
3. India

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I. Introduction

Although India's democratic institutions include a vibrant free press, its effectiveness is limited by a number of factors. Standards of academic research in certain aspects of national security studies are constrained by the low salience given to defence studies and a relative lack of public information. Lack of interest in defence issues in the lower house of the Indian Parliament (the Lok Sabha) perhaps stems from their low electoral value. The situation is thus one of an under-informed yet vocal society.

Although departmental responsibilities and procedures at the lower levels are well defined, ambiguities remain about how the arms procurement policy-making process integrates the functions of the Government's different security bureaucracies. The process does, however, illustrate the general state of public policy making in India.

The complex range of issues and factors that influence decisions requires a multi-dimensional examination, and no comprehensive studies or collated primary sources at the national level exist. This chapter is based on the informed opinion of Indian experts from diverse backgrounds and organizations and on Indian publications and public sources. Despite strong public interest in the accountability of the official decision-making processes, a traditional reticence among Indian officials and competition over 'turf' hampered this study. However, some senior officials, both in active service and retired, participated in the workshop held to review the papers on which this chapter is based.

* The author would like to thank A. P. Venkateswaran, former Foreign Secretary of India, who supervised the research in India, and the experts who contributed the papers which formed the basis of the chapter. Annexe C lists all these contributors. In addition, the following experts participated in the workshop held in New Delhi on 1 July 1995: G. K. Arora, former Secretary, Ministry of Finance; Maj.-Gen. D. Banerjee, Deputy Director, Institute for Defence Studies and Analyses (IDSA); Capt. U. Bhaskar, Senior Fellow, IDSA; A. Deo, formerly of the Ministry of External Affairs; S. C. Kashyap, former Secretary General, Parliament of India; I. Malhotra, senior journalist; Brig. V. K. Nair (ret.); Vice-Admiral K. K. Nayyar, former Vice-Chief of Naval Staff; Lt-Gen. V. R. Raghavan (ret.), former Director-General of Military Operations; R. Ramachandran, journalist, *Economic Times*; K. Santhanam, Chief Adviser, Defence Research and Development Organisation (DRDO); V. Siddartha, DRDO; A. V. Singh, Joint Secretary, Ministry of Defence; Air Commander N. B. Singh (ret.), United Services Institution of India (USI); N. N. Vohra, former Defence Secretary; and M. Zuberi, Jawahar Lal Nehru University. The author also thanks K. Subrahmanyam, former Director, IDSA, for reviewing the country study.

Section II of this chapter describes the current arms procurement decision-making process in India as it is intended to function and section III examines one special case—the arms transfer relationship with the former Soviet Union and Russia. Section IV examines the inherent problems in the process and the difficulties of harmonizing the military's security requirements with public interest priorities. Section V presents conclusions and recommendations, and suggests how to separate the legitimate needs of confidentiality from the equally legitimate needs of public accountability in these sensitive areas.

This chapter is confined to the decision-making processes at government (executive) and user (armed service) levels as they relate to the procurement of major conventional arms through domestic production and by import.¹

II. The arms procurement decision-making process

The history of Indian arms procurement can be roughly divided into three phases: (a) from independence in 1947 until the early to mid-1960s; (b) from the mid-1960s, that is, after the 1962 Sino-Indian and 1965 India–Pakistan conflicts, until the mid-1980s; and (c) from the mid-1980s to the present day. The first phase was characterized by off-the-shelf procurement by import, predominantly from France and the UK. During the second phase efforts were made to build up domestic defence production, mostly through assembly under licence from the Soviet Union and the UK. The current phase started with large purchases by Prime Minister Rajiv Gandhi's Government (1984–89), while gradual improvements were made in research and development (R&D) and systems integration for in-country assembly of weapons. If the life cycles of major weapon systems are considered to be some 20–25 years, it can be assumed that India will undertake a major arms replacement exercise beginning in the middle of the next decade.

The 1987–88 parliamentary inquiry, following allegations of bribes paid by the Swedish howitzer supplier Bofors to secure a major contract, exposed the inner workings of the Indian Army's formal arms procurement process. The inquiry investigated the process by which the army imported weapon systems but did not cover indigenous development and production.² Much ambiguity still surrounds the procedures for procurement of domestically produced weapons by all three armed services, as well as those for the import of arms by the Indian Air Force and Navy.

¹ Major conventional arms are defined as: aircraft; armoured vehicles; artillery; guidance and radar systems; missiles; and warships. For further detail, see Wezeman, P. D. and Wezeman, S. T., 'Transfers of major conventional weapons', *SIPRI Yearbook 1998: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1998), pp. 369–70.

² India, Lok Sabha, *Report of the Joint Committee of the Indian Parliament to Inquire into the Bofors Contract*, Eighth Lok Sabha (Lok Sabha Secretariat: New Delhi, Apr. 1988).

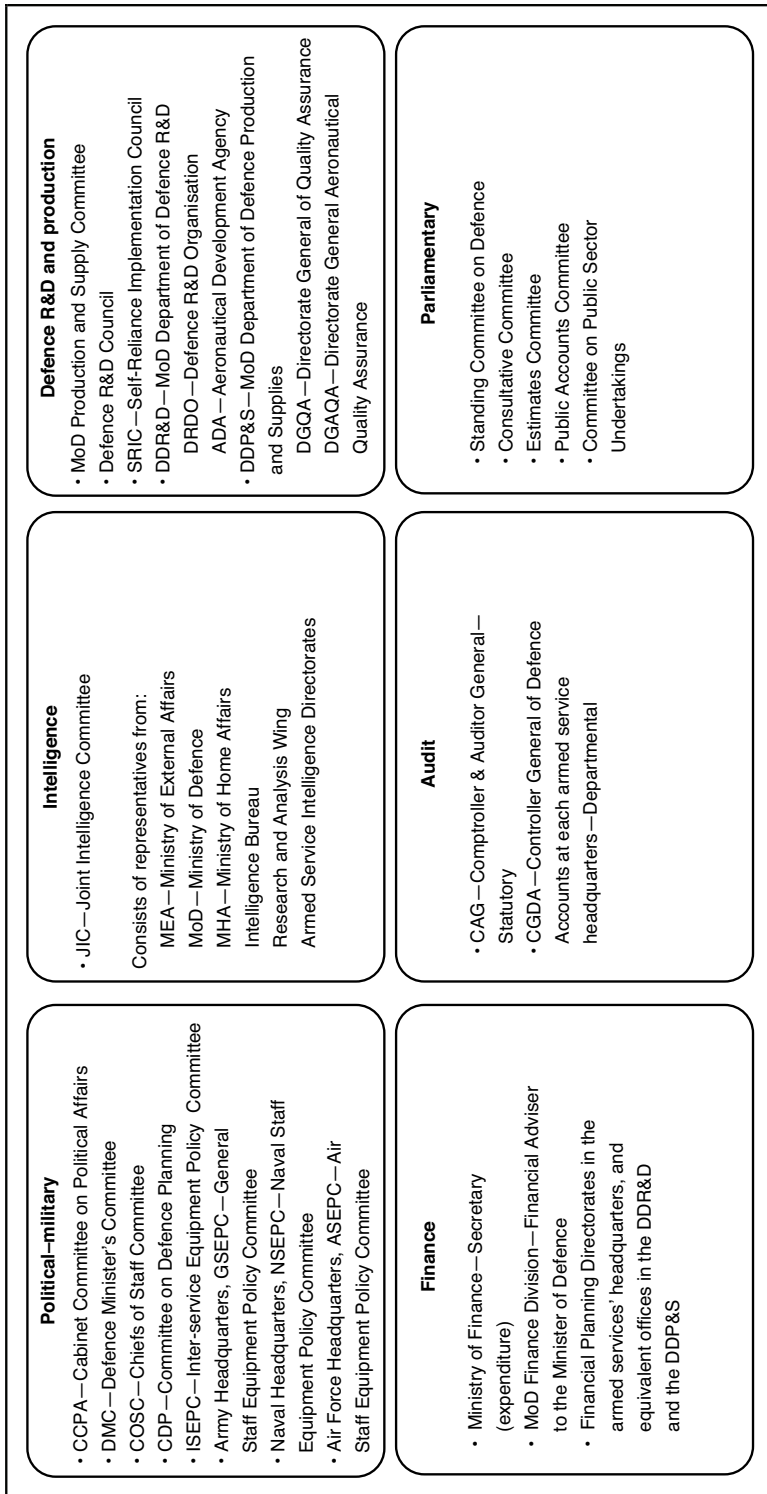


Figure 3.1. Organizations involved in the Indian arms procurement and review process, 1997
Source: Compiled by the author.

The actors³

This section describes some of the many organizations and actors involved in the national security decision-making process. Figure 3.1. shows these organizations clustered into six functional groups. Organizational lines of control may span two or three of these. Although the figure is based on public sources up to and including 1997, this study has revealed that many of the organizations are in fact defunct or fail to perform the tasks they were designed for.

Within two months of Independence, the Defence Committee of the Cabinet (DCC) was established as the supreme security decision-making body. It was presided over by the Prime Minister with the service chiefs of the army, air force and navy attending. This arrangement allowed the military's unfiltered advice to be directly available to the Prime Minister in isolation from other national concerns. At that time arms procurement programmes mainly involved purchases from abroad, although some efforts were made to initiate domestic weapon production in the late 1950s.⁴

After a number of reorganizations and changes of name, the DCC was redesignated as the Cabinet Committee on Political Affairs (CCPA) in 1971.⁵ The CCPA is an omnibus policy-making body concerned with the entire range of political and security issues. It is headed by the Prime Minister and includes the Ministers of Defence, Home Affairs, Finance and External Affairs, while other senior ministers are invited to participate from time to time. Direct military input to the committee has been diluted by the exclusion of the three service chiefs, who attend only when invited to render advice.

To synchronize defence with the wider aspects of development, a Planning Cell was set up at the Ministry of Defence (MoD) in November 1965. This body, intended to facilitate mid- and long-term defence planning and to maintain constant liaison with the National Planning Commission (an independent body responsible for socio-economic planning) and other ministries in order to integrate defence planning with overall economic planning, has not functioned as intended.⁶

³ This section is based on various reports including: India, Lok Sabha, Estimates Committee, *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy*, 19th Report (Lok Sabha Secretariat: New Delhi, Aug. 1992), pp. 4–13; Prasanan, R., 'Chinks in the armour', *The Week* (Cochin), 26 Sep. 1993; Malik, V. P., 'Defence planning system in India', *Amrita Bazar Patrika* (Calcutta), 19 and 21 Dec. 1990 (in English); Sinha, S. K., *Higher Defence Organisation in India*, USI National Security Lecture no. 10 (United Services Institution of India: New Delhi, 1991), pp. 23–27; Nand Kishore, *NDC Journal*, vol. 14 (Nov. 1992), pp. 83–84; *Report of the Comptroller and Auditor General of India for the Year Ended 31 Mar. 1992*, no. 8 (New Delhi, 1993); and Government of India, *Defence Services Estimates 1994/95* (Government of India Press: New Delhi, 1995), pp. 91–94.

⁴ Rao, P. V. R., *India's Defence Policy and Organisation Since Independence*, USI National Security Lecture (United Services Institution of India: [New Delhi], 1977), p. 32; and Kumaran, P. K., 'Military auditing in Indian arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 18 (1995), pp. 1–3.

⁵ Pai Panandikar, V. A. and Mehra, A., *The Indian Cabinet: A Study in Governance* (Konark Publishers: Delhi, 1996), p. 181.

⁶ Malik (note 3); and Interview by the author with Lt-Gen. V. R. Raghavan (ret.), 30 May 1996.

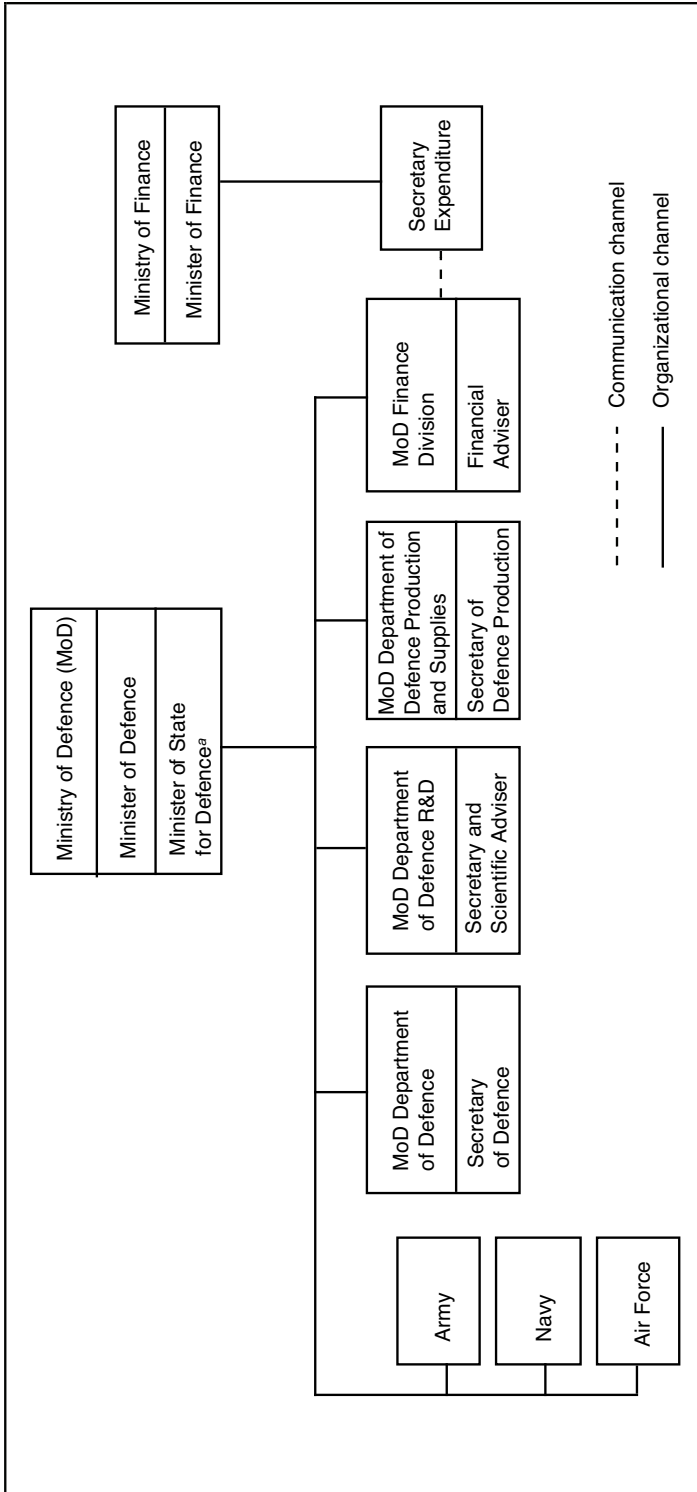


Figure 3.2. The arms procurement decision-making process in the Indian Ministry of Defence

^a The Minister of State for Defence at times functions as the Minister of State for Defence Production.

Source: Compiled by the author.

The MoD consists of three main departments and a finance division (see figure 3.2). The Department of Defence is headed by the Secretary of Defence and has the task of coordinating the activities of the other MoD departments and of the three armed services. The Department of Defence Production and Supplies (DDP&S) is headed by a secretary and deals with matters related to defence production and indigenization. The Department of Defence Research and Development (DDR&D) is headed by a secretary who is also Scientific Adviser to the Defence Minister. Its responsibilities include R&D planning and advising the Defence Minister on scientific aspects of military equipment. The Financial Adviser to the Defence Minister presides over the MoD's Finance Division. Among other things, he is responsible for ensuring financial control over defence budget proposals.

Several committees and advisory bodies are engaged in the defence planning process. The Defence Minister's Committee (DMC) is chaired by the Defence Minister and includes the Minister of State for Defence Production, the chiefs of the armed services, the Secretaries of Defence, Defence Production and Defence R&D, and the Financial Adviser to the Defence Minister. However, it has effectively been replaced by the Defence Minister's weekly ('morning') meetings, which have no formal agenda but provide a forum for discussion and for monitoring progress.⁷ The MoD Production and Supply Committee deals with matters relating to import substitution, domestic arms production and the operation of the ordnance factories,⁸ and approval of major projects before they are submitted to the CCPA for financial approval.⁹ It is chaired by the Defence Minister and has the same membership as the DMC. The Defence Minister also chairs the Defence R&D Council, which formulates and reviews R&D programmes and considers R&D budget proposals with organizations dealing with scientific R&D. Its composition is the same as that of the DMC with the addition of the Directors-General of the Council for Scientific and Industrial Research and the Armed Forces Medical Services.¹⁰

The Chiefs of Staff Committee (COSC), comprising the three service chiefs and chaired by the one with the longest tenure, provides a direct channel for conveying professional military advice to the Defence Minister and the Prime Minister. The COSC coordinates broad military aims and strategies, which are later approved by the Defence Minister.

The Committee on Defence Planning (CDP), created in 1978, is chaired by the Cabinet Secretary and includes the Prime Minister's Secretary; the three service chiefs; the Secretaries of Defence, Finance, External Affairs, Defence Production and the National Planning Commission; and the Financial Adviser to the Defence Minister.¹¹ It is responsible for such defence planning matters as: (a) periodic review of long-term intelligence assessments of geo-strategic

⁷ Sinha (note 3), pp. 26–28.

⁸ Government of India (note 3), p. 91.

⁹ Natarajan, V. C. and Chakraborty, A. K., *Defence Reporting in India: The Communication Gap* (Trishul Publications: Noida, 1995), p. 125.

¹⁰ Natarajan and Chakraborty (note 9), p. 127.

¹¹ Malik (note 3).

developments with a bearing on national security; (b) review of national defence objectives in order to recommend priorities and develop a long-term framework for defence planning; and (c) the balancing of competing interests in the economic, technological, foreign policy and defence fields in order to optimize the national defence effort.

Threat assessment and defence planning

The 1962 border war with China aroused India's awareness, and systematic defence planning began with the introduction of five-year defence plans in the mid-1960s. The first (for fiscal years (FYs) 1964/65–1968/69) proposed the building of a defence production base in order gradually to reduce external dependence. The MoD Planning Cell draws up the five-year defence plan for approval by the Defence Minister and the CCPA. The annual plans of each of the armed services are to be based on this plan. Long-term plans with a 15- to 20-year time-frame, called perspective plans, are drafted by the armed services.

The Joint Intelligence Committee (JIC) in the Cabinet Secretariat carries out external and internal threat assessments on the basis of inputs from the Intelligence Bureau, the Research and Analysis Wing, and the independent assessments of the directorates of intelligence at the armed services' respective headquarters.¹² The JIC processes information to meet the needs of different levels of decision making. Assessments of the political and the security environments are also made by the Ministries of External Affairs and Defence, but inter-ministerial coordination of foreign and defence policies at functional levels has not been developed into a formalized working relationship.

In 1986 the Government set up the Defence Planning Staff (DPS)—a multi-disciplinary body consisting of representatives from the three armed services, the Ministries of Defence, Finance and External Affairs, and the Defence Research and Development Organisation (DRDO). The DPS provides inputs to the COSC on a variety of issues related to defence planning including: (a) international and regional security affairs; (b) defence policy; (c) weapons and equipment; and (d) financial planning.¹³ Its staff of 12 formulate military objectives and concepts for combined operations, joint training, joint logistics and management, and interact closely with the government departments dealing with defence R&D, defence production, industry and finance. It provides guidelines to the armed service headquarters for formulating their draft plans and projections, and prepares a draft integrated plan in consultation with the armed services, the DRDO and the DDP&S. It also coordinates the perspective planning of the three branches of the armed services.

The COSC coordinates broad military objectives and strategies and forwards its recommendations to the MoD. After its advice to the MoD on military strategy has been accepted, each of the armed services plans its own force levels

¹² Rao (note 4), pp. 25–30; Malik (note 3); and Chari, P. R., 'Defence policy formulation: the Indian experience', *Indian Defence Review*, vol. 11, no. 1 (Jan.–Mar. 1996), p. 27.

¹³ Rao (note 4).

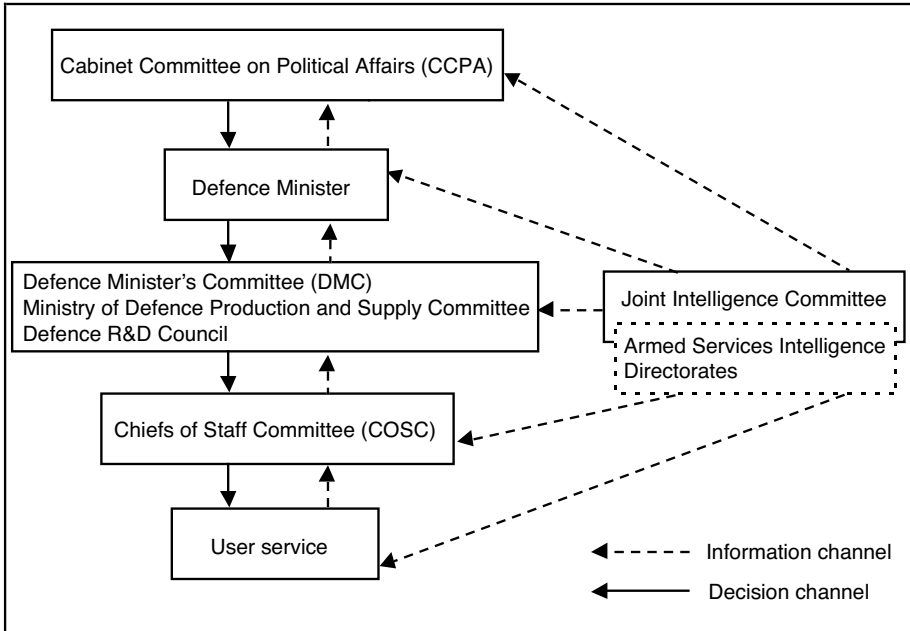


Figure 3.3. Information and decision channels in the Indian arms procurement decision-making process

Source: Compiled by the author.

and related weapons and equipment procurement. Figure 3.3 shows the channels of information and decision making in the arms procurement process.

The role of the military in the arms procurement process

Although each service has established its own procurement procedures, it is difficult to present an accurate description of the division of responsibilities within the services owing to the scarcity of officially published information. How far the armed services follow the prescribed procedures depends on individuals at the highest levels of national decision making and their attitudes to public accountability.

*The arms procurement process in the Indian Army*¹⁴

The 1987–88 parliamentary inquiry into the Bofors contract exposed the inner workings of the Indian Army's formal arms procurement process. It is reasonable to presume that the navy and the air force follow similar procedures.

¹⁴ This section is largely based on *Report of the Joint Committee of the Indian Parliament to Inquire into the Bofors Contract* (note 2).

The formal process in the Indian Army for assessing the requirements of and procuring major weapon systems starts with the preparation of a Philosophy Paper, which identifies the characteristics and advantages of new weapon systems in broad terms. Based on the Army Perspective Planning Department's perspective plans for force modernization, the philosophy papers assess: (a) threats and relative force levels; (b) operational concepts; (c) emerging technologies and relative effectiveness of new systems compared with current equipment; (d) rate of obsolescence and useful service life of existing weapon systems; and (e) related issues.

The next step involves the General Staff Equipment Policy Committee (GSEPC). Chaired by the Vice- or Deputy Chief of the Indian Army, it includes representatives of the MoD, the DDR&D, the DDP&S, the Finance Division of the MoD and other agencies. The GSEPC formalizes weapon and equipment requirements in policy statements based on data from the army's directorates of military operations, staff duties, and weapons and equipment. These policy statements serve as guidelines and are forwarded to the DRDO for comments as to the feasibility of indigenous development. On the basis of the Philosophy Paper and the DRDO's assessment, the MoD then examines the feasibility of indigenously developing or importing a system. If import is the option chosen, defence attachés at Indian embassies abroad are asked to identify potential suppliers, who are then asked to present proposals.¹⁵ These proposals are sent to the DRDO, the DDP&S and the Finance Division of the MoD for comments. Depending on the amount of foreign exchange involved, the Financial Adviser to the Defence Minister or the Secretary of Expenditure at the Ministry of Finance must approve the transfer.

The MoD either gives its approval for trial evaluations of the weapon system in India or sends its study teams abroad. Trials are usually conducted on a 'no cost, no commitment' basis. The communication channels of the MoD in the arms procurement decision-making process are shown in figure 3.3.

The technical aspects of the proposals are examined by a Technical Evaluation and Negotiating Committee against the requirements identified by the armed forces. If this committee finds the proposals technically acceptable they are forwarded to the Price Negotiating Committee (PNC) for commercial negotiations. Both are MoD committees,¹⁶ but the PNC also has a representative from the Ministry of Finance and can invite revised quotations from the competing firms during the negotiations.¹⁷

Contracts for purchase may include an agreement for or commitment to licensed production, which is signed by the DDP&S. Corresponding credit agreements can also be negotiated simultaneously. Financial authority for pro-

¹⁵ Bedi, R., 'Doing business between the lines', *Jane's Defence Weekly*, 11 Dec. 1993, p. 28.

¹⁶ *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), pp. 9–10.

¹⁷ Other issues discussed by the PNC, which also includes legal experts, are the financing arrangements; payment terms; range and cost of spares and components; cost of technology for licensed manufacture; and repair and overhaul arrangements. Jafa, V. S., 'Arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 12 (1995), p. 12.

curement up to rupees (Rs) 200 million (\$5.5 million)¹⁸ rests with the Secretary of Defence, for amounts up to Rs 500 million (\$13.7 million) with the Defence Minister and for amounts above that with the CCPA.

For common user systems, the Inter-Service Equipment and Policy Committee (ISEPC) coordinates the requirements of the three services.

Defence R&D

The Defence Science Organisation (DSO) was set up in May 1948 with the appointment of a scientific adviser to the Defence Minister. It was expanded and reorganized by merging a number of service and technical institutions and renamed the Defence Research and Development Organisation in 1958 with a network of nine laboratories. However, the DRDO had no separate budget and functioned as a division of the MoD Department of Defence Production. In 1980 defence R&D became the responsibility of a separate MoD Department of Defence Research and Development.¹⁹ These changes were part of efforts to broaden the indigenous production base for defence equipment.

The DDR&D oversees the work of the DRDO, which currently has a network of 50 laboratories and establishments, and that of the Aeronautical Development Agency (ADA), established to develop the Light Combat Aircraft (LCA). It also cooperates with 70 academic research institutions, 50 national science and technology centres and 150 companies in the public and private sectors. R&D is also carried out at select universities under a grant-in-aid scheme.²⁰

The DDR&D has prepared a 15-year perspective plan up to the year 2000, linked with those of the armed services.²¹ In 1997 two high-powered councils—the Self-Reliance Implementation Council and the Joint Planning Council—were set up by the MoD to identify key areas for indigenization, monitor important projects and ensure timely implementation.²² The DRDO has also initiated a 10-year self-reliance plan, to be completed in FY 2004/2005, which aims to raise self-reliance in defence procurement from 30 to 70 per cent using a three-pronged approach: (a) indigenization of vital spare parts; (b) upgrading of existing systems and equipment life-extension programmes; and (c) indigenous design and development of high-technology weapon systems.²³

¹⁸ At the 1997 average exchange rate of Rs 36.313 = \$1. International Monetary Fund, *International Financial Statistics*, Mar. 1998.

¹⁹ Jaiswal, N. K., 'Growth of military operational research in India', *Defence Science Journal*, vol. 44, no. 3 (July 1994), pp. 215–16; *Report of the Comptroller and Auditor General of India for the Year Ended 31 Mar. 1994*, no. 8 (New Delhi, 1995), p. 206; Sen, S. K., 'Some aspects of India's defence industrialisation', *USI Journal*, vol. 124, no. 516 (Apr.–June 1994), p. 157; and Indian Ministry of Defence, *Annual Report 1996/97* (MoD: New Delhi, 1997), p. 9.

²⁰ Indian Ministry of Defence, *Annual Report 1993/94* (MoD: New Delhi, 1994), p. 33.

²¹ It is not clear whether this is a one-off plan or the beginning of a user-developer coordination process. India, Lok Sabha, Standing Committee on Defence, *Ministry of Defence: Defence Research and Development—Major Projects, Fifth Report, 1995/96* (Lok Sabha Secretariat: New Delhi, Aug. 1995), p. 5.

²² 'Councils set up to implement defense projects', *Deccan Herald*, 25 Apr. 1997.

²³ Kalra, D. V., 'Building national arms industrial capacities', SIPRI Arms Procurement Decision Making Project, Working Paper no. 10 (1995), p. 11; and Kalam, A., 'Combating the technology control

After nomination of the DRDO laboratories which are to carry out R&D up to the prototype stage, the next steps are generally: (a) concept definition; (b) feasibility studies; (c) project definition; (d) approval from the competent financial authority; (e) development of a full-scale engineering model; and (f) development of a prototype. (They do not necessarily follow one after the other in this order.) Throughout the process there is a dialogue between the user service and the DRDO on performance specifications, costs and time-frame.

At the prototype stage, defence public-sector undertakings (DPSUs) or ordnance factories are designated to set up production facilities and different organizations conduct successive levels of trials: (a) technical evaluation trials; (b) user trials; (c) user-cum-technical trials; (d) confirmation trials; and (e) maintenance evaluation trials.²⁴ After trials the prototype is either frozen as a pre-production model or chosen as a technology demonstrator.²⁵ DRDO representatives are associated with the field and user trials, conducted in different types of terrain by the user service, and maintenance evaluation trials are conducted by the Directorate-General of Electrical and Mechanical Engineers. Their reports are processed by the Directorate of Weapons and Equipment in the army and equivalent directorates in the navy or air force.

The procedure followed in budgeting for an indigenously developed system depends upon its technical complexity. If the user service is allowed to proceed and develop the equipment selected, the most common arrangement is a 'cost-plus' contract.²⁶ If the DRDO is asked to develop the product, either it or the user service meets the development costs or they are shared.²⁷ Projects which arise from the user services are called staff projects. The DRDO also has a budget to develop and fund technology competence-building projects to meet the future needs of the armed services on its own initiative.²⁸ The successful Agni and Prithvi ballistic missile projects began as exploratory DRDO initiatives without formal qualitative requirements from the user services.

regimes', USI National Security Lecture (United Services Institution of India: Madras, Dec. 1996). The DRDO plans to raise the indigenization levels to 70% if its current share of around 5% of the defence budget is doubled by the year 2000. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), p. 6. Even though it has taken almost 4 decades of DRDO service for India to achieve a military technology indigenization level of 30%, there has been no debate on how it will ensure that the level of indigenous production increases to 70%.

²⁴ Mago, K., Presentation at the Army-Industry Partnership Seminar, New Delhi, 15 Sep. 1995.

²⁵ This term is apparently misconstrued in the Indian public debate, as is evident from reports relating to the Agni missile. 'Further Agni tests to be carried out soon', *Financial Express*, 27 Nov. 1994; 'Successful missile tests a milestone for defence services', *Times of India*, 26 Dec. 1994; and 'Induction of Prithvi under consideration', *Times of India*, 17 May 1995. Even if a technology demonstrator does not go into production, technology upgrading work may continue to improve the performance and reliability of components and sub-systems. According to another interpretation, 'technology demonstration research aims to verify not only the effectiveness of advanced technology that has high technology risks, but also feasibility of such technology as a weapon system. Consequently, prototype products are developed using such technology but not on the assumption that specific equipment will be developed for actual use'. *Defense of Japan 1996* (Japan Defense Agency: Tokyo, July 1996), p. 113.

²⁶ In cost-plus contracts, the developers receive the audited costs plus a negotiated fixed fee as a profit.

²⁷ Jafa (note 17), p. 11.

²⁸ Ghosh, A. K., *India's Defence Budget and Expenditure Management in a Wider Context* (Lancer Publications: New Delhi, 1996), p. 304.

The Secretary of the DDR&D is also head of the DRDO and Scientific Adviser to the Defence Minister. Combining advisory and head-of-line functions in the same person defies sound organizational principles. The advisory function for R&D quality control is carried out by representatives of the user services, but as neither technology quality assurance nor evaluation are carried out by non-MoD/DRDO experts another organizational principle, that of providing external checks and balances, is neglected.

The defence industrial base

By the end of World War II some 16 ordnance factories had been built in India, and after independence another 23 were added to the Ordnance Factories organization, which was later placed under the MoD. These factories were restructured into an Ordnance Factories Board in 1979. They produce a wide range of defence products, but in 1996 only three were involved in producing tanks and combat vehicles and five produced a range of ordnance equipment such as artillery guns.²⁹ In addition, the MoD has eight DPSUs, structured to operate flexibly with decentralized management and sufficient operational autonomy to utilize the defence technological base for a wider and diversified range of applications.³⁰ The organizations involved in India's defence R&D and production are listed in appendix 3A.

Ordnance factories were among the first institutions in India to introduce cost accounting practices. Product costs were used for accounting but not for management decisions.³¹ In 1987 ordnance factories were given a separate heading in the defence budget in the expectation that they should function more like commercial production units. Until recently, as both the ordnance factories and DPSUs were monopoly suppliers to the armed forces, the cost factor was not a major consideration. This generated indifference to cost considerations among the armed forces and inefficiencies in the production organizations.³²

In 1991 the Government's Industrial Policy Resolution reserved only the final assembly of lethal weapon systems for the public sector, and the manufacture of components, assemblies and sub-assemblies was opened up to the private sector.

In building the Indian defence industrial base, planners imitated the Soviet-style state arms-manufacturing sector, whose Russian inheritors have been struggling to become competitive in the international market since 1991. The Indian armed forces procure 250 per cent more from the public sector than from the private sector, in contrast with the more successful defence industrial bases in countries where the primary contribution to defence procurement is made by the private sector. A survey of the top 500 Indian companies indicates that only

²⁹ India, Ministry of Defence, *Annual Report* (MoD: New Delhi), various years.

³⁰ Ahuja, G. S., 'Defence industrial, technological & economic bases', SIPRI Arms Procurement Decision Making Project, Working Paper no. 15 (1995), pp. 3-4.

³¹ Jafa (note 17), p. 9.

³² Jafa (note 17), p. 10.

30 of them have been involved in defence contracts. Most Indian defence contractors are small and medium-scale enterprises engaged as ancillary producers.³³

Quality-assurance functions are carried out by the Directorate-General of Quality Assurance (DGQA) for all equipment purchased by the Indian Army and Navy, either through import or through domestic production. Quality assurance of specialized air and aeronautical equipment for the air force is done by the Directorate-General Aeronautical Quality Assurance (DGAQA), and of certain missile systems by the Missile Systems Quality Assurance Agency (MSQAA) set up in 1992. The DGQA has controllers responsible for armaments, vehicles, electronics and warship projects and who conduct inspections relating to arms procurement.³⁴ Although the DGQA and the DGAQA are independent of the user services, the R&D organizations and the production organizations, they both function under the Secretary of the DDP&S and cannot be considered entirely autonomous in their channels of reporting.

In the absence of a single authority which can oversee development, production and induction programmes of various arms procurement projects and coordinate the user services, the DRDO and the DDP&S, specially constituted committees or authorities, usually headed by a senior member of the user service involved, oversee the progress of major projects.³⁵ Despite the risk of neglect, inefficiency, waste, fraud and misuse of public funds in procurement via domestic production, legislative oversight has not reached this area of government policy and decision making. Arms procurement through domestic R&D and production has a single developer, a single buyer and a sole funder in the Indian Government. Thus, the accountability loop is effectively closed.

The budget and audit processes

The defence budget planning process involves the Financial Planning Directorate of each armed service, the Finance Division of the MoD and the Ministry of Finance. Discussions start in October every year and the budget is presented to Parliament by the Minister of Finance at the end of February. After making allocations for salaries, other mandatory expenditures and commitments made earlier, the armed service headquarters provide financial data for the draft arms procurement budget. The impact of a tight financial situation is primarily felt on the budget for arms procurement and other expenditures which could be put off to a later date. Funds for arms procurement are listed under the capital

³³ Defence purchases from the private sector are small—some Rs 12.25 billion (c. \$390 million in FY 1993/94 at the 1994 average exchange rate) compared to those from the ordnance factories—Rs 19.88 billion (c. \$633 million)—and the DPSUs—Rs 22.19 billion (\$707 million) in the same year. Ahuja (note 30), pp. 4–5. Current rates of exchange from International Monetary Fund, *International Financial Statistics Yearbook 1997* (IMF: Washington, DC, 1997).

³⁴ India, Ministry of Defence, *Annual Report 1995/96* (MoD: New Delhi, 1996), p. 53; and Discussion papers from the Army–Industry Partnership Seminar, New Delhi, 14–15 Sep. 1995.

³⁵ Sen, S. K., 'Decision making on India's defence technology and industrial base: implications of changes for R&D policies and prospects', SIPRI Arms Procurement Decision Making Project, Working Paper no. 13 (1995), p. 7.

account; expenditure on operations and maintenance is under the revenue account.³⁶

The structure of the Indian defence budget has not changed for six decades. It provides information by simple expenditure heads but does not permit analysis of the true functional cost of the different elements of defence.³⁷ In the revenue account demands are listed under four headings—army, navy, air force and ordnance factories—mainly for salaries, transport, stores and miscellaneous expenditure. Expenditure under the capital account is for estates, aircraft and aero-engines, heavy and medium vehicles, other equipment, construction, naval fleets and dockyards. Nor does the capital account reflect the costs of making a weapon system fully operational over its entire life cycle, and it is difficult to distinguish between programmes and objectives of expenditure or to detect waste. The armed services are reported to be sensitive about a more detailed breakdown of the budget.³⁸

Each armed service headquarters bases its projections of arms procurement expenditure on: (a) current expenditure and existing force levels; (b) proposed changes in force levels; and (c) replacement or upgrading of weapon systems. On the basis of these estimates the MoD Finance Division and the armed service financial planning directorates decide priorities and assess the financial resources likely to be available. After the MoD has approved the projections and the budget forecast has been discussed with the Ministry of Finance, the final figures are incorporated in the annual general budget presented to the parliament.

In the case of imported weapon systems, the Ministry of Finance mainly deals with the evaluation of costs, the question whether these can be met within the approved budget, issues such as credit, funding and payment arrangements, and proposed counter-trade or offset options.³⁹ India has not developed a formal policy on offsets, as its experience suggests that they increase the sales price of the weapon systems, reduce the competitiveness of the DPSUs using offsets, and mean long lead times, labour strikes and so on.⁴⁰ The main agencies designated for counter-trade are the State Trading Corporation and the Minerals and Metals Trading Corporation, while responsibility for policy making resides with the DDP&S. These giant state agencies have been nominated on the

³⁶ Ghosh (note 28), p. 103. For a detailed analysis of the Indian defence budget, see Government of India (note 3), pp. 93–97; Jafa (note 17); and Ghosh (note 28), pp. 35–55.

³⁷ On the distinction, see Kennedy, G., *Defence Economics* (Duckworth: London, 1983), pp. 91–116.

³⁸ Ghosh (note 28), pp. 103, 259; and Interview by the author with N. N. Vohra (former Defence Secretary), 28 May 1996. However, different versions of each other's opinions are put forward by civil servants and the military. A former lieutenant-general believes that greater detail should be introduced and more information made available about procurement plans. Singh, V. K., 'Budgeting for defence: a rational approach', *Indian Defence Review*, vol. 11, no. 3 (July–Sep. 1996), pp. 35–37.

³⁹ On offsets, see Udis, B. and Maskus, K. E., 'Offsets as industrial policy: lessons from aerospace', *Defence Economics*, vol. 2, no. 2 (1990), pp. 151–64, quoted in Hartley, K. and Sandler, T., *The Economics of Defence* (Cambridge University Press: Cambridge, 1995), p. 240. Counter-trade is a form of offset.

⁴⁰ Ghosh (note 28), p. 346; and Comments by V. S. Jafa, former Financial Adviser, MoD, at the CPR–SIPRI workshop, New Delhi, 1 July 1995.

assumption that other agencies have no experience in this area.⁴¹ They prioritize trade promotion and not long-term advanced technology capacity building⁴²—the aim of the offset policies of many countries.

The parliamentary Standing Committee on Defence examines the draft budget before commending it to the lower house of the Parliament for approval. Outlays are approved for one year at a time. Funding for longer contractual commitments is not constrained by the parliamentary process as long as the MoD takes responsibility to meet commitments from the budgets allocated for future years.⁴³

A former lieutenant-general suggests that both perspective and five-year plans should be subject to parliamentary approval to ensure consistency between financial and defence planning and to reinforce civilian control of the armed forces by the elected representatives.⁴⁴

The financial adviser in the MoD is also responsible for the audit of defence expenditure for each armed service through the offices of the Controller General of Defence Accounts (CGDA). In addition to these departmental audits, statutory audit functions are carried out by the Office of the Comptroller and Auditor General of India (CAG), a constitutionally mandated autonomous authority which presents publicly available audit reports to the president under Article 151 of the constitution. The parliamentary Public Accounts Committee examines the effectiveness of defence expenditure with the assistance of the CAG. However, the CAG primarily examines financial weaknesses and difficulties in production and maintenance of weapon systems. It does not assess the value for money of chosen weapon systems or the decision-making processes. Neither does it analyse recurring problems and systemic limitations.

Legislative oversight

The Parliament's main means of influencing defence policy making (and indirectly arms procurement) is through its role in the drafting of the annual budget during debates in the whole house and through its various committees. Although parliamentary standing committees have the right to demand information, it is still possible for the Government to deny it on grounds of national security. In this case, the speaker of the lower house can ask the MoD to justify

⁴¹ Jafa (note 17), p. 13; and US International Trade Commission (USITC), *Assessment of the Effects of Barter and Countertrade Transactions on US Industries* (USITC: Washington, DC, Oct. 1985).

⁴² In the case of the Bofors deal for the sale of the 155-mm howitzer to India, the State Trading Corporation sold a substantial part of the Rs 8000 million offsets (over half the total contract value) in the form of traditional commodities like cashew nuts, castor oil and rice, which benefited neither the Indian defence industry nor other advanced technology sectors. *Report of the Comptroller and Auditor General*, no. 12 (New Delhi, 1990), pp. 9–13. However, the direct offsets which were part of the Indian Airlines contract for purchase of the Airbus 320, whereby Hindustan Aeronautics Ltd provided some components to Airbus Industrie, did provide technological benefits. Such differences further illustrate the lack of a coordinated national offset policy. Jafa (note 17), p. 13.

⁴³ Jafa (note 17), pp. 4–5.

⁴⁴ Singh (note 38).

the withholding of information and give a ruling.⁴⁵ According to Jaswant Singh, Chairman of the Estimates Committee in 1991–92, the Indian Parliament has no constitutional right to demand documents or subpoena witnesses for evidence, and the Government and Civil Service thwart most of its efforts to elicit information. As a result, parliamentary scrutiny of procurement decisions is negligible.⁴⁶

The Estimates Committee examines budget estimates, but with the present budget structure it is difficult to check specific procurement projects. The Public Accounts Committee examines how the money has been spent, primarily on the basis of the CAG's reports. The Committee on Public Sector Undertakings examines the performance of the DPSUs that manufacture weapon systems. Members of these committees are elected by the Lok Sabha or nominated by the speaker in proportion to the parties' representation in the Parliament. Their meetings are held behind closed doors and there are no public hearings. In 1992 the parliamentary Standing Committee on Defence was established to exercise legislative oversight of defence policies and decision making.⁴⁷ However, either because of lack of interest, owing to the perceived low electoral value of defence procurement issues,⁴⁸ or because of the frequent (annual) change in the membership of the committees, few Indian parliamentarians specialize in defence matters.⁴⁹

III. The Indo-Soviet arms transfer relationship

Until the 1962 Sino-Indian border conflict, India's military inventory was primarily based on Western equipment.⁵⁰ After two years of successive failures to acquire and licence-manufacture the British Lightning or the US F-104 Starfighter, six MiG-21 combat aircraft were transferred to India by the USSR in 1964 in a deal to manufacture this model under licence. These experiences, combined with failures to procure US naval equipment and borrow three British

⁴⁵ Interview by the author with S. C. Kashyap, former Secretary-General, Indian Parliament, 30 May 1996; and Kamath, P. M., 'Foreign policy making in India: need for committee system to strengthen the role of parliament', *Strategic Analysis*, May 1987, p. 232.

⁴⁶ Singh, J., 'Legislative oversight in arms procurement decision making processes', SIPRI Arms Procurement Decision Making Project, Working Paper no. 14 (1995), pp. 6–7; and Jaswant Singh, communication with the author, 3 May 1995.

⁴⁷ Singh (note 46), p. 6.

⁴⁸ 'Unfortunately in India's case, little political benefit seems to accrue from expertise in this field. Defence (issues) are not of a very high priority when it comes to catching votes.' Communication of the author with Jaswant Singh, 3 May 1995. The Standing Committee on Defence had 44 members to consider the MoD grant request for FY 1995/96. Attendance levels were: 20 members on 4 Apr., 25 on 10 Apr., 20 on 12 Apr. and 20 on 19 Apr. The total time in session was 12 hours and 20 minutes. Apart from the chairman, only 7 members attended all the sessions.

⁴⁹ Even the Minister of State for Defence, who is a Member of Parliament, rarely takes the initiative to critically examine the organizations and methods. Sen (note 19), p. 164. There is less and less interest among MPs in specializing, not only in defence matters but also in other areas of policy. Interview by the author with S. C. Kashyap, 30 May 1996.

⁵⁰ The Soviet Union sold India 24 Mi-4 helicopters, 26 Il-14 medium transport aircraft and 8 An-12 medium transport aircraft before 1962. Achutan, N. S., *Soviet Arms Transfer Policy in South Asia (1955–1981): The Politics of International Arms Transfers* (Lancer International: New Delhi, 1988), p. 161.

Daring Class destroyers, left Indian decision makers doubtful of the reliability of Western sources of supply.

While the Sino-Soviet rift allowed India and the USSR to broaden their military industrial linkages, there were impediments: (a) the Western orientation of the Indian civil and military bureaucracies; (b) lack of information in the defence establishment on the suitability of Soviet equipment; (c) the language barrier and the interpretation of operational, technical and maintenance manuals; and (d) problems of mixed inventories.⁵¹ India's conflicts with China in 1962 and Pakistan in 1965, however, were followed by extensive purchases of Soviet equipment by all three Indian armed services and by 1989 the dependency on Soviet-origin equipment was estimated at 70 per cent.⁵²

The experience with Soviet weapons has been mixed. They were found to be comparatively rugged and, because of the Soviet policy of upgrading subsequent generations, easy to adapt and maintain. The perceived low risk of embargoes or of denial of technologies and spare parts, together with easy credit and barter arrangements, low price and competitive performance, led to the Indian preference for weapons of Soviet origin.

Until the collapse of the USSR spare parts and accessories were readily available under preferential terms, but they were highly priced. Soviet secrecy made access to technical information difficult and the agreements contained restrictive end-use clauses, prohibiting re-exports and upgrades.⁵³ Soviet equipment was available at 'political prices', with low interest rates on deferred repayment schedules, whereas Western suppliers demanded advance payment. By reducing cash-flow problems and interfering less with India's development expenditure, the Soviet terms were more acceptable to India's financial bureaucracies.⁵⁴

The collapse of the USSR meant the end of friendship prices. By 1995 India's accumulated debt was estimated at approximately Rs 240 billion (\$7.4 billion).⁵⁵ To compound its debt repayment problem, its trade with Russia fell from Rs 52.5 billion (\$2.3 billion) in FY 1990/91 to Rs 25 billion (\$800 million) in 1993/94 and may continue to decline in view of the competition from China and of shipping and transport bottlenecks.⁵⁶

⁵¹ Chari, P. R., 'India's weapons acquisition decision-making process and Indo-Soviet military cooperation', SIPRI Arms Procurement Decision Making Project, Working Paper no. 19 (1995), p. 5.

⁵² Singh, R. P., 'Indo-Soviet military co-operation', *Strategic Analysis* (New Delhi), Dec. 1990, pp. 1081-83.

⁵³ Chari (note 51), pp. 9-11.

⁵⁴ Kumaran (note 4), p. 4. Credits were available for 10 years at an annual interest rate of 2% and were renegotiated in the 1980s with a 17-year repayment schedule at an annual interest rate of 2.5%. The Soviet Union was moreover willing to barter and accept payment in rupees.

⁵⁵ Chari (note 51), p. 11. At the 1995 average exchange rate of Rs 32.427 = \$1. International Monetary Fund, *International Financial Statistics Yearbook 1997* (note 33). Rs 24 000 crores need to be paid in 10 years.

⁵⁶ Gidadhbuli, R. G., 'Russia's economic relations with China', *Economic and Political Weekly* (Mumbai), 17 June 1995, pp. 1426-27. Current rates of exchange from International Monetary Fund, *International Financial Statistics Yearbook 1997* (note 33). Apparently, expenditure for aircraft purchased earlier from the Soviet Union is restricting the availability of funds for purchases. Singh, J., 'The air force is getting lean, but not mean enough', *Times of India*, 31 Aug. 1996, p. 11.

In current Russian arms export policies, commercial considerations override political considerations.⁵⁷ India's arms procurement linkages with Russia are marked by pragmatism and mutual interest—India's need for arms and spare parts on the one hand and the attractions of a large Indian market on the other.⁵⁸

Even during the heyday of Soviet–Indian technology transfers, Indian defence R&D scientists felt they had better access to their Western counterparts than to Soviet scientists.⁵⁹ Soviet experts doubted India's capabilities to absorb advanced technology. The Soviet military industrial bureaucracies interpreted technology transfer agreements rather rigidly and Indian scientists had access only to those drawings and specifications which the suppliers considered necessary for the assembly or sub-assembly of a specific system.⁶⁰ As Soviet suppliers did not answer queries even remotely connected with design or development, Indian engineers came not to expect major technology gains from Soviet licences for the assembly of weapon systems in India.⁶¹

Military technological self-reliance

Indian arms procurement policy in the 1970s and 1980s focused on the transfer of knowledge for developing skills in the operation and maintenance of weapon systems and for the assembly of weapon systems from semi- or completely knocked-down kits. Commenting on Soviet and other licences for the manufacture of a diverse range of land, air and naval systems from the mid-1960s onwards, a former head of the DRDO has stated that 'most defence production in India was under licence, which neither led to capacities to design nor develop advanced manufacturing techniques; licences for assembly of weapon systems simply followed one another in boring succession'.⁶² The Secretary of Defence R&D considers that it was mostly fabrication skills that were transferred to India by Soviet and Western suppliers in the name of technology

⁵⁷ Sergounin, A. A. and Subbotin, S. V., 'Indo–Russian military cooperation', SIPRI Arms Procurement Decision Making Project, Working Paper no. 20 (1995), p. 5. In Nov. 1994 Russia is believed to have offered Su-27 aircraft to Pakistan for \$35 million per item.

⁵⁸ Sergounin and Subbotin (note 57), pp. 2–3. Russian defence industrialists, however, are reported to be dissatisfied with the payment system for transactions with India and other buyers in the developing world. According to one account, Russian enterprises receive about 8–10% of revenue in cash while more than two-thirds or even up to full payment can be in the form of barter (consumer goods or even food). Russian arms industry leaders point out that bartering arms for consumer goods does not help in restructuring the industry or in the development of production. These conditions should change with improvements on the Russian domestic market.

⁵⁹ Sen (note 35), p. 1; and Kumar, D., 'Sukhoi-30s will be stationed in Pune', *Times of India*, 24 Dec. 1996, p. 8. For the first time, Russian agencies have agreed to permit the DRDO to participate in an R&D project, involving the co-development of electronic equipment which will be compatible with the Indian LCA.

⁶⁰ E.g., design drawings for sub-assembly were available, but no design drawings, technical documents or manufacturing details for components. This hampered indigenization of weapon systems. Joshi, S. G. and Pandian, P. N., 'Procedure for indigenization versus indigenous development of critical components', Proceedings of the Army–Industry Partnership Seminar, New Delhi, 14–15 Sep. 1995, p. 410.

⁶¹ Sen (note 35), p. 12. India has received licences to manufacture MiG-21 and MiG-27 combat aircraft, T-72 tanks, BMP-2 armoured infantry fighting vehicles and Tarantul Class fast attack craft.

⁶² Arunachalam, V. S., 'The acquisitions game: an analysis of the demand side of the trade', *Harvard International Review*, winter 1994/95, p. 73.

transfer.⁶³ India's apparent failure to capitalize on its long connection with the USSR to develop indigenous weapon design and R&D capabilities probably stems from a lack of Indian initiatives to graduate beyond manufacturing capabilities and from Soviet reluctance to encourage Indian autonomy in R&D. Some DRDO staff suggest that the Indian military's preference for imported weapons has also compounded the problems of domestic production.⁶⁴

It is not clear to what extent the experience and skills gained by India through licensed manufacture of generations of Soviet equipment contributed to the design and R&D of the Arjun tank, the Advanced Light Helicopter (ALH), the LCA or the Type 15 destroyer. Most of these include major assemblies or components of Western design and origin, using standards that are closer to Indian engineering standards than are Russian standards, so that the sourcing of components from the Indian industry is presumably easier and the indigenization of equipment of Russian origin problematic.⁶⁵ Even the potential for developing India's R&D capacities with Russian cooperation is uncertain since Russia joined the Wassenaar Arrangement in 1996.⁶⁶

A country cannot achieve self-reliance in defence production alone, without building up competitive technological capacities in the national engineering sector.⁶⁷ It remains to be investigated whether the aspiration of self-reliance was purely rhetoric to make the Soviet arms connection palatable, or whether the Soviet option was chosen in the absence of comparable options from the West.

IV. Deficiencies in the process

The problems in the Indian defence procurement decision-making system can be divided into four groups: (a) the lack of integrated, long-term planning; (b) deficiencies in the defence organizations themselves; (c) the absence of independent oversight or scrutiny; and (d) behavioural factors.

⁶³ Paper by A. P. J. Abdul Kalam, presented at the Army-Industry Partnership Seminar, New Delhi, 14-15 Sep. 1995, p. 4.

⁶⁴ Arunachalam (note 62), p. 73.

⁶⁵ Obsolete Russian components and the non-availability of designs and drawings for the manufacture of sub-systems have also contributed to difficulties in indigenization, as illustrated by the need for Yugoslav assistance in upgrading T-72 engines. Joshi and Pandian (note 60), p. 409; and Interview by the author with V. S. Jafa, May 1996.

⁶⁶ After the experience of the aborted Glavkosmos/Indian Space Research Organisation deal for the transfer of cryogenic engines, India's caution is natural. For a description of the Wassenaar Arrangement, see Anthony, I., Eckstein, S. and Zanders, J. P., 'Multilateral military-related export control measures', *SIPRI Yearbook 1997: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), pp. 345-48.

⁶⁷ High-technology exports by the Indian engineering industry to technology-competitive markets in the OECD countries would be an indicator. The sectors for comparison could include micro-electronics, advanced materials and design, computers and telecommunications, sensors, opto-electronics, aerospace, marine systems, precision engineering and production technologies.

Long-term integrated planning

The broader elements of defence planning are supposed to be part of national development planning. However, the interface between defence and development policies and planning has not functioned effectively, nor has that with broader security planning.

India has no comprehensive policy document that gives long-term direction to national security priorities. A formal defence policy document to guide the development of long-term integrated planning has even been explained as unnecessary by the MoD in view of the defence policy debates in the Indian Parliament, the MoD annual reports and even the operational directives issued by the Secretary of Defence to the chiefs of staff.⁶⁸ In fact, these directives are traditionally drafted by the three chiefs and forwarded for approval to the MoD, which routinely approves and returns the documents.⁶⁹

The defence planning mechanisms in place are only partially effective. The seventh five-year defence plan, to have been effective from 1986 onwards, was approved too late to be of any use, and the eighth was never approved.⁷⁰ The Defence Minister's morning meetings deal with routine issues rather than long-term policy forecasting. The fact that the annual budgets do not include financial commitments for more than one year ahead further hampers the coherent planning of arms procurement. Operational priorities are therefore tailored to match weapon systems which match available financial resources.⁷¹ It is difficult to prioritize R&D projects with long gestation periods and difficult for the DDP&S to scale defence production entities in anticipation of a production order. The term 'ad hoc planning', to describe the Indian arms procurement and security planning processes, abounds in the Indian media.⁷²

The military tends to focus on scenario-based planning rather than long-term capacity building. This has inbuilt limitations when it comes to dealing with unexpected situations. Plans are, for example, easily upset by factors outside national control, resulting in reactive responses to other countries' acquisition of new capacities. The Hank Brown Amendment passed by the US Senate in 1995, allowing a one-time transfer of arms to Pakistan, energized the arms pur-

⁶⁸ *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), pp. 2–3. The Standing Committee on Defence has asked the Government to examine the feasibility of preparing a formal national defence policy document to be placed before Parliament. 'Decide on Agni introduction soon, parliamentary panel tells Government', *Times of India*, 11 Mar. 1996, p. 1.

⁶⁹ The operational directives have often remained without approval for long periods, while older versions remained in use. Chari (note 12), p. 28. According to Maj.-Gen. Afsir Karim, the degree of integration between the army, the navy and the air force is not enough to avoid waste and duplication in procurement. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

⁷⁰ Ghosh (note 28), p. 214.

⁷¹ *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), p. 9. At a meeting in the Defence Minister's Office attended by the 3 chiefs of the armed services in 1993, the Minister of Finance suggested reductions of Rs 5000 million (c. \$160 million at the time) in defence spending to meet other requirements. He listened to the difficulties of the 3 chiefs, went back to his office and reduced the defence budget as he had intended nevertheless. Bahri, S. K. (Lt-Gen.), 'Chinks in armour', *The Statesman* (New Delhi), 27 Feb. 1996.

⁷² The term was frequently used to characterize the defence policy-making process by experts participating in the SIPRI Arms Procurement Decision Making Workshop, New Delhi, July 1995.

chase lobbies in India.⁷³ As one observer noted, '[the] . . . demands for fresh imports to match [the] capability acquired by Pakistan through [the] recent \$360 million package would generate procurement proposals without doubt'.⁷⁴

The tendency of security bureaucracies to exclude the military from gaining broader external security policy experience further restricts the military's understanding of security alternatives. Perspective planning by the armed services is also handicapped by the absence of specialized research capabilities and long-term forecasting methods.

Formally, the CDP and the COSC provide the basic structures for integrated planning. While the former is made up of the three service chiefs and civil servants, the latter only comprises the service chiefs, and the level of coordination between them is difficult to ascertain. The DPS, which reports to the COSC, draws on expertise from the armed services, the Finance Division of the MoD, the Ministry of External Affairs (MEA) and the DRDO, but has been unable to initiate a process of integrated planning at the government level owing to inter-service rivalry, lack of trust and organizational inertia.⁷⁵ Furthermore, defence planning appears to have been constrained by changes in the head of the DPS six times in as many years.⁷⁶ As a result, the MoD combines disparate plans of the three armed services as the five-year defence plan.

Over the years there have been repeated demands in India, primarily from the security community, for a National Security Council (NSC) for integrated planning. These demands were met by the Janata Dal Government in August 1990,⁷⁷ but as its advocates were unable to articulate how or why an NSC would be more efficient than existing processes the NSC was abandoned within a year by the Congress Government.⁷⁸ The functions and organizational efficiencies that an NSC could bring to bear on security decision making have not been adequately analysed.

⁷³ 'Brown Amendment may force review of defence policy', *Times of India*, 31 Oct 1995, p. 1. For the Hank Brown Amendment to the Foreign Assistance Act, see 'Brown Amendment no. 2708 (Senate, September 20, 1995)', *Congressional Record*, p. S13984, URL<<http://thomas.loc.gov/cgi-bin/>>, version current on 9 Oct. 1997.

⁷⁴ Kalra (note 23), p. 7. See also Dixit, A., 'India's military hardware troubles: replenishment is a short term answer', *Pacific Defence Review*, Annual reference section 1996, p. 10.

⁷⁵ Ministry of Defence (note 20). No method has been developed to take advantage of opportunities for economies or interoperability when similar equipment is required by different services. Cariappa, K. C. (Air Vice-Marshal, ret.), 'Inter-service weapons system commonality', *The Pioneer* (New Delhi), 22 Aug. 1996.

⁷⁶ 'Parliamentary committee echoes defence experts', *The Statesman* (New Delhi), 31 Mar. 1996. According to a former Chief of the Army Staff, the DPS 'never got off the ground'. Sundarji, K., 'National policy and security strategy', *The Hindu*, 13 Dec. 1996, p. 10.

⁷⁷ Notification no. 50/4/18/18-TS, *Government of India Gazette*, 24 Aug. 1990.

⁷⁸ 'Plan for NSC abandoned', *Hindustan Times*, 28 Oct. 1991. A revival of the NSC has been opposed by the Ministry of External Affairs, which is concerned about losing its influence in foreign policy making, and by the Ministry of Home Affairs, which argues that the value of the NSC to the existing process would be doubtful. 'Idea of National Security Council has few takers in MEA', *Times of India*, 12 July 1996, p. 6; and 'National Security Council: no answer to Purulia', *Indian Express*, 12 July 1996.

Organizational deficiencies

Major deficiencies in the monitoring and review mechanisms of the organizations involved obstruct the development of an efficient, regulated decision-making process. A number of them do not perform the functions in the arms procurement process for which they were established. For example, the COSC works on the basis of consensus and shies away from contentious issues, to the detriment of integrated defence planning and coordinated arms procurement. While the DPS does not integrate threat assessments with major arms procurement plans that could affect all three armed services, the ISEPC does not function as intended, if at all.⁷⁹

The limitations of the military in building capacities and expertise for long-term planning stem mainly from frequent job rotation, and inconsistencies and uncertainties inevitably remain in the planning processes.

Lack of inter-ministerial or inter-agency coordination

Planning units have been established in the MoD Department of Defence Production and the DRDO, but no systematic interaction between these organizations and the perspective planning directorates at the armed services' headquarters has been formalized.⁸⁰

The fact that the armed services formulate the 15-year perspective plans and the annual plans while the MoD formulates the 5-year plans indicates planning inconsistencies and obstructs the development of linkages between the armed forces' philosophy papers and defence policy priorities.⁸¹ How coordination between the annual defence plans, the long-term perspective plans and the committee-inspired philosophy papers is handled is unclear.

Threat assessment and planning by the three services are largely independent of each other.⁸² The difficulty of integrating their plans clearly increases the likelihood of different threat perceptions developing between them, allows lobbies to develop in the ministries and in the media to promote their own points of view, and creates inter-service rivalries. Political threat assessments, meanwhile, are carried out by the MEA and the JIC,⁸³ but routines for reporting them are not formalized. According to a former Foreign Secretary, formal MEA assessments are not considered in the course of the military's threat assess-

⁷⁹ Interviews by the author with K. Subrahmanyam, Lt-Gen. V. R. Raghavan (ret.) and P. R. Chari, May 1996.

⁸⁰ Malik (note 3).

⁸¹ The Government acknowledges such limitations. 'The absence of clearly defined national security objectives/military aims, leads to proposals being examined on a somewhat general basis. Similarly in the absence of clarity in long-term financial commitment, proposals/cases having financial implications cannot be decided in an optimal manner.' *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), p. 9.

⁸² Interview by the author with K. Subrahmanyam, 29 May 1996.

⁸³ Chari (note 12), p. 27.

ments.⁸⁴ (A counter-criticism is that MEA representatives do not participate in meetings on threat assessment.⁸⁵)

The framing of a common capital budget by the MoD leads to an implicit assumption that it coordinates priorities between the three armed services. However, at present there is no approved five-year plan to administer the capital budget, nor is there any formal mechanism for determining priorities between projects that cut across organizational lines.⁸⁶ Nor does the present financial information management system function as a coordination tool, but rather as a rough tool of expenditure control. The present budget system is not equipped to provide information on the costs of carrying out a job, nor does it provide opportunities for better management of financial resources.

Coordination between the MoD and different ministries and specialized agencies is also underdeveloped in terms of financial and techno-industrial resource sharing, security analyses, technology and political risk assessment. At the DDP&S, the Directorate of Planning and Coordination provides a link between the production organizations, the user services and the R&D organizations. However, at the level of the MoD policy monitoring requires sub-optimal planning,⁸⁷ analysis, coordination and review at various levels involving the user services, the developer (the DRDO), manufacturers in the public and private sectors, and the academic community.⁸⁸ The point of contact between the equipment development organizations—that is, the DRDO and the user services—for review of major projects is high, at the level of vice-chief of staff of each service.⁸⁹

As no single authority oversees R&D on and the production and procurement of weapon systems, the MoD is expected to coordinate the perspectives of the armed services, the DRDO and the DDP&S.⁹⁰ The limitations of interdepartmental coordination are exemplified by the process of defining user requirements for a specific project. The relevant R&D agency identifies: (a) its current technological levels and potential capabilities in relation to the proposed system; and (b) the technologies available through import. Using this input, the armed services draft their requirements for the proposed weapon system, drawing on their own experience as well as their perceptions of the future battlefield. The draft requirements are then discussed with the DRDO, which may either

⁸⁴ Interviews by the author with A. P. Venkateswaran, July 1995.

⁸⁵ Interview by the author with P. R. Chari, May 1996.

⁸⁶ Ghosh (note 28), p. 104.

⁸⁷ Sub-optimization in systems analysis implies breaking up decision making into component parts or sub-problems. By analysing smaller sub-problems, greater attention can be paid to detail.

⁸⁸ Lack of coordination between them is illustrated by the decision in 1997 (for political rather than industrial reasons) to reverse the divestiture of certain DPSUs. 'Four defence PSUs withdrawn from Disinvestment Commission', *The Hindu*, 12 Nov. 1997, p. 52. The divestitures had begun in the early 1990s at Bharat Electronics Ltd and Bharat Earth Movers Ltd. Comments by A. V. Singh, Joint Secretary of the DDP&S, MoD, at the CPR-SIPRI Workshop, New Delhi, 1 July 1995.

⁸⁹ Comments at the CPR-SIPRI workshop, New Delhi, 1 July 1995; and Ministry of Defence (note 19), p. 53.

⁹⁰ Where the Defence Minister is responsible for other important functions, the coordination function is likely to be weak. A Defence Minister's Equipment and Policy-Making Committee exists, but it is not known whether it has ever met. Madhok, V. K., 'Flaws in defence', *Indian Express*, 9 Sep. 1993.

accept or change certain technical features or performance parameters of the proposed system. In practice, the armed services have found that the DRDO does not accurately define the indigenous technological capacities for the development of equipment for fear that the armed forces will choose to import the system.⁹¹

The DRDO has started to take initiatives for collaboration with private companies, but this has yet to be institutionalized and processes of civil–military technology and industrial integration have not yet been developed.⁹² The absence of transparent procedures also prevents interaction between the private sector and the defence public sector, hampering the mutual benefits that could be gained from such interaction.

Export controls are sometimes officially blamed for difficulties in obtaining critical components when coordination at home is actually at fault. Considerable ambiguity remains in this regard,⁹³ but a number of sub-systems and critical components are being procured from the member countries of the Wassenaar Arrangement for major weapon systems under development, including the LCA, the ALH, the Arjun tank, Howaldtswerke-Deutsche Werft (HDW) submarines and fire-finder radars.⁹⁴ India in fact imports technologies and components from the USA and other Wassenaar Arrangement members on a large scale. Export licences are granted to programmes whose mission profiles have been accepted by the technology-exporting countries. The progress of the Integrated Guided Missile Development Programme (IGMDP) has, however, been affected by the tightening of the Missile Technology Control Regime (MTCR) and subsequent export controls.⁹⁵ The methods used to address potential missile proliferation in India include a stringent process of verification and confirmation before licences are issued to India, prevention of the re-export

⁹¹ Singh, H. (Lt-Gen.), 'The second coming of the Arjun', *The Tribune* (Chandigarh), 29 Mar. 1996.

⁹² A noticeable change has also been observed in the LCA and Integrated Guided Missile Development (IGMD) projects where attempts to integrate civil and military capabilities have been made. The changes in management methods in these two projects are indicative of problems with the coordination of defence R&D and production.

⁹³ Official reports give contradictory accounts of the effects of export control. One report of the Standing Committee on Defence on major DRDO projects states that vital technologies are being deliberately and unjustifiably denied to India, but the MoD annual report for 1995/96 states that progress in the development of state-of-the-art systems is not affected by export control regimes. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), p. 3; Ministry of Defence (note 34), p. 53; and Kalam, A., *Jansatta*, 6 Dec. 1995, p. 6.

⁹⁴ The LCA has a General Electric turbo-fan engine; the fly-by-wire flight control system has been developed by Lockheed Martin; British Aerospace and Wright Patterson are providing flight control law consultancy; Alenia of Italy provided technical consultancy for the carbon-fibre composite wing; Ericsson of Sweden was involved in the development of pulse doppler multi-mode radar; and Dassault provided design software packages. Other foreign components included actuators, generators, fuel pumps, ring laser gyros, and components for head-up and multi-functional display. Mama, H., 'LCA fighter drives India's aerospace industry', *Interavia*, Dec. 1996, p. 15; and Bedi, R., 'The eagle has landed', *Indian Express*, 1 Nov. 1996. On the Wassenaar Arrangement, see note 66.

⁹⁵ The MTCR was established in 1987 as an instrument for nuclear non-proliferation policy. For a description of the regime, see Anthony, Eckstein and Zanders (note 66), pp. 354–59. 'Of late there have been very disturbing trends. Some of the companies who are doing R&D or even limited manufacturing, have been put on what is called the watchlists of certain governments.' Comments by K. Santhanam at the CPR–SIPRI Workshop, New Delhi, 1 July 1995, p. 21.

of technologies of US origin from third countries, and the placing of Indian companies on the 'watch list' of potential proliferators.⁹⁶

Difficulties in integrating broader expertise and scattered skills in a formalized manner at the MoD level indicate another systemic deficiency. The main barriers are a lack of political will and inadequate knowledge of defence matters among the political leaders and a lack of staff continuity among the civilian bureaucracy in the MoD.⁹⁷ However, civil servants in the MoD do bring a broader sensitivity to society's priorities to the decision-making process.

India's failure to develop interdisciplinary and inter-ministerial processes could be the result of deeply ingrained attitudes to controlling information on the part of tradition-minded officials—an attitude which works against the interests of the society they are meant to serve and instead leads to a convergence of interests between the defence R&D community and the military. For example, an R&D agency is expected to conduct technology forecasting on the basis of an assessment of operational scenarios and tactical requirements, but the work being carried out by the DRDO in this area is described as perfunctory.⁹⁸

The issue of rationalizing roles and missions to avoid duplication also remains unaddressed.

Failures of project management and cost control

Cost overruns in the development of major weapon systems in India have been attributed to inaccurate estimates, inflation, changes in the proposed production volumes, and a lack of competence among the military staff to formulate technical specifications and qualitative requirements. Variations in the prices of components and programme delays owing to unforeseen problems associated with the learning process, such as gaining the necessary technical skills and project management experience, have also affected costs. Time overruns, which often add to the costs, have arisen from mid-programme budget constraints, exchange-rate variations and project redefinition. Major programmes can be delayed because of weaknesses in systems integration skills and attempts by the

⁹⁶ Ministry of Defence (note 19), p. 55; 'More bullying', *Hindustan Times*, 26 May 1997, p. 11; and 'India protests export curbs on Bharat Electronics', *Times of India*, 17 June 1997, p. 20. According to a notification from the US Department of Commerce, export licences from US companies will require more careful scrutiny in the cases of the Bhabha Atomic Research Centre (Trombay), the Indira Gandhi Centre for Atomic Research (Kalpakkam) and India Rare Earths Ltd. *Washington File*, US Information Service, 30 June 1997, URL <<http://www.usis.usemb.se/wireless/100/eur116.htm>>.

⁹⁷ Address by O. P. Mehra (former Chief of the Indian Air Force) in Sinha (note 3), pp. 61–63.

⁹⁸ Sen (note 19), p. 165. According to a DRDO representative, 'technology assessment is conducted on an ad hoc basis depending upon the competence of technical teams'. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995. The discussion at the workshop indicated a lack of capacity for conducting long-term technology assessment in an institutionalized manner either in the DRDO or within the armed services. The Centre for Aeronautical Systems Studies and Analysis, Bangalore, carries out aircraft systems analysis and the Institute for Systems Studies and Analysis, New Delhi, carries out ground weapon systems analysis, computerized war games and operational research for force structure planning. Jaiswal, N. K., 'Growth of military operational research in India', *Defence Science Journal*, vol. 44, no. 3 (July 1994), pp. 215–19.

armed services to demand unrealistic and at times unproven technical specifications.⁹⁹

The DRDO maintains that it has an extensive review system of committees, boards of management and governing bodies, but the fact that it had to close almost two-thirds of its projects in 1989 raises questions about the effectiveness of this system.¹⁰⁰ Perhaps DRDO productivity is affected by the time taken up by panels and review committees, or perhaps such mechanisms only work on paper for rubber-stamping decisions already made at the leadership level.

It is not uncommon for manufacturers to intentionally under-assess project costs in order to ensure approval. The defence R&D community also understates development costs in order to forestall pressures to import.¹⁰¹ Advanced engineering expertise in the armed services, the MoD and its Finance Division is clearly inadequate to enable them to question understated projections.¹⁰² Monitoring by legislative committees could reduce some of the project management problems.

Oversight and legislative scrutiny

In the Indian Parliament, participation in, influence on and even examination of long-term arms procurement planning are non-existent. The lack of published policy documents is a major weakness. According to Jaswant Singh, the Parliament has never appointed a defence commission or sought independent professional advice.¹⁰³ The absence of parliamentary supervision results in such absurdities as a five-year defence plan with no corresponding financial commitment.¹⁰⁴ Depending on the time available, the Parliament occasionally debates defence matters, but always focuses on immediate issues. The actual shaping of the defence budget takes place outside the Parliament among political leaders, civilian bureaucrats and military advisers. Members of the Standing Committee on Defence have even criticized the United Front Government's

⁹⁹ E.g., the costs of the Integrated Guided Missile Development Programme (IGMDP) almost doubled in 7 years, those for the LCA nearly tripled in 10 years and those for the Arjun tank increased by 18 times in 13 years. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), pp. 11–12. For a study of time and cost overruns in the case of the Arjun tank, see Jha, P. S., 'India's arms procurement system: secrecy versus accountability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 16 (1995), pp. 6–12.

¹⁰⁰ The report of the Standing Committee on Defence in Jan. 1994 noted that, as a result of the rigorous review of projects conducted over 4 months, the DRDO had closed down 618 of 989 projects in 1989. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), pp. 7–8.

¹⁰¹ Nand Kishore (note 3), p. 87. The original allocation for the Arjun tank was Rs 155 million (\$19 million at the 1974 rate of exchange) in 1974. It was increased to Rs 565 million (\$72 million) in 1980 and to Rs 2800 million (\$216 million) in 1987. The escalation is explained by an increase in the number of prototypes (from 12 to 42), inflation and deteriorating exchange rates. In the case of the LCA, Rs 5600 million (\$560 million) were sanctioned in 1983 for the development of 6 flying prototypes. (Current rates of exchange from International Monetary Fund, *International Financial Statistics Yearbook* (IMF: Washington, DC, various years).) The cost for only 2 technology demonstrator aircraft escalated to Rs 21 880 million (c. \$700 million) in 1993. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), pp. 18–19.

¹⁰² Subrahmanyam, K., 'Defence R&D management', *Economic Times* (New Delhi), 2 Nov. 1995.

¹⁰³ Singh (note 46), pp. 10–11.

¹⁰⁴ Singh (note 46), pp. 10–11; and Jafa (note 17) p. 8.

'secretiveness' in not apprising them of defence policy. However, when a former chairman of the Standing Committee became a cabinet minister in the United Front Government in 1996, he was unable to improve the availability of information because of the attitude of his civil servants.¹⁰⁵

There is very little evidence of parliamentary involvement in Indian defence technology issues. This could be due to lack of interest in defence affairs or to the low electoral value of such committees, which is also indicated by the low attendance and participation at the hearings of the standing committee.¹⁰⁶ The Standing Committee on Defence has started to conduct hearings on the DRDO. However, the short term of service (one year) on parliamentary committees prevents Members of Parliament (MPs) from gaining knowledge and competence in specific security and technical fields. If and when professional expertise is sought by the committees, it is only available in the form of reports from government-funded think-tanks which do not wish to have their opinion seen as diverging from that of the establishment. The difficulty in finding independent professional opinion to facilitate quality inputs to legislative oversight remains one of the major weaknesses in the Indian parliamentary system.¹⁰⁷ If parliamentary committee hearings are to be a function of the Parliament at work, representatives of the accredited press should attend the meetings to prevent distorted or deliberate leaks.

S. C. Kashyap, a noted Indian constitutional expert, observes that:

[besides the] accountability of the Government and of the administration to the elected representatives of the people, there is a more crucial aspect of the accountability of the legislators to the public at large. The question is what public mechanisms can be built to bring to account the executive and the legislators within the existing framework? The questions are perhaps most relevant to decision-making processes in the area of security concerns, defence policy formulations, arms manufacture and purchases etc.¹⁰⁸

Kashyap believes that arms procurement is bound to remain an executive function which must be exercised in accordance with laws and policies laid down by the Parliament. He asks which laws have been enacted by the Indian Parliament with regard to obtaining information from the Government and whether its power to elicit information from the Government is being exercised.

Limited expertise in framing laws and exercising power could be attributed to the fact that many MPs in India today have lower educational standards and

¹⁰⁵ [Why this apathy towards defence?], *Navbharat Times*, 10 Dec. 1996 (in Hindi).

¹⁰⁶ Singh (note 46), p. 10. One member of the Rajya Sabha (the upper house of the Indian Parliament), states that because of lack of interest on the part of MPs the bureaucracy has acquired monopoly control over the MoD. Malkani, K. R., 'A positive approach to defence', *Indian Express*, 27 Dec. 1996. See also note 48.

¹⁰⁷ 'It is essential for the departmental committees to be serviced by competent staff. They should invariably take assistance of specialists during enquiries.' Kashyap, S. C., 'Standing Committee must learn to run', *Times of India*, 20 May 1995, p. 8. The Standing Committee on Defence has started to invite independent strategic analysts to give evidence at its hearings. Flory, K., 'Parliamentary committee echoes defence experts', *The Statesman* (New Delhi), 31 Mar. 1996. However, access to expert advice of specialized matters has not been institutionalized.

¹⁰⁸ S. C. Kashyap, communication with the author, 29 July 1995.

come from a wider range of social backgrounds than the members of India's first two parliaments, a greater number of whom had an understanding and knowledge of legislative processes. If this observation is supported by research, it could identify a major limitation in advancing the constitutional changes required for the democratization of Indian society—a deficiency which affects not only security policy monitoring but also the whole of public policy making.

This weakness is exacerbated by the fact that demands for accountability in the parliamentary committees are primarily made by members of the opposition, who are in a minority and cannot exercise critical oversight of their own accord. Furthermore, such demands may be based on personal, mundane or electoral considerations.

Information sharing carries an element of risk in countries with low national cohesion. The need to accept the integrity of MPs and develop a process of providing information on a need-to-know basis has not been accepted. The Government, made up of the parties in power, decides who needs to know and opposition MPs are seen in an adversarial context.

Weaknesses in legislative or multi-party oversight may, however, have serious security consequences. It is not unknown for groups around the leader to develop a certain political élitism over time and for one group to assume that it best understands the interests of the nation. The formation of such closed groups leads to conformity and similarity in thinking, which reinforces the closed circle of interaction. A lack of feedback (from the press) or professional oversight (by the Parliament) may reinforce confidence in the group's decision making and raise the threshold of resistance to contrary information:

Members of the group fed each other with assessments and optimistic estimations . . . the outcome was the atmosphere of self-fulfilling discussions . . . perpetuating group members' self-confidence and sense of invulnerability. This led to baseless optimism and a willingness to take risks that were expressed in adoption of the Forward Policy, while placing exaggerated and unrealistic confidence in the ability of the concerned organizations [the Indian military] to execute such a policy containing such a high element of risk with success.¹⁰⁹

Auditing

Legislative oversight functions are augmented by a professionally competent auditing organization in the form of the CAG. As an institution, the CAG recognizes that, while the judgement of professionals in weapon system selection should be respected, the factors, criteria and procedures used in the selection should be open to audit to justify the selection. These include: (a) the factors on which the decision was based; (b) the comparative financial assessment and cost data which determined the deal; (c) the reports and data on concomitant programmes for the induction of the weapon system, such as coord-

¹⁰⁹ Vertzberger, Y., 'Bureaucratic-organizational politics and information processing in a developing state', *International Studies Quarterly*, vol. 28, no. 2 (1984), p. 88.

ination between procurement planning actions; and (d) related infrastructure and planning actions.

While specific investigations into defective equipment are ordered, no systematic or standardized post-induction re-evaluation of weapon systems is carried out to compare the complete range of their capabilities with those accepted at the time of selection.¹¹⁰ This limitation could also be the result of the CAG's lack of access to multi-disciplinary, professional expertise. Unlike other democratic countries, India has no external audit agency to monitor the work of the CAG, nor are its procedures open to inspection by the Indian Parliament. Neither the Parliament nor the Minister of Finance has the right of access to audit regulations, which were previously open to the public but are now classified. This undemocratic situation remains unchallenged in the Parliament: MPs accept it as a norm of public office.¹¹¹

Behavioural factors

Emphasis on secrecy

The procedures and details of military expenditure are treated as confidential and information is not publicly available.

Secrecy appears to be sanctified by appeal to the national interest or national security. This helps the Government to withhold or release information according to its perception of its own interests. If MPs insist on obtaining information, they can be silenced by questioning their patriotism. A prevailing assumption among government officials is that a legislature of more than 500 MPs cannot maintain confidentiality and that politicians would not be able to resist the temptation to divulge government views on issues prematurely for their own political gains.¹¹² A traditional mind-set is evident in the failure of both the military and the civilian bureaucracies to realize that building public understanding and an information base would strengthen the decision-making processes and improve professional output. The avoidance of accountability has created an adversarial relationship between the public-interest institutions and interested public servants.

The reasons for an excessive emphasis on secrecy which shrouds national security issues are inadequately explained and inappropriately justified,¹¹³ and this distorts the public understanding of even genuine needs for confidentiality. The military security establishment has been unable to devise a method of analysing, processing and disseminating information for the public to strengthen democratic institutions. Communication between government agencies, non-governmental organizations and individuals with expertise in technology

¹¹⁰ Kumaran (note 4), pp. 13–23, 27.

¹¹¹ Joseph, K. P., 'Decline and fall of government audit', *Economic and Political Weekly* (Mumbai), Mar. 1994, p. 533.

¹¹² Kamath (note 45), pp. 228, 234, 238.

¹¹³ Nayar, K. P., 'Élite motivation and domestic considerations in arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 11 (1995), p. 2.

development and arms procurement has been a weak link in the process, resulting in compartmentalized thinking.

Essential details that would facilitate public monitoring of decision-making procedures and processes are available neither to the media nor to legislative bodies such as the Standing Committee on Defence. The professionalism of decision making remains unmonitored and unverified.¹¹⁴ A culture of excessive secrecy has inhibited the development of an informed public debate on national security issues.¹¹⁵ The media are relatively active but have no specialized analytical focus¹¹⁶ and there are no routines through which they can acquire and synthesize disaggregated information on the decision-making structures. Their responsibility to inform the public, which would in fact help to build public confidence in decision makers, is ill-served by the distance maintained by the civilian and military bureaucracy. A process of constructive engagement in public concerns by the security bureaucracies through informed and educated defence correspondents would pay dividends in the long run. A small step in the right direction was taken with the establishment of a war correspondents' course, exposing journalists to the organizational structures, weapons and state of preparedness of the armed forces.¹¹⁷ An informed public is a confident public, and a confident public understands and is tolerant of the limitations of the decision-making process.

Academic research suffers from similar limitations, as well as from a diversion of talent to more remunerative disciplines. There is an ongoing struggle between the desire to keep the public informed and the need to keep certain information confidential.¹¹⁸

Four damaging consequences of excessive confidentiality have been identified: (a) there is insufficient examination of the rationale for weapon system procurement; (b) there is a greater likelihood of corruption in arms procurement; (c) an inadequately analysed procurement policy leads to inefficiencies and can have unhealthy consequences for national security; and (d) opacity in decision-making processes damages public confidence in the armed forces, which are consequently subjected to needless controversies.¹¹⁹ The military's professional credibility and objectivity of government decisions consequently suffer. The official argument is that decisions are made according to rules, but the public needs to know if the rules are archaic and irrelevant or whether parliamentary processes have made them effective.

¹¹⁴ 'In practice, a huge gap exists between what is ideal and what is actually practised in the three arms of the defence services . . . the system defies scrutiny by any segment of the democratic polity.' Nayar (note 113), p. 7.

¹¹⁵ *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), p. 29.

¹¹⁶ Dinesh, K., 'Need for military-media interaction', *Indian Defence Review*, vol. 10, no. 3 (July-Sep. 1995), p. 72; and comments by Inder Malhotra at the CPR-SIPRI Workshop, New Delhi, 1 July 1995.

¹¹⁷ Natarajan and Chakraborty (note 9), pp. 26, 67.

¹¹⁸ The MoD usually says that it is in the public interest not to reveal information. Prasanan (note 3). A former Chief of Army Staff, Gen. K. Sundarji, says that politicians, bureaucrats, the armed forces and the media have aided and abetted a conspiracy of silence. 'Too much secrecy', *Times of India*, 14 Feb. 1991.

¹¹⁹ Singh (note 46), p. 18.

There is, however, an undercurrent of opinion that suggests that excessive secrecy is becoming a liability and that there should be greater transparency with respect to financial and procurement procedures.¹²⁰ Experts have begun to suggest that some non-sensitive information could be treated as public.¹²¹ Within the limits of military confidentiality, clear information about arms procurement processes for the legislative oversight bodies would permit a better public understanding of deviations from the formal procedures. According to Kaushal, 'the secrecy shrouding procurement, the protection given to loss-making resource-devouring defence production units and the atmosphere of secrecy that blankets defence in India creates a nest of corruption among bureaucracies, procurement agencies, and politicians'.¹²² For example, although since 1985 the MoD has officially banned dealings with the agents of foreign suppliers by executive order, about 80 agents are reported to be involved in the transport and testing of systems and finalizing contracts.¹²³ An MoD proposal to ban arms sales agents by legislation was turned down as untenable. Although the DPSUs are in the public sector, they are exempt from the ban on dealing with foreign contractors and have gradually become importers as well as manufacturers of defence equipment.¹²⁴

Cultural barriers to the flow of information are common in the Indian bureaucratic system. The pulls of caste and common social backgrounds are stronger than organizational loyalties and affect recruitment to the Civil Service.¹²⁵

Personal relationships in professional communication

A prominent characteristic of the Indian style of political decision making is the emphasis on personal relationships and their influence on professional communication. Working relationships centre around factions and groups rather than institutions and professions. The electoral power struggle has been largely dependent upon caste and community. Social divisions, which form the basis of political voting blocs, create deep-rooted adversarial relationships. The attitude

¹²⁰ Jafa (note 17), p. 15; and Kaushal, N., *India's Defence Budget: Can it be Reduced?*, ACDIS Occasional Paper (Program in Arms Control, Disarmament and International Security, University of Illinois at Urbana-Champaign: Urbana, Ill., Feb. 1995), pp. 9–11. As in the Soviet defence industry, lack of transparency contributes to inefficiencies. Comments by G. K. Arora, former Secretary, Ministry of Finance, at the CPR-SIPRI Workshop, New Delhi, 1 July 1995.

¹²¹ Jafa (note 17), p. 15.

¹²² Kaushal (note 120), p. 10. According to retired Major-Gen. V. Saighal, the overstaffed and under-performing defence departments have institutionalized corruption on an awesome scale. Saighal, V., 'Downsizing for defence preparedness', *Economic Times* (New Delhi), 17 Feb. 1996.

¹²³ Bedi (note 15).

¹²⁴ Bedi, R., 'Back-door brokering', *Indian Express*, 17 Jan. 1997.

¹²⁵ Panini, M. N. and Kumar, V. R., 'The sociology of strategic decision making on national security issues in India', SIPRI Arms Procurement Decision Making Project, Working Paper no. 17 (1995), pp. 9, 12. On the influence of personal relationships in India, Paul Brass says: 'a state-level faction in Uttar Pradesh will have its inner core of followers personally attached to the leader in an emotional fashion. Journalistic accounts indicate similar factional manoeuvring at the national level and in other states'. H. Gould claims that, 'while Indian politicians have been able to transcend *jati* (caste) boundaries, the modernisation of their behaviour goes no further . . . having factions behave like *jatis* seems part of the natural order of things'. Both are paraphrased in Hoffman, S., 'Faction behaviour and culture codes: India and Japan', *Journal of Asian Studies*, Feb. 1981, pp. 235–36.

which politicians tend to display when voted into power reinforces the existing polarization in the public service. Despite attempts to establish secular institutions, Indian public administration has generally not been able to break free from traditional ways of thinking, moulded by caste and community.¹²⁶ Professional communication tends to develop among colleagues from the same cultural and social backgrounds, and professional relationships are based on personal trust rather than institutional norms or competence. Public servants spend a significant amount of time and energy in building contacts rather than on policy planning, monitoring and implementing decisions.¹²⁷ Personal contacts are weighed above delegation and decentralization.

Partly as a result, an extreme style of centralization and non-delegation of authority has been practised by several of India's prime ministers. General K. Sundarji, former Chief of Army Staff, believes that Prime Minister Jawahar Lal Nehru's personality restricted the growth of policy-making institutions: 'Nehru's taking over of policy making as a personal fiefdom did not permit the growth of [a] healthy tradition of consultations between ministries concerned with national security policies'. He goes on to say that 'bureaucracy functioned only as rapidly as Nehru could handle the vast amount of paper that crossed his desk', implying that the individuals on whom Nehru relied had a dominant influence on the information presented to him.¹²⁸ Major General D. K. Palit, Director of Military Operations during the 1962 Sino-Indian War, blames Nehru's leadership style for the breaches of procedure that crept into the MoD.¹²⁹ The view that issues pertaining to national security and international relations were too sensitive to be discussed in detail publicly meant that strategic decision making was confined to a select group in the Indian Government. Prime Minister Indira Gandhi's disregard for established procedures made formal national security structures difficult to operate,¹³⁰ while Rajiv Gandhi only sought the opinion of his few trusted advisers, and the centralization of decision making on national security matters was apparent during his rule as Prime Minister.¹³¹

This centralization of decision-making authority and the bypassing of official procedures became the norm. The Prime Minister's informal approval was

¹²⁶ Panini and Kumar (note 125), pp. 8, 12. The influence of astrologers and god-men on ministers is indicative of the influence of intuitive judgement on decision-making behaviour. Sehgal, R., 'Star struck in the capital', *Times of India*, 18 May 1997, p. 1.

¹²⁷ Panini and Kumar (note 125), pp. 10–11.

¹²⁸ Sundarji (note 76); and Vertzberger (note 109), p. 82.

¹²⁹ Panandikar and Mehra (note 5), p. 177.

¹³⁰ During Prime Minister Indira Gandhi's rule the locus of strategic decision making shifted to the Prime Minister's Office, which became a critical centre in the Government for processing important decisions as it informally took over many of the coordinating functions of the Cabinet Secretary and his influence declined. Panini and Kumar (note 125), p. 3; and Panandikar and Mehra (note 5), p. 183.

¹³¹ In 1986 Prime Minister Rajiv Gandhi set up a Policy Advisory Committee, under the chairmanship of G. Parthasarthy, to take a long-term view of national security and foreign policy. Its members were his close confidants, including Arun Nehru, Minister of State for Home Affairs, and Arun Singh, then Minister of State for Defence. Sinha (note 3), p. 28. During his 5-year tenure, Rajiv Gandhi had 4 defence ministers, including himself for 16 months, and 6 ministers of external affairs, including himself for 22 months. Panandikar and Mehra (note 5), pp. 185–87.

required for a variety of decisions. The decision-making powers of the Prime Minister's Office have been further centralized through its direct access to the intelligence agencies. This has not only politicized the intelligence services but also generated uncertainty among top-level bureaucrats.¹³²

Decision-making tends to be episodic, not only in the security field but also in the entire domain of public policy making. A lack of professional trust within governments and between governments and Parliament has inhibited decision making, monitoring and post-decision analysis at the highest levels. A similar pattern is evident in the style of arms procurement decision making. That defence policy and defence R&D management are determined by personal relationships can be observed at various levels of the decision-making hierarchy.¹³³ This relationship orientation was illustrated by the Westland helicopter purchase¹³⁴ and by the decision-making styles of certain service chiefs. Some spend more time redesigning uniforms than designing ways to build up the long-term capacities of their armed services. Under these circumstances, such moribund bodies as the ISEPC could provide greater continuity and consistency than a service chief driven by personal preferences.

Resistance to change

A traditional belief system and a negative attitude to dissenting professional opinion have been the bane of India's management of security. Vertzberger's observation that 'Indian decision makers' adherence to outdated perceptions and evaluations over painful and realistic reevaluation of the situation leading to India's conflict with the Chinese'¹³⁵ is still valid today.

The question is whether this persists because specialized technical and management education is not yet sufficiently diffused through India's military and security bureaucracies, thus maintaining a traditional reliance on manpower as opposed to productivity based on technology. The Indian military's technical productivity is reflected by the poor levels of serviceability of its advanced equipment¹³⁶ and is much lower than in the user services of supplier countries. This hampers the development of indigenous equipment optimized for the Indian operational environment. More advanced technical education would better meet the wide-ranging requirements of development, production, testing

¹³² Interview by the author with P. R. Chari, May 1996; and Natarajan and Chakraborty (note 9), p. 94. A recent ruling of the Supreme Court placed the central intelligence services under the control of an autonomous central vigilance commission.

¹³³ 'The decision making in prescribing staff requirements is highly personalized in this country. Often with changes in the leadership in an armed service, staff requirements tend to change with personal predilections of the decision maker.' Subrahmanyam, K., 'Defence R&D management', *Economic Times* (New Delhi), 2 Nov. 1995.

¹³⁴ The Westland sale was unprofessionally handled because of the strained relations between Rajiv Gandhi and British Prime Minister Margaret Thatcher. The helicopters were obsolete and unfit for use in the offshore oilfield work for which they were bought. Interview by the author with P. R. Chari, May 1996.

¹³⁵ Vertzberger (note 109, p. 77) quotes former senior Indian officials to support his observations.

¹³⁶ A survey of CAG reports over the years reveals low levels of maintenance and operational readiness of equipment. Dixit (note 74) estimates that the Indian Navy is only about 40% seaworthy.

and procurement of advanced weapon systems, as well as adapting or upgrading existing equipment or innovating. Poor user–developer interaction is a direct consequence and the armed services tend to change their quality requirements without regard to what is technically feasible.¹³⁷

Outdated and inadequate management skills for planning, R&D and production were evident in the case of the import of Romanian AKM rifles.¹³⁸ A study by the Indian Institute of Management in Ahmedabad advises the Army Ordnance Corps to transform itself into a materials management organization in order to improve a procurement process characterized by long lead times, poor information systems and an over-stocked inventory encumbered by a multi-echelon organization.¹³⁹

The generalist educational background of the military prevents it from keeping pace with technological change and the rapid reshaping of the user environment. It impairs interaction with technologists in R&D, production and maintenance agencies during the entire life cycle of weapon systems and reinforces reliance on procedures, limiting opportunities and ideas for innovation. In militaries with a technology-oriented organizational culture, qualitatively higher orders of productivity, technology absorption and adaptation are found.

According to observers of India's major technology projects, the record of the DRDO is one of failure rather than success.¹⁴⁰ Even though its work is applied research and demands engineering skills, it lacks engineers with advanced research backgrounds.¹⁴¹ The fact that its ratio of auxiliary and administrative

¹³⁷ Because technical aspects were not properly understood, the army revised its qualitative requirements for the Arjun tank twice. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), p. 22. Performance requirements appear to be compiled by the staff of the armed forces from the best characteristics of weapon systems of the same category from different countries. Subrahmanyam, K., 'Defence R&D management', *Economic Times* (New Delhi), 2 Nov. 1995. According to Lt-Gen. Harwant Singh, the General Staff tends to pitch its qualitative requirements high, more or less in conformity with equipment in more modern armies, sometimes unrelated to South Asian battlefield conditions. On the other hand, the DRDO tends to make ambitious time estimates for the completion of R&D projects. Comments by Air Marshal K. D. Chadha at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

¹³⁸ Inaccurately reported in the Indian press as AK-47s. 100 000 AKMs were bought to fight the insurgencies in Kashmir and Punjab. 'Army buys one lakh Romanian AK-47s', *Indian Express*, 6 Aug. 1995. According to one report, ammunition for them had not still been bought in Dec. 1996. *The Tribune* (Chandigarh), 5 Dec. 1996. An Indian small-arms system, comprising a 5.56-mm calibre rifle, light machine-gun and carbine, was accepted for introduction in 1982, intended to be locally produced and to be completed in 1988. In May 1994 a contract to import 5.56-mm rifles was concluded as the 3 weapon systems were still at different stages of development. *Report of the Comptroller and Auditor General* (note 19), pp. 105–20. CAG reports describe many similar limitations in technology management. See, e.g., *Report of the Comptroller and Auditor General*, no. 9 (New Delhi, 1995), pp. 16–24, 81–82.

¹³⁹ Ghosh (note 28), p. 255.

¹⁴⁰ Jha (note 99), p. 5. According to Vice-Admiral K. K. Nayyar, 2 major factors contributing to the DRDO's weakness are its lack of performance and capability audit and an organizational attitude that fails to ensure accountability. On the other hand, the impractical demands on system performance and development schedules of the armed forces do not give the DRDO a fair chance to develop systems. Comments at the CPR–SIPRI workshop, New Delhi, 1 July 1995.

¹⁴¹ A review of the education profile of one DRDO laboratory revealed that it should have been 80 : 20 engineers : natural scientists, whereas only 20% of the scientific staff had engineering degrees, 27% had degrees in mathematics and physical sciences, and 48% were considered unqualified for R&D work. *Report of the Comptroller and Auditor General* (note 19), pp. 219–20. The DRDO runs a postgraduate research and training scheme for electronics, mechanical engineering and allied disciplines to make up for the lack of engineers with advanced technical qualifications. Ministry of Defence (note 34), p. 57.

staff to engineers and scientists is more than four times that found in private-sector R&D organizations indicates that resources are not being used as effectively as they could be and that productivity could be higher.¹⁴²

Lack of understanding of technology development processes and the resulting weakness of monitoring lie behind resistance to change and behind much waste and many mistakes. This was evident in the absence of a parliamentary debate on the DRDO's 10-year self-reliance plan (up to FY 2004/05) or on its consistency with the DDR&D 15-year perspective plan (up to the year 2000). Had there been a parliamentary assessment of the DRDO plan based on technicalities, public scrutiny might have focused on such questions as monitoring and evaluation, periodic review mechanisms, the feasibility of the plan in the light of such problems as technology obsolescence, the effects of new weapon systems emerging on the market, development lead times of 15–20 years or more, past levels of indigenization achieved by the DRDO, and the fact that the technology-generation cycles of components and sub-assemblies are becoming shorter than the life cycles of major weapon systems.

A survey of major weapon systems under development in India reveals that their R&D time in some cases will be nearly as long as their expected service life and that their rate of obsolescence will therefore be faster.¹⁴³ A number of factors account for this: (a) the armed forces pitch specifications beyond the horizon of technical feasibility; (b) the DRDO seizes the project and the funds allocated to it in the expectation that performance requirements will be reduced; and (c) there are difficulties arising from design problems, limited expertise and thinly spread technical and financial resources. Post-development problems include difficulties in converting prototypes into production models, lack of production facilities and financial constraints which between them raise unit costs and make indigenous models unaffordable.¹⁴⁴ It is a moot point whether a monopolistic agency can be internationally competitive if it enjoys autonomy in a country's technology assessment, development, quality assurance and evaluation.

Strong traditionalism and the lack of a broad base of advanced technical education in the armed forces handicap long-term security forecasting and are to a great extent responsible for the lack of associated capacities—in financial assessment, technology assessment, systems analysis and operational research.

¹⁴² Auxiliary staff, such as technical assistants, surveyors and draughtsmen, are responsible for the maintenance of equipment and machinery and preparation of materials for experiments and tests, while administrative staff carry out clerical, messenger and janitorial functions. In 1992 there were 3.48 auxiliary and administrative personnel for each engineer in the DRDO. In the private sector the proportion was 0.84 and in the R&D sector overall 2.07. India, Ministry of Science and Technology, *R&D Statistics, 1992/93* (Ministry of Science and Technology: New Delhi, 1993).

¹⁴³ Kalra (note 23), p. 6. The LCA, Arjun tank and ALH have been on the drawing-boards, in R&D laboratories and on test tracks or flights for almost 2 decades.

¹⁴⁴ Ghosh (note 28), pp. 307–308. A senior DRDO official has said that 'the DRDO does not carry out detailed financial assessment because neither the organization has skills nor does it want to do that because the project would take longer than the lifetime of the equipment'. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

However, national-level decision-making processes have shown a certain responsiveness in crisis situations.

V. Conclusions and recommendations

Long-term planning

The escalating costs and the rate of obsolescence of advanced weapon systems compel integrated defence planning and advanced technology capacity. Indian arms procurement decision-making processes have not yet incorporated long-term technology development or engineering capacity building into the national planning system. Pointing to isolated areas of achievement in India, A. P. J. Abdul Kalam observes: 'If we integrate the work done by various research institutions, we could set up a chain reaction to ensure speedier development'.¹⁴⁵

One expert in the field maintains that 'arms procurement decision making involves a complex range of factors: although the process of defence allocations begins with taking into account national and societal needs, it gets diffused between the military users, the bureaucratic examination and political choice'.¹⁴⁶ It is nevertheless difficult to find evidence of structures, methods and capacities within the military organizations engaged in arms procurement that consider national and societal priorities before presenting the military's needs. Demands for public accountability are seen from the perspective of organizational interests as opposed to national and societal interests.

While government officials are constrained by the pressures of routine work, their horizon for conceptualizing, forecasting and defining policy alternatives is restricted by their short tenure in a particular job. Policy planning staff need years to mature their thinking in a particular specialization before it can develop into a well-grounded expertise—an approach which is antithetical to the way bureaucrats or military officers advance in their careers.

Accountability

For India's democratic processes to be made more stable, it needs to develop greater government accountability to the legislature and in turn to the people of India, thus developing public confidence in decision making. The parliamentary standing committees are suitable instruments to channel the Government's accountability and develop an objective public opinion on security issues.

An account of political organization during the conflict with China says that:

¹⁴⁵ A. P. J. Abdul Kalam, cited in a communication from M. Zuberi, 9 Dec. 1996.

¹⁴⁶ 'Involvement of all agencies concerned brings in checks and balances . . . and makes for increased accountability. Coupled with the need for confidentiality, it makes the description of the total process difficult.' Kalra (note 23), pp. 2–3. According to V. K. Nair (Brig., ret.), 'Instead of decrying lack of transparency, the problem of accountability needs to be addressed . . . adequate transparency needs to be introduced in the system to hold responsible authorities accountable . . . methods which as of now do not exist'. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

Among parliament members, only a handful had the knowledge and experience to analyse and investigate the activities of the Indian Army. But even those few had neither the authority nor the ability, nor the necessary means to do any of that: the major policy makers kept them utterly in the dark. The annual report issued by the Ministry of Defence, for example, which was meant to describe the annual activities of that Ministry, really provided only the most insignificant information, while the parliamentary committee responsible for defence affairs, attached to the Ministry of Defence, had no formal status and hence was 'toothless'. Parliament therefore had no access to the proper information, nor was it able to call on involved officials to testify before it. As for the Indian press, newspaper editors could publish only what was given them by the authorities in the Ministry of Defence.¹⁴⁷

Another observation from 1995 suggests how far the Indian Parliament has advanced towards this goal over the past three decades:

[Some] fundamental constitutional reforms are needed to make the system really representative, responsible and responsive (in other words more accountable to the people). However the tragedy is that the politicians (and bureaucrats) are sick even of the minimal accountability that lingers in the existing policy and they would like systematic changes only to do away with it in order to ensure greater and unhindered 'stability' of their governments.¹⁴⁸

P. S. Jha, Press Adviser in the Prime Minister's Office in the Janata Dal Government in 1990, believes that legislative oversight is limited by the Government's frequent citing of the need for secrecy and by the absence of a secretariat for the Standing Committee on Defence to call in experts and commission studies. The situation is characterized by the view that the control of information is an instrument of power. 'Successive Indian governments have denied information to the citizens under the assumption that if shared, what in consequence is being shared is also power.'¹⁴⁹ According to Kashyap, the parliamentary committees examine and oversee implementation of policies by the administration, not what ministers have done.¹⁵⁰

The Indian Parliament has not shown initiative in resolving the conflict between the public's need for information and the need for military confidentiality. Parliamentary committees are divided in their interest in seeking information and the members of the party in power and those in opposition appear to align themselves with their party instead of developing a professional attitude in their oversight functions and a constructive engagement with the Government.¹⁵¹

To improve the level of insight and understanding of security policies and to provide it with better information (in keeping with the genuine requirements of military confidentiality), the large, unwieldy Standing Committee on Defence,

¹⁴⁷ Vertzberger (note 109), p. 85.

¹⁴⁸ S. C. Kashyap, communication with the author, 29 July 1995.

¹⁴⁹ Singh (note 46), p. 9.

¹⁵⁰ Kashyap, S. C., *Economic and Political Weekly* (Mumbai), 6 Oct. 1990, pp. 2278–79.

¹⁵¹ Interview by the author with S. C. Kashyap, 30 May 1996.

responsible for oversight of the MoD, could be restructured into smaller, more focused subcommittees specializing in such issues as: (a) security policy and threat assessment; (b) procurement, R&D and production/industrial issues; (c) human resources planning, education and training; (d) financial planning, budget and audit; (e) defence management; and (f) internal security. Small, efficient subcommittees would benefit the decision-making process as they could sharpen the executive's decisions against the test of wider judgement, pre-empt criticism, and share and exchange sensitive information in confidential hearings. At the same time they could communicate concerns to the national executive. It is understandable if the military and the R&D bureaucracy resist this approach because it takes time or breaches the requirements of confidentiality. As professionals they would prefer to retain an element of latitude in their planning and implementation. On the other hand, the likelihood of financial misadventure and waste of effort through technological or resource overreach would also be reduced.

Such a system of subcommittees would also provide a forum for various agencies of the executive to air their differences without lobbying with the media. It would help the public and its elected representatives to understand the complexities of such decisions, the level of uncertainties and the difficulties which the national executive has to face.

Some of the deficiencies of Indian security policy making and arms procurement decision making identified here could be addressed by developing a framework that facilitates access to diverse professional opinions in the political, defence, economic and technological fields. A higher level of professional expertise in the country at large would serve the parliamentary committees in examining policy alternatives and exercising oversight.

Notwithstanding the limitations in Indian arms procurement planning and implementation, the level of debate and freedom of the press offer a notable potential for improving accountability in the system. Improvements in the quality of professional analysis in the media and in the academic world will improve the public understanding of defence issues, which appears to be the main obstacle to developing an assertive legislative oversight.

In the present climate there is a tension between the need for efficiency, implying confidentiality in the interests of speedy decision making, on the one hand, and the requirements of accountability, implying oversight, balance or restraint, on the other. If the issue of accountability is to be raised in the context of the larger interests of society, a public debate must define the criteria for needs of confidentiality, taking into account the military's point of view. This debate has yet to take place in India.¹⁵² It is important that national security does not become a standard argument for avoiding accountability for institutional waste, fraud, abuse, professional neglect or inefficiencies. An attitude of evasion and a proclivity for inaction result from the differing views of their

¹⁵² The issue of the public's right to information was reflected in the manifesto of the Janata Dal Party in the 1996 parliamentary elections.

own accountability among the various committees of the executive and the legislature.

The military's requirements for confidentiality are legitimate so long as they relate to its plans and capabilities. It is with processes, procedures and methods that abuses creep into the system unless there is public accountability. The need, therefore, is to develop oversight and audit processes and skilled parliamentary subcommittees assisted by professional expertise.

The United Front Government in early 1997 proposed a Freedom of Information Act which would oblige the Government to provide information on all subjects—except matters of national security and foreign relations.¹⁵³ Its exclusion of procedures and processes relating to all the functions of the armed forces or the foreign services is inconsistent with the very objectives of the proposed legislation. It would be erroneous to assume that these two bureaucracies are innocent of waste, fraud, abuse or functional inefficiencies.

The challenge is to raise the level of trust between the Government and the public, represented by legislative oversight bodies which would seek to establish whether variations from the decision-making norms are exceptions and not normal practice, that there are no extra-constitutional incentives at play which bypass the process or misuse it through lobbies exaggerating threat perceptions,¹⁵⁴ and that the procedures and processes are reviewed to keep up with changes in technology and emerging threats. If the public or its elected representatives are unable to ask questions about the performance of security-related projects, the responsible government bodies lose not only public confidence but also their capacity to perform to their full potential. It is not suggested that sensitive issues be laid bare to public scrutiny, but a debate needs to be initiated to decide what is sensitive and why—a question which is relevant to all fields of public policy making and governance in India.

Auditing

Statutory auditing should cover the wider aspects of arms procurement decision making and the methods used for selection, negotiation, procurement, maintenance and operation of the equipment. Ideally, it should also examine the following questions related to arms procurement. Was the system necessary and what were the alternatives? What were the qualitative requirements? What should the delivery schedule have been? What kind of training and maintenance facilities were required? What support and maintenance facilities are available within the country? How many items should have been ordered? What are the differences between estimated and actual life-cycle costs? How did weapon performance compare with pre-procurement criteria? Was the operational and

¹⁵³ Singh, G., 'Freedom of Information Act proposed', *Times of India*, 23 Feb. 1997, p. 1.

¹⁵⁴ Air Marshal B. D. Jayal expresses concern for those who are lobbied, hoping—for the sake of India's security—that they will not be swayed by extraneous considerations. Jayal, B. D., 'IAF's ad hoc ways', *Times of India*, 9 July 1996, p. 10.

technological obsolescence materially different from that estimated at the start of the project?¹⁵⁵

A comprehensive analysis of the programme and life-cycle costs of major weapon systems should be an essential element of the audit, and requires assessment by experts from different disciplines. The lack of such analysis means that the picture of the burden of the weapon systems on society is incomplete and cost–benefit assessments misleading.¹⁵⁶

A way of addressing the limitations in monitoring major R&D programmes would be to set up R&D project-monitoring capacities in the user services or an independent R&D quality assurance authority, which should report to a cabinet-level authority independent of the DRDO. Such agencies should also produce mandatory annual reports giving reasons for time and cost overruns to statutory audit authorities and the legislative oversight bodies. In addition to monitoring agencies, expertise must be developed in systems analysis and financial and technology assessment, independent of the MoD. Currently, the Indian arms procurement process remains dependent on a monopolistic state R&D agency which controls both information and the quality of the end-product. Even a systematic process of long-term force design and procurement can have elements of uncertainty and delay, but it appears that the consistent pattern of time and cost overruns of almost all the major DRDO projects has still not been investigated.

Concluding remarks

This chapter might give an impression that the Indian security establishment has, over the years, not managed its arms procurement decisions in an efficient manner. It can be argued that, in measuring the military's cost–benefit ratios, India has acquired weapon systems which give it competitive returns in terms of combat power for its financial investments. However, this interpretation could be misleading in the absence of public data on the total costs of ownership of weapons and the true burden they place on society.

This study examines how far arms procurement decision making in India is accountable to the public. In this sense, taking into account India's democratic processes, its well-established statutory audit process, a free press and a liberal attitude to public inquiry, much more can be done to harmonize arms procurement decision making with the broader needs of security and public accountability.

¹⁵⁵ Kumaran (note 4), p. 12.

¹⁵⁶ E.g., a comprehensive financial assessment of the life-cycle costs of the Su-30 combat aircraft contract has never been made. Estimates vary between Rs 6300 crore [\$1.73 billion at the 1997 average rate of exchange] (*The Statesman* (New Delhi), 17 Mar. 1997) and Rs 7000 crore [\$192 billion] (*Times of India*, 8 Jan. 1997, p. 9). Current rates of exchange from *International Financial Statistics*, Mar. 1998, note 18. One crore = 10 million. The CAG does not engage consultants, so that it is difficult to achieve the desired levels of statutory audit. Joseph (note 111).

Appendix 3A. India's defence R&D and production establishments

R&D establishments

Aeronautics

- Aerial Delivery Research and Development Establishment (ADRDE), Agra—*aerial delivery of items and parachute recovery systems*
- Advanced Systems Integration and Evaluation Organisation (ASIEO), Bangalore—*weapon systems integration, flight testing and evaluation*
- Aeronautical Development Establishment (ADE), Bangalore—*PTA, fly-by-wire control system for the LCA and electronic countermeasure equipment*
- Centre for Airborne Systems (CABS), Bangalore—*airborne systems and development of the airborne surveillance platform*
- Gas Turbine Research Establishment (GTRE), Bangalore—*aero-engines, military turbines, development of the Kaveri engine*

Armaments and combat vehicles

- Combat Vehicles Research and Development Establishment (CVRDE), Avadi (Madras)—*combat vehicles*
- Vehicle Research and Development Establishment (VRDE), Ahmednagar—*armaments and special-purpose vehicles, tank transporters and trailers*
- Proof and Experimental Establishment (PEE), Balasore—*development of armaments and technical analysis of field gun*
- Armament Research and Development Establishment (ARDE), Pune—*electromagnetic and liquid propulsion systems, armament instrumentation, multiple rocket-launcher system and mines*
- Institute of Armament Technology (IAT), Pune—*armament technology, materials development*

Computers and systems studies

- Advanced Numerical Research and Analysis Group (ANURAG), Hyderabad—*computer hardware and software*
- Centre for Artificial Intelligence and Robotics (CAIR), Bangalore—*artificial intelligence*
- Centre for Aeronautical System Studies and Analyses (CASSA), Bangalore—*systems analyses of aeronautical projects*
- Defence Institute of Work Study (DIWS), Mussoorie—*study of work techniques*
- Institute for Systems Studies and Analyses (ISSA); Delhi—*operations research, systems analysis techniques and computer war games*
- Scientific Analysis Group (SAG), Delhi—*theoretical analysis of scientific and technical problems relating to defence*

Electronics, instrumentation and communications

- Electronics and Radar Development Establishment (LRDE), Bangalore—*radar systems, communications and electronic equipment*
- Defence Research and Development Unit (DRDU), Calcutta—*communication and switching equipment*

Defence Electronics Application Laboratory (DEAL), Dehradun—*digital and satellite communications*

Instruments Research and Development Establishment (IRDE), Dehradun—*instrumentation for weapon systems and thermal imaging*

Defence Science Centre (DSC), Delhi—*gas dynamic laser and ring laser gyroscope*

Defence Electronics Research Laboratory (DERL), Hyderabad—*radar systems and advanced communications systems*

Microwave Tube Research and Development Centre (MTRDC), Bangalore—*advanced microwave tubes*

Engineering

Research and Development Establishment (Engineers), Pune—*development of bridges, trackways and mobility equipment*

Defence Terrain Research Laboratory (DTRL), Delhi—*research into combat effectiveness in diverse terrains*

Snow and Avalanches Study Establishment (SASE), Manali—*implications of snow and avalanches for military operations*

Explosives research and safety

Centre for Environment and Explosives Safety (CEES), Delhi—*storage and transport safety measures for hazardous materials and weapons*

Defence Institute of Fire Research (DIFR), Delhi—*fire detection and suppression research*

Explosives Research and Development Laboratory (ERDL), Pune—*high explosives, solid rocket propellants and high-energy polymers*

Life studies

Defence Bioengineering and Electromedical Laboratory (DEBEL), Bangalore—*biomedical engineering*

Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi—*applied physiology and neurophysiology*

Defence Institute of Psychological Research (DIPR), Delhi—*psychological tests for aptitude and skills*

Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi—*advanced nuclear medicine therapy and biomedical research*

Defence Research and Development Establishment (DRDE), Gwalior—*studies in toxicology and development of antibodies against bacterial, viral and chemical agent poisoning*

Defence Agricultural Research and Development Laboratory (DARDL), Haldwani—*agricultural research in high-altitude areas*

Field Research Laboratory (FRL), Leh—*food technologies*

Defence Food Research Laboratory (DFRL), Mysore—*ready-to-eat nutritious food*

Defence Research Laboratory (DRL), Tezpur—*food technology*

Materials

Solid State Physics Laboratory (SSPL), Delhi—*solid-state materials and components*

Defence Metallurgical Research Laboratory (DMRL), Hyderabad—*composite armour, precision optical assemblies and artificial intelligence*

Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur—*extreme cold-weather clothing and hydraulic fluid for submarines*

Defence Laboratory (DL), Jodhpur—*polymeric composites*

Missiles

Interim Test Range (ITR), Balashore—*provision of data for ballistic missiles*

Terminal Ballistics Research Laboratory (TBRL), Chandigarh—*ballistics of specialized weapon systems and missiles*

Defence Research and Development Laboratory (DRDL), Hyderabad—*design, development and quality control of missiles, and the IGMDP programme*

Research Centre Imarat (RCI), Hyderabad—*missile technology and training in missile technology*

Naval systems

Naval Chemical and Metallurgical Laboratory (NCML), Bombay—*naval systems chemical and metallurgical products*

Naval Physical and Oceanographical Laboratory (NPOL), Cochin—*naval sonar systems and signal processing*

Naval Science and Technological Laboratory (NSTL), Vishakapatnam—*naval technology, especially sonar systems*

Defence manufacturing entities

Defence public-sector undertakings (DPSUs)

1. Hindustan Aeronautics Ltd. The largest aeronautical complex in Southern Asia with 12 divisions—*design, development, manufacture, repair and overhaul of aircraft, helicopters, engines and related systems such as avionics, instruments and accessories*
2. Bharat Electronics Ltd. An electronics manufacturing organization—*design, development and manufacture of advanced radar for military and civilian use, communications equipment, and optical and opto-electronic equipment*
3. Bharat Earth Movers Ltd—*production of mining, construction and railway equipment, and products relevant to core sectors such as steel, coal and power*
4. Mazagon Docks Ltd—*production of warships, submarines, missile boats, destroyers, frigates, corvettes and patrol vessels of up to 6000 tons and merchant ships up to 27 000 dead weight tonnage (DWT) including well platforms for oil and natural gas extraction*
5. Garden Reach Shipbuilders & Engineers Ltd.—*production of warships and auxiliary vessels, ship-borne equipment, portable steel bridges, diesel engines, marine sewage treatment plants, and repair and overhaul of ships*
6. Goa Shipyard Ltd—*design, construction and repair of ships for the navy and the coastguard*
7. Bharat Dynamics Ltd—*prime agency for manufacture of the Prithvi, Trishul, Akash and Nag missiles; also manufactures small arms for the police and paramilitary forces*
8. Mishra Dhatu Nigam Ltd—*development and production of advanced materials and special alloys for the aeronautical, space, defence, atomic energy and engineering industries*

Ordnance Factories

39 ordnance factories operating under the Ordnance Factories Board are divided into five functional divisions:

1. Materials and components: 10 factories
2. Weapons, vehicles and equipment: 10 factories
3. Ammunition and explosives: 10 factories
4. Armoured vehicles: 4 factories
5. Ordnance equipment group: 5 factories

Sources: Roy-Chaudhury, R., 'Defence research and development in India', *Asian Strategic Review 1994/95* (Institute for Defence Studies and Analyses: New Delhi, 1995), pp. 251–55; and *Report of the Comptroller and Auditor General of India for the year ended 31 Mar. 1992*, no. 8 (New Delhi, 1993), p. 94.