörth, 2000; Ashbourne, 2000; Morgan & McGuire, 2004)

In 1998, the CEO of Lockheed Martin, Vance Coffman, discussed "The future of transatlantic industrial partnership". Coffman stressed the need to respond to "challenges of the 21st century" which would lead to the "fundamental realignment of the defence industrial base of the greatest military alliance in history". He warned against the creation of 'fortresses' in the EU and U.S. – he saw alarming tendencies in such fortresses. Fortresses would be both "bad business and bad policy". Coffman described the Cold-War transatlantic cooperation as "for the most part a politically-inspired, MoD-directed activity. The system was not truly cooperative, and it was short from competitive". Coffman envisioned the need for "new patterns of mutually desirable cooperation and partnership...sector-specific strategic alliances and partnerships". Coffman also mentioned the problems of disputes over the availability of source codes and intellectual property rights (IPR) when creating transatlantic cooperation or integration.

Adams (1999) discussed "The necessity of transatlantic defence cooperation". Adams pointed out the argument of a "one-way street", i.e. that the U.S. sells much more to Europe than it buys from it. The ratio in 1999 was 7:1. Adams also pointed out that if the U.S. government does not encourage transatlantic integration, this will enhance European fortress tendencies. In accordance with globalization, the defence industry must reorder itself into a global supply chain, where everyone must be prepared to make sacrifices in order to get a piece of the new order.

Ashbourne (2000) made a sharp attack on the transatlantic context by discussing "Opening the U.S. Defence Market". The main message of the paper is that there is strong corporate interest in more partnering ventures, but that the protectionism of the U.S. government and the reluctance to open up its market are "a major obstacle to transatlantic alliances". She discussed why the U.S. does not open its defence market, and in her view the reasons are mainly: U.S. superiority (the U.S. is better off being somewhat insulated), protectionism, protection of jobs, the hard-to-change U.S. institutionalized context, concerns for technology transfer, preferring some weapons staying only in U.S. hands, and a

view that the U.S. does not have to and will never allow itself to become anything less than the leader. The conclusion, according to Ashbourne, is that there is a strong case for claiming that a “Fortress America” exists.

7.4 Analysis of discourse identified in texts

The two matrixes below present the driving forces and the inhibitors that were apparent in the relevant texts. For example, Driving force 1.2 states that companies see ownership industry integration as desirable since it would increase the competitiveness of the defence industry (thus decreasing inefficiencies regarding e.g. cost).

The box for organizational field under ownership integration (box number 5) is empty in both matrixes. This shows that the discourse in texts, in aggregate, does not see ownership integration as being driven by the organizational field, nor is it determined by the organizational field: ownership integration is driven by companies and governments. Operational integration, however, is partly driven or inhibited by the organizational field.

	Ownership integration	Operational integration
Corporate field	<p>Driving force 1.1: <i>The defence industry would benefit from transatlantic ownership integration by forcing industry to consolidate and rationalize.</i></p> <p>Driving force 1.2: <i>Transatlantic ownership integration would increase the competitiveness of the defence industry.</i></p>	<p>Driving force 2.1: <i>Transatlantic operational integration would bring with it several efficiencies: e.g. economies of scale, reduced costs, globalized supply chains, increased synergies, decreased redundancies</i></p>
Government field	<p>Driving force 3.1: <i>Transatlantic defence industry integration would facilitate as well as force a European defence industry consolidation, which would be beneficial for governments.</i></p>	<p>Driving force 4.1: <i>Transatlantic operational integration would bring with it harmonization and standardization of military demand and procurement</i></p>
Organizational field	-	<p>Driving force 6.1: <i>Operational integration will increase interoperability between NATO partners and other European allies</i></p> <p>Driving force 6.2: <i>Transatlantic operational integration would bring with benefits of a positive NATO development and a more shared global security assessment, and it would promote a shared reform for RMA and transformation</i></p> <p>Driving force 6.3: <i>Transatlantic operational integration could contribute to opening up the market and increase reciprocal market access</i></p>

Table 7.2. *Driving forces for transatlantic defence industry integration as identified through secondary sources*

	Ownership integration	Operational integration
Corporate field	Inhibitor 1.1: <i>Increased transatlantic ownership integration would lead to an unwanted dominance of a few 'super-primes' with monopoly power and a less competitive and innovative market.</i>	Inhibitor 2.1: <i>International and transatlantic ownership integration will only lead to marginal effects of efficiency, cost reduction and rationalization due to defence companies' resistance to mergers</i>
Government field	Inhibitor 3.1: <i>Transatlantic ownership integration cannot occur more than marginally due to states' protectionism and institutionalized resistance.</i>	Inhibitor 4.1: <i>Transatlantic operational integration is deeply restricted through the impact of the national export control systems for defence materiel and defence technology</i> Inhibitor 4.2: <i>Transatlantic operational integration is restricted through the impact of the functioning of the U.S. political system and the actions of the U.S. Congress</i> Inhibitor 4.3: <i>Transatlantic operational integration is restricted because of the concerned nation's national focus in defence planning</i> Inhibitor 4.4: <i>Politicians and other representatives of states show a 'policy ambivalence' towards transatlantic operational integration</i>
Organizational field	-	Inhibitor 6.1: <i>Operational integration is hampered by the imbalance (size, home market, R&D funds, technology sophistication, speed of innovation) between U.S. defence companies and European defence companies</i> Inhibitor 6.2: <i>Transatlantic operational integration is difficult to agree upon due to the dominance of the U.S. as customer and concerning its impact upon military specifications</i> Inhibitor 6.3: <i>Transatlantic operational integration is hampered by the fact that the defence trade flow is much larger from the U.S. to Europe, than from Europe to the U.S.</i> Inhibitor 6.4: <i>Transatlantic operational integration is inhibited by the low level of technology sharing between the U.S. and Europe</i> Inhibitor 6.5: <i>European policy fragmentation between states inhibits possibilities of transatlantic operational integration</i> Inhibitor 6.6: <i>Transatlantic operational integration is inhibited by the existence of a 'Fortress America' and a 'Fortress Europe'</i>

Table 7.3. *Inhibitors for transatlantic defence industry integration as identified through secondary sources*

In the following, driving forces and inhibitors for transatlantic defence industry integration as identified in texts will be analyzed.

7.4.1 Driving forces

According to texts, ownership integration is desirable for companies since it would increase competition, initiate rationalization and create more efficiency. Operational integration is desirable for the same reasons, but there are more arguments for such efficiencies: economies of scale, reduced costs, synergies, reduced redundancies etc.

Governments see ownership integration as beneficial since it would force industrial rationalization, whereas operational integration is desirable since it would bring with it increased harmonization and standardization.

Ownership integration is not seen as being driven by factors in the organizational field. Operational integration, however, is strongly advocated as being beneficial since it would benefit NATO and NATO interoperability, promote RMA and transformation, and also open up the defence market and create reciprocal market access.

7.4.2 Inhibitors

Some texts express scepticism towards ownership integration, since without restrictive government control of the consolidation there would be a creation of a small number of 'superprimes', which would lead to a less competitive market. Operational integration is seen as only being able to lead to marginal efficiency gains due to companies' resistance to cross-border operational integration.

Ownership integration cannot occur more than marginally, since states will not allow it. The inhibitors for operational integration are clearly more developed: governments are seen as making operational integration very difficult through many regulatory arrangements and practices – and there is a discrepancy between positive government rhetoric and sceptical (if not discouraging) government practice due to 'policy ambivalence'.

Ownership integration is not seen as being inhibited by any actors or factors in the organizational field. The inhibitors, however, were strongly pronounced. The common denominator in the six identified inhibitors is the strong political influence – the domestic preference in government practice, the discouragement of technology transfer and synergy creation, and not least, the dominance of the U.S. and difficult market institutionalization in Europe. All these factors create a market practice that is permeated with scepticism and inertia.

7.4.3 Overall conclusions

We can see in general that ownership integration is decided and controlled by companies and respective governments, there being no shared government view that drives mergers and acquisitions. Texts also tend to stress *market* benefits, not benefits or disadvantages seen from single companies' perspective.

The dominant institutional logic being advocated in the driving forces suggests that a shared market and shared arms development should develop. The inhibitors as expressed in texts point to imbalances between the U.S. and Europe in defence resources and in policy, and to the U.S. institutionalized resistance towards technology transfer and multi-lateral collaboration. There is really no shared institutional logic in the inhibitors, it is rather a question of separate and divided national standpoints, but where each national position resembles the others.

In the texts, all but one source clearly argued for increased transatlantic integration. At the same time, a large number of arguments were given for why it is hard to create, and these inhibitors were primarily due to governments' restrictive regulations, extensive bureaucracy and sceptical behaviour. Thus, the political influence is seen as very strong, and strongly inhibiting.

Chapter 8 Driving forces and inhibitors for transatlantic defence industry integration – discourse as identified through interviews

“International defence cooperation requires political will and programs.” Representatives at GICAT, French industry organization, 2003

“Export control rules are used in order to manipulate the marketplace.” Manager, BAE Systems, 2002

“The export control process is so deeply entrenched in the U.S. system, so arcane that no one understands it.”
Former U.S. Deputy Defense Secretary, 2001

“Government is an inhibitor for full industry collaboration.” Manager, Boeing, 2001

“If there was a true market-based competition, the U.S. defence industry would probably out-compete the European defence industry.” Raytheon manager, Washington D.C., 2001

The discourse concerning transatlantic defence industry integration involves arguments for and against a suggested action. It involves the view of companies and the view of governments. The defence market is a political market and the companies must take into account government priorities and regulations when formulating their goals and priorities. Governments formulate their policies and regulations in order to promote a preferred control and development of the defence industry, as well as supporting their domestic industries. Companies are supported and restrained at the same time. The driving forces and inhibitors thus reflect the interface between corporate strategy and government concern for the functioning of this market and for the well-being of this industry.

The following account is thereby intended to further enhance the understanding of the organizational fields of the national MICs. There is also an element of shared, supranational organizational fields: NATO or EU. There could also be shared fields of interest between smaller groups or pairs of nations.

Presentation outline of discourse as identified through interviews

The driving forces and the inhibitors for transatlantic defence industry integration have been identified and are presented in two steps: literature search (Chapter 7) and interviews (Chapter 8). Chapter 7 presented a survey of what had already been written based on a search in databases concerning ‘Transatlantic defence industry integration’ (and closely related concepts).

In this chapter a more focused empirical search is presented. The account of driving forces and inhibitors identified through interviews and presented in this chapter offers a great variety of arguments. In the following, driving forces or inhibitors will be expressed and explained. They are ranked in perceived, falling order of importance, as the account was

gradually developed during the sequence of interviews. An accumulated order stabilised over the interviews, based on the successive comments.

The respondents were asked what they saw as the most important driving forces and inhibitors. The account of driving forces and inhibitors is the result of interviews – an accumulated assessment. This sequential methodology is discussed in Chapter 4 Methodology.

As described earlier in the thesis, the driving forces and inhibitors are separated between corporate and governmental ones. The overarching questions regarding these driving forces and inhibitors are:

“Why should there be (driving force) or should there not be (inhibitor) transatlantic defence industry integration?”

and/or

“What factors drive or inhibit the transatlantic defence industry integration?”

In other words, the driving forces and inhibitors could be understood as active actions by decision makers as well as driving or impeding systemic effects, i.e. the functioning of the organizational field. Each such argument must be understood as one of several, parallel arguments. Different respondents within each group have emphasised different driving forces or inhibitors.

The reader should bear in mind that the literature study in Chapter 7 offered one account of the discourse. The presentation in Chapter 8 of these driving forces and inhibitors as identified through interviews offers a different account, and is expected to offer enhanced detail, understanding and explanation of the discourse for transatlantic defence industry integration when compared to the account in Chapter 7 through a literature search, i.e. secondary sources. We will analyze how the two accounts differ.

The texts referred to in Chapter 7 tend not to be directly from government policy makers, or from corporate decision makers. For the interviews, such respondents were specifically sought.

Now follow accounts of the driving forces and inhibitors, separated between the corporate and the government perspectives. Firstly the account from the U.S. is presented, followed by France and finally the United Kingdom. All of the arguments in the following lists are expressed by respondents in interviews, if not marked otherwise. They are driving forces and inhibitors as seen by or as understood by these respondents.

At the end of this chapter comes, firstly, a table that brings together all the identified driving forces and inhibitors in one overview. Thereafter comes a table with all the driving forces sorted by the same principles as in Chapter 7, and finally one with all the inhibitors. The accumulated discourse will be analyzed in Part IV Results.

8.1 USA

U.S. corporate driving forces

Respondents from U.S. defence companies were asked why there should be increased transatlantic defence industry integration.

The primary driving force was that U.S. companies would get better access to the European markets. In their view, stronger links to European companies would offer them better access to the decision makers and the acquisition processes.

The companies saw enhanced transatlantic defence industry integration as an evident, general aspect of improving their competitiveness through a stronger global position.

Earlier, U.S. companies had to a larger extent been selling entire defence systems to European buyers (according to interviews). The European states, however, have come to strive increasingly for more domestic development or an increased share of domestic systems, thus creating technology development, jobs and also a coveted transatlantic link. If U.S. companies cannot sell entire systems “wholesale”, they strive to create a collaborative engagement, co-development, or to sell sub-systems and achieve business through that approach.

Finally, the companies increasingly needed to maintain their leading position as prime companies. Defence programs had become much scarcer than during the Cold War, and for each prime position lost to a competitor, there would be precious time lost until the next program to bid for.

U.S. corporate inhibitors

Respondents from U.S. companies were asked why there should *not* be increased transatlantic defence industry integration.

The primary inhibitor was that they must protect business secrets. They saw themselves as being technologically superior to European counterparts, thanks to a long and lasting period of much more ambitious defence spending. They saw that they had a comparative and competitive advantage which they saw no reason to risk.

A further inhibitor is that in the U.S. there was during the years after 2001 an extreme market growth due to the Iraq and Afghanistan campaign, and that the U.S. market offered so much more business that the potential European business was dwarfed in comparison.

An inhibiting factor companies experienced was that the difficult bureaucratic procedures and the complex systems of export control outweighed the possible business advantages. Business interests were seen as being at the whim of European government priorities – priorities that could change overnight.

“Congress creates ‘domestic offset programs’; many facilities in many states.” Representative, Aerospace Industries Association of America (AIA), Washington D.C. (2001)

U.S. companies were clearly anxious not to jeopardise their strong domestic position. They stated that it was of fundamental importance to maintain a steady and loyal relation with certain central vested interests, especially with Congress and with the Armed Forces. Firstly, companies must at all times maintain congressional support. The decision-making process in Congress (the House of Representatives and the Senate) is highly patriotic, subjective, home-constituency-oriented and quite emotional. Congress has firm standpoints on jobs, national interest and on national security. Congress has to approve of the spending proposed by the President. Congressmen and senators normally very strongly support their home constituencies and the defence-related employment in these. Secondly, the defence

Services tend to prefer all-U.S. defence solutions. The preference for ‘all-American’ defence technology is of fundamental importance to the Armed Forces. The separate defence Services have also, e.g. regarding fighters, had long traditions and bonds to specific companies. Losing such a prioritized position could be devastating for a company’s specific product area. Introducing a foreign company or a European defence technology would weaken the adhesion between the specific company and the defence Service.

There were highly institutionalised, domestic processes and networks of defence R&D and production. An inclusion of a European collaborative partner would “add uncertainty”¹⁰³ to the setup, and this should be strongly avoided.

U.S. government driving forces

“Interoperability is a buyer thing.” U.S. defence analyst, 2001

The following list of government driving forces is based on representatives from several different government bodies; see the list of respondents in Appendix 1.

The main government driver for transatlantic defence industry integration is to promote interoperability within NATO and with allies. NATO is also a vehicle for safeguarding and promoting U.S. security and defence policy. NATO is the primary instrument for cooperating with European allies. In the last years, this focus has to some extent shifted towards the missions in Iraq and Afghanistan. Therefore, cooperation and shared goals are increasingly being sought within the coalitions that operate in Iraq and Afghanistan.

The second driver, which is related to the first, is to safeguard the cohesion of NATO. The U.S. has certain interests and obligations to Europe. NATO strength is crucial for the U.S. in order to fulfil these goals. In order to maintain a strong common base for cooperation and stronger momentum in the future, it is important that there are strong links and channels for communication, transfer and exchange (be it information, technology or products/services) in the transatlantic interface.

Third, there is a driver for getting access for the domestic companies to European national markets. A strong and competitive U.S. industrial base is a centrepiece of U.S. security policy. If the U.S. defence industry is present in Europe, it gets more business, and can also extract technology transfer and inspiration from its European counterparts. A strong domestic defence industry strengthens the options for the U.S. and gives it a stronger position towards the rest of the world.

Fourth, the Gulf War in 1991 revealed certain capabilities within the U.S. doctrine that created clear advantages for the allied forces (which in effect mostly were based on U.S. technology). These new capabilities showed that innovations and new solutions had given the allied forces massive domination in information processing and battlefield awareness. These dramatic new insights were collectively labelled as being part of RMA – Revolution in Military Affairs.¹⁰⁴ (Interviews) RMA has been succeeded by other guiding acronyms,

¹⁰³ Quote as expressed in interview with advisor to Senator.

¹⁰⁴ Owens (2000).

e.g. NCW (Network-Centric Warfare), NEC (Network-Enabled Capabilities) and Transformation. The common denominator is highly advanced capabilities reached through extremely sophisticated systems of systems of Command, Control and Communication technologies (Bitzinger, 2008). The driving force is thus to promote joint development and interoperability within these reforms.

U.S. government inhibitors

The U.S. government representatives also articulated inhibitors for transatlantic defence industry integration.

“There are divergent and convergent tendencies in the transatlantic integration. The divergent tendencies are stronger under W. Bush.” Professor and ex-Pentagon official, Washington D.C., 2001

The foremost inhibitor is that the U.S. must meticulously control the transfer of defence technology. The overall approach was expressed as being that extreme control must be ensured. Practically all countries are treated the same way in the licensing procedures, with only slightly relaxed processes vis-à-vis the UK¹⁰⁵. Therefore, there is an argument for having a strict and closely monitored technology transfer process. The main advocates for this are substantial parts of Congress, and it is also represented by the vested interests that reside in the State Department bureaucracy. By controlling this process, there will also follow a strong influence on the global arms development.

“Congress doesn’t care much for transatlantic programs.” Defence industry analyst, U.S., 2001

“Transatlantic links do not create U.S. jobs, but it creates competition.” Academic expert on U.S. defence technology base, 2001

The second inhibitor was often expressed as “Avoiding good things to bad guys”. This resembles the previous argument, but it has a wider grasp. In the previous argument, there is a stricter and narrower limitation that might exclude even the UK. In this argument, the issue is to make sure that weapons do not get to states or actors that more clearly are seen as potential adversaries to the U.S. (e.g. al-Qaeda, China, Libya, Iran and North Korea) (Interviews). This and the previous argument are not contradictory; those who state the previous argument definitely state this one. Avoiding good things to bad guys sounds less paranoid than the previous argument.

The third inhibitor is the protection of U.S. jobs. There are protectionist fractions that see it as their main goal to protect U.S. jobs. Several senators and congressmen are very closely linked to their constituencies and, for them, an important goal is that any defence-related jobs in their constituency must be protected. Strong lobby groups push the same issue, e.g. unions and trade organizations. An effect of the strong links between con-

¹⁰⁵ There have in the last ten years been a number of initiatives from the U.S. in order to establish and foster bilateral defence development: e.g. DoP (Declaration of Principles), DTSI (Defence Trade and Security Initiative) as well as several attempts to create a stronger defence community between the U.S. and UK. These initiatives have created some formalization of the defence cooperation. At the same time, the U.S.’s unilaterally formulated campaigns in Iraq and Afghanistan and against al-Qaeda have moved the U.S. in slightly different directions. The aggregate impact of these processes cannot be analyzed, and is seen as being outside the focus of this thesis. (See Bialos, 2009 for a description of these initiatives.)

gressmen and their constituencies is that the production in major programs gets spread out to very many states, areas or cities that have been supported by their congressmen (Interviews). This argument is often expressed with the claim that it is “in the national interest”, thereby rendering the rhetorical opponent an aura of not prioritizing the national interest and thus not being a ‘true patriot’.

“The Europeans are getting, for free, access to superior technology, and the U.S. is taking responsibility for the defence of Europe.” Professor, MIT, 2001

A fourth inhibitor is to protect the U.S. defence technology base. There is a concern of some parties that the U.S. technology base must be protected, and that this requires the defence industry to be viewed as, and protected as, a national asset. The U.S. defence technology base should therefore be kept as diverse and big as it presently is in order to make certain that the U.S. has many options – some would even say as many options as possible. The defence industry is in this view an important cornerstone of the U.S. global security posture – it gives the U.S. a spectrum of possibilities and doctrinaire flexibility, and it endows U.S. security policy with a momentum.

“Parts of Congress are even sceptical to defence business with the UK.” U.S. Senate staffer (D), 2001

The fifth inhibitor is to safeguard ‘non-proliferation’. This argument borders the first and the second inhibitors. Some claim in using this argument that e.g. no air-to-air missiles at all should be distributed to any other country, thereby keeping the missiles purely U.S.-held; that the source codes in the missile black boxes are still off limits is not seen as sufficient. Others claim that the U.S. should be much more restrictive in selling as many fighter aircraft as they do. A fundamental argument in this respect is that no U.S. weapon, platform or technology shall ever be turned against the U.S. This argument connects with a striving to reduce or eliminate uncertainties. (Also problematized by e.g. Forsberg (1994) and Keller (1995)).

The final inhibitor is that in many other nations there is substantial state ownership, influence and control in their defence companies. The risk of other states changing their priorities and affecting the foreign company’s strategies should be avoided. U.S. security and defence interests should not in any way be jeopardized or weakened by the (supposed) whims of another state. Thus, cooperation with e.g. France – which has substantial government ownership in and influence over the defence industry – was depicted as highly unwanted.

U.S. aggregate driving forces and inhibitors

Compared to the account of the discourse presented in Chapter 8, the most apparent added detail was identified regarding the list of U.S. government inhibitors.

It became apparent, when studying the U.S. driving forces and inhibitors, that it is seen as essential to dress up a suggested reform, defence program or industrial action in order to satisfy particular vested interests and actors controlling resources. The discourse may have a primary function of ensuring that the present conditions will not be adjusted, rather than suggesting changes of present conditions.

8.2 France

The French defence company respondents expressed a list of driving forces and inhibitors. For a more thorough analysis of the French defence industry context, see Lundmark (2004).

French corporate driving forces

The clearly strongest driving force is the companies' constant striving to get access to the U.S. defence market. The U.S. defence market is by far the largest. The European market is in comparison fragmented and showing overcapacity. It is therefore highly coveted to be able to do business in the U.S. market.

Secondly, the U.S. defence community has very attractive defence technologies. The U.S. defence market and research development generate vastly more than what is generated in Europe, so participation in U.S. defence programs is from that standpoint highly attractive.

Third, the defence companies saw very limited growth potential in Europe, and the market growth in the U.S. was staggering after 2001, and has stayed on a much higher level ever since.

The U.S. defence R&D is larger than the accumulated EU defence R&D, in 2008 six to seven times larger. French companies are therefore highly interested in becoming involved with the U.S. R&D processes.

Thus, the common denominator of these driving forces is a straightforward incentive to get access to a much richer defence market and defence community.

French corporate inhibitors

The first expressed inhibitor is the uneven size of the companies, the U.S. counterparts generally being larger. The large European companies are to a great extent conglomerates of defence assets in separate states, whereas the U.S. companies are more integrated entities. If a French (or European) company were to cooperate with a U.S. company, the U.S. company would in most cases be larger and the U.S. government development financing clearly higher. Thereby, the European company would always be junior to the U.S. company, and the belief is that the U.S. company, backed by the U.S. government, would then dominate the relationship.

Secondly, several respondents held that it was not meaningful to strive to create a Franco-U.S. cooperation. Since the U.S. authorities have such strict regulations and control demands on a transatlantic cooperation, the cooperation becomes so cumbersome that it is seen as unattractive. The political goals in different nations (a general problem) also tend to be volatile and to express uncoordinated directions over time, making uncertainties evident.

Third, the company representatives admitted that the French state's clear and strong control of the domestic defence industry was a highly impeding factor in achieving cooperation with U.S. companies.

Fourth, there is clear global competition between U.S. companies and French companies in some technologies, e.g. fighters, missiles, radar and sensors. This creates reciprocal caution and suspicion about cooperation. U.S. companies have only been allowed by the French state to acquire smaller, dual-use defence companies.

French government driving forces

A fundamental starting point is that the French state does not allow acquisition of French companies by U.S. companies; they see only cooperation, not integration, as possible.

The first and foremost driving force as expressed by the government representatives is that transatlantic defence industry integration or cooperation would mean access to attractive defence technologies in the U.S. As stated above, the U.S. defence community is far more generously funded, and the U.S. is in general also leading the global defence technology forefront.

Government representatives underlined that the U.S. and France, despite recurrent controversies between the U.S. and France that surface diplomatically or in media, shared similar overarching political goals. The two nations share important views in security policy. Thereby, they still have a clear incentive to collaborate.

Third, the U.S. defence posture appears in the foreseeable future to be very positive towards a high defence budget. It is a partner with reliable finances and a stable future.

Finally, the U.S. and France share high ambitions in military technology. This puts the two on a similar level; they are inclined to express very high goals in technology achievement, and thus finance defence R&D striving for very demanding technology achievements. Respondents expressed that France had very few peers in such ambitions – clearly the U.S., but otherwise only the UK in some limited areas.

French government inhibitors

*“The primary goal is not to be anti-American, it is to be non-dependent.”*¹⁰⁶ Ministry representative, Ministère de la Défense, Paris, 2003

There is a strong French sentiment created by de Gaulle, which has been reiterated and refined by successive presidents: that France does not accept being dependent upon any other nation. This argument was stated in the interviews by several government officials (and it has also been articulated in several defence White Papers). The French defence posture as declared by the state (shaped by de Gaulle) is that France does not accept dependence upon any other nation in defence matters. Cooperation with the U.S. would, by definition, create an uneven relationship where the U.S. company would have more power and control than the French. This must be understood not as meaning that the French

¹⁰⁶ «Le but central n'est pas d'être anti-américaine, c'est d'être non-dépendante.»

detest the U.S.; the U.S. is simply the only nation that France could be dependent upon. Therefore this is avoided.

“The U.S. distrusts France. ... There can be no French government interest in the U.S. industry.” Merrill Lynch manager, London, 2002

The second expressed inhibitor was the issue of distrust. There is a tradition and history of mutual distrust and negative images between France and the U.S. This is a hampering factor, which however they believed could be dealt with. Still, some ‘less informed’ forces in the Senate and Congress express a low appreciation of France. There is also in some cases a negative French attitude towards the U.S. dominance.

The third inhibitor was the issue of the recurrent divergence of political agendas. France has criticized several U.S. military endeavours in recent decades (e.g. the invasion in Iraq), and such divergence creates considerable distance between parts of the respective political and military communities.

The fourth inhibitor was the “inertia in the U.S. bureaucracies”. It was seen as being highly cumbersome to deal with the many facets of the U.S. defence technology control system, and it was felt that these had an inherent scepticism towards adding new, foreign elements.

French aggregate driving forces and inhibitors

The French companies expressed straightforward incentives for doing better business through access to the U.S. market, and implied that the European market was anorectic in comparison. In this sense, the interviews did not reveal anything surprising.

Regarding the inhibitors, the companies maintained that the uneven size would probably put them in a subordinate position and that the national regulations make integration difficult; that the French state’s ownership and control made French companies less attractive as collaborative partners; and finally, that global competition in certain technologies and segments had created general caution and suspicion. Thus, the inhibitors to a great extent reflected institutional resistance.

The government driving forces express two main strands: the attractive U.S. market and research breadth (just like the companies) and the fact that, despite other recurrent Franco-U.S. frictions, the two nations share a very similar security view of the world and very high defence technology ambitions.

Regarding the inhibitors, the national and nationalistic priorities became apparent. France stresses its sovereignty, and that it does not accept being dependent upon any other nation. France undoubtedly takes pride in its singular, independent posture proclaiming a French view of the world. This creates an element of distrust and prestige between France and the U.S. The respondents expressed that in Congress (particularly) and in the U.S. government bodies there were deeply rooted sentiments against France. This scepticism was also confirmed in the U.S., and referred to in the UK. Finally, the U.S. defence technology bureaucracy was seen as a major impediment to cooperation.

8.3 United Kingdom

“The UK is an extremely good market for U.S. companies.” Representative of Lockheed Martin UK, London, 2002

UK corporate driving forces

“The main drivers for transatlantic defence industry integration are more money, more profitable, more technology access.” BAE Systems representative, London, 2002

Company representatives in the UK were asked what they saw as the main driving forces for transatlantic defence industry integration.

The primary driving force was expressed as being that UK companies already have an established market presence in the U.S., with a total of about 30,000 employees in the U.S. Therefore it is a natural arena for new business.

Secondly, the U.S. market is by far the biggest, and with the most dynamic market development. Naturally, companies want a part of this business.

Third, the U.S. spends 6-7 times more on defence R&D than Europe does. The U.S. is the leader in almost all aspects of defence technology. Companies are therefore interested in becoming involved in the U.S. R&D processes.

Fourth, there are several uniting characteristics: same language, similar business culture, tradition of cooperation in wars, and generally the so-called “special relationship” (that the U.S. and the UK will always have stronger bonds: an expression established by Winston Churchill in 1946, based on the close military cooperation during WWII). The special relationship is a distinct competitive advantage vis-à-vis the European competitors.

Fifth, there is a much more stable, financial future on the U.S. defence market than on other defence markets.

Furthermore, if the UK collaborates in Europe it often has to relate to several states’ defence priorities, and probably also to the EU agenda – altogether a volatile environment. The U.S. is a much more predictable partner, and there is only a single counterpart to cope with.

UK corporate inhibitors

“For BAE, limitations for U.S. operations are severe: interacting is cumbersome.” BAE Systems representative, London, 2002

The primary inhibitor was the uneven size between UK and U.S. companies, implying a disadvantage of never being in charge.

Secondly, even if the bonds are close between the U.S. and the UK, the U.S. companies will have the strongest financing and will dominate the cooperation.

Cooperation with the U.S. may seriously impede the possibility to export from the UK. Further export of British products that have a U.S. technology content (‘3rd-party export’) is often highly restricted. The U.S. and the UK may not have the same lists of nations to export to. This ‘veto’ power has also been used in order to help U.S. companies in their

export; U.S. state actions are rhetorically dressed in higher-order goals of national security but (according to several respondents) are designed to eliminate competition with U.S. companies.

The regulatory systems are different, and this creates considerable legal work. Other respondents, however, stated that this issue is highly complex, but that companies have learnt to deal with it. For smaller companies, it may be a considerable impediment.

U.S. companies have a tradition of selling, not of cooperation. European companies are used to cooperation within Europe. This causes friction between the companies.

Overall, the companies did not seem very preoccupied with the inhibitors. They underlined, however, that the national cultures are not as close as is often believed.

UK government driving forces

“If Europe does not develop in the same direction as the U.S. after 9/11, they will not be in sync with the U.S.” Colonel, U.S. Embassy, London, 2002

The primary driving force, as expressed by UK government representatives, is that the UK and the U.S. have politically shared goals. The ‘special relationship’ was stressed. The security and military interests are similar or combined. There is deep integration of certain highly sensitive defence technologies, a closeness the U.S. shares with no other state.

Secondly, the two nations’ armed forces must be interoperable due to their extensive mutual obligations in warfare.

Third, the U.S. is leading the forefront in defence technology, and therefore it is attractive to have access to this defence community.

Fourth, the importance of the NATO interoperability was stressed.

Finally, the NATO arena was clearly the UK military officers’ preferred European defence community, and not the EU military capacity.

UK government inhibitors

“The greatest problems with transatlantic links are regulatory aspects and CFIUS.” Diplomat, UK Embassy, Washington D.C., 2001

The primary inhibitor was that the U.S. military programs have a domestic uncertainty related to domestic U.S. politics and domestic rivalry – an uncertainty which is difficult for UK companies and actors to influence. *“The outcome of intra-Administration struggles cause unintentionally altered conditions.”* (Analyst, Stimson Center, Washington D.C., 2001)

Secondly, the issue of 3rd-party export was stressed (described above). U.S. defence technology export regulations tend to make further export of British products to other customers more difficult. This decreases the British autonomy in defence exports. *“Export control rules are used in order to manipulate the marketplace.”* (Interview, BAE Systems, London, 2002)

The final inhibitor is the difficulty of coordinating defence R&D planning. There is a clear tendency to prefer domestic, established networks of defence R&D.

Clearly, the UK government representatives saw the driving forces as vastly outweighing the inhibitors.

UK comparative disadvantages

For the UK there are also comparative disadvantages of intra-European cooperation compared to UK-U.S. cooperation. These disadvantages would also be valid for companies from other European nations – but they have, in comparison, very limited cooperation with the U.S. The following comparative disadvantages were articulated in the UK by corporate and government representatives:

It was seen as more difficult to deal with job reductions in Europe. In defence cooperation, this also quickly becomes an issue in the EU Commission and Parliament.

European companies were seen as having a more dependent, ‘parental’ relation to their governments – thus making them more sensitive to political wind shifts. U.S. companies were perceived as more predictable over time.

The politico-military development is much more synchronized between NATO Europe and the U.S. than within EU Europe. Thus, the EU defence cooperation is more burdened with cumbersome negotiation.

In Europe, the UK sees no military peers, apart from France; the U.S. becomes a preferred alternative.

Finally, a difference in legal tradition was stressed. The UK and U.S. legal systems and principles have the same historical roots; France, Spain and Italy have a different one. Germany has a related legal system, but a very different political and constitutional system, e.g. concerning its *länder* and the *stiftungs* that own companies.

A negative aspect of UK-U.S. cooperation is that it will always be a one-sided accommodation (by the UK), whereas in Europe there will be a reciprocal accommodation.

UK aggregate driving forces and inhibitors

UK companies saw the U.S. arena as their natural and main business arena. They exploited their favourable position compared to their European competitors. Since the U.S. market was seen as the most dynamic, increased transatlantic defence industry integration was the number one corporate priority. The ‘special relationship’, shared warring experiences in the last century, same language, close NATO collaboration – all this made cooperation and integration natural and also a competitive advantage for the companies. Cooperation with the U.S. was in general more predictable, and cooperation with several EU nations much more uncertain.

However, the companies also saw inhibitors. The uneven size of the companies and the dominant national support from the U.S. government would make UK companies subordinate (as in France). UK export could be impossible if U.S. subsystems are a part of the product. U.S. companies also had different selling traditions.

Governments stressed the shared values, shared military heritage and NATO focus as driving forces for transatlantic integration, paired with the U.S. dominance in defence technology and spending.

Regarding inhibitors, government respondents expressed that they tended to fall hostage to U.S. domestic political processes where U.S. security considerations were superior to other nations' possible incentives. For the companies, third-party export was a concern: that with a jointly developed defence product between the U.S. and the UK (for example), the U.S. might put restrictions on further re-export (i.e. to a third party) of a defence item or technology, thereby making export of this product from the UK impossible. Finally, it was seen as highly difficult to coordinate defence R&D between the U.S. and Europe.

8.4 Aggregate assessment of driving forces and inhibitors identified in interviews

Table 8.1 brings together and synthesizes all the driving forces and inhibitors that were identified through interviews, and sorts them by nation, divided between corporate and government driving forces and inhibitors. In the table below, company driving forces and inhibitors are in *italics*, and government driving forces and inhibitors are in **bold**. U.S. respondents are underlined, French respondents underlined in this fashion, and UK respondents not underlined. In the following two matrixes in this chapter, the origin of the driving forces and inhibitors can thus be traced.

The U.S. *corporate driving forces* express that the companies wish to maintain their present competitive position, and further their market reach into Europe. The UK and French company driving forces express that they strongly strive to get access to the U.S. market, which offers much more business and is much better financed through the U.S. defence spending and defence R&D. Thus, the uniting driving forces are straightforward; the main growth factor is on the U.S. market. A comparison of the *corporate inhibitors* shows that transatlantic defence industry integration is seen as facing several impeding factors through government scepticism and limitations on business, as well as that U.S. vested interests are hard to convince. U.S. companies see the European market as being fragmented and cumbersome. Furthermore, the difference in size and market power makes the positions between companies uneven; business is seen as being dominated by the U.S.

Government driving forces stress NATO goals of interoperability, technology sharing and NATO cohesion. The U.S. strives to promote companies' business in Europe, and the UK and France want to get access to the attractive U.S. defence technology. The *government inhibitors* on the U.S. side generally express that the U.S. must protect its defence technologies. Furthermore, the issue of defence employment is a strong inhibiting factor, more so than in Europe. UK and French inhibitors mirror the U.S. inhibitors in that the U.S. scepticism (based on technology protection and Congressional inertia) sets integration possibilities in the hands of U.S. actors, which creates considerable uncertainties about integration that are beyond control by foreign companies.

Another interesting aspect is that the U.S.-UK 'special relationship' was strongly stressed by many UK respondents, but hardly ever by the U.S. respondents.

	Company		Government	
	<i>Driving forces</i>	<i>Inhibitors</i>	<i>Driving forces</i>	<i>Inhibitors</i>
<u>U.S.</u>	<p><u>get better access to European markets</u></p> <p><u>improve their competitiveness</u></p> <p><u>strive to create a collaborative engagement</u></p> <p><u>maintain their leading position as a prime company</u></p>	<p><u>protect business secrets</u></p> <p><u>the U.S. market offered much more business</u></p> <p><u>difficult bureaucratic procedures</u></p> <p><u>whim of European government priorities</u></p> <p><u>not to jeopardize their strong domestic position</u></p> <p><u>maintain congressional support</u></p> <p><u>good relations with the defence Services</u></p> <p><u>no synergies to extract</u></p>	<p><u>promote interoperability within NATO and with allies</u></p> <p><u>safeguard the cohesion of NATO</u></p> <p><u>get access to European market for the domestic companies</u></p> <p><u>promote joint development and interoperability within RMA, Transformation etc.</u></p>	<p><u>the U.S. must meticulously control the transfer of defence technology</u></p> <p><u>avoid giving good things to bad guys</u></p> <p><u>protect U.S. jobs</u></p> <p><u>protect U.S. defence technology base</u></p> <p><u>safeguard ‘non-proliferation’</u></p> <p><u>security and defence interests should not in any way be jeopardized or weakened by the (supposed) whims of another state</u></p>
France	<p><u>access to the U.S. defence market</u></p> <p><u>U.S. defence community has very attractive defence technologies</u></p> <p><u>limited growth potential in Europe</u></p> <p><u>U.S. defence R&D is larger</u></p> <p><u>get access to a much richer defence market and defence community</u></p>	<p><u>uneven size between the companies</u></p> <p><u>not meaningful to strive to create a Franco-U.S. cooperation</u></p> <p><u>the French state’s clear and strong control of the domestic defence industry.</u></p> <p><u>global competition between U.S. companies and French companies</u></p>	<p><u>access to attractive defence technologies in the U.S.</u></p> <p><u>shared similar overarching political goals.</u></p> <p><u>partner with reliable finances and a stable future</u></p> <p><u>shared high ambitions in military technology.</u></p>	<p><u>France does not accept being dependent upon any other nation</u></p> <p><u>the issue of distrust</u></p> <p><u>recurrent divergence of political agendas</u></p> <p><u>inertia in the U.S. bureaucracies</u></p>
UK	<p><u>a natural arena for new business</u></p> <p><u>the U.S. market is by far the biggest</u></p> <p><u>the U.S. spends 6-7 times more on defence R&D than Europe</u></p> <p><u>several uniting characteristics</u></p> <p><u>more stable, financial future</u></p> <p><u>the U.S. is much more predictable and it is only one single counterpart</u></p>	<p><u>U.S. will dominate the cooperation</u></p> <p><u>impede the possibility to export from the UK</u></p> <p><u>regulatory systems are different and this creates considerable legal work.</u></p> <p><u>U.S. companies have a tradition of selling, not of cooperating</u></p>	<p><u>politically shared goals. The ‘special relationship’</u></p> <p><u>must be interoperable</u></p> <p><u>the U.S. is leading the forefront in defence technology</u></p> <p><u>NATO interoperability</u></p> <p><u>the NATO arena was clearly the UK military officers’ preferred European defence community</u></p>	<p><u>U.S. military programs have a domestic uncertainty related to domestic U.S. politics and domestic rivalry</u></p> <p><u>3rd-party export, decreases the British autonomy</u></p> <p><u>difficulty of coordinating defence R&D planning</u></p>

Table 8.1. *Driving forces and inhibitors identified through interviews*

Tables 8.2 and 8.3 reassemble the driving forces and the inhibitors and sort them based on the same discourse matrix as in Chapter 7: *ownership* and *operational integration* in one dimension, *corporate field – government field – organizational field* in the other dimension. This reassembly enables a direct comparison between combination and analysis of the two accounts of the discourse – identified through texts and through interviews.

	Ownership integration	Operational integration
Corporate field	<p><i>access to the U.S. defence market</i></p> <p><u>access to attractive defence technologies in the U.S.</u></p> <p><u>getting access to European market for the domestic companies</u></p> <p><i>a natural arena for new business</i></p> <p><i>the U.S. market is by far the biggest</i></p>	<p><i>get better access to European markets</i></p> <p><i>improve their competitiveness</i></p> <p><i>maintain their leading position as a prime company</i></p> <p><i>protect business secrets</i></p>
Government field	<p><i>get access to a much richer defence market and defence community</i></p> <p><i>limited growth potential in Europe</i></p> <p><u>access to attractive defence technologies in the U.S.</u></p> <p><u>getting access to European market for the domestic companies</u></p>	<p><i>access to the U.S. defence market</i></p> <p><i>U.S. defence community has very attractive defence technologies.</i></p> <p><i>U.S. defence R&D is larger</i></p> <p><u>partner with reliable finances and a stable future</u></p> <p><u>shared high ambitions in military technology</u></p> <p><i>the U.S. market is by far the biggest</i></p> <p><i>the U.S. spends 6-7 times more on defence R&D than Europe</i></p> <p><i>several uniting characteristics</i></p> <p><i>more stable, financial future</i></p> <p><i>the U.S. is much more predictable and it is only one single counterpart</i></p> <p>politically shared goals. The ‘special relationship’</p> <p>the U.S. is leading the forefront in defence technology</p>
Organizational field	-	<p><i>strive to create a collaborative engagement</i></p> <p><u>promote interoperability within NATO and with allies</u></p> <p><u>safeguard the cohesion of NATO</u></p> <p><u>promote joint development and interoperability for RMA etc.</u></p> <p><u>shared similar overarching political goals</u></p> <p>must be interoperable</p> <p>NATO interoperability</p> <p>the NATO arena was clearly the UK military officers’ preferred European defence community</p>

Table 8.2. *Driving forces identified through interviews – sorted over discourse matrix*

	Ownership integration	Operational integration
Corporate field	<i>no synergies to extract</i>	<i>uneven size between the companies</i> <i>not meaningful to strive to create a Franco-U.S. cooperation</i> the issue of distrust <i>U.S. companies have a tradition of selling, not of cooperating</i>
Government field	<i>difficult bureaucratic procedures</i> barriers to technology transfer (all concerned) blocked M&A	<i>the U.S. market offered much more business</i> <i>difficult bureaucratic procedures</i> <i>not to jeopardize their strong domestic position</i> <i>maintain congressional support</i> <i>good relations with the defence Services</i> the U.S. must meticulously control the transfer of defence technology protection of U.S. jobs protect U.S. defence technology base security and defence interests should not in any way be jeopardized or weakened by the (supposed) whims of another state <i>the French state's clear and strong control of the domestic defence industry</i> <i>global competition between U.S. companies and French companies.</i> France does not accept being dependent upon any other nation the issue of distrust recurrent divergence of political agendas inertia in the U.S. bureaucracies <i>U.S. will dominate the cooperation</i> <i>impede the possibility to export from the UK.</i> <i>regulatory systems are different and this creates considerable legal work</i> U.S. military programs have a domestic uncertainty related to domestic U.S. politics and domestic rivalry 3rd-party export, decreases the British autonomy
Organizational field	-	<i>whim of European government priorities</i> avoid giving good things to bad guys safeguard 'non-proliferation' difficulty of coordinating defence R&D planning

Table 8.3. *Inibitors identified through interviews – sorted over discourse matrix*

8.5 Analysis of the discourse for transatlantic defence industry integration

Under this heading there will first be an assessment of the driving forces and inhibitors identified through texts, which were presented in more detail in Chapter 7. Thereafter follows an analysis comparing the discourse as identified through texts with the discourse as identified through interviews.

8.5.1 Analysis of the assessment of driving forces & inhibitors – interviews

In the interviews, respondents were asked what they saw as the main driving forces and inhibitors for transatlantic defence industry integration. These were separated between corporate and government arguments. The data collection through interviews differs in focus from the literature study, firstly in that it more precisely asks individual respondents, and secondly in that it seeks to collect more data from corporate representatives as they were in clear minority in the literature study presented in Chapter 8. The desired result was that the interviews would reveal a deeper understanding of what were seen as the true driving forces and inhibitors regarding transatlantic defence industry integration, so as to reach a better understanding of and explanation for the transatlantic defence industry integration.

Companies

It is obvious that U.S. companies are interested in the European market, but not as desperately as the European companies are interested in the U.S. market. U.S. companies have a home market which is much more plentiful in resources than any other market. The French and the UK companies have a straightforward, strong interest in increasing their business on the U.S. market – the largest, with best technologies, best R&D funding by far, and also a stable defence commitment. The UK companies feel a prioritized bond with their U.S. industrial partners.

Regarding inhibitors, U.S. companies do not want to jeopardize their acceptance by U.S. domestic vested interests, especially Congress and the military. The French as well as the UK companies see problems with U.S. companies generally being larger, and paired with their (normally) stronger financial backing; a European company always becomes junior. UK companies stress the problem of 3rd-party export, since U.S. ITAR restrictions lead to such export being vetoed by the U.S. The French companies see inhibitors through the French state's ownership in and strong control of the French defence industry, and also through the fact that several French companies compete on a global basis with U.S. companies and, therefore, cannot cooperate with them and are unwilling to share technology.

Governments

The U.S. government can view the world from an elevated position and invite others to cooperate as it pleases. Other nations are begging to be accepted. The U.S. government driving forces were primarily based on NATO commitments and interoperability, but also to promote domestic companies. French and UK government driving forces are dominated by the dominance and wealth of the US market, and the UK stresses military cohesion and the 'special relationship'. It should be stressed that most of the interviews in the U.S. were made in the spring of 2001, when George W. Bush had just started his first presidency and September 11 not yet had occurred.

The inhibitors reveal much more sceptical and protectionist arguments. The U.S. wants to maintain its technological and military supremacy, and does not see cooperation as very beneficial. The protection of the U.S. defence industrial base is important, regarding jobs as well as technology. France has its distinct defence posture where it does not accept being dependent upon any other nation, and therefore avoids transatlantic cooperation and forbids U.S. acquisition of French companies. French government representatives admit the political rivalry between France and the U.S., which disturbs the relation despite fundamental security policy similarities. The UK government stresses the problem with 3rd-party export, and the fact that, despite their advanced position vis-à-vis other European nations, they become hostage to U.S. domestic politics and priorities. Among the inhibitors, the recurrent themes are that, from a domestic perspective of some kind, transatlantic defence industry integration is met with scepticism in each nation. It can be assumed that these domestic reflexes are stronger than the arguments that address multilateral benefit (NATO, EU, better market, market access, technology sharing etc.) since the integration is limited in comparison to the impression given by the positive discourse for transatlantic defence industry integration.

8.5.2 Analysis of driving forces and inhibitors for transatlantic defence industry integration: comparison between and combination of the two discourse accounts

The following table summarizes the results of the assessment of the discourse for transatlantic defence industry integration. Driving forces and inhibitors are coupled to how they relate to ownership and operational integration. Furthermore, there is a separation between secondary texts and interviews. Finally, the driving forces and inhibitors are also separated based on whether they emanate from the corporate field, the government field or the organizational field. After the table it will be analyzed in several ways regarding how different parts of the table relate to each other, for example how corporate driving forces for transatlantic defence industry ownership integration relate, when texts are compared to interviews.

	Ownership integration		Operational integration	
	<i>Secondary texts</i>	<i>Interviews</i>	<i>Secondary texts</i>	<i>Interviews</i>
Corporate field	<i>Driving forces</i>	Focus on improving industry structure and corporate competitiveness	Better access to the U.S. market Access to European markets Create new business	Create efficiencies: economies of scale. Reduced costs, synergies, R&D coordination, decrease redundancies
	<i>Inhibitors</i>	Monopoly Unwanted dominance	No synergies to extract	Can only lead to marginal effects on efficiency, cost and rationalization
Government field	<i>Driving forces</i>	Transatlantic integration will force European states to engage in European integration	Access to richer U.S. defence market, attractive U.S. technologies, U.S. R&D Access for domestic companies in national markets	Operational integration will bring harmonization and standardization in military demand and procurement
	<i>Inhibitors</i>	Limited possibilities due to states' protectionism	Difficult bureaucratic and protectionist procedures U.S.: Strong national bonds between companies and MIC (?)	Export control systems U.S. political system National focus Policy ambivalence
Organizational field	<i>Driving forces</i>	-	-	Bureaucracy U.S. dominance U.S. domestic policy overrides cooperative accords U.S. companies: maintain domestic support (Congress, military) U.S. government: tech transfer, protect jobs, protect U.S. technology Corporate competition 3 rd -party export French government influence
	<i>Inhibitors</i>	-	NATO: interoperability and development RMA, Transformation Open markets – reciprocal access Imbalance: R&D, size, sophistication, defence trade U.S. dominance No technology flow European policy fragmentation	NATO interoperability and cohesion RMA, Transformation Whim of European government priorities Non-proliferation of defence technology in general Avoiding technology to unwanted states Difficulty of multilateral coordination of defence R&D planning

Table 8.4. *Accumulated account of the discourse for transatlantic defence industry integration*

The following is an analysis of the combined assessment of the discourse as presented in the above matrix. The analysis starts with an intra-discourse analysis, followed by the overall conclusions of the assessment. Thereafter there is a comparison between discourse and action (the action (transatlantic defence industry integration) presented in Chapter 6).

The analysis is intended to compare the two accounts of the discourse and to see in what ways they correspond, in what ways they differ and in what ways the combination of the two discourse accounts offers new conclusions. Later the discourse will be further analyzed by more closely combining them with the concepts of integration and organizational field.

1. INTRA-DISDISCOURSE

- *In the combined picture of discourse, what generally drives and inhibits transatlantic defence industry integration?*
 - o Ownership integration is decided upon by companies, but requires government consent by concerned governments – it is not a multilateral issue or governed by the organizational field. No arguments have been identified in texts or expressed in interviews that ownership integration is an issue steered by the organizational field.
 - o Operational integration is an issue that is steered by the interaction of many actors in companies, governments and multilateral organizations – in the organizational field. Companies cannot engage in operational integration without governmental consent; in principle it requires government support.
 - o The dominant driving force for European companies and governments is to get access to the U.S. market. This was much more clearly stressed in interviews.
- *In what way do texts and interviews correspond?*
 - o The U.S. is strongly dominating the context and holds the key to all transatlantic defence industry integration.
- *Differences between texts and interviews?*
 - o Texts were mainly written by economists, political scientists and representatives of governments or government authorities, which could explain the focus on multilateral and macro benefits. Few texts focus on corporate strategies; this could be explained by the lack of authors from strategy/management/business administration.
 - o In interviews there are much more self-centred arguments; texts tend to focus on more multilateral perspectives.
 - o In interviews the aspect of market access is highly pronounced. It is not pronounced in texts where the aspired market development rather is addressed as “open market”, “reciprocal access”, “true transatlantic market” etc.
 - o Texts contain very few arguments expressed by companies, and few texts are based on interviews with companies, but several writers expressed what is beneficial for industry.
- *Differences between corporate and government views?*

- Companies stress competitiveness for their company, while governments stress multilateral benefits (not surprisingly).
- Governments state that a multilateral benefit through EU, NATO and operational integration is a prioritized driver for supporting industry. Companies do not formulate driving forces linked to multilateral organizations.
- Companies see national barriers to integration as the main inhibitor, combined with the imbalance between the U.S. and the European states, and the influence of U.S. domestic politics. Governments see the dominance of the U.S. as the main inhibitor.
- All concerned see the overall rigidity of technology transfer, export control and states' national focus as strong inhibitors of increased ownership and operational integration.
- *Difference between driving forces and inhibitors*
 - Driving forces as expressed by companies stress market access, new business and improved competitiveness for the single company. Driving forces as expressed by governments stress market/industry efficiencies and multilateral shared benefits through NATO and EU.
 - Inhibitors as expressed by companies predominantly point to power imbalances; scepticism and distrust; not to lose or jeopardize favoured positions; protectionism and national foci; policy ambivalence. Governments stress the U.S. dominance and general regulatory obstacles.

2. OVERALL CONCLUSIONS FROM THE DISCOURSE

- *What were the main findings through a two-pronged approach to discourse analysis?*
 - The development of ownership integration is held back by non-united national perspectives emanating from governments.
 - Operational integration is rhetorically supported and encouraged, but its implementation is limited through individual governments' restrictions on technology transfer, and by the general, compartmentalized work-distribution system of cost-share–work-share in multilateral defence collaboration.
 - Texts and politicians strive for multilateral and shared benefits, while companies strive for access to the U.S. market.
 - Protectionist and self-centric arguments that are sceptical towards transatlantic defence industry integration were not apparent in the texts, but became pronounced in the interviews.

We will now turn to Chapter 9 for the final empirical part. Chapter 9 presents three cases of transatlantic defence industry integration. These cases are intended to offer accounts of companies-in-action in the organizational field and how discourse and action evolve concerning transatlantic defence industry integration.

Chapter 9 Case studies of transatlantic defence industry integration

*“Pour les liens transatlantiques, il faut procéder avec des organisations légères.”*¹⁰⁷ Senior manager, Snecma

In this chapter three cases that involve transatlantic defence industry integration will be described and analyzed: *NATO Frigate Replacement for the 1990s* (NFR-90), *ThalesRaytheonSystems* (TRS) and *Joint Strike Fighter* (JSF).

These cases are intended to exemplify how companies are involved in processes of transatlantic defence industry integration and how different vested interests are manifested in the discourse concerning transatlantic defence industry integration. By doing this, the intention is to exemplify how the behaviour and strategy of the defence companies evolve, and how they interact with the surrounding organizational field and the main actors and their vested interests. Each case is clearly embedded in a transatlantic defence industry context.

Two of these cases – NFR-90 and Joint Strike Fighter – were initiated by governments, and TRS is an initiative between two companies. Most of the defence companies’ activities and production are created through government/military orders. In order to capture the nature of corporate integration it is suitable to present cases that are initiated by governments as well as by companies.

In Part IV of the thesis, we will return to these cases, and relate them to the other empirical parts of the thesis, as well as discussing them in relation to the central theoretical concepts and the explanatory model of the thesis.

The case descriptions are based on interviews, previous analyses and research through other secondary material, company texts and press releases. These cases will one by one be described in their respective chronological order of events, and they are thereafter analyzed in relation to integration, discourse and organizational field.

The in-case analyses will focus on the concepts integration, discourse and organizational field. Regarding the latter two, the empirical data is less exact compared to the data on integration. Therefore, discourse and organizational field are analysed “as reflected in the cases”.

¹⁰⁷ “For the transatlantic links, you have to proceed with loose organizations.” (My translation, quotation from interview.)

9.1 NATO Frigate Replacement for the 1990s – NFR-90



Most of the information is from a paper about NFR-90 (2004), by the political scientist Andrea Ellner in a French anthology on the history of European armaments collaboration (Hébert & Hamiot, 2004)¹⁰⁸. Her account has been supplemented with various other sources and searches in order to suit this thesis.

In modern navies, frigates are used to protect other warships and merchant-marine ships, especially as anti-submarine warfare (ASW) combatants for amphibious expeditionary forces, underway replenishment groups, and merchant convoys. But ship classes dubbed "frigates" have also more closely resembled corvettes, destroyers, cruisers and even battleships. The U.S. had a reclassification reform in 1975 where it decided to switch from frigate to 'destroyer' for that type of ship. (Source: Wikipedia: 'Frigates') In general, the largest naval ship is the aircraft carrier, followed by cruisers, destroyers, frigates, corvettes, patrol vessels – and thereafter different smaller, specialized vessels¹⁰⁹.

Project Group 27

NATO members have agreed to cooperate on armaments development in order to strengthen the capabilities of NATO. Member states convene in many task groups in NATO where they share procurement and development plans, changes in military doctrine, choice of military technologies etc. In doing this, they strive to find possibilities for synergies and pooling of procurement and armaments development. NFR-90 is an example of an idea for a joint development program to be organized within the NATO structure.

In December 1979, the NATO Naval Armaments Group (NNAG) created Project group 27, consisting of the representatives of seven countries: Canada, France, FR Germany, Italy, the Netherlands, the UK and the U.S. France was thus a partner, despite its 1966 withdrawal from the NATO military structure under NATO command. France, however, remained in the NATO structures for e.g. standardization, formulation of common requirements and R&D collaboration.

¹⁰⁸ Ellner, A. "Le projet NFR-90 (frégate de l'OTAN pour les années 1990)", pp. 125-151, in Hébert, J.-P., & Hamiot, J. (2004), *Histoire de la coopération européenne dans l'armement*, CNRS éditions, Paris. Her paper is partly based on her dissertation on British Naval Policy 1970-1990, received at the Free University of Berlin.

¹⁰⁹ A naval (military) ship is a 'vessel' or a 'ship', never a 'boat'.

The starting point was to create a Mission Need Document (MND), offering a first, 'minimalistic' definition of the frigate. At this stage the ship should according to the MND be constructed for Anti-Submarine Warfare (ASW) as well as Anti-Air Warfare (AAW), and be of 2500 to 5000 tonnes. Further goals were a more flexible utilization potential (i.e. several military mission types) and lower cost per ship.

By the end of 1980, the group concluded that a common requirement existed for a conventionally powered ship of roughly 3500 tonnes. However, there was disagreement over the primary role of the vessel. Four members wanted it to be an anti-submarine warfare (ASW), while Canada, the U.S. and Germany wanted the vessel to be primarily for air defence. The group therefore decided that the vessel should have a common hull design and be 'modular' so that each navy could specify its own equipment fit.

NATO Industrial Advisory Group

Thereafter, the NATO Industrial Advisory Group (NIAG) was given the task to carry out a feasibility study, identifying costs and benefits of different solutions.

In February 1981, NIAG Subgroup 13 began to evaluate the various solutions to the requirements in terms of operational capabilities. Drawing on 132 companies from nine nations, they presented a report in October 1982 that discussed 12 possible designs ranging from 2500 to 4000 tonnes. The size 3500 tonnes was however seen as the best for meeting many requirements, according to the report. A successful cooperative program was said to offer 20% savings on acquisition cost and 12% on life-cycle costs.

Memorandum of Understanding

In 1983, each of the nations initiated their own assessment of the NIAG recommendations, in order to present it at a spring 1983 NATO meeting. These assessments also involved critical evaluations in order to validate whether mutual procurement really offered the envisaged cost savings. At that meeting Belgium and Norway (which had been observers in the group together with Spain) decided that NFR-90 could not meet their national requirements. Spain, however, decided to join NFR-90. Eight countries participated in drafting a Memorandum of Understanding that had to be signed by April 1984 to qualify for membership of the program. At this stage, the envisaged mutual arms development program was intended to be the largest collaborative project ever undertaken by NATO. The conditions of how the work share should be divided and organized were defined in 19 paragraphs in the MoU.

There were some other prerequisites for a mutual program:

- a ship that could be used worldwide¹¹⁰
- at least 50 frigates produced (no national program would come close to such a number)
- the nations would produce the frigates at their own shipyards

¹¹⁰ Thereby basic maintenance could be performed by many nations on all ships.

- nations would individually provide for subsystems integration in the vessels

All nations would be guided by principles of striving for standardization, interoperability and flexibility. Flexibility meant in this sense a common ship design that would allow room for national specification needs. The study had a 25-year perspective.

NATO Staff Requirement – a more detailed feasibility study, Project Management Office and the Internationale Schiffs-Studien GmbH

A more detailed feasibility study was set up by the NATO Staff Requirement. This feasibility study was to be coordinated by a Project Management Office (PMO) for the program in Hamburg. Each participating nation assigned two naval officers to this office. Each of the eight states was to contribute one eighth of the cost for the study, a total cost which was not to exceed \$15 million.

PMO was to act as a liaison group between the navies and the private sector joint venture company 'Internationale Schiffs-Studien GmbH' (ISS), composed of representatives of the lead companies, one from each country, nominated by the participating countries. This nomination procedure, however, raised concerns in the U.S., since its national procurements regulations required the government to issue a Request for Proposal (RFP) and select a prime contractor from the bids. Therefore, the U.S. Navy had to choose a national prime contractor in order to be able to continue with NFR-90. The choice was Westinghouse Corporation. The U.S. could not, however, (due to anti-trust legislation) order Westinghouse to send representatives to ISS. A technical amendment therefore had to be made which enabled Westinghouse 'by their own decision' to join ISS. The PMO and ISS were placed in adjacent buildings in Hamburg.

The ISS was to meet every six months in Hamburg. There was a Steering Committee, with five subgroups: Platform, Payload, Planning/Cost, Logistics and Legal Advice. The Steering Committee and the subgroups each had a chairman, and Payload and Platform also had assigned deputy chairmen. Which questions had to be discussed at the meetings were defined, and all changes of the project plan had to be unanimously agreed upon in the Steering Committee. There was also an 'Assistant Steering Committee' whose role was to operatively work with ongoing administration in Hamburg at ISS.

The feasibility study had to address combat systems, payload, integrated logistics concepts, propulsion systems and auxiliaries. Specific decisions on radar, pump, engine and switchboard were excluded from this feasibility study.

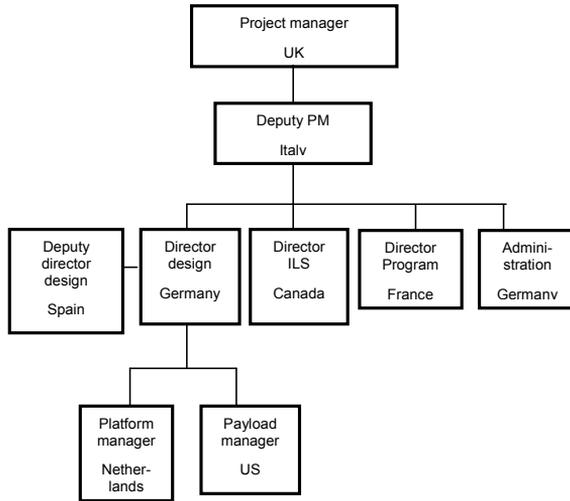
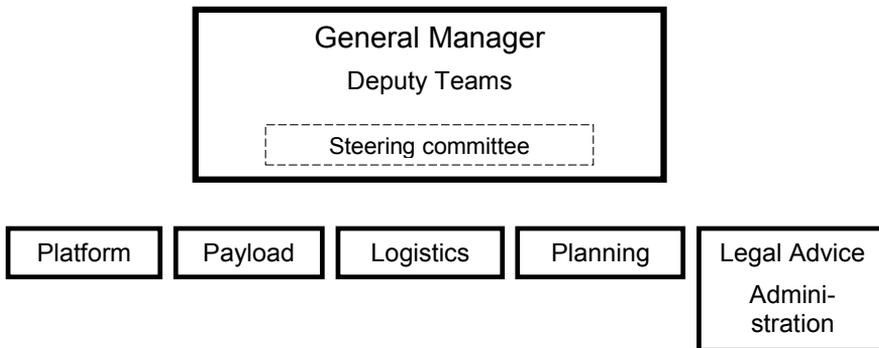


Figure 9.1. PMO



Lead companies:

Canada	Acres International Ltd.
France	Thomson-CSF
FRG	MTG Marinetechnik GmbH
Italy	Cantieri Navali Italiani
Netherlands	Hollandse Signaal Apparaten BV
Spain	Empresa Nacional Bazan
UK	British Shipbuilders
USA	Westinghouse Corporation

Figure 9.2. ISS

One factor that stirred some discussion was whether the ship was to be metric or not (metres or feet/inches). It was decided that it was to be metric. The UK Royal Navy had asserted in its response to this issue that it was “marching smartly toward the adoption of the metric system, inch by inch”.

The envisaged service date for NFR-90 was at this stage judged to be no earlier than 1992. It should also be noted that all NATO members, by joining NATO, had signed common declarations to pursue the goals of interoperability and standardization within NATO.

Project Steering Committee of the NATO Naval Armaments Group

Despite these discussions, the feasibility study was completed on 29 October 1985 and delivered to the Project Steering Committee of the NATO Naval Armaments Group. The 10,000-page study was then compared with possible national solutions to the frigate requirement prior to a decision whether to proceed to a project definition stage, expected by January 1987. A Statement of Intent was signed by the eight participating countries on 29 July 1986. The project definition phase was intended to specify common equipment on the vessels to an amount of 50%, and the suppliers should be selected by competitive tender.

But ...

At this time, there was concern, especially from the UK, that NFR-90 had to have its timetables synchronized for shipbuilding and weapon systems fitting at ‘an early stage’. One central system for a military vessel like a frigate is its anti-air warfare system. Such a system includes a missile that is aimed for helicopters, airplanes or other missiles – threats in the air. Together with that missile is a system with one or several radar systems, sensor systems, a communication system and various other co-dependent systems.

One such large and complex common NATO system being planned simultaneously was the NATO NAAWS (Anti-Air Warfare System) with U.S., Can, UK, Ge, NL and Sp in the group. There was also another parallel group called FAMS (Family of Anti-Air Missile Systems) with Fr, It, Sp, UK and later NL in the group.¹¹¹ Some of the nations thus participated in both groups. NAAWS was centred on U.S. missiles and FAMS on French missiles (Aster 15 and Aster 30) in combination with an Italian radar (EMPAR) and a British missile (Sea Wolf). NAAWS was further split up into three competing consortia, each led by three different U.S. companies (General Electric/General Dynamics; Westinghouse/McDonnell Douglas; and Martin Marietta, ITT, Lockheed, Hughes Aircraft and United Technologies).¹¹² The UK and France had concerns that NAAWS would make the

¹¹¹ NAAWS was based on two different missile solutions, FAMS on an already existing French missile and NAAWS on planned U.S. missiles. NAAWS had three different competing consortia (initially four), each with its combination of companies from different NFR-90 nations. In order to receive support from individual nations, one company from that nation had to be included. Each alternative composition of suppliers and technology choices made up a separate aggregate technological solution – a solution to a common threat: the possible airborne threats towards a frigate.

¹¹² Anthony (1990) and interview with Ger Willemsen. Several U.S.-led groups were created in order to accommodate the U.S. procurement regulations that demanded intra-U.S. competition. In late 1987, there were four or perhaps five different U.S.-led NAAWS consortia. In May 1989, there were two NAAWS solutions, and two FAMS solutions.

U.S. too dominant in this technology field of missile systems, and therefore created a European alternative.

NAAWS and FAMS required substantial differences in ship design. Therefore an alternative solution was now that NFR-90 should come in two versions, making both NAAWS and FAMS possible.

	NAAWS 1	NAAWS 2	NAAWS 3	NAAWS 4	FAMS
United States	General Electric, CSC, Ford Motor Corporation, General Dynamics	Raytheon, Martin Marietta	Westinghouse, Hughes Aircraft, LTV, Martin Marietta, McDonnell Douglas, Vitro, MCR, ORI	Martin-Marietta, Hughes, ITT, Lockheed Electronics, Magnavox, Norden	
UK	British Aerospace, Marconi	Plessey, Bristol Aerospace	Babcock Power, Ferranti, Short Brothers, Thorn EMI	Plessey	British Aerospace, Marconi (joined in 1989)
Spain	Inisel	ERIA	Bazan, Celesa	Bazan	Ibermisil
Germany	Siemens	AEG, MBB	Contraves, AEG, BGT, Dornier	AEG Marine-technik, Krupp Atlas	
Netherlands	Hollandse Signaal-apparaten	Fokker	Philips, ELOMA	Hollandse Signaal-apparaten	
Canada	Thomson-CSF, SPAR Aerospace	Paramax, Unisys	Marconi, MEL, SPAR Aerospace	Litton, SPAR Aerospace, Oerlikon	
France					Aerospatiale, Thomson-CSF
Italy					Selenia
				Left out of the competition in 1988	

Table 9.1. *Competing consortia for the NFR-90 Anti-Air Warfare System, late 1987* (Beech, 1988; Richardson, 1990; OTC, 1991; Friedman's World Naval Weapons Systems, 1991/92; Ellner, 2004, and several articles)

The four different NAAWS consortia and the FAMS consortium were composed as depicted in Table 9.1, primes in bold letters.

At this stage of cooperation for joint frigate production, none of the participating nations had foreclosed the option of a predominantly national solution to its frigate requirements; i.e. they all had the possibility to withdraw and initiate a domestic solution. It had also become apparent that the NFR-90 was peripheral to the procurement plans of the U.S. Navy – they had other frigate program options or ongoing production during the NFR-90 negotiations. At the same time, Canada, France, FRG, the UK and Italy all had national programs which would produce escort vessels of roughly the same size and construction, and such programs could be extended into meeting the needs of a frigate.

Canada started production of six City class patrol frigates in March 1987. These vessels did not fully fill the needs envisaged by NFR-90, but they decreased the need for it. Canada also had a Ship Replacement Program (SRP) initiated in 1969, which had been gradually transformed and postponed, and this process swelled into the NFR-90 negotiations.

In France, funds for a new air defence escort vessel were decided upon in 1978. This vessel also experienced a gradual transformation of its requirements at different stages in 1982, 1985 and 1986, and in 1988 reached a procurement decision of a light patrol frigate of about 3000 tonnes, resembling the NFR-90.

Germany had an ongoing upgrading of its existing *Type 122 Bremen* class frigate, commissioned in 1982 from the design from a Dutch *Kortenaar* class ship. These '*Type 123*' frigates were to be produced regardless of NFR-90, starting in 1989.

In Italy, production was started on two *Animoso* class air defence escort vessels. The Netherlands had in 1988 also launched a new class of frigates, the *Karel Doorman* or *M* class.

The UK had several ongoing procurement plans and also initiated productions at the end of the 1980s, e.g. the *Type 22* and *23* frigates (*Type 23* designed around the Sea Wolf missile), and the *Type 42* destroyers (designed for air defence based on the Sea Dart missile). There was at this time considerable debate in the Parliament on the continued cost and time overruns of military programs, and naval programs were especially scrutinised. The UK also at the same time had reforms of its defence procurement system.

There were thus, in parallel with the ongoing negotiations for the NFR-90, also discussions on starting domestic frigate programs. Such domestic programs would all include substantial foreign supply of certain crucial systems. The ship designs and the technical specifications of the vessels, however, would be decided upon within one nation. The naval artillery would have a limited range of possible suppliers, not all of them from the participating nations; the helicopters that would be stationed on the frigates would present other possible solutions; the air defence system would also offer another group of possible suppliers. All such choices would strike national connotations, and these choices would also spill back on how each nation would judge and value the previous, common feasibility assessments that had been made for NFR-90.

At the same time, all nations expressed concerns about the constant uncertainty whether the program would really be successful and production would start. Such commonly shared scepticism added to the cautiousness and the bureaucracy of the program.

Another important factor which, gradually and to a varying extent, affected NFR-90 (and other programs in the same way) was that at each specific instant of time, each of the

eight nations had different dynamics in their procurement plans. At the end of the 1970s, Germany and Spain had the most pressing need for a frigate, whereas the UK, Canada, France, Italy and the Netherlands had needs for a frigate mainly into the late 1990s. Such dynamics of the procurement plans will also change over time as there are cuts in programs or reshuffling of resources. The uncertainties were thus immense, and the envisaged interdependences in the production were hard to overlook and analyze.

At this stage approaching the end of the 1980s, Britain, Canada and Italy all suggested a ship design closer to 4000 tonnes, whereas the Dutch, French and German ship requirements tended to point down towards 3000 tonnes. At the time, some countries started to suggest larger ships since 'steel and air were cheap' and a larger ship made systems installation less complicated and the personnel could achieve better conditions¹¹³.

The beginning of the end

In July 1987, all nations had agreed to continue the cooperation. By October 1987, all but the UK and France had signed a new MoU. In January 1988, these two signed the MoU, but with certain reservations. The UK only committed itself for a period of six months to start with. Both nations demanded the possibility of withdrawing from the project after the Base Line Review, a further evaluation of the plans envisaged by the end of 1988.

The participating nations had difficulty at this stage in agreeing upon sufficient harmonization of specifications on a 'Local Area Missile System', radar demands, what type of Anti-Surface-Ship Missile (ASSM), and on the medium-calibre cannon. The LAMS was a NATO project that generated requirements which fed into both NAAWS and FAMS. There were also several other projects within NATO that negatively affected the possibility of reaching mutual accords on harmonized demands for NFR-90. Under ASSM, there were also two rival groups: one that opted for the U.S. Harpoon, and another group with e.g. France, UK and Germany that opted for a second generation of the French Exocet missile.

As several nations ordered other ships that to some extent covered the envisaged performance of NFR-90, the projected economies of scale were gradually weakened.

The most important problem for NFR-90 appears in retrospect to have been the conflict over the choice of Anti-Air Weapons (AAW). The different nations effectively became divided into two groups due to the different priorities for the AAW. Canada, the U.S. and the Netherlands opted for NATO Anti Air Weapon System (NAAWS), whereas France and Italy opted for Family of Anti-Air Missiles (FAMS). Spain and the UK opted for either one, and finally Germany had not decided. The choice of this weaponry would produce different production setups, creating national benefits in different directions within the NFR-90 group.

In August 1989, the Baseline Design stated that there were two official NAAWS options, and three FAMS options. The three FAMS options were covered by the single FAMS consortium.

¹¹³ Interview: Willemsen.

These discussions became increasingly difficult. In September 1989, the UK withdrew from the program after the delayed Base Line Review. Italy and France withdrew immediately thereafter. Germany, Spain and the Netherlands withdrew at the end of the year. Canada and the U.S. finally killed the program in January 1990.

The ISS concluded in its report in January 1990 that they refused to accept the UK arguments as valid, and that the differences could be reconciled. They concluded that the program was “prematurely terminated”. However, it was too late.

The NAAWS program was cancelled as a consequence of the cancellation of NFR-90. The UK chose to pursue a new AAW program, LAMS (Local Area Missile System), a variant of FAMS (Elliott, 1990). But that becomes a different trajectory after the NFR-90 story.

9.1.1 In-case analysis NFR-90

NFR-90 involves only operational integration through multilateral cooperation – cooperation orchestrated by several nations – and that came to involve companies in several nations. Assuming that transatlantic defence industry integration necessitates state involvement, we can see in NFR-90 how the corporate and the government actions interact. It does not result in operational integration of companies, but rather intended integration of defence planning and defence procurement.

Integration

Before cooperation could really start to develop, the process of *negotiation* was immense. Perhaps negotiation must be seen as an integral part of defence cooperation; actual cooperation in the form of R&D efforts and production is always preceded, in defence materiel matters, by a period of lengthy and complex negotiation. And the more participating member states, the more complicated the negotiation phase becomes.

<i>Time</i>	<i>Actor</i>	<i>Episode</i>	<i>Nations (only changes noted)</i>	<i>Comment</i>
<i>Dec 1979</i>	NATO Naval Armaments Group (NIAG)	Project Group 27 created	Canada, France, West Germany, Italy, the Netherlands, the UK and the U.S.	
<i>Dec 1980</i>	Project Group 27	Mission Need Document		General requirements
<i>Feb 1981</i>	NIAG	Evaluation of different solutions		
<i>Oct 1982</i>	NIAG	Report on solutions		12 possible designs
<i>April 1983</i>	NIAG, NATO Meeting	The participants presented their assessments	Belgium and Norway left their roles as observers in the collaboration. Spain had been observer, but now joined NFR-90	A MoU was to be signed by April 1984
<i>April 1984</i>	Project Management Office (PMO), Internationale Schiffs-Studien GmbH (ISS)	PMO and ISS were created in the MoU PMO had the responsibility to coordinate the NATO Staff requirement in a feasibility study		Each nation and the respective companies defined their commitment Two offices established in Hamburg
<i>Oct 1985</i>	PMO	Feasibility study presented		Delivered to the Project Steering Committee of the NATO Naval Armaments Group, a 10,000-page study
<i>July 1986</i>	PMO	Statement of Intent signed by the participating countries		
<i>July 1987</i>	PMO	All nations agreed to continue the cooperation		There had been a period of considerable insecurities and discussions, especially related to other ship-building programs, the size of NFR-90 and the Anti-Air Warfare system
<i>Oct 1987</i>	PMO	MoU	Britain and France did not sign	
<i>Jan 1988</i>	PMO	MoU	Britain and France signed, with certain reservations	
<i>Aug 1989</i>	PMO	Baseline Design		Two official NAAWS options (Raytheon consortium excluded, but later reincluded), three FAMS options
<i>Sep 1989</i>	UK, Italy, France		The UK withdrew, with France and Italy following immediately thereafter	
<i>Dec 1989</i>	Germany, Spain, the Netherlands		Withdrew	
<i>Jan 1990</i>	Canada and the U.S.		Ended the program	
<i>Jan 1990</i>	ISS	Report	Stated that the program was "prematurely terminated"	

Table 9.2. *The development of NFR-90*

The above table shows the official events that occurred in the NFR-90 development. The unofficial, national discussions and alterations of procurement plans are too unclear to set into one picture. Over eleven years, eight nations discussed and negotiated how to organize NFR-90. Such a lengthy negotiation phase was not foreseen.

NFR-90 did not include any ownership integration, nor did it lead to any. There was, however, an implicit goal from NATO that NFR-90 would lead to industrial consolidation among the participating states and other NATO members.

Multilateral collaboration in the defence market typically involves an operational integration through distribution of work, which has to be approved by the governments that finance the R&D and the production. Each nation expects and demands sophisticated assignments for research, development and production. The rewarded assignment stands in direct proportion to its financial contribution. However, the content of the work share has to be interpreted and negotiated (Hartley, 1983; Hebert & Hamiot, 2004; Axelson & Lundmark, 2010).

A NATO program such as NFR-90 is typically divided into stages such as Staff Target, Pre-feasibility study, Staff Requirement, Feasibility Study, Development, Test and perhaps more stages before it (hopefully) arrives at the production phase. For government bodies, all these stages will take a long time, and the total time will be very difficult to predict and will certainly contain severe delays. The parallel industrial stages (i.e. the mirroring industrial committees that will reflect the inter-governmental progressions) that would feed back into the governmental sequence would typically be more precisely defined and take less time. Therefore, the industrial shadow-organization is subject to an unpredictable process that halts and starts, halts and starts in a manner that makes planning highly difficult. This creates conditions that financially are hard to accept for industry.

NFR-90 was primarily intended to create operational integration and economies of scale. This was to be organized within an umbrella of a multilateral defence collaboration under NATO auspices. NFR-90 stresses some characteristics of multilateral defence cooperation initiated by states. One characteristic is the inherent scepticism and caution about engaging in mutual programs. In this attitude reside several concerns from a domestic perspective:

- Traditions of domestic, autonomous production.
- That conditions will change over time; different nations' attitudes towards and preference for a program will vary highly over time.
- National prestige. Defence production strikes at the heart of national prestige. There are also usually very old bonds between the national navies and the naval missile, artillery and munitions industries, and the domestic shipyards.
- Unique, national specifications. Nations tend to see their national demands for e.g. warships (or tanks, fighters etc.) as unique. As an outside observer, such unique de-

mands appear rather to be unique processes of specification, not as unique demands on the vessels.¹¹⁴

One central issue in NFR-90 was that the participating nations never were able to settle upon a shared solution for the AAW (Anti-Air Warfare) solution (NAAWS or FAMS)¹¹⁵. The two main alternatives (which in turn had their separate bidders) created design repercussions that divided the pro-NAAWS and pro-FAMS sides. The two alternatives also showed the adherence to national solutions and the corresponding companies and technology choices. Furthermore, there was a concern – especially in France and the UK – that the U.S. would become too dominant in AAW if NFR-90 were equipped with an AAW solution based on a U.S. missile. As NFR-90 became increasingly prolonged, the AAW differences and the friction vis-à-vis other ship programs offered a window of escape for the participating nations. Each possible AAW solution would produce different benefits for different nations through the work share; each effect would be closely and critically evaluated by each nation. The continuous negotiation could take year-long recesses in order to let each nation react to the consequence of each planning toll-gate.

Discourse as reflected in NFR-90

NFR-90 was a program for operational integration of frigate production that would meet many nations' needs. NFR-90 suffered from (among other things) a burden of being seen, apart from meeting naval needs for ships, also as a driver for harmonization of defence specifications, defence industry consolidation and of NATO interoperability. Such demands proved to come in conflict with operative demands as well as with corporate demands. Moreover, for the individual nations, there was a goal to bring advanced defence development and production to the respective domestic naval, defence and maritime industry. Furthermore, national defence-industrial priorities came in conflict with higher-order NATO rhetoric.

Companies were highly interested in NFR-90 since it was the largest NATO collaboration ever, and it was intended to set standards in technology and for collaboration principles. Military shipbuilders naturally are dependent upon military orders, so this was a very large business opportunity. Inhibitors on the corporate side have not been identified, but the unwillingness to compromise on technology solutions appears to be a generic inertia.

Governments seem to have been primarily driven by cost-reduction incentives and wanting to support national defence industry and promote preferred technological solutions in subsystems. The inhibitors on the government side were clearly the unwillingness to engage in compromise.

¹¹⁴ Sometimes previous procurement decisions for e.g. helicopters, missiles or aircraft carriers will highly limit the future procurement options for e.g. frigates. As one nation chooses e.g. a certain helicopter for service on ships, this will create technology path dependence in the supporting systems. The size and weight of the helicopter will establish a certain limited spectrum of adjoining systems on deck. After the installation of the helicopter, the nations have also created stronger bonds to that specific helicopter type and that specific supplier. If the next military vessel “inherits” those helicopters as well, this will put limitations on the specifications of the next frigate. Domestically, this will create even stronger bonds and dependences between a domestic supplier and the national military.

¹¹⁵ NAAWS: NATO Anti-Air Warfare System. FAMS: Family of Anti-Air Missile Systems.

According to Ellner, a study of the national documents on specifications in the early stages of NFR-90 (around 1980) reveals greater discrepancies than could be understood by studying the mutual document being handed over to NIAG (NATO Industrial Advisory Group). There was thus a pro-NFR discourse in NATO which wanted to downplay differences, and instead grow unison through gradual mutual approvals.

In retrospect, the entire setup for NFR-90 appears highly unrealistic. Under the guiding principle of NFR-90 creating “standardization, interoperability and flexibility”, nations were supposed to gradually define the common demands to a level of 50%, and let the other 50% be defined nationally. However, the nations were never able to come to terms on what was to be common, and the national demands inflicted back upon what was to be common. And all decisions on work share and common system design were to be decided upon in unison.

Organizational field as reflected in NFR-90

According to Ellner (2004), NFR-90 never actually had a possibility to succeed: from the beginning, the participating nations had regrouped contrasting national specifications under a minimalist common denominator defined as a “frigate”. On the one hand, the project fit with the multilateral goals under a NATO umbrella paired with the prospected economies of scale. On the other hand, the project was incompatible with national needs and priorities. As the program progressed, the national specifications respectively became increasingly sophisticated, aiming to reach demands that never would have been formulated in a national program. The initial, militarily defined, shared demand for a common frigate gradually became subordinate to industrial interests (either on a national level or under different coalitions of industrial interests) (Ellner).

NFR-90 shows how national MICs resist the intended set-up of the project. On a higher-order level, nations pledged allegiance to the NATO goals. In the ongoing negotiations, however, nations lobbied for national companies and created alliances around technology choices. There were strong bonds between national militaries, defence authorities, ministries and defence companies.

Ellner also stressed two factors that increased the frictions between the participating nations:

- *National choices in naval strategy*: For example, the U.S., France, Italy and the UK have aircraft carriers. Different choices of size and weaponry, as well as the timing of procurement plans – these factors all affected the domestic background that the nations brought into the NFR-90 negotiation.
- *National technology subsystems choices*: Each nation had its traditions of the subsystems in naval ships. The propulsion technologies in e.g. Germany, France and the UK were quite different, each having their domestic suppliers. Since each nation had the subsystem integration responsibility domestically, such choices would affect their assessment of different technology alternatives. Different sorts of propulsion set different and quite specific demands on hull design, length/breadth, propellers, type of hull material (what type of steel sheets, paint etc.). All nations were aware of such domestic inertia and therefore had an interface of compromise institutionalized into the cooperative setup from the outset.

A subtle detail in the ongoing development of a program such as NFR-90 is how nations strive to man different positions in committees in order to protect national defence-industrial capabilities and interests, as well as to be able to affect the further development of the project. The staffing is thereby ridden by vested interests. The nomination of chairmen of committees is thereby a delicate matter. These aspects are not apparent in the secondary sources that have been studied; these are details that have been described during interviews.

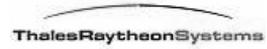
Discourse and action come into stark contrast in NFR-90. Nations had expressed in NATO, through discourse, firm commitment to a defence program that was seen as driving several politically preferred developments. As discourse was to materialize into action, NFR-90 confronted and provoked massive negotiation processes to go through, all demanding approval from all concerned nations. Priorities within each nation proved to exert strong resistance, and the national MICs and their inherent technology choices projected different outcomes for each nation. During the life of NFR-90, there was massive negotiation. Each passed bureaucratic hurdle created new challenges for the cooperation.

In NATO, there was a discourse based on a suggested preference for a shared NATO defence market. This argument proved to come to a complete failure in the conflict towards the non-united, but very similar national institutional logics that strongly prioritized domestic benefits and priorities, and showed very little adherence to rhetoric promises for shared defence development.

So why did NFR-90 fail? We may see a number of parallel, interrelated or intertwined explanations: there were too many issues to agree upon, and different timelines; national, European or U.S. defence industry priorities came into stark conflict; a fundamental change of the security policy context occurred – the end of the Cold War. There was never an enduring period of consensus.¹¹⁶ Ellner states that the ultimate reason for the failure of NFR-90 was that the ambition of the project was simply too large and revolutionary. It contained political, strategic and industrial problems and challenged too many communities. The contradictions (in the specifications for the frigate) that were built into what had to be negotiated were too great.

¹¹⁶ A striking characteristic of NFR appears to be the constant uncertainty. The nations concerned must have shown extraordinary commitment within NATO since they engaged in such a revolutionary collaboration attempt, and did not give up earlier.

9.2 ThalesRaytheonSystems



Introduction

This case will describe the creation in 2001 of ThalesRaytheonSystems (TRS), a joint venture between Thales and Raytheon.

The case study has the following disposition: the development that preceded the creation of TRS is first described, followed by a description of the process of creating TRS. After that, there will be a description of how TRS was presented and launched, and a brief overview of the business development of TRS. Finally there will be a brief account of the results and the present state of TRS. The main focus of this case study is on the creation of TRS, what the demands were for approving the creation of TRS, and the implication of a strategic, transatlantic joint venture.

Most of the respondents that are attributed in this case study demanded “no quotes” at the interviews. Therefore the interview sources are mostly attributed to place and year, never with a specific name.

The companies

1. Thomson-CSF/Thales¹¹⁷

Thales has evolved from *Compagnie Française Thomson-Houston*, founded in 1893. Thomson-CSF was established in 1968 when Thomson-Brandt merged its electronics arm with that of *Compagnie Générale de Télégraphie Sans Fil (CSF)*. Thomson-CSF changed its name to Thales shortly after its acquisition of the UK defence company Racal in 2000. Thales' major shareholders are the French state (27.1%) and Dassault Group (25.8%)¹¹⁸.

Thales had a very wide range of activities in 2008. It is usually described as a defence electronics company. It supplies e.g. combat systems, radar, electronics for defence systems, communication systems, aerospace surveillance, air defence systems, naval defence systems, avionics, simulation and sonar. In other words, TRS does not develop products and

¹¹⁷ Note that Thomson-CSF changed its name in 2001 to Thales, and these two names will be used in accordance with this. It is essentially the same company.

¹¹⁸ These percentages were involved during spring 2009 in a process where the French state shifted Thales shares to Dassault, thereby forcing these companies to consolidate parts of their businesses. The French state chose in May 2009 to transfer Alcatel-Lucent's Thales shares to Dassault.

platforms, but rather supplies systemic capabilities. It is renowned in the defence industry for its “multi-domestic approach” – it aims to have a domestic presence in many nations¹¹⁹. Thales has been by far the most active global company in acquiring companies and in creating joint ventures in domestic markets with local defence companies. It has for a long time been among the ten biggest defence companies in the world. The previous entity Thomson also produced a wide range of consumer electronics products, which now is not a part of Thales. It had a defence turnover of 60% in 2007. Its headquarters are in Neuilly-sur-Seine (west of Paris). Thales’ 2007 turnover was € 12.3 billion, and it had 68,000 employees.

The French state has for a long time had a minority ownership in Thomson-CSF/Thales. Shares of the company have also been moved between different other French defence companies that the state also has minority shares in.¹²⁰ France strove from the early 1960s not to be dependent on any other nation in defence technology. The French president Francois Mitterrand nationalized significant parts of the French defence industry in 1981 and 1982. One of those companies was Thomson-CSF. According to interviews in France in 2003, this nationalization only marginally affected Thomson-CSF’s strategies. In 1992, France declared in a defence White Paper that France’s defence industry should become a part of the European defence industry base. In 1999, the DGA director declared that transatlantic links would thenceforth be the most important component in defence cooperation.

Thomson-CSF attempted to acquire LTV’s bankrupt missile business in the U.S. in 1992, but the acquisition was blocked. Thomson-CSF and LTV had a joint project in the 1980s, offering the U.S. VT-1, a derivative of the French missile Crotale. The U.S. chose another alternative. According to outside analysts, other interested buyers played upon scepticism in Congress about French handling of U.S. defence technology, and thereby made Congress block the attempted acquisition, so that a U.S. company could acquire it instead (Richardson, 1990; Briody, 2003). According to Thales respondents, LTV was “simply too sensitive” – it had e.g. defence technology development for Patriot missiles and Theatre High-Altitude Area Defence Missile System (THAAD) (interviews) Thomson-CSF also attempted to acquire DRS Technologies (U.S.) later in the 1990s, but was rejected¹²¹.

2. Raytheon

Raytheon Company is a U.S. defence company. It is the world’s largest producer of guided missiles. It is also a major producer of radar (military and civil), command and control systems and different types of naval navigation systems and instruments. Raytheon was established in 1922, and took its present name in 1959. It has around 73,000 employees. It

¹¹⁹ Usually by acquiring a domestic company that is established in the national “defence infrastructure”; established in the MIC.

¹²⁰ The overall state defence-industrial ownership is pooled in a holding company, SOGEP. Over the years, this reshuffling of state interests in Thales is difficult to interpret. As French defence companies acquire other French defence companies, or parts of other French companies, they often pay with shares in their own company, and the State adjusts its minority share in the acquiring company. No large Franco-French merger or acquisition can be completed without the consent of the French state, and this has always been the case. (Dussauge & Cornu, 1998; Giovachini, 2000; Lundmark, 2004)

¹²¹ DRS was acquired by the Italian company Finmeccanica in 2008.

has a 90% defence turnover. In 2007 it was the world's fifth largest defence contractor. Raytheon grew rapidly in the 1990s, acquiring E-Systems (1995), Chrysler Corporation's defence electronics (1996), Texas Instruments' defence unit (1997) and Hughes Aircraft's defence business from General Motors in 1997. Thereby, practically all U.S. missile production became centred in Raytheon. It has its headquarters in Waltham, Massachusetts. Raytheon's 2009 turnover was \$25 billion and it had 75,000 employees worldwide. Raytheon's main non-U.S. assets are in the UK, Canada and Australia.

Thomson-CSF/Thales' and Raytheon's previous transatlantic collaboration history

Thomson-CSF could not fully participate in NATO-led defence programs during the 1980s, due to the French weaker commitment to NATO since 1966.¹²² Therefore, the French state held a disproportionately large share of R&D funds in order to make French companies a part of the NATO technology development. (Interviews at TRS, June, 2009)

Thomson-CSF earlier had a U.S. Army collaboration program, RITA (*Reseau Intégré de Transmissions Automatiques*). RITA was first a Franco-Belgian project for army communication, initiated in 1974. It was led by Thomson-CSF and the Belgian Thomson subsidiary, and was fielded in 1982. The U.S. Army later chose RITA for equipping 26 U.S. Army divisions between 1986-1992. Margaret Thatcher sent a personal telex to Ronald Reagan, stressing the "special relationship" between the UK and the U.S. – and that he should choose the Plessey (UK)-Rockwell (U.S.) solution. Thomson-CSF partnered with the U.S. company GTE for the bid to the U.S. The Thomson-GTE bid was however at \$4.3 billion, and the Plessey-Rockwell bid at \$7.4 billion – so the Thomson-GTE bid won. RITA was also acquired by several other NATO members. RITA was the largest foreign defence contract to the U.S. at that time (apart from just a couple of British imports). In 1992, a second version (RITA 2000) started to be developed together with Italy, Spain and Portugal. It was deployed in 1998. Thomson then had to further team up with GTE, since the production of the system had to be in the U.S. GTE was acquired by General Dynamics in 1999. (Les Echos, April 13, 1992, Brzoska & Lock, 1992; www.janes.com, www.jya.com (GTE); Time Magazine, April 18, 2005)

Several respondents have stressed that the creation of TRS was facilitated by previous collaboration history between the two. Thomson-CSF also had collaboration with Hughes Electronics for an air-defence simulator and with Raytheon for a mine-hunting sonar to the U.S. Navy (in the joint venture ThoRay). Hughes Electronics had its biggest cooperative partner in Thomson-CSF. Hughes was acquired by Raytheon in 1997 for \$9.5 billion. (Les Echos, 1992; Bitzinger, 1999)

ThalesRaytheonSystems grew out of a history of project-specific collaboration between Thales/Thomson-CSF and Raytheon, the most important of which was aimed at upgrading the NATO ACCS (*NATO Air Command and Control System*). Thales (at that time Thomson-CSF) and Raytheon formed in December 1996 a 50/50 joint venture. This joint venture, based in Paris, was called *Air Command Systems International (ACSI)* and aimed at winning

¹²² France withdrew its military forces from NATO's integrated military command in 1966. As a consequence the NATO headquarters moved from Paris to Brussels.

the NATO ACCS Level of Operational Capability (LOC) improvement program. ACSI was awarded the *ACCS LOC 1* in July 1999 by the NATO Command and Control Management Agency. (Lorell et al.) Thales and Raytheon thereby took charge of the NATO standardization for Air Command and Control Systems. (Interviews at TRS, 2009)

Thomson-CSF and Hughes competed in Switzerland in the mid-1990s for developing the Swiss air defence. Thomson-CSF and Hughes were persuaded by the Swiss to combine their efforts in a joint bid for the system, named Florako. In November 1998 Thomson-CSF and Hughes (by then a part of Raytheon) were awarded the contract. After Florako – and the Swiss match-making – “it was a natural move to move from project cooperation to strategic cooperation”. (Interviews at TRS, 2009)

All the cooperation and joint projects that led up to TRS were between Thomson-CSF and the Hughes radar and air defence facilities in Fullerton, California; therefore the description of cooperation between Thales/Thomson-CSF and Hughes.

Thomson-CSF and Raytheon created the ACCSI organization for managing the NATO ACCS contract. The first ACCSI order was in 1999. According to Thales respondents, this became “a prototype for ThalesRaytheonSystems”, which paved the way for TRS. (Interviews at TRS, 2009).

Negotiating the creation of the TRS joint venture

According to an interview in Washington D.C. in 2001, the process of getting TRS approved by French and U.S. authorities took 26 months. The approval was “successful due to very careful groundwork”. An initial broader list of areas of cooperation was gradually slimmed down.

Government concern

A creation of a Franco-U.S. defence industry entity will raise a number of concerns in both nations. The main concerns in the negotiations (according to one U.S. respondent involved in the negotiations) were U.S. government controls over and concerns about technology transfer, as well as antitrust issues – i.e. that TRS should not monopolize or achieve too large a share of the market – but not the security issue. According to the French Defence Attaché in the U.S. in 2001, the main European worry was security of supply, and the main U.S. concern was export control of defence technology. Furthermore, France and the U.S. had strong links on the earlier R&D phases, but very little interaction in development of systems and in production. According to a TRS French spokesman in March 2001, the major U.S. government concern was the fear of technology leaks, based on a general scepticism vis-à-vis France. In fact, the U.S. and the French authorities had to learn each other’s defence technology regulations; they had not fully tested them against each other before. Another issue was the U.S. FCPA (Foreign Corrupt Practice Act) recently introduced into OECD, and therefore this was a big issue that particular year. (Deschars, 2001) The French government, according to Thales respondents, was not very concerned with the creation of TRS. There was a list of confidentiality issues that had to be secured. According to TRS respondents, it is “mainly an industrial

story”. In several interviews in the U.S. in 2001, some respondents were sceptical about Franco-U.S. defence cooperation since France had had defence export to Syria, which was seen as hostile to the U.S.¹²³ A U.S. Congress source said in an interview that the U.S. “did not want to add any uncertainties”, that is, the U.S. should be in strict control of its own defence technology. In Europe the TRS idea was investigated by the European Commission, as to whether this joint venture could jeopardize European states’ sovereignty in defence technology.

It is thus difficult to identify what were the main concerns in the negotiations – different respondents have different assessments. Technology control seems to be the most common denominator. In documents received from Pentagon and TRS in 2009, it is clear that numerous processes, licences and reviews had to be made on each government side, as described below.

Defining the scope of TRS

According to a Pentagon respondent in 2001, who led the U.S. part of the approval process, Thales and Raytheon chose the defence technology area because it was important for NATO, but not heavily classified. Moreover, the two companies had already cooperated in the area. If they had tried to start doing so within a more sensitive military technology area, “the deal would never have come through”. Thomson-CSF, according to the respondent, had had some setbacks in establishing itself on the U.S. market (notably the failed LTV acquisition in 1992, DRS Technologies in the late 1990s, and some other non-disclosed acquisition attempts). Therefore, Thales took a more cautious course that built upon established contacts and experience. The main focus for TRS became ground-based radars, air defence and ground-based air defence.

A Raytheon spokesman said that Thales and Raytheon foresaw important growth in Air Defence Command and Control, and that they wanted to introduce high-performance long-range radars into the EU and U.S. systems. (Deschars, 2001)

Government scrutiny

For a joint venture like TRS to be accepted, it had to be scrutinized in the U.S. by four processes (to begin with):

- *CFIUS*: Committee for Investment in the U.S., led by the Department of the Treasury¹²⁴.
- *FOCI*: (Foreign Ownership, Control or Influence), if classified technology is involved. “To obtain information that indicates whether offerers/bidders or contractors are owned, controlled or influenced by a foreign person [entity] and whether as a result the potential for an undue risk to the common defense and national security may exist.”¹²⁵ FOCI is handled by the Defense Security Service, a unit within the Department of Defense.

¹²³ In parallel, these critics were sceptical about defence cooperation with Italy due to its defence export to Libya, and about defence cooperation with Germany due to its defence export to Iran.

¹²⁴ With the participation of the Departments of Defense, State, Commerce and Justice.

¹²⁵ https://www.dss.mil/GW/ShowBinary/DSS/isp/foci/foci_mitigation.html

- *Hart-Scott-Rodino process*: The Hart-Scott-Rodino Antitrust Improvements Act of 1976. This process has to review and approve a merger over \$50 million involving defence technology. It is led by the Pentagon together with the Ministry of Justice.
- *Exon-Florio process*: The Exon-Florio Amendment was enacted by the United States Congress in 1988 to review foreign investment within the United States. All foreign investments that might affect national security may be reviewed and if deemed to pose a threat to security, the President of the United States may block the investment. According to the amendment, the president may block the investment when “*there is credible evidence that leads the President to believe that the foreign interest exercising control might take action that threatens to impair the national security.*” It is handled by Department of the Treasury.

Apart from these processes, there are several committees and departments in the State Department, Department of Commerce, Department of Defense and committees within the military that also have to approve. Sapolsky (1972) describes in detail how a large defence program (exemplified with Polaris), through its different development phases, must be managed in order to satisfy and get approval from numerous different agencies and committees in the U.S. Apart from the formal processes, there are also several informal processes and gateways to clear, where people must be convinced.

In Europe, TRS had to undergo scrutiny by the French Ministry of Defence, and by the EU Commissioner for European Competition. TRS had to sign a *Convention de supervision des Intérêts de Sécurité*, as a Joint Venture Agreement annex. In the TRS-SAs Security Committee regarding export control, the French Ministry of Defence (MoD) has two representatives. TRS has an appointed Technology Control officer who reports once a year to the French MoD. TRS also has an *Export Control Manager*, who is the interface towards the MoD regarding Export Control. There are also a number of certificates and policies that TRS has to comply with, *vis-à-vis* the French authorities. TRS has a U.S.-French/Raytheon-Thales *Compliance Committee* which has to meet at least four times a year, and which reports to the Board of Directors of the TRS Holding Company. (Printed information from TRS, 2009)

There were also joint declarations by the U.S. and French procurement officials, Jacques Gansler (U.S.) and Jean-Yves Helmer (France). The last formal government approvals came on April 15, 2001, but Thales and Raytheon waited until the Le Bourget Air Show in Paris to announce the joint venture, but started their operations on June 1, two weeks before Le Bourget.

In parallel with all the government consents, the companies and the respective defence ministries had to sign a number of joint agreements and contracts. This created a web of committees and control functions that are to continuously oversee and follow TRS' operations. The central function is the Compliance Committee which meets four times a year. (TRS information material, 2009)

According to an interview at DGA in 2003, the French state held a minority share in Thales, but is a passive owner with a golden share. There is also in France a correlation between ownership and influence in a company; above 1/3 of the shares gives the owner *minorité de blocage*, i.e. that minority owner must approve the *assemblée general extraordinaire*, i.e. the innermost board of the company (compared to the *assemblée ordinaire*) (Lundmark, 2004).

Discussions started early in 1999

Some respondents in the UK, as well as in the U.S., stressed that Thomson-CSF, by acquiring the UK firm Racal in 2000, thereby obtained a much stronger U.S. presence, and that this created beneficial synergies on the U.S. market and also in some way strengthened the idea of TRS when already approved Racal business came into Thales' control.

All respondents agreed that Raytheon could never acquire Thales or vice versa, nor could they merge. None of the two governments would have approved of that. Furthermore, Thales' transatlantic business is clearly restricted and has to be approved by the French government. (Interviews: Washington D.C.; London, 2002; Paris, 2003, 2009)

According to several respondents, there cannot in practice be any *direct* Thales ownership of U.S. defence companies, since the French state is a large minority shareholder in Thales with a golden share. Those respondents stressed that it would not be acceptable that any U.S. defence interests may be disturbed by other states' influence due to those states' ownership in defence companies. Thales has a U.S. affiliate: Thales Communications Inc. (TCI). This company works with defence communications products. It is organized so that Thales has a "proxy board"¹²⁶, meaning that there is a board appointed by Thales for the company, but that TCI is being run by U.S. citizens. Thales has very limited insight into the company's operations, and cannot transfer technology from it to outside the U.S. A proxy board is standard procedure in the U.S. for a company which is dealing with sensitive defence technology, and which is owned by a non-U.S. company (www.thalescomminc.com). This is therefore not a *direct* ownership.

Launching TRS

TRS was officially launched in June 2001 at the Le Bourget Air Show in Paris. They announced that they then had all the necessary government approvals on both sides of the Atlantic. In press communiqués from the companies, the creation of TRS attracted substantial media attention in being the "first, transatlantic, strategic joint venture". The initial scope of TRS was formulated as "air defence/command and control centres and ground-based air surveillance and weapons locating radars" – high priorities in the NATO DCI¹²⁷ effort. (Lorell et al.) The joint venture was presented thus: "TRS heralds a new era in transatlantic relations. This joint venture takes us beyond a program-by-program arrangement to one that will create a long-term, stable relationship of benefit to our customers and our respective customers alike." (Joint Thales-Raytheon press release June 18, 2001)

TRS received unusually much media coverage for a joint venture. For one thing, transatlantic joint ventures were (and are) rare, and Franco-U.S. defence cooperation is scarce. A

¹²⁶ A *proxy arrangement* "places the company under the control of U.S. trustees, the foreign owner derives the benefit of the company but abdicates control. ... Trustees are appointed by the company and approved by the U.S. government." Trustees must be U.S. citizens. All communication is controlled by the trustees. "Foreign owner has little influence over the daily activities of the organization." There is also another arrangement, *SSA Companies* (Special Security Arrangement), where the foreign owner has access to financial and proprietary information. There is also a shared board between the U.S. management and the foreign owner. "Proxy and SSA companies are U.S. companies under foreign ownership or control". (Information in e-mail from U.S. Defense Department, June 2009).

¹²⁷ NATO DCI (Defence Capabilities Initiative) was a NATO initiative from 1999 intended to decrease defence technology differences within NATO in a number of identified defence capabilities.

Raytheon source said: “The joint venture has been two-plus years in the making; it’s been a laborious process. But most challenging was the business of the regulatory approvals.” (Defense Daily International, June 22, 2001)

Design of the joint venture

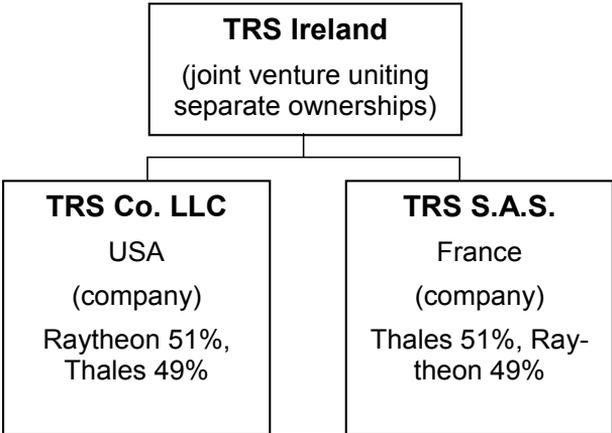


Figure 9.3. *ThalesRaytheonSystems’ (TRS) organizational design* (Source: own)

TRS was designed to pool the strategic interests and future commitments of Thales and Raytheon within a specified area. It was not designed solely for a specific project.

The corporate setup of TRS is one U.S.-based company in Fullerton, California, owned 51% by Raytheon and 49% by Thales. There is a parallel French company in Neuilly-sur-Seine, owned 51% by Thales and 49% by Raytheon. On top of this, there is a joint joint venture company headquarters owned 50-50. The shared joint venture company headquarters is based in Ireland and does not have any production; it is an organizational construct in order to legally unite the respective companies’ ownerships.

The novel aspect of the setup is that it was it was the first *strategic* transatlantic joint venture. There had been previous *project* joint ventures. The crucial difference is that a project joint venture is designed for accomplishing one specific project or order, and in the defence industry it is thereafter often dismantled. The strategic joint venture is designed in order to pool long-term strategic interests in a specified geographic area, market segment or technology area. TRS has a product area focus which is defined as “air defence systems”. Within this broad area, the U.S. and French authorities have meticulously excluded certain technology areas from what TRS can cooperate on (according to interviews). These lists of exclusions are not public.

In an interview with a senior manager at Thales in 2003, he described TRS as follows. For the joint venture to go through, it could not be U.S. or French. The board meetings had

to be held in Ireland. TRS has three boards: one for the U.S. company, one for the French company, and one for the Irish. TRS had a French chairman, and a U.S. CEO. The company was a success (for being a transatlantic joint venture) since both nations had placed orders in the company. "It is not a brilliant case, but still a success." Previous cooperation and orders regarding ACSS and NATO have been brought in under the TRS umbrella.

Functioning of the joint venture

According to U.S. interviews in 2001, TRS should be understood as a test case of the U.S.-France possibilities of mutual development. Important technology areas that were not too sensitive would be closely followed by (especially) U.S. government officials to see whether TRS would work. (Interviews)

Integration is not occurring with assets in TRS, but strategies are slowly integrating. They have mixed teams with common training. There are no jointly developed products. However, according to TRS promotion material, TRS's unique features were "a seamless organization to fit customer needs" with "access to parent company's technology, product and system portfolio, processes and critical skills and to their local presence around the world" and "an exceptional combination of domain knowledge, technical expertise, and industrial and commercial capacity" (TRS information material, 2009). These declarations could fit with very many non-defence strategic alliances or mergers, but in the defence industry the possibility to combine defence-industrial assets and capabilities over borders is highly restricted.

The UK defence business in Raytheon UK that was in the same business area as TRS was excluded from TRS integration, which was a Raytheon-internal decision. Thales and Raytheon also divided their export activities between them (interview at Raytheon UK, London, 2002). The Irish company for TRS is "created out of tax issues", and is "just a mailbox" (interviews at TRS, 2009). However, the Irish company does have a board, and board meetings must be held there.

Purpose of TRS

The purpose of TRS was not to address a new market. It was a *strategic* alliance – to share a business. Thales and Raytheon aimed to control the market and become the number one in every segment of TRS's scope. TRS should thereafter have other competitors as sub-contractors. The business area of TRS was in 2009 formulated as "air defence systems, air operation command and control systems and C4I¹²⁸, 3D air defence radars, battlefield and counter-battery radars and life-cycle support". For the agreed (and government-approved) business scope, TRS is the only entity in Thales or Raytheon that can sell those products. There are some exceptions, e.g. the COBRA radar system, ballistic missile radar and everything that has to do with missile defence. "TRS is a strategic marketing tool, owned by Thales and Raytheon, A tool belonging to the shareholders. 1/2 of revenues go to each company, 1/2 of EBIT. ... It's a very powerful tool, we do not know how powerful. We are constantly discovering new things." TRS must be understood as a tool. It is primarily

¹²⁸ C4I: Command, control, communications, computers and intelligence.

a way for Thales and Raytheon to pool their product portfolios and jointly address the world market. Depending on the customer, they will use either the U.S. or the French TRS unit for addressing the customer. (Interviews at TRS, 2009)

A BAE Systems representative saw TRS as a way for Thales and Raytheon to “segment and carve up the market between them”. Furthermore, substantial and interdependent integration of the companies could only arise with joint production. (Interview, London, 2004)

What came out of TRS?

According to competitors’ comments, in 2004, TRS had had a slow development. They had received a small number of orders. According to Thales representatives, it is progressing in the planned manner. According to its competitors, not much progress can be seen. (Interviews, 2004) According to www.raytheon.com in 2006, “The successes of the joint venture...have been based on the consolidation of experience from the company’s two locations during the past five years.”

According to Thales respondents in 2009, there had been a gradual deepening of bonds and business through a series of projects. Creating TRS demanded crossing a formal threshold that required a lot of effort to cross, but it was not a very dramatic move for the companies. ThalesRaytheonSystems was a big media issue around 2001, but it is non-controversial in 2009. (Interviews at TRS, 2009)

There is still clear separation between the two domestic markets. After eight years (June, 2009) they had not sold any French product to the U.S. or any U.S. product to France. (Ibid)

The RITA, ACCS and Florako projects have been instrumental for TRS’s growth and in shaping TRS. The joint “solidity, commitment, support of the two governments and the combined synergies” have been central in winning ACCS. In the spring of 2009, TRS had 1600 employees equally divided between the U.S. and France. TRS describes itself as having about 1/3 of the combined markets of TRS’s segments. They see their total market as being around \$2.5 to 3 billion. In 2009, TRS had delivered defence systems to e.g. the U.S., France, Switzerland, Mexico, Canada, Norway, Finland, Estonia and Malaysia, and also supplied to joint NATO capabilities. It is, however, difficult to assess or judge whether this is due to the creation of TRS, or whether those businesses would have ended up in Raytheon or Thales anyway. (Ibid.)

Business practice in 2009

At defence trade shows, it is essential how a company places the products under national flags and how products are combined. There may be two TRS flags, one under each company’s booth. The same product will have a very different reception with some customers depending on whether it is marketed as a French or as a U.S. product. “How to present a TRS product under which flag is an essential marketing question” (Ibid).

There are clear limitations to how much Thales and Raytheon can integrate their activities, and to what extent they can cooperate and technology synergies can be exploited.

Thales and Raytheon have pooled a joint development into TRS, the GM400 radar. This is the most far-reaching cooperation between the two mother companies. GM400 is a ground-based radar that they have developed together. “Thales spent a fortune, €100 mil-

lion.” It has been sold to Malaysia through its U.S. TRS facility, and Finland, Estonia and Germany through the French TRS facility. (Interviews 2009, press release 2010-12-20)

The cooperation within TRS is on the U.S. side solely with the previous Hughes facilities in Fullerton, California. There is no real cooperation between Thales and other parts of Raytheon due to TRS. In Raytheon, the missile business is integrated and rationalized to some extent between the Hughes and Raytheon facilities. The ex-Hughes air defence and radar facility in Fullerton is still quite autonomous vis-à-vis the Raytheon HQ. (Interview, June 2009)

9.2.1 In-case analysis TRS

“TRS would not have been possible in 2003.” Thales manager, Paris, 2003

This case exemplifies the challenges that confront a creation of a joint venture in the defence industry. As this joint venture was also transatlantic and strategic, the complexities increased.

Integration

TRS shows the restrictions set upon transatlantic *ownership* integration. The failed attempts of Thomson-CSF to acquire U.S. companies (LTV and DRS Technologies) had previously proved that it was more difficult for a French company than a UK company to acquire a U.S. defence company. A joint venture was therefore an attractive solution for Thales.

Thales was a much more internationalized company than Raytheon, and Thomson-CSF/Thales had for decades had a multi-domestic strategy. Thales therefore had cooperation and border-crossing development built into its overarching business model. Raytheon was used to developing for the U.S., and selling wholesale to other nations. In this sense the companies were different.

TRS was not the first transatlantic joint venture, but the first transatlantic, *strategic* joint venture. Several respondents have pointed out that a problem with program-related joint ventures is that they become vulnerable if the procurement becomes too extended in time. The different governments tend to drift away in their respective priorities and budgetary levels as time passes, thereby making the initial agreement increasingly dated. TRS is a pooling of equity, but it is rather a pooling of market interests and marketing strategy; there is virtually no operational integration in the true sense of the word.

Thomson used to cooperate with the Hughes plant in Fullerton, California, and Hughes was acquired by Raytheon. TRS’s activities only concern the ex-Hughes operations in Fullerton. Respondents point out that Raytheon’s U.S. acquisitions had not led to far-reaching integration between Raytheon and e.g. Hughes. So there is institutional resistance also domestically to operational integration.

TRS also shows how companies are restricted in what *operational* integration can be performed. Kline & Rosenberg (1986) described the innovation process in the following manner:

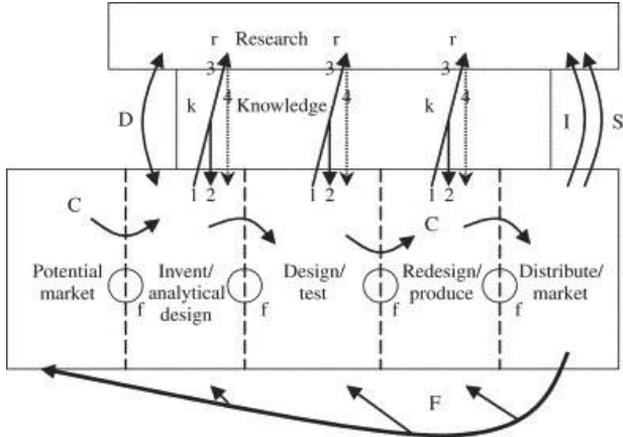


Figure 9.4. *The chain-linked model* (Kline and Rosenberg, 1986, p. 290)

This model stresses that in commercially successful radical innovations, the research solutions in one arena are influenced by the ideas and opportunities in other arenas. Kline and Rosenberg emphasized the incremental innovations. In the case of the innovation processes of Thales and Raytheon, and how their respective results and innovations are united within TRS's offered defence systems, the picture is somewhat different. According to interviews at TRS (June, 2009), the processes that are pooled into TRS can be described as follows:

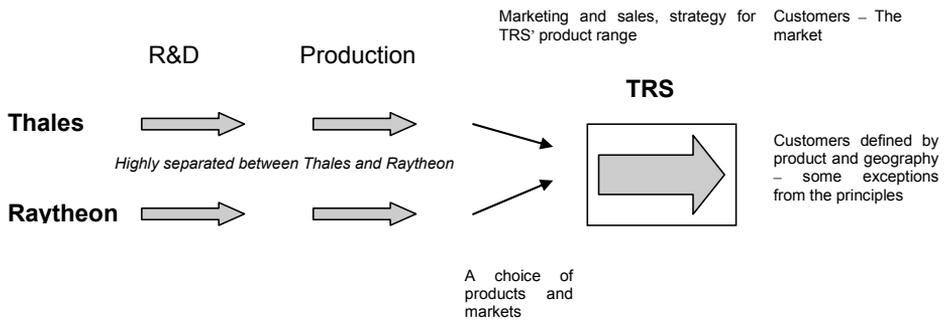


Figure 9.5. *Integration and cooperation between Thales and Raytheon into ThalesRaytheonSystems* (own interpretation from interviews)

The above figure is a description (based on interviews) of how TRS activities broadly relate to the processes within Thales and Raytheon. TRS documents describe TRS as a strategic platform with technology access to both Thales and Raytheon. The respective companies' technologies and subsystems are combined into TRS products. For the companies, R&D is separated, production is separated, but marketing and sales are combined. There is coordination between governments and within NATO in early planning phases of

R&D in order to harmonize the NATO infrastructure, and the Thales and Raytheon R&D infrastructures. The early government planning and coordination processes (closely coupled to military capabilities) are domestically sensitive and classified processes. After production, certain chosen segments and product groups are pooled into TRS. Each company has its own separate strategy that rises above the joint TRS strategy. (Interview, June 2009)

The national innovation processes that relate to Thales or Raytheon have not been closely analyzed for this thesis. Within each nation, there is a continuous interaction between the company, the military user and the procurement authority (a generic defence procurement approach). It is however clear that there is very limited interaction between the R&D processes directly related to Thales' and Raytheon's respective process in France and in the U.S. Within TRS, there is no technological innovation. Nevertheless, there is innovation in the sense of new combinations of subsystems developed separately at Thales and Raytheon.

In defence production, the R&D and the production are almost exclusively performed only on the basis of an order from an end user; the innovation process is predominantly activated by military orders for R&D or production. Companies do not finance the innovation themselves; this is perceived as too costly and as involving too high technology risks and business risks. If we see it from a TRS perspective, TRS does not finance R&D. TRS's customers will order a defence system which is a combination of innovation outcomes from both the U.S. and the French innovation processes. There is a deliberate separation between the two companies' technology innovation processes; this is highly regulated through a number of clauses and agreements.

To sum up, TRS is a compartmentalized joint venture, representing the ownership integration that is possible between the two. It is unusual in being transatlantic, and also in being strategic. The operational interaction is only allowed within a sharply defined product portfolio, and only in marketing and sales.

Discourse as reflected in TRS

TRS is a corporate venture that had to convince sceptical MICs. Thales and Raytheon had clear strategic incentives for creating TRS in order to dominate the world market through their combined market positions and product portfolios, and to become the number one in every segment of TRS's scope, thereafter turning present competitors into subcontractors. Their driving forces are very clear, and no inhibitors are expressed in the TRS rhetoric.

The two concerned governments, however, have required considerable efforts from Thales and Raytheon in order to convince the governments that this joint venture does not violate or jeopardize national security and military concerns. Thales and Raytheon have had to process and pass considerable regulatory processes – this burden of proof manifests the inherent scepticism of the MICs and constitutes clear inhibitors. Overall, the governmental inhibitors reflect a sceptical response from national MICs, primarily concerning technology control and technology transfer. Thales and Raytheon had to convince the two governments on the benefits of the corporate institutional logic of promoting Thales and Raytheon dominance, over the back-bone government scepticism towards a transatlantic, strategic JV like TRS.

Organizational field as reflected in TRS

TRS shows how the creation of a transatlantic joint venture demands extensive bureaucratic processes to clear with the concerned governments. When the joint venture also is strategic and Franco-U.S., the complexities increase. The resulting joint venture is a negotiated construct built on distinct firewalls: no R&D sharing, synergies only in marketing and product combinations, interaction allowed only within the precisely defined business segment and only with the ex-Hughes facility in Fullerton. The fact that neither nation has acquired products from the other is proof of the separation. Products within TRS's defined segments are sold to other buyers than the U.S. and France, and if sold to these two the products emanate from Raytheon in the U.S. or from Thales in France. At TRS's homepage (May 2010) it is declared:

“...we optimize research and development opportunities from our parent companies to provide advanced solutions in terms of operational performance, reliability and affordability. ... With the technological strengths of Thales and Raytheon, TRS is positioned to offer customizable solutions matched with a coordinated support for all customers throughout the world”.

The French MIC and the U.S. MIC both required considerable regulatory scrutiny before approving TRS. The U.S. clearly demanded more. The respective militaries have both acquired from TRS, but each one buys only products that emanate from the national mother company (Raytheon or Thales).

Conclusion

It is difficult to judge the impact of TRS. TRS itself claims that it has been a success, pointing to a large increase in sales. It is reasonable to assume that this business otherwise could have ended up in Thales or Raytheon separately, regardless of TRS. Respondents from other companies tend to downplay the impact of TRS on the transatlantic defence industry integration. Respondents from Thales and Raytheon claim that the first years of TRS will show its impact in the long run, as the defence market has very long planning periods.

Thus, TRS shows how the creation of a joint venture in the defence industry will have fundamental limitations on how much the concerned companies can create synergies, integrate the businesses and pool the innovation.

9.3 Joint Strike Fighter



Introduction

This case will describe the development of Joint Strike Fighter (JSF). JSF is a U.S.-led defence program for a military fighter aircraft. It is the largest single defence program ever. JSF will have a turnover of around \$300 billion for the development and acquisition of the aircraft and the estimated output of aircraft is around 2500.¹²⁹

The process and the period that led up to the decision to start this program are first described. Thereafter comes a description of how different alternatives were selected and reduced to two, and how these two competitors attracted non-U.S. industrial partners. Following this is a description of how the JSF program came to attract further industrial partners apart from the UK. Finally, there will be a brief description of how JSF has progressed until 2010.

The main focus of this case study is on the selection of non-U.S. industrial partners and the competitive conditions for the industrial consortia. This encompasses a period from 1984 to 2001.

Interviews were primarily made in 2001 in the U.S., but also in 2003 in France, and in 2004 in London. Most of the respondents that are attributed in this case study demanded “no quotes” at the interviews. Therefore the interview sources are attributed to place and year. Apart from these interviews, studies have been made of secondary material. E-mail enquiries and discussions were conducted in 2008.

But first a few words on the different types of military aircraft that will be discussed. Depending on the aircraft’s demands for landing and take-off, they are generally divided into the following categories:

- *CTOL*: Conventional Take-Off and Landing. This type of plane lands on conventional runways (1-3 km) at an airport/military base.
- *STOL*: Short Take-Off and Landing, an airplane that can take off and land on shorter strips, The NATO definition states that a STOL aircraft must clear a barrier of 15 m after 450 m of runway, and, conversely, must land under the same conditions. This

¹²⁹ The developed aircraft that is now for sale is called Lockheed Martin F-35 Lightning II.

puts higher demands on e.g. acceleration and deceleration, brakes, and other systems that are subject to higher demands at take-off or landing.

- *VTOL*: Vertical Take-Off and Landing, fixed-wing aircraft that can hover, take off and land vertically. VTOL puts extreme demands on the aircraft, and demands several quite different technology solutions compared to the other types.
- *STOVL*: Short Take-Off and Vertical Landing, an aircraft that can operate in both of the above modes.
- *Carrier variant*: it must be able to take off and land on the deck of an aircraft carrier, about 300 m long, which will be moving at about 35 knots on the water and is rolling with the waves. This involves a very short runway and puts extreme demands on the landing gear, brakes, shock absorbers, pilot visibility and other systems.

The development of JSF – A slowly emerging roadmap

NATO studies that were done during the fifties and sixties pointed to the need of aircraft that could start and land vertically, or at least on short strips. This was because the Soviet Union was expected to bomb airports and bases widely in case of war. Therefore, many research projects for vertical take-off began, most of them unsuccessful – e.g. Lockheed *XFV-1 Salmon* (U.S.), *Mirage Balzac* (France), *Fokker D.24 Alliance* (Netherlands), and *EWB VJ 101C* (Germany). Many different technical solutions and approaches were tried. Only two solutions were successful: Hawker from the UK with its *Harrier* (operational in 1969) and Yakovlev from the Soviet Union with its *Yak-38 Forger*. (Sweetman, 2004; Keijsper, 2007)

McDonnell Douglas of the U.S. acquired the licence for the Harrier, started joint testing and development in 1973 and thereafter developed it together with the UK for U.S. needs and exported it to several other nations under the name of AV-8B. There were two setbacks of the Harrier/AV-8B: it was subsonic (could not exceed the speed of sound), and it had a very high accident rate (which was kept secret).¹³⁰ The main success of the Harrier was when the UK sent aircraft carriers to the Falkland Islands. The Harriers shot down 31 Argentine aircraft (Dassault *Mirage* (Fra) and Douglas *A4 Skyhawk* (U.S.)), with no losses. These “combat-proven” successes were to convince Washington more deeply about the strength of VTOL. Spain had already acquired AV-8A, India acquired it in the mid-1980s, and Italy was planning to acquire VTOL aircraft. (Sweetman)

Based on this successful cooperation on the Harrier, the U.S. DoD and the UK MoD joined in a joint research effort in 1983 in order to create a *Supersonic Short Take-Off and Vertical Landing (STOVL) Fighter* (SSF). The first results of this cooperation led to a Memorandum of Understanding (MoU) being signed by the two in January, 1986. Four technological options were studied as options for SSF: Advanced Vector-Thrust (AVT), Remote Augmented Lift System (RALS), Ejector Augmentor (EA) and Hybrid Tandem Fan (HTF). Since the UK aviation industry was much smaller, British Aerospace and Rolls-

¹³⁰ In 2002, the Los Angeles Times made the story of the accident rate the centre of a Pulitzer-winning investigation.

Royce performed all the UK studies together. In the U.S., five competitive teams were formed: General Dynamics E-7, McDonnell Douglas 279-3, Rockwell International Baseline, Rockwell International Alternative and Vought TF 120. NASA AMES Research Center issued a quest for proposals (RfP) in May 1986, where four different types of propulsion solutions were to be funded. The best of these four was then to build a technology demonstrator (ASTOVL, Advanced STOVL) around 1990/91. The four teams that were awarded contracts by NASA were: McDonnell Douglas and Pratt & Whitney; Grumman and General Electric; General Dynamics and General Electric; Lockheed and Pratt & Whitney/Rolls Royce.¹³¹ (Keijsper)

British Rolls Royce was the authority on VTOL, and had also provided engines for the French *Balzac* attempt for VTOL, as well as for the German VJ 101C. The U.S. companies wanted in different ways to get access to, and hopefully surpass, the knowledge lead on VTOL held by Rolls Royce. (Ibid.)

The U.S. Marines decided in 1987 that they would replace all their existing fighters with the ASTOVL aircraft, thereby in one stroke making the entire project much more interesting for the competing companies. Around 1990/91 the U.S. Defense Secretary Dick Cheney made a radical overview of many aircraft programs, e.g. ATF, ATA, F-117, A-12 and A-6E. This resulted in several programs being either cut or terminated, which in its aftermath seriously undermined the business future of several U.S. producers of military aircraft. The U.S. Services still, however, wanted to replace existing aircraft with newer aircraft. As the Cold War recently and abruptly had ended, the demand and future outlook for military aircraft in the U.S. were highly unclear. In August 1991 the Pentagon issued an RfP for concept exploration for the *A-X* program (1992 renamed A/F-X). Five competing teams were given contracts: McDonnell Douglas and LTV; Grumman, Boeing and Lockheed; Rockwell, Lockheed; Lockheed and General Dynamics; and McDonnell Douglas and Northrop (the prime contractor being named first). Around this time, the U.S. Air Force had a *Multi Role Fighter* (MRF) program, which was merged together with A/F-X into a new program, *JAST*, in 1993. A/F-X alone was to replace the F-14, A-6, F-111, F-117 and F-15. (Keijsper, Sweetman)

The early years of JAST/JSF

The JAST was entering new and explosive territory in aiming to make an aircraft for the Air Force and the Navy. Previous attempts for “joint” aircraft had always ended up in separate versions.

In the early 1990s, the Pentagon faced a difficult acquisition decision when it came to military aircraft. The Air Force’s A-10 and F-16, the Navy’s F/A 18C/D and the Marine Corp’s AV 8B and F/A 18C/D were all facing the end of their operational lives and replacements would soon be required. In order to address this, the Air Force and Navy had launched four new tactical aircraft programs: F-22, F/A 18E, the AFX Stealth Fighter (joint Air Force/Navy) and the Multi-Role Fighter (MRF). The Navy had also asked the

¹³¹ Pratt & Whitney (U.S.), General Electric (U.S.) and Rolls Royce (UK) were the three existing, *large* engine producers in the U.S. and UK. There was also Allison (U.S.), acquired by Rolls Royce in 1995.

Defense Advanced Research Projects Agency (DARPA) to examine designs for a new Short Takeoff and Vertical Landing (STOVL) platform that could replace the Marine Corps' AV 8B. (Kapstein, 2004; Masson, 2009)

In the U.S. military, there are four different Air Forces, in contrast to other nations' one Air Force. The four Services: Army, Navy, Air Force and the Marines, have their separate aerial capabilities.¹³² They had also until the 1990s separately had strong bonds with certain companies who had designed specifically for each Service. In the 1990s, there were simultaneously, over a number of years, several developments that urged increased integration of the Services' acquisition of military aircraft:

- Corporate consolidation: In the beginning of the 1990s, there were still six separate prime producers of military aircraft competing for new contracts. By 1998, they were down to three: Lockheed Martin, Northrop Grumman and Boeing.¹³³
- End of the Cold War: Decreasing defence budgets forced defence planners to lower ambitions; the Pentagon could no longer finance that many different aircraft programs.

The Clinton Administration ordered a "bottom-up review" in 1993, striving for total savings of \$112 billion in defence spending from 1994-1998. The result was termination of AFX and MRF, and sharp cuts for F-22 and F/A-18E/F. These cuts also pushed a wave of massive consolidation in the entire U.S. defence industry.

JAST

In this budgetary environment, the Pentagon began to study the possibility of building a single, joint aircraft – a modular concept for all services with a high degree of commonality. It was primarily aimed for the Air Force and Navy at this stage and was initially named JAST (Joint Advanced Strike Technology). It would be a complex program in that it would have to meet the "myriad fighter requirements" of the two services, one of which relied on aircraft carriers to provide runways. The Marine Corps joined the program later in 1994. JAST was renamed Joint Strike Fighter in 1995. (Kapstein)

"Services should not be too joint. They should compete for resources; this creates competition and innovation." Director, Office for Acquisition, Technology and Logistics, Pentagon (2001)

The idea of a joint aircraft for several services met strong scepticism. It had been tried before, but the Services had previously not been able to come to terms regarding specifications, timeline, budgets, choice of contractor etc. In 1996, a Pentagon official stated: "We've tried this before... The TFX program [in the 1960s] attempted to build a universal airplane that did everybody's job and wound up doing everybody's job poorly". The Air Force General set in charge of JAST aired his scepticism, saying that the program was

¹³² The U.S. Army could not, since the 1948 Key West Agreement, have jet aircraft – only propeller aircraft and helicopters. The joint command had had problems of a united air command in WWII and wanted to decrease the aircraft diversity.

¹³³ Lockheed Martin had in its legacy the following aircraft producers: Lockheed, Martin, Marietta, General Dynamics; Northrop Grumman: Vought, Northrop and Grumman; Boeing Douglas, McDonnell, Boeing and Rockwell. This gradual consolidation had progressed since the 1980s. The largest mergers and acquisitions, however, occurred in the 1990s. By 1998 they were down to three (Lorell, 2002).

“resented by all Services”. At the same time, the Services’ separate aircraft projects were scrapped, and they were forced to create new relationships with new corporate entities. (Ibid)

A new element in the development of the JAST/JSF was that it should be developed “with the foreign market in mind”. This demand was urged in 1994 by the Defense Science Board (DSB), an influential Pentagon defence science planning organization. Previously, all military aircraft had been designed solely in order to meet the U.S. military Services’ needs. Any export came after that, usually meaning that the U.S. had had the exported technology level for a number of years before it was exported. The motive for bearing the export market in mind was primarily driven by economic considerations. (Ibid)

The F-16 had previously been exported to Belgium, the Netherlands and Denmark. Those nations had produced and assembled the aircraft under strict technology-transfer and licensing setups.

DSB did not, however, want JAST/JSF to be co-developed and co-produced with foreign partners. DSB and Pentagon at this time saw international collaboration as disadvantageous for the U.S. in most cases, especially in aircraft. It was feared that it would result in suboptimal division of labour, a more complicated set of specifications and also a more complex management structure. Previous collaboration efforts in Europe for Eurofighter/Typhoon surely pointed in that direction, where the UK, Germany, Spain and Italy had had severe problems in managing the program¹³⁴. Furthermore, the technology transfer issue would be a thorny issue to handle. Thus, the initial JAST/JSF planning did not include any foreign partners. (Ibid)

As Kapstein put it, JAST/JSF in its development came to be shaped by multiple political, military, financial, industrial and technological factors and objectives. Politically, the project had to win friends in Congress. Militarily, the program had to meet multi-service requirements. Financially, it had to be protected over its entire lifetime (over several presidents). Industrially, the distribution of work and the nature of that work had been fundamentally steered by nations’ defence-industrial ambitions and priorities – for the companies the main goal has been to remain in the competition and to become a member of the winning team. Technologically, it had to continuously meet a number of very high technological goals – reaching previously unseen technology performances. (Ibid) On top of that, it had to reach acceptance later in a number of other nations when it became a multi-lateral program.

Send in the Marines

When the U.S. Marine Corps joined the program in late 1994, a major turning point was reached. The Marines wanted a STOVL version. The STOVL ability had previously been provided by the British Sea Harrier, in the U.S. licence-produced and heavily developed as

¹³⁴ For example, when the aircraft was to be assembled, there was a severe fitting problem due to the left and right wings having been produced by different nations.

the AV-8B. In joining JAST, the Marine Corps joined with the UK Royal Navy in having these requirements. (Sweetman, Keijsper, Kapstein)

On December 20, 1995, the U.S. and UK governments signed a MoU that made Britain a full collaborative partner in all aspects of the JSF. The UK thereby committed itself to contributing \$200 million to the upcoming Concept Development Phase 1997-2001. (Ibid.)

For the UK, JSF was a very good opportunity where they would get access to a primarily U.S.-financed state-of-the-art military aircraft. British defence industry would also get a fair share of the development. The political impact of the UK presence would later prove to get British companies more than the usual work share decided by exact financing percentages.

The Final Countdown approaching

Until this time, there had been three competing teams: McDonnell Douglas, Lockheed Martin and Boeing. McDonnell Douglas invested heavily in the competition, but was eliminated from the competition, and as a result of this became acquired by Boeing in 1997 (Kapstein).

Concept Development Phase 1997-2001

The Pentagon issued a competition during 1997-2001 where the two competing teams, from Lockheed Martin and Boeing, were financed in a Concept Development Phase (CDP). Each team was to build one conventional take-off and landing (CTOL) variant of JSF for the U.S. Air Force and Navy, and also a STOVL Variant of JSF for the Marine Corps and the Royal Navy. The Royal Navy's aircraft carriers had shorter landing decks, which required vertical take-off and landing. (Ibid)

The two teams took two somewhat different trajectories. *Lockheed Martin* had recruited McDonnell Douglas' previous teammates Northrop Grumman and British Aerospace. Lockheed Martin's JSF represented an incremental or evolutionary improvement over existing platforms (with the exception of the complex STOVL version), with a more conventional combat aircraft design. *Boeing* had acquired its previous competitor McDonnell Douglas, and proposed a more radical, delta-wing jet fighter – a prototype that looked rather odd to many aviators. (Ibid)

The setup was a winner-take-all competition, but many foresaw that the losing team would still be awarded a sizeable part of the program in order not to destroy its aircraft design capability. In October 2001, the Pentagon and the British Defence Procurement Agency announced that Lockheed Martin had won the competition and would take the lead in building the JSF. (Kapstein, Keisper, Sweetman) ¹³⁵

¹³⁵ One interesting detail of Lockheed Martin's strategy is that it had financed the Russian aircraft producer Yakovlev from 1991 to 1994. Yakovlev had been developing VTOL aircraft for a number of years, but their financing from Russia (then CIS) had ceased and Lockheed Martin financed their continued development of the YAK 141M, thereby anticipating technological contributions from Yakovlev back to Lockheed Martin and its JSF development. This partnership was not made public by Lockheed Martin until 1994. Yakovlev was formally added to the Lockheed Martin JSF Team in 1995. (<http://www.aeroflight.co.uk/types/russia/yakovlev/yak-41/yak-41.htm>, <http://www.flightglobal.com/articles/1995/06/21/25571/lockheed-yakovlev-discuss-astovl.html>,

Engineering and Manufacturing Design Phase (EMD)

During the EMD phase from 2001-2009, Lockheed Martin was supposed to solve the outstanding challenges; goals had to be ironed out, and Lockheed Martin had to enter into supplier agreements. There was no known government intervention in order to include Boeing in the supply chains, so Boeing truly lost ground in the manned fighter market through the outcome of the JSF CDP phase. (Kapstein)

The two competing teams in the CDP had already up-and-running development teams. Their UK partners had, thanks to their political importance, more than the UK 10% of the program. Several UK suppliers were also on both teams, so they would have been on the winning team whatever the outcome. (Ibid)

The EMD phase was roughly two years behind schedule in 2009.

Multilateral Collaboration

The JSF is the first cutting-edge and high-profile U.S. defence program that has come to rely on foreign participation, co-development and technology transfer. During CDP, the Pentagon invited governments among the U.S. allies to seek participation at one of four levels: Full Collaborative Partner; Associate Partner; Informed Partner; and Foreign Military Sales (FMS) Major Participant. Only the UK qualified as Full Collaborative Partner. The Associate Partners became Denmark, the Netherlands and Norway (which previously had acquired the F-16, and therefore had a developed relationship with the U.S. companies concerned and the U.S. Services, as well as with the U.S. maintenance and upgrade capabilities). These three nations expressed hopes and expectations of winning JSF supplier contracts as well.¹³⁶ Canada and Italy joined as Informed Partners. Australia joined in 2006 as a level 3 partner. Finally, there were three FMS partners: Turkey, Singapore and Israel (which also had F-16s). (Kapstein, Masson)

So why did the U.S. (despite DSB's advice) take this giant leap into multilateral collaboration – a situation it had previously been so sternly opposed to? The U.S. still could, if it wanted to, develop its own aircraft. According to a RAND Corporation report:

“Foreign government and industry participation have been included for the following reasons: to enhance equipment interoperability with allies, to promote foreign acquisition of the aircraft, to share the financial burden of development and production, and to gain access to unique technologies and capabilities from key allies.” (Birkler et al.)

Clearly, achieving international partners was seen as safeguarding the enduring life of the program (Sapolsky et al., 2009). This also rests upon the turning times after the end of the Cold War, where President Clinton was seeking multinational solutions to security problems, partly abandoning previous U.S. technology supremacy postures. The sharply falling U.S. defence budgets also helped to win acceptance for multilateral collaboration.

<http://www.aviastar.org/air/russia/yak-141.php>) According to some specialists, the Lockheed Martin JSF architecture also resembles the YAK 141.

¹³⁶ To what extent they will receive or have received such contracts is not clear. One can expect that Norway did receive some kind of JSF industrial setup when they in 2008 chose JSF over Gripen – or that they were heavily compensated in some other way for sticking to JSF. The Norwegian *Stortinget* (the Norwegian parliament) had in 2004 almost made Norway abandon JSF due to disappointment over the low level of Norwegian JSF contracts.

At the same time, in Europe there was also fundamental defence-industrial consolidation. This produced much larger defence companies (EADS, Thales, BAE Systems, MBDA) that would be almost on par with the biggest U.S. defence companies. Together with this, there was a deepening EU-based discourse that strongly supported the development of a EU-centred defence capacity and the importance of maintaining an internationally competitive European defence industry. These European political movements and industrial consolidations created a debate regarding “Fortress Europe vs. Fortress U.S.” in defence issues. Hence there were concerns in the U.S. that Europe might sort out U.S. defence materiel options so that the large market would decrease radically for U.S. companies.

This overall relationship with the European defence community supported a more benign approach to the participation of foreign nations and their companies. JSF would therefore tie up European companies and European defence R&D, tempting them with jobs, state-of-the-art technology and (very unsure) technology participation. Thereby, politicians in many nations could become domestic lobbyists for JSF – offering qualified industry development (Masson, 2004).

The idea was that international partners “*should ‘earn’ their way on the program and ‘earn’ their work share through direct negotiations with the prime contractor*”. The two teams also had unprecedented freedom to compose their teams – such setups are usually to a much higher extent designed by governments pointing to certain suppliers. (Lorell et al., 2002, p. 165; Cook et al., 2002)

Clinton’s push for export and multilateralism

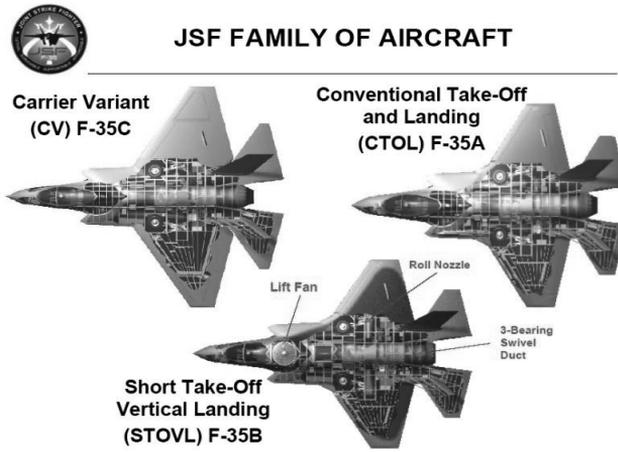
The Clinton administration was worried about the continued health of the U.S. defence industry after having decided upon several drastic budget cuts and program terminations of programs initiated during the Cold War and previous presidencies. Decreasing domestic demand should be mitigated by increased export (a strategy also used in France, the UK, Sweden, Russia and other nations). The Clinton administration made a number of efforts to support export: embassies and diplomats were increasingly used; export licences were reviewed in order to promote more permissive export; foreign buyers were expected to pay their fair share of R&D costs; and buying nations could be offered financial support for low-interest loans (as in the case of Poland when they chose F-16 in 2003). (Kapstein)

Epilogue

JSF strikes maximum political, military and defence technology sensitivity – within the U.S. and vis-à-vis the international JSF partner nations. Its development has created fundamental effects on restructuring and consolidation of the U.S. aerospace business. JSF will be further analyzed in Part IV.



Picture 9.1. Lockheed Martin JSF (www.lockheedmartin.com)



Picture 9.2. JSF Family (www.lockheedmartin.com)



Picture 9.3. Boeing JSF (www.boeing.com)

9.3.1 In-case analysis JSF

Integration

“JSF drives the international aerospace consolidation.” BAE Systems representative, London, 2002

There was considerable *ownership* integration in the U.S. military aircraft industry during the 1990s. The extreme consequences of the competition for JSF made the U.S. companies put in extreme stakes. McDonnell Douglas, it is stated, invested heavily and lost and was subsequently acquired by Boeing. Some of this concentration related directly to the outcomes during the development of JSF (especially Boeing’s acquisition of McDonnell Douglas). Other consolidation occurred in parallel with the JSF development, fuelled by several developments: first, the end of the Cold War; secondly, the Pentagon ordering the U.S. services to cooperate on aircraft development and merge their procurement processes; and third, the Pentagon in 1993 stressed that it expected the defence industry to consolidate and that companies should become fewer. Thus, there has been considerable ownership integration among aircraft producers in the U.S. during the JSF development. In Europe, the aircraft producers have however remained the same¹³⁷. Transatlantically, there has been no ownership integration.

The outlook after JSF was that there would in the foreseeable future – a horizon of about 40 years – not be another competitively awarded U.S. contract for manned combat aircraft. Boeing would still produce and develop the F-18, but that would soon come to an end. Aircraft were also predicted to increasingly become unmanned (UAVs: Unmanned Aerial Vehicles), since an unmanned aircraft is not limited by human physiological limitations (e.g. G-forces), there is obviously no risk of a pilot casualty if the plane crashes, and not least, UAVs are much cheaper to buy and operate. Furthermore, the companies offered foreign partners extensive participation, with more subcontract work than what was proportional to the amount of foreign governments’ contributions. Estimates (Kapstein) have stated that the UK firm BAE Systems alone may receive as much as 25% of the development and production, compared to the UK’s 10% government participation. *“BAE is present in 15 states in the U.S. for JSF”* (Interview, BAE Systems, London, 2002).

The JSF partnering arrangement is all about *operational* integration. The F-35 buyers negotiate their production and development share based on their level of participation defined by the number of aircraft planned to be acquired.

This ideal, competitive choice of suppliers, however, never worked. For one thing, U.S. procurement traditions definitely did not welcome foreign suppliers. Furthermore, the competitive conditions for winning the contract made the competing teams offer much more than 10% to the UK suppliers. So the supplier structure was set in place by much less rational incentives. It is nonetheless reasonable to assume that the teams’ free compo-

¹³⁷ The production consortia for Eurofighter was established before JSF, in 1986, comprising Messerschmitt-Bölkow-Blohm (Germany, later DASA, now a part of EADS), Alenia Aeronautica (Italy, a part of Finmeccanica), CASA (Spain, now a part of EADS) and British Aerospace (UK, now BAE Systems). Alenia and BAE Systems are partners in JSF and Eurofighter. The two remaining European aircraft producers are Saab and Dassault, none of them partners in JSF or Eurofighter.

sition of supplier structures in the end was a more efficient solution than what governments would have created.

The U.S. wanted, through multilateral collaboration, to gain access to attractive foreign defence technology. This has been supported by suggestions that the defence industry is becoming increasingly globalized and more dependent upon and similar to non-defence industries. From a U.S. perspective, one might however question whether the U.S. really is dependent upon foreign defence technology, and whether this influx of technology really would offset the negative aspects of a very complex multilateral defence program.

The strict hierarchy of technologies, defined by the U.S., does not welcome technology transfer from the U.S. to its partner nations. This means that there is limited technology fusion between the partner companies. BAE System as the principal and longest partner experiences much more technology integration compared to the other partners. UK defence companies, procurement authorities and government however express considerable dissatisfaction with the U.S. limited willingness to share technology.¹³⁸ *“BAE falls down the food chain in JSF; not prime, not system integration.”* (Interview, BAE Systems, London, 2002).

There were incentives for risk-sharing and co-financing from foreign states in the program. On the other hand, there are setbacks and downsides to multilateral collaboration, since it is commonly known that with several partners the administration and management complexity and challenges multiply. One could also say that the risk-sharing is political. It *may* be more difficult to convince several governments, but it *may* also be difficult to stop a program if there are already formal agreements between governments.

Another issue that helped to support the necessity of making the program multilateral is that European nations and other more developed nations, gradually since their acquisitions of F-16s (in the 1980s), are demanding and expecting more participation in the development of the aircraft. This becomes a competitive factor: if the U.S. aggregate defence complex (state, military, companies, Congress etc.) wants to sell the aircraft, it will have to sweeten the offer by offering increased participation in order not to be beaten by the European competitors Rafale, Eurofighter or Gripen.

Discourse as reflected in JSF

JSF has developed over many years, and the conditions have changed in several new ways. Initially, U.S. companies were naturally interested in performing development of new, advanced aircraft in high numbers; this created fierce competition between companies. The companies also wanted to protect their strong bonds with certain U.S. services. British companies were eager to take part in U.S. defence technology development of highest strategic importance. As the competition narrowed, the driving forces for companies became more drastic; the winner between Lockheed Martin and Boeing would make a gigantic leap forward compared to the other. As the project also became international and geared towards the export market, the incentive to receive sophisticated technology development became a further driver, paired with the demands for straightforward cost-

¹³⁸ See e.g. <http://www.flightglobal.com/articles/2006/12/08/210990/uk-parliamentary-defence-committee-urges-plan-b-second-choice-if-jsf-technology-transfer-issues.html> (2006) and <http://www.stormingmedia.us/42/4220/A422035.html> (2010).

share–work–share rewards to JSF partner companies. U.S. companies expressed scepticism towards cooperation with presumably less sophisticated companies in buyer companies. For all companies concerned, JSF – being the largest defence program ever – is an extremely attractive business opportunity.

Government driving forces and inhibitors have also changed over the course of JSF. Inside the U.S., it has been clear that different vested interests have competed for influence over the development of JSF. Under Clinton, the issue of transatlantic cooperation became much stronger, a degree of interest not seen before or after. The operational integration in the supply chain, however, is still a source of dispute between the U.S. and the partner nations under the UK level.

In JSF, as well as in Sapolsky (1972) on the Polaris development, the competition for legitimacy and resources is pronounced. The separate U.S. services had their very strong traditions, and JSF was the first project that managed to break down some of the compartmentalization of separate Service procurement processes. As JSF became bilateral, and then multilateral, several conflicting institutional logics in different nations became engaged in a massive negotiation process. The aspect of negotiation has thus been a persistent feature all through the life of JAST and JSF – and it still goes on.

Organizational field as reflected in JSF

The end of the Cold War in 1989 brought entirely new conditions for the U.S. military and for the NATO community. Procurement plans do not, however, change rapidly. In 1992, Bill Clinton became president of the U.S. and wanted to radically reform defence procurement: more joint programs, more international peace-keeping and military collaboration paired with falling defence budgets pushed reforms that made JAST/JSF more interesting for the Pentagon¹³⁹. U.S. allies were also more prioritized for collaboration. The Clinton administration pushed much more for defence export as a way to finance U.S. defence materiel development. The Gulf War in 1991 made stealth¹⁴⁰ a much more prioritized feature.

The JSF program demonstrates that the defence industry is subject to a highly elaborated procurement and planning administration. JSF shows how the defence market only partially follows economically rational objectives; these come further down the agenda.

Kapstein (2004) discussed how JSF is shaped by interplay between political, military, financial, industrial and technological factors. All these factors are correlated and intertwined in such a way that it is not possible to state which one is the most influential. There are a number of vested interests that have to be considered, and many goals that have to be met. As Kapstein put it, “*It is in the true political economy sense of the term ‘capture’ – mean-*

¹³⁹ The Pentagon (the Department of Defense) urged for JAST/JSF as a joint program for all military services, whereas the services were highly reluctant.

¹⁴⁰ Stealth: a sub-discipline of military tactics and passive electronic countermeasures, which cover a range of techniques used with personnel, aircraft, ships, submarines, and missiles, to make them less visible (ideally invisible) to radar, infrared, sonar and other detection methods.

ing the ability of strong economic lobbies to capture government decision-making – that JSF entered foreign markets.”

A persuasive, but elusive, argument is the issue of *interoperability*. There is a strong incentive within NATO to create an increased technical similarity between its members in order to facilitate and make possible efficient communication and coordination. This incentive has been strong since 1949 when NATO was created. However, individual NATO members have ever since been developing their own idiosyncratic approaches and solutions. On top of that, the U.S. four Services have had their respective traditions and reluctance to give in to calls for intra-U.S. jointness.

Lockheed had since the late 1940s had a secret (“black”) development facility in Palmdale, California nicknamed *Skunk Works*. Several aircraft of utmost strategic importance for the U.S. have been developed there: XP 80, U2, SR71 Blackbird, F-117 and more (Rich & Janos, 1994). Thus, Lockheed has had a special position vis-à-vis the Pentagon in developing state-of-the-art aircraft. This may have been influential in giving them the final JSF contract. McDonnell Douglas had also developed its *Phantom Works*, which also had had some black programs. Northrop had had its “black” B2 bomber (with Boeing as important subcontractor), started by Ronald Reagan. The Lockheed Skunk Works was however a much bigger enterprise than the other companies’ black programs.

The initial phases of JSF show that the U.S. MIC contained several organizational fields (sub-MICs?) around the U.S. services, each having long-standing development traditions with certain companies. First, the Services had to be forced to cooperate and integrate their procurement processes. Secondly, the Pentagon imposed joint, integrated procurement to make JSF an international, collaborative project. For other nations that have become a part of JSF, each nation strives to negotiate an attractive package with work and technology transfer to domestic companies. The entire supply chain is organized by Lockheed Martin, under a U.S.-defined hierarchy of technologies.

JSF shows how economic forces have weighed on military planners and the defence industry after the Cold War. These forces have led the U.S. and its allies to adopt new approaches to weapons procurement, supported by a stronger reliance on export and international partners in defence programs. This cooperative approach changed in the 2000s, but by then JSF was already a multilateral program.

9.4 Cross-case analysis

These three cases display the context of the defence market, with a special focus on the transatlantic aspect. The cases will now be compared concerning the concepts of integration, discourse and organizational field.

Integration

The defence industry primes are concerned in different ways, but primarily regarding operational integration. In NFR-90, the companies involved are very numerous. The suggested supply chains involved 130 companies. Several of these were probably in both the civil and military naval markets. In the consortia for the AAW solution, we can see Raytheon, Thomson-CSF, British Aerospace, Hughes, Lockheed, Marconi, Litton, MBB and many others that later became parts of the present group of primes. So we cannot really detect how the strategic group acted in this project. In TRS the two companies creating

the joint venture were France's largest company and the U.S.'s 3rd to 5th company (depending on year). In JSF, all the U.S. producers of military aircraft were involved in some part of the development. The successive choices and rejections of consortia clearly affected the progression of the U.S. industry for military aircraft. It appears clear that the present Boeing and Lockheed Martin both were partly created through the consequences of the Pentagon's selections, as when McDonnell Douglas lost out and soon thereafter was acquired by Boeing.

A striking observation from the cases is how technology and innovation are being protected and separated between nations. National R&D processes are in many cases kept separated. Operational integration is closely supervised and restricted. Nations are reluctant to abandon domestic technologies, although it is true that the aggregate systemic interdependences in a defence platform make a change of e.g. propulsion in a ship or the type of missile influence many different systems. Ownership integration is not an issue in defence-materiel cooperation; each nation's stake and offer are based on a specific domestic defence company.

What ownership and operational integration occurred in these three cases? In *NFR-90*, no ownership integration occurred. There was a NATO incentive to promote intra-NATO consolidation with *NFR-90*, which came to nothing. Very little operational integration occurred. There were years of negotiation on how to organise the production, but since the project was aborted, nothing happened. Indirectly, however, several of the companies established stronger links and sub-system development developed as a result of the corporate negotiation. In *TRS*, the intended ownership integration came into fruition; the joint venture was created. The operational integration was by the two governments strictly delimited to marketing and sales synergies. R&D and production synergies were disallowed. It is reasonable to assume that the two companies have developed certain harmonized, strategic incentives and priorities through the interpersonal interaction. *NFR-90* has not involved any direct ownership integration, but the implication of the selection of Boeing and Lockheed Martin for the Concept Development Phase was that Boeing acquired McDonnell Douglas when it was eliminated from the competition. JSF is all about operational integration. The operational integration concerns a very complex design of supply chains between the buyers. This design is orchestrated through a strict hierarchy of technologies – a hierarchy primarily defined by and dominated by the U.S. Depending on level of participation the F-35¹⁴¹ buyers are awarded certain responsibilities in the overall supply chain, producing a hierarchy of partnership level vis-à-vis the program integrator Lockheed Martin. For this division of responsibilities, the cost share – work share becomes the clear principle. There is however considerable disagreement and friction between the F-35 buyers and the U.S. concerning what the buyers' production assignments should be; the buyers expect sophisticated development, which the U.S. is reluctant to. Thus, all three cases clearly show that transatlantic ownership and operational integration is very cumbersome to create.

Discourse

¹⁴¹ The acquired aircraft's product name is Lockheed Martin F-35 Lightning II.

The development in each of the cases demonstrates that discourse concerns and initiates lengthy processes of negotiation where many vested interests must be confronted. Discourse seems to trigger domestic scepticism; national structures and technology choices create considerable reluctance to change. Nations may in their discourse express political will to e.g. harmonize requirements and share technology, but the national MICs, through their aggregate behaviour, resist and dilute visions for such multilateral benefits. Each national MIC shows a similar self-centric preference, expressing very similar, but non-united institutional logics.

Each decision to do something does not necessarily mean that the companies will start to produce. On the road from discourse to action, each consecutive step tends to bring with it new negotiations, e.g. concerning what missile or propulsion to use, and how the industrial work share will be distributed.

There is thus a long and thorny road from discourse to action. In NFR-90, more than a decade of highly committed negotiation resulted in termination of the program. In TRS, the resulting joint venture is a closely scrutinized corporate hybrid with extensive limitations on how the founders can integrate and create synergies. In JSF, there was a sequence of critical decisions based on evaluations of existing alternatives, where each decision brought with it repercussions on corporate consolidation and business prospects, and military traditions and preferences were challenged, causing further repercussions on companies' links to their buyers and the companies' future business prospects.

Cross-case analysis of driving forces and inhibitors for integration

The cases will now be analyzed regarding how driving forces and inhibitors of transatlantic defence industry integration are expressed or can be identified. This assessment is somewhat subjective, since the secondary texts did not explicitly analyze the context regarding driving forces and inhibitors. This assessment (Table 9.3) is an interpretation based upon the case description and interviews.

	NFR-90		TRS		JSF	
	<i>Corporate</i>	<i>Government</i>	<i>Corporate</i>	<i>Government</i>	<i>Corporate</i>	<i>Government</i>
Ownership integration						
<i>driving forces</i>	No such driving forces can be identified; the companies focused on collaboration in a project.	There was a NATO incentive that NFR-90 would <i>bring with it</i> closer industrial ties and thereafter industrial consolidation.	Thales and Raytheon had this joint venture as the focal objective – no further.	The respective governments approved of the joint venture, but with limited enthusiasm.	In the U.S., the successful companies came to acquire losing companies in the JSF competition.	Incentives for risk-sharing and co-financing Implicit long-term incentives for increased U.S. dominance
<i>inhibitors</i>	Ownership integration was not an explicit issue.	Governments strove to foremost protect their national defence industry and national defence choices and to award business to domestic companies. Nationally, ownership integration was not an issue.	The restrictive approach from the governments set clear limits to what could be done.	The U.S. was sceptical with state ownership of a foreign company with state ownership affecting strategy of focal U.S. company; France denies foreign acquisition of defence companies	Inhibitors that are generic to the aerospace sector; none specific; companies strive to grow through acquisitions	Specialized and developed aerospace companies are generally seen as national assets that governments protect – a general, cautious perspective
Operational integration						
<i>driving forces</i>	Strong corporate support for NFR-90; to receive a part of this very large defence program, a program that would bring market and defence standards shaping effects. Companies also wanted to position their products on a wider market.	Cost reduction Support national industry Improve NATO operations and bring with them harmonization. Nationally, the incentives proved to be highly self-interested, and overruled NATO incentives	The companies stretched the operational integration as far as possible, resulting mainly in marketing synergies. Wanted to become standard-setters for NATO	Positive about these companies improving their market positions and economies of scale in development costs.	Strong incentives to become a part of this outstanding defence program	Strong incentives for economies of scale and scope Export revenues (Implicitly) Secure U.S. dominance, and disfavoured European competitors
<i>inhibitors</i>	Corporate inhibitors were their strong bonds with previous technology choices and their strong national bonds; this proved in combination to be highly impeding.	National cohesion and national inertia around domestic technology traditions proved to strongly resist operational integration. Governments and military not willing to compromise	Limiting technology sharing Only interaction with concerned parts of the companies' wide product portfolios.	Strong! Sceptical of technology sharing and synergies, most so from the U.S.	Unwillingness to share U.S. defence technology Hierarchy of technology, disfavoured partner advanced development	Unwillingness to share U.S. defence technology Disagreement on work distribution Intra-U.S. resistance to multilateral programs and to procurement jointness of defence Services

Table 9.3. *Cross-case analysis of driving forces and inhibitors for integration in NFR-90, TRS and JSF*

These three cases show how defence companies engage in transatlantic defence industry integration. None of the three cases concern a straightforward border-crossing acquisition; the issue of ownership integration is thereby restricted. The cases, however, touch upon central aspects of how defence companies *mainly* interact: through different forms of regulated interaction. Yet issues of cross-border mergers and acquisitions are an integral part of the context.

Corporate driving forces in general can be understood as being highly pragmatic. In these cases, they engage in ownership integration as far as the governments are willing to allow them, and the ownership integration becomes a negotiation and a compromise between on the one hand corporate visions for expansion and synergies, and on the other government restrictions. Companies in each studied case also saw opportunities for reaching future improved competitiveness and positions through business opportunities of operational integration. In NFR-90, a multitude of alliances over technologies and subsystems between partnering nations and companies became a constant source of disunity. To some extent, however, the business opportunities in NFR and JSF arose due to government initiatives; companies did not create, but rather became recipients of business opportunities.

Corporate inhibitors stress that companies are sceptical about technology sharing. This is probably not due to unwillingness to cooperate, but rather due to the shared view that all others are restricted and do not willingly share – a sort of prisoners' dilemma. Companies are also anxious not to lose strong bonds and favourable treatment from their home governments.

Government driving forces show a friction through the dichotomy between multilateral goals and domestic preference. Economies of scale and scope are undisputed drivers. In NFR-90 and JSF, strong incentives for NATO and military partner interoperability, harmonization and cohesion were expressed. In TRS, both governments were positive about limited operational integration that would strengthen these companies, but highly sceptical about ownership integration. Government driving forces tend to explicitly favour operational integration, and in a less direct way to be positive about cross-border ownership integration.

Government inhibitors primarily show scepticism towards technology sharing, and towards diluting the strength of national defence technology capacities and industries. National, less explicit priorities proved in NFR-90 to fundamentally make NFR-90 unrealistic. Governments tend mainly to protect national defence companies and not to welcome a globalized industrial consolidation. TRS shows that ownership integration between the U.S. and France hardly can stretch beyond a specialized joint venture. The extensive need for negotiation before reaching actual ownership and operational integration is an impeding factor. In TRS, the 'policy ambivalence' becomes clear; governments elsewhere express support for transatlantic defence market integration, but for TRS they strongly limit its operations due to national restrictions on cross-border technology sharing and operational integration. In JSF, national incentives for protecting and developing national defence technology have repeatedly come in opposition to goals based upon multilateral benefits. In NFR-90, it can also be perceived that cross-border integration was much more restricted during the life of the program compared to the developments under TRS and JSF. Finally, the agreements on work share in defence cooperation are highly politically steered, and become a difficult stepping stone. Many other transatlantic defence programs have

been cancelled due to governments not being able to come to terms on the conditions of the cooperation, one important inhibitor being to coordinate procurement timelines (this problem grows if programs become delayed).

In TRS and JSF, previous cooperation between defence companies proved to be important success factors. They had thereby received reciprocal acceptance and trust between companies, between governments and within defence-related regulatory government agencies. In NFR-90 the companies had cooperated only partly, and only on subsystems. The planned integration of the separate subsystems proved in NFR-90 to cause insurmountable challenges.

Organizational field

Regarding MICs, several vested interests in national MICs must be convinced. This is done in complex negotiations involving companies, politicians, procurement authorities, the military, and government representatives: negotiations in several nations, performed simultaneously. Numerous parallel processes are started. In NFR-90 and JSF, military capabilities are manifested into certain specifications; each national complex of interests is confronted with foreign complexes of interests; companies are called upon to jointly find solutions to a negotiated demand. Corporate incentives and priorities will have to be met by the buyers, although the buyers shape the overarching transaction situation and conditions. In TRS, the national MICs each demonstrate their assessment of how and whether Thales and Raytheon may create a joint venture as suggested by the companies.

As we can see, each case shows that many formal processes must be performed in order to pass planning toll-gates. Apart from these formal processes, it is obvious that there also were informal processes and toll-gates. In NFR-90 the national strategic reactions and the strategic reactions within coalitions of nations, as well as coalitions behind subsystem consortia (such as NAAWS vs. FAMS), made the complexities immense. If we see the defence market as an organizational field, it is a loosely coupled entity with actors that one by one act in a similar way, but in an uncoordinated fashion.

Especially NFR-90 and JSF show how the negotiations for creating the collaboration confront national MICs and thereby makes the dominant institutional logics apparent.

The next and final part of the thesis is Part IV, where the empirical parts will be analyzed and the results of the thesis will be presented. First, Chapter 10 contains an analysis regarding how the transatlantic defence industry integration can be understood with the help of the Case Study model developed in Chapter 4, and with its constituent theoretical constructs. This will be followed by an analysis in Chapter 11 of how the conclusions in Part III and Chapter 10 relate. In Chapter 12, there will be a discussion on the perceived contributions of the thesis. Finally, Chapter 13 will give a concluding discussion which relates this thesis to present defence market developments.

PART IV RESULTS

In Part IV the results of the thesis will be presented. The overall question to be addressed is related to the purpose of the thesis: how well have the empirical data and the Case Study model served to bring understanding and explanation to the transatlantic defence industry integration?

In this part it will be shown how the transatlantic defence industry integration has resulted in a highly market-specific outcome – an outcome strongly influenced by the conditions offered by the organizational field and by national governments' developed regulatory governance.

Part IV has four chapters:

Chapter 10 interprets the empirical presentations in Part III by connecting them to the theory presented in Chapter 3 Theoretical framework, and to the Case Study model. How can we understand and explain the empirical data sets with the help of the theory applied – and the Case Study model?

Chapter 11 synthesises the results in Chapter 10 and aims to create an understanding and explanation of the research problem and to examine whether the purpose is reached. What is the combined impact of the analyses and the theory? The main conclusions of the thesis are presented.

Chapter 12 discusses what are seen as the contributions of the thesis: to theory, to methodology, and regarding the empirical material. The chapter will also offer suggestions for further research. Alternative approaches and shortcomings of the research approach utilized will also be discussed.

Chapter 13 is a Postscript on the future of the transatlantic defence market. This is a discussion that departs from the thesis and expands from the thesis' delimitations.

Chapter 10 Understanding and explaining transatlantic defence industry integration

In this chapter the results of Part III will be analyzed with the help of the Case Study model and its constituent theoretically based variables, thereby leading up to the conclusions of the thesis. The main purpose of this chapter is to answer the questions:

How can the transatlantic defence industry integration be understood and explained?

and

If there is a discrepancy between discourse and action, how can it be understood and explained?

10.1 Outline

The defence market is perhaps the most politically influenced market of all; government influence and state interests are highly pronounced. Only representatives of a state are able to acquire defence equipment for use.¹⁴² The role of the domestic defence industry also becomes closely connected to the security and defence policy of a state – especially in the case of the focal states in this thesis, the U.S., France and the UK. Governments see a domestic defence industry as strengthening the home state's powers and prestige. A domestic defence industry is seen as giving the state a better possibility to provide its military with the best possible defence materiel; it becomes a competitive advantage in nations' competition for international military and security influence and autonomy. It is generally accepted that ambitious and elaborate defence production in a nation creates strongly institutionalized patterns of interdependence between the domestic politicians, procurement authorities, military and defence industry (and other closely related interests) – what is generally described as a military-industrial complex (MIC). However, defence companies are for the most part private companies that formulate and implement their own strategies. One focal aspect of this strategy is how they integrate with other companies.

The Case Study model's focal theoretical concepts are action, discourse and organizational field. Action is empirically searched as integration, and discourse as the combination of driving forces and inhibitors. Organizational field is applied in the aggregate empirical assessment, and with the help of the MIC concept.

¹⁴² Defence companies also sell components and systems to other defence companies, and the buyers combine these products with their own knowledge, technology and products. The final product for military use is at the end sold to representatives of a state. These companies' products to other than military use (e.g. security solutions and aerospace components) are outside of this thesis' focus.

In this chapter the conclusions from the different empirical data sets will be presented, analyzed and related to each other. A gradually evolving, higher-order perspective will emerge through this sequence of analysis of the empirical results. The perspective of the Case Study model will set all concepts and empirical data in relation to each other.

10.2 Integration

Two new concept pairs relating to integration are now introduced in order to further refine the analysis of the transatlantic defence industry integration. The analysis will gain added detail with integration seen as also being structural or processual, and differentiated or integrated. The reason for this is that the empirical material shows that the concepts ownership and operational integration do not offer sufficient detail for explaining the nature of the integration.

Firstly, the integration may be either *structural* or *processual*. ‘Structural’ denotes the officially created structure: a merger, an acquisition, a joint venture or a formal cooperation (an alliance, company-company cooperation or a government-created defence program in order to develop a certain product or defence technology). The actual, ‘processual’ integration between companies’ operations may, however, be different from what is formally implied by the nature of the structural construct. How companies actually interact, how they integrate their processes, how they create synergies, and how they in different ways improve efficiency are not by definition congruent with what the structural construct signals. The perspective of structural and processual applies to ownership as well as operational integration.

	Ownership integration	Operational integration
Structural integration	<i>Mergers, acquisitions, joint ventures</i>	<i>Defence collaboration initiated by governments</i> <i>Defence projects initiated by companies</i>
Processual integration	<i>Rationalization, consolidation</i>	<i>Synergies, supply chain integration, technology sharing, R&D synergies</i> - Integrated - Differentiated

Figure 10.1. *Integration taxonomy*

Secondly, operational integration can be understood as being organized in a *differentiated* or an *integrated* manner. ‘Differentiated’ implies that the work contributions of companies into a joint defence program are organized so that their respective work responsibilities are actively held apart, technology sharing and combination is not encouraged, and strivings for synergies are not promoted. ‘Integrated’ implies that companies in such cooperation are allowed and encouraged to integrate operations and processes, organize mutual R&D and

innovation, share technology and search for synergies. The outcome of the operational integration can, naturally, materialize in many intermediate shapes between the fully differentiated and the fully integrated.

These two perspectives on how integration materializes are pictured together with ownership and operational integration in the above figure.

In the following, transatlantic integration will be compared with intra-European integration in order to add contrast.

Transatlantic defence industry ownership integration

After WWII the size and breadth of the national MICs were maintained in the U.S., the UK and France. Defence technology development and defence materiel production had, however, become increasingly expensive through spirals of increasing sophistication. There has therefore since the 1950s been a continuous discourse promoting increased integration between and within national defence-industrial entities in order to create synergies and reduce redundancies and costs.

For this thesis, ownership integration of defence companies is analyzed in order to understand the transatlantic defence industry integration as being intra-European, intra-U.S. or transatlantic. Overall, limited ownership integration occurred until the 1990s. After the Cold War, however, Western nations came to realize that the size and breadth of their national defence industries had suddenly become much too large. This gave a new impulse for ownership integration. The Pentagon in 1993 assembled the CEOs of the fifteen largest U.S. defence companies and informed them that the U.S. would no longer finance the then present breadth of defence companies in the U.S., and that it would actively support an intra-U.S. defence industry consolidation and concentration. This catapulted a wave of consolidation that primarily occurred in 1993-98 reducing the number of companies from fifteen down to four. The Western European defence industries confronted the same deflation of military demand. The U.S. consolidation also altered the international marketplace and the competitive conditions. An intra-European consolidation wave primarily occurred in 1998-2001 – a process that could not have occurred without the larger European NATO nations agreeing to allow corporate mergers within Europe. Clearly the intra-U.S. consolidation prompted European governments to actively support and push an intra-European consolidation. The primary result of this government-led consolidation was the creation of MBDA, EADS and BAE Systems (but BAES not as directly dependent upon government action). There was also national consolidation in many other European nations. The transatlantic defence industry integration was widely promoted in the second half of the 1990s, but the result of this was mainly that a handful of UK companies (especially Smiths and BAE Systems) strongly increased their U.S. presence through acquisitions of U.S. companies. Thus, the transatlantic ownership integration was less pronounced than the intra-European and the intra-US integration.

Defence companies have also engaged in joint ventures in order to pool corporate interests for a certain task. This might also be the only possible way to satisfy the regulatory demands. Joint ventures have been abundant in Europe, often leading to deeper ownership integration. Transatlantic joint ventures have mostly been *project* ventures that have been dismantled after the order is delivered. Joint ventures create trust between companies, and between regulatory agencies, and may be precursors to further operational inte-

gration. *Strategic*, transatlantic joint ventures hardly occur, with ThalesRaytheonSystems as the striking exception.

However, the cross-border ownership integration that *did* occur must be further analyzed regarding the structural and the processual implications. Structural constructs through mergers, acquisitions or joint ventures were actively and meticulously restricted from creating cross-border integration of defence companies: in France, foreign acquisitions have been practically banned; in the UK, foreign acquisitions are not discouraged, but foreign acquisitions will have limited scope for cross-border rationalization; in U.S. acquisitions, the foreign owner's influence is fundamentally restricted and restrained through firewalls and proxy boards – the acquired company's operations and strategy will be run by a board of only U.S. citizens and with limited insight from the foreign owner. Thus, the processual aspect of transatlantic ownership integration is widely held back.

The ownership integration through acquisitions results in the acquiring company controlling a larger share of the market; it has naturally taken over the business of the acquiree. The strategic control and influence of this acquired business, and the possibilities to create synergies and cross-border combinations, are restricted in many ways by government regulations, as has been shown. Transatlantic mergers have not occurred.

Transatlantic defence industry operational integration

Defence development was until WWII basically a national affair for the larger defence states. After WWII, nations started to engage in a discourse that advocated interoperability and shared defence development – reforms that were fuelled by the increasing costs of defence development. In NATO very little collaboration was started. In Europe, several bilateral defence collaborations were started mainly between France, Italy, Germany and the UK in the 1950s. These European collaborations were primarily in missiles and aircraft – areas with high development costs and clear economies of scale. These collaborations were organized as strict cost-share–work-share arrangements. Collaborative models and principles specially designed for defence production were created: teaming arrangements, *juste retour* and cost share–work share. These models had in common that responsibilities between companies should be compartmentalized and kept strictly national, and be proportional to each nation's capital contribution.

Operational integration has had a slow but steady development within Europe. The initial defence programs gradually built trust and shared knowledge between militaries, defence authorities, ministries and companies. They also created shared paths of technology, and thereby interdependences. There were also many failed defence collaborations. Based on the experiences from successful collaborations, the programs developed in the 1980s and 1990s into joint ventures among defence companies from France, the UK, Germany and Italy – such as Euromissile, Eurocopter, Airbus and Eurofighter. These joint ventures further developed into companies in the 1990s, and several of these were incorporated into MBDA and EADS.

Naturally, the European collaboration during decades created a shared understanding of defence technologies in certain areas, and bonds between the nations and the militaries. The logistics operations and the military planning strove to create shared solutions for maintenance, spare parts etc. However, the persistent principle was that production should be based on cost share–work share, and that national defence entities thereby were actively held apart.

Transatlantically, there has been some border-crossing cooperation, but primarily between the U.S. and the UK in sensitive areas as nuclear weapons, stealth¹⁴³ and nuclear submarines. Several attempts at NATO collaboration have been terminated or aborted, e.g. NFR-90. The transatlantic defence programs that exist at present were mostly created in the 1990s, a period when the U.S. under Clinton was much more positive towards transatlantic defence collaboration – with Joint Strike Fighter being the striking example.

According to a BAE Systems representative, stealth became a cross-road for the UK aerospace integration vis-à-vis Europe. There was a European stealth program within a multilateral R&D collaboration (ETAP). When the UK chose JSF, they could no longer collaborate with France and Germany in ETAP. Neither France, nor the U.S. could tolerate such bipartite UK engagement. The same causality was stated at Dassault in Paris. (Interviews: BAE Systems, London, 2002; Dassault, Paris, 2003). This outcome is said to have a very profound long-term effect on the aerospace industry, to the detriment of the other European aerospace companies.

The U.S. has since 2001 had a defence budget 2-2.5 times larger than the aggregate European budget, and the U.S. defence R&D budget has been 6-7 times larger. The top four defence spenders in Europe (UK, France, Germany, Italy) have a collaborative share of 15-30% of the defence acquisition, whereas the U.S. has around 1%. The U.S. collaborative defence R&D is around 1%. Thereby it becomes clear that the defence technology developments in the U.S. and in Europe largely flow in separate paths, and have limited interaction.

The change that occurs brings with it considerable negotiation concerning the extent of processual integration. The incentives, priorities, driving forces, inhibitors and final actual integration reflect the underlying institutional conditions. Governments are sceptic to cross-border processual integration through ownership integration (rationalization, consolidation) and through operational integration (synergies, supply chain integration, technology sharing). Through this chapter, we will increasingly bring in the institutionalized conditions of the organizational field in order to explain the integration.

Thus, there has been a fair amount of operational integration on a structural level, but the processual integration has been actively held apart. The operational integration in defence collaboration has largely been differentiated into strict work packages between companies in different nations (cost share–work share). Such work packages in collaborative defence production are highly separated and compartmentalized in order to minimize technology transfer, thus not encouraging synergies.

Government policies for regulating and influencing the defence industry integration

Companies do integrate, and they do cooperate. Governments control and shape the defence-industrial integration through a number of tools and powers. These government ac-

¹⁴³ 'Stealth' is a sub-discipline of military tactics which covers a range of techniques used with personnel, aircraft, ships, submarines, and missiles, to make them less visible (ideally invisible) to radar, infrared, sonar and other detection methods.

tions can be separated between *export control*, *ownership of property rights* and *company control*¹⁴⁴. Note that these policy instruments are not particular to transatlantic defence industry integration; they are rather one nation's general interface towards other nations' defence industries.

	<i>ownership</i>	<i>operational</i>
<i>structural</i>	<p><i>Company control:</i> Cross-border acquisitions and mergers in structural form cannot occur without government approval. Disapproval can be based on competitive grounds, and also based on various national strategic decisions.</p> <p>Cross-border consolidation <i>may</i> also occur as a result of several governments' joint actions pushing consolidation (EADS, MBDA).</p> <p>Governments can steer mergers and acquisitions through golden shares and direct ownership. Mergers and acquisitions cannot occur without government consent.</p> <p>In France the government actively reshuffles its ownership of shares between companies in order to force domestic consolidation. The government also owns several large companies 100%.</p>	<p><i>Company control:</i> Defence programs (collaborative defence development) almost by definition require that <i>nations</i> pool their interests, R&D funds and acquisition. Corporate joint ventures are primarily created around defence programs, rather than based on joint, strategic forecasts. Companies are not allowed to cooperate without government approval. Company-created collaboration without government financing is rare. Thus, structural constructs of operational integration are primarily, almost exclusively, initiated by governments.</p> <p><i>Property rights:</i> Governments control companies through control of technology transfer. Through this control, they can monitor most parts of cross-border interaction between companies; companies must have government approval for practically all interaction.</p> <p>Established cooperation will be awarded specific committees that support as well as supervise the development.</p> <p><i>Export control:</i> Governments can restrict or forbid re-export of transferred technology to 3rd-party customers. The U.S. most typically exercises this right.</p>
<i>processual</i>	<p><i>Company control:</i> The ownership integration of two companies is regulated under a number of regulatory clauses where a restricted cross-border interaction is the norm. Firewalls are defined where technology transfer cannot occur. In the U.S., the system of proxy boards makes the foreign ownership deeply hamstrung.</p> <p><i>Export control:</i> The foreign owner only partly directs the acquired company's export; this still requires the home nation's consent.</p>	<p><i>Property rights, technology transfer:</i> The processual integration within defence programs and between company initiatives is combined and encouraged. The preferred set-up is a system of cost share–work share. This means that work packages will be compartmentalized between nations, and that the supply chain will be differentiated rather than integrated. Furthermore, the allocation and division of work packages are based primarily on cost share, thereby side-stepping generic, overall market drivers for competition, globalization and optimizing supply chains. Each nation will have a preferred, domestic supplier. This practice thereby preserves industrial structures.</p> <p><i>Company control:</i> The issue of technology transfer co-relates with what ownership integration the government is willing to accept or wants to achieve.</p> <p><i>Export control:</i> In a collaborative program, export of the aggregate product will require consent from all concerned nations.</p>

Table 10.1. *Government policy instruments' regulatory impact on transatlantic, cross-border defence company integration*

¹⁴⁴Company control is executed in a number of ways: Permit to produce defence equipment, Golden share, Company ownership, Company boards, Domestic consolidation, Acquisition of companies, Approval of cooperation and interaction, Semi-private status, Committees for control and R&D funding. This was described in more detail in Chapter 2.

These policy instruments are related to ownership and operational integration, and to structural and processual integration, in Table 10.1 above.

This table shows how government policy instruments can be understood as regulating many aspects of transatlantic defence industry integration. Two distinctive traits can be identified in this account. *Firstly*, governments through their use of their regulatory instruments overall strive to keep companies processually separated between nations. *Secondly*, governments' primary instrument for restricting more processual integration than desired is through highly restrictive, or even prohibitive, technology transfer regimes.

Admittedly, this thesis has not investigated to what extent defence companies informally interact and integrate in joint development processes. There may well be deeper interaction, despite the formal limitations enforced by governments. Governments, however (as shown in the above table), strive through a diversity of regulatory instruments to control and limit such interaction.

Since governments finance most defence technology development, they are often the owners of the intellectual property rights and patents that come out of the development. This ownership is actively used in order to control technology transfer, and thereby control industrial processual integration, and also to have the right to block ownership integration suggestions.

Export and offsets

Apart from the ownership and operational integration, there are also two other corporate activities that influence the industrial integration. *Defence export* has received a higher government support since the early 1990s, and export revenues are often a large part of the turnover. Defence companies through these orders become engaged in interaction with buyers and with the buying nations' defence companies; defence materiel is very seldom delivered ready for use, the normal procedure being that the acquired goods are upgraded and modified in order to fit with the buyers' specific demands. The exporting company may have to organize licence production in the buying country, and thereby have to educate local companies (e.g. F-16 in Belgium, the Netherlands, Norway, Denmark). This may create further business – a path dependence can be seen over to JSF. Furthermore, defence export normally requires *offset* arrangements where the buying country will demand that the seller organizes a domestic defence production and a transfer of military technology; this offset arrangement becomes a decisive part of the bid to the buyer. The selling company will be engaged in a long-term industrial relation with local companies for e.g. education, production and technology transfer. (Axelson & Lundmark, 2009) The implications of export and offset have not been studied for this thesis, but they are integral parts of defence companies' strategies.

Combinatory matrix – outcome of structural and processual integration

The following two figures are intended to picture the extent of structural and processual transatlantic integration as seen in the empirical material. The matrix presented in Chapter

3 on Ownership integration vs. Operational integration is here further elaborated. The ovals in the figures represent the scope of the structural and processual integration¹⁴⁵.

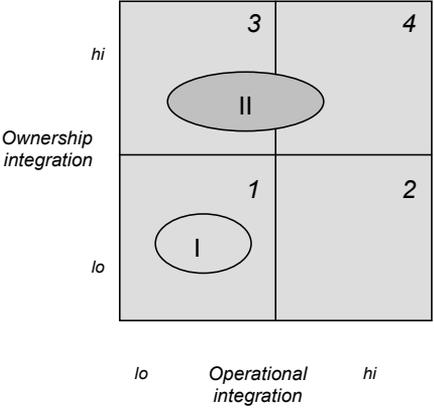


Figure 10.2. *Structural transatlantic and intra-European integration*

I. *Transatlantic structural integration:* The structural integration points to more integration, through ownership and operations. Companies’ possibilities to merge and acquire are however restricted, and there are very few joint development programs. On the prime level, the ownership integration is very limited, but more developed on lower tiers.

II. *Intra-European structural integration:* Within Europe, there is considerable operational integration through many joint development programs. There has also been quite radical consolidation (ownership integration). There are still, however, many companies that are primarily focused on their home markets. The intra-European ownership integration has not been more than marginally allowed to result in processual integration in the form of rationalization and elimination of redundancies.

The intra-U.S. consolidation has been dramatic. The structural, operational integration falls somewhat outside of the thesis’ purpose since it is within one nation (i.e. no need for collaborative programs) and has not been studied. There is therefore no depiction of intra-U.S. structural integration.

¹⁴⁵ The sizes of the ovals do not, however, represent a more exact quantitative assessment.

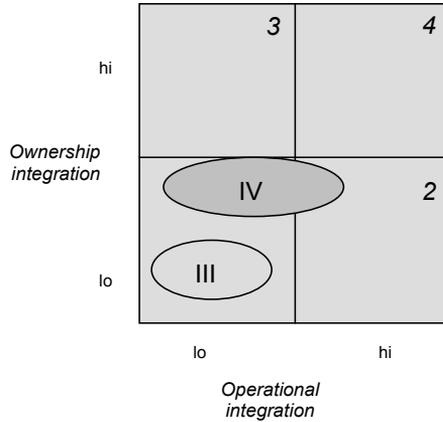


Figure 10.3. *Processual transatlantic and intra-European integration*

III. *Transatlantic processual integration:* the processual integration between companies is highly limited both in ownership and in operations. Companies are not more than marginally allowed to integrate production processes, or to rationalize between companies. Only about 1% of U.S. defence development program spending is run in cooperation with other nations.

IV. *Intra-European processual integration:* There is much more collaboration in joint development programs (between 15-30% of all defence development spending in the focal nations) compared to transatlantically, but production processes are still widely held apart through cost share–work share. There are some more recent collaborative programs (e.g. Neuron and MidCas) that allow increased, shared technology development. The consolidation of the European defence industry still maintains quite separate national defence companies – synergies and rationalization are not encouraged.

The intra-U.S. processual integration has been analyzed in less detail, but the data indicate that there is considerable protection of defence companies through congressmen’s protection of home constituencies’ defence employment. Thereby, these companies’ employment is protected as congressional representatives compete for defence production allotments being placed in their home constituencies.

Conclusions

Governments, through their restrictive and inhibiting regulation, have set a clear threshold where cooperation is prioritized, but where they are suspicious of integration (structural through ownership, processual though ownership as well as operational) of their domestic defence industry assets with defence companies from other nations. Governments control the degree of processual integration primarily through mechanisms of keeping companies separated, with highly restrictive governance of technology transfer and of the acquiring companies’ limited control over acquired companies.

The addition of the dimensions structural-processual and differentiated-integrated brings increased detail on what integration that actually materializes through acquisitions and through collaborative defence programs.

Thus, the ‘globalization’ situation in box 4 – with far-reaching cross-border mergers and acquisitions that lead to cross-border supply chains and consolidation, reallocation of production, optimization of supply chains, technology transfer and synergies – cannot be said to occur in the transatlantic defence industry integration, but to some extent within Europe.

10.3 Discourse

In the following analysis, patterns are searched in the texts on the one hand, and in the interviews on the other. These patterns will thereafter be compared, in order to see what understanding, explanation and conclusions we can draw from this.

The main focus is on the discourse as presented in Chapters 7 and 8, but the discourse as identified in the cases in Chapter 9 is also briefly mentioned in this analysis.

Texts

Texts from 1994 to 2001 that addressed transatlantic defence industry integration were searched. These texts from academic papers and books, articles, published speeches and government reports were analyzed. This assessment was presented in Chapter 7 of the thesis.

The primary driving forces identified in texts were as follows:

- All but one text supported increased transatlantic defence industry integration.
- To achieve economies of scale, shared R&D costs, reciprocal technology access, advantages of globalized supply chains etc. Such generic efficiency-oriented aspects were put forward by practically all texts.
- To reach harmonized military requirements and procurement and standardization – leading to transparency and consolidation. Many saw NATO as the vehicle for this development.
- To create a larger market with more competition and innovation.
- Visions of “reciprocal market access”, “a true transatlantic market” and similar expressions.

The primary inhibitors identified in texts were:

- The most commonly articulated inhibitor was the unequal size between the U.S. and the European companies, and between the respective markets in the U.S. and in Europe.
- The protective and protectionist nature of the U.S. export control system.
- National protectionism, and tendencies for “Fortress Europe” and “Fortress America”.

- The U.S. was seen as addressing its partner nations in a U.S.-centric way.
- “Policy ambivalence” concerning transatlantic defence industry integration (governments rhetorically promote transatlantic integration with one hand, and act protectionistically by supporting their domestic defence industry with the other hand).
- The fragmentation of European nations’ defence politics and defence spending, paired with the shrinking European defence budgets.

Overall, many texts focused primarily on changes that are needed in order for transatlantic defence industry integration to be able to occur – e.g. deregulation, European consolidation, acceptance of globalization, and harmonizing of requirements and procurement – which can be summarized as reforms of institutional or market conditions.

The data do not offer much detail on why *companies* would want or not want more transatlantic defence industry integration. Texts did not generally distinguish between corporate and government driving forces and inhibitors. The texts were mostly written by economists, political scientists or government representatives, so it is understandable that they rather focus on macro-economic effects and political benefits, and not on corporate strategy. Several of these texts, however, advocated what was beneficial to or desired by industry.

Interviews

The focus of data collection through interviews differed from the literature study in that, firstly, it asks individual respondents more precisely, and secondly it seeks to collect more data from corporate representatives since they were in clear minority in the literature study presented in Chapter 7. The desired result was that the interviews would reveal a deeper understanding of what were seen as the true driving forces and inhibitors regarding transatlantic defence industry integration, so as to reach a better understanding and explanation for the transatlantic defence industry integration.

Overall, the interviews revealed arguments that are much more focused on self-interest, either from a single company’s view or from a nation’s view. The issue of market access (and especially to the U.S. market) was highly pronounced. The interviews also revealed several inhibitors that were based on scepticism about other nations, or about the benefits of cooperation.

Corporate driving forces & inhibitors

The main driving force for the companies was to get access to the U.S. market, U.S. defence technology and U.S. defence R&D. U.S. companies were interested in the European market, but the European companies were much more interested in the U.S. market. The U.S. market offers much more business, and is much better financed. Some U.S. companies saw government defence cooperation as the only way to get access to European, national markets, and they therefore strove to become suppliers to such programs.

Regarding inhibitors, U.S. companies stressed the importance of not jeopardizing their acceptance by and bonds with the Congress and military, and inclusion of foreign partners tended to make those actors sceptical.

French and UK companies saw a problem in U.S. companies most of the time being clearly larger and with better financial backing from the government. UK companies saw a problem with 3rd-party export: that an inclusion of U.S. technology may hinder export from the UK.

French companies saw inhibitors through the French government's ownership and strong control of the domestic defence industry. Another inhibitor was that several large French companies are global competitors to U.S. companies, which makes cooperation difficult.

Government driving forces & inhibitors

The U.S. government could view the world from an elevated position and invite others as it pleased. Other nations were begging to be accepted. The U.S. government driving forces were primarily based on NATO commitments and interoperability, but were also meant to promote domestic companies. French and UK government driving forces were focusing on the dominance and wealth of the US market, while the UK stressed military cohesion and the 'special relationship'.

The inhibitors revealed much more sceptic and protectionist arguments. The U.S. wanted to maintain its technological and military supremacy, and did not see cooperation as very beneficial. The protection of the U.S. defence industrial base is important, regarding jobs as well as technology, and all-domestic corporate representation in defence technology development was clearly preferred. France has its distinct defence posture where it does not accept being dependent upon any other nation, and therefore avoids transatlantic cooperation and forbids U.S. (and other) acquisition of French companies. French government representatives admit the political rivalry between France and the U.S., which disturbs the relation despite fundamental security policy similarities. The UK government stresses the problem with 3rd-party export, and objects that despite its advanced position vis-à-vis the U.S. compared to other European nations, it becomes hostage to U.S. domestic politics and priorities. Among the inhibitors, a recurrent theme was that from a domestic perspective of some kind, transatlantic defence industry integration was met with scepticism in each nation.

Comparison

Texts vs. interviews: Comparing the assessment of driving forces and inhibitors from texts and the interviews, the following observations can be made.

Texts were mainly written by economists, political scientists and representatives of governments or government authorities, which could explain the focus on multilateral and macro benefits. Few texts focus on corporate strategies; this could be explained by the lack of authors from strategy/management/business administration.

In interviews there were arguments much more focused on benefits of self-interest; texts tended to focus on more multilateral perspectives. In interviews the aspect of market access is highly pronounced. Not so in texts, which emphasized the "open market", "reciprocal access", "true transatlantic market" etc.

Texts contain very few arguments expressed by companies, and few texts are based on interviews with companies, but several writers expressed what was beneficial or desired by industry.

Companies vs. Governments: Comparing the combined assessment of corporate and government driving forces and inhibitors, the following observations can be made.

“When asking people about why it’s important with a globalization of the defence industry, all government officials answered interoperability. Out of sixteen business executives, none mentioned interoperability – they all focused on the competitiveness and profitability of their company.” (Jensen, 2001)

Driving forces: Companies stressed competitiveness for their company; governments stressed multilateral benefits (not surprising). Governments stated that a multilateral benefit through EU, NATO and operational integration was a prioritized driver for supporting industry. Companies did not phrase driving forces linked to multilateral organizations.

Inhibitors: Companies saw national barriers to integration as the main inhibitor, combined with the imbalance between the U.S. and the European states, and the influence of U.S. domestic politics. Governments saw the dominance of the U.S. as the main inhibitor. All concerned saw the overall rigidity of technology transfer, export control and states’ national focus as strong inhibitors of increased ownership and operational integration.

Driving forces vs. inhibitors: If we compare the combined assessment of driving forces to the inhibitors, the following observations can be made.

Driving forces as expressed by companies stressed market access, new business and improved competitiveness for the single company. Driving forces as expressed by governments stressed market/industry efficiencies and multilateral, shared benefits through NATO and EU.

Inhibitors as expressed by companies predominantly point to power imbalances; scepticism and distrust; wanting not to lose or jeopardize favoured positions; protectionism and national foci; policy ambivalence. Governments stress the U.S. dominance and general regulatory obstacles (primarily concerned with technology transfer).

Conclusions

What were the main findings through a two-pronged approach (texts and interviews) to discourse analysis? The following conclusions can be drawn from analyzing the approach of studying texts as well as performing interviews. These are what, according to the combined discourse assessments, could be seen as the main explanatory factors in the outcome of the transatlantic defence industry integration.

The assessment of the discourse in texts pointed to a growth of a dominant institutional logic towards shared market development, market harmonization, technology sharing etc. The assessment of the discourse in interviews instead pointed to the strong, separated national preference and scepticism towards cross-border, corporate processual integration. These two logics clearly are in conflict. The outcome of the transatlantic integration points to that the latter perspective is the dominant logic.

- The development of ownership integration is primarily being held back by non-united, national perspectives from governments.
- Operational integration was rhetorically supported and encouraged, but its implementation was restricted through individual governments’ restrictions on technol-

ogy transfer, and by the general, compartmentalized work distribution system of cost share–work share in multilateral defence collaboration.

- Texts and politicians strove for multilateral and shared benefits, whereas companies strove for access to the U.S. market.
- Protectionist and self-centred arguments that are sceptical about transatlantic defence industry integration were not apparent in the texts, but became pronounced in the interviews.
- Texts pointed to the dominant institutional logics being multilaterally based reform providing multilateral benefits, whereas interviews pointed to the dominant institutional logics being national focus and benefits of self-interest. The integration outcome clearly show that the interviews revealed a logic more in line with how integration turned out.

Discourse in the cases – aggregate assessment

The cases in Chapter 9 presented how companies have engaged in transatlantic defence industry integration. The cases showed examples of discourse set in the context of these cases. This discourse was analyzed for each case in Chapter 9. It showed how defence companies interact through different forms of regulated interaction. The *corporate driving forces* could overall be seen as highly pragmatic; they engage in these business opportunities as far as the governments are willing to allow them. Large defence programs did offer attractive technology development and production in large numbers. The ownership and operational integration becomes a negotiated compromise between corporate incentives and government restrictions. In some cases it was governments that were pushing harder for cooperation than companies, when companies did not see sufficient benefits from cooperating with certain companies, or did not want to jeopardize competitive advantages. *Government driving forces* showed a constant friction through the dichotomy between multilateral goals and domestic preference, where the domestic perspective tended to get the upper hand. A persistent and undisputed driving force was the search for economies of scale and scope. To this were added multilateral goals of NATO interoperability, market harmonization etc. Government driving forces tended to explicitly favour operational integration, and in a less direct way to support or accept cross-border ownership integration.

Corporate inhibitors revealed that companies tended to be sceptical about technology sharing. Companies were also anxious not to lose strong bonds and favourable treatment from their home governments and militaries. *Government inhibitors* mainly showed scepticism towards technology sharing and towards diluting the strength of national defence technology capacities and industries. Governments tended primarily to protect national defence companies and not to welcome a globalized industrial consolidation (apart from domestic companies acquiring companies in other nations).

The assessment of driving forces and inhibitors as identified in these three cases primarily points to the following:

- the cohesion of vested interests in national MICs,
- the avoidance of technology sharing

- previous cooperation seems to be a success factor for successful implementation of transatlantic defence industry integration; trust must be built among the vested interests

The limits to transatlantic ownership integration make operational integration in many cases the only possible means of access to other markets in the transatlantic community. Otherwise, the discourse in the cases did not come in conflict with the discourse assessment described in Chapters 7 and 8.

After the presentation of the integration and the discourse, the next step will be to compare the integration and the discourse. Through this, the aim is to identify where discourse and action correspond, and where there is a discrepancy between discourse and action.

10.4 Comparison between integration and discourse

First of all, what kind of integration did the discourse point to, or suggest?

Driving forces: Ownership integration is seen overall in texts and interviews as a self-evident goal for improving the market's functioning and the competitiveness of companies.

Secondary discourse suggested that ownership integration would improve the efficiency of the defence market and industry. Operational integration would create efficiencies, synergies, harmonization and standardization of a perceived more open defence market, and it would also improve the cohesion, functioning and interoperability of NATO. The NATO argument has weakened after Clinton and 9/11 and through the increasing European harmonization.

Interviews suggested that ownership integration primarily would mean more business, technology and R&D access for defence companies through improved market access to national markets. The European companies were much more focused on the U.S. market access than vice versa. Operational integration was primarily viewed by companies as raising business opportunities to improve or maintain individual companies' competitive position, whereas governments to a larger extent saw it as a vehicle for reaching multilateral benefits through NATO or a "better" market.

Inhibitors: Secondary discourse offered little scepticism about ownership integration, but some feared a monopoly situation and an unwanted dominance from perceived, very large U.S. primes if ownership integration was not restricted. Most texts were also strongly advocating increased transatlantic operational integration, but a minority expected only marginal effects. Interviews suggested that national bureaucracy and inertia highly inhibit ownership integration, or in other words that ownership integration is something which ought to occur but that it is cumbersome to create.

Transatlantic operational integration was difficult to perform, because it was not prioritized by the Pentagon and the president (apart from Clinton); because the impact of domestic U.S. politics discouraged it; due to the sharp imbalance in power, R&D, ambition and size; due to the difficulty of coordinating R&D planning; due to concerns about 3rd-party export; and to the general very restrictive technology sharing. The operational integration thereby had a limited processual long-term effect.

Discrepancy between discourse and action

The next step is to compare the discourse and the action, and see how they compare.

Transatlantic *ownership* integration was highly prioritized in the discourse, but the actual integration was highly limited. The ownership integration that did occur offered very few synergies or rationalization possibilities due to restrictive government control systems and firewalls. U.S. companies acquired by European companies mostly remain focused on the U.S. defence market, and the limited influence of the foreign owner (through the proxy boards) greatly reduced the possibilities to change the strategies of these acquired companies.

Admittedly, the published discourse did not suggest or foresee massive ownership integration, but the rhetoric was apparently overly optimistic. The interviews revealed many inhibitors based on scepticism, national focus and protectionism – contextual factors that were put forward in only a few of the texts.

“We are moving towards greater inhibitors.” Official, Foreign and Commonwealth Office, London, 2002

Transatlantic *operational* integration experienced a window of opportunity *in the discourse* at the end of the 1990s through Clinton’s higher priority on transatlantic cooperation, combined with the issue of RMA, DCI and NATO development. But after Clinton and with George W. Bush, 9/11, and an intra-European consolidation, the prospects for operational integration were sharply decreased. European companies were as interested, but operational integration became less plausible with altered priorities in the U.S. With the dramatic increases in ambition and defence spending by an intensively warring U.S., the imbalances also became more marked. Joint Strike Fighter, created under more beneficial conditions for transatlantic operational integration, becomes the conspicuous (and very large) exception.

Overall, the impact of the vast dominance of the U.S., its ambition to dominate and control defence technology and the defence market, and the national focus of its actual domestic political behaviour – all this was not sufficiently apparent in the discourse. Furthermore, the states concerned in the transatlantic defence industry integration collectively constituted a loose, imbalanced and fragmented organizational field of the defence market – a state coalition where each member primarily displayed scepticism about cross-border integration and prioritized domestic concerns.

Defence companies are, however, to some extent acquired in both directions across the Atlantic Ocean (although foreign acquisitions are not possible in France). Companies do business and cooperate under the highly restrictive conditions offered by the organizational field. But the ownership integration results in very limited processual integration between merged companies, and the operational integration is performed under highly re-

strictive cooperative forms with separated work packages under limited technology cross-fertilization. The processual integrative effect is thereby actively held back¹⁴⁶.

A further comparison between discourse and action will come in the discussion about the Case Study model below.

10.5 Organizational field

“There are not fortresses, but a locked, uneven situation.” Official, Foreign and Commonwealth Office, London, 2002

“The U.S. clearly is the central player in the defence globalization process. As the single largest integrated defence market and home to most of the largest industrial units, with the dominant defence technology base and the one state with a super global power span, what the U.S. does or wants will go a long way in shaping the rest of the world’s defence industrial interests.” (Hayward, 2001)

“In the U.S., the defence dynamic is driven by the U.S. strong hegemony. In Europe through a mixed bag of national identities that each wants to preserve their capabilities.” Professor, UK university, 2002

An organizational field is ‘a company’s closest and most formative environment’, ‘a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies and organizations that produce similar output’, or ‘a field of actors that is characterized by a single predominant or by multiple, potentially competing institutional orders or logics’ (DiMaggio & Powell 1991; Fligstein 1993; Meyer 2007). The organizational field is a researcher’s interpretation and analytical tool in order to search for understanding and explanation for a higher-order relationship and explanation. Now a higher-order perspective will be applied and added to the analysis. If we use the perspective of the defence market as an organizational field, how does it offer better understanding and explanation of the transatlantic defence industry integration?

The developments of three focal MICs were presented in Chapter 5. This showed how the size, breadth and composition of these nations’ domestic defence industries’ developments have been closely dependent upon impulses and support from the home governments. Until WWII, the typical cycle of defence-industrial growth was that the defence industry sharply increased in size just before and during war, and that after war its size diminished radically. After WWII, this typical sequence was altered, as the U.S., the UK and France maintained their defence-industrial breadth after the end of the war. This was an effect of the Cold War that emerged after the war. Another new characteristic was that during WWII scientists and the scientific community had become deeply involved in the innovation and development of defence products, and this new element of the MIC was

¹⁴⁶ A study of more recent intra-European multilateral defence cooperation (e.g. Neuron and MidCas) showed that the organization of the cooperative projects contains mechanisms in order to promote shared technology development between companies, thereby loosening the traditional, differentiated and strict cost share–work share principle. Furthermore, that cooperation where work share is decided upon between companies, with limited political interference, increases the probability of a successful cooperation. The general principle in multilateral defence cooperation is still, however, strict cost share–work share (Axelson & Lundmark, 2010).

also maintained. As defence development gradually became more and more advanced and scientific, extensive planning and evaluation technocracies were created. In France, this technocracy has been embodied and culturally borne by the *ingénieurs général de l'armement*.

In Chapter 9 three cases of transatlantic defence industry integration were presented. In these cases it was apparent that vested interests in national MICs must be persuaded in order for transatlantic defence industry integration to occur at all. Defence companies cannot autonomously engage in ownership or operational integration without the consent of the governments concerned. Governments may also deny acquisitions or mergers based on considerations of security or defence policy. Mergers and acquisitions may also – as in many other industries – be denied based on considerations of competition and antitrust policy.

In Chapter 9 it was also apparent that in order for transatlantic defence industry integration to occur, extensive negotiation and clearance of regulatory toll-gates must be passed. In these processes, many different vested interests must be convinced to make certain choices regarding technology choice, choice of subsystems, choice of partners etc. Apart from these formal processes, it was obvious that there also were informal decision processes and toll-gates. In NFR-90 the national strategic reactions and the strategic reactions within coalitions of nations as well as coalitions behind subsystem consortia (such as NAAWS vs. FAMS) made the complexities immense. If we see the defence market as an organizational field, it is a loosely coupled entity with actors (MICs) that one by one act in similar ways, but in an uncoordinated fashion.

Companies are dependent upon resources from governments, without which they would not exist. Governments also control companies in many ways. The concept of an organizational field addresses a company's closest and most formative environment, a recognized area of institutional life, or a field of actors that is characterized by a single predominant or by multiple, potentially competing institutional orders or logics. We can clearly see in Part III how the corporate field is dependent upon the support, resources and approval from the government field. This dependence is mostly national. The government's defence, security and foreign policies are also based on the existence of a sophisticated, domestic defence industry, so there is a reciprocal dependence. This interdependence creates a shared logic that reinforces the issue of a MIC; all concerned will favour conclusions that foster preservation and continued development of national defence industry, technology and products. The military, industry, politicians and public officials may, based on separate and different logics, favour the same outcome.

"The main driver for transatlantic integration is access, access, access." Academic, UK university, 2002

"European companies must have U.S. companies for business, U.S. companies find European companies nice to have." Merrill Lynch representative, London, 2002

The U.S. defence market is the most attractive for defence companies. The U.S. military is sceptic to buying non-U.S. military equipment. Established U.S. defence companies are difficult to acquire for European companies, and if they do, they get very limited strategic control. According to other studies and comments from people I have met in my professional role at FOI, several European companies pursue a different strategy for getting access to the U.S. market. They aim to identify SME.s with promising technology that not yet has attracted defence R&D funding. If they acquire three, they expect (as a proxy) that one of them will receive defence R&D funding. The European company then already has more insight into the company's technology, and has a

more favourable foothold on the U.S. market. Naturally, small SMEs that have such potential will become more costly to acquire. (Interviews in France, Sweden, UK).

The different MICs in different nations have different backgrounds and traditions, and also different political conditions that create a certain regulatory set-up. Each MIC also has its idiosyncratic set of vested interests and domestic defence-related rivalries. The outward behaviours of the MICs are highly similar, but the domestic conditions and competition for resources are different in each nation. Thereby, we may see each MIC as an organizational field, but we may also see the interplay between the MICs, i.e. the defence market, as an organizational field.

“The notion that industry should police itself is truly laughable.” U.S. Senates political spokesman (R)

In order for a strongly institutionalized organizational field to change its dominant institutional logics, there must be a challenging institutional logic or rationale that is strong enough to overthrow the previous. In the case of the MIC, it had a very strong institutional logic during the Cold War with its two aggressive and highly armed opposing blocs. This high tension maintained the high level and ambition of defence expenditure. When the Soviet Union collapsed and the Warsaw Pact disintegrated, the imminent military threat largely disappeared. New discourses started proposing disarmament and defence industry conversion. Despite the very strong change of institutional conditions, the MICs largely did not change in size or in sophistication. What did occur was that there was industrial consolidation intra-U.S. and intra-Europe. The extreme standards of technology protection developed during 40 years of Cold War were maintained. Apparently, the change in dominant institutional logics was apparently not strong enough; the institutional inertia was too profound. During the 2000s, there is among European governments a still ongoing shift with the emergent institutional logics of Europeanization reaching increasing importance, at the same time as the institutional logics of transatlanticism experiencing decreasing importance. European companies, however, primarily strive for acquiring business in the U.S. Batora (2009) describe how the European Defence Agency has to deal with several conflicting institutional logics. He sees tensions between the logics of supranational regulation and the logic of intergovernmental networking; between the logic of defence sovereignty and the logic of pooled defence resources; between a Europeanist and a Euro-Atlantic logic; and finally between the logics of liberalisation and Europeanization of the defence market (Batora, 2009)

What added understanding & explanation do we get from the organizational field perspective?

The perspective of analyzing the defence market offers a way to set the corporate integration in perspective with its environment. The corporate field (the companies, which in aggregate constitute an industry) can be understood as acting in different environments. Firstly, they operate in a national context with a certain set of conditions, possibilities and limitations. European companies also operate in a European context, where government policies are intertwined and interdependent. The U.S. companies have the comparative advantage of operating in one single, national context – a context that also is by far the richest in resources and business. The UK companies can also be said to operate in an intermediary context thanks to the UK-U.S. “special relationship”. Finally, there is also a transatlantic context – a context that is clearly more elusive.

In the defence market, the impact of the government field profoundly defines the companies' strategic grasp. The identification of the government field's impact upon corporate actions and strategies allows an explanation for how the corporate integration becomes rational and understandable. Companies will find the strategies and the means to do business that are possible within the confines of government support and government restrictions.

The actions of the corporate field and the government field become more understandable when set in relation within a uniting organizational field. There is no overarching logic or set of rules that applies to all nations or to all companies, but there is symmetry to the overall functioning of the organizational field. The resulting, dominant institutional logic is that protection of domestic defence technology is the foremost priority, paired with a logic to prefer solutions that protect and preserve national defence-industrial and defence technology assets.

10.6 Case Study model

What is the contribution and explanatory power of the Case Study model?

The purpose of the thesis is to *formulate an explanatory model for comparing the discourse concerning and the action of a specific industrial change*. This model is intended to best suit a politically influenced market. The thesis focuses on the transatlantic defence industry integration. With the aid of that model, the goal is to *understand and explain the transatlantic defence industry integration*.

The focal theoretical concepts of the Case Study model are action, discourse and organizational field. Action was empirically searched as integration, and discourse as the combination of driving forces and inhibitors. The perspective of an organizational field was applied to the aggregate empirical assessment, and with the help of the MIC concept.

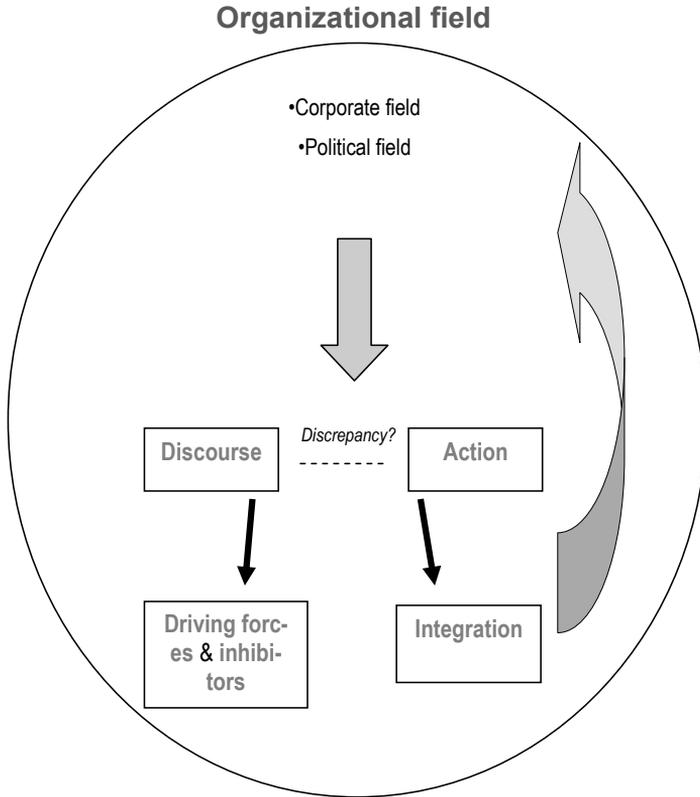


Figure 10.4. *Case Study model*

The aggregate perspective of the Case Study model enables a discussion and an analysis of the relationship between its theoretical constructs.

What conclusions can be made from the comparison between discourse and action – what are the findings related to the Case Study model?

Texts focused on multilateral benefits. Interviews suggested that actors (companies, states) had much more focus on benefits based on self-interest, thereby suggesting much stronger inhibitors than the texts did.

Action resulted in highly politicized and restrictive set-ups of ownership and operational integration. The discourse, especially in texts, promoted a general approach by governments that seemed unrealistic – the cynical understanding of how the organizational field of the defence market works – and a power and dominance perspective was, on the whole, not properly articulated in the texts.

The domestic inertia exercised by national MICs offered a part of the explanation for why transatlantic defence industry integration resulted as it did. The actors in the national

MICs protected domestically developed defence technology and favoured domestic defence companies. Elaborate national defence bureaucracies and control systems created under Cold War conditions are designed to be sceptical and restrictive about border-crossing operational integration – and they do that job well.

Companies do acquire and they do integrate and cooperate, and there are national authorities and policies that promote and create substantial operational integration. This cooperative approach, however, almost entirely resulted in intra-European operational integration. The larger European nations have between 15 and 30% of their defence procurement in multilateral cooperation, but the U.S. has around 1%.¹⁴⁷

It is obvious that there was no causal relationship between discourse and action; what is being done only partly conforms to what was suggested by the discourse. The integration is better understood and explained by adding the impact of the government field set in the context of the organizational field. The discourse for transatlantic defence industry integration was in its turn influenced by the integration that occurred: once the U.S. defence industry consolidation had taken place, the conditions for European defence companies changed, and government rhetoric and action pressed for intra-European ownership integration. As the U.S. government and military clearly decreased their interest in transatlantic defence industry integration – due to the presidential shift from Clinton to G. W. Bush and the impact of 9/11 – the prospects were clearly deflated. Irrespective of these political wind shifts, companies strove to increase their own competitive positions, and European companies strove to get a presence on the U.S. market and become a part of its attractive defence spending.

All through the development since the end of the Cold War, governments have continued to closely regulate defence companies' actions. These instruments are largely based on national priorities, and the regulatory grasp is primarily national: national defence companies' operations, export, and domestic mergers and acquisitions. There are several multilateral agreements regarding e.g. defence export and technology transfer, but these arrangements largely define the common denominators that can be agreed upon.

Discourse becomes an explanatory bridge between action and the organizational field. The transatlantic defence industry integration largely differs from what in strategy literature is seen as how companies merge and acquire, and how companies' international operations develop through globalization and the perfection of internationalized supply chains.

The impact of the discourse and action on the organizational field

In the Case Study model, there is an arrow on the right, implying a causal effect from the discourse and action back to the organizational field. The relations between the corporate and the government field(s) are naturally affected by the development of the transatlantic

¹⁴⁷ Present defence policies in Europe are becoming increasingly shared between nations (see e.g. France and the UK in late 2010), and national defence procurement is increasingly becoming integrated into an EU defence market harmonization (Mörth 2000; Britz 2004; Schmitt 2005; Bekkers et al. 2008). That is, however, a different story which this thesis only partly touches upon.

defence industry integration over time. There is, however, no united government field; there is rather a loose coalition of national MICs of various strengths and international importance. Governments cooperate in order to better affect – through united efforts and powers – the development of the defence industry. European nations make different accords – in the EU, bilaterally and multilaterally – in order to influence the development of the national and the ‘European Defence Technology Industrial Base’ (EDTIB). This process is driven by the nature of the U.S. defence dominance, the evolution of the defence-industrial landscape, and the European striving to have a certain degree of defence technology autonomy. Among the EU member states, there is a declared goal to decrease the European dependence upon the U.S. in defence matters. The military capabilities that are needed for European nations’ military challenges (and the defence equipment and technology that are needed in order to create such capabilities) are stated as being the foremost driver for how the European defence industry ought to develop.

The strength of the Case Study model

Is the Case Study model an adequate tool for understanding and explaining the nature of the transatlantic defence industry integration? The model offers a perspective that sets a highly politicized market into an aggregate perspective, and the corporate integration in a market often described as “not being a market” can thereby be considered rational under these conditions.

The Case Study model could be applied to other processes of industrial change and market reform. It is most suitable to a market where the corporate field is highly co-dependent with the government field, and where the political influence is marked. Furthermore, it will be more pertinent if there is a marked discourse that evolves over a longer time period, so that different vested interests, stakes and institutional conditions become pronounced – thereby making dominant institutional logics apparent. It would also be applicable to a suggested change that appears not to materialize, for example in the fishing industry or the agricultural industry. State involvement through corporate ownership and the state as a buyer would also make the Case Study model suitable, e.g. in energy, telecommunications and infrastructure.

The Case Study model could also, with some alterations, be applicable to processes of institutional change, such as different processes of Europeanization led by the European Commission. A process clearly related to this thesis is the ongoing harmonization process in Europe of the defence market, led by the European Defence Agency (EDA) together with the European Commission.¹⁴⁸ In this process, there is an ongoing European defence-industrial consolidation process (co-dependent with other global defence-industrial processes, especially the U.S. development) – an *industrial* integration. There is also a *market* integration, with a combined harmonization of the regulatory framework (especially the Directive 2009/81/EC on public procurement in the fields of defence and security, i.e. the

¹⁴⁸ EDA is a defence authority hierarchically under the European Commission, but the two actors have different roles in the process.

so-called Defence Directive¹⁴⁹, and the Code of Conduct) from August 2009, and also a gradual consolidation of the European military demand, defence research and defence planning processes. This EU process creates a conflict and a challenge in that the majority of the EU members also are members of NATO, which has a somewhat different agenda and goals; this will be further discussed in Chapter 13.

The next chapter will discuss the theoretical, empirical and methodological implications of the thesis, together with the main conclusions in relation to the thesis' purpose.

¹⁴⁹ This EC Directive has a long history of previous, gradual harmonization through policy documents and multilateral agreements (e.g. OCCAR and LoI/Framework Agreement). See e.g. Mörth 2003, Britz 2004.

Chapter 11 Findings on the transatlantic defence industry integration

In this chapter the results of the thesis will be put forward. In terms of the thesis' purpose and the research question, what were the results? What improved understanding of the empirical phenomenon has been reached?

First there will be a discussion of understanding and explanation. Next comes a discussion on the improved understanding of the phenomenon in relation to theory, methodology and empirical data. This is followed by a section on what are seen as the main conclusions – the chief factors that explain the activity in the transatlantic defence industry integration, together with what are seen as the condensed driving forces and inhibitors. Then the thesis' results are compared to previous analyses of the phenomenon. Finally, there is a discussion of the overall research design.

Understanding and explanation

- Understanding

The research approach of this thesis stressed the importance of understanding the conditions of the specific political market in order to understand the integration within this organizational field. Corporate action regarding transatlantic defence industry integration would appear erratic and incomprehensible if we solely analyzed corporate strategies, without knowledge of the conditions set upon the defence industry by governments. The following parts have been important in reaching understanding: the discussion of the defence industry (Chapter 2) and the description of the MICs (Chapter 5).

- Explanation

The Case Study model rests upon the background understanding obtained in Chapters 2 and 5. Through the empirical data in Chapters 5-9 and the Case Study model, the corporate integration can be explained, and can be understood as rational under the conditions of the organizational field of the defence market. The discourse becomes an explanatory bridge that connects the integration with the organizational field, the co-dependence between the corporate and the government field, and how the government field regulates the corporate integration and its business activities.

11.1 Improved understanding of the phenomenon

Under this heading there will be a discussion on how the thesis has improved the understanding of the transatlantic defence industry integration – regarding theory, methodology and the empirical data.

Integration

Defence companies' transatlantic integration is often described as occurring in a market 'not being a market', on the ground that the interaction between supply and demand due to government influence fails to qualify by generally accepted norms of a market. It is true that the political influence is so great that price as an explanatory factor becomes a weak indicator for how the market operates. An explanation for the integration requires a different explanatory approach.

How defence companies engage in ownership and operational integration, and how these events turn out, can be better understood and explained when the corporate field is set into a market context which stresses the influence of the government field and the interdependence between these two fields – the organizational field. In order to understand this interplay, it is essential to understand the incentives and goals of the government field.

Defence companies are similar to companies in general in that they want to further and perfect their competitive position through different strategic options, and that they want to maximize their profit in a way that in the short term satisfies the shareholders, and to ensure the strength of the company in a way that in the long term satisfies the home government's demands (which may be formulated in many ways).

Ownership integration has two primary goals. Firstly, to increase the companies' market position. Secondly, to get access to other, more or less captive national markets.

Operational integration has three primary strands. Firstly, nations strive to develop defence products in order to achieve products that fit their specific demand. The access to attractive defence technology is restricted, and therefore nations finance domestic technology development. Nations in many cases do not acquire already developed products 'off the shelf', and when they want to develop new products and see autonomous development as too expensive they may pool their demand with other nations in a collaborative defence program. Defence production almost exclusively occurs either in a domestic development or in a government-initiated, collaborative program¹⁵⁰. Such collaboration requires that the contributions of defence companies in several nations must be coordinated – an operational integration. Secondly, operational integration may also occur in a new organizational entity after companies have merged or been acquired, or if they have created a joint venture. Thirdly, companies could through voluntary cooperation integrate their operations through production arrangements in a supply chain.

Ownership and operational integration can be further analyzed as being structural or processual. The structural integration denotes the new structure or entity that has been formally created – a collaborative arrangement or a new corporate entity. Cross-border processual integration is closely regulated and monitored by the governments concerned,

¹⁵⁰ And as a result of an export order, but this typically concerns already developed products, often to some extent modified for the new customer.

where governments are driven primarily by protection of domestic companies, investments in defence technology, abilities of the companies and the domestic defence technology development capacity, together with national goals for security policy, foreign policy and military capabilities. Processual integration is generally not encouraged.

Ownership integration (M&A) occurs on the initiative of defence companies, but only as acquisitions. The design of ownership integration and operational integration is, however, closely orchestrated by governments, transatlantically and in general. Acquisitions result in highly restricted influence of the acquirer over the acquiree. There are specialized firewall arrangements set up by the host nation of the acquired company and the acquirer that greatly limit the new owner's strategic control.

The operational integration in collaborative programs is overall designed in a differentiated manner through cost share – work share arrangements, which through their set-up do not stimulate synergies and technology sharing. Certainly, the companies will have to organize so that the respective contributions together add up to and form a sophisticated product that performs to the specifications, and they will have to solve the challenges of different interfaces together. But companies cannot engage in mutual, cross-border projects by their own will. All such interaction, even just a meeting, has to be approved by the respective governments.

These observations about integration are for the most part generic to the defence industry, and not specific to the transatlantic integration. Specific to the transatlantic integration are the asymmetric dependence between nations and companies due to the U.S. hegemony; and the extreme restrictions on strategic influence for foreign acquirers in the U.S. These factors create a highly unbalanced power distribution over the transatlantic defence industry integration.

To sum up, the transatlantic defence industry integration follows generally established government-created regulatory regimes for how defence companies can interact. There is thus an overarching logic, pattern and rationality to how the integration turns out. This logic is not the result of a mutually agreed regulatory harmonization; it is the result of nations' similar, parallel restrictive and protectionist behaviour. With the integration taxonomy, enhanced understanding and explanatory power are reached.

Discourse

An initial observation that triggered this thesis was that there appeared to be a continued discourse over many years that advocated increased transatlantic defence industry integration, but that there was an industrial integration that largely developed very slowly, and in a restricted manner.

This thesis shows that there was a marked difference between discourse expressed in texts and that in interviews. If the *text* discourse expresses what the writers truly expected would happen, the overall message was that nations would decrease their domestic interests and priorities, set their actions into an aggregate priority of a more harmonized and open market, not prioritize their domestic defence companies as much, allow reciprocal market access and freer technology transfer, and not use their national competitive advantages in order to maximize their influence. There were clearly also sceptical views that the U.S. would continue to dominate the market. If the *interview* discourse expressed what the respondents truly expected would happen, the overall message stressed that compa-

nies were driven by their own competitiveness and did not at all prioritize multilateral benefits (unless these offered more and better business). The interviews also more strongly indicated that nations were driven chiefly by concern for their domestic defence industry and to control technology transfer. All respondents (corporate and government) stressed the priority of getting access to the U.S. market and its technology, and for U.S. companies of not jeopardizing access to the U.S. market by losing trust from Congress and the military. In sum, the interviews offered a message that clearly is more convincing for understanding and explaining how the transatlantic defence industry integration had turned out.

The texts were primarily written by writers *not* from the corporate field, but rather from the government field, political science or economics. This conforms to the focus on multilateral benefits, but it also indicates that corporate strategic priorities seemed not to be properly explained or understood.

The cases in Chapter 9 showed that the driving forces and inhibitors overall are focused on benefits of self-interest. This becomes a paradox when the mutual endeavour is a joint defence materiel development or a joint venture. The degree of scepticism and unwillingness towards technology sharing, and the protectionism of domestic defence industry, result in a low degree of trust and openness. Thus, the forces that inhibit deeper ownership and operational integration proved to be very strong.

A study of corporate integration shows considerable ownership and operational integration within Europe, and limited transatlantic ownership and operational integration. A more detailed study of the separation between structural and processual integration shows that the processual integration is actively held back. When adding the assessment of the discourse, an explanation of the limited processual integration is offered and a causal relation is clear; governments discourage processual integration. Discourse becomes an explanatory bridge between the concept of integration and the concept of an organizational field.

In Chapter 3 a recent analysis was discussed (Depeyre, 2009), which described the discourse and actions¹⁵¹ of the five largest U.S. defence companies. Discourse is seen by Depeyre as the strategic intent that the company presents to its environment – what the company intends to do. Actions concern internal allocation and combination of resources and external allocation of resources (mergers and acquisitions) in order to carry out the company's strategic intent. Comparing this thesis to Depeyre's work, both study recombinations of corporate assets. Depeyre studies five companies' individual recombinations, whereas my thesis studies recombinations of industrial resources through ownership and operational integration within an industry that acts in an organizational field: the aggregate outcome of recombinations on the industrial level. Another difference is that official corporate strategy is seen by Depeyre as observable and unequivocal, whereas this thesis sees discourse as ambiguous and not truly representative of companies' actual driving forces and inhibitors. Furthermore, my thesis more deeply analyzes what kind of structural and

¹⁵¹ “*Discours et actions*?”. Note that Depeyre uses the word ‘actions’, not action, thereby implying specific acts.

processual integration really occurs behind officially announced mergers, acquisitions and cooperative programs. A final difference is my thesis' more pronounced focus on the influence of the government field, and the view of the defence market understood as an organizational field. However, Depeyre's treatment of recombination brings interesting perspectives to my analysis.

Based upon the initial observation that there appeared to be a discrepancy between discourse and action, and that identified previous analyses did not appear convincing for explaining such a discrepancy, this thesis thereby had to produce a better explanation. The discourse assessments clarified conflicting perspectives reflecting underlying institutional logics. These conflicts in logic brought improved explanation to the assessed integration outcome; national governments' strong reluctance towards technology transfer explains the highly limited transatlantic, processual corporate integration.

Through stressing two dichotomies in the discourse (texts–interviews, corporate field–government field) as well as the separation between the U.S., France and the UK, certain theoretical points stand out:

- There is a clear discrepancy between what the studied actors say in the discourse and what they do. Especially the government field expresses multilateral incentives, but governments primarily act unilaterally. They show a policy ambivalence.
- Discourse does not reveal the dominant institutional logic. There are parallel local (national) discourses, and actors must address their institutional logic in order to obtain legitimacy and thereby resources. The discourse is dominated by the dominant actor – the U.S. – and the published discourse does not sufficiently reflect this, whereas the discourse in interviews clarified it.
- The discourse from the government field is influenced by critical events (end of the Cold War, the increased interest in NATO interoperability, the shift from a more multilateralist Clinton to a highly unilateralist Bush), whereas companies' incentives for transatlantic integration do not change much. This is not surprising, but the published and governmental discourse tends to be overly optimistic, if not unrealistic.

This shows that an exploitation of the difference between discourse and action conforms to the theoretical perspective of Brunsson. Action can be better understood when more actively identifying the discourse, and the incentives that lie behind the actors that express the discourse. The overall discourse as expressed in texts did not seem to reveal the true priorities of the actors concerned, especially the companies. The outcome of the transatlantic defence industry integration thereby requires an analysis of integration in several steps so as to be understood and explained.

Political market

A 'political market' means that the market conditions in which the companies concerned (an industry) operate are profoundly influenced by political actors. In the defence market the political influence is truly fundamental. Governments strive to control and regulate the conditions of most aspects of corporate action. This creates a certain, limited room of strategic manoeuvrability for companies. Within this strategic confine, companies will optimize their operations and strategies. They challenge the limitations by suggesting mergers and acquisitions, and by aiming to access foreign defence technology. They strive to persuade governments to give them orders and to finance defence technology develop-

ment. The successful companies have been skilful in optimizing their rewards from this political environment. Companies' competitive position is also highly dependent upon the support they receive from their home government in how it allocates resources to its domestic companies.

Thus, by exploiting the influence and impact of the government field in a political market, the competitive conditions for a company are better utilized. In a sense, all markets are politically influenced, but in some markets the influence is more profound than in others.

MIC

The MIC concept is useful for capturing the political context of the defence market and, most of all, how national defence production becomes deeply embedded in a national, cohesive coalition of interests that protects the domestic defence actors and fosters a sort of group-think. The MIC becomes a national organizational field united by the concern of promoting its domestic military and defence technology actors. The overall dominant, institutional logic is rhetorically united under an umbrella of a 'national interest'.¹⁵²

Especially in the U.S. and France, the MICs have through their development shown strong institutionalized, taken-for-granted institutional logics based on national interests. In the U.S. such logic is most apparent as a unilateral priority of the 'U.S. national interest'. In France, the institutional logic has rather been expressed as a non-dependence on others in defence matters. The *ingénieurs de l'armement* in France have been the incarnation and bearers of a strong national defence posture.

The MIC concept drew greater analytical interest during the Cold War and in the years after its end. The lack of theoretical stringency and unison between scholars in what constitutes a MIC, however, makes the MIC concept less useful for structured analysis of corporate action, since the priorities that drive MICs are so subjective, political and aggregated. The MIC is still a highly useful metaphor for capturing what drives the development of the defence industry and, in this thesis, the transatlantic defence industry integration. The inclusion of a discourse analysis is able to dissect higher-order political incentives and more directly relate them to what companies can and will do.

Organizational field

An organizational field is not observable; it cannot be measured. Its perspective is useful, however, in setting corporate and government actions in relation to a higher-order rationale. The power structures which are inherent in a market subject to strong political influence, and which in a discourse are set under stress for fundamental change – as a reform of the conditions for transatlantic defence industry integration – will also point to issues of dissonance and imbalance between actors regarding market change.

Markets are primarily governed through regulations for competition. Companies are set free to operate under this governance with differing degrees of freedom. In e.g. telecommunications and energy, governments have in international accords agreed upon how the

¹⁵² A nation's choice of military equipment and priorities in military technology is also a result of its military posture and ambitions, and the demand and choices that it brings. This aspect, however, is not analyzed in this thesis.

international market should function, and with certain limitations. If they violate the regulations, sanctions may be put into action. There is a competitive governance framework for defence companies. However, governments do not allow them to operate freely under these conditions. Supply, demand, the market mechanism of price and a 'free' global competition are not set free. Companies' actions are closely monitored, and require government consent in most aspects of their out-of-company operations. Governments do not trust companies and the market to be able to create a supply that will offer buyers the best possible supply. Thus, the market governance is primarily a regulatory governance model.

The Case Study model shows how corporate rationality becomes rational if related to the impact of the defence market understood as an organizational field and to its inherent conditions – what Oliver calls 'strategic responses' (Oliver, 1991).

The aspect of 'institutional logic' becomes a useful concept for linking patterns in discourse to the question of which values and priorities dominate in the organizational field. The MICs embedded dominant institutional logics trace their historical patterns back to the Cold War, WWII, WWI but also back to other strong national conditions and traditions. To the most part the organizational fields of the MICs have resisted such strong shocks as the end of the Cold War and the power of globalization. The strongest government instrument for maintaining stability in this organizational field is the control of technology transfer. Thus, industrial forces striving for globalization, synergies, rationalization etc. are allowed only limited impact on the size and nature of the defence industry and its internal reorganization.

Through the concept of the organizational field, certain theoretical points stand out:

- The defence market is a highly institutionalized organizational field that has a distinct appearance in society. This organizational field is shaped around the market and the actors that influence its conditions. It has a fundamental government influence which to a large extent defines and controls what companies can do. However, there is not a strong *transatlantic* (or global) organizational field; it is rather a coalition of similarly acting national entities that prevails on this level.
- The MIC is a metaphor with considerable power to describe and explain how nations act; domestically and towards other MICs. The MICs resist change and promote domestic priorities. In other markets, governments have much more extensively decreased the importance of national preferences and embraced deregulation and globalization.
- The concept of institutional logics serves as an adequate instrument to describe the nature of the institutionalization. The institutional logics in different nations share certain characteristics in being historical sediments of the issue of national military power, and of the striving for national sovereignty in defence production. The long traditions of profound institutionalization of government, and of military and domestic defence production (previously within the government, now in companies), have created deep embeddedness of the shared institutional logic. The defence market seen as an organizational field also shows local institutional logics, seen nationally in the descriptions of the MICs and also identifiable in separate intra-U.S., intra-European and transatlantic contexts for industrial integration.

- The control of technology transfer is the tool of governments that permeates their control of the defence-industrial integration. There is no shared regulatory governance for technology transfer, but each nation acts similarly in a regulatory set-up that reflects its domestic military and security priorities and ambitions. This thereby becomes the dominant institutional logic.

11.1.2 Empirical data

What new understanding of empirical phenomena has been reached through the thesis?

The design of the thesis and the use of the Case Study model presented a novel empirical account of the defence market that offers understanding and explanation of the interrelationship of the industry, government actors, governments' regulatory governance, national markets and the shared marketplace. Through this aggregate picture, certain empirical observations are put forward:

Transatlantic defence industry integration: The thesis has presented an assessment of the transatlantic corporate ownership and operational integration¹⁵³. With the three analytical concept pairs of ownership–operational, structural–processual and integrated–differentiated in an integration taxonomy, the transatlantic defence industry integration was described and understood with increased detail. The effect of the institutionalized resistance towards processual integration became especially apparent.

Such an assessment has limitations; it proved impossible to gather a 'full' coverage of what mergers, acquisitions and collaborative arrangements have occurred. Integration on the prime level can be covered to a large extent. The extent of primes' ownership and operational integration into lower tiers, however, is more difficult. More detailed information about the processual integration in specific cases is hard to get access to, and would have demanded a different study, but all data indicate that the processual integration is highly limited. In TRS, though, quite exact information was retrieved regarding how the companies can and cannot processually integrate their operations.

Discourse: The assessment of discourse in texts and interviews, divided between corporate driving forces and inhibitors, government driving forces and inhibitors, offered an empirical assessment with considerable detail. Such an assessment has not been identified in previous analyses.

Organizational field: The study has shown that the transatlantic defence market as an organizational field is not strongly institutionalized, and can be better understood as a loosely coupled coalition of MICs focused on stability of the institutional conditions and benefits of self-interest.

The Case Study model, the perspective of an organizational field and the breadth of empirical data together offer an accumulated picture. This accumulated picture suggests an aggregate relation-

¹⁵³ Focusing on the companies Lockheed Martin, Northrop Grumman, Raytheon, Boeing, EADS, BAE Systems, Thales and MBDA.

ship between corporate strategy, corporate integration, government interest in a political market and the discourse concerning a specific industrial change – this accumulated picture is a novel illustration.

11.1.3 Methodology

To conduct a literature study and then perform interviews is standard procedure. In this thesis the literature study can be said to represent the official discourse for a wider audience (Chapter 7), while the interviews revealed incentives in the discourse more focused on benefits of self-interest – incentives that appear to be closer to how the companies actually act. These two types of sources have added to the strength of the empirical data.

An important point of departure for the methodology is the dichotomy between discourse in texts and that in interviews. This dichotomy proved to reveal explanations and make differences in institutional logics clearer.

The interviews were performed over a period of several years, and ten years have passed since the first. This can be seen as a problem, but since the shift of the U.S. presidency to George W. Bush in 2001 led to a shift in transatlantic relations, the differences can instead be exploited.

A great number of interviews were performed in 2001 in the U.S., in 2003 in France, and in 2004 in the UK – totally over 100 interviews. The interviews in the U.S. focused on driving forces and inhibitors, and data were collected for another, but closely related study. The data were not fully validated for this thesis' purpose, which has led to the empirical material in some respects being too wide for the purpose of this thesis. However, there is no possibility to repeat these interviews, so I have used parts of these data and interpreted them for the purpose of the thesis. Moreover, in terms of size, the U.S. sample is roughly double the French sample, and six times the UK sample. However, the UK sample of ten respondents was more directly focused on this thesis, and the French sample of twenty-nine respondents should be sufficient for interviews.

A strength in the methodology is that it represents a large breadth of empirical data. Through the thesis' empirical account, the intent is to present a narrative which makes the defence industry behaviour rational in relation to the conditions of its organizational field. The pattern of integration becomes apparent from the sequence of empirical data, inductively building an explanation for the discrepancy between discourse and action.

The geographical presentation of data in Chapters 5 and 8 is unusual in business administration methodology. It was seen as suitable since the assumption is that the nation-state has such a profound impact on the functioning of the MIC and how it shapes the conditions for the defence industry.

The focal level of analysis becomes the meso-level interface between the focal companies and the organizational field; this is where we find the explanations for the nature of the discrepancy between discourse and action concerning transatlantic defence industry integration.

In the earlier phases of the thesis work, I received criticism for my writing being too contextual – that my reasoning was based too much on my personal knowledge and understanding. Hence the thesis provides substantial information that serves as background

knowledge. Chapter 2 gives a presentation of the defence industry, and in Chapter 5 there are accounts of the developments of the MICs in the U.S., UK and France. Based on this, the intention is that the readers thereafter can join the search for a better explanation for transatlantic defence industry integration.

Compared to the initial sample of companies in the strategic group, there is a handful more that have grown in importance since the start of the thesis' focal time period. If we compare the initial sample of companies with Table 6.4, Finmeccanica (Italy), United Technologies (U.S.), General Dynamics (U.S.) and L-3 Communications (U.S.) also stand out.¹⁵⁴ These companies have grown during the last decade so that they could be seen as part of the strategic group. The three U.S. companies are among the SIPRI top ten. United Technologies, however, is largely a conglomerate of diverse business interests, and its major defence business is in Pratt & Whitney, which produces aircraft engines. United Technologies is therefore not suitable within the sample of primes. L-3 Communications has risen to become a prime contractor on many subsystems in growth markets related to emerging technologies in command, control, communication and information (C³I). General Dynamics was not a part of my company sample either, and therefore not within the focus of my interviews. Finmeccanica is primarily an industrial conglomerate with limited strategic conformity within the total group. It could be argued that Finmeccanica also should be included in the sample. But firstly, through other studies I have obtained extensive empirical material concerning France and the U.S., and a study of Italy has not been possible to perform. Secondly, Finmeccanica rose to a transatlantic status more on par with the companies studied in my thesis, but not until late 2008 when they acquired DRS Technologies in the U.S. These companies have thus not been covered by my focus. The absence of these companies should not, however, distort the overall results of the study.

A problem with the methodology of this thesis is that it has required an extensive empirical collection, so extensive that it has made the thesis overly difficult to finalize. The breadth of the empirical data, covering aspects of corporate action, MICs, discourse and case studies, has made the unification of the empirical data into one analytical framework very difficult. Overall, my empirical scope is therefore not recommendable. Future analyses of related research problems are therefore advised to delimit their empirical and analytical scope compared to this thesis.

Eisenhardt (1989, 2007) suggested "theory building from cases", searching for patterns in the empirical data and seeing how they compare to theory. The transatlantic defence industry integration can be seen as one overarching case study, the studies of MICs as three subsets, and the three case studies of NFR-90, TRS and JSF as three other case studies. All three types of case studies fit into the Case Study model, and patterns can be seen between them. The most closely *analyzed* empirical phenomenon, however, is the ownership and operational integration. The patterns found in the integration offered a pattern of how the integration results, or does not result, in structural and processual integration. These patterns become rational when related to the patterns found in the MICs, the dis-

¹⁵⁴ Halliburton (U.S.) is also among the SIPRI top ten, but it is a consultancy company that falls outside of the definition of 'strategic group' in this thesis.

course and the NFR-90, TRS and JSF case studies. The theoretical results and contribution of this overall framework can be said to validate the usefulness of the Case Study model.

Further relating to Eisenhardt, the analysis of the discourse also showed a pattern in how the driving forces and inhibitors were expressed in texts and in interviews, respectively. This offers a theoretical perspective in order to analyze how corporate action (or other action) may show a discrepancy. The Case Study model connects the organizational field with the corporate integration, bridged by the analysis of driving forces and inhibitors.

The Case Study model is deductively derived, based on certain fundamental assumptions of how a political market may differ from a market functioning according to the SCP paradigm. What inductively derived patterns can we find in the empirical data about discourse? This thesis indicates that in a political market the published texts and secondary sources will stress government and multilateral perspectives more than corporate incentives – the corporate incentives and governments' incentives based on self-interest will be better captured in interviews. Whether this holds true in other markets remains to be tested in other studies.

11.2 Conclusions

This thesis concerns transatlantic defence industry integration. It may sound as if the companies are passive, captive strategic appendices that cannot affect their own future. Such is not the case.

So how do companies do business? They sell in their home country. They export. They engage in cooperation with companies from other nations. They expand in ownership integration through acquisitions, they acquire minority shares in other companies in other nations, and through offset arrangements they perform commitments to produce and develop defence products for other nations. What we are focusing on in this thesis is how they integrate transatlantically, and how the transatlantic defence industry market works. In the transatlantic dimension, the focal companies only integrate to a low extent, and cooperation is cumbersome to implement. When European companies are able to acquire U.S. companies, they become hamstrung owners and their influence on the management of the companies is restricted to almost nothing. U.S. companies' acquisitions of European companies are partly restricted (some companies cannot be acquired). Defence technology cannot be transferred from European acquirees to the U.S. owner, nor from U.S. acquirees to the European owner. Acquirers cannot more than marginally rationalize and create synergies between companies across borders. Defence materiel cooperation is typically organized in a highly differentiated supply chain through cost share – work share. Thus, the processual integration is limited. If we focus on the transatlantic defence industry integration, the corporate integration is highly limited, and the integration that occurs is deeply restricted by the government field.

Under this heading, the thesis' main conclusions are first presented. This is followed by the primary, condensed driving forces and inhibitors for the transatlantic defence industry integration.

11.1.1 The thesis' main conclusions

The thesis uses an established perspective from institutional theory regarding discourse and action, which is set in relation to the related theoretical concept of an organizational field. By combining the empirical data on discourse and action within the organizational field, we can find intermediate explanatory factors that explain the discrepancy between discourse and action. The main conclusions of the thesis thus primarily relate to the combination of the theoretical concepts of integration, organizational field and discourse, combined with the aggregate understanding of the transatlantic defence market.

This is illustrated in the following figure:

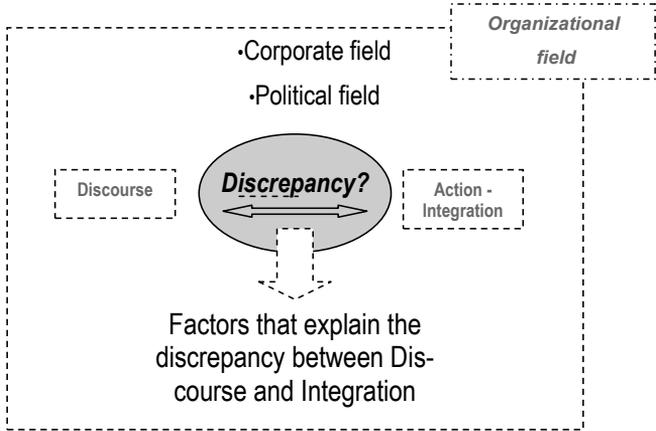


Figure 11.1. The thesis' main conclusions

The thesis' main conclusions respond to the question: *What are the factors that explain the discrepancy between discourse and action regarding transatlantic defence industry integration?*

The thesis indicates that, in terms of the focal theoretical concepts of the thesis, the nature of the discrepancy between discourse and action concerning transatlantic defence industry integration can be explained as follows:

Integration

Transatlantic industrial integration is highly regulated and restricted:

Acquisitions on a leash: Ownership integration is not discouraged, but the effects of acquisitions are deeply restricted as the foreign owner gets very little influence over the foreign acquisition. Many defence companies cannot be acquired from abroad due to government golden shares or vetoes. Processual ownership integration (cross-border consolidation, rationalization, supply chain integration etc.) is actively restricted. Mergers do not occur.

Market mechanisms or companies are not trusted to create market efficiency: The operational integration that occurs is primarily driven by economies of scale or strategic market synergies. Structural operational integration (collaborative programs) is encouraged in discourse, but processual operational integration is strongly restricted in practice. Bureaucracy, scepticism and restrictions are so vast that many collaboration attempts never reach fruition. Companies are not allowed to truly integrate industrial assets, R&D processes, technology or production processes. In cooperation, there are strict firewalls between companies.

Cost share – work share is the formalized practice for collaborative programs, which is constructed in order to define work share shares according to cost shares, and also to actively restrict processual integration and technology transfer.

Integration in isolation: Governments in aggregate offer a limited scope of corporate cross-border integration, with defined degrees of freedom. Within this strategic confine, companies find ways to do business. Development and production will occur; these are the only companies that are able to execute production of defence products. Governments regulate and monitor all aspects of corporate integration through a multitude of instruments and regulations – a regulatory governance which defines the strategic envelope.

Rational under the restrictions: Defence companies' actions are rational under the conditions offered by the organizational field; companies' actions become 'strategic responses' to this highly regulated market. Companies will advocate extensive integration, but are aware that the outcome will be less developed.

Discourse

The discourse contains apparent contradictions between integration and separation:

Altruistic arguments are symbolic: Discourse as identified in texts has suggested that altruistic benefits and joint actions in a shared market (the organizational field) matter for transatlantic defence industry integration. Discourse as identified in interviews has revealed that benefits of self-interest and priorities governed by the corporate field and the government field are what really matters for the outcome of the transatlantic defence industry integration.

Market integration requires willingness to share: Discourse as identified in texts thus suggests that shared benefit is important for governments and is desired by companies. Discourse as identified in interviews reveals that there is no dominant, shared institutional logic. The dominant institutional logic is parallel, but rather identical in each nation; each actor primarily prioritizes benefits of self-interest and avoids outward technology transfer. Transatlantic integration requires increasingly shared market and technology, but integration cannot occur if no one is willing to share.

Organizational field

In the organizational field, there is an apparent mix of institutionalized conditions that serve as inhibitors to increased integration:

Technology is national: Governments deeply control and restrict the corporate integration and development towards a more transparent market through their respective, highly restrictive policies for technology transfer between nations. This is a legitimate tool for avoiding unwanted technology transfer, but is also used as a direct tool for restricting all aspects of processual integration.

Separated innovation flows: The U.S. and the European defence research and innovation flows are largely separated. About 1% of the U.S. defence RDT&E and 1% of the U.S. defence procurement are shared over the Atlantic Ocean; the U.S. defence budget is persistently more than double the aggregate EU defence budgets, and the U.S. defence R&D budget is persistently 6-7 times larger than the European aggregate defence R&D budgets. Thus, the U.S. and European defence development flows largely run in separate paths.

The benefit of the national MIC is the dominant institutional logic:

- Within the organizational field, multilateral aspects of a shared market and harmonized practices do not really affect transatlantic defence industry integration. National aspects in the government field are what govern transatlantic defence industry integration and where companies must achieve (and not jeopardize) legitimacy and obtain resources.
- There is no shared regulatory governance model, but all governments show similar, parallel governance practices where each nation on its own is sceptical of outward technology transfer. The regulatory behaviour is primarily based on scepticism and self-interest – not on trust and shared benefits.
- The MICs' sceptical logic creates inertia towards border-crossing ownership and operational integration. National defence procurement reacts to border-crossing integration as a military-industrial complex, with an inherent reluctance to accept this industrial change due to the organizational field's advanced national institutionalization of practices, the close bonds between its actors, a protectionist concern for the domestic defence industry, and the very high standards of control by governments.

Overall, '**globalization**' is **not encouraged** when it comes to corporate integration and technology sharing. Globalization is primarily encouraged regarding defence export.

11.1.2 Most important driving forces and inhibitors

Based on the conclusions of this thesis, what main factors can be said to

- *drive the transatlantic defence industry integration?*
 - o Of the integration that does occur, governments and supranational bodies have very little driving impact on the transatlantic integration. The integration that does occur is primarily what companies are able to execute in what they see as good business or attractive acquisitions, despite the extensive government restrictions, and given what is accepted by all the vested interests concerned. Companies slowly pull reluctant governments towards increased corporate integration.
 - o Transatlantic integration will not occur without sufficient support and legitimacy from U.S. actors. Many companies want to get access to the U.S.

market, and many European nations would want shared defence programs with the U.S. Thus, the U.S. interest is what governs the extent of transatlantic integration.

- *inhibit the transatlantic defence industry integration?*
 - o The clearest inhibiting factor is that all concerned nations are deeply restrictive towards technology transfer and technology sharing. This restrictive approach permeates all government governance. All cross-border ownership and operational integration is closely supervised and organized by governments in order for processual integration and technology transfer to be minimized.
 - o The highly separated and uneven defence development flows in the U.S. and Europe.
 - o The U.S. 'MIC' has always preferred U.S. domestic defence development. There was an increased interest in transatlantic defence collaboration under Clinton, but this interest decreased markedly after Clinton and 9/11, and with the Iraq and Afghanistan wars.
 - o Governments' extensive defence bureaucracies and many tools of supervising domestic defence assets – although larger companies have learnt how to manage these regulatory hurdles.

11.3 Results compared to previous analyses

In Chapter 1, it was indicated that previous analyses of transatlantic defence industry integration broadly offered the following three hypotheses for explanation of the outcome:

- *There is little integration and the two political contexts are so different that they will always stay apart.*
- *If the two sides could harmonize in certain ways (normally with higher defence budgets in Europe and/or less scepticism in the U.S. vis-à-vis Europe, or harmonized military requirements), integration would occur.*
- *There is actually integration between companies, integration that is pulling the two political contexts closer.*

Compared to these perspectives, this thesis shows that the ownership integration is gradually becoming more pronounced on levels below the strategic group; first- and second-tier companies are highly attractive. Through these acquisitions, the acquirer can get market access, and will increase its market position relative to its competitors. In this sense, the third hypothesis holds true. On the prime level, however, there is no indication that the integration is intensifying.

There is some market harmonization and inter-government agreement (primarily bilateral) regarding the conditions of transatlantic defence technology transfer. These reform attempts, however, are only partial. The second hypothesis is not thereby falsified, but it shows that the degree of change is highly limited. Governments praise transatlantic *market* harmonization with one hand, but act on national preferences with the other – what we defined as 'policy ambivalence'.

The first hypothesis is overly pessimistic, but it holds some truth. The general regulatory governance that discourages processual integration and technology transfer puts a very strong inhibiting burden upon the transatlantic defence industry integration. The integration of the government fields' regulatory governance does not seem to change more than marginally.

A different explanation can be found in the fact that the flows of defence demand and defence R&D largely flow in separate paths. The U.S. defence procurement and the U.S. defence R&D are shared with Europe only through less than 2% of defence collaboration and R&D. Since Clinton, the separation has grown more marked. This suggests that the prospects for transatlantic defence integration have not improved, and perhaps have even been weakened. Added to this explanation is the fact that the U.S. defence R&D funding has been six to seven times higher than all of Europe's for the last ten years, and that the U.S. defence procurement is two to three times higher. The defence technology developments in the U.S. and in Europe thereby move in separate lanes, at different speeds.

Thus, in summary the transatlantic defence industry integration is to some extent being pulled by the ownership integration performed by companies. However, governments' regulatory inhibiting effect together with the largely separated defence technology development flows between the U.S. and Europe profoundly limits the operational integration.

11.4 Evaluation of the research design

What do we know now that we did not know beforehand?

Theoretically

An analysis of corporate integration can be more deeply analyzed when using a framework of ownership and operational integration, together with structural and processual integration.

A discourse analysis as done in this thesis is able to connect corporate integration in a political market with the interaction between a corporate field and a government field in a market seen as an organizational field. Conflicting institutional logics and perhaps less obvious but dominant institutional logics can be identified, understood and explained.

The combination of theories on integration, discourse and organizational field can bring enhanced explanation to corporate rationality in a highly politicized market.

Methodologically

The method of a separated analysis between discourse in texts and in interviews has revealed a deeper understanding of why there can be a discrepancy between discourse and action.

To further sort the discourse data in terms of driving forces and inhibitors, and present them coupled to the corporate field, government field and the organizational field, has brought order to the vast data on discourse.

Empirically

The research design and the Case Study model have provided an aggregate account and assessment of the defence market which makes the interrelationships between actors more understandable, and brings a novel order and narrative to how the defence market functions.

The integration taxonomy made it possible to disentangle the generally imprecise references to 'integration' in the defence industry by describing the industrial integration with three conceptual pairs: ownership–operational, structural–processual, and the operational, processual integration as being integrated–differentiated.

An account of discourse separated between texts and in interviews had not been identified in any other studies.

Analysis of corporate strategy in the defence market based on theory from the field of business administration is very rare. The empirical data collection is thereby a novel one.

A key empirical finding is the importance of governments' regulatory governance, which primarily rests upon a restrictive regime concerning cross-border technology transfer.

The results of the thesis, and in what ways increased understanding and explanation have been attained for the nature of the transatlantic defence industry integration, have now been presented. In the following chapter the contributions of the thesis will be considered.

Chapter 12 Contributions

The purpose of this chapter is to summarize the contributions of the thesis.

First, we will discuss how the thesis has succeeded in relation to the research question and the purpose, followed by a discussion on alternative approaches of the study. We will then present the perceived theoretical, methodological and empirical contributions of the thesis.

After this, a discussion follows regarding the practical implications of the thesis – for companies and for policy-makers. Finally, there will be a discussion on suggestions for further research.

12.1 Results in relation to research question and purpose

The purpose of the thesis is twofold:

To formulate an explanatory model for analyzing the discourse concerning and the action (outcome) of an industrial change process.

and with the aid of that model

Understand and explain the outcome of the transatlantic defence industry integration pattern.

For the first part of the purpose, such a model has been formulated and applied in the thesis. How well this model has worked was discussed in Chapters 10 and 11. The model offered a way to combine the theoretical concepts of integration, discourse and organizational field and to combine the thesis' vast empirical data.

For the second part of the purpose, the nature of the transatlantic defence industry integration has been described. The extent of ownership and operational integration has been assessed and analyzed with a further perspective of structural and processual integration. This integration is understandable in relation to the assessment of discourse and the incentives and conditions of the organizational field – all set into the context of the Case Study model. This overall assessment and analysis offers an explanation for why the integration turned out as it has, and also explains how governments' regulatory governance – non-united as a whole, but one-by-one similar in action – profoundly restricts how companies are able to integrate through ownership and operations, structurally and processually.

12.2 Empirical contributions

This thesis has primarily presented an aggregate description, understanding and explanation of how the transatlantic defence market functions and how the industrial integration evolves. This aggregate picture and the interrelationship between the empirical phenomena constitute the thesis' main contribution.

Studies of previous analyses and enquiries to researchers in many nations revealed a widespread belief that there was limited transatlantic defence industry integration. There was, however, no study that had clarified the true extent of this integration with statistics and distinctive empirical data. I attempted to produce such an account, but this proved to be very difficult. Defence R&D collaboration and bilateral development collaboration are not always publicly announced. Company-to-company collaboration on lower tiers may not be publicised at all. Instead, I made a comparison between the intra-European, intra-U.S. and transatlantic industrial integration in order to compare the nature and extent of the integration. This showed that the transatlantic integration really was limited in comparison.

The perspective of the Case Study model clarified how governments in discourse may advocate a development towards a shared and open defence market. It also clarified how nations individually in their actions show opposition to a defence market transparency and increased technology transfer. Through this, the limited integration becomes understandable when set into the conditions of the defence market understood as an organizational field.

The perspective of combining integration, discourse and organizational field provides a combined picture of how the defence market functions. Thus, the thesis brings understanding and explanation to how the corporate strategy and the corporate integration become rational under the conditions created by the defence market seen as an organizational field.

The dichotomy between a government field and a corporate field, together with the dichotomy of discourse into driving forces and inhibitors for corporate integration, offers a way to clarify how a strongly politicised market functions, and the processes that underlie the actual outcome of integration.

The thesis has analysed the transatlantic defence-industrial integration with an integration taxonomy (ownership–operational, structural–processual) which brings increased clarity to analysis of the concept of ‘integration’ compared to previous studies.

The initial empirical observation indicated that there was a discrepancy between discourse and action. The thesis shows that there really is a discrepancy, and the analysis explains in what ways. In order to set the transatlantic integration in perspective, it has been compared to the intra-U.S. and intra-European integration.

Academic analyses of the defence industry are primarily made in the disciplines of political science or economics, very seldom in business administration. The defence market is often accused of ‘not being a real market’. It is therefore rewarding to see how business administration theory can be applied to the defence industry and market. The resultant perspective on the integration turns out to enhance understanding and explanation of how the defence market functions.

The assessment of the driving forces and inhibitors and the two accounts of the discourse appear to provide empirical data not previously compiled.

12.3 Contributions to theory

What was the identified theoretical gap? The thesis was intended to find an explanation for the perceived discrepancy between discourse and action regarding transatlantic defence industry integration. The understanding of the defence market indicated that the focal defence companies (the primes) are highly dependent upon the government field, and that the defence market shows very strong national institutionalization. A theoretical tool was thereby needed that could combine the following theoretical concepts: corporate rationality for integration of companies; government governance of a strongly politicized and regulated market; and discourse for industrial change. Building blocks were found that yielded a part of this model (integration, discourse, organizational field), and more specific concepts were identified (e.g. vested interests, institutional logics, strategic responses, policy ambivalence, talk & action, driving forces & inhibitors) which elucidated the patterns in the empirical data.

The main contribution is the combination of these building blocks into one ‘Case Study model’ which is able to explain a more abstract empirical phenomenon on the meso level (causality between discourse and action in an organizational field) through a combination of less abstract empirical data found on a lower level (corporate integration, arguments for or against industrial change, cases of transatlantic integration). The main theoretical concepts (integration, discourse, organizational field) are used as tools in order to find an explanation on the higher level. The Case Study model focuses on some novel aspects and searches in some new directions – with an unusual combination of theoretical concepts. This provides a novel picture of corporate integration in a political market.

The Case Study model is a tool for combining the theoretical aspects that were identified as important for being able to understand and explain the transatlantic defence industry integration. In my view it has worked well, but its capacity for clearly and precisely capturing the components of the discourse must be improved; this is a suggestion for further research. The Case Study model should also be suitable for analyzing other markets that bear characteristics of a political market.

The thesis presents four new theoretical contributions: the Case Study model, the integration taxonomy, the dichotomy between driving forces and inhibitors, and the discourse matrix. Some further comments can be made on contributions through the use of the focal theoretical concepts:

Integration: There is no unified school of theory regarding ‘integration’; it is a concept used in many fields. Based on established definitions of integration, however, ownership and operational integration together with structural and processual integration can explain how government regulatory influence shapes corporate integration. The analytical aspect of integrated or differentiated supply chains offers additional explanatory power. This is united in the integration taxonomy.

Discourse: The dichotomy between texts and interviews, corporate field and government field, and driving forces and inhibitors makes patterns in and understanding of discourse more apparent. Discourse can be seen as an explanatory bridge between action and an organizational field. The discourse matrix offers a tool for sorting incentives for industrial change in a political market as emanating from the corporate field, the government field or the organizational field.

Neo-institutional theory in organizational analysis: From this school, primarily three theoretical strands were utilized: discourse & action, organizational field, and institutional logic. *First*, the concept of discourse & action was used and proved to be highly useful and illustrative, so in this sense the perspective was tested and found valid. The use of driving forces and inhibitors as a tool for more finely dissecting the discourse may be seen as an added option to the concept. *Second*, the organizational field is a powerful metaphor and analytical tool. As the neo-institutional field is so large, it becomes more of a perspective than an analytical tool, but it keeps the thesis' perspective durable. Organizational field in combination with 'MIC' stresses the extreme tensions and power structures that reside behind the scene in the defence industry's environment. The defence industry's organizational field is also driven by the very harsh demands of military warfare, and no (legal) marketplace contains higher stakes than this. The MIC metaphor can be used as a theoretical enabler if combined with institutional theory. *Thirdly*, the concept of 'institutional logic' proved pertinent for explaining the discrepancy between discourse and action, and it also served as a bridge over to explaining the discourse.

The extremely political nature of the defence industry may, through its 'exaggerated' market behaviour, bring out novel aspects of established theories and concepts in business administration theory.

12.4 Contributions to methodology

The Case Study model and its perspective suggest a way to investigate industrial change processes, political markets, the relation between discourse and action, or a combination of these perspectives. Other applications of the model or derivatives of it should be possible.

The concept of driving forces and inhibitors as used in the interviews was instrumental in penetrating the discourse and identifying the sceptical arguments about transatlantic defence industry integration – the inhibitors.

The combination of and comparison between discourse in texts and discourse in interviews suggests a way to understand and explain corporate rationality in highly politicized markets.

12.5 Limitations

This thesis has not investigated how defence companies actually integrate processually; it is possible that more informal processual interaction, synergies and technology sharing exist. How a prime interacts with its suppliers in a supply chain is not examined either. The assessments of this thesis, however, show that such processual integration is not encouraged by governments, and is even actively monitored in order for it not to occur. TRS points to how the respective governments restrict it. Other studies (e.g. Molas-Gallart, 1999; Axelson & Lundmark, 2010) indicate that governments allow only limited processual integration in the defence industry.

There is more transatlantic ownership integration and processual integration in lower tiers of the industrial hierarchy under the primes; this has been put forward by several respondents. These industrial levels, however, have not been in the scope of the thesis, so

this topic is not analyzed. Some respondents have argued that such integration, more clearly driven by globalization, will result in the primes following as well, in order to better access the best suppliers. The thesis has not investigated this aspect.

The impact of offset on the transatlantic defence industry integration has not been researched or analyzed. This factor is fundamental for how defence companies structure their offers for achieving export orders. The selling company will have to organize a complex arrangement for fulfilling the offset obligations, typically over a ten-year period. It may, as shown by Axelson & Lundmark (2009), result in substantial industrial interaction with local defence industry and may lead to acquisitions and further business. The impact of offset has not been within the scope of the thesis, but has been referred to. It does not seem to affect governments' general regulatory governance of defence companies.¹⁵⁵

The Europeanization of a European defence market, led by the authorities affiliated with the European Commission¹⁵⁶, and the transposition of the Defence Procurement Directive by August 2011 is an important reform that alters, or will alter, the market conditions for European companies, and influences Europe's relationship with the U.S. This Europeanization does not change conditions drastically, it is rather an ongoing 'policy convergence' (Britz, 2008; Fligstein, 2008) as national defence policies gradually show a convergence towards a more harmonized national defence industry policy. This reform does not yet, however, seem to have altered the incentives and conditions of transatlantic corporate integration to any real extent. European companies' most attractive business opportunity and strategic goal is still to get access to the U.S. market. The reform nevertheless demands extensive effort in European ministries and procurement agencies, and is a focal component of rhetoric in government bills and policy documents. This has been determined to lie outside the scope of the thesis, and is therefore mentioned but not a part of the analytical framework.

12.6 Alternative approaches?

Given the empirical observations and the purpose of the thesis, how could it have been performed differently with a theoretical framework that falls under the umbrella of business administration theory?

One approach might have been to rely solely on secondary sources, with no interviews. In this case, the study could have been performed without travelling. This alternative would have had two weaknesses. First, in my research approach the periods spent as a guest researcher in the U.S. and France strongly increased my understanding of the market contexts in those countries. Secondly, interviews proved to reveal a deeper and more truthful

¹⁵⁵ An interesting aspect described by Axelson & Lundmark (2009) is that buyers of defence goods who demand offset (as most do) will view technology transfer to the domestic defence industry as an important competitive factor in evaluating the bids. This is an increasing trend, where indirect offset unrelated to the military product is decreasing, and defence technology transfer to the buyer is becoming more prioritised.

¹⁵⁶ Especially the European Defence Agency (EDA), DG Market and DG Industry.

understanding of incentives for and against transatlantic defence industry integration, and thereby also better explanations.

A second alternative could have been to search only for data on corporate action, and not for the actions and incentives of governments. But I claim that corporate action in the defence industry cannot be properly understood if isolated from government actions and influence. The market conditions are so politicised that corporate action would otherwise appear erratic.

A third alternative could have been to use the Structure-Conduct-Performance perspective (SCP). By adopting this view, individual defence companies would have to be seen as able to act independently and rationally, based upon information about the market. Yet the strong dependence on financing from governments, the cross-border regulatory restrictions and the highly politicised market conditions that are apparent in the defence market make the SCP perspective less pertinent. Corporate strategy must in my view be understood as closely interdependent with government actions and priorities.

Thus, my understanding of the defence market suggests that an understanding and an explanation of the transatlantic defence industry integration require a theoretical approach that stresses the governmental influence.

12.7 Normative implications

12.7.1 Best practice – management implications

Can a strategy for successful transatlantic defence industry integration be presented to a defence company? What are the success factors?

Increase the processual integration: The process of ‘globalization’ has revolutionized the industrial practice in many other markets and industries. In the defence industry, governments in practice actively resist globalization. There is therefore an immense pool of hypothetical possibilities for synergies and rationalization which have not been realized. Companies would therefore attain competitive advantages by increasing the processual integration. In order to do this, they must liberate themselves from national restrictions, combined with offering opportunities for governments to achieve better defence innovation through increased synergies, multilateral collaboration and technology combination. Ideally, there should be a business opportunity that has a strategic fit between the companies, the long-term goals of the respective governments, and the respective militaries’ long-term product demand and military doctrine. ThalesRaytheonSystems appears to be such a case.

R&D pooling: If companies can contribute to convincing governments on both sides of the ocean that they, together with the companies, have a shared interest in developing a certain defence technology, this will likely create opportunities for further business, and it will also create presence in the U.S. defence community. This pooling should preferably be bilateral in order to earn a U.S. interest, and it must be based on already existing capabilities in the European company.

Build trust: The national MICs are apparently sceptical of its domestic defence industry becoming less national. The vested interests of the MICs must be convinced through a gradual build-up of trust.

Build U.S. presence over time. Companies must create partnerships with U.S. companies with long-term strategic fit, as in the case of ThalesRaytheonSystems.

Demand in international operations: If defence companies can identify a shared military need for international missions (Iraq, Afghanistan etc.) the interest could be substantial. This could also provide affirmative support from the home military and government. International missions tend to have pressing needs which can result in quick government decision-making. It could also result in trust from the U.S. military – a very strong competitive advantage.

Niche excellence: Companies must become attractive for other companies, especially for U.S. companies and U.S. policymakers, as the U.S. overall has vast technology superiority compared to Europe. They must possess specialized defence technology niches that offer unique attractiveness.

Export partnering: If a European company could provide an essential system in an American export offer, this could mean a strong competitive advantage. Other nations would also be convinced of this system's performance if the U.S. were to choose it. This option, however, is extremely difficult to achieve; the U.S. almost exclusively designs defence products consisting only of U.S. technology.

Combat proven: In defence export, a very strong sales pitch is that the product is 'combat proven'. This means that the product has been used by militaries in real combat, or at least under war-like conditions. Some Swedish products are widely used by the U.S. in Iraq and Afghanistan (especially Saab's *Carl Gustaf* recoilless rifle). Respondents in Europe have stated that the U.S. companies strongly put forward the combat-proven argument when they are aiming to export. The Gripen airplane's presence in Libya will to some extent contribute to a Swedish 'combat proven' image. To conclude, usage by the U.S. military is of tremendous competitive impact.

12.7.2 Implications for policymakers

Policymakers must understand grand, transatlantic defence relations. They may communicate visions of reciprocal technology sharing, but must be aware of the actual national foci on national benefits.

Policymakers must have realistic expectations. A political rhetoric that differs too much from what actually happens and is possible to achieve runs the risk of having limited influence, or directing effort in the wrong directions.

According to several respondents, discussions in the U.S. Congress reveal that the politicians have very long memories. Collaborative shortfalls in military matters decades ago will still matter strongly. This could concern the French withdrawal from NATO in 1966,

or defence export in the 1980s to a nation that the U.S. regards as hostile or not trustworthy. Trust is hard to build, and scepticism stays for a very long time.¹⁵⁷

Defence technology collaboration takes a very long time to establish. Trust must be built between companies, militaries, R&D communities and defence bureaucracies. Such trust cannot be created within one parliamentary period; it takes much longer.

Governments should strive to create shared R&D programs with the U.S. (admittedly a very difficult task). This would enhance trust in the U.S. and provide better future business opportunities for domestic companies.

Nations must exploit competitive advantages in technology. With the slowly deepening globalization of the defence market, companies will no longer be able to operate only within national monopolies – they must be internationally competitive. In order to create border-crossing integration of production, they must be attractive as partners for companies as well as for policymakers.

Nations can choose to be very accommodating towards U.S. defence priorities and NATO standards. The UK has chosen to become dependent on the U.S., whereas France avoids it. This could lead to long-term (but subordinate) partnerships with U.S. companies – if the given nation has sufficiently attractive defence technology, competence and defence funding.

Governments could instead choose to prioritize Europe instead of the U.S. The Europeanization process and the creation of an EU military force will offer many business opportunities. There is still considerable business in Europe.

Many European nations participate in international operations, often alongside the U.S. A domestic military demand for defence products that overlaps a U.S. demand could create shared procurement or development – and also bring with it invaluable trust in the U.S. community.

Governments and policymakers could more strongly promote their internationally competitive companies in order to become more attractive for U.S. companies and U.S. policymakers.

Defence R&D could be directed towards niche areas where transatlantic collaboration is seen as feasible to create – this demands a strategic priority from the concerned government. Pooled R&D projects will increase the possibility for further development and business for industry.

Towards the U.S., bilateral armaments collaboration is more feasible than multilateral.

¹⁵⁷ Several respondents also said that congressmen and senators will use such xenophobic arguments in order to safeguard continued defence production in their home constituency. Discourse in that case masks the true incentives. There is also a very strong preference for all-U.S. defence equipment in Congress and the military, so these arguments will resonate strongly with this 'national interest'.

12.8 Suggestions for future research

The Case Study model could be applied to other markets with a strong political influence. This model could for example be applied to the fishery or agricultural industries in Europe, industries that are deeply politicised and where work and the industrial landscape are entirely dependent on political support and subsidies.

The Case Study model could be applied to more distinct industrial cases in political markets. A project in e.g. infrastructure or energy where there have been many different vested interests and perspectives would be suitable.

A study could be based on a similar methodology for certain parts of the defence industry, e.g. within a nation, or a market segment.

There is an increasing intra-European integration of defence R&D and a parallel, co-dependent gradual movement towards a harmonised 'European Defence Equipment Market'. Some recent, multilateral defence collaborations in Europe (e.g. Neuron and MidCas) with defence R&D pooling are designed in order to promote shared technology development. They are still organized under cost share – work share principles, but with clearly more open interfaces between companies. How does this influence the short-term and long-term operational, processual integration of European defence companies?

A study that would strongly resonate with this thesis would be to analyse the discourse for Europeanization and the EDEM in order to identify the institutional logics in different nations. My experience indicates that there is a marked discrepancy between governments' commitments to the Europeanization process and the priorities of national MICs and their defence companies.

This thesis has shown how governments' restrictive governance acts as a strong inhibitor on the processual integration of companies. Interviews and other analyses indicate that the processual integration is limited. A more focused study of what processual integration actually occurs between interacting companies in collaborations or in supply chains could further clarify this issue.

The theoretical concept of driving forces and inhibitors in this thesis would benefit from stronger conceptual rigour. My research process shows that it must be made more convincing.

Chapter 13 Postscript: the future of the transatlantic defence industry integration

This final chapter provides a more speculative discussion on the future of the transatlantic defence industry integration. The discussion rests on the previous analysis in the thesis, but also on my personal experience and knowledge of the defence industry and the defence market after having worked as a defence industry analyst since 1998.

There is a political stratosphere above the focus of this thesis that affects the conditions of the transatlantic defence industry integration. The organizational field is embedded in this stratosphere. Over time, aspects such as the development of the Cold War, NATO development, the EU's powers and actions, U.S. war efforts (the Gulf War, Iraq, Afghanistan), bilateral and/or multilateral relations between the U.S. and EU or specific states, U.S. presidents' reforms or policy agendas in defence matters, the Europeanization of the defence market – such developments alter the conditions of the defence industry. These grand perspectives go beyond the analysis of this thesis and cannot be objectively captured, but I will broadly discuss them. I will also partly bring other defence companies below the prime level into the discussion.

Will there be a shared transatlantic market? In a long perspective of, say, 30 years, it is reasonable to believe that there has been further concentration in some segments of the defence market. In the segment of manned fighter aircraft, not all of the producers Boeing, Lockheed Martin, Eurofighter, Dassault and Saab are likely to produce their own planes. There is also over-capacity in armoured vehicles and military shipbuilding in Europe.

The U.S. defence-industrial domination and the technology gap are likely to increase further as long as the very large differences in funding and the largely separated innovation processes prevail.

Nations that wish to attain stronger security and military links will favour suppliers from the most geopolitically important nations; an acquisition of e.g. a fighter means a 'security handshake', as the buyer becomes a part of the selling nation's security fraternity. For example, several members of NATO tend to buy into U.S. standards (e.g. Norway and Denmark). Central and East European NATO members tend to want to come closer to NATO and the U.S., and may therefore favour U.S. equipment. This incentive may further marginalize certain companies that are outside of the loop of U.S.-financed defence development.

U.S. defence technology is the most sophisticated, and U.S. defence materiel development is experiencing recurrent extreme cost increases – more so than in comparable nations. If this development is not reversed, several nations will probably opt for less sophisticated

but sufficient defence technology, and at a considerably lower price. If so, there will probably be an increasing rift between nations that opt for the U.S. level of technology, and other nations that will choose less costly products from companies in e.g. Europe and Asia.

Since 9/11 the issue of transatlantic defence industry integration has clearly been weakened. The U.S. has radically increased its defence spending, and its defence R&D priorities are less attached to NATO and Europe. The common denominator is now primarily how NATO members (and others) can operate together with the U.S. in Iraq, Afghanistan and lately also Libya. The possible transatlantic common denominators have thus radically shifted in character.

The Joint Strike Fighter development fundamentally affects the future of the European military aerospace industry. Nations like the U.K., Netherlands, Italy, Netherlands, Norway, Denmark and probably more to come are devoting defence R&D to an American project with a hitherto unseen magnitude. When the European Commission is working to safeguard the European aerospace industry, JSF/F-35 becomes an unbalancing factor. Development of new military aircraft is becoming increasingly expensive and complicated, and new fighter development in Europe appears to be no longer attainable by a single nation. In a longer perspective, the global dominance of Lockheed Martin is likely to further increase, and three European fighter suppliers are seen by all analysts as at least one too many.

Europe is experiencing several important change processes regarding its defence industry and the European defence market:

- The most important process is the Europeanization of the defence market, led by the European Commission and the defence authority EDA (European Defence Agency). Until 1998, the development was mostly rhetorical, with a web of bureaucratic constructs for discussing possible collaboration. The development was only loosely coupled to the Commission. EU members refrained from letting the Commission get control over the defence market – a situation that was established through article 292 in the Rome Treaty stating that defence procurement could be regarded by each member as a national responsibility and thus not concerned with a common EU market. NATO was still the dominant forum for defence development. In 1998, six nations (France, Germany, Italy, Spain, Sweden and the UK) signed a Letter of Intent ('LoI', later renamed 'The Framework Agreement') which served to create harmonization in defence regulations and conditions – for companies, government-to-government collaboration and defence R&D. From the early 2000s, Europeanization picked up considerable speed. The Commission created the EDA in 2005, and by August 2011 a Defence Procurement Directive has to be transposed in all members' national legislation. So far, the development has not had much impact on the defence industry and the industrial integration. The Defence Procurement Directive will however profoundly change the conditions of defence procurement and decrease members' possibility to disfavour foreign suppliers.
- Especially between 1998-2002, there was considerable European consolidation among the LoI members. This consolidation was to some extent facilitated by the LoI initiative and helped to release strong incentives for consolidation. Sweden

was however largely outside of this consolidation. The consolidation was made among EU members, but the Commission had very little influence on the consolidation occurring and the industrial outcome – apart from allowing mergers and acquisitions in relation to EU market competition legislation. Compared to other consolidations in Europe in other industries, the defence industry consolidation has led only to restricted rationalization, and national defence industrial entities have largely been kept apart within the new conglomerates. There are apparently discussions on creating higher-order synergies and recombinations in the created border-crossing conglomerates, but the change in company operations and industry structure is developing quite slowly.

- The growth of the EU in the last 15 years through the inclusion of many Central and East European nations have created a fundamentally altered mix of national defence-industrial entities. The Commission wants to streamline and rationalize the over-sized and redundant EU defence industry, at the same time as many of the new members wish to modernize their defence industries. This creates a paradox. If market forces were allowed to rule freely, a large share of the new members' defence industries would disappear through consolidation or in the competition with Western European and U.S. defence companies. In certain segments, especially armoured vehicles and shipbuilding, there is still considerable overcapacity in Europe.¹⁵⁸ These companies represent substantial employment and thus become politically sensitive. This constitutes a big challenge for the Europeanization and openness of the defence market.
- The present Europeanization of the defence market is aiming to create a supra-national regulatory governance within the EU. This thereby weakens the national governments' independence in defence matters. Compared to the development of the transatlantic market, and of the largely overlapping NATO community, the Europeanization is thus a much more radical market development. If a European, harmonized defence market were created with a shared governance for technology transfer, the U.S. would have to interact with a coalition of nations, instead of interacting on a bilateral basis. This would to some extent strengthen the comparative strength of Europe compared to the U.S. – but the U.S. would still be highly dominant for many decades to come.

In sum, what is likely to be the future development of the aggregate defence industry in the U.S. and Europe?

- The U.S. defence industry will continue to dominate globally as long as the U.S. remains the dominant military power with enormously superior funding to industry. Massive economic crises could force the U.S. to downsize its defence ambi-

¹⁵⁸ Another possible development could be that manufacturing of defence products could move to nations in Europe with lower labour costs as in car and household appliance manufacturing. This is a hypothetical development that still not has materialized, probably because of the mother companies' and their host nations' unwillingness to transfer technology. The employment in defence manufacturing is probably also protected in e.g. the UK and France.

tions, but with its present overwhelming technology and financial dominance, such changes would have to be very radical in order to alter the present dominance.

- European companies have in general come to rely much more on export than their U.S. counterparts. Several of the non-European nations to which they export demand substantial technology transfer in the export package. This technology transfer will likely lead to some globally competitive niche companies, but most of these nations appear not to have a corresponding and sufficiently sophisticated domestic R&D infrastructure in order to develop globally competitive products.¹⁵⁹
- The U.S. defence export is heavily dominated by its fighter exports. The defence exports in e.g. armoured vehicles, submarines and naval ships are dominated by Europe. An increase of U.S. interest in other segments would alter the market balance, probably to the detriment of the European companies.
- Presently the defence innovation flows in Europe and the U.S. are largely separated, and have been so for a long time. A 100% increase in transatlantic defence collaboration would still leave the collaborative share (operational integration) of U.S. defence development at around 2.5% (compared to 15-25 % between the largest EU nations). Thus, the shared defence development will likely remain at marginal levels, thereby producing separated defence product portfolios. At the same time, European defence R&D is becoming increasingly shared, and such shared R&D endeavours will create more common denominators between the companies – thus strengthening the European defence development.
- If European nations become more liberal and less protectionist towards their defence companies, U.S. defence companies will be able to acquire many more European companies. If the U.S. also becomes more liberal and less protectionist, there will certainly be more acquisitions from Europe. This could develop into more integrated supply chains and more synergies. A radical development in this direction does not seem likely, however.
- It is more likely that the largest defence companies will become even larger and have a more globally diversified product portfolio. This will make them less dependent upon national governments, and conversely, national governments will experience decreased control of these companies. Such companies will find ways to achieve global competitive advantages and business opportunities. As long as nations are not able to create shared and influential governance structures, individual nations will be less able to control these companies.

¹⁵⁹ In this regard it would be reasonable to discuss the future defence-industrial positions of the BRIC nations (Brazil, Russia, India, China). This would, however lead to a much wider discussion than this thesis' scope. At any rate, Brazil and India have for decades tried to develop a globally competitive, domestic defence industry – but with very limited success. Russia has considerable export, but when it comes to what nations buy, the customer segments that procure Russian defence products would not likely procure U.S. defence products, but possibly French products. China is so far in most product segments at a clearly lower technology level than U.S., French or UK defence products.

- Defence companies are however increasingly sourcing for subsystems and components outside (domestically and abroad), retaining the systems integration capability in-house. Such sourcing is becoming increasingly globalized. This inclusion of new suppliers leads to more internationalized supply chains, and this is likely to bring some globalization to the supply chains. These specialized suppliers are not, however, likely to grow organically into very big companies; thus far in the defence industry, they have only been able to become internationalized niche suppliers. The largest defence companies instead tend to grow larger, and to acquire the successful niche companies. The largest defence nations also have very strong protection of domestic defence technology, and the smaller nations less so – which will work as a competitive advantage for the large companies from the large nations.
- Defence companies in Europe see the U.S. defence market as the most attractive. The Europeanization of the defence market in the EU will create and foster a political discourse, and stress priorities and incentives which are partly contradictory to European defence companies' strategic focus. The European Commission aims to promote the competitiveness of the European defence industry, not to create a 'Fortress Europe'. A focus on EU market harmonization will, however, more strongly enhance European cohesion than transatlantic openness.
- If defence companies increasingly are using non-military technology, they will experience fewer technology restrictions, which may prove to be a competitive advantage. They also have to deal with faster cycles of technology change (as in IT and electronics) which will force them to adapt to non-military business models. This 'defence industry shift' brings new challenges also to government defence bureaucracies as the technology acquisition becomes more uncertain and less predictable. So far, it does not seem to have altered the industrial landscape; national defence procurement processes appear to address well-known defence companies that are firmly established on the market. On lower industrial tiers (components), however, it is claimed that there is considerably more globalization.
- Germany, the third biggest defence spender in the EU, has not been analysed in this thesis. Germany has a quite different industrial and ownership structure compared to other European nations. Companies have in several cases part ownership from the local *länder*¹⁶⁰. Ownership is also often held by family foundations (*stiftungs*). Furthermore, there are several specialized German defence companies that have remained medium size and have been successful with international export without having been consolidated into EADS (e.g. Rheinmetall, Krauss-Maffei), thus resembling several French companies (e.g. Dassault, DCN/DCNS, Safran, SNPE). Out of practical reasons, however, Germany has not been a part of this thesis' scope.
- In order for more radical *processual* integration to occur, nations' restrictive regulatory governance for technology transfer must change. From a strict U.S. perspective,

¹⁶⁰ Germany is made up of sixteen *länder*, which to some extent resemble the U.S. states.

the present situation is favourable, and it preserves the U.S. dominance since many European nations are dependent upon U.S. defence technology. U.S. ITAR restrictions (that U.S. defence technology requires a U.S. permit for further export) can be and are used in order to promote export from U.S. companies when they compete against European competitors.

- The Europeanization of the European defence procurement is likely to have substantial influence on the defence procurement and defence collaboration patterns in Europe. This will lead to new industrial relations; influence supply chains and probably create more consolidation within a larger nation base. The Europeanization process by definition also strives to include defence companies that previously have not been engaged in intra-European defence R&D, defence development and collaboration. However, companies that strive to become partners to the largest and most sophisticated European defence companies must be sufficiently sophisticated and competitive, and must be supported by sufficient defence R&D. The defence market Europeanization also strives to ban offset, a very important enabler for these newer companies in order to become part of the supply chains. All this presents enormous challenges. Political will cannot create competitive partnering between companies. As in the case of transatlantic defence industry integration, there is considerable discrepancy between the political discourse and the industrial realities. With one hand, politicians want to reduce redundancies in industry, with another hand to include numerous new companies and with a third, domestic hand to safeguard national employment in the defence industry. In my view, the political discourse regarding the Europeanization of the defence market highly underestimates the industrial challenges and imbalances. In all, this complex of challenges leads into so many different scenarios that it would require a discussion that becomes too wide for this last chapter. It is an area for further research.

To sum up, the vision of a shared, transatlantic defence market is not a probable outcome in the, at least, 10-20 year future. I also believe that the defence industry will continue to be a very politically influenced market, probably the most politicized of all markets. In order to more deeply understand the corporate strategy and the industrial development, it must be related to the politicized influence from its organizational field.

APPENDIX 1 Interview questions

The following questions were put forward to respondents.

1. *Describe your present position and in what way it relates to transatlantic defence industry integration.*
2. *What are, in your view, the main corporate driving forces and inhibitors for transatlantic defence industry integration?*
3. *What are, in your view, the main government driving forces and inhibitors for transatlantic defence industry integration?*

Depending on the respondent's background and affiliation, the focus would differ on discussing corporate or government driving forces and inhibitors. There were discussions with the respondents in relation to questions 2 and 3.

APPENDIX 2 List of respondents

Respondents are listed in the chronological order of interviews. No names, since several demanded ‘no quotes’.

Table A1. *List of respondents in the U.S.*

Category	Company/organization	Position	Field of expertise	Number of persons
2001				
Academic analyst	Massachusetts Institute of Technology, Center for International Studies (CIS)	Director	Arms proliferation	1
Academic analyst	Massachusetts Institute of Technology, Security Studies Program (SSP)	Professor of Public Policy and Organization, Director of SSP	Defence industry consolidation, defence innovation, force structure	1 (several occasions)
Academic analyst	Massachusetts Institute of Technology, Security Studies Program (SSP)	Senior Research Fellow	U.S. defence budget	1 (several occasions)
Embassy	Swedish Embassy, Washington D.C.	Minister for Economic Affairs		1
Embassy	Swedish Embassy, Washington D.C.	Defence Attaché + assistant D.A.		2
Academic analyst	University of Kentucky, Patterson School of Diplomacy and International Commerce	Assistant Professor	Defence restructuring, military innovation	1 (several occasions)
Embassy	French Embassy, Washington D.C.	Defence attaché assistant	Defence industry cooperation	1
Think tank analyst	Atlantic Council	Researcher	Defence industry consolidation	1
Academic analyst	Harvard University	MBA student	Author of exam paper on transatlantic consolidation	1
Academic analyst	Massachusetts Institute of Technology	Principal Research Initiative	Lean Aerospace Initiative (LAI)	1
Company (consultant)	Hicks & Associates	Vice President	Corporate acquisitions and mergers, export control	1
Defence company	Science Applications International Corporation (SAIC)	Project director, Strategic Assessment Center		1
Think tank analyst	The Henry L. Stimson Center	“Study Group on Enhancing Multilateral Export controls for U.S. National Security	Export control	2

		ty”		
Think tank analyst	Institute for Defense Analysis (IDA)	Research staff member, strategy, forces and resources division	Defence restructuring, defence collaboration, government regulations	1
Think tank analyst	Teal Group	Senior Analyst	Defence and defence industry	1
Ministry	Pentagon, Office for Acquisition, Technology and Logistics	Director, Financial and economic analysis	Defence collaboration, export control	2
Industry interest group (lobbying)	Aerospace Industries Association	Vice President International Affairs	Government relations, lobbying, defence restructuring and collaboration	1
Academic analyst	George Washington University	Professor, International Affairs	Defence industry integration	1
Government agency	General Accounting Office, Acquisition and Sourcing		U.S. government policy for export control, mergers and acquisitions, and defence collaboration	3
Embassy	British Embassy, Washington D.C.	Defence Attaché + staff		3
Industry	Northrop Grumman	Analysis Center	Strategic analysis	5
Industry	Charles River Associates	Director of Aerospace and Defence Consulting	Defence restructuring, Corporate mergers and acquisitions	1 (several occasions)
Academic analyst	Naval War College, Newport, RI, Strategic Research Dept		Defence industry transformation, Naval procurement	3
Industry	Smiths Industries, Aerospace	Vice president, government relations		1
Industry	The Carlyle Group	Chief Financial Advisor		1
Industry	GenCorp	Director, International marketing and sales		1
Think tank analyst	Center for Strategic & International Studies (CSIS)	President and CEO (previously 3rd in Pentagon)	Defence, export control, arms proliferation	1
Industry	Lockheed Martin	Vice President, Plans and Analysis		1
Industry	Lockheed Martin	Director, Western Europe		1
Think tank analyst	Council on Foreign Relations (CFR)	Professor, Director for Planning program		1
Embassy	German Embassy, Washington D.C.	Counselor, Defence Research and Engineering	Defence collaboration, industrial affairs	1

Industry	Boeing	Manager, JSF Business Development		1
Industry	Raytheon	Director, International Policy and Relations		1
Industry	Boeing	Senior Principal Technical Specialist		1
Military	Armed Forces	Colonels in the U.S. services, at MIT		4
Political body	U.S. Congress	Advisor to Congressman		1
Political body	U.S. Senate	Advisor to Senator		1
Academic analyst	Massachusetts Institute of Technology, Security Studies Program (SSP)	Associate Director SSP	Force structure	1
2004				
Military	Pentagon, Acquisition, Technology & Logistics	Colonel	International cooperation	1
Ministry	Pentagon, Acquisition, Technology & Logistics		CFIUS	1
Ministry	Pentagon, Acquisition, Technology & Logistics		Armaments Cooperation Atlantic	1

Table A2: *List of respondents in France*

Category	Company/organization	Position	Main field of expertise	Number of persons
2003				
Defence company	EADS	Head of communications Defence and Civil Systems	Especially missiles	1
Defence company	GIAT Industries	Project director, "production acquisition"		2
Defence company	Snecma	Director defence business		1
Defence Company	Dassault Aviation	Business development		1
Defence company	Armaris	Sales and marketing department		1
Defence company	SNPE/SME	Director of development of external relations		1
Defence	Thales	Senior management,		1

company		group executive strategy		
Government agency	DGA/Direction de la coopération et des affaires industrielles	Directeur ; Sous-directeur; Sous-directeur adjoint	Defence cooperation, defence-industrial policy, international collaboration, the role of the French state	3
Government agency	DGA/Centre des hautes études de l'armement (CHEAr)/Département Rayonnement et Études Stratégiques	Researcher (chargé d'études)	Long-term technological strategies	1
Analysis organization	FRS (Fondation pour la recherche stratégique)	Deputy director	French defence policy, military technology	1
Analysis organization	FRS (Fondation pour la recherche stratégique)	Researcher /Chargée de recherche	Defence industry, Europeanization, consolidation	1
Multilateral organization	EU/Institute for Security Studies	Associate Director	Europeanization, consolidation	1
Multilateral organization	NATO/Political Affairs Division	Previously official at DGA, now at NATO	French defence industry policy	1
Academic analyst	Université Paris 1/Laboratoire d'Économie publique	Researcher	The role and importance of the defence industry in France	1
Academic analyst	C3ED Centre d'Économie et d'Éthique pour l'environnement et le Développement	Researcher (Maître de Conférences)	French defence-industrial system	1
Academic analyst	École des Hautes Études en Sciences Sociales (EHESS)/CIRPES	Researcher	French defence industry, international collaboration, consolidation	1
Industry interest group	GICAT (Groupement des industries concernées par les matériels de défense terrestre)	Director of international affairs and strategic actions; Economic calculations and offset	Interests of Army-oriented defence industries	2
Industry interest group	CIDEF /Conseil des industries de défense françaises (French defence industries council)	General secretary	Relations between the French state and the defence industry, French defence industry policy, defence industry interests	1
Industry interest group	GICAN/French Naval industries interest group		Naval defence industry, naval defence cooperation	1
Ministry	Ministry of Defence/DAS		Industrial relations	1
Embassy	Swedish Embassy	Defence attaché, Assistant defence attaché	Defence industrial affairs, cooperation	2
2009				
Company	ThalesRaytheonSystems			1
Company	Thales			1
Company	Thales			1

Table A3: List of respondents in the UK

Category	Company/organization	Position	Field of expertise	Number of persons
2002				
Defence consultancy	Ashbourne and Beaver		Transatlantic defence industry integration	1
Investment consultancy	Merrill Lynch	Director of Global Securities	Mergers and acquisitions	1
Defence company	BAE Systems	Group Head of Strategic Analysis	Corporate Strategy	1
Defence company	BAE Systems	Strategy Director, International Partnerships	International cooperation	1
Defence company	Raytheon UK	Director Strategic Planning	Corporate strategy	1
Industry interest group	Society of British Aerospace Companies (SBAC)	Head of Economic and Political Affairs	Defence industry globalisation	1
Academia	Science and Technology Policy Research, University of Sussex	Research Fellow	Defence industry R&D cooperation	1
Embassy	U.S. Embassy, London	Manager, Air Force systems	International cooperation	1
Defence company	Lockheed Martin UK Ltd	Chief Executive	International cooperation, Corporate strategy	1
Ministry	Foreign and Commonwealth Office	Head of Section, Security Policy Department	Interaction between security policy and defence cooperation	1

Table A4: List of respondents in the Netherlands

2008				
Ministry	Ministry of Defence		Defence cooperation (NFR-90)	1
Company	Thales		Worked with NFR-90, Dutch industry representative in ISS	1

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