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Evolution of India’s Agni-V Missile
Bureaucratic Politics and Nuclear Ambiguity

ABSTRACT

India’s Agni-V missile test of April 2012 opens new questions as to India’s intentions. This article investigates three principal bureaucratic determinants of Indian military nuclear policy. Greater control over policymaking is required from the Prime Minister’s Office to resolve governance questions surrounding India’s nuclear policy.

KEYWORDS: India, nuclear weapons, bureaucratic politics, Asian security

India’s nuclear forces are entering a new stage of technical maturity. The country’s first indigenous nuclear-armed submarine, the Arihant, is presently on sea trials. Missile testing programs suggest growing progress toward operationalization of India’s ballistic strike capability. The Agni-V missile, first tested off the coast of Odisha on April 19, 2012, encapsulates the choices India now faces. New Delhi must decide the nuclear force best suited to meet its geopolitical ambitions, such as extending its influence in South and East Asian security issues while maintaining its status as a restrained, responsible global power.

The emergence of the Agni-V marks a new juncture in India’s nuclear history. It is the first missile able to reach Beijing and Shanghai, as well as the first to potentially host MIRV (multiple independently targetable re-entry vehicles) warheads. Accordingly, the Agni-V raises a host of related strategic and governance issues facing Indian political leaders, such as the desirable range, size, and destructive capability of India’s nuclear arsenal, along with the effectiveness of elected civilian control over nuclear force development.
To understand these issues, we must first understand how Indian nuclear policy is actually made. This article begins by outlining an approach to understanding Indian nuclear policymaking by employing a “Model III” perspective of bureaucratic politics theory, which emphasizes a fragmented policy process characterized by inter-institutional politics. The article argues that the Agni-V is best understood as a product of the efforts of the Defence Research and Development Organisation (DRDO) to maximize its bureaucratic autonomy against bureaucratic constraints, primarily the Prime Minister’s Office (PMO) and the armed forces. This stands in contrast to standard realist accounts of the Indian nuclear program, which prioritize an external environment of threat in explaining Indian nuclear policy, and with explanations from the domestic politics school, which focus on internal societal and political developments as the key drivers of the program. Furthermore, the article suggests that the military nuclear program has a similar relationship to the bureaucratic imperatives of the Department of Atomic Energy (DAE).

The article then examines the technical qualities and history of the Agni-V missile itself while analyzing the broader institutional roles of the DAE, the DRDO, and the PMO in nuclear policymaking. In contrast to disciplinary frameworks such as realist or domestic politics approaches, the article argues that a “Model III” approach, emphasizing the influence of bureaucratic institutions and their competitive interactions, best illuminates related institutional roles and governance issues. It concludes with policy recommendations, principally focusing on the imperative for the PMO to maintain directive control of the nuclear policy process rather than the current situation in which the DAE and DRDO have substantial discretion to shape the nuclear program in their interests.

IMPACTS OF THE AGNI-V

The Agni-V missile carries new significance for India and stands as an important Indian technical achievement. Operating with a reach of 5,000 km, it brings India to the cusp of intercontinental ballistic missile capability, generally defined as a range of over 5,500 km.1 The missile features new composite materials and could potentially host MIRV platforms, both significant

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technical leaps in missile development. For India’s military agencies, developing and mastering the Agni-V opens new horizons in technological knowledge that can be applied to subsequent projects.

Additionally, the missile has made international political waves. Because the 2012 test brought Beijing, Shanghai, and other distant Chinese cities into India’s missile range, it quickly attracted increased Chinese attention. While Beijing sought to downplay any Sino-Indian rivalry, China’s state-run Global Times newspaper issued a withering response to the Indian launch, asserting that “for the foreseeable future, India would stand no chance in an overall arms race with China.” As China continues to modernize its much more advanced nuclear arsenal, these sentiments suggest the likelihood of escalating strategic tensions between Beijing and New Delhi for the near future.

The 2012 launch also stimulated political debates in Washington. The Obama administration came under domestic pressure to affirm that the Indian test undermined U.S. efforts to reduce strategic tensions within South Asia, and Asia as a whole, while acknowledging the test’s challenge to Washington’s general nuclear non-proliferation agenda. However, the Obama administration repeatedly refused to condemn the test. This marked a major shift away from Washington’s traditional association of Indian missile development with that of North Korea as parallel threats to global stability. The new U.S. reaction of quiet acquiescence to the Indian missile program demonstrates how far bilateral relations have come since the signing of the landmark 2008 U.S.-India nuclear deal, which, in the hopes of building a strategic partnership with New Delhi, abandoned the Clinton administration’s view of India primarily as a proliferation problem.

In addition to the above well-documented technological and political effects, the Agni-V test changed the internal governance of India’s nuclear program by raising several significant policymaking questions that will continue to grow in salience as India builds from the Agni platforms. These revolve around the quality and degree of political control over the military

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nuclear program; the strategic objectives that Indian nuclear weapons are intended to support; and how best to combine such control and objectives to guarantee directive political leadership, ensuring elected civilian political authority throughout the nuclear program. The detrimental consequences for New Delhi of failing to resolve these governance questions will increase as India’s rising economic and military strength, and its impacts on the international system, draws more scrutiny from the international community.

The growing technical capabilities of India’s nuclear arsenal create governance imperatives for Indian leaders to better articulate national strategic goals and recognize them in assigning policy priorities and resources. India’s relevant strategic objectives—namely, the deliberate avoidance of a nuclear arms race with China and Pakistan, enhancement of its strategic partnership with the U.S., and the continued cultivation of India’s global image as a peaceful, responsible power—highlight the importance of centralized control over the disparate agencies responsible for defense policy to ensure that policymaking is firmly linked to these objectives.

**BUREAUCRATIC POLITICS AND DEFENSE POLICY**

There are two principal theoretical explanations for the Indian military nuclear program: the realist and domestic politics schools. Realists emphasize international pressures, including rising nuclear threats from Pakistan and China, combined with American-led pressure directed through the global nonproliferation regime against Indian nuclear efforts, as the initial trigger and continuing reason for an Indian nuclear program to address related threats.6 Scholars from the domestic politics school argue that this realist approach misses the importance of mass domestic political views and pressures in shaping nuclear policy, and that focusing on these issues more accurately explains India’s nuclear history.7


However, neither school substantially focuses their attention on the important bureaucratic influences shaping the nuclear program. Yet, as with any national defense project, the emergence of India’s nuclear triad (air, land, and sea) as a technical reality is managed by government bureaucracies; India’s nuclear triad is thus shaped by internal bureaucratic dialogues and the general tenor of interbureaucratic relations. To best understand Indian nuclear force components as policy outcomes, we argue, requires the identification of the bureaucratic units intrinsic to the policy process. Policy-making on this account is a product of the interests and influence-seeking activities of these units.

Bureaucratic politics theory, with origins in academic efforts to explain policymaking processes primarily in American case studies, claims that the analysis of these units is significant. In particular, this theory underscores the units’ bargaining abilities and constraints. As a pivotal article on bureaucratic political theory scholarship states, government action “can be understood largely as a result of bargaining among players positioned hierarchically in the government. . . . Both the bargaining and the results are importantly affected by a number of constraints, in particular, organizational processes and shared values.”

The article’s coauthor, Graham Allison, envisioned three analytical models of foreign policy construction in terms of bureaucratic politics theory. The first, Model I, resembled the rational, impenetrable unitary state of structural realism. Model II introduced intraorganizational influences, suggesting that ingrained informational and decision-making pathways could shape the policy process. Model III, the “bureaucratic politics” model, further emphasized the fragmented state alluded to in Model II, presenting interbureaucratic competition as a critical factor in understanding policy development and implementation.


An issue that arises when considering bureaucratic politics theory is how to determine the precise influence of bureaucratic politics in a policy process given the presence of other variables. Cultural perspectives and personal preferences, for example, are two potential additional influences. A helpful solution is suggested by Robert Art, whose work on American politics focused on the analytical importance of the political leader’s intent, in his case, that of the president’s: “In short, the gap is not always, nor even usually, considerable between ‘what leaders choose and [what] organizations implement.’ Precisely because the size of the gap is correlated with the degree of Presidential commitment, Presidential intent becomes all the more significant. It is the key variable for determining the applicability of the bureaucratic paradigm.”

Case studies where the political leader offers committed, directive leadership to policy development and implementation therefore suggest the utility of a realist perspective: the state policy process is more likely to assume unitary characteristics in these cases. However, when the political leader takes little interest in the policy issue, perhaps operationally manifesting this in procrastination, incohesion, or delegation of substantive policy responsibilities, the bureaucratic politics model is much more helpful in understanding policy outcomes. Interbureaucratic maneuvers attain greater influence in this policymaking scenario, with greater leeway for their independent policy entrepreneurship.

The Indian nuclear policymaking process lends itself to a bureaucratic politics, rather than a unitary realist perspective. Indian prime ministers have devoted, at best, occasional interest to nuclear policy issues, mainly preferring to delegate substantial levels of policymaking discretion to the DAE and DRDO. Both agencies constitute the main internal governmental lobbies for the expansion of the Indian military nuclear program. The dynamics in Indian nuclear force policymaking can be usefully understood by apprehending the relationships among the DAE, DRDO, and PMO as the three principal bureaucratic units determining policy. The virtual exclusion of the Indian military from nuclear policy input constitutes a significant difference from defense studies in American contexts, thus far the main corpus of bureaucratic politics analyses.

“Model II” and “Model III” bureaucratic politics analytical models could both valuably inform our analysis. Model II highlights the salience of informational pathways to policymaking influence. This becomes particularly relevant in the Indian context, as the DRDO and DAE can report directly to the prime minister through personal briefings regarding their programs. The prime minister also holds the atomic energy ministerial portfolio. These attributes of the Indian policymaking structure grant the prime minister substantial personal oversight over the military nuclear program, given that this officeholder “has always been the only political leader with a say in the program.”\textsuperscript{11} The DRDO and DAE are able to advance their interests directly through the PMO, rather than through an intermediary institution that may distort, limit, or block communication. Because other government agencies, such as the armed forces, lack this privileged access to the top, the informational pathways available to the DRDO and DAE, and the influence inherent in these exclusive pathways, are significant in analyzing policy outcomes.

However, although Model II is useful in drawing out the importance of communicative mechanisms for policymaking, the competitive nature of inter-institutional relations is only captured by the Model III perspective. Agencies necessarily compete with each other for the attention and favor of political leaders, generous allocations from a limited central budget, and executive autonomy to develop and pursue new projects. The informational pathways highlighted by a Model II lens is helpful to understanding policymaking, but only if seen in the competitive context of Model III as a valuable tool for an agency in pressing its interests against those of competitors. The conduct of the DAE and DRDO can be seen as driven by an effort to protect valued communicative links to the prime minister, secure recurrent generous funding, and maintain a high level of autonomy.

What would an examination of the present Indian military nuclear program informed by this Model III theoretical perspective look like? The remainder of this paper provides such an examination. It highlights how Indian nuclear policymaking currently features a remarkable degree of deci-sional and operational autonomy for the DAE and DRDO, with little directive participation or interest from the PMO despite the latter’s position at the apex of the nuclear command chain. With the PMO and the armed forces as the

principal competitors that could curb their autonomy, the DAE and DRDO undertake a wide range of activities to protect their bureaucratic interests.

As the main competitor in determining nuclear policy, the PMO may wish to reduce the DAE and DRDO’s autonomy and strengthen its direct control over their operations. Moreover, the armed forces generally seek to obtain a greater voice in defense technological project planning, reducing the DAE and DRDO’s autonomy. The military nuclear complex for the DAE, and the Agni missile project for the DRDO, constitute politically popular projects for the agencies to promote, given that they represent populist symbols of national strength. Supporting such projects accordingly advances the bureaucratic interests of the DAE and DRDO, giving them popular support and thus more leverage in budget negotiations to protect these popular projects and thereby undermining the interests of competitors. The DAE and DRDO have no interest in limiting these programs, which is a central point for analyzing Indian nuclear policymaking. The interest-advancing activities of both organizations have had visible impacts on the shape and evolution of the Indian missile program.

Given such a policymaking context, a bureaucratic politics approach should offer rich analytic insights into Indian nuclear force development. However, any analysis must recognize the limits of an external academic analysis of highly secretive policy processes. The bureaucratic politics tradition offers theoretical perspectives for understanding the institutional behavior of the DAE and DRDO as an independent variable shaping nuclear force policy. However, this analysis cannot probe far beyond identifying their institutional interests and supporting activities, their respective positions and status in the bureaucratic power structure, and their publicly visible inputs into nuclear force policy. Deeper granularity is simply unavailable to scholars working outside these sensitive policy processes. However, the above approach can still bring greater analytic rigor to the study of Indian nuclear policymaking.

**DEVELOPING THE AGNI-V**

Persistent efforts to upgrade its missile capabilities demonstrate India’s belief that such potential is a strategic necessity. The strategic rationale behind
India’s missile capabilities has been clearly, even ambitiously, articulated by the Indian government:

The acquisition of a missile system capable of delivering conventional or nuclear warhead[s] bridges a key gap in the nuclear deterrent profile of the country. The double distinction of being nuclear-capable and possessor of the means of delivery means that India can hold its head high without fear of being bullied in a hostile security environment. China with its vast nuclear arsenal, Pakistan with its nuclear weapons and delivery system capability, America perching in Diego Garcia[,] and 11 other Asian countries possessing missiles is quite a grim security scenario.\(^\text{13}\)

This overview, explaining the nuclear threats India faces as a rationale for its missile program, delegates questions of the future of the program to the DRDO. Tracing the influence of the DRDO and other bureaucratic actors in shaping the program is therefore essential to understanding its history and current issues.

The Agni missile suite comes out of the Integrated Guided Missile Development Program (IGMDP), launched in 1983 as a major DRDO project with an initial 10-year budget of US$260 million. The IGMDP was approved by Prime Minister Indira Gandhi and involved simultaneous development of Prithvi (short-range surface-to-surface), Agni (intermediate-range ballistic), Trishul (short-range surface-to-air), Akash (medium-range surface-to-air), and Nag (anti-tank) missile projects. A. P. J. Abdul Kalam, a missile scientist managing the Satellite Launch Vehicle-3 (SLV-3) civilian rocket project for the Indian Space Research Organisation (ISRO), was reassigned to lead the IGMDP initiative at the DRDO in 1983, later becoming chief of the DRDO in 1992.

During Kalam’s tenure, the IGMDP projects became intertwined with the agency’s bureaucratic identity. In particular, the success of the Prithvi and Agni missile initiatives, heavily emphasized and celebrated by the agency, politically compensated for shortcomings in other DRDO projects such as the Arjun battle tank and airborne early-warning radar.\(^\text{14}\) Mirroring Kalam’s career shift, the Agni project initially borrowed technology from the ISRO


civilian space program. The first-stage motors of the Agni-I (700 km range) and Agni-II (1,200 km range) originate in the organization’s SLV rocket, while the ISRO built the solid-fuel second stage of the Agni-II.

However, this collaboration imposed costs for these two agencies. Both the ISRO and DRDO were subjected to technological sanctions under the international Missile Technology Control Regime (MTCR) established in 1987 to limit trafficking of missile technology. This reduced the technological development prospects for the ISRO, which, unlike the DRDO, had a dedicated civilian rocket program that also suffered from blanket MTCR sanctions. The Indian government gradually recognized the need to insulate the ISRO from military activities in order for international space collaboration efforts to succeed. Beginning in 1999, military missile activities were therefore conducted solely by the DRDO. The DRDO’s technical successes also permitted decreasing reliance on ISRO technology, with the Agni-III (3,500 km range) and other subsequent missiles being developed entirely in-house. The IGMDP was closed in 2008, and missile projects have been left entirely to DRDO discretion since then. As India’s civilian space agency, the ISRO has had no involvement with military missile projects since the Agni-II’s release in 1999, and indeed has a bureaucratic interest in distancing itself from military programs so that its core civilian initiatives can succeed.

The missile program has overcome the external technological limitations imposed by the MCTR to produce missiles of growing range and lethality. The Agni-V has emerged as the latest symbol of DRDO excellence and national military prowess. Built at a reported cost of US$25 million, the Agni-V is a three-stage, solid propellant missile. The missile is about 17 meters long and two meters wide, with a launch weight of around 50 metric tons; it can carry a nuclear warhead of more than one metric ton. With a range of 5,000 km, the missile enters into the category of intermediate-range ballistic missiles (IRBMs), which range from 3,000–5,000 km. The missile hosts several new navigation, guidance, warhead, and engine technologies. While its shorter-range predecessors, the Agni-I (700 km range) and Agni-II (1,200 km range), were mainly developed with Pakistan in mind, the later versions, the Agni-III and Agni-IV (2,500–3,500 km range), are viewed by Indian strategists as China-centric deterrents.15 The Agni-III, presently being

inducted into the armed forces, shares an almost 60% structural similarity with its successor Agni-V model.  

Calling the launch of the Agni-V a “game changer,” the DRDO Agni-V program director, Dr. Avinash Chander, claimed that other countries’ concern about the missile “shows the impact it has made.” As India’s missile development agency, the DRDO has suggested that it will start working on variants of the Agni-V, including those able to integrate MIRVs and anti-satellite systems, as well as those capable of launching military satellites on demand. The Agni-V is thus treated by the DRDO as a platform for follow-on missile projects, which generate prestige, political capital, and budgetary sustainability for the agency.

The history of the missile program as intrinsic to the fortunes of agencies belonging to India’s strategic complex highlights their importance in explaining Indian nuclear behavior. Operational nuclear policy statements such as those made above by Chander suggest that an analysis of the influence and activities of the DRDO, as well as other relevant agencies, is essential to understanding Indian nuclear policymaking. The following sections will investigate in greater detail the three principal institutions involved in the nuclear program: the DRDO, DAE, and PMO. Their bureaucratic interests, the activities to pursue them, and the consequences of these activities on India’s missile and broader military nuclear program will be analyzed. The Model III approach, emphasizing bureaucratic competition for the ability of one government agency to set India’s nuclear policy agenda, will shed light on the interactions of these three institutions.

**BUREAUCRATIC ACTORS: THE DRDO**

Established in 1958 with the merger of the Technical Development Establishment and the Directorate of Technical Development and Production with the Defence Science Organisation, the DRDO is India’s primary national agency for developing military technologies. Applying a Model III

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approach to studying the DRDO helps illuminate its main bureaucratic interests in, first, protecting its autonomy to develop and manage projects and, second, ensuring continued access to senior policymakers and substantial budgetary allocations for these projects. Given that a Model III approach involves the identification of competitors, we view the armed forces and the PMO as the principal institutional threats to DRDO autonomy.

To forestall bureaucratic military incursions, the agency seeks to minimize military input into project planning and delivery. The DRDO is able to directly brief the prime minister on its programs and associated needs, reducing the risk of intermediary institutions, such as the Ministry of Defence, obstructing its bureaucratic interests.\textsuperscript{19} To diminish the potential of an assertive PMO imposing limits on DRDO missile projects, the agency makes operational policy statements aimed at generating popular political support for further missile development. Furthermore, the agency is internally organized to render it difficult for an outsider to isolate and change specific programs. The Agni-V serves as a product of the agency’s bureaucratic interests in demonstrating the agency’s technical success when left alone by the military and generating popular sentiments supportive of the agency’s drive for further missile projects.

The Indian armed forces have a difficult relationship with the DRDO and difficulty working with its military products. Certain key projects assigned to the DRDO, including the \textit{Arihant} ballistic missile submarine (or SSBN: “ship, submersible, ballistic, nuclear”) project, have either not been completed on time or have resulted in huge cost overruns. In response to this criticism, the DRDO has attempted to assign blame to the military, claiming that the changing requirements of the Indian armed forces are poorly coordinated with ongoing DRDO projects.\textsuperscript{20}

The agency firmly resists permitting the military a voice in its product design and delivery planning. It appears that military involvement in DRDO activities only occurs during the testing of the DRDO’s final product for military training purposes. Furthermore, the head of the DRDO Advanced Systems Lab has claimed that the agency has a better track record with

\textsuperscript{19} For examples of recent briefings, see Press Trust of India, “Cabinet Committee on Security Asks DRDO to Accelerate Military Projects,” \textit{Economic Times}, April 4, 2013; and idem, “Agni V: DRDO Chief Briefs PM on the Ballistic Missile,” ibid., April 21, 2012.

missiles than in other defense projects because there are fewer external actors involved.\textsuperscript{21}

In 2007, the Ministry of Defence set up an independent external committee of experts to conduct a comprehensive review of the DRDO and suggest how it could be made more efficient, responsive, and professional. The recommendations were submitted a year later, and in 2010 a series of reform measures to revitalize the DRDO were announced. Related policy actions principally involved the internal restructuring of the agency around technology domains, alongside affirmations of the importance of military-user involvement in DRDO projects. However, these reforms have had a limited effect, if any, and have not changed the tenor of DRDO-military relations, which are defined by the DRDO’s bureaucratic interest in avoiding a close working relationship.

The agency’s principal interest in safeguarding its autonomy, and promoting politically popular missile projects to help achieve this, also characterizes its relationship with the PMO. The DRDO has outlined its resistance to limiting the range and destructive capability of the Agni program and placing any limits on the prospect of longer-range missiles in the future. According to Chander, “[The] DRDO does not wait for the threat to become a reality before it starts the development,” and as such there is a need to “develop capabilities to meet futuristic [sic] threats.”\textsuperscript{22} Although the agency may now be planning longer-range missiles, the PMO refuses to clarify its approval of DRDO public statements regarding the future of the Agni suite and its strategic purposes.

The DRDO’s tendency to assign political and military roles for its new missiles in public statements oversteps its official role; these should be reserved for the PMO to determine and announce. By preemptively making its opinion public, the DRDO in effect pressures the PMO to forgo any missile range cap, highlighting the agency’s significance in understanding nuclear policy outcomes. The DRDO has no incentive to install a brake on missile development or permit any limits to its technical options or budget in this area.

The DRDO ballistic missile projects are developed domestically. Its international and private-sector collaboration programs do not significantly affect

\begin{itemize}
\item \textsuperscript{21} Suman Sharma, “DRDO Makes Missiles Faster Than Tanks,” \textit{Sunday Guardian}, April 22, 2012.
\item \textsuperscript{22} Subramanian, “Quality Our Concern.”
\end{itemize}
its ballistic missile projects. Internationally, Russia is the closest collaborator with the DRDO. Russia is currently assisting the DRDO with the Brahmos conventional cruise missile project and provides other assistance such as submarine crew training and fighter aircraft development. Israel, India’s other significant defense technology partner, is working with the DRDO to build a conventional long-range surface-to-air missile. However, India’s ballistic missile platforms are being designed and built indigenously by the DRDO.

The agency could potentially use private-sector links to pressure policymakers. The DRDO and the private sector have collaborated on projects, such as missile launcher trucks and metals production. However, a greater private-sector voice in the DRDO conflicts with its interest in cultivating an image as India’s sole competent defense technology organization. While agency statements rhetorically welcome greater private-sector involvement, these are always balanced with negative remarks about the capabilities of the private sector to deliver the goods. The agency has no interest in eroding its position as the prime missile technology provider for India.

The DRDO is internally organized to prioritize its popular missile programs while merging programs to reduce the ability of an outsider to identify and alter specific projects. Roughly 35% of the agency’s budget of around $900 million is allocated to the development and implementation of strategic systems that include nuclear weapons and long-range missiles. The DRDO maintains autonomous control here. Approximately 18% of the budget is spent on payroll and about 12% on maintenance of infrastructure. Funding for external research projects accounts for 5%. This leaves the DRDO with only 30% of its budget exclusively for the development of systems and products spanning the whole non-nuclear technology spectrum and thus vulnerable to external interference. The DRDO budgetary priorities are developed in the recognition that success in the missile program generates greater leverage for the agency against its institutional competitors than other conventional projects.

In addition to its internal organization evident in budgetary allocations, the DRDO further promotes its missile program and reduces external oversight by folding one program into another. The Agni-III and IV models were


quickly described by DRDO in the context of a prospective Agni-V.\textsuperscript{25} The Agni-V is now spoken of as a step toward a naval SSBN variant, a ballistic missile defense capability, and a potential Agni-VI.\textsuperscript{26} This latter project appears to be advancing, with details of Agni-VI technical progress released to the press in February 2013, and a further release in May 2013 estimating its arrival in 2017. The release of such details may sound premature: although the Agni-V has only been tested once, its successor missile is already being planned. The reported range of the Agni-VI of 6,000 km will extend its range past the landmass of its nuclear adversaries, China and Pakistan. It is also the first missile being designed explicitly with MIRV capabilities, a development that invites questions as to the accuracy of describing India’s nuclear doctrine as “credible minimum deterrence.”

Folding one program into another, as described, is characteristic DRDO bureaucratic practice, echoing how the agency presented previous Agni missiles. This organizational tactic renders it difficult for policymakers to ensure a structural disaggregation of agency missile projects in order to closely monitor and direct the boundaries and goals of DRDO missile development. Asked for his opinion on more-advanced missiles following the Agni-V launch in October 2012, Defence Minister A. K. Antony argued that the DRDO should “let the present Agni series stabilize.”\textsuperscript{27} The DRDO evades this advice by portraying one missile as merely a technical demonstrator for the next project, making the distinction between where one project finishes and another begins unclear to anyone outside the DRDO.

The inattention or inability of the PMO to take concrete steps to improve DRDO performance and compel it to cooperate with other defense bureaucratic stakeholders has permitted the DRDO a remarkable degree of self-governance. The DRDO receives little external pressure, such as in tying its budget to project delivery deadlines, and is internally organized to render it difficult for external observers to track its projects. This means missile project delays frequently occur in the absence of an incentive for the agency to meet


The organization’s substantial self-governance is reflected in budgetary prioritization, project design and delivery, and the setting of operational policy through regular statements outlining the doctrinal meaning of DRDO products. The organization thereby accrues even more explanatory relevance to nuclear policymaking in India than might be expected for its ostensible role as a mere military research and development (R&D) implementation agency.

In exploring the dynamics of interbureaucratic competition, the Model III approach suggests we view the DRDO’s missile development efforts as means to pursue its interests, namely, safeguarding its autonomy, garnering generous budgetary allocations, and ensuring high-level political access when needed. The agency seeks to secure its autonomy in missile design and production against renewed pressure from the military to include the armed forces in the process. Similarly, the DRDO confronts half-hearted and intermittent requests from the PMO to get along with the other stakeholders in the nuclear program. This also accounts for DRDO efforts to win influence over the heads of other stakeholders by appealing directly to the public with popular narratives of technical progress and national achievement. The agency’s bureaucratic interests thus explain its largely autonomous internal behavior amid high visibility in authoritatively shaping public conceptions of India’s nuclear future.

Like the organizational activities of the DRDO leading to its public resistance to missile range caps and to missile delivery delays, certain characteristics of the DAE influence the Indian nuclear policy process.

BUREAUCRATIC ACTORS: THE DAE

The DAE is a critical actor in the bureaucratic politics shaping Indian nuclear policy. Its official responsibility to develop and provide fissile material, the requisite facilities, and nuclear warheads grants it a central role in the nuclear force production chain. However, its political influence is greater than the sum of these responsibilities. Successive Indian decisions to permit or advance in military nuclear research were partly propelled by the extensive lobbying of DAE scientists in internal governmental discussions and external

public argumentation. The Indian missile program has also been affected by DAE bureaucratic influences.

The bureaucratic interests of the DAE closely resemble those of the DRDO. The DAE’s main interest is to prevent limits being imposed on its autonomy to conduct military and civil programs. The department’s military nuclear program is much more successful and politically popular than its halting civil nuclear energy projects, securing substantial DAE budgetary attention and public promotion by the agency.

In contrast with the DRDO, the PMO is the main threat to DAE autonomy. The DRDO must supply the military with a broad range of nuclear products; the military is thus the greatest bureaucratic competitor to the DRDO. The DAE, on the other hand, provides only warheads to the military services; it therefore mainly conducts its bureaucratic campaign for autonomy through extensive internal and public lobbying for the necessity of the military nuclear program to Indian security. The DAE is historically related to India’s Atomic Energy Commission (AEC), which, in turn, has a close structural relationship with the PMO. The AEC reports only to the prime minister, who holds the nuclear energy portfolio. This leverage amplifies the DAE voice in government policy debates in advancing its core aim of maximizing its autonomy, while making the PMO the central bureaucratic competitor to its objectives.

In pursuing its bureaucratic interest in maximizing its autonomy and flexibility vis-à-vis the strategic nuclear program, the DAE has demonstrated a formidable influence in several benchmarks of Indian nuclear history. The agency has conducted intensive governmental lobbying to seek greater autonomy to conduct military nuclear research. For example, its internal campaign to commence nuclear weapons research eventually won approval from Prime Minister Lal Bahadur Shastri in 1964 following the Chinese nuclear test that year. Shastri subsequently commissioned the nuclear weapons program, which led to India’s first nuclear weapon’s test in 1974 following continual DAE pressure upon Prime Minister Indira Gandhi. Successive prime ministers faced continuous pressure from the DAE for new nuclear testing rounds, leading, decades later, to the 1998 nuclear weapons tests.29 Success in this lobbying campaign draws popular public support to the agency, demonstrates

its importance to Indian security, and, flowing from this, provides support for
its new military projects while undermining any pressure for constraints on
Indian nuclear development.

The importance of a flourishing and successful military nuclear program to
DAE bureaucratic fortunes is illustrated by a recent controversy regarding the
credibility of its scientific claims arising from the 1998 nuclear test series. The
series, operated by a joint DRDO-DAE team of scientists, included a single
thermonuclear test. The yield from this test was initially reported as meeting
design specifications of 45 kilotons. However, K. Santhanam, a senior
DRDO member of the test team, publicly disavowed this stated yield in
2009. He claimed the yield was instead a “fizzle,” or significantly lower than
that intended by the test team. The DAE’s robust denial of these allegations
demonstrates the inherent bureaucratic competition in the military program,
as both the DRDO and DAE seek to protect their credibility by assailing the
other.

The DAE also firmly resists any proposal to audit the technical credibility
of its devices, for example, through review by a panel of retired scientists. Anil Kakodkar, the head of the DAE research lab responsible for the original
45 kiloton yield calculation (and since appointed AEC chief in August 2000)
further claimed that DRDO involvement in the tests amounted to mere
“logistical support.” This implied that DRDO members were unqualified
to offer any expert assessment of the DAE’s scientific claims. In short, these
events following the 1998 tests reveal the DAE’s public reaffirmation of its
bureaucratic independence, namely, maximum autonomy in military nuclear
development, thereby reducing the threat of external oversight and control.

The controversy over the 1998 nuclear test’s yield has significantly
impacted India’s missile program. There is no present effort to independently
test the credibility of DAE claims regarding the performance and reliability of
their warheads. This has spurred technical doubts that permeate India’s nuclear
force development efforts—including the Agni missile, whose most likely
warhead is the thermonuclear device in question. Permitting an independent
review panel to be assembled would likely improve national confidence in

32. Koithara, Managing India’s Nuclear Forces, p. 127.
Indian warhead reliability. However, it would undercut DAE authority as the sole arbiter of military nuclear technical affairs, and is resisted by the agency on those terms.

Furthermore, Indian missile developments, including the ability of the Agni-V and Agni-VI to host MIRV warheads, will create demand for more sophisticated and smaller warheads. Unless the agency yields to independent verification of its claims, credibility doubts will proliferate and further affect confidence in missile development and the wider military nuclear program. As a former chair of the Chiefs of Staff Committee has remarked: “We have to rely on the word of our DRDO/DAE scientists as far as performance, reliability, accuracy and yield of missiles and nuclear warheads are concerned. Unfortunately, hyperbolic claims coupled with dissonance within the ranks of our scientists have eroded their credibility.”

In addition to protecting its bureaucratic turf, DAE lobbying has also extended to topics involving broader nuclear operational policy and declaratory policy, which includes a no-first-use policy and a moratorium against further nuclear testing as a measure of restraint. The agency exhibits a similar tendency to the DRDO in publicly setting operational terms for its military products, with seemingly little prior consultation or coordination with the PMO. R. Chidambaram, a key member of the DAE unit conducting the 1998 Indian nuclear test series, framed the development of low-yield nuclear weapons as a “scientific objective” of the tests. The expressed interest in tactical nuclear weapons here has not been echoed or articulated by the PMO, illustrating the bureaucratic entrepreneurship of the DAE in assigning itself new military projects and influencing weapons policy.

Until 2008, the DAE was organized similarly to the DRDO, with a merged civil and military nuclear program that was difficult for outsiders to disentangle. The PMO sought to divide the civil from the military components of DAE infrastructure as part of the 2008 nuclear deal with the U.S., which exempted India from U.S. nuclear sanctions in return for India dividing its military and civilian nuclear programs and placing the latter under International Atomic Energy Agency monitoring. This stimulated robust DAE opposition because the deal threatened its core interest of operational autonomy and

was, in addition, driven by the PMO, its principal bureaucratic competitor. In its public lobbying activities during the domestic nuclear agreement debates, the DAE argued both that the U.S. should lift technological sanctions against India and that New Delhi should ensure minimal, if any, international oversight or influence on the DAE. This argumentation clearly reflected its bureaucratic interests. Also, following the 2006 passage of the Hyde Act in the U.S., intended to prevent the proliferation of nuclear weapons in South Asia, a group of current and former DAE officials issued a letter to Indian parliamentarians. In the letter, the scientists drew red lines regarding absolute policy autonomy regarding the research, conception, and execution of nuclear programs, and maximal preservation of operational secrecy.

This influence of DAE scientists in the Indian debate was such that it created, in their words, “ground rules” that shaped the debate, India’s negotiating position with the U.S., and the terms of the end agreement. For example, in a wide-ranging interview with the Indian Express, AEC chair Anil Kakodkar announced that the prototype fast breeder reactor would definitively not be included in the list of facilities available for international safeguarding, preempting any elected civilian official opinion or decision on the matter. The breeder reactor program was duly excluded from international safeguards in the final agreement. The influence of this intervention was such that Prime Minister Manmohan Singh, speaking to the upper house of the Indian Parliament concerning the nuclear agreement, felt compelled to include a section specifically addressing the concerns of the DAE’s nuclear scientists. Singh argued that the agreement, and government policy more generally, would not create “any restraint in perpetuity on our freedom of action.”

This policymaking activism from the DAE, in its aim to secure its bureaucratic interest of maximum autonomy in the nuclear program, is essential to understanding Indian nuclear behavior. The department’s history of pressing for expanded military research, making operational declarations, and articulating terms for international nuclear negotiations, with or without explicit prior civilian consent, highlights its core bureaucratic interests. Its activities to

support these bureaucratic interests have substantive impacts on Indian nuclear policy, as witnessed in the continuing concerns over warhead reliability and in the nuclear agreement debates.\textsuperscript{39}

If the bureaucratic interests of the DRDO and the DAE in continually expanding nuclear force production are to be checked, the PMO must better coordinate its policies in line with its interests in the nuclear bureaucratic game. Yet, unlike the DRDO and the DAE, the PMO’s activities are not closely aligned with its bureaucratic interests.

**BUREAUCRATIC ACTORS: THE PMO**

As the apex of political decision-making authority in India, nuclear force decisions ultimately rest with the PMO. The DAE and DRDO are formally technical implementation agencies, mandated to execute the nuclear policy conceived by elected political leaders. We have seen in the preceding sections the substantial presence of these technical agencies in political debates inside and outside the government regarding the future of India’s nuclear force. This presence fills a vacuum in nuclear policy created by the frequent disinterest of the PMO in nuclear issues. This disinterest reflects the PMO’s concern with quotidian political problems and electoral demands, and subsequent unconcern with defense policy matters outside immediate crises. This unconcern is reflected in the slow-moving nature of reforms to the nuclear policy process, as we will see below.

The bureaucratic interests of the PMO are to define nuclear policy in correspondence with wider national interests, ensure that policy is correctly and efficiently executed by subordinate agencies, and safeguard against threats to its bureaucratic position of exclusive nuclear decision-making authority. As the military services have a minimal role in nuclear policymaking, the main competitive threats to the PMO bureaucratic position are the DAE and DRDO through the encroachments they have made on the process of defining nuclear policy. The PMO is notable in that, of the three agencies discussed in this article, it is the least proficient at aligning its nuclear policy activities with its bureaucratic interests. Nuclear policymaking activity or inertia is largely dependent on the character and capabilities of the sitting

As shown in Table 1, the resources that the PMO can devote to nuclear force planning are mere fractions of those enjoyed by the DRDO and DAE. The PMO is also disadvantaged by its requirement to use its limited resources to focus on day-to-day political issues. This contrasts with the principal focus on maximizing nuclear policy bureaucratic influence that animates the DRDO and DAE in the use of their superior resources. The PMO therefore tends to make intermittent nuclear policy decisions and proposes reforms to the formal policymaking process. These decisions are often forced by internal or external pressures, rather than long-term strategic planning. Internal pressures often include sustained lobbying by the DAE and DRDO for a larger and more technically diverse nuclear force, while external pressures include shifts in global non-proliferation policy or in great-power relations as viewed by the PMO. This policy process leads to reactive decisions that respond to

<table>
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<th>DRDO</th>
<th>PMO</th>
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</table>


**Note:** PMO incorporates the Prime Minister’s Office, Principal Scientific Adviser’s Office, and Cabinet and National Security Council Secretariats.

prime minister, and must also compete with multiple daily political demands on his or her attention.

As shown in Table 1, the resources that the PMO can devote to nuclear force planning are mere fractions of those enjoyed by the DRDO and DAE. The PMO is also disadvantaged by its requirement to use its limited resources to focus on day-to-day political issues. This contrasts with the principal focus on maximizing nuclear policy bureaucratic influence that animates the DRDO and DAE in the use of their superior resources. The PMO therefore tends to make intermittent nuclear policy decisions and proposes reforms to the formal policymaking process. These decisions are often forced by internal or external pressures, rather than long-term strategic planning. Internal pressures often include sustained lobbying by the DAE and DRDO for a larger and more technically diverse nuclear force, while external pressures include shifts in global non-proliferation policy or in great-power relations as viewed by the PMO. This policy process leads to reactive decisions that respond to
and take into account nuclear policy agendas already set elsewhere. This further diminishes the proficiency of the PMO in developing and asserting its nuclear policies down the command chain.

An examination of recent PMO policy efforts since the advent of the National Democratic Alliance (NDA) administration in 1998 sheds light on these dynamics. The incoming administration confronted a well-known nuclear policy process dependent on the personality of the prime minister and shaped in a reactive manner by internal and external pressures. The NDA administration intended to bring greater structure and strategic planning to nuclear policy decisions by establishing new institutions in 2003 such as the National Command Authority (NCA) and the Strategic Forces Command (SFC). The NCA exists for the prime minister, national security advisor, defense secretary, and military and defense agency chiefs from both the DRDO and the DAE to consider and issue nuclear orders. The SFC, led by armed forces chiefs, executes orders from the NCA while managing the operationalization of the nuclear force.

The membership of the NCA consists of two tiers: a political council chaired by the prime minister and an executive council chaired by the national security advisor. The political council includes the Cabinet Committee on Security (which includes the prime minister, defense minister, home minister, finance minister, and external affairs minister) and the national security advisor. The executive council advises the political council and organizes the execution of its orders. It is chaired by the national security advisor, and likely includes the cabinet secretary, principal scientific advisor, foreign secretary, and the chiefs of the DAE, DRDO, Research and Analysis Wing, Intelligence Bureau, Joint Intelligence Committee, and SFC. The SFC is headed by a rotating military chair and the chiefs of the three armed service branches. In the event of a decision to use nuclear weapons, the command structure is organized so the decision is made solely by the NCA political council, its execution organized by the NCA executive council, and its ultimate execution conducted by the SFC.

A National Security Advisory Board (NSAB), consisting of retired officials, journalists, and scholars, was set up in 1998, also by the NDA. This board serves an informal role structurally separate from the NCA-SFC command chain. While it drafted a suggested nuclear doctrine for India in 1999, its advice is not binding, and nuclear decisions are taken by the PMO through the NCA.

However, these institutions have not substantially changed the personalization of the policy process, nor the tendency of the PMO to only provide reactive and ad-hoc policy responses to urgent pressures. The 1998 nuclear test decision was driven by longstanding lobbying from the DRDO and DAE to commence a new nuclear testing round and an expanded weapons program. The urgency of this lobbying was the product of growing pressure from the U.S. for India to sign the Comprehensive Test Ban Treaty (CTBT), which would restrict India’s nuclear force options. It is crucial to note that this decision was deliberately made before the NSAB and new policymaking institutions were established, rather than following the advice of long-term systematic strategic policy reviews conducted by these bodies. It is also important to realize that the DRDO and DAE can circumvent their assigned advisory role in the command chain by their ability to communicate directly with the prime minister. The failure to properly use these institutions permits the problems of a personalized policy process, including the influential bureaucratic presence of the DAE and DRDO, to continue.

Individual decisions on the missile program have historically been taken on an ad hoc basis by the prime minister, although this responsibility is gradually drifting under the DRDO operational aegis as it no longer seeks the approval of the prime minister to start a missile project. The government approved the first test of the Agni-II missile in April 1999, and Prime Minister Atal Bihari Vajpayee of the NDA announced in his Independence Day speech in August 1999 that it would be commissioned by the Air Force. The Agni-I was also commissioned by the government in 1999. However, subsequent missiles, from the Agni-III onward, have been left to the DRDO to conceive, develop, and test. This effective devolution of nuclear force decision-making to the missile agency has produced a missile program reflective of the bureaucratic interests of that agency, featuring expanding missile variants with little sign of political or financial restraint.

Policymaking institutions designed to instill better directive political control over military nuclear policy have therefore been established, but their
effectiveness is hindered by the disinterest of civilian policymakers in nuclear affairs and the persistence of old policy habits. The personal networks and preferences of the prime minister remain the determinant of policy action, producing policymaking dysfunction when the officeholder is uninterested in nuclear affairs. For example, the SFC did not have a dedicated headquarters for 18 months after the announcement of its establishment in January 2003. The SFC leadership is assigned as part of a complicated interservice balancing of directorships, with one military branch receiving command of a joint base in exchange for another branch commanding the SFC, rather than being determined by individual merit, experience, or specialization. The management of the SFC is therefore subjected to the interservice rivalries and competition for relative bureaucratic advantage that have developed as a result of the failure of civilian policymakers to authorize a single Chief of Defense Staff.

The NCA, for its own part, meets intermittently to review aspects of nuclear force development, with one report specifying that meetings are held “every three to six months.”  

42 These meetings appear to take the form of the DAE, DRDO, and military staff briefing the prime minister on decisions they have taken regarding development and deployment of military nuclear assets, with little evidence of the prime minister doing much else aside from retroactively approving their activities. Following this pattern, the official choreography of the Agni-V launch process included the DRDO chief visiting the prime minister’s residence to brief him on the agency’s progress and future plans regarding the missile as more of an informational exercise than to receive orders. As Prime Minister Singh has shown little concern for nuclear affairs since the conclusion of the nuclear agreement with the U.S. in 2008, the interests of the DAE and DRDO have increasingly dominated policy outcomes.

CONCLUSION: BUREAUCRATIC POLITICS AND INDIAN NUCLEAR POLICY ISSUES

Several critical nuclear decisions are looming before the Indian government that will shape the future of India’s nuclear force as well as internal and

external perceptions of India as a rising military power. For example, the Agni-V could serve as a gateway to an expanding, diversified Indian nuclear force, or as the capstone missile to be deployed in small numbers. Another issue includes the Arihant, India’s first indigenous nuclear-armed submarine, at present out for sea trials. Its operational deployment will require some means of pre-authorizing military commanders to issue a nuclear strike in the event of the incapacitation of civilian policymakers, a concern that reopens tensions within India’s fraught civil-military relations. The ultimate size and political and military purpose of India’s nuclear force is an active and growing topic of internal debate. The military remains a passive recipient of DRDO and DAE projects, rather than being integrated into the process of product design, testing, and delivery. Leaving these issues for subordinate bureaucratic agencies to mitigate will further embed inertia, delays, and foggy thinking in the Indian nuclear policymaking process.

The developmental trajectory of the Agni-V suggests a greater degree of policy direction is required from the PMO to build clear lines of civilian decision-making authority in the nuclear force structuring process, curtail the present tendency of the DRDO and the DAE to publicly assign operational policies to their products, and reiterate Indian adherence to a military strategy involving nuclear restraint and credible minimum deterrence to the larger international community. The PMO needs to project a sense of the Agni-V’s place in such an overall strategy while managing domestic bureaucratic politics more effectively. Greater central control of the missile program from the PMO, including setting clear direction (potentially through the equivalent of a nuclear posture review) could prevent international misperceptions caused by a multiplicity of Indian official perspectives regarding strategic programs. A stronger grip by the PMO could also ensure that project expenditure and deployment are conducted with greater efficiency and transparency to civilian policymakers at all stages.

The Indian nuclear policymaking context has proven to be ripe for analyses following a bureaucratic politics perspective. India faces multiple external pressures such as the expanding nuclear arsenals of China and Pakistan, as well as U.S. desire to see some Indian convergence with Washington’s non-proliferation and Asian geostrategic goals. However, while a realist account would entirely focus upon these pressures to account for the Indian nuclear weapons program, and a domestic politics approach would highlight societal political developments, these factors are not sufficient to develop an account
of India’s nuclear policy decisions. Utilizing a Model III bureaucratic politics perspective offers greater insight than the realist and domestic politics accounts into the decision-making process, emphasizing the bureaucratic interests and maneuverings that actually shape Indian nuclear policy. Focusing on the Agni-V’s emergence helps clarify the nuclear policy issues facing India by illuminating the importance of the military nuclear program to influential agencies in Indian defense policymaking. Indeed, further applications of bureaucratic politics theory to Indian policy analyses could develop better theoretical tools to understand policymaking realities based upon studying the influences and interactions of individual government agencies, rather than holding international threats or domestic societal politics as the key factors explaining Indian nuclear developments.

The tendency for bureaucratic institutions, and especially the DAE and DRDO, to shape policy where elected civilian orders are not forthcoming should receive greater analytical salience in the study of Indian nuclear force policy. If left uncorrected, India’s dysfunctional policy process will continue to define its nuclear story, threaten other aspects of its defense policymaking, and even challenge the ultimate ability of its elected government to direct policies and resources to meet the unprecedented opportunities and threats India faces.