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Brazilian national defence policy and strategy reviewed as a unity

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Abstract

This article reviews Brazil's capstone directives for defence: the *Política Nacional de Defesa* (National Defence Policy) and the *Estratégia Nacional de Defesa* (National Defence Strategy). It presents an overview of their contents and discusses how they might be read by polities or agencies through the lenses of Strategic Studies and Public Policy of Science, Technology, and Innovation.

Keywords: Armed Forces; Brazil; Defence Policy; Science Technology and Innovation; Strategic Studies; Strategy.

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Introduction

The public, regular presentation of defence policies and strategies is one of the cornerstones of democratic governance and serves diplomacy to preserve, protect, and support international peace and security. Such documents are a polity's declaratory policy, playing substantial domestic and international roles. They matter on many levels, conveying a polity's intentions and objectives, alternatives and choices about ends, ways, means, and methods. As importantly, defence policies are essential components of the system of checks and balances and civil-military relations.

As defence policies express a polity's perception and direction as a whole, as a nation, they offer the opportunity of considering, furthermore, the role that defence preparations might play in development, in the well-being of the citizenry, in forming or enhancing their shared identity. They bring together aspirations and constraints, ambitions and restraints, ends desired and means required, the interpretation of the past and of what the future might hold. Defence policies serve, as a result, to communicate both how a polity perceives itself and how it perceives and wishes to participate in international society.

The Brazilian partnership in BRICS enhanced its international profile and elevated its role as a potential global player in the first two decades of the 21st Century. This has made Brazil's expression of its ambitions, intentions, designs, defence policy and strategy of global, and not just of regional, interest. *Política Nacional de Defesa* (PND, National Defence Policy) and *Estratégia Nacional de Defesa* (END, National Defence Strategy) correspond to the highest-level expression of Brazil's declaratory policy on defence. These are Brazil's strategic communication to the world as well as to Brazilians and to Brazilian armed forces, making them the paramount sources for appreciating Brazilian posture, projects, and prospects. What do Brazil's *Política Nacional de Defesa* (PND) and *Estratégia Nacional de Defesa* (END) say?

Two important caveats must precede their appreciation. First, it is neither possible to substitute their reading nor to summarize them in detail within the confines of a journal article. Second, this article is largely an annotated appreciation of the documents themselves. It accounts for their purpose and mutual influences, refraining from consideration of what they should or could be. Further, it does not contrast them with practice, what has been or is being carried out. What follows takes what the documents themselves indicate are their concerns.

The article begins by a review of the unity of Brazil's *Política Nacional de Defesa* (PND) and *Estratégia Nacional de Defesa* (END), P&E, which reports what it is about, what it says in general, and what and how it says it through examples of its details. This is followed by a policy review outlining how it might be interpreted through the lenses of Strategic Studies and Public Policy. Conclusions summarize and discuss the consequences of the article, qualifying its thrust.

An overview

The unity of *Política Nacional de Defesa* (PND, National Defence Policy) and *Estratégia Nacional de Defesa* (END, National Defence Strategy) expresses civil-military realignment of re-democratization. Brazil's first public defence policy (PDN, PND's predecessor) was published in 1996. It paved the way for the creation of the *Ministério da Defesa* (Ministry of Defence - MoD), turning the military ministries into subordinate commands. This was followed by END in 2008. PND and END were brought in line in 2012 and approved by Congress in 2013. Since then, the MoD presents PND-END as a unity – P&E (Brasil 2012).

Like many Brazilian capstone documents, P&E is acknowledged as the position of a given administration, but presumed to emanate from the state, transcending administrations. It is neither signed nor explicitly endorsed by any official – 'Brazil' is the author. The masthead lists president, ministers, and other officials' *nihil obstat*, but does not convey executive authority to contents or execution. This would require statutory attribution of exercise of constitutional delegated powers – that is not the case of P&E.

A summary Review of Literature

In many ways, P&E (Brasil 2012) can be said to address the fact that the 1996 PDN and 2008 END were written many years apart and lacked a clear hierarchy between them. From a broad perspective, P&E corresponds to a logical step in the path of Brazilian defence conceptualization and modernization.

P&E's thrust was, in fact, largely anticipated: both Brazil's international positioning (Fishman and Manwaring 2011) and the quandary it presented to Rousseff's administration (Bertazzo 2012). A comparison of END with capstone documents from other BRICS countries reveals analogous responses to very different circumstances (Bertonha 2013). Challenges persist as to P&E's own intended comprehensiveness (Cepik 2014). P&E can either be perceived as another instance of Brazil's recurring strategic posture as a security free-rider (Proença Jr. and Diniz 2008) or as another instance of Brazil's difficulties in defence management, marked by institutional frailty before the military (Winand and Saint-Pierre 2010).

P&E incorporates greater alignment of defence with foreign policy, a matter notably absent from its earlier versions (Alsina Jr. 2003). It still chooses neither to engage with the issues of the use of force proper (Proença Jr. and Duarte 2007; Bertonha 2010), nor to relate to the conceptual criticism of its foundations (Rudzit and Nogami 2010), nor yet to take full responsibility for the Brazilian armed forces' constitutional mandate (Proença Jr. 2011a).

In what concerns industry and technology, P&E's assumption that technological promises lead to operational capabilities and development has been regarded as simplistic (Proença Jr. 2011b; Silva and Proença Jr. 2014), and P&E's expectation of smooth running defence acquisition, unrealistic (Bohn 2014; Franko 2014). Still, Science, Technology, and Innovation (STI) do emerge as a one of P&E's central pillars, arguably its clearest expression of the developmental counterpart of P&E to defence proper. Unsurprisingly, as it aims beyond the Armed Forces and the state, confidence and credibility may be held to be at least as important as feasibility and affordability (Martins Filho 2014).

END's 2008 version led to foreign policy consequences: the expectation of an increased role for military power supporting diplomacy (Alsina Jr. 2009) or increased Brazilian assertiveness (Wigell 2011). Congressional approval of P&E in 2013 amplified this effect: Brazil was deemed to have become a global player (Vitelli 2015). Some scholars wonder how far Brazil would go (Hirst 2015; Tepperman 2017), others how far Brazil could go (Cervo and Lessa 2014; Mares and Trinkunas 2016).

P&E: an overview

The Introduction to P&E reads: "PND sets the objectives for national defence and guides the state as to what to do to reach them. END, in turn, establishes how to achieve it. Together they pave the way to build the defence Brazil aspires to" (Brasil 2012: 7).

PND is “the highest level planning document for defence under the purview of the MoD” (Brasil 2012, 11), and essentially concerns itself with external threats. While it acknowledges domestic security responsibilities of the Armed Forces, these are remitted to specific legislation (Brasil 2012, 35). PND conceptualizes ‘security’ as “the condition that allows the country to preserve its sovereignty and national integrity, to promote its national interest free from pressures or threats, ensuring its citizens the free exercise of constitutional rights and duties” (Brasil 2012, 12) and ‘national defence’ as “the set of measures and actions of the state, particularly military, for the defence of the territory and national interests against preponderantly external, potential or actual threats” (Brasil 2012, 12). PND’s seven chapters provide definitions of the international, regional, and national environments and propose eleven ‘national defence objectives’ followed by ‘guidelines’.

END presents itself as “inseparable from a national development strategy” (Brasil 2012, 43), “the link between the concept and the policy of national independence, on the one hand, and the Armed Forces to safekeep that independence, on the other” (Brasil 2012, 45). END comprises a wide-ranging variety of thematic chapters, grouped into ‘Systematic Formulation’, which deals with END itself, and ‘Implementation Measures’.

No description of what P&E says in detail can avoid dealing with the tensions it contains. P&E presumes that PND subordinates END. Yet END is broader, and more far-ranging. END is linked to an all-encompassing concept and policy of national independence (Brasil 2012, 45), counterpart to a national development strategy (none of the latter available as of 2017). END belongs to a network, while PND does not. PND defines eleven objectives. END would have to refer to them explicitly — it does not. Rather, END formulates its own objectives — some as broad, if not broader, than PND’s. END sometimes expresses goals in its own fashion so as to best explain what is to be achieved or should come to be achieved, as self-standing desired attributes, capabilities, or end-states.

Doing justice to PND’s eleven objectives requires a full quotation:

- I. To guarantee sovereignty, national assets and territorial integrity.
- II. To defend national interest, Brazilian citizens, goods, and resources abroad.
- III. Contribute towards the preservation of national unity and cohesion.
- IV. Contribute to regional stability.
- V. Contribute to the maintenance of peace and international security.
- VI. Enhance Brazil’s projection in the concert of nations and its greater participation in international decision-making processes.
- VII. To keep the armed forces modern, integrated, trained and balanced, increasing their professionalization, operating in joint fashion while being adequately distributed over the national territory.
- VIII. To raise awareness within Brazilian society of the importance of defence subjects.
- IX. To develop the national defence industry to obtain autonomy in indispensable technologies.

X. To structure the armed forces around capabilities, providing them with personnel and materiel compatible with strategic and operational planning.

XI. To develop the potential of defence logistics and national mobilization (Brasil 2012, 29–30).

As these would constitute the loadstone of all Brazilian defence activities, they admit a first cut appreciation.

Objective I would appear to echo Article 142 of the Brazilian Constitution, that reads:

The Armed Forces, made up of the Navy, Army and Air Force, are permanent and regular national institutions, organized on the basis of hierarchy and discipline, under the supreme authority of the President of the Republic, and intended to defend the Nation, guarantee the constitutional branches of government and, on the initiative of any of these branches, law and order (Brasil 1988).

In choosing “to guarantee”, rather than “to defend” (as above) in objective I, a measure of nuance is introduced. Guarantee is construed as to uphold when and if required, which is a curious way for P&E to frame its primary objective.

Contrariwise, the choice of “to defend” national interests, goods, and citizens abroad in objective II would signal a mandate for military power projection, which would seem to some extent at odds with principles IV (“non-intervention”) and VII (“peaceful solution of conflicts”) of article 4 of the Brazilian Constitution (Brasil 1988).

P&E’s Objectives III, IV and V’s choice of “to contribute” and objective VI’s of “to intensify”, as much as objective VIII, “to raise awareness” are calls for activity – not achievement. Almost anything can be regarded as contribution, intensification, or as raising awareness, and thus it is not immediately clear what they propose as direction or how results could be assessed.

Likewise, objectives VII, X, and XI address the Armed Forces through a description of desirable attributes or end-states. Objective VII requires “keeping” the Armed Forces “modern, integrated, trained, and balanced, and with increasing professionalization, operating jointly and adequately deployed on the national territory” (Brasil 2012, 30) which begs the question of what each of those terms denotes. Objective X requires “structuring” the armed forces “around capacities”, giving them personnel and materiel “compatible with strategic and operational planning [*sic*]” (Brasil 2012, 30). It is not obvious how else the Armed Forces could be structured, and the plea for compatibility with planning is troublesome in itself. In the absence of goals that would give purpose to such planning and political choices of how to pursue them, it might as well be admitted that objective X raises more questions than it answers. One way or the other, objective XI: “developing the potential” of defence logistics and national mobilization — is another curious choice of words, setting as objective the development of potential, and not logistics or mobilization proper, and again begging the question of how to assess an activity, as well as about its purpose in distinguishing potential from actual.

Objective IX requires developing the national defence industry “so as to obtain autonomy in indispensable technologies”, which admits a plain text reading of autonomy while deferring to a later unspecified date [defining?] which technologies would be deemed indispensable.

The guidelines range from advertising *ad hoc* arrangements to deal with international crisis or war, through the role of the Armed Forces and of conscription, to concerns (the Amazon, e.g.), to staking claims as to the purpose and direction of defence-relevant domestic (technology, e.g.) and foreign (strategic partnerships, peacekeeping, e.g.) policies (Brasil 2012, 31–3).

Moreover, it remains unclear whether objectives and guidelines are to be sought or followed *at* the direction of a given administration or to serve *as* direction to a given administration.

The two following parts of P&E amount to an omnibus of largely self-contained chapters, that share a variety of visions and perspectives, communicated by descriptions, lists, desiderata, and sets of desirable attributes or end-states.

Three “structural axis” (Brasil 2012, 65–6) would seem to provide the framework for the presentation of “Systematic Formulation”: a. the reorganization, reorientation and personnel and materiel policy of the Armed Forces; b. the Defence Industrial Base; and c. the personnel composition of the Armed Forces.

The first structural axis is addressed by three chapters that describe the strategic objectives and individual perspective of each of the Armed Forces. While each chapter has provisos for joint action, there is no chapter that accounts for the joint view each of the other chapters might appear to assume. The Navy identifies tasks, giving paramount attention to sea denial – the prevention of any hostile concentration approaching Brazil by sea – and admits to power projection as a corollary (Brasil 2012, 67). The Army enunciates principles of flexibility and elasticity, which translate into the ability to employ force commensurate with circumstances or, alternatively, to increase its numbers through mobilization (Brasil 2012, 75–6). The Air Force provides a chain of nested dependencies that go from (a) aerial surveillance, that enables (b) desired control of the air, which in turn allows (c) the ability to fight in particular points of the national territory, which as a result configures (d) required capabilities, which are wholly independent of any particular opponent (Brasil 2012, 85–8). Each chapter sticks to the abstract development of its premises, and offers no organizational or material detail of the means that would correspond to alternatives that would pursue or achieve its strategic objectives.

The second structural axis understands that Brazil’s *Base Industrial de Defesa* (BID, Defence Industrial Base (DIB)) would have to be reorganized in toto, prioritizing (a) the development of independent technological capabilities (b) the subordination of commercial concerns to strategic imperatives, and (c) the avoidance of polarization between routine and advanced research; further, it would be involved in translating results into operational capabilities (Brasil 2012, 99–100). This amounts to the prescription of desired permanent boundary conditions or desired end-states with no organizational or material detail.

The third structural axis demands that the personnel composition, in conscription and in the armed forces themselves, must remain a faithful mirror of the makeup of Brazilian population as a whole “so that the Nation might find itself above social classes” (Brasil 2012, 66).

The conclusion of “Systematic Formulation” is assertive, sure, and certain of its feasibility as a result of “the almost unrestricted capacity for adaptation that infuses Brazilian culture” and “the profound identity between Nation and Armed Forces” (Brasil 2012, 109). “Implementation Measures” is also divided into three parts: (a) context, so as to refine objectives and explain methods; (b) application, a sampling of the classes of problems of the Armed Forces; and (c) the strategic actions that would take Brazil from where it is to where it should be, followed by a chapter of final dispositions.

Context has a single chapter, that reiterates the conclusion of ‘Systematic Formulation’ while presenting – juxtaposing – lists of positive aspects (the identity between Nation and Armed Forces, e.g.); vulnerabilities (the lack of involvement of Brazilian society with defence affairs, e.g.); and the large list of opportunities that range from the abstract (the greater engagement of Brazilian society, e.g.) to the requisites of administrative legislation (centralized procurement, e.g.) (Brasil 2012, 113–7). Oddly enough, there are no threats.

‘Application of strategy’ is a sub-part with no introduction or conclusion that gathers five chapters. These range from a few pages, structuring of the Armed Forces, e.g. – which provide lists of relevant considerations, concerns, steps or alternatives (Brasil 2012, 123–8), to a single paragraph, ‘Guarantee of Law and Order’, e.g. – that refers that constitutional mission to legislation (Brasil 2012, 129).

‘Strategic Actions’ is also a sub-part with no introduction or conclusion with chapters that range from a few pages, Science, Technology and Innovation, e.g. – that provides lists of demands, claims, and parameters (Brasil 2012, 71–3), to a single paragraph, ‘Public Relations’, e.g. – to enhance Brazilian “defence mentality” following MoD’s initiatives (Brasil 2012, 152).

Final Dispositions close P&E, aggregating a schedule of activities that will flesh out P&E, from the first item (Acquisition Plans) that ranges from 2012-2031, to a dozen other items that may depend on collaboration with other agencies, with milestones set for 2013 or 2014. Its final paragraph opens with the admonition “END and its resulting documents will be complemented by annexes”, while only proposing as such the hypotheses for use of the Armed Forces (Brasil 2012, 155).

This suffices for an over glance of so large, ambitious and varied a document as P&E.

P&E through the lenses of Strategic Studies and Public Policy

The following offers an analysis of P&E through the lenses of Strategic Studies and Public Policy, outlining how P&E might be read by polities or agencies.

Strategic Studies: ends and means

The lens of Strategic Studies is germane as to how polities or agencies would read P&E. Strategic Studies are concerned with the use of force to resolve conflicts that admit resolution by what the use of force may achieve (Brodie 1949; Gray 1977). Strategic Studies are about war as a phenomenon: the use of force to compel (Gray 1999) – the use of (the results of the use of) the means of force to pursue political ends (von Clausewitz 1976; 1981). This leads to an absolute requirement. Ends and means must be explicit, and clear enough so that it is possible to answer which means to achieve these ends or which ends can these means achieve (von Clausewitz 1976; 1981; Davis 1994; Gray 2014).

Once preferences and priorities in ends and means are a given, the issue becomes that of governance of defence, in the strict sense of allowing government to govern the armed forces, their supporting apparatus, and war itself (O’Hanlon 2009; Gray 2014). Governance requires (a) a defence policy that enunciates preferences and priorities for the ends it might pursue and the means of force that would pursue them, (b) force design that would provide those means, and all else required to enable, support and sustain them in preparation and/or use and (c), direction and command that allows the day-to-day supervision and situated adjustment of preparation and/or use. Very few other nations propose to deal with the matter in so comprehensive a manner as P&E aspires to do for Brazil. This is an empirical observation, not an epistemological assumption. In fact, P&E would only admit comparison with documentation from major nuclear powers. This makes it opportune to illustrate the issue by a brief outline of US and Russia’s arrangements.

In the USA, the capstone document is the annual “National Security Strategy”, signed by the president, that identifies preferences and priorities in terms of political concerns (ends) and ways to address them (means) (USA 2015). This gives authoritative direction to a bi-directional flow under a variety of controls, both political and technical: top-down, all the way to individual administrative offices, firms or combat units and *bottom-up*, reporting what can, may, and might be achievable, improving implementation and informing the next iteration (Spinney 1985; Quinn 2015).

In the Russian Federation, the matter is more unilaterally top-down. “The Military Doctrine of the Russian Federation”, an expression of presidential decision expected to last a decade, lays down in detail a whole multi-dimensional matrix of ends and means (Russian Federation 2014), providing specified conditions, preferences, and priorities that articulate preferred, accepted and prescribed ways and methods (Sinovets and Renz 2015). Complementary top-down plans like the *State Armament Program* outline decades-long procurement, specifying means, down to the individual models to be acquired (Renz 2014; Galeoti 2017).

The issue here is that there are many ways to digest the requirements of Strategic Studies to conform to the administrative realities of a given polity. Regardless, each polity, each agency, will read P&E as counterpart to its own way of doing things (Booth 1979) — but relying on Strategic

Studies as touchstone for any reading of P&E's strategic meaning (Gray 1993; 2014; Millet and Murray 2007; O'Hanlon 2009).

P&E is comprehensively top-down, a closer parallel to Russia than to the USA. Its chapters express things as P&E understands them to be (Brasil 2012, 17 ff.), as they should be (Brasil 2012, 31 ff.), as they might be (Brasil 2012, 91 ff.), as P&E would wish them to be (Brasil 2012, 109 ff.). More broadly, what P&E wishes Brazil would *care for* (Brasil 2012, 129 ff.). Each chapter is largely self-standing, deeply concerned with its own particular theme, reporting in varying detail its own inner tensions.

For instance, admitting to power projection, but only under the UN, but not so much as to take it as an actual commitment to collective defence (Brasil 2012, 33). Or presuming the certainty of Brazil's pacific ascendancy to international primacy, but without hegemony – aggrandizement through harmonious relationships (Brasil 2012, 41). Or yet gathering in a single chapter lists to guide future joint staff planning that outline possible concerns, parameters or goals, ranging from the abstract (combat power that lends credibility to deterrence, e.g., Brasil 2012, 124), to possible procurement priorities (transport helicopters, e.g., Brasil 2012, 125), to deployment (specific to each force, e.g., Brasil 2012, 126–7), arriving at desirable capacities (permanent readiness, e.g., Brasil 2012, 128), but without de-conflicting demands (ready forces' requirements conflict with those which are expandable by mobilization, e.g., Brasil 2012, 128). Or, further yet, offering the comprehensive variety of items which other agencies would procure for defence, such as funds and political constancy to develop whole chains of scientific, technological, manufacturing, and operational development capabilities (Brasil 2012, 139–40). Despite the appearance of detail of some of these items, they emerge as alternative ways for deferring preferences or priorities as they lack focus, explicit inter-agency connections, or executive authority. This explains the impossibility of a review of the ensemble beyond this mosaic-like sampler.

P&E ultimately declines to provide preferences and priorities concerning ends and means. By presenting activities as 'objectives', by juxtaposing desired attributes or end-states, collecting lists for future implementation, alternative courses of action, or parameters without de-conflicting their demands, or yet by pleading for results that are to be obtained by other agencies in favor of defence, P&E preserves considerable freedom of action. Chapters advertise what P&E *cares for*, what it *might take into account*, what it *might do*, what it *would wish for*, implicitly adopting a "wait and see" posture that obviates immediate commitments, efforts, or expenditure. This does lighten the load on staffs and executives by postponing the messiness of scheduling and budgeting, avoiding the difficulties of setting up controls or having to define terms and methods for its own evaluation.

Freedom to act "when and if", however, leaves in suspense what is to be done starting *now*. Presumably, decisions will be made at some point, with enough lead time in advance of the *if* becoming *when*, lest one be unprepared as *when* becomes *now*. This posture would seem to rely on Brazilians' capacity for adaptation (Brasil 2012, 109) or to presume very reliable and timely advance warning, which might be an underlying, undisclosed premise of P&E.

Further, to leave agencies free from direction or tutelage for a considerable time, without clear politically established preferences or priorities in ends or means, risks autarchy and self-serving dysfunctions. P&E does not consider the possibility that inertia and bureaucratic empire-building might predominate, exacerbating intra- and inter-force rivalries, straining civil-military relations. This would appear to assume self-guided and harmonious intra- and inter-agency cooperation, perhaps depending on the unity of Nation and Armed Forces (Brasil 2012, 109) or on other underlying, undisclosed premises.

This might be corroborated by the way P&E deals with the DIB, which is to be reconfigured from the ground up. The whole matter is held hostage to, and elaborately expresses, the notion of a command economy. DIB would be confined to the development of independent technologies, divorced from the globalized network of science and technology, while subordinating commercial concerns for profit to strategic imperatives, requiring concurrent routine and advanced research and manufacturing activities. Further, DIB would answer at least in part for the development of operational capabilities (Brasil 2012, 99–100), as well as presumably spinning off its results into national development, fulfilling END's development counterpart (Brasil 2012, 45) by realizing its STI mandate. DIB's chapter on 'Implementation Measures' is a single-item agenda for MoD lobbying so other agencies might enhance special funding and export treatment of defence firms (Brasil 2012, 145). As in any command economy, those involved or interested can be expected to jockey for favor, buck up for opportunities and keep an eye open for the main chance, while expecting to be adequately rewarded for playing along as much as for any, eventual, result. There might be underlying, undisclosed premises here as well.

While P&E's "wait and see" posture might come to prove an interesting experiment in the fullness of time, it is not quite so obvious how it would actually guide action in procuring means to seek ends or gauging ends reachable by existing (or prospective) means in the present. Nor, consequently, how P&E could establish governance of defence to enable direction and command of day to day activities. Without clear expression of politically decided priorities and preferences of ends and means, there is really nothing substantive to say about P&E through the lens of Strategic Studies, other than noting and qualifying their absence.

Regardless, what then might be the reading of P&E by politics and agencies, by those who have to assess it or implement it?

Public Policy: the (in)effectiveness of political intent

The lens of Public Policy is germane as to how various involved parties would read P&E, which requires the appreciation of what needs to be considered so that decisions, actions, and control are effected legally, legitimately, and accountability. Public Policy is concerned with the issues and executions of a mandate, particularly, as to how a given direction supports the formulation and execution of undertakings in the public sphere, according to the public interest

in democracies — how political intent can be translated into effective and accountable actions (Moran *et al.* 2006, 3 ff). That being said, the particulars of each specific field of application must be considered. In what concerns Science, Technology, and Innovation (STI) – for its importance as explicitly stated in P&E –, the matter of policy depends on governments’ ability to engage the private sector in developing a shared vision for the future: the societal challenges that must be met, what might be developed to meet it, and how that would serve the interests of all involved (Evans 1995; Stiglitz and Wallsten 1999; Fiani 2013).

The USA is the core of a global network of defence-driven innovation. Its arrangements, particularly of the relations between the defence establishment and the defence industrial base (Weiss 2008), are not only the most expansive and comprehensive (Block 2008; Freeman 2015), but also in a very real sense the touchstone of all efforts by other polities. In more ways than one, US practice is often taken as the state of the art (Fagerberg and Mowery 2006; Weinberger 2017). The USA goes farthest and deepest in publicly enunciating its societal challenges, explicitly connecting its defence needs, defence activities, technological research, and business sector — the “industrial-military complex” (Dieter 2015).

The “Small Business Innovation Research” (SBIR) is a case in point. SBIR was completely overhauled in the 1990s at a confluence of concerns, namely, the loss of technological competitiveness of the US economy against Japan and Germany, the longstanding political aim to stimulate small businesses, the recognition — and concern for the disappearance — of a large number of small high-technology startups that were both key to the vision the country held of itself and an integral part of the strategy to bring it to fruition (National Research Council 2008). How the US armed services perceive, implement, and place SBIR within overall defence activities (National Research Council 2009; 2014) offers an opportune illustration of how the specificity of the field can transfigure a sensitive expectation of what is at stake in linking STI Public Policy to defence.

SBIR is a good example of how the US armed services square the contradictory demands and dynamics of R&D and procurement (Edquist *et al.* 2000; Connell 2006) through systematic Test and Evaluation (T&E) (National Research Council 2014). One thing is Research and Development (R&D), which entails the highest level of technological risk – failure is a possibility in any one project. Failure in R&D demands reports; but it is not – and should not be – legally actionable, that is, failure does not expose researchers or developers to legal action. Another is procurement: what will be bought by the armed services with the expectation of “zero” technological risk: the item delivers the expected performance over its life cycle. A failure in delivering such performance is – and has to be, in fact – legally actionable (Dimitri *et al.* 2006) – it is a breach of contract. While it might appear that an STI policy in touch with defence would require the introduction of technological risk into defence procurement, that is not the case at all (National Research Council 2009).

Acknowledging such a divide, the USA has established, in the wake of the 2005 series of reports by the National Academies of Sciences, points of contact, individuals who answer for the connection between procurement offices and research institutions whose purpose is to “square”

the circle between R&D and procurement in a given general area (naval aviation, NAVAIR, e.g., in the case of the US Navy). In other words, persons whose role it is to bridge the gap between one and the other through conflict resolution and by matchmaking between smaller companies tasked with R&D and large defence contractors, possibly interested in, though often unknowing of, research results, that have the necessary experience in meeting the stringent, even overbearing, manufacturing and operational requirements of materiel procurement between these two parties and acquisition program managers where additional funding for the next level of T&E may be found (National Research Council 2009; Lessa 2014). This reduces the technological risk of R&D over time to the point when these technologies can be successfully integrated into a procurement program (Office of Naval Research 2008; National Research Council 2009).

This informs and serves all three main parties involved. It tells researchers what problems the armed services would like to see solved, and why. It qualifies what the armed services might come to ask in light of technological promises and dead ends, and it allows policy-makers and agencies to cumulate learning over the whole cycle. Just as importantly, it identifies what problems cannot be solved, what may not be asked for, what there is still to learn (Office of Naval Research 2008). The whole is mediated by individuals empowered to act as honest brokers, using various controls, most notably robust Test and Evaluation (T&E) at scheduled milestones. The results of testing and evaluation support judgment on the promise, feasibility, or opportunity of any one particular technological solution. Dual-use and profitability, in turn, are a shared concern. Each party knows it stands to benefit should any one technology that stemmed from pursuing solutions to defence needs successfully find profitable applications in private markets. Granted, it benefits each of them in different ways: for instance, defence establishments gain from the familiarity and reliability for defence products in terms of military recruitment and training (National Research Council 2009; 2014).

When it comes to STI, the learning process itself can be — and most often is — paramount. In fact, most of STI policy-making is the art of formulating controls that support systematic evaluation, rather than choosing what to develop (Georghiou *et al.* 2014). This — rather than the setting of broad general goals (a political decision), specifying particular performance or capability (a military decision), pursuing the most promising or intriguing line of investigation (a research decision), or effecting controls, evaluations and passing judgment (an agency's decision) — is the core of the matter when it comes to any informed proposition or appreciation of STI policy in defence.

The issue here is that there are actually only very few ways of digesting the state of the art as administrative reality (Rodrik 2007; Lember *et al.* 2013). All polities and agencies use the US experience as their lens to read Public Policy of STI related to defence — including the reading of P&E.

And yet, P&E would appear to take this seemingly inescapable aspect of STI policy in defence for granted, almost approaching a positivist understanding of science, technology, or innovation, by which the clear expression of ambitious goals ensures their achievement if efforts are adequately

funded for long enough. Most of P&E's considerations regarding STI correspond to demands that others must meet, with the participation or at the request of the MoD. These include strategic partnerships that will grant access to technologies (Brasil 2012, 138–9) or the various integrating poles that, once established and funded over the long-term by other agencies, will achieve goals as broad as autonomy in technology and manufacturing of “smart weapons” (for sea, land, and air) or as narrow as the individual soldier's suite, e.g. (Brasil 2012, 139–40). Further, there are sweeping expectations of technological autonomy in fields like aerospace, conventional and nuclear submarines, or “cybernetics” (Brasil 2012, 139–43). P&E seems to expect the MoD's interests in science and technology will shape Brazil's national policies (Brasil 2012, 140–4). P&E would appear to make the same assumption in STI as in DIB: aspirations, expectations, and requests of a command economy that will achieve desired end-states or attributes – perhaps relying once again on Brazilians' ability to adapt and the unity of Nation and Armed Forces (Brasil 2012, 109) or on other underlying, undisclosed premises. As a result, through the lens of Public Policy in general, and STI in particular, P&E would appear to be either beyond redemption or, alternatively, to aspire to autonomy in method as much as in technology.

It would seem beyond redemption if there are no controls to square away the different interests of the parties involved, with R&D and procurement being treated as an indivisible continuum. Acknowledged divergent interests of the parties, mediated by an honest broker, resolving conflicts and issues of performance at each stage are not an optional extra when it comes to STI policy. The lack of sufficient controls (of robust, scheduled T&E, particularly) may fail to account for, record and allow for the institutional, shared systematic appreciation of what went well, and why - and, perhaps more importantly, – of what went wrong, and why. To fail to differentiate R&D from procurement, furthermore, may unwittingly limit legal liability and prevent the effect of market forces, halting the process of accountability or selection that rewards success and punishes failure – potentially placing policy, and policy-makers, on a very slippery slope.

As for autonomy in method, one point stands out that should suffice to convey its boldness: P&E's spousal of verticalization. It is not entirely convincing that a fully verticalized, general, hierarchical and national supply chain that would depend exclusively on domestically sourced materials and capabilities would surpass in effectiveness or efficiency the currently preponderant network of distributed, specialized, market-driven and globalized arrangements. In proposing an approach that would unify all of research and development, manufacturing, procurement and development of operational capabilities in a single hierarchical structure to be guided by strategic imperatives, P&E would, if successful, break new ground, innovating in innovation, perhaps giving a new lease of life to conceptions held dear in the early stages of mass production. Here as in the matters of legal action, or the play of market forces, it might well turn out that P&E would again rely on Brazilians' capacity for adaptation and unity of Nation and Armed Forces (Brasil 2012, 109) or on underlying, undisclosed premises.

Regardless, what then might be the reading of P&E by politics and agencies, by those who have to assess it or implement it?

Conclusion

Brazil's capstone direction for defence, the PND and the END were approved by Congress in 2013. Presented as a unit (P&E) ever since, it constitutes a landmark in the process of Brazilian re-democratization and authoritatively expresses Brazil's official declaratory policy in defence, the most up-to-date presentation of Brazil's ambitions, intentions, and activities. It corresponds to an exercise in transparency that enlivens links with Congress and with Brazilian society – raising awareness of defence issues. P&E presents itself as but a facet of a wider conception that would connect strategies of defence and development under the concept and policy of a policy for national independence to the Armed Forces, whose mission would be to safeguard it (Brasil 2012, 45).

The definition of priorities, the establishment of foci in the pursuit of P&E – agency in its full breadth – are formally invested in the *Ministério da Defesa*. P&E conveys a broad, inclusive concern for the many facets it considers germane to the defence of Brazil. It composes a variety of elements: definitions, concerns, approaches, admonitions, and desiderata, pleas for mechanisms or initiatives by others that would deliver its wishes through national defence objectives or self-standing intents, cautions, lists, desired end-states, capacities, and aspirations. It seems much is expected from Brazilians' capacity for adaptation and the benefits of the unity of nation and Armed Forces (Brasil 2012, 109). P&E's formulations consistently preserve freedom of action, expressing a posture of "wait and see". This would be in harmony with the absence of either preferences or priorities concerning ends or means, resources or finance and also coherent with P&E's implementation timeframe of 2012-2031 (Brasil 2012, 153 ff.), as well as with the sweeping deferral of any outstanding issues to annexes as yet to be written as of 2017 (Brasil 2012, 155). This does leave unanswered how P&E would propose to establish governance over its activities, evaluate its results or provide for oversight of its expenditures, which would appear to merit some importance, given that defence is already one of the top three lines of the Brazilian Federal Budget.

To focus on the absence of priorities and preferences regarding ends and means in P&E through the lens of Strategic Studies might not be entirely fair. It might well be the case that P&E does not propose to arrive at any such. This might be in accordance with the posture of "wait and see" that preserves freedom of action, postponing commitments until "when and if". However, this practice does raise some cogent concerns as to P&E as a guide for immediate action, namely, what is to be done until "when", as much as it would seem to presume very reliable advance warning to know it. Granted, this might ensure P&E's longevity as the broad expression of Brazil's aspirations. Until priorities and preferences regarding ends and means are decided upon, the contribution of Strategic Studies is limited to noting their absence.

Similarly, it might be of little practical consequence that P&E's aspirations and imperatives touching Science, Technology, and Innovation would seem to be either beyond redemption or amount to an innovation that seemingly enlarges the state of the art of Public Policy. This might do well for the uplifting posture of reaching for the stars and hoping for the best – inspirational, if nothing else – by aiming at innovation in innovation, and autonomy in method as well as in

technology. Alternatively, it may be admitted, that, at some point, it might turn out to be the case that the pressing concerns of developing countries preclude making the distinction between research and development from procurement, for all sorts of reasons. However, it does raise some cogent concerns as to its feasibility, as well as to its prospects. It might well be that P&E presumes that actual implementation, cumulative practice, and repeated interaction will lead to a sufficient measure of experience and adaptation, perhaps even learning.

This article offered a first cut at the contents of the 2013 proffered unity of Brazil's *Política Nacional de Defesa* and *Estratégia Nacional de Defesa*, P&E in short, and discussed how these might be understood through the lenses of Strategic Studies and Public Policy in Science, Technology, and Innovation and thus come to be read by polities and agencies. Part 1 offered an overview of P&E against the backdrop of a literature review (A Summary Review of the Literature) (1.1): what it is about, what it says in general, and provided examples of its details (P&E, an Overview) (1.2). Part 2 offered a policy review of P&E, outlining how it might be interpreted through two lenses. The lens of Strategic Studies acknowledged that it could do no more than note and qualify the absence of preferences and priorities in ends and means (Strategic Studies: Ends and Means) (2.1). The lens of Public Policy comprehended the assumptions that P&E makes regarding Science, Technology, and Innovation, which would admit to being either beyond redemption or the aspiration of innovation in method as well as in technology development (Public Policy: the (in)effectiveness of political intent) (2.2). Part 3 offered conclusions and discussed some of the consequences of the article. Defence policy and strategy are not trifles. They pose serious challenges with grave, far-reaching consequences both domestically and for international relations. And yet, formulating policy means making choices; those it favors are pleased, but everybody else is not. P&E leverages what is, might or could be, artfully skirting this pitfall. If anything, the breadth and scope of Brazil's authoritative declaratory defence policy does suggest a broad agenda for public discussion, political debate, and scholarly interpretation.

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