

Delivering Defence Industrial Change

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Foreword

2008 will mark the 150th anniversary of the signing of the Anglo-Japanese Treaty of Amity and Commerce. This treaty is one of the 'Five-Nation Accords' that Japan signed with countries such as the US and France. It was an unequal accord. However, there is no mistaking that Japan received many benefits from the UK through exchange in various fields from science and technology to culture, and that this treaty formed the basis for a modernised nation. Particularly in the field of security, Japan was able to learn much from the UK with which it shares many geopolitical concerns and both countries came to form an alliance in 1902. It would not be an exaggeration to say that the Anglo-Japanese Alliance was indispensable for Japan's victory over Russia in the Battle of Tsushima.

There is no doubt that the UK was able to establish itself as a superpower by flexing its military might. However, that is not the only reason. The UK was able to enjoy prosperity because its outstanding statesmen were able to draft superior national strategies.

It has been twenty years since the end of the Cold War, and six years since the terrorist attacks of 9/11, and I have heard that much debate over the national security strategy has been taking place in the UK. In the international society of today, the concept of threat has evolved from traditional military threats to issues such as terrorism, energy and food security, the effects of climate change and epidemics. While facing budgetary and human resource restrictions, every country now faces the problem of how best to maintain the fundamental function of a nation which is to protect the lives and assets of its people.

There has been and will be debate over whether it is best to take a posture that can respond to all threats over a variety of fields or to prioritise threats and concentrate resources on those threats that are most viable. What is clear is that the UK, Japan and even the US cannot effectively respond to security threats on their own. Both Japan and the UK need to show a clear national strategy and work together to co-ordinate those strategies.

East Asia is at a watershed. The issue of how to deal with a rising China and Russia is something that all countries, not just Japan and the UK, have in common. The questions of whether we can get China right, as US experts insist, and whether we can build a co-operative relationship with Russia, require substantial attention.

In order to construct a national strategy that fits the times, it is necessary to draw upon wisdom widely from the public and the private sectors. This report, a result of co-operation between two independent think tanks from both Japan and the UK, is in line with this necessity and 'meets the needs of the time' which is the very ideal of the AFJ. I believe that this report, which will be the first of its kind to undertaken by RUSI and AFJ based on the official partnership formed between both institutes in November 2007, will contribute to security co-operation between Japan and the UK. And, I hope that it will transcend borders and contribute not only to the security of both countries, but the entire world.



Katsumasa Horiguchi
Chairman, Asian Forum Japan

The threats to the security of the world's leading economies are more diverse than ever before and the problem of dealing with those threats is a challenge for us all. Providing effective national security does not start and end at a country's own borders and does not come cheaply. As the world economy stutters, governments face difficult decisions on spending priorities. None more so than in Japan, where defence acquisition costs are traditionally high and where the Japanese Ministry of Defense is currently working hard to regain public confidence in its acquisition process. Against this background, this report has been compiled to help inform a debate, since with these challenges come opportunities.

Starting with the baseline that the US-Japan defence relationship remains key to the continued security of Japan, the contention in this report is that a strengthened relationship with Europe would complement the US-Japan alliance; it would strengthen it, rather than detracting from it as some fear.

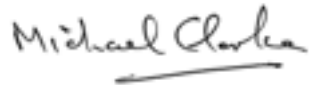
Japan and the UK share an impressive history and both look to the United States as their key strategic ally. The UK does not have the resources to commit troops to assist Japan's security as does the US. The UK can help deliver the next best thing: defence industrial change. The UK has undergone a huge period of change which has culminated in fundamental strategic decisions being taken about the future shape of its defence industry. Key to UK thinking has also been the need for interoperability with NATO partners, in particular the United States.

The United Kingdom has more experience than any country in working in partnership with other governments on 'collaborative' defence programmes. This approach was adopted for operational, technological and economic reasons and has led companies from different nations to work together closely under the auspices of governmental contracts. This international industrial outlook has also helped the UK become the second largest exporter of defence equipment worldwide. This is because beyond such government contracts, one finds UK companies readily entering into commercial partnerships with like-minded industries around the world. The report chapter explains how this approach has worked in practice, but it is interesting to note that such partnerships have evolved in countries of strategic importance to the United States (Saudi Arabia being a prime example) and indeed have added to that bilateral relationship.

There is UK experience here that is readily applicable to Japan. Japanese companies have an excellent reputation in many commercial sectors and it seems incongruous that a sister defence company often struggles to deliver a defence capability of the right quality. The Japanese defence industry and Japanese defence procurers can do better; all of the chapters here come to that conclusion. Yet all struggle to identify how.

An answer could be not for Japan to try to address the new threats, or try to improve its procurement practices on its own. Others are facing and have faced similar challenges. The similarities between the UK and Japan argue for a closer defence business relationship and one that is demonstrably beneficial to both sides. Why not, for example, allow Japanese companies to test the water with UK counterparts about a strategic business relationship which goes beyond mere supply to the Self-Defense Forces? Why not allow the Government Defence Scientific communities to talk to each other about future defence capabilities in which both countries might have an interest?

This is not to ignore Japan's three principles of weapons export. The fundamental question is whether Japan can effectively address the threats it faces without some relaxation of these principles. This ought to be achieved without compromising basic policy concerns. Japan is at a crossroads; hopefully this report will help shape the discussion of which way it should turn.

A handwritten signature in black ink that reads "Michael Clarke". The signature is written in a cursive style and is underlined with a single horizontal line.

Michael Clarke
Director, RUSI

Prologue

On July 15 a Japanese government panel, the Defense Ministry Reform Council presented a report to the Prime Minister recommending a number of changes to the infrastructure of the JMOD. Although the report focused predominantly on personnel changes within the JMOD, it made some references to reform of the defence acquisition process. Emphasising better accountability and greater transparency for defence procurement, the report encouraged direct contracts with foreign companies.

In September 2003 the Comprehensive Acquisition Reform Committee was created, Chaired by the then Minister of Defence. It issued two interim reports in July 2004 and March 2005. The reports stated that more sophisticated and complex equipment requirements had led to increased unit prices. In addition, increasingly severe fiscal conditions had resulted in decreased procurement volumes, further increases in unit price and a vicious circle of rising costs. There was a clear need for cost reduction, transparency, impartiality and accountability. As a result, the Acquisition Reform Promotion Project Team was created in October 2007.

After ten successive meetings, the team made the following recommendations in July 2008:

- Strengthened oversight of import costs for Foreign Military Sales, including direct contact with foreign manufacturers and the reorganisation of the Equipment Procurement and Construction Office (EPCO).
- Strengthened management of life cycle costs, with a cost reduction goal set in place to reduce costs by 15% over five years by 2011.
- The introduction of a new incentive contract in 2008, incorporating flexibility in the reward distribution rate between the government and the private sector.
- The promotion of outsourcing including non-traditional methods such as Private Finance Initiative (PFI).
- Acquisition and associated Research and Development (R&D) programmes to be based on requirements for joint operability and acquisition reform.
- Promotion of further R&D co-operation with the United States and with other countries in the dual-use technology area.
- A Technology Evaluation Committee led by the Parliamentary Secretary for Defense to be created in 2008.
- Approval by the Minister of Defense for high value negotiated contracts
- Within the JMOD, the Bureau of Defense Policy to take charge of capabilities and requirements while the Bureau of Finance to oversee equipment selection.

It is hoped that this report will assist the effort in Japan towards acquisition reform and to inform the debate in delivering defence industrial change.

Preface

The British Defence Industry: A Background

The UK defence industry comprises several thousand privately owned companies that are partly or fully involved in defence business. The core 370 companies employ about 350,000 people, which equates to about 10 per cent of the UK's industrial workforce and 1.5 per cent of the number of people in employment in the country as a whole. Total sales are in the region of £14 billion per year, of which 35-40 per cent is exported. UK defence exports account for about 20 per cent of the world market. The size of the defence industry has decreased considerably in past decades, with the number of people employed halving since 1980. With an increase in private sector activity in service provision during this period, this change masks an even steeper decline in the traditional manufacturing part of defence industry and a steady rise in imports of defence equipment.

The process of industrial restructuring that accelerated in the 1990s had its origins in the policies established in the years following the end of the Second World War. Initially, the UK stayed on the path of self-sufficiency. Much of industry was, if not government owned, completely dependent upon government for its survival. There was little regard for cost effectiveness with the demands of the Cold War driving technological development associated funding. By the late 1950s, it was recognised that this position was unsustainable and the move towards importing certain armaments and technologies started with the 1958 agreement with the US on nuclear reactor technology and the Polaris missile agreement of 1962. Financial restrictions led to the cancellation in 1965 of the TSR2 fighter aircraft project and the purchase of Phantom F4 aircraft, again from the US. The large aircraft carrier programme was cancelled in 1967 for similar reasons. In spite of these developments, industry remained in its cosy relationship with government with little incentive to improve its performance. The rescue by the government in 1971 of Rolls Royce from financial collapse reinforced this view.

It was not until the 1980s that the next phase of change occurred, through the Thatcher government's privatisation programme, with greater emphasis on value for money and a general insistence that industry should be self-sufficient. Pressure on budgets as the government sought to reduce public expenditure was exacerbated by the increasing complexity of weapons systems whose costs were rising much more quickly than general inflation. Government detached itself as a customer from industry as supplier, new contracting methodologies were developed and greater use made of competition. The result was a wave of industry mergers within the UK as weaker, smaller companies were absorbed by larger ones. Export sales were driven by commercial as well as foreign policy considerations.

The current phase of industrial restructuring, which commenced in the late 1990s, has been more international in character. Rather than the development of national champions, access to foreign markets, particularly in the US, has driven change and encouraged cross border acquisitions and mergers. Companies, especially those operating in the UK, are becoming more international in character, regardless of their home base. Thus the French company Thales bought a number of respected UK companies including RACAL and Thorn EMI. This resulted in Thales becoming sufficiently competent as a potential prime contractor to be one of the two contenders currently bidding for the Royal Navy's future aircraft carrier programme, which is now in a competitive assessment phase. More assertive military customers with quickly

changing operational requirements have also played their part in shaping industry.

BAE Systems has combined its missile business with that of Aerospatiale of France and a number of other firms to form a new company MBDA that provides missile expertise and products Europe-wide and a counterweight and viable competitor to Raytheon of the US. This form of industry-led international co-operation appears much more likely to be successful than past attempts, since all parties have a mutual interest in success. The Meteor missile produced by MBDA and the A400 strategic lift aircraft being developed by EADS are examples of products being developed by viable pan-European companies for multiple national customers.

While there are a number of significant UK based defence companies, such as Rolls Royce, the development of BAE Systems, now the UK's largest defence contractor, demonstrates the various phases of change. While parts of the company have origins in the early days of flight, British Aerospace as such was formed in 1977 as a government owned corporation through the merger of the British Aircraft Corporation, Hawker Siddeley and Scottish Aviation. The company was partly privatised in 1981, with the government selling its remaining stake of about 48 per cent in 1985. A number of acquisitions in the late 1980s, including the formerly government-owned Royal Ordnance factories, the Rover motor group and Arlington Securities left the company with a diverse but vulnerable portfolio. By 1992 the company was close to collapse; there was a £1 billion write-off and the share price fell by half. The solution, apart from senior management changes was to focus on the core business of defence and aerospace systems. Rover was sold to BMW, much to the frustration of Honda. As well as UK defence contracts, the company was reliant throughout much of the 1990s on extensive weapons deliveries to Saudi Arabia.

Following the Strategic Defence Review (SDR) of 1997, the UK government and the Ministry of Defence (MoD) looked towards the requirements of the armed forces and how those requirements would be met. To protect its interests and attain its goals in a rapidly changing world, it was thus decided that Britain required armed forces which could operate in support of diplomacy and alongside economic, trade and development initiatives to strengthen security, avert conflict and conduct effective military operations around the crisis spectrum. With diverse and unexpected operational challenges, forces would in future be based around military capabilities rather than limiting threat scenarios of the Cold War period. Significant changes were proposed to the force structure, returning the British armed forces to their more traditional expeditionary role.

Joint operations were further emphasised through the establishment of more joint command structures and management arrangements, bringing closer together the Army, Navy and Air Force. The most important element of this has been the formation of a pool of readily available, rapidly deployable, high capability forces to form the Joint Rapid Reaction Forces (JRRF). Tailored JRRF force packages are intended to carry out all short-notice tasks up to and including brigade-size or equivalent war-fighting operations and provide the first stage of a larger deployment.

Compared to its predecessor, the Joint Rapid Deployment Force, the JRRF has significantly enhanced firepower, mobility and protection, especially for its land elements, together with an

improved command and control capability. The JRRF pool includes up to fifty warships and support vessels, four brigades, about 100 combat aircraft, 160 other aircraft. At the same time, it was recognised that the armed forces would need up-to-date doctrine within which to operate. A Joint Doctrine and Concepts Centre was thus created to look beyond war-fighting to provide an international focal point for peace support doctrine. The Typhoon is planned to provide the cornerstone of the Air Force's future fighting capability. The four partner nations (Britain, Germany, Italy and Spain) signed production contracts for the first 148 aircraft in September 1998.

The Smart Acquisition initiative was a joint exercise with industry designed to make the acquisition of equipment cheaper, faster and better. Key to the new way of working, which has now largely been implemented, was a clearly identified MoD customer and an empowered project leader. Savings of £2 billion during the period 2002-2008 were identified as possible by application of these new arrangements. While cost reductions of this magnitude have been built into the equipment programme and the focus on outputs coupled with clearly identified responsibilities through the formation of Integrated Project Teams (IPTs) has improved matters, there are still flaws and difficulties. A consequence of reduced project delays is that bills, which were, under previous expectations, not expected to become due, are materialising sooner, thus increasing financial difficulties in the short term. While setting up the MoD Centre customer based around capabilities has been generally successful, there is a sense that insufficient emphasis is being placed on value, with affordability and hence cost remaining dominant features of decision-making.

The organisation of research, development and evaluation has been overhauled and the extent of the various programmes examined. While the UK's annual Research Development and Evaluation (RD&E) budget of about £2.5 billion is the largest in NATO Europe, it is nevertheless only about one-tenth that of the US. Expenditure has been recognised as insufficient to meet all needs and thus a concept of 'towers of excellence' has been developed to cover those areas in which it has been decided that the UK needs to devote particular attention. The Defence Evaluation and Research Agency (DERA) consumes about 40 per cent of the RD&E budget. Most functions have now moved to the private sector within a special-purpose company, QinetiQ, where the government believes that they will be performed most effectively and provide best value for the taxpayer.

About one quarter of the Agency was retained in-house to provide a core of expertise to manage the MoD's programmes and provide high level advice. While initially causing concern among allies such as the US on the grounds of potential conflicts of interest between security and commercial freedoms, these appear to have been largely dispelled with the form of commercial arrangements established. The organisation has been further modified by the establishment of a Defence Diversification Agency (DDA) to help widen the diffusion of defence-originated technology into the broader economy, help companies to become better informed about defence requirements and so encourage their diversification and encourage the transfer of suitable civil technology into military programmes.

In conjunction with the introduction of Smart Acquisition, the UK has continued its efforts to improve international co-operation in defence procurement. In the 1980s, the need to minimise

costs contributed to the enthusiasm for international collaborative projects, so as to burden-share development with other nations.

The Defence Industrial Strategy (DIS), first published by the Ministry of Defence in 2005, laid the foundations for defence industry to shape its business in order to deliver programmes for the future, as well as continue to provide the important support to current platforms and capabilities.

Building on the Defence Industrial Policy which had been set during the period post SDR, the DIS identified those key industrial capabilities which the UK required to remain under sovereign control across all defence sectors. Importantly, it acknowledged that business transformation was critical to the long term sustainment of key skills in both industry and MoD.

Between DIP and DIS the UK Government recognised that the defence aerospace market was changing. The world over, budgets have been increasingly aimed toward fewer but yet more capable platforms, such as the Joint Strike Fighter (JSF) and Typhoon. This trend toward fewer numbers of platforms has seen an increase in collaborative working. Within the UK, even with the globalisation of major defence companies such as BAE Systems and Rolls Royce, the full set of industrial capabilities required to design, develop and support a multi-role combat aircraft of world standing are not available indigenously. By ensuring that access to leading edge technology is available through collaboration, in programmes such as Typhoon and the Type-45 Destroyer, the UK Ministry of Defence appears to have demonstrated its intent for future major equipment programmes across a number of sectors.

UK Industry has good pedigree in being successful partnering with both other elements of industry and Governments overseas, in recent years. BAE Systems, initially formed from the merging of fourteen aerospace companies within the UK are a truly global company, with 'home markets' in half a dozen countries. They have a good track record of working with partners on a number of air systems, including Tornado, Harrier and Hawk. Rolls Royce are a major player in both civil and military engine markets and have large global interests following acquisition of the US Allison Engine Company and BMWs aero division. At the tier-two level, GE Aviation now own what was Smiths Aerospace, a world leader in aircraft subsystems, who have products in service with dozens of countries around the globe. Augusta Westland and Selex Systems are both owned by Finmeccanica, who in turn are part owned by the Italian Government – these examples and many more show just how truly international now defence industry has become.

The Route to Collaboration

In recent decades, the UK and its European allies have used a pragmatic mixture of strategies for the procurement of defence equipment. To provide the UK's armed forces with cost-effective equipment, the MoD has sometimes funded the development and production of new equipment designed specifically to meet its own military requirement, sometimes collaborated with one or more of its allies to develop and produce new equipment to meet their agreed joint requirement and sometimes procured equipment which had been produced by a trusted ally and was already in service with that ally's armed forces. Each of these strategies has its own characteristic advantages and disadvantages.

Half a century ago, many developed nations had the technical and financial resources to undertake the design, development and manufacture, by private-sector or public-sector contractors within their own frontiers, of most of the defence equipment required by their armed forces and for export to smaller or less-developed allies. However, as the unit cost of most types of defence equipment increased much faster than national defence budgets and hence nations could afford smaller numbers of succeeding generations in each type, this procurement strategy became increasingly unattractive and uneconomic.

These diseconomies of scale affected particularly those classes of equipment, such as aircraft and guided missiles, where the ratio of fixed or variable cost of a project is comparatively high, principally because of the scale and complexity of the development work involved. Accordingly, the UK now rarely launches such projects on a national basis.

A nation may choose to collaborate with allied nations having similar military requirements on the design, development and production of a defence equipment project, provided that the nations together have the full range of technical expertise required and that each nation makes a significant technical and financial contribution. This option allows the nations to share the up-front fixed costs (generally in proportion to the number of units required by their respective armed forces) and to benefit from economies of scale on a long production run. The cost-effectiveness of the collaborative project may benefit from complementary areas of technical expertise within the partner nations and from their diversity of technical concepts and the military strength of their alliance would be increased by the interoperability of their equipment and the resulting operational flexibility.

The UK has accumulated considerable experience during the last half century of collaborative projects involving up to three other allied nations. Early projects had to overcome some nationalistic chauvinism but experience of successive projects and better communications and transport links, have progressively promoted mutual respect for other nations' characteristic strengths.

Collaborative projects involving the US present special problems because its national financial contribution to the project is generally much larger than that of any other collaborator, reflecting the larger number of units the US will require for its armed forces. Hence the views of the US representatives on the project (regarding the equipment performance required, the project's design features and project management) tend to be dominant. Other nations can only influence the project towards their own national objectives when the US has no strong preference. Furthermore, the US government may distort the project work share to avoid transfer to its partners of particularly-sensitive technologies.

As well as providing cost savings and enhanced alliance effectiveness, collaborative projects provide a valuable stimulus to the restructuring of defence industries within the partner nations and to the exchange of ideas between them. Collaboration with other nations with similar military requirements and similar defence budgets would allow Japan to influence the design of a future defence equipment project to suit its own military needs and to strengthen its national technology and industrial bases. Japanese expertise in technology and the quality and efficiency of its manufacturing processes would make Japan an attractive partner in many future defence

equipment projects and the traditional Japanese management skills in achieving consensus and harmony are ideally suited to collaborative projects involving equal and independent partners.

1. Japan's Search for Defence Production Autonomy through International Linkages

Japan's 'grand strategy' in the post-war and post-Cold War periods can be characterised as seeking to safeguard its national vulnerabilities and autonomy through the mechanism of a closer alliance with but hedging against over-dependence on the US. In turn, a crucial component underpinning Japan's strategy has been the careful fostering of its national defence production capabilities. Japan's policy-makers, in line with their historical belief since the Meiji period in the need for technological autonomy as a means to ensure national security autonomy (encapsulated in the slogan 'Rich Nation, Strong Army') and within the constraints of constitutional prohibitions and the particular characteristics of the Japanese political economy, have thus attempted to develop a defence production industry that provides for security leverage both within and against the US-Japan alliance.

Japan's continuity in thinking about the maintenance of technological autonomy and its relationship to wider national security and alliance management priorities provides the backdrop for understanding its degree of preparedness to contemplate enhanced international collaboration in defence production. For there are now signs that, despite its constant desire to cling to autonomy in defence production, Japan now recognises that it can no longer go it alone and needs to seek new international partners that may buttress it against over-dependency on the US relationship. Hence, Japan is set to seek autonomy through increased international defence production co-operation.

Japan's Defence Production Model under Pressure

Japan's government and private industry reached a rough consensus in the post-war period that the most effective means to deliver an autonomous defence production base has been to pursue policies of *kokusanka* (indigenous production), through a number of methods.

Foreign Military Sales and Off-the-Shelf

Japan's policy-makers clearly see a role for general imports and foreign military sales (FMS) of defence equipment, often providing fast, low-cost and relatively low-risk technology for defence needs.

Licensed Production

Japan's defence planners, as in the pre-war and immediate post-war periods, however, have maintained their overall preference for indigenous domestic production. Japan has continued to see many advantages in licensed domestic production, serving as a middle road between wholesale imports and wholly domestic production of defence equipment. Licensed production has been seen to hold the advantages of the fast acquisition of defence technology, low-technological development risk and the opportunities for innovation on imported technology to strengthen the defence production base. But these also have been weighed against the usually higher costs of licensed production; that Japan may not always be allowed to produce the very latest foreign weapons systems; and that the opportunities for learning technological are still limited.

Pure Indigenous Production

Japan's traditional preference, instead, has been for *jishu gijutsu* (indigenous production and autonomous technology), offering as it does the maximum contribution to the defence production base and maintaining of employment, even if presenting high technological development risks and high procurement costs.

Japan's policy-makers have sought to promote *kokusanka* through the *ikusei* (careful nurturing) of defence technology, in part through government direct and indirect subsidisation of the defence industry but also through embedding the military technological case within larger civilian industrial conglomerates. Japan's domestic defence production has been subordinated to civilian developmental priorities with the civilian sector drawing technological 'spin-off' from the military sector and where necessary the smaller military sector deriving 'spin-on' technology from the civilian sector.

Consequently, Japan's defence industry in relation to overall national economic size has been moderate in scale, accounting for less than 1 per cent of total industrial production. Moreover, defence production has accounted for typically less than 1 per cent of total national production in most key industrial sectors, with shipbuilding and aircraft as exceptions, at between 10 and 50 and 60 per cent respectively. Japanese defence production has been concentrated within a relatively small number of conglomerates focused predominantly on civilian production. Mitsubishi Heavy Industries (MHI) has remained the leading Japanese defence contractor in terms of sales and numbers of contracts and the top twenty of contractors has been dominated by KHI, FHI, Sumitomo, Toshiba, IHI,

MELCO, NEC and Komatsu, with trading companies such as Itach and Sumitomo involved in the import of defence equipment. These companies dominate Japanese defence procurement with over 70 per cent of total contracts but defence tends to be a relatively small proportion of their overall business. MHI, despite taking nearly a fifth of total defence contracts, derives less than 10 per cent of its total sales from this sector; it is a similar story for KHI; and for others it is smaller still at less than 4 per cent. Japanese corporations globally thus rank low in terms of total defence sales and the percentage of their business derived from defence. It is perhaps only Fujitsu and IHI Marine United that can be said to rank as defence contractors with a business profile similar to other global corporations.

Japan's achievement of pure *kokusanka* in line with this model and given its restrictions on defence spending, has not in practice always been successful, with some singular failures of state intervention (such as the YS-11 and F-1) and it has often been obliged to settle for a version of licensed production for key weapons systems. It has also proved to be an expensive option, with extremely high unit prices for equipment. Nevertheless, Japan has demonstrated its capabilities in military ship-building, in rebuilding its aircraft industry (producing a range of licensed fighters and indigenous trainers and transports, if with licensed engines) and in missiles. Japan has thus kept shares of domestic procurement at around 90 per cent in much of the post-war period. Japanese policy can thus be said to have 'succeeded without really flying' in the sense that, even though it failed to produce entire platforms without a degree of dependence on foreign technology, it still managed to indigenise the key technologies to enable it to keep in step with international standards and to provide it with the

potential to produce independent systems in the future.

Japan Shifts from 'Made in Japan' to 'Made with Japan'?

Japan's emphasis on maintaining indigenous defence production in an attempt to maximise national autonomy has meant that it has been largely divorced from international military production. Japan has, of course, maintained FMS procurements from the US, licensed production of key weapons systems from the US and has embarked on thirteen co-development projects with the US since the 1980s, the most notable of which was the FS-X/F-2. Moreover, Japan has exported some technologies with inadvertent dual-use military applications but it can state with conviction that it has not engaged in significant arms transfers.

However, since the late 1990s, Japan has been forced to reconsider its defence production policy and to begin to expand international collaborative linkages. Japanese defence industry is beset by the inescapable twin problems of limited demand in Japan itself, due to tight defence budgets and the lack of access to co-development partners and economies of scale for increasingly expensive weapons systems, due to the ban on arms transfers. Japan has experienced some consolidation in its defence industry, especially in shipbuilding, but by and large has found this difficult due its post-war model of embedding nature of production capabilities within larger civilian conglomerates. Japan is now facing the situation of a number of larger firms but also especially crucial subcontracting small- and medium-sized enterprises exiting the defence industry altogether. The Japanese government has sought to maintain the

indigenous defence production base by initiating some new *kokusanka* projects, such as the P-X and C-X and even plans for a prototype F-X to replace the F-4, the aim of which are to identify and continue to nurture 'strategic' and 'specialist' technologies and to preserve the potential for systems integration and building larger platforms. But despite these efforts and a series of government and industrial advisory reports, the Japanese Defense Agency (JDA) concluded in 2005 that Japan's defence production base is 'seriously weakening'.

Japan's creaking defence industrial model means that it has now little chance but to consider increasing the opportunities for international collaboration (to move to *junkokusanka*, or semi-indigenous production) and thus its policy-makers have fixed upon a partial or total lifting of the arms export ban as a key means to reverse the decline in the domestic defence production base. In January 2004, in a speech at The Hague, Ishiba Shigeru, in his first stint at the JDA, touched upon the need to lift the ban on exports to facilitate defence production with the US and other countries. The Prime Minister's Office later stressed that the government was only considering a further partial lifting only with regard to the US and BMD. Nevertheless, Ishiba's comments reflect strengthening opinion within the MoD and segments of domestic industry regarding the need to curtail the export bans. The Liberal Democratic Party's (LDP) Defence Policy Subcommittee in 2004 proposed that the total ban be lifted in favour of an export licensing scheme. This call was repeated by the Keidanren's Defence Production Committee in July of the same year. Shinz Abe in 2004, as the then LDP Secretary-General, advocated a return to the principles of the 1967 ban on arms exports to communist countries, countries under UN sanctions and states

party to conflict, thereby clearing the way for high-tech weapons sales and co-production with other developed states. The Prime Minister's Council on Security and Defence Capabilities commented in 2004 that expanding technological military co-operation with states other than the US should not be seen as Japan acting as a 'merchant of death'.

Although momentum seemed to be growing for a wholesale revision of the arms export ban by the end of 2004, this was eventually halted by the intervention of the Kmeit. However, the government did move to partially breach the ban on 10 December 2004 in order to facilitate co-development with the US of ballistic missile defence (BMD). The Chief Cabinet Secretary's statement stressed that BMD would not conflict with the arms export ban because the project was designed for the smooth functioning of the US-Japan alliance and Japan's own defence. At the same time, Japan's policy-makers have challenged the arms export ban in other ways by interpreting the Chief Cabinet Secretary's statement of 2004 as providing grounds for, on a case-by-case basis, investigation with other countries into joint research and development of technologies designed to respond to terrorism and piracy.

Japanese defence industry has inevitably looked to the US as its prime international partner, perceiving the advantages of producing highly interoperable equipment for alliance co-operation and the possibilities to access the US's leading-edge technologies. For its part, the US favours co-development in order to share costs and to access Japanese advanced manufacturing techniques and certain technologies. The main bilateral project is the upgrading of the SM-3 BLK-IIA interceptor missile for the Aegis BMD system and which will eventually move into

some form of co-production stage (either through wholesale exchange of technologies or the establishment of a joint plant in Japan or the US) involving the deeper integration of US and Japanese industry. Moreover, US-Japan defence industrial linkages remain strong through forums such as US-Japan Industry Forum for Security Cooperation and the Japan-US Center for Peace and Cultural Exchange.

However, Japan's defence planners and industrial leaders also see disadvantages and risks in over-emphasising future defence co-operation with the US. The Japanese defence community remains ambivalent about the outcome of the FS-X/F-2 project, feeling that it enabled Japan to acquire some F-16 advanced technology, but that it had to pay handsomely for it and that the US also extracted key technologies from Japan. Japan has also shown suspicions of the degree to which the US can be trusted to allow Japan to maintain autonomous technology even in the case of co-development and co-production. Japan, even allowing for the prohibitions resulting from the arms export ban, has showed very little interest in the JSF because it views it as a demonstration of the US's disinclination to share technology fully with its partners. Japanese policy-makers have been especially frustrated at the US Congress's refusal to release the F-22, despite Japan being designated as the US's prime ally in the Asia-Pacific, personal appeals by Prime Minister Abe when visiting Washington DC in April 2007 and a report from former Bush administration officials in February of the same year calling for the sale of the F-22 as a key method to solidify confidence in the alliance. One METI official is reported to have summed up doubts about the defence production relationship with the US in the case of the PAC-3 BMD system: 'If we buy everything from the United States, our

production and technology will decline to zero'.

Japan's awareness of the need to internationalise but also diversify its range of production and potential export partners means that it has already begun to export 'demilitarised' JCG patrol craft to Indonesia for anti-piracy activities and begun new, if small-scale international defence technological co-operation. The MoD's Technical Research and Development Institute (TRDI) has despatched observers to Sweden's nuclear, biological and chemical (NBC) facilities and used French facilities to calculate stealth technologies. Moreover, Japanese policy-makers see future possibilities for international co-operation with non-US partners in technologies to clear landmines and lessen the threat from improvised explosive devices (IEDs). Hence, the indications are that as Japan's defence industry predicament grows, it will gradually seek to re-enter the international defence co-development and export markets.

Conclusion: Japan's Defence Industry Reaches out to Europe?

Japan's defence production model simply

cannot function as before given domestic sbudget restrictions and the need to share development costs for ever more expensive platforms. Of course, Japanese policy-makers and defence contractors will look first to their US ally and the opportunities for collaborative production. However, in line with the constant grand strategy since its modernisation, Japan will seek to maximise as much national technological autonomy as possible. The US offers some of these opportunities for technology exchange to Japan but also poses the potential problems of simultaneously undermining Japanese technological autonomy and strategic freedom. In order to hedge against over-reliance on the US alliance, Japan is thus looking to consider the options of co-operation with non-US partners. The first-tier producers of Europe, which are safe options as US allies but which also most crucially offer the possibility of greater technology sharing through licensed production and co-development, may find they have increasing opportunities to work with Japan in future years. It is the task of European manufacturers to understand Japan's strategic and defence industrial needs if they wish to reciprocate the growing interest from Japan.

2. Japanese Defence Industry Policy

Current defence industrial policy in the United States and the United Kingdom continues to be debated at length and the outcomes of this debate have been widely published in public. In Japan there are only a few examples of public debate and research which explicitly demonstrates the direction of defence industry policy towards the maintenance of Japan's defence industry infrastructure and to satisfy current and future national security and emergency requirements. The Japanese defence industrial base also maintains its own interpretation of government policy.

Japan's cautious approach to the defence industrial debate can be explained for the following reasons.

Due to the constant resonance of Japan's Second World War defeat, the term 'defence industry' implies the 'merchants of death' and because argument over the need for a defence industry satisfying Japan's national security requirements has been avoided, discussion of defence industry policy has not shaped public opinion.

Japan's pacifist constitution engineered by the General Headquarters of the Supreme Commander for the Allied Powers in the wake of the Second World War engendered a taboo culture of opposition to any armament of Japanese society. Furthermore, Japan's Ministry of Defence (JMoD) was formerly an agency subordinate to Japan's cabinet and as such had difficulty in policy making.

Japanese defence policy is intertwined with that of the Foreign Ministry and Ministry of Economy, Trade and Industry (METI) and

Japanese ministries have a tendency towards a stove-piped administrative system causing problems for a cohesive national defence industrial policy.

Finally, Japanese defence industrial policy is shaped by Japan's Arms Exports Ban, the *Three Principles of Arms Export* (See Appendix 1). Except for export of technologies to the United States, arms exports are basically prohibited with only a few case-by-case exceptions, thus Japan's defence industry is constrained both domestically and internationally.

Japan's defence industry is small and is specifically limited to a domestic market with arms imports strictly restricted, however defence equipment budgets had been increasing until the mid 1990s. Even under the recent budget cuts, the defence equipment budget has not decreased dramatically thus there could be room for manoeuvre within the industry. This fact, combined with companies' low dependence on the defence budget has not given rise to mergers and acquisitions (with a few exceptions) as seen with Western defence industries.

METI plays a primary role in executing industrial promotion policies and the growth of Japanese defence industries after the Second World War have been controlled by METI (previously the Ministry of International Trade and Industry). METI's policies, with the exception of defence aerospace and chemicals, have made Japanese industry internationally powerful.

JMOD and METI both deal with financial aspects of defence industry policy. METI plays a role in the national industrial promotion and METI's Aerospace and Defense Industry Division's Manufacturing Industries Bureau works in this field. In

addition, import and export control and issues associated with the production and control of chemical and biological weapons are handled at METI. The JMOD's Equipment Policy Division, Bureau of Finance and Equipment is also a primary decision-making body. For some important issues, the Japanese Prime Minister takes decisions at the National Security Council. Both Ministries' roles are attached in Appendix 4.

Issues Regarding Japanese Defence Industry Policy

In Japan there is no single defence industry policy document. The 'National Defence Program Guidelines' (See Appendix 2), outlining Japanese defence policy and 'The Mid-term Defense Acquisition Program' (appendix 3) compose the fundamentals of Japan's defence industry policy. In particular, the amount of expenditure stated in the Mid-term Defense Acquisition Program demonstrates entire equipment procurement over five years and is consequently a very important document for the defence industry.

However, there are almost no examples of discussion or analysis, published or otherwise, regarding defence industry infrastructure relating to equipment supply for the realisation of defence policy and future national security requirements as stated in the defence guidelines.

In Japan, policies are manifest in the form of legislation, through the publication of regulations and guidelines from ministries and through occasional academic conferences held by defence policy-making ministries. Ministries commission the academic community to conduct research reports and policy recommendations, some of which are often adopted. Alternatively,

ministries either formally or informally request public institutions under their control for policy advice, or such institutions might organise workshops and study groups to research other countries' approaches, the results of which are often employed as reference material for government officers. For the defence community, legislation is not based on such reports, which are few in number. However, as a result of this type of research activity, civilians in the field can understand defence issues within the ministries and develop tacit mutual understanding. This often amounts to tacit policy making and is symbolic of Japanese political culture.

Defence Industry Technological Foundation Workshop Report (2000)

In 2000, the JMOD Equipment and METI Technological Information Industry Directors held a joint Defence Industry and Technological Foundation Workshop. The President of Tokai University published a report, which is one of the few examples of comment on Japan's defence industry policy. The report examines 'the fundamental direction towards the development of the defence industry and technology base towards the 21st century'. In the report, entitled 'current problems and future trends' and 'problems linked to the technology base and future trends', the following was discussed:

'Future trends of current problems'

- The maintenance of the industrial base
- Satisfying supply and standardisation and the importance of maintenance and repair for the technology base
- Promotion of effective upgrades
- Use of civilian and commercial-off-the-shelf (COTS),

- Problems with contract methodology
- Promotion of fixed price contracts, incentivisation, employment of private finance initiatives
- Clarification of procurement methodology and the nurturing of the technology base
- Promotion of the intensification of the commercial environment and an effective defence industry.

Problems linked to the technology base and future trends'

- Development and maintenance of the technology base
- Clarification of long-term strategic technical emphasis
- Emphasis of systems integration technology
- Promotion of effective research and development
- Promotion of increases of the research budget
- Re-evaluation of the increasing value of research and development infrastructure
- Intensification of Japan-US co-operation in the field of equipment and technology
- Clarification of priority technology fields.

In this report, strategic comments are time-constrained, thus there is no mention of real research of the Japanese defence industry capability. Furthermore, some aspects such as the intensification of Japan-US co-operation in equipment and technology

fields and cost reduction incentivisation had been achieved yet joint capabilities within the Japan Self-Defense Forces (JSDF) and the necessary systems integration had not yet occurred.

Research of the Defence Industry and Defence Technology Trends

Apart from individual company reports, defence industry research and trends in defence technology, especially comparisons between Japan and the West are conducted by public foundations within the defence industry and sometimes by think tanks. The JMOD tasks these organisations to conduct research on an *ad hoc* basis and some public bodies commission research if necessary. The outcome of this research, apart from that commissioned internally by the government, is accessible. This work however is not regarded as defence industry policy and not published as concrete policy or guidelines. For the defence industry, this presents a good opportunity because it can access public research work otherwise inaccessible to companies and to fathom trends in the defence field and practical aspects of Japanese defence policy.

Defence Industry Policy and the *Defense of Japan 2007*

With the exception of mention of JMOD's Equipment Policy Division, Bureau of Finance and Equipment, *Defense of Japan 2007* makes scant comment of and does not clarify Japanese defence industry policy. In recent years, JMOD's defence industry policy departments have witnessed scandals stemming from government initiated pre-emptive bidding and price fixing aimed at the effective gains to be made from equipment procurement. Thus *Defense of Japan 2007* states that 'for the enhancement of the defence industry and technology

base, Japan has considered clarifying which elements of the defence industrial technology base should be developed as key security issues' but neither concrete policy nor any decisions have been achieved.

Defence industry policy development activity at METI

METI has played an important role in policy-making in the rehabilitation of the Japanese economy after the Second World War. At this point, despite lack of clarity over the defence sector, METI's role in industrial development was crucial. In the realm of the defence aerospace industry, METI takes the initiative to promote aerospace industry development both for both civil and military production. Analysis of industry dynamics, future trends and financial policy have been developed by METI and on 27 April 2006 METI's Defence Aerospace Industry Division published *METI's Aerospace Industry Policy* online.

Direct financial policy development cannot be identified, however, METI assigns defence industry officials to the Aerospace and Defense Industry Division of the Manufacturing Industries Bureau with the aim of developing the defence industry. METI in some cases has commissioned public organisations to conduct research on defence industry development. Public foundations have published some research reports including *Research of defence industry policy trends in developed countries* and *Research on the maintenance of Defence industry technology base*, which include some recommendations for Japan's defence industry development policy.

Defence Acquisition and Procurement Reform

After the end of the Cold War,

corresponding with threatened defence budget cuts and with IT and technical developments in the civil sector, the need for reform of defence acquisition and supply have been debated worldwide. Since the second half of 1990s, mergers and acquisition of defence related companies increased in the West with the support of the US government and subsequently defence procurement has become a significant driver of defence industry policy. In Japan, this phenomenon in the defence industry has not occurred except for a few exceptions in the shipbuilding industry.

Japanese defence procurement policy has undergone reform three times and currently comprehensive acquisition reform activity is underway but the results are unremarkable. However, new acquisition and procurement reform commenced at the end of 2007. The new JMOD reform goal is to achieve transparent and fair defence acquisition. The strengthening of control of equipment life-cycles, effective research and development and the strengthening of policy towards effective procurement and maintenance are some concrete examples. A comparison between these efforts and British Smart Acquisition activities at the UK's MoD and the US Department of Defense's '128 reforms' plus the recent launch of the Defense Acquisition performance Assessment Project (DAPA) demonstrate a number of differences as follows.

Communication between JMOD, which orders equipment and the defence industry which takes those orders, is poor. Therefore the JMOD does not consider the defence industry as an equal partner and mutual trust is not achieved. This does not mean that each side harbours anger towards the other. The environment is simply not competitive and due to long standing relations they maintain a cordial status quo.

Above all else, it is a relationship where reform is not discussed.

Current Japanese acquisition reform focuses on the prevention of scandals and not cost reduction of defence procurement focusing on pricing, conditions and trade-off adjustments. Therefore the core concern focuses on the breadth of government contract officers' discretion and punitive actions against illegal commercial activity.

The concept of capability base demand has not been realised within the Demand Assessment and the Commercial Procurement Divisions because they are burdened with the need to prevent scandals. Communication is poor.

The contract selection process is adverse to negotiation due to the fear of scandal and because, according to old accounting law, a decision is made on the basis of only one bid. On the surface, an overall value system is promoted but in reality this is not the case and consequently selection according to best value does not take place. Especially because of recent scandals, voluntary contracts are prohibited in principle and the general competitive bid is reinforced. Actual contract negotiation, which decides specifications from competitive RFP proposals, is currently not accepted.

Furthermore, as a part of the reform discussed above, Integrated Project Teams (IPTs) have been launched but program and project managers are not empowered sufficiently so as to make IPTs effective. The system has not been reformed to support managers in both organisational and financial terms, thus the efficacy of such teams are in doubt and Japan's procurement reform is still in question.

Selected Examples of Recent Achievements

Cost Reduction Incentives

Given the specialisation and small-scale of Japan's defence industry market, defence procurement contracts are negotiated via substantive voluntary agreements (competitive bidding in only one bid) but for the most part once the contract price is fixed, price reduction cannot take place. In order to encourage cost saving measures, the JDA introduced a contract incentive system in 1999 and through a subsequent a Vice Minister's directive in 2002 some parts of system were changed, involving a relaxation of technical requirements. This encourages cost-saving proposals which, when adopted, 50 per cent of the cost reduction would be transferred to the contractor as an incentive grant over five years. However, due to complicated procedures there have been only two cases over the past eight years. JMOD is currently working on revising an incentive grant scheme, however Japanese defence contracts also require audit costs to be incorporated under special legislation on the return of excess interest. Under these regulations, if interest exceeds fixed interest rates, it must be returned even in the case of fixed contracts. The contractor thus takes the burden and the government absolves itself of any responsibility. This system adverse to risk-sharing impedes cost reduction incentives for the defence industry. In the UK Defence Review of 2003, the government and supplier shared losses at a ratio of 3:1 but in Japan the supplier takes the full risk.

Another Example of Improvement in Acquisition Reform

Some evidence of improvement includes

legal claims over defence contract admissibility, the active encouragement of COTS acquisition, opportunities to buy government bonds and the adaptation of the Treasury Obligation Act to encourage lease of equipment. Due to annual budget allocation, contracts were generally on an annual basis but now multi-year contracts have been agreed. Problems nevertheless remain. For example, in the case of COTS, specification problems place pressure on enterprises which need to consider through-life cost.

Problems with Contract Specification and the Vendor Selection Process

The Japanese defence procurement specification process is often fraught with difficulty due to its complexity. In these cases, the government side creates an RFP and selects companies based on competitive proposals. Later, during further negotiations, re-bidding takes place and the final price is decided. However, according to century-old Japanese public procurement accounting law, bid specification takes place beforehand using single price competitive bidding. In recent years, a comprehensive rating system has been combined with one-shot bidding and proposal pricing cannot be changed. As a result of recent public bidding scandals, especially government initiated bid-rigging and price fixing, voluntary contracts are strictly prohibited. Therefore, JMOD has struggled with the vendor selection process.

Systems Integration Technology and Exposure to Liability

Defence procurement of large-scale complex systems has increased in recent years and as noted in the committee report recommendations in 2000, although the importance of system integration is

acknowledged, neither defence industry policy nor the contracting method has changed. With the exception of major weapons systems such as destroyer engines and radar systems, equipment which carries less risk such as repeated production of aircraft engines, the prime company's subsystem procurement often employs system integration. In the case of government systems, systems integration is usually conducted with the prime company. However, in the case of computer platform lease contracts, usually a separate contract is made because the government usually lacks the technological capability for systems integration. As a result, responsibility becomes ambiguous and effectively companies that produce such systems will take overall responsibility. Since 2000, the Japanese government's e-government project has been regularly assisted by private sector IT systems integration. The government often found itself in a weakened position dubbed 'vendor lock' and the Japanese government has recently published basic guidelines on government procurement of information systems set to take effect in July 2007. According to the guidelines, government procurement of information systems should be a split order. However, government officials in charge of system engineering do not take responsibility for the systems integration and the private sector systems integration engineers become concerned. Since lease contracting for systems integration applies to defence procurement policy, an early reasonable solution to the problem is needed.

Technical Research and Development

Due to the speed of technological advances and the commensurate demand for modern defence equipment, the promotion of

defence technology research and development in the private sector and at universities and research institutions is crucial to satisfy Japan's national defence capabilities. This is a major problem for Japan's defence industry.

Japan's Position on Science and Technology Research and Development

Japan's national science and technology research and development investment is second to the US is the largest in the world in terms of GDP. However in terms of the government/private sector burden ratio, the government burden rate is about 20 per cent, smaller than US and British government's rates of about 30 per cent and the French government's rate of about 40 per cent. The Japanese government's burden is very low by comparison with other nations in the defence field. Because of its small and specialised defence market, development costs are larger than research costs and the government is required to cover both. Therefore the Japanese government's defence research burden is far less than in other fields.

Japan's defence research and development costs are less than 5 per cent of the total government research expenditure and the absolute cost is less than ¥200 billion, most of which is on development costs. While the US Department of Defense's Science and Technology expenditure of 6.1- 6.3 per cent occupies 15 per cent of total research and development costs, Japan's respective costs are less than 2 per cent of total the defence research and development expenditure. In addition to small budgets and small numbers of researchers, since the end of the Second World War, there has been an allergic reaction to defence research among the university research community.

Although the number of such scholars is small, their opinions are so strong that interest in the defence sector at research institutions and within academia is quite low. Co-operation and integration between defence and civil research is very rare. One of the very few examples is the Ministry of Education's independent agency, the Japan Science and Technology Agency (JSTA's) anti-personnel mine detection and clearance research and development project commissioned by the JMOD.

Japan's Fundamental Project for Defence Science and Technology Research and Development

This is a five-year-project currently in the middle of the third-phase 2006–2010. The total amount invested by the government is ¥200 billion. The project's third phase does not elaborate on defence industry aspects but of the six major goals of the project's third phase, the sixth goal is 'a peaceful nation, which can be proud of national security and its implementation'. A recent conference on 'promotion of scientific technology and security PT' concluded that there was a need for analysis on the contribution of science and technology and dual-use technology as a comprehensive contribution to security. However the pace of joint research is very slow and understanding of the defence industry is hard to promote.

A Mid-to-long term technology assessment by the JMOD Technical Research and Development Institute

Although the JMOD technical research and development programmes have seldom been made public, in April 2007 for the first time the JMOD TRDI published 'Mid and long term technology outlook'. This document is the result of analysis of the

required capability base according to Japan's defence planning strategy and requirements for future technologies. The JMOD identifies twenty functional items required as future technology and systems requirements according to current levels of basic research and a further thirteen technologies which could in the future could result in dramatic improvements in quality or innovation towards new technologies. This report introduces encouraging new technology research trends in JMOD's research and development capability.

Joint Research and Development with Foreign Countries

As an exception to the three principles of arms exports, technology transfer to the United States has been permitted and joint research and development has been conducted in fields such as eye-safe lasers. Recently, requirements for joint research and development of Ballistic Missile Defence (BMD) have emerged and in 2004 the comments by the Chief Cabinet Secretary were published, promoting the strengthening of joint research with the United States. In 2008, the following five joint research projects and one joint development project will be conducted:

- Ship-borne air defence radar research
- Carrier-based tactical combat command systems research
- Advanced materials for hull structure research
- Portable chemical agents detection technology research (candidate project)
- Gyro and image application applied technology research (candidate project)
- Missile technology for Ballistic Missile Defence warhead development.

In 2008 Japan will be working with other countries such as France, Sweden and the UK.

Appendix 1: The Three Principles of Arms Exports

1. The Government of Japan has been dealing carefully with 'arms' exports in accordance with the policy guideline named Three Principles on Arms Exports (hereinafter referred to as 'the Three Principles') in order to avoid any possible aggravation of international conflicts.
2. Under the Three Principles, 'arms' exports to the following countries or regions shall not be permitted:
 - (i) communist bloc countries,
 - (ii) countries subject to 'arms' exports embargo under the United Nations Security Council's resolutions and
 - (iii) countries involved in or likely to be involved in international conflicts.
3. The Three Principles have been the basic policy concerning Japan's 'arms' exports since they were declared at the Diet session in 1967.
4. Subsequently, in February 1976, the Government of Japan announced the collateral policy guideline at the Diet session that the 'arms' exports to other areas not included in the Three Principles will be also restrained in conformity with Japan's position as a peace-loving nation. In other words, the collateral policy guideline declared that the Government of Japan shall not promote 'arms' exports, regardless of the destinations.

5. The Ministry of Economy, Trade and Industry (METI) controls Japan's 'arms' exports, based on the Foreign Exchange and Foreign Trade Law. The exports of 'arms' and equipment for arms production listed in the Export Trade Control Order require export licenses to all destinations, since those transactions could be obstructive to the maintenance of international peace and security. In addition, 'arms' trades mediated between foreign countries by Japanese agent need METI's permission.
6. The term 'arms' as referred to in the Three Principles is defined as 'goods which are listed in Item 1 of Annexed List 1 of the Export Trade Control Order of Japan and which are to be used by military forces and directly employed in combat.' Such 'arms' include specially-designed parts and accessories as well as finished products. The question of whether each item falls under such 'arms' or not will be judged objectively based on its shape, feature and other technical aspects and regardless of its end-use. On the other hand, so-called dual-use items do not fall under such 'arms.'
7. Based on other relevant laws, the Government of Japan also deals with in a strict manner:
 - (i) direct overseas investment for the purpose of manufacturing 'arms' abroad and
 - (ii) participation in the overseas construction projects of military facilities.
8. The export of technologies which are exclusively related to the design, production and use of 'arms' as defined

in paragraph 5 above (hereinafter referred to as the 'military technologies') is treated in the same manner as the export of 'arms.' However, in order to ensure the effective operation of the Japan-United States security arrangements, the Government of Japan paved the way for the transfer of the military technologies to the United States as an exception to the Three Principles. Such transfer of military technologies to the United States is to be implemented in accordance with the Mutual Defense Assistance Agreement (the MDA Agreement) and the Exchange of Notes concerning the Transfer of Military Technologies concluded in 1983 under the MDA Agreement (the 1983 Exchange of Notes).

Appendix 2: Japanese Defense Program Guidelines

Japanese Defense Program Guidelines have been published in 1976, 1995 and 2004 (reflecting the 11 September attacks). The basic principles of the 1976 and 1995 guidelines are only to combat direct military threats using the basic minimum defence capability. 2004's guidelines retain this basic principle but attempt to reconsider a focus on deterrent effect with an emphasis on a defence capability which can cope with multiple contingencies both internal and external to Japan. The reasons behind this change are to correspond with diverse contingencies through threat reduction, incident response and damage minimisation plus a requirement to engage in peace co-operation activities. The guidelines state that Japan aims to create a flexible and multifunctional self-defence force.

Contents of National Defense Program Guidelines 2005 (available online)

1. Purpose
2. Security Environment Surrounding Japan
3. Basic Policies and the Security of Japan
 - (i) Basic Principles
 - (ii) Japan's Own Efforts
 - (iii) Japan-U.S. Security Arrangements
 - (iv) Co-operation with the International Community
4. Vision for a Future Defense Capability
 - (i) Role of the Defense Capability
 - (ii) Fundamental Measures for Japan's Defense Capabilities
5. Additional Elements for Consideration

From the perspective of defence industry policy, this guidelines' last section five 'Additional Elements for Consideration' need attention. In addition to meeting defence capability requirements, the guidelines envision the shape of a defence force projected out to ten years which will be reviewed if necessary after five years.

- 'Mindful of markedly worsening fiscal conditions, Japan will curb defense expenditure by further rationalizing and streamlining our defense capability and will attempt to successfully carry out its missions by harmonizing its operations with measures taken by other Governments'

- 'Curbing life-cycle costs, including purchase price of defense equipment'
- 'Operation of policies to maintain defence institutions and acquisition of equipment.'

Appendix 3: Mid-term Defence Infrastructure Program published under the National Defence Program Guidelines (2005–2009)

The contents of this project are as follows:

1. Program Policy
2. Organisational review of the JDA and the Self-Defense Force
3. Main Capabilities Projects of the SDF
 - (i) Effective response to new threats and diverse contingencies, response to ballistic missile attack, response to attacks by guerrillas and special operations forces, early warning and air surveillance, response to air invasion and armed special operations vessels, response to large-scale disasters and special disasters
 - (ii) Preparation against full-scale invasion
 - (iii) Proactive and independent efforts to improve the international security environment
 - (iv) Basic tasks for defense capability, strengthening of joint operations, strengthening of intelligence functions, response to advances in science and technology and effective use of human resources.
 - (v) Promotion of various measures to underpin defense capability.

4. Measures to Strengthen Japan-US Security Arrangements

5. Scale of Build-up and Necessary Budget:

Ground Self-Defense Force

Tanks	49
Artillery (excluding mortars)	38 pieces
Armed vehicles	104
Combat helicopters (AS-64D)	7
Medium-range surface-to-air guided missiles	8
companies	

Maritime Self-Defense Force

Upgrade of Aegis-equipped destroyers:	3 vessels
Destroyers:	5 vessels
Submarines:	3 vessels
Other:	11 vessels
Self-defence vessels:	20 vessels (approx. 59,000 tons)
New fixed-wing patrol aircraft:	4
Patrol helicopters (SH-60K):	23 units
Minesweeping and transport helicopters:	3 units

Air Self-Defense Force

Upgrade of the Patriot surface-to-air missile	2 groups
F-15 fighter upgrade	26 aircraft
F-2 Fighter	22
New Fighters	7
New transport aircraft	8
Transport helicopters (CH-47J)	4 units
Airborne refuelling and transport planes	1

6. VI. Required Budget

Not exceed about ¥24.24 trillion under FY 2004 prices. An extra budget of up to ¥100 billion can be allocated if necessary to respond to unforeseen events with the approval of the Security Council.

Appendix 4: Defence Industry Policy-making Related Organisations

1. Creation of Internal Bureau under JMOD organisational order Chapter 3. Number 5 Equipment Accounting Bureau (Regulation of affairs of the Defence Policy Division). Article 36 The Defence Policy Division conducts the following:

- (i) Comprehensive policy planning in relation to research, development and procurement of equipment, procurement services for the Self-Defense Force
- (ii) Comprehensive policy planning relating to bidding and contracts
- (iii) Comprehensive business in relation to the fundamentals of procurement services and development and procurement of equipment
- (iv) Procurement service systems and equipment development (except for regulations under the audit division)
- (v) Management of the equipment facilities headquarters.

2. Creation of Internal Bureau Section Number 3 under METI organisational ordinance Section 2, Chapter 3. Manufacturing Industry Bureau Number 6. Article 76 Aerospace Ordnance Division of the Office of the Aerospace Industry conducts the following affairs:

- (i) Section 8, clause 1, article 11 regarding the following materials.
 - Aircraft and their components
 - Weapons and parts

- Hunting guns, harpoon guns, spear guns, whaling guns, lifesaving flares and air guns
 - Satellite and rocket components
 - Large-scale space technology development and the development of the ore industry.
3. Business and improvements relating to use of outer space and development of business related to METI regulations.

Article 8: the manufacturing industry division regulates following affairs.

The following materials' consumption and distribution, production, import and exports, except for consumption of distribution of special agricultural, forestry and fisheries materials and consumption, distribution and production of raw silk and short cocoon fibre (except for regulations under the Agency for Natural Resources, Energy and Commerce Information Policy

Bureau regarding aircraft, this is limited to aircraft manufacturing business):

Steel, steel products, light metals, nickel, cobalt, titanium, rare metals, non-ferrous metal parts, metal scrap, science industry machine parts, casting products, forging, textile industry goods, miscellaneous goods and similar industrial products including oil and fats, cosmetics, agriculture and marine machine parts, industrial vehicles, internal combustion engines, aircraft, wood and bamboo goods used for guns, civil engineering materials (excluding wood) and excluding chemical fertilisers, food and beverages, agricultural chemicals, rails cars, railway signalling equipment, automotive combustion devices for cars, hides and furs, light vehicle production by the Ministry of Land, Infrastructure and Transport, tourist vessels, parts and goods for vessels and agricultural machinery produced by the Ministry of Agriculture, Forestry and Fisheries.

3. Japan's Unique Defence Industry and Strategic Opportunities through Dialogue with the United Kingdom

Japan's defence industry is currently facing a set of difficulties. The defence budget has not only suffered from bouts of long economic recession and structural financial reforms but the procurement system itself has become marred by scandals linking government interests and the core of the industry. While bidding competition and more precision in cost calculation were introduced in order to protect the transparency of procurement, in reality these reforms have achieved little but add to the financial pressure on the industry.

However, the problems facing the Japanese defence industry are not limited to the above mentioned issues. The industry is beset by deeper structural issues dating back to the Second World War. After the end of the war, the US occupying forces dismantled Japan's defence industry. The development of the defence and aerospace industry was restricted in an attempt to prevent future Japanese militarisation.¹ In addition to restrictions resulting from the war defeat, Japan is also hampered by the provisions of Article 9 of the Japanese Constitution, which states that land, sea and air forces as well as other potential vehicles for war will never be maintained. With the advent of the Korean War and despite the restrictions contained within the constitution, the Self-Defense Forces (SDF) were created. Though a defence industry was formed, it has been considerably restricted due to the Constitution, the Japan-US alliance

relationship based on the two countries' security treaty and the peace doctrine supported by nation.

This chapter will discuss the particular character of the Japanese defence industry and to what extent Japan could benefit from the type of defence industry collaboration experienced in Europe and particularly with relation to the United Kingdom.

Historical background of the Japanese Defence Industry Policy

After the Second World War, Japanese defence policy was controlled by the United States; Japan had no defence capability or defence industry policy. Only as a result of the signing in 1951 of the San Francisco Peace Treaty between Japan and the US did Japan establish the National Police Reserve. It was the National Police Reserve that later became the Japanese Self-Defense Force.

The creation of the SDF was regarded by reformist parties, such as the Social Democratic Party of Japan and the Japanese Communist Party, as a breach of Article 9. They opposed the self-defence policy as well as the Japan-US Treaty. The reformist parties then enjoyed considerable support. The ideological argument over the constitution came to an end at beginning of the 1970s when the Liberal Democratic Party developed policies known as the 'Income Doubling Plan' which related to rapid Japanese economic growth and the formation of a welfare state. The SDF and the Japan-US Treaty were gradually accepted by the nation.

Restrictions on the Defence Industry

The first major restrictions on the Japanese defence industry are the *three principles of arms export*. In the second half of 1960s,

¹ Japanese Aerospace Company, *Aerospace Industry in Japan: For 50 Years* (The Society of Japanese Aerospace Companies, 2003).

Japan's Parliament, the Diet, addressed issues of the involvement in the Vietnam War and the Nuclear Non-Proliferation Treaty (NPT). To avoid showing Japanese commitment to the Vietnam War, Prime Minister Eisaku Sato banned arms export to the following countries:

- countries in the communist bloc
- countries to which weapons exports are banned by UN resolutions
- countries involved or feared to be involved in armed conflicts.
- Sato's Cabinet ban was reinterpreted by the Miki Takeo Cabinet in 1976 and was consolidated into the three principles of arms export in force today.

The second of the three principles addresses exports to the United States. According to this, Japan's defence industry has had to 'refrain from' exporting arms to all nations including the United States.² Exports to the US are restricted with the exception of sample exports from the Japan-US joint research development of FSX project (see below), the Japan-US joint development of the Strategic Defense Initiative (SDI) and the Japan-US joint development of Ballistic Missile Defence.

The Miki Cabinet's arms export ban led to the establishment of a civil manufacturing industry which focused on exports for civilian purposes. Concurrently, the Japanese defence industry established a somewhat skewed industry structure, which relies solely on internal demand from the JMOD.

The second major restriction, also established during the Miki Cabinet in 1976 was 'a defence budget within 1 per cent of

GDP'. While Japanese GDP continued to grow, so did the defence budget. However, the economy slowed down and the 1 per cent of GDP provision became a considerable restriction. The actual growth of the defence budget has been therefore limited. In 2007 the defence budget was pegged at ¥4.8 trillion of a GDP of ¥516.0 trillion. Since the Japanese defence industry relies on domestic demand, the defence budget's stunted growth means that the defence market is constrained with minimal profit margins.

The defence budget is within 1 per cent of GDP, but not all of it is allocated towards the costs of equipment. As stated above, the defence budget in 2007 was ¥4.782 trillion, however personnel and food expenses totalled 43.9 per cent of the budget at ¥2.102 trillion and commercial expenditure was only ¥2.680 trillion. Of this, ¥1.766 trillion 36.9 per cent of the total budget is dubbed 'expenditure expenses', or payments based on past contracts which cannot be used for the procurement of new equipment. The actual annual budget allocation for new contracts under the description of 'general expenditure' stands at only ¥913.8 billion.

Of the 'general expenses' allocation, research and development expenditure is ¥26.1 billion and equipment purchase costs are ¥21.5 billion (0.45 per cent of the total). Examining annual expenditure and projected costs for the following year, research and development costs are ¥132.7 billion, equipment purchase costs are ¥516.3 billion, aircraft purchases amount to ¥211.0 billion, ship construction costs are ¥146.0 billion, with defence procurement totalling ¥1.60 trillion.³ It is evident that Japan's

² Japanese Ministry of Defense, *The Defense White Paper Heisei 16* (2004).

³ Japanese Ministry of Defense, *Japan's Defense and Budgets (Plan): The Outline of Budgets in Heisei 20* (2007), pp. 23–27.

defence budget leans heavily towards personnel and facilities costs and the budget allocation for defence industry sales including research and development and equipment is limited.

Negative Influences of a Restricted Industry

Restrictions imposed upon the Japanese defence sector have created a fragmenting industry. Recent defence-related scandals indicate that the very small defence supply industry and its obscure standards have led to a lack of transparency and controversial links between the defence industry and JMOD. In other countries, the transparency of the procurement system and the introduction of the competitive principles are evaluated and justifiable procurement is sustained. In Japan, little action has been taken to make the procurement process transparent. Scandals over procurement practices in the past stem from what is known as 'padded demand'.

While these systematic deficiencies, the issues of non-transparency and the lack of ethics between supplier (JMOD) and provider (the defence industry) are a big problem, these issues can be solved within the context of system ethics.⁴

Defence equipment costs are extremely high. Since arms exports are 'restrained', the defence industry does not need to increase its international competitive power. Since there is no need for cost reduction and of unit prices there is no need for 'well-sold' products and cost-cutting incentives do not work. The price of equipment is decided

contractually with the JMOD, including and a cost-plus-fee contract (a contract that includes additional interest costs). The defence industry has therefore adopted high cost products involving complicated technology and incentive is placed on the use of parts with high unit prices. This amounts to the fixing of a high cost structure and through this process 'padded demand' often emerges.⁵

Maintaining high-cost equipment within the boundaries of 1 per cent of the defence budget impedes a comprehensive defence infrastructure and restricts the diversity and volume of equipment that can be supplied. Since the dispatch of the SDF on Peace Keeping Operations to Cambodia (UNTAC) in 1992, Japanese support missions to the United Nations have increased and consequently demand for logistics equipment such as transport and replenishment has increased. As a result, equipment priorities have switched. Procurement of equipment relating to communications and information-gathering has declined and development of this capability remains weak.

In a globalised world, the SDF needs to be able to gather information and communicate via satellites. Such infrastructure is indispensable for the dispatch of the SDF abroad. However, Japanese defence policy is restricted by the 'Peaceful Use of Outer Space Diet Resolution' of 1969. While the Revolution in Military Affairs (RMA) concept developed in the United States refers to the use of

⁴ JMOD has already proposed the reform of the system. 'JMOD: the section of unification is doing the direct contract—equipment supply, the reform plan is formed', *Mainich Shinbun*, 3 February 2008.

⁵ M Oiso, 'The extreme arms export ban policy that breeds the defence scandals', Shizuoka Kenritsu University oiso.net, Reading Earth, *Analysing the World* (29 December 2007) <<http://www.geocities.co.jp/CollegeLife-Cafe/5562/column/column102.html>>.

space-based infrastructure, the Japanese Diet Resolution prohibits it.

Even though the SDF requires a level of interoperability under the provisions of the Japan-US Treaty, the resolution states that Japan must only use space for peaceful purposes. When this issue was argued in the Cabinet the phrase peaceful purposes was interpreted as 'non-military'. Related to this issue is the peaceful use of nuclear power. JMOD the SDF have been banned from research relating to nuclear power. The SDF is not allowed to use space infrastructure and only under a 'generalised principle', submitted as a government opinion in 1985, was the use of space infrastructure permitted. The SDF can use space capabilities in the civil and commercial sectors, making possible the use of satellite imagery and communications.

Japan joined the SDI through a Cabinet decision in December 2003 and the use of space infrastructure is now viewed as necessary and an Outer Space Fundamental Law has been submitted to the Diet. Prominent members of the LDP are trying to change the definition of 'peaceful use' of outer space from 'non-military' to 'non-attack and non-invasion'.

Another restriction on the defence market is directly connected to the licensed production system and technology transfer from the United States. In Japan's nascent defence industry, all focus was placed on securing interoperability and technological catch-up. Research and development in leading edge fields such as aerospace and chemistry were prohibited seven years after the end of the Second World War and the Japanese defence industry collapsed.

Many prominent scientists started to work in civilian and commercial research and

development forming the basis of Japan's economic growth. The SDF was created to operate with US forces under the provisions of the Japan-US Treaty. Technological catch-up was seen as a key component in this endeavour and the fastest way to ensure its success was through licensed production. The defence industry in Japan gained its technological know-how from the US, enabling the production of high-quality high-tech products.

Producing defence equipment based on Japanese indigenous technology has at times presented challenges for Japan-US relations. The FSX is an example. Japan aimed at the development and the production of the technology in Japan. Japan did not want the production license from the US for the next in-flight refuelling tanker which was to be made with new technologies (e.g. combined materials) stemming from civilian and defence technology. Japan's wishes faced strong US opposition and eventually the project became a joint Japan-US development project. Due to the embedded high-cost characteristics of Japanese defence industry, cancelling the tanker became very expensive. JMOD had committed to the project and to supplying these expensive tanks for relatively long periods of time. Owing to the arms export ban, the tank could not be exported to the US, despite being the result of a joint Japan-US project.⁶ A recent example of difficulties in the Japan-US relationship is the F-2 project which came to an end in 2006.

The Possibility of Co-operation with the British Defence Industry

It would seem that there is little or no space for co-operation with countries other than

⁶ T Zenma, *Why Cannot Japan Create Airplanes?* (Tokyo: Shisousya, 2002).

the US due to the Japan-US defence, aerospace and electronic industry partnership. Japanese companies such as Shiba Zyukou, Kawasaki Zyukou and Fuji Zyuko develop and produce 30 per cent of the civil aircraft, the Boeing 787, along with the production license. In addition, Japanese security policy is based on the Japan-US Treaty with most emphasis placed on securing interoperability with the US. It is therefore difficult to imagine serious defence procurement from countries other than the United States. Because of the arms export ban, there is no strong international competitive power in the Japanese defence industry, undermining any technological co-operation with non-US countries.

Is it therefore impossible to enter into a dialogue with the UK defence industry? This is not necessarily the case. Of utmost significance would be the concept of 'self-development'. Japanese defence industry policy has been marked by two contradicting ideologies, 'dependence on the United States' and 'self-development'.⁷ For those focusing on the dependence on the United States, the alliance between the two countries is seen as indispensable with defence equipment unification being the first priority. With a focus on subduing the Japanese defence industry profile rather than strengthening its foundation, this approach also avoids any criticism from the US. On the other side of the issue, there are those who support the idea of 'self-development'. They believe that the alliance

with the United States will not last forever. They believe that the Japan-US security system was created in the Cold War and with this particular security scenario being over, there is no longer a reason for the US to support Japan unconditionally. Since the Japan-US alliance is not viewed as indestructible, they highlight the dangers of having no national defence industry infrastructure. The strengthening of the defence industry is therefore viewed as necessary.

Both strands of thought have been strictly regulated by the restricted defence budget and the ban on arms exports. In the case of FSX, 'self-development' has often been able to take advantage of the catch-up process involved in the production of equipment such as tanks. Another example of 'self-development' initiatives related to the launch of information gathering satellites. This decision was taken in 1998 after the missile launch in North Korea. The development of satellites in Japan was seen as the first priority and Mitsubishi Electric gained the prime contract.

It is important to realise that Japan does not depend on the United States all the time. The main proposition in the 'self-development' argument suggests strengthening Japanese defence industry technology. Japanese technology continues to improve and is approaching US standards; however, on the whole there are still many technological weaknesses. Equipment and infrastructure needed for peacekeeping operations have not developed at the same rate as those produced in the West. Further advances would be needed in the production of night vision equipment, next generation portable communication facilities, portable land communication and chemical defence systems.

⁷ There is an important report entitled 'the fundamental direction towards the maintenance and development of the defence industry and technology base towards the 21st century' (Defence Industry / Technical Foundation Workshop, November 2000). This report details concrete improvements for the Japanese defence industry, many focusing on 'strengthening the domestic defence industrial technology base'

It is also clear that export control policies in the US are beginning to question the future of the Japan-US alliance. As for the F-22 demanded by Japan, the US Congress terminated the sale due to concerns over the ability of Japan to protect classified US defence data. With the US unwilling to carry out arms export and the difficulties faced in terms of defence technology dialogue, co-ordination on the defence equipment Japan hoped for has become difficult.

Under such circumstances, the possibility of defence industry co-operation with European countries, most notably with the UK, has increased. With the licensed production and the arms supply from the United States getting trickier it might be high time to find sources from other countries. In 2007, Japan signed a defence treaty with Australia which is expected to become the next Japanese ally after the United States. Japan is expected to start working with Australia in the defence technology development field.⁸ Given these circumstances, it would not be inconceivable that a defence equipment supply treaty be enacted with the UK.

The Japanese Defence Industry as a Partner

Since defence industry realignment in 1990s, the British defence industry has been grouped mainly around BAE Systems and many deals have been conducted through joint ventures in European countries. BAE Systems also has a considerable presence in North America and as a partner of JSF (F-

35), and they have eagerly tried to enter the American market. Britain has entered into a defence technology treaty with the United States (although it has not yet come into force) and has attempted to overcome some of the problems inherent in the American export control system. Within the European market, the UK has been involved in defence industry co-operation such as OCCAR and the LoI. Moreover, the first chief executive of the European Defence Agency, Nick Witney, is from the Britain, so the country plays important role in the joint research development and the equipment supply schemes in Europe.⁹

Japan has not experienced defence co-operation as broad as that of European countries. Despite the lack of experience, the new international security environment of a post-Cold War era has made co-operation with European countries both possible and more likely.

In order to have a meaningful exchange with European nations, Japan must consider several issues. First, deregulation is necessary – it must form a legal system to ease international co-operation. As it stands, exports of arms and related facilities are banned. Even if joint projects were set up with European countries, projects would not work unless they were treated as an exception of the arms export ban. This may present difficulties as the ban enjoys strong national support. Any attempt to circumvent the ban would be highly controversial and could possibly lead to the collapse of the Cabinet. In order for possibilities to open up with European

⁸ 'Japan-Australia Joint Declaration on Security Cooperation', 13 March 2007 and 'Major elements of the Action Plan to implement the Japan-Australia Joint Declaration on Security Cooperation', September 2007, <http://www.mofa.go.jp/mofaj/area/australia/0709_kk.html>.

⁹ For this point, see 'Dealing with the U.S.-Europe power gap', Research Institute for Peace and Security and *The current situation and the future of the EU common diplomacy and security policy*, Japan Defence Agency Research Institute (March 2007).

markets, initiatives would have to be undertaken to ensure a change of perception of the part of the public and among the media concerning the ban.

It would also be necessary to change the industry structure and make it more technology-oriented. Due to the export ban and the restricted defence budget, the Japanese defence industry is based on a high cost structure including high-tech development and the supply of high quality parts. It would be difficult to join international joint projects if the current Japanese industry structure remains unchanged. In some cases, Japanese defence technology development is beyond international standards, for example, the main wings of fighters using combined materials. Such technology could be important for international joint projects. However, production high costs could prevent Japan from producing competitive equipment. This problem stemming from a technology-oriented industry structure can be observed in the commercial sector as well. The Japanese YS-11, a technologically superior aircraft, was a disaster for these very reasons. Furthermore, rockets such as the H-IIA and satellites have not experienced commercial success.

Finally, while technology transfer and the licensed production could be seen as a catalyst for co-operation with Europe, its primary purpose is to achieve interoperability with the US and to achieve technological catch-up. Interoperability would be key to any co-operation between Japan and Europe but no systems are currently in place. If a defence co-operation

treaty with the UK were to be agreed with Japan as a global partner to NATO, interoperability with European countries would be required. Currently, there is no such movement.

Although Japan has the will to embark on defence industry co-operation with European countries, especially with Britain, from a strategic perspective challenges remain for such a development to actually materialise. A number of incentives in Japan discussed above would need to be introduced. Such reforms have not yet produced any results and in order to be a great partner and build strategic alliances, Japan needs to address its defence industry structure.

Conclusion

Japanese defence industry policy is unique. Special provisions such as the three principles of arms export and a constrained defence budget regulate the Japanese defence industry to such a degree that Japan cannot play an important role as a global partner. However, in a post-Cold War, post 9/11 environment, Japan's security requirements have changed. A comprehensive defence industry policy is now required. In order to formulate a meaningful defence industry policy, it is necessary for Japan to broaden its traditional co-operation with the US to include countries such as the United Kingdom. In addition, transparency within the Japanese defence industry itself needs to be improved. Though initiatives in this direction have commenced, much work remains to be done.

4. Strengthening the Relationship between Japan and the UK and Shared Security Environments

The Security Environments of Japan and the UK

When the Japanese think of strengthening any security co-operation between Japan and the UK, the first thing that springs to mind is the Anglo-Japanese Alliance of 1902. At the time, Japan had only just started to modernise and war with Russia, one of the world's most powerful countries, was a crisis that put the very survival of the state in the balance. A quick end to the Russo-Japanese war was the most pressing military and foreign affairs prerogative and victory at the Battle of Tsushima became a decisive turning point for Japan. The considerable damage that the UK inflicted on Russia's Baltic Fleet as it headed to Vladivostok was a key feature behind this victory. The Anglo-Japanese Alliance was also helped greatly by the requisition of military funds. However, it is the image of Japan's victory, as characterised in a painting of the Battle of Tsushima hanging at the Royal United Services Institute for Defence and Security Studies (RUSI) that represents most clearly the Anglo-Japanese Alliance in the minds of the Japanese.

The relationship between Japan and the UK remains strong. The lock of Admiral Nelson's hair given by the UK is stored and exhibited at the Japanese Maritime Self-Defense Force (JMSDF) Service School in Etajima, previous home of the Imperial Navy Candidate School. The JMSDF dispatches international students to the US and the UK. It is safe to say that the spirit of co-operation between Japan and the UK continues to this day, particularly between

the JMSDF and the Royal Navy. The security environment affecting both Japan and the UK has changed greatly over recent years, with the potential for the relationship between both countries to be strengthened in many ways.

Threats to Japan

There are a number of factors that affect Japan's security environment. China is coming to terms with its new status as a power capable of wielding political influence to accompany its newfound economic strength. In line with its growing economy, China has expanded and modernised its military over recent years. The Chinese government explains that this military expansion and modernisation is entirely defensive, but many observers remain sceptical about this explanation. Meanwhile, resource-rich Russia, another great power neighbouring Japan, has emerged from the chaos that followed the collapse of the Soviet Union and is once again asserting itself as a wild-card pseudo-superpower.

Currently the largest and most direct threats to Japan are North Korea's ballistic missile arsenal and the pariah state's desire to acquire nuclear weapons. A missile launched by North Korea in 1998 splashed down in the waters off the north-east coast of Japan and a series of missile launch tests were conducted by North Korea in 2006. North Korea's ballistic missile technology had improved considerably. However, this concern was eclipsed by North Korea's nuclear test later that year. North Korea's nuclear program is being discussed at the Six-Party Talks but as long as North Korea remains unpredictable, it is a strategic imperative for Japan to set out responses to this threat.

While Japan may not engage in military action, it is participating in the War on Terror with the US and the UK. After the war in Iraq, the Japan Ground Self-Defense Force (JGSDF) was dispatched to assist in reconstruction projects and the Japan Air Self-Defense Force contributes aircraft to the reconstruction efforts. The JMSDF is engaging in refuelling activities in the Arabian Sea. Concern has been raised that Japan could thus become a target of Islamic extremist terrorism and it is this threat that Japan has in common with the UK. A final threat to Japan comes in the form of South-East Asian piracy; a problem that Japan cannot tolerate since it depends on ocean transport for much of its energy and resources.

The Security Environment of the UK

Whereas the born-again Russian bear is a destabilising factor for UK security, Russia currently poses no direct military threat to mainland Britain. This does not mean that there are no threats to UK security. Increasingly, the threat of terrorism, the proliferation of weapons of mass destruction (WMD), regional conflict and immigration policy are emerging at the forefront of the United Kingdom's security concerns. In 2005, the UK's transport system was targeted in simultaneous terrorist attacks which killed in fifty-two people (including the four suicide bombers) and injured some 700 people. In 2006, although the plot was thwarted, a large-scale terrorist plan involving jetliners bound for the US was uncovered at Heathrow Airport. Current threats to the security of the UK are not from the regular militaries of other countries but rather the global asymmetric threat posed by transnational terror. This threat faces many European countries and prompted the German defence minister to state that 'our country's security begins with Afghanistan'.

The emerging threats have made a change in NATO's response necessary. NATO was born of the Cold War as a regional defence alliance with its activities limited to certain territories. However, with threats to Europe emerging from afar, NATO has dispatched troops to the Balkans, Afghanistan and Iraq, and now engages in peace support and reconstruction efforts. As the scope and detail of its activities have expanded since the end of the Cold War, NATO has strengthened co-operative efforts with other countries and organisations.

Ballistic Missile Defence: An Active Defensive Posture Pivotal to the US-Japan Alliance.

As mentioned above, currently the most serious threat posed to Japan is North Korea's ballistic missiles. Japan's national security would be at risk if North Korea develops the capability to arm its ballistic missiles with nuclear warheads. Following the missile tests conducted in 2006, North Korea has proven its ability to deploy ballistic missiles that can target the entirety of Japan. To deal with this threat, Japan is seeking to deploy ballistic missile defence systems. Japan's missile defence strategy is two-staged. Ballistic missiles are first intercepted mid-course with SM3 missiles launched from Aegis destroyers; those missiles not shot down are intercepted with land-based PAC3 systems. However, the deployment of these weapons alone is insufficient to intercept North Korean ballistic missiles which require only ten minutes to reach Japan. Japan therefore needs to be able to predict when North Korea is preparing to launch a missile and detect the launch in real-time. As it stands, Japan lacks the equipment for this capability and must therefore rely on information from US surveillance satellites.

The BMD is a so-called 'system of systems' comprising sensor platforms such as surveillance satellites and radar, weapons and command and control (C2) systems. There is also a 'system of systems' relationship between Japan and the US itself. Japan's reliance on information from the US means that its BMD would only work because it functions as a part of the total BMD system employed by both the US and Japan. An effective defence posture is established only when the systems of both Japan and the US function as one system. BMD systems will become more advanced as ballistic missile performance improves, however it remains dependant on full co-operation between Japan and the US.

Dissuasion, Deterrence, Offensive Defence and Passive Defence

Japan's active defence cannot be fully secured through BMD missile interception. There is no guarantee that each and every missile in a ballistic barrage targeting the Japanese archipelago would be shot down. Missiles missed by SM3 could be intercepted by PAC3 but its operational range is limited and cannot cover every inch of Japan. Furthermore, any debris from successfully intercepted missiles would result in considerable civilian collateral damage. If Japan were successful in intercepting a nuclear-armed missile, the damage wreaked would be enormous. The best form of defence therefore is the prevention of missiles from ever being launched. This is where dissuasion, deterrence and 'offensive defence' become necessary.

It is debatable whether deterrence postures and offensive defence are consistent with Japan's exclusively defence-oriented policy. Realistically, this all depends much on the strike capability of the US military. The primary tool for dissuasion is diplomacy. In

the case of North Korea, this would include focusing in particular on China's leverage with the North Korean leadership and its influence through the Six-Party Talks and the UN Security Council.

In a missile attack on Japan, regardless of successful missile interception or not, there would be some degree of damage to the country. Passive defence or damage confinement is therefore indispensable. Passive defence comprises vulnerability reduction, an alert network and damage recovery. Japan has a National Instantaneous Alert System (J-ALERT) and a Prefectural/City Disaster Management Radio network but there is often a time-lag in reporting large-scale accidents or natural disasters to government nerve centres in the wake of such incidents. If emergency detection is delayed, then this system fails in its role. If information is not quickly relayed to local governments or emergency services in damage hot-spots, then these areas will most likely fall victim to panic and chaos. Japan needs to develop a communications system that links central and local governments, Self-Defence Forces, police, hospitals, fire departments and organisations that comprise important national infrastructure and an information system to support it. These systems are not needed simply for BMD. They are effective in handling all types of incidents such as natural disasters, large-scale accidents and terrorist attacks.

Since 2004, the Cabinet Office has been developing a 'Disaster Prevention Information Sharing Platform' that will link the information systems of each disaster response related organisation. However, there is little participation by ministries or local governments and currently the project has not achieved its initial goals. Promoting the development and expansion

of the project to a comprehensive crisis management information sharing platform will be critical during this phase of implementation. With regards to dissuasion and passive defence, the pressing issue would be to specifically address how to involve lawmakers in the development of a risk management system. On this point, Japan could learn much from the UK's experience.

Co-operation between the Defence Industries of Japan and the UK in Dealing with Future Threats

Since there is a wide array of threats to the security of Japan, commensurate solutions to eliminate these threats must be identified. Defence capabilities in the air and at sea, including the acquisition of jet fighters and destroyers, must be enhanced to address conventional threats such as the expansion and modernisation of China's military. Comprehensive policies must also be implemented to deal with North Korea's ballistic missile threat. Passive defence and crisis management must be incorporated into defence budgets, and larger budgets are required to deploy active defence systems such as sensor, weapons and C2 systems. Furthermore, it must be recognised that equipment needed to engage in international peace support operations, a new primary mission for the SDF, is different from that employed for conventional threats and missile defence systems.

It is crucial for Japan's national security that a domestic defence industry and technology base be maintained. Japan will be unable to cover the entire cost of all the equipment mentioned and must selectively distribute resources and accumulate technology from restricted budgets allocated through Japan's harsh fiscal predicament, constrained by domestic technological restrictions.

Conversely, while there are no imminent conventional threats to the UK, its war on terror in Iraq and Afghanistan means it must focus its resources in dealing with new threats. A general military update also needs to be considered by the UK, including ensuring a selective defence industry and technology base.

The difficulties in maintaining a domestic national defence market have confronted both the UK and Japan since the Cold War, long before security threats diversified into what they are today. The domestic national defence markets in both countries were limited and unable to maintain a comprehensive defence industry and technology base. However, the UK and Japan's respective defence industries took altogether different paths. Since the 1960's, the UK has been more outward-facing and has nurtured its defence industry by investing in US corporations, entering the US national defence market and by establishing multinational defence corporations with other European countries. US corporations filled seven of the top ten defence industry corporations in the world in 2006 and the US continued to dominate the defence market. The UK company, BAE Systems, ranked fourth.

Ever since the production of weapons was first permitted in the wake of the Second World War, Japan has been bound by three principles of weapons export and the only client of Japan's defence industry has been the Defence Ministry. The three principles prevent weapons export to communist countries, countries to which the export of weapons had been prohibited by a UN resolution and countries which are, or may be, involved in international conflict. This resulted in the development of a harsh weapons export prohibition policy in 1976 and the adoption of the 'resolution

regarding the issue of weapons export' by the Diet in 1981, according to which actual measures to prohibit the export of weapons were taken. The principles have been criticised for impeding cost reductions through mass production, ultimately resulting in the comparatively high price of Japanese produced defence equipment. This raises the question of whether weapons from Japan, which lacks weapons development experience based on data from active operations, would be competitive in the world market.

One of the major problems is that Japan cannot participate in international joint developments because it chooses to adhere to its legislation. As defence equipment becomes more advanced and the cost of research and development increases, it has become increasingly difficult for one country alone to produce cutting-edge equipment. Since the 1990s international research, development and production has been carried out in various countries, mainly in the US and Europe, in an effort to keep the costs borne by any single country down. Some examples are the Eurofighter Typhoon, the JSF (F-35) and the Airbus A400M transport. Japan cannot participate in this collaboration due to its domestic restrictions above. While Japan has been unable to participate in the defence sector, it has made considerable contributions to the private sector. In the airline industry, Japan has been responsible for 35 per cent of the development of the Boeing 787; approximately the same ratio for which Boeing itself is responsible. Though Japan is not participating in development of the Airbus A380, some fifteen Japanese corporations are assisting with its production. These projects highlight the possibilities of Japanese participation in advanced technological capability programmes.

Without Japan's relationship with the US, the absolute national defence budget of Japan is comparable to that of other countries, with a defence-related research budget considerably lower than that of other foreign nations able to improve certain technologies and know-how through combat experience. An inability to participate in international joint research and development of defence equipment has put Japan in a disadvantageous position for improving the standard of its defence industry and technology base. Joint research and development between Japan and the US of BMD is an exception to the three principles. It is high time that joint research and development of other defence equipment be explored by Japan.

The lessons learnt from the joint Japan-US FSX project of the 1980s (the basis for the F-2 support fighter) is a case in point. While Japan was forced to provide radar and carbon fibre single mould processing technology, it received no engine technology from the US and was forced to abandon the provision of flight control software. Despite the manufacturing share ratio of Japan and the US was 6:4; the profit share ratio was 4:6. The FSX development project left a bitter taste in the mouth for Japan. At that time, there was considerable trade friction between the US and Japan and a sense of crisis had evolved from frustration in the US caused by Japan's trade surplus. The US military technology of the US was overwhelmingly superior and Japan went along with US demands. While the current US-Japan trade relationship is now very different, it is highly probable that any joint development between the US and Japan would be initiated by the US and followed by Japan. The possibility of joint research and development of defence equipment with the UK, revolving on the axis of the alliance with the US, should be carefully considered.

The strategic needs of the SDF are closer to those of European countries than the US, which has the capability and requirement to deploy a strong expeditionary force and to engage in large-scale military operations. In essence, a great deal of European military equipment is suitable for Japan. Japan's Maritime Self-Defense Force adopted the AgustaWestland EH-101 (MCH-101), jointly developed by the UK and Italy as successor to the American made MH-53E helicopter. The MCH-101 project highlights the positive opportunities of joint research and development of defence equipment by Japan and the UK and other European nations.

Strengthening the Relationship between Japan and the UK in Dealing with New Threats

Comprehensive efforts such as foreign diplomacy, military force and public order are necessary to counter transnational security threats of terrorism, the proliferation of WMD and regional conflict. The United Nations is one stage for foreign diplomacy. In the case of the North Korean ballistic missile crisis, the UN Security Council unanimously agreed to adopt a resolution condemning North Korea for its actions. The UN called for a halt to its missile programme, reconfirmation of a moratorium on missile launches and an immediate and unconditional return to the Six-Party Talks, plus swift effort to implement the joint statement released by the Six-Party Talks of September 2005. The resolution also called on Security Council members to put a stop to international transactions involving materials, technology and money used for missiles and WMD. This action was not just directed at North Korea but also at China and Russia, both of whom have significant influence over North Korea. This type of action by the UN

Security Council can only be achieved with the support of permanent members to the Council such as the UK.

While the UN has influence and authority, it lacks the agility to act due to the individual interests of member nations and its resolutions have often resulted in lukewarm threats. The US has proposed the 'Proliferation Security Initiative' (PSI) to supplement the UN's efforts. This is an initiative driven by a coalition of the willing to prevent the proliferation of WMD-related technology, including nuclear weapons and ballistic missiles. Both Japan and the UK participated in the PSI 'Pacific Shield 07', a maritime exercise held last year under the supervision of Japan in Sagami Bay. Continuing to engage in this type of collaborative activity is crucially important for regional stability.

In order to restore and maintain civil order, NATO, the UK and other European countries have sent troops to many regions of the world. The participation in international peace support operations was recently added as a primary mission of the Defence Ministry, enabling Japan to engage and respond alongside other nations. Co-ordination between countries is key for such operations to be successful and further co-operation in the development of defence equipment must therefore be supported.

Japan dispatched its SDF to a relatively safe region of Iraq, far removed from the frontline, to assist in the restoration of civil order and reconstruction programmes. In carrying out its work, the SDF required the protection of both UK and Australian troops. The deployment was not risk-free; rockets fell near SDF barracks and several SDF vehicles were damaged by roadside IEDs. The US military has been plagued by IEDs targeting troop transports and quickly

developed and deployed defensive armour for its patrol vehicles. Protective gear for individual soldiers has also been improved. Japan's constitution limited its participation to refuelling operations, transport supply and reconstruction activities. While Japan is unlikely to participate in active fighting alongside the US and the UK, its troops share similar requirements for armoured vehicles and protective gear. There is scope here for the joint development and production of this type of protective equipment.

A final area of possible co-operation relates to intelligence, counter-terrorist operations and the proliferation of WMD. Foreign and domestic intelligence is vital to counter terrorist operations and the proliferation of WMD. How to improve the intelligence infrastructure of the Japanese Prime Minister's office has been debated since the Shinzo Abe administration. A February report on this issue discusses the need to strengthen the link between intelligence and policy, intelligence gathering functions, improvements in intelligence collection, analysis and dissemination as well as policies for infrastructure development and the protection of classified information.

Thorough information management and protective measures must be a prerequisite for any kind of joint research and development of defence equipment between Japan and the UK. If the restrictions of the three principles on weapons export were to

be lifted, intelligence must be properly handled and protected or friendly countries would be less inclined to trust Japan as a partner in such ventures. The General Security of Military Information Agreement (GSOMIA) was signed between Japan and the US last year. Steps need to be taken to guarantee its effectiveness. Intelligence leaks regarding Aegis destroyers have led to calls for Japan to strengthen its information management system.

The UK has a long tradition in intelligence and information management systems know-how. Japan could benefit from UK experience and knowledge as it tries to improve the intelligence mechanisms of the Prime Minister's office. While it would be difficult for Japan to adopt the intelligence system of another country, the February report recommends co-operation on the technology required for 'an infrastructure for sharing information' This is a field where Japan and the UK may be able to co-operate. Such co-operation could also facilitate damage control from ballistic missiles and consequently enhance Japan's crisis management capability.

Finally, it has been widely recognised that one of the main components needed in the War on Terror is better communication between intelligence communities within and between countries. Increased co-operation between Japan and the UK should be considered in this regard.

5. Defence Industries in the United Kingdom and Japan – Defence Capabilities and Industrial Examples.

Similar issues challenge both the UK and Japanese defence industries. Both need to be selective about which defence capabilities should be retained or acquired. This report discusses strategic UK and Japanese defence industrial thinking with some appropriate examples.

As specified in the 1960 Treaty of Mutual Cooperation and Security, the Self-Defense Forces of Japan have played a supporting role to US Forces in Japan (UFJ). This relationship has however constrained the capacity of Japan's Defense Forces, the aim of which has not been to maximise its capability to respond to crises. Rather, the targeted equipment requirements have been covered in a matter-of-fact manner governed by stable annual defence expenditure. The Japanese government remains the only purchaser of military equipment from domestic defence industries since the end of the Second World War. The government has maintained sole authority in determining whether to produce domestically or import arms and related equipment systems.

Although the conclusion of the Cold War impacted heavily on defence industries worldwide, Japan was the exception to this rule. Under a three principle arms export system, defence industries in Japan were prohibited from selling military equipment abroad, thereby restricting domestic arms manufacturers to the local market. Consequently, Japanese defence industries were insulated from movements in the global arms market which resulted from the end of the bipolar international order.

Traditionally, Japan's government has exercised strong supervisory powers over the defence industry. The Minister of Economy, Trade and Industry for example, has authority to approve the manufacture, sales and repair of arms and aircraft. Qualified companies contracted by the government in defence-related manufacturing, purchases and services are registered on a list which is consistently restricted to roughly 2,000 to 2,500 businesses. Those companies which do not satisfy government required conditions are excluded from entry. In order to calculate the purchasing price of military equipment, the JMOD sets the manufacturing costs and adds a fair profit margin. For this reason, there has always been a strong tendency for companies which have delivered military equipment in the past to retain their registered status. Companies attempting to gain entry onto the list therefore face high development costs. For these reasons, since the 1970s, six delivery companies account for around 60 per cent of the market share; Mitsubishi Heavy Industries, Kawasaki Heavy Industries, Mitsubishi Electric, NEC, IHI (formerly Ishikawajima-Harima Heavy Industries) and Toshiba. Furthermore, the top twenty companies command three-quarters of the total delivery amount. For Japan's defence industries, the sales volume of consumer and industrial appliances have historically overwhelmed that of arms. This is because companies able to bear arms research and development costs of arms have been limited to major corporations.

In many respects, the Japanese defence industry has remained quite static. Two separate developments in the fields of technology and geopolitics during the 1990s have however challenged the industry fundamentally.

Geopolitically, military power worldwide

has been affected by structural changes in the international system. As the bipolar order of the Cold War gave way to a more uncertain security environment characterised by asymmetric ethnic conflicts, terrorism and insurgencies, it became clear that the efficacy of frontal-attack military equipment and heavy conventional forces was declining.

More importantly, by the 1990s, rapid developments were taking place in telecommunication and information technology. Innovative application of these new capabilities in military operations engendered dramatic changes in the organisational and operational concepts of mostly western armed forces. Military doctrine itself was undergoing a process of metamorphosis, a development most commonly referred to as the Revolution in Military Affairs (RMA). Recognition that conventional arms and military tactics were rendered increasingly obsolete made the need to train talented people who could master new kinds of arms and tactics pressing. For example, the capability to master precision-guided munitions effectively has become substantially more important.

Both these developments mean that it has become necessary for the UK and Japan to reconsider the composition of their armed forces and the military equipment they use. There is an urgent requirement to reconstruct both states' military organisations. Recent activities by the armed forces of Japan (the minesweeper mission in the Persian Gulf and dispatch of the Self-Defense Forces to Samawah in Iraq) and Britain (the prolonged dispute in the former Yugoslavia involving NATO) have provided useful lessons in this regard.

However, since Japan's Self-Defense Forces

have never been engaged in battle, equipment has not been remodelled for actual use and training has not been geared towards actual fighting. Ironically, the army's lack of field experience and battle-consciousness undermines its powers of deterrence, the very *raison d'être* of the Japanese army.

The case of Iraq is indicative. After the successful coalition invasion of 2003, an interim government was installed in Iraq on 1 July 2004. The military parties of each country with troops stationed in Iraq were integrated into a headquarters structure called Unified Command which was directed by the US. In Japan, the government explained that Self-Defense Forces were to be engaged in activities as part of a multinational force. The Self-Defense Forces were dispatched to the Samawah area, under the condition that it was not an Iraqi war zone. However, if it temporarily became a war zone, the Self-Defense Forces would have been forced to perform necessary peace preservation activities as a member of the Unified Command. In order to strengthen the deterrent power of Japan's forces therefore, the SDF must continue to join the military operations of foreign countries.

The Self-Defense Forces of Japan were dispatched to Samawah to provide humanitarian support such as water supply and medical services and recovery assistance such as engineering and construction works. Security activities were not included in the assignment and no SDF casualties were reported in Iraq where public safety had seriously deteriorated. The exterior body panels of both lightly-armoured mobile vehicles and highly mobile vehicles, which the Self-Defense Forces deployed in Iraq, were highly vulnerable to attack, lacking capability to prevent even a handgun round.

That the equipment used by the Self-Defense Forces of Japan has not been upgraded for actual battle should be considered a significant issue.

As discussed above, the 1990s witnessed the nature of war itself change. Previously clear distinctions between land, sea and air forces have eroded. Consequently, Japan must establish a comprehensive network between all three which can maintain mutual co-operation. This will undoubtedly be a long process; each force has a long history and deep sense of identity. Integration will not be accomplished overnight.

To effectively deal with these changes, Japan must recognise and understand the revolution in military affairs, necessitating the use of public relations and education to inform Japanese citizens, the military and the defence industry. The survival and development of the latter can be assured if improvements in the technical capabilities of the Self-Defense Forces are in line with developments fostered by the RMA and military equipment which would enhance the status of the SDF as a meaningful deterrent are acquired. Technologically, for example, in order to utilise sensor, electronics and communications technologies in which Japanese industries have an advantage, efforts are needed to facilitate understanding towards the introduction of these technologies.

The UK currently leads over Japan in these developments. British forces are already unified and employ helicopter units for both land, sea and air operations. Japan lags behind and needs to strengthen joint operations for the SDF, an issue which has become pressing thanks to developments in the US military. Transformation of the security strategy by US Forces and the reduction of US Forces in South Korea

are progressing. Ensuring the mutual employment and interoperability of US Forces and Japan's Self-Defense Forces is therefore necessary. A positive sign is the installation of the Japan-US integrated tactical operations centre, which will function as a centre for missile defence and is due to be completed during the 2009 fiscal year.

When considering a future co-operation between Japan and Britain, one must not overlook the role of the US. After the end of the Cold War, US Forces deployed around 100,000 troops in the Asia-Pacific region in addition to the 100,000 stationed in Europe. It could be argued that Japan and Britain occupy similar positions; both countries depend on the US to enforce their respective deterrent power. The US commands about half of global arms exports and sets the standard for armaments and military organisation in the world. Both Japan and the UK need to reorganise and reform static, heavy, militaries which characterised the Cold War era and transform into organisations which are high tech, well-equipped and mobile.

The UK and Japan: Maximising the Strength of Defence Industries – Collaboration, US Reliance and Technology Transfers.

In 2003, the UK joined the coalition of the willing to overthrow the Ba'athist regime of Saddam Hussein. Whilst in Iraq the British Army was engaged in concerted missions with the US army, military equipment was increasingly interconnected and military tactics adopted dramatically improved strategic capabilities. Britain has, as a result, embarked on a thorough process of military reform, re-examining military equipment and its usability in modern combat. In sharp contrast, no substantial

reform of the JSDF equipment has been initiated.

The Japanese Ground Self-Defense Force possesses around 700 Type-74 tanks. Designed in the 1960s, these models are technologically outdated and would be easily destroyed by enemy tank fire or anti-tank missiles; in short, they hold little value in a modern conflict scenario. Japanese forces have fewer than 300 of the newer, more relevant Type-90 tank model. The new Type-90 tanks also have weak points in their susceptibility to attack from the upper surface. Reinforcement to strengthen the armour has still not been performed. Although Britain's tanks are fewer than 400 in total, they all are the newest Challenger 2 type.

The considerable gulf between British and Japanese forces lies not simply with the modernity of military equipment. It is axiomatic within current military doctrine that the future security environment necessitates military activity taking place at a considerable distance from the home garrisons of most forces. Military forces must adopt an expeditionary posture, moving away from static, heavy conventional forces. To highlight the growing gap which exists between the UK and Japan, while the JSDF maintains nearly 1,000 tanks, Britain has less than 400. Moreover, Japanese forces possess at least 700 field guns with a calibre of 155mm or more; Britain possesses fewer than 300. Japan has therefore maintained the status and size of its conventional armed forces. However, to be relevant, the number, usage and significance of tanks, field guns and other heavy artillery must be reduced and existing arms must be remodelled to increase mobility. Efficient use of the allotted budget will be necessary to achieve these objectives.

The US has recognised the changing nature of war and contemporary military thought is now based on Military Operations Other Than War (MOOTW). This US concept holds that the role of the military will be increasingly dominated by a range of operations that fall short of outright conventional war and will instead consist of conflict deterrence, peacekeeping operations, civilian disaster assistance and so forth. Much emphasis has therefore been put on Battlefield Digitalisation and the construction of Battlefield Integrated Command System (BICS). Lessons were learned in Afghanistan where, due to the mountainous terrain, even if ground forces were dispatched they would not carry field guns – firepower support precision attacks by helicopters, fighters and attack planes were instead utilised.

Both Britain and Japan need to promote their domestic defence industries as well as maintain equipment imports from foreign countries including the US. Since the defence budgets of Britain and Japan are small in comparison to the US, in order to continue the successful development of their defence industries, both countries need to focus on core priorities while simultaneously importing arms and introducing know-how from foreign countries.

Technological progress means that countries no longer need to possess strictly identical hardware and military equipment. Although information sharing and the unification of mutual directive order systems are effective in improving efficiency, the standardisation of military equipment is not always necessary. Each country could therefore develop technologies which are tailored to their strengths, innovate techniques for operations and upgrade their equipment. Japan, superior in electronic

technologies, has been at the forefront of missile development. The air-to-air AAM-4 missile demonstrates outstanding performance, particularly with regard to its stealth capability and range of over 100 km. Co-operation between Airborne Early Warning and Control Systems (AWACS) planes and terrestrial air defence radars and the development of equipment which meets the goals of an exclusively defence-oriented policy in Japan is therefore being advanced.

Improvements in military power projection capabilities enabling rapid transportation of forces across the Pacific or Atlantic Ocean can be observed in militaries worldwide (particularly with the British Army and US forces). Since exclusively defence-oriented policies are the foundation of Japanese military force, it is unsurprising that there will be a discrepancy between Japan and militaries which are more advanced in this regard. However, with domestic duties such as disaster relief increasing in frequency, Japan's Self-Defense Forces are being called upon for immediate action more regularly than in the past. It could therefore be argued that Japan should try and close the large gap that exists in power projection capabilities.

Alongside these changes in equipment and technical requirements, Japan will need to respond to developments required in military strategies, tactics and doctrine. It is widely expected that the importance of supply logistics will increase in the future. Generally speaking, the army has tried to transport and store excessive goods. Installation of sensors inside military vehicles and the use of IC tags mean that systems are being introduced effectively to supply necessary parts and avoid an ad hoc approach. In short, we could be witnessing a 'Revolution in Military Logistics'. Japan has long been restricted by the three

principles controlling arms exports; however, advances in technology have allowed the development of equipment and systems intended for civilian use which have ended up being used by the military. Japan is thus able to contribute to the defence sector outside of the restrictions of the three principles.

Japanese Government Strategic Defence Industry Thinking Aspirations and the Relationship between METI and the Japanese Defence Industry

In Japan, the administrative branch of government (particularly the Cabinet) has been the primary shaper of foreign policy. Within the Cabinet, the Security Council is responsible for developing national security policy. The Basic Policy on National Defense, which is the plan for acquiring general defence equipment, and the budget for implementing the basic policy are also set by the Security Council. Cabinet meeting decisions are made after the approval of the Security Council. The chairperson of the Security Council is the Prime Minister. Other members are the State Minister, the Foreign Minister, the Minister of Finance, the Minister of Defense, the Chief Cabinet Secretary, the Chairman of the National Public Safety Commission, the Minister of Economy, Trade and Industry and so on. In comparison to other countries, the security policy of Japan is built around non-military goals such as economic policies and political considerations. Furthermore, Article 9 of Japan's pacifist constitution does not recognise the state's right of belligerency. Therefore, the use of military power by the Self-Defense Forces as a means of settling international disputes is forbidden. These regulations dramatically reduce the capabilities of the Self-Defense Forces to preserve peace.

Japan maintains three principles for controlling arms exports and abstains from exporting arms to any region. Additionally Japan has also declared that it will not possess nuclear weapons.

The Ministry of Economy, Trade and Industry and the Ministry of Defense aim to maintain the country's domestic defence industry in Japan. Consequently, they place orders with domestic arms manufacturers at a little under ¥1 trillion annually for national defence equipment.

Due to the limited size of the domestic defence market, prices are soaring in the domestic-oriented small-lot production. As for military equipment, development costs range from tens to hundreds of billions of yen and are especially high for aircraft. Japan therefore has no choice but to introduce the most reliable equipment from the US with the accompanying high licensing fees that this entails.

Japan's Ministry of Defense drafts security policy. However, the Ministry of Foreign Affairs considers the political and diplomatic factors and implements the security policy. Relations with the US have been given the highest priority and are based on the Japan-US Security Treaty.

Drafting of the defence budget is the responsibility of the Ministry of Defense. Through the Aerospace and Defense Industry Division of the Manufacturing Industries Bureau, the Ministry of Economy, Trade and Industry supervises the defence industries, aiming to create a ripple effect on the Japanese economy by promoting these industries. Moreover, at METI the Security Export Control Policy Division of Trade Control Department in the Trade and Export Cooperation Bureau is in charge of the precise control of Japanese arms related

imports and also exports. The Ministry of Finance has carried out the role of suppressing the expansion of defence expenditures under the financial equilibrium principle.

Equalisation of the annual budget is achieved because there is this kind of defence-related policy making structure. Equalised expenditures have continued every year towards the goal of maintaining defence capacity under the security policy. However, this tendency has resulted in fixing the defence industry structure and limiting the number of companies bidding for new entry.

According to the 'Law Relating to Measures for Preserving the Peace and Security of Japan in the Event of a Situation in the Areas Surrounding Japan', based on Japan-US Security Treaty, if an emergency occurs near Japan but outside of war zones the Self-Defense Forces are to perform search and rescue for US crew members. An enemy attack on a search and rescue aircraft is highly possible.

According to the constitution, however, Japan cannot exercise the right to collective self-defence and there remain numerous obstacles to concerted strategic activity with US Forces. However, it can be expected that requests for the Self-Defense Forces to participate in non-combatant evacuation operations (NEO) or peacekeeping operations (PKO) will increase in the future. It is in this context, a re-examination of general military equipment is necessary for ensuring the safety of the Self-Defense Force personnel.

Lessons Learnt – Successes and Failures Associated with the F-2 and F-15 Programmes

The F-2 is the newest air fighter of Japan's Air Self-Defense Force. During the early stages of preliminary research and development, when the aircraft was called the FS-X, the US government made clear its displeasure that Japan would develop technical know-how on latest jet fighters. Japan decided to develop the F-2 based on an improvement to the F-16 design.

Production was shared by the US and Japan at a 60/40 ratio and the F-2 ended up being used only by Japan. Generally speaking, licensed production would generate high costs and the domestic production ratio has been declining. The domestic production ratio of the F-4EJ fighter has been at 95 per cent, but in the case of the F-15 J-DJ, in which licensed production began in 1980, the ratio remains at only 75 per cent.

The Japanese defence industry announced that the FS-X was superior to the US-produced F-15. Subsequently, the research and development budget was approved. It should also be noted that the newly-developed FS-X is more technologically advanced to the F-15, which was developed during the latter half of the 1960s. The development of the FS-X was contingent upon these budget announcements.

In order to maintain the defence industries of Japan, comparisons between the F-15 and FS-X (F-2) were widely announced as an indication of the technical capabilities of Japan's defence industries. Japan manufactured the F-15 under license from US and maintains a production line for the F-15 even now. Japan was even in the position to continue domestic production even in the

event that Boeing's F-15 production lines become full.

With the development of Japanese electronics, the F-15 is inferior in its stealth capability compared with that of the F-22 and its supersonic cruising ability is also relatively sluggish. However, the F-15 matches the F-22 capability from other standpoints. Improvement of manoeuvrability, air defence and combat efficiency as well as ground and ship attack capability and even multiple-purpose such as reconnaissance are being pursued.

Conversely, the production costs for F-2 which has been produced only in Japan have been high. The development of F-2 was rushed; aircraft for operational use were manufactured without performing experimental flights with a TD (Technology Demonstrator). Consequently, many problems were found in these fighters, resulting in the evaluation of the F-2 body design as unsatisfactory. There are currently no projects to develop a fighter aircraft that will serve as the successor to the F-2.

Although F-22 Raptor of Lockheed Martin is currently a leading candidate to succeed the F-4EJ fighter plane of the Air Self-Defense Force, the possibility that the US will permit Japan to manufacture under license is low. The likelihood is high that Japan will only import the F-22.

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6. The Day When a European Fighter Flies in Japanese Skies: A View of Future Japan-Europe Co-operation in Military Procurement

On 26 July 2007, the JMOD announced its intention to postpone selection of the next fighter (F-X) of the JASDF (Japan Air Self-Defense Force).¹⁰ The F-X would succeed the F-4EJ scheduled to be phased out from the fiscal year 2008. According to the mid-term defence programme,¹¹ seven F-Xs are planned in the budgetary request in the 2009 fiscal year. Six models were considered as candidates of the F-X, such as the F-22, F-18, F-15FX¹² of the US, the F-35, a product of international joint development with the US and European countries, the French Rafale and the Eurofighter (developed jointly by four European countries, including the UK). It is the US F-22 that the JMOD wanted most and everyone thought that F-22 would be selected as the F-X if the US would allow it to be exported to Japan.

However, the US House of Representatives Appropriations Committee decided to continue an export ban of the F-22,¹³ although Japan repeatedly requested the engineering data relating to the F-22 for selection purposes. Under normal considerations, the F-X would have been

¹⁰ Chunichi Web, 26 July 2007, <<http://www.chunichi.co.jp/s/article/2007072601000477.html>>, accessed 26 July 2007.

¹¹ The Mid-term Defense Program is estimated over five years, FY2005-2009 and authorised by the Security Council as a government program.

¹² F-15FX is the proposal version of F-15E for the JASDF.

¹³ David A Fulghum and Douglas Barrie, 'First Choice: As missile threats grow and cost appears to be no barrier to stealthy F-22 topping Japan military's wish list', *Aviation Week & Space Technology*, 23 April 2007, pp.20-21.

selected from the other candidates. Since the F-22 has outstanding performance compared with the others, Japan chose to postpone the selection.

US-made fighters have been in use since the JASDF was established and this paper aims to investigate whether a European fighter can replace US models in the main fighter role as well as to examine the issues surrounding co-operation between Japan and Europe in military procurement.

Why Japan has Selected Fighters made in the US? Genealogy of Main Fighters and History of Fighter Selection

In 1945, Japanese aviation-related assets were requisitioned into the United States Armed Forces by the occupation policy of the Allied Forces. All activities, covering not only research and experimentation but also production and flight servicing of aircraft, were forbidden. However, policy towards Japan was greatly changed by the Korean War and an aviation ban was removed in April 1952. Two years later, the Japan Defense Agency and the JASDF were established.

In 1955 the JASDF became an 'Air Power'. The JASDF was provided with F-86F from the US. Around the same time, Japan started negotiations for licensed production and MHI (Mitsubishi Heavy Industries) acquired the license to manufacture and assemble F-86F¹⁴ in 1956. No fighter selection was required at the time. However, in order to cope with the supersonic bomber capabilities of the Soviet Union, a supersonic fighter was needed and the

¹⁴ Total 300 F-86Fs were produced. Seventy were knockdown by the MAP grant and following 230 were the licensed production.

JASDF selected the F-104. The selection was controversial and not without its problems. The F-11 was initially selected, however the decision was annulled when political corruption came to light. In the end, following a second selection process, the F-104 was selected. Since the issues at that time are still relevant today, there are lessons to be learned concerning the adoption of the F-104.

At the outset, the candidates were the F-104C, F-102, F-106, N-156F (F-5A) and F-11F. Of these, the F-106 had the best capability because the F-102 was an early version of the F-106 and the other candidates were lightweight fighters. The F-106 was a highly capable fighter aircraft equipped with a data link and was interlocked with the SAGE.¹⁵ It could carry out interception missions automatically except in its landing phase and the US Air Force itself had adopted it. Since the SAGE employed highly secret technology, Japan could not hope to get the F-106. As a result, the Lockheed F-104 and the Grumman F-11 remained the final candidates.

For the JASDF, the Grumman Corporation proposed the F-11F-1F¹⁶ which was the upgrade type of the F-11F and had more powerful engines. The F-11F-1F recorded a maximum speed of 2,253 km/h and established the world altitude record at 23,449 metres. Since it also had appealing manoeuvrability and stability, the decision was made to for it to be chosen. However, the decision was criticised and it was

¹⁵ The SAGE (Semi Automatic Ground Environment) was developed in 1950s for air defense control by US Air Force.

¹⁶ It was called G.98J-11 by the company name of Grumman Corporation. Although two prototypes were manufactured, it was not adopted by the US Navy. The demonstrator for Japan was manufactured by conversion of No. 2 of F11 F-1F.

suggested that 'the F-11F was a phantom fighter, only on paper', because only an experimental model existed at the time of selection. In the end a very positive two and a half month visit to Lockheed by a Japanese research team resulted in the F-11 being beaten by the F-104.

The lessons of this selection process were firstly that the US never exports its most advanced technology and secondly the importance of actual operational results; a paper plan is unreliable.

The F-4 was selected to succeed to the F-86 as a main fighter of the JASDF following the F-104. There were eight models as candidates at that time: the US F-4E,¹⁷ F-5,¹⁸ P-530 (the upgrade type of F-5 and the prototype of F-18) and CL-1010-2 (the upgrade type of F-104), Jaguar¹⁹ (a Franco-British joint development), France's Mirage F-1,²⁰ Sweden SAAB-37²¹ and the UK Lightning.²²

In the light of the need for operational results, the P-530 and the CL-1010 which were at the planning stage and the Jaguar which had no operational results were immediately excluded from the selection process. Aircraft that had first flown in the 1950s were considered too old and as such only the F-4E, the Mirage F-1 and the SAAB-37 remained. In the end, the CL-1010-2 was

¹⁷ The first flight of the prototype was carried out in June 1967.

¹⁸ The first flight of the prototype was carried out in July 1959.

¹⁹ The first flight of the prototype was carried out in September 1968.

²⁰ The first flight of the prototype was carried out in December 1966.

²¹ The first flight of the prototype was carried out in February 1967.

²² The first flight of the prototype was carried out in August 1954.

included and the SAAB-37 was eliminated from the final group. The CL-1010-2 had the advantage of the upgrade type of the F-104 employed in Japan in those days and conversely, although the maiden flights of the Mirage F-1 and the SAAB-37 were earlier than the F-4E, they were greatly operationally inferior by comparison with the F-4 which already had numerous earlier versions. In the final selection, the CL-1010-2 and the Mirage F-1 were not competitors.

Next, the F-15 arrived on the scene as a successor of the F-104. The selection was performed step by step. At this stage in 1975, seven candidates were selected: the F-14,²³ F-15,²⁴ F-16,²⁵ YF-17,²⁶ Mirage F-1 and Panavia Tornado ADV.²⁷ The YF-17, which was an experimental model, and the Panavia Tornado ADV lacked operational results. The Mirage F-1 was too old this time. The F-14, F-15 and F-16 remained as primary candidates resulting in a competition between the F-14 and the F-15. Both aircraft had similar body scales and capabilities; however the F-15 was declared the winner.

Although it is not a main fighter, the selection process of the F-2 serves as an important lesson. It was jointly developed by Japan and the US as the successor to the support fighter F-1, which Japan had

developed domestically. The F-2 project started off as promoting domestic development in the same way as the F-1 but it was completed in a Japan-US joint development. After it had become a joint development, there were three options to be weighed such as the modification plans for the F-15, the F-16 and the F-18. The F-16 modification plan was chosen and the reason was as follows. First, it was easy for the JASDF to use an Air Force aircraft, rather than a naval one, from the viewpoint of US-Japan joint operations. An aircraft assuming carrier-based operations is not always optimal.²⁸ Therefore, the F-18 modification plan was eliminated at the beginning and the competition narrowed between the modification plans for the F-15 and the F-16. The advantages the F-16 firstly in the case of accident, the effect of flight suspension was very serious even if the F-2 was a support fighter when the same series fighter as the F-15 selected by the JASDF had been deployed already as a main fighter. Secondly, since the body scale was small, manufacturing and operating costs were reduced. On the other hand, the F-15 modification plan's advantages were threefold. The logistics cost saving expected by using the same series of the F-15, the large scale body and the gross potential for weapons loads was greater and future upgrade possibility. Lastly it was twin-engined and therefore generally considered to be less of an operational risk. Although it is not clear what kind of judgment was finally made, the F-2 was going to be developed based on the F-16. As in the

²³ The first flight of the prototype was carried out in December 1970. It was selected by the US Navy and deployed in 1973.

²⁴ The first flight of the prototype was carried out in July 1972. It was selected by the US Air Force. The variant for Japan was based on F-15C/D.

²⁵ The first flight of the prototype was carried out in February 1974. It won the competition with YF-17 and was selected by the US Air Force.

²⁶ Although the first flight of the prototype was carried out in June 1974, it was not selected by the US Forces.

²⁷ It was named Tornado F.2 and the first Tornado ADV performed the first flight in October 1979.

²⁸ Generally speaking, a carrier-based airplane is disadvantageous compared with an Air Force plane because it is necessary to strengthen the structure such as landing gear because of landings on the deck of a ship. A MacDonnell Douglas presented an ambitious large-scale modification proposal, but there was another problem in that development cost increased.

past, for main fighter selections in Japan, the following common points can be observed.

An American Fighter as Always a Candidate

It makes sense that the defence of Japan is primarily realised on the basis of the Japan-US Security Treaty. Having said this, the US has so far refused to export candidates with the latest high technology capabilities.

The actual operational results and the decision-making by the purchasing parties are important. However, operational results are required and the models sought are usually required to be relatively new.

All Selected Fighters were Manufactured under Licence in Japan

Priority is given to US-made over European-made, and priority is given to Air Force fighters over Navy fighters.

It cannot be emphasised more that it is advantageous to use a common model with Japan's only ally, the US. The ability to use US-made weapons, such as missiles, is much more important than the capability of a platform. It must also be noted that there are several differences between Navy and Air Force aircraft for example, the US Air Force used JP-4 fuel and the US Navy used JP-5 fuel. The many joint training or joint exercises held with the US Air Force have led to a common understanding and way of thinking. Japanese decision-making regarding the selection process is therefore heavily influenced by a so called 'culture', which has been nurtured historically and traditionally.

How Fighter Selection is Performed – Japan's Procurement System and Selection Process

As can be gleaned from the above examples, the Japanese procedure for selection does not appear to follow the model of other countries. While the JSDF shifted to the posture of joint operations in 2006 and the Joint Staff Office was made responsible for operations of the Self-Defense Force, each Staff Office has been responsible for force construction. The procurement of fighters is an example. First, the operational concept and requirements of the next fighter are issued. These requirements are made by the Director of the Defense Department of the Air Staff Office for major weapons systems, such as a main fighter. Based on these requirements, the Director of the Technology Department issues a performance requirement and defines technical details concretely. The Director of the Logistics Department then makes a request for proposals and issues it to companies. Companies then draw up and submit proposals for the next fighter to the Air Self-Defense Force.

The responsibility for fighter selection lies with the Director of the Defense Department, who recruits a project team with the co-operation of each department and evaluation work begins. The decision to adopt a major weapons system such as the main fighter needs the approval of the Defense Minister but the responsibility for selection is in with each Self-Defense Force. Provisions to keep the selection process fair and transparent are also required.

When a model has been decided upon, a budgetary request is performed. Contract work is performed only after the approval of the budget. As for a contract, each Self-Defense Force sends the request for

procurement to the EPCO (Equipment Procurement and Construction Office²⁹) and contract activities, such as bidding are performed by the EPCO.

Although not an example of a fighter aircraft, the selection work of the utility aircraft called the U-X was undertaken in 1994. Candidates were the Falcon 900 (France), the Challenger 600 (Canada) and the Gulf Stream IV (US). The aircraft was mainly used for liaison and it did not have heavy military requirements. A decision was taken to choose the Gulf Stream IV. The French government took exception to the decision and sent a letter to the Defense Agency, which caused some controversy in the Diet.³⁰ The Defense Agency requested that three outside experts review the model selection and send their results to the Diet. The details of military selection activities are not open to the public but since the U-X was a business jet without sensitive technology and doubts had been raised in the Diet, an exceptional decision was taken to disclose the entire case. The investigation found that the model selection process had been appropriate and no evidence of foul play was found in either the technical or price evaluations. The controversy highlighted that the model selection process cannot be interrupted by politicians and bureaucrats.

²⁹ From the 2007 fiscal year, the Equipment Procurement Office and the Defense Facilities Administration Agency was merged and it was reorganised with the Equipment Procurement and Construction Office.

³⁰ The Upper House minutes, the 131st Diet, Committee on the Cabinet No. 8, 29 November 1996, < <http://kokkai.ndl.go.jp/SENTAKU/sangiin/131/1020/13111291020008c.html> > accessed on February 26, 2008.

Conditions where the Eurofighter could be Selected as the F-X

In the mid-term defence programme (2005 to 2009), seven F-Xs are planned as a successor to the F-4EJ. The JASDF established the F-X office in the Air Staff Office and assessment is underway. The candidates are six models: the F-22, F-18, F-15FX, F-35, Rafale and Eurofighter.

According to the standards described in section 2, it seems that the F-35 is out of the running because it lacks operational results. The Rafale and the Eurofighter are eliminated too because they are not US-made. With the F-18 excluded, the competition is between the F-22 and the F-15FX, and the F-22 would be selected.

It can of course be questioned whether it is really fair that all the past main fighters were ordered from the US. It seems timing is key to this question. As explained above there is little room to institutionally intervene in any kind of unfair selection and the process itself strives to be transparent. However, there seems to have been room for discretion about the timing requirements inherent in the selection process. As described in the second section, in order to be nominated as a possibility, the model in question must not be under development nor must any great length of time passed since its last deployment. As it stated earlier, despite being appropriated for the mid-term defence programme in connection with the US export ban of the F-22, the F-X model selection was postponed. Can there therefore be any chance for a European fighter?

The greatest factor in the postponement of the F-22 was the US Congress refusal to accept the export. The F-22 is a high performance fighter and despite the recent

US Air Force freeze on the budget for the production of the F-22, there have been calls to increase the number of planned F-22 production from 183 to 381 to the DoD.³¹ The production of the F-22 may become even more vigorous if the problems associated with the current structural defects of the F-15 are not resolved.

From the Japanese perspective, the JASDF changed its posture to wait for the lift of the export ban of the F-22. The JASDF cannot change the time requirement for aircraft replacement and procurement largely because the service life of F-4 has already been determined. The F-4's service life is now almost over since the aircraft has been in use for so long and has suffered fatigue from years of use. Service life can be determined based upon either economics or fatigue; the service life may become shorter but never longer. Furthermore, the crash of a USAF F-15C last year may have a serious influence on Japanese thinking. The F-15 C/D, the same type as F-15J/DJ of the JASDF may have its service shortened unexpectedly and the F-15 J/DJ of the JASDF will certainly feel the after-effects. If the timing of the phase-out of F-15 J/DJ has to be brought forward, this could prompt calls for the acceleration of selection activities for the F-X.

These factors alone cannot be the clincher for the European competitors.

The US Fighter as a Candidate Model

Assuming the export ban of the leading candidate F-22 continues, the major candidates for the next Japanese fighter

aircraft are the F-15FX and the F-18. Japan has historically maintained two models of main fighter. It would be difficult to select the F-15FX and for only the F-15 series to perform the air defence of Japan. This is the same thinking as not having chosen the F-15 modification plan for the joint development of the F-2. It would seem that the F-18 is the strongest candidate. However the F-18 is a Navy fighter and differences such as the concept of operation or the logistics system are the same as the European fighter. It is difficult to choose between an American Navy fighter and a European Air Force fighter. For a European fighter to be chosen, it is important to promote the project 'an Air Force fighter' and to stress interoperability with the USAF in NATO to the maximum.

The Actual Operational Results

European fighters such as the Rafale and Eurofighter are already deployed with no operational problems. Contrasted with the timing of the heavily delayed F-X selection there should be concern over losing the technological edge. It is therefore important to prepare for an upgrade option that incorporates new technology. Purchasing an export version equipped with lower grade systems technology is out of the question.

Licensed Production

The conditions of licensed production may be the most important conditions in this scenario. Even if export of the F-22 were to be permitted, Japan might still be denied licensed production and might give up its purchase option. Licensed production for the F-15FX or F-18 may be accepted. Europe must therefore promote licensed production and technology release in order to win the selection. Technical support is also very important after the selection decision is

³¹ Christopher Bolkcom and Emma Chanlett-Avery, 'Potential F-22 Raptor Export to Japan', CRS Report for Congress, 2 July 2007, p.1.

made. In the past, Japan independently developed the F-1 support fighter. The F-1 was powered by a Rolls Royce Adour engine. Despite of dissatisfaction over performance, dissatisfaction with technology and logistics support is more serious and it is a fact that there is deep-seated distrust over the European system.

Japan-US 'Culture'

One result of the Japan-US relationship is the idea, cultivated over many years that Japanese procurement will give priority to US-preferred aircraft. It is extremely difficult for Europe to overcome this cultural barrier overnight. Steady efforts are necessary.

The F-2 Joint development program taught many lessons to both Japan and the US. Dubbed the 'FS-X war' it attracted the attention of the world. Which side won the war? Japan was 'a loser' because the FS-X program was forced into joint, not domestic development and consequently the unit price of production was extremely high. The US can also be considered 'a loser' although it seemed that the US won joint development of the FS-X, as expected. A study by the RAND Corporation pointed out that the US failed to carry out the plan as 'the FS-X program is not meeting many of the initial expectations the Pentagon negotiators had when it was agreed to in 1987.' Nevertheless, it is a fact that both Japan and the US have argued through the joint development and have deepened a mutual understanding.

Today, the production allotment of Boeing the B-787 is shared equally by both Boeing and Japan, at 35 per cent. This reason for this is that the US recognised the high level of Japanese design and manufacturing technology, particularly in the area of composite materials. It is very important to

cultivate 'a co-operative relationship' with both military and commercial opportunities.

A Future View of Japan-Europe Procurement Co-operation

Two issues most concern the future of Japan-Europe security co-operation. The first concerns the Three Principles on Arms Export. Japan has enforced a self-imposed a ban on the export of arms since 1967. Arms and arms technology have been exported to the US which remains the exception to this ban. It was due to this framework that the joint development of the F-2 and the joint research of BMD could take place. In 2006, Japan decided to provide patrol vessels in support of efforts at 'controlling and preventing terrorism and piracy' to the Republic of Indonesia.³² It was considered another exception to the Three Principles. This was a watershed event that diverged considerably away from the usual interpretation that the US is the only exception to the Three Principles. This means that Japan can export arms to a country other than the US as long as it falls under the principle of 'peaceful purpose'. Here, the export of arms or arms technology to European countries is possible. In short, it has been suggested that joint development and joint arms research with European countries could take place. In future it could be achieved through systems development for anti-terrorism measures or for international contributions under the principle of 'peaceful purpose.' Another area of joint research could be in munitions clearance for mines and cluster bombs, certainly a good theme of joint research and development for Japan due to the entailing moral and constitutional principles.

³² Japan Ministry of Defense, *Defense of Japan 2007*, Inter Group, footnote 9, p.152.

The second issue concerns the space domain. Japan interprets the 'peaceful use of outer space' principle as 'non-military'. It has been forbidden entirely for JSDF to be involved with space.³³ The JSDF has been a commercial communication satellites user, but has never launched, manufactured or developed a satellite. The information-gathering satellites are also operated by the Satellite Information Center under the Cabinet Secretariat, rather than the MoD or the JSDF. However, a new development arose in 2007. The Liberal Democratic Party played a central role in enacting 'the Space Basic Law' which interprets 'peaceful use of outer space' as 'non-aggression.' If the Space Basic Law is enacted, the JMOD could actively participate in Japanese space policy making. This development allows the defence industry to anticipate the possibility of a new market.

Examining the turnover of the space industry, it has decreased by more than 30 per cent over ten years. JMOD is thus looking forward to new defence demand. Many business groups and government organisations, such as the Society of Japanese Aerospace Companies and Nippon Keidanren (the Japan Business Federation), the Ministry of Economy, Trade and Industry, have held joint meetings and seminars discussing the issue and space business will be a new field to be exploited in the Japan-Europe relationship.

Finally, mention should be made of the international F-35 joint development programme. An international joint

development programme run mainly by the US, in which a total of eleven countries participate, including the UK. Unfortunately, Japan has not joined this project due to self-imposed restraint on weapons export as described earlier. That is, Japanese participation in the joint development program would entail the export of military technology developed by Japan to participating countries other than the US. Even if Japan were to share the expense of the development, the effect would be the same. Japan has a chance to import the F-35 after development. But if Japan does make design improvements on its own aircraft, it might be asked for technical information feedback and this violates the Three Principles on Arms Export. Although the Three Principles could be eased, it would still take a long time to develop primary weapons systems with countries other than the US. However, in the case of equipment that does not carry weaponry the way may be more open. The C-X transport aircraft under development by the Technical Research and Development Institute is considered a commercial export version and the US-2 flying boat for search and rescue of the Japan Maritime Self-Defense Force is also being considered for export. If these can be exported, the next middle trainer (the successor to the T-4 trainer), a future helicopter (the successor of the UH-60 helicopter), or joint development of reconnaissance UAV could also be candidates for export. Moreover, systems used for international peace co-operation activities, large-scale disaster relief activities and anti-terrorism measures may be accepted for joint development or joint research. Decisions on whether to give permission to export a given system could be done on a case-by-case basis. METI (the Ministry of Economy, Trade and Industry) has the authority and the Trade Control Department, the Trade and Economic Co-

³³ Setsuko Aoki, 'Tekiho na uchu no gunjiryoyou-ketugi-kettei-kijun to siteno kokkai ketugi no yuuyousei [The effectiveness of the Diet resolution as decision standard of the legitimate military use of space]' (Keio University, 2005), p.16, <<http://coe21-policy.sfc.keio.ac.jp/ja/wp/WP68.pdf>> accessed on Mar 18, 2007.

operation Bureau is increasingly part of the process. The section that has jurisdiction over the defence industry is the Aerospace and Defense Industry Division of the Manufacturing Industries Bureau. METI and JMOD maintain a good relationship, such as exchanging personnel and make an effort to develop defence industries in co-operation.

Conclusion

The ties maintained over more than fifty years based on the Japan-United States Security Treaty remain very strong, especially in the military. This culture can and has influenced the field of defence procurement. It would be very difficult for Europe to establish a new Japan-Europe strategic relationship on par with that between the US and Japan. The history of Japan's past selection of main fighters does give some indication of the challenges facing a future Japan-Europe relationship.

Japan has always selected the USAF fighters. Whether or not cultural forces have been conscious or otherwise, they have impacted several procurement decisions. In the case of establishment of operational requirements, because the JASDF has continued using the same fighters as the US Air Force, it is only natural that knowledge and experience has been similar to that experienced by the US Air Force. The bias towards the US Air Force has not only affected European nations' export aspirations but also the US Navy itself has not been able to compete for the export of its fighter aircraft.

Despite previous failures, there seems to be a current window of opportunity for Europe. The selection of F-X could be a rare

opportunity. The possibility of a European fighter being selected increases exponentially the longer JASDF is forced to delay its selection. This being said, any opportunity for Europe with regards to the F-X selection is dependent on the US not exporting the F-22.

Any opportunity for Europe with regard to the F-X selection would also have to take into consideration the strong Japan-US relationship. Some of the inherent issues related to the Japan-US relationship have been discussed in section four. Conditions would apply, including the need to ensure the interoperability with US systems. Furthermore, unstinting technical co-operation and disclosure of technology would be required. Of particular importance would be the provision of appropriate systems support in the operational phase. The availability of such provisions would significantly affect the development of a future Japan-Europe relationship, not just with regards to the F-X selection but to all potential defence-related procurement between Japan and Europe.

While there are challenges ahead, the time is ripe for the fostering of a new Japan-Europe relationship. The JMOD is currently easing its self-imposed restrictions concerning weapons exports as well as issues related to access to space. As the JMOD reforms, it will change its procurement organisations and infrastructure. The Japanese procurement culture is thus likely to change and will provide the best opportunity for building a new Japan-Europe relationship. As this culture changes, the possibility of looking up one day and seeing a European fighter flying in the skies of Japan is increasingly likely.