OPEN ACCESS Freely available online

Journal of Defense Management

Research Article

Towards Building a Missile Proliferation Theory: The Moment of Ballistic Consciousness and the Tactical Rationale

Ali Dizboni*[1], Karim E. El-Baz*[1]

[1]*Department of Political Science at the Royal Military College of Canada, Egypt*

ABSTRACT

Ballistic missile proliferation in the Middle East can stem from a need to overcome specific military vulnerabilities that correlate with ineffective armed forces. This ineffectiveness could be both intentional and unintentional. Intentional, in the sense that the political leadership can deliberately decrease the effectiveness of the national military institutions when it perceives that the main threat to the regime security is domestic rather than foreign. Accordingly, the procurement of unmanned systems of delivery such as ballistic missiles resembles a golden ticket to compensate for the inherent military vulnerability associated with coup-proofing practices. Military ineffectiveness could also be unintentional if the state has no sustainable access to efficient and effective air force crafts, spare parts, ammunition and training, and in this case, relying on ballistic missiles as the main means of delivery would be intended to compensate for the unreliability of the air force.

Keywords: Ballistic Missiles; Coup-Proofing; Tactical Rationale; Military Effectiveness

INTRODUCTION

Orthodox proliferation and nonproliferation theories rest upon several assumptions that clarify the ballistic proliferation behavior. These assumptions include: security, deterrence, actor's rationality, national pride, mode of governance, the quality of decision-making circles, or the power of idea and norm. However, like many social sciences-related theories before, these theories became in a way a hostage to the intellectual jail of "righteousness", when each of these theories claimed the absolute truth, and belittled the alternative perspectives in process. Many security-oriented theorists, for instance, derived their rationale from the school realism in the 1950s. From Henry Kessinger to John Mearsheimer, security theorists related proliferation to the chaotic world order that lacks overarching governance. Kenneth Waltz, one of these theorists, claimed in 1990 that the pursuit of security lies at the very essence of the proliferation rationale. In 1961, Charles De Gaulle, then-President of France, questioned the U.S. nuclear willingness to defend Europe against the Soviet Union. Waltz would claim that a need to procure a means to deter an external threat has shaped the French proliferation rationale? Is this true though? And can this hypothesis explain why other countries procured similar means of deterrence? Validating this hypothesis would undermine the efforts of the father of the French atomic bomb, Bertrand Goldschmidt, whose state-sponsored work on nuclear weapons is dated back to 1942 prior to perceiving the Soviet Union as a threat. Furthermore, security cannot possibly fully explain the proliferation behavior of all the countries that procured ballistic or weapon of mass destruction capabilities. South Africa was neither under the threat of a potential Soviet Invasion nor neighbored by aggressive enemies, still its efforts to develop indigenous nuclear and ballistic capabilities are dated back as early as 1944. Security might have played a role in pushing and financing a French indigenous nuclear and ballistic program but associating the universal proliferation rationale to security would be a cardinal sin [1-5].

Neoliberal institutionalists resembled in the writings of Mitchel Reiss, Etel Solingen, Glenn Chafetz and Stephen Meyer tended to challenge the security orientation of the discipline and presented a fresh approach to assess proliferation studies. Solingen, for instance, studied the variance in the mode of governance (liberal democracies V.S. non-democracies) and its impact on the decision to proliferate. Chafetz tackled proliferation through applying a core-periphery model in which

***Correspondence to:** Ali Dizboni, Department of Political Science at the Royal Military College of Canada, Egypt, Tel: 01140404029; E-mail: kelbaz@aucegypt.edu

Received Date: June 19, 2021; **Accepted Date:** October 21, 2021; **Published Date:** November 1, 2021

Citation: Dizboni A, El-Baz K E (2021) Towards Building a Missile Proliferation Theory: The Moment of Ballistic Consciousness and the Tactical Rationale. J Defense Manag 11: p421

the core (liberal democratic states) values cooperation over arms race and the periphery (non-democracies) feels isolated and maximizes their military power. Stephen Meyer approached proliferation as a three-stage process that begins with an executive decision to develop a capacity, followed by a decision to transform this capacity into a capability, and eventually transforming this capability into an operational program. According to Meyer, the decision to proliferate lies in the second stage, but Meyer has also pointed out that the decision to proliferate is one thing and transforming the decision to an operational capacity is another, as many countries altered their proliferation behavior in the second stage and eventually gave up on their proliferation ambitions. Scott Sagan, another neoliberal institutionalist, utilized the bureaucratic politics model through focusing on the role of organizations in the proliferation decision. Sagan based his proliferation model upon the case of India and nuclear weapons in the late 1960s, and associated India's proliferation decision to successful political lobbying the Indian National Atomic Commission. This very example, however, challenges all the claims offered by the neoliberal institutionalists; India was already a consolidated democracy and a core state in the international arena prior to its decision to develop nuclear capabilities or its very first indigenous ballistic capability (the Prithvi program). Six out of the nine countries that developed nuclear capabilities for military use are arguably consolidated democracies. Out of the 31 countries that currently possess ballistic capabilities, 21 are consolidated liberal democracies, so quantitively, it seems that the correlation between mode of governance and ballistic missiles or nuclear weapons is far stronger than the case with non-democracies. This, however, does not mean that the neoliberal institutionalists were wrong. Simply [6]. The school, despite its merit, cannot offer the one answer to the proliferation puzzle.

Beyond the realm of classic International Relations, a new trend in proliferation studies sought to tackle the proliferation puzzle through focusing on the non-materialistic gains such as national pride. Ian lesser argued that countries, in their pursuit of strategic weight and prestige, can find their end in parading and perhaps utilizing ballistic missile capabilities. Daniel Barkley has expanded on this notion and attested that the mere possession of ballistic missile capability provides nations with national prestige that could be transformed into coercive diplomacy, and by extension can lead to favorable deals countries in possession of these systems in return of dismantling their capabilities. Similarly, Gawdat Bahgat has integrated national pride as one of many factors that can motivate a state to proliferate. As interesting as this approach can be, none of those who introduced it clearly stated that national pride as an independent variable on its own with significant weight to influence the proliferation decision. After all, North Korea did invest billions to reverse engineer the Scud B systems it received from Egypt in the 1980s to parade them in Kim Il-sung Square, and Saudi Arabia did not knock the doors of almost every ballistic missile exporter facing multiple rejections till China finally agreed to supply the DF-3 and DF-21 to make Al-Sauds dynasty proud.

None of these theories is flawed, but also none of them can fully assess decision to go ballistic on its own. By all means, security is a key variable in the decision to go ballistic, so is the decision-making mechanism (unilateral/collective), mode of governance, quality of leadership as well as non-materialistic gains such as national pride. Yet, constraining the proliferation rationale to these variables will be like scratching the surface of the subject to avoid the deeper technical complexity of the military systems. These theories regarded proliferation decision as an executive decision taken in a political vacuum. This is precisely why these theories fail to answer why countries might pursue ballistic missiles and not any capability that serves similar purposes of deterrence, security, and national pride among the other motives. Contemplating why a country precisely singles out ballistic missiles out of other cheaper and reusable alternatives requires an analysis that decouples ballistic missiles from the realm of policy [7-9].

Since the dawn of time, from the age of longbows to the age unmanned aerial vehicles (UAVs), the decision to procure or develop military hardware was governed by two basic aspects; a moment of consciousness in which a clan, a nation or a country realizes its military vulnerability to specific attacks; and a rationale derived out of this moment justifies and select the best military means to address this specific vulnerability. In the Italian war of 1494, the Italians felt a moment of consciousness in which their square-shaped fortresses were vulnerable to the French gunpowder cannons. Out of this moment, an Italian tactical rationale sought to evolve a new design than can withstand French cannon barrages; henceforth, the introduction of the polygon shaped Bastion Fort or Trace Italienne. During World War One, the belligerents experienced a moment of consciousness derived from the need to end costly protracted trench campaigns. Out of this moment, a British tactical rationale sought a means to swiftly penetrate enemy defences and control his command and control centers; henceforth, the introduction of the World's first motorized tank, the British Mark I at the Battle of Somme in 1916. Similarity, moments of consciousness preceded the tactical rationale that developed torpedoes to counter steamboats, guided surface to air missiles to counter jet fighters and close-in-weapon systems (CIWS) to counter anti-ship missiles and ammunition. The advent of ballistic missiles is neither an exception to this moment nor rationale. Towards late 1942, Nazi Germany experienced the first moment of ballistic consciousness; a moment in which the country realized its manned aerial ineffectiveness to deliver payloads to Allied cities due to the superior Allied air power. This moment derived a tactical rationale to seek out unmanned means of delivery; hence, the revival of the previously undermined Wernher Von Braun's rocketry. The product that came out of this tactical rationale was the world's first ballistic missile, the Vergeltungswaffe 2 (V-2). The V-2 was a single-stage liquid fueled ballistic missile guided by an inertial radio guidance system. Its engine combusted a nine-ton mixture of alcohol and liquid oxygen that generated a significant amount of thrust extending the missile's range to 350 Kilometers. The missile would rise vertically after ignition for almost 10 Kilometers, and then its guidance and control system would turn it to 45 degrees guiding it to its target. Once it attained the

required speed the control system would shut off the engine, and allow the gravity to cruise the missile down to its pre-determined target. The missile carried a payload of one-ton and was able to reach many of the allied cities including London, Antwerp, Paris, Tournai, Mons, Cambrai, and Maastricht. The missile's accuracy was poor, still it left a deep psychological impact on the allies as the only weapon that cannot be intercepted or shot down in flight by the Allies air force. this advantage made the V-2 missile the most used ballistic missile in history with a record of 2,952 fired at allied cities between 1943 and 1945 killing over 13,000 civilians and leaving 25,000 casualties in addition to an immense physical damage. The Allies' vulnerability the V-2 attacks created a moment of ballistic consciousness in the United States and the Soviet Union. Out of this moment came a tactical rationale that derived the Allies' intelligence services to scavange Nazi stocks for unused V-2s or any related data and succeeded in transferring some the V-2 models, blueprints and some of Nazi rocket brains including Wernher Von Braun to replicate the Nazi ballistic missile program. By 1948, the transferred technology allowed the U.S. to recreate the V-2 program as the RTV-G4-Bumber sounding rocket. Two years later, the Bumber project evolved to become the U.S. very first operational ballistic missile the PGM-11 Redstone. As for the Soviet Union, by 1950, it operated its indigenous clone of the V-2 missile and dubbed it as the R-1 missile.

Up until 1953, the U.S. perceived ballistic missiles as long-range artillery system capable of carrying conventional or nuclear warheads to destinations beyond the range of traditional tube artillery. The very first generation of American ballistic missiles, namely the PGM-11 Redstone missiles had seen limited production and field deployment. Due to the short range of the missile (Appx. 300 km), those missiles were confined to serve in the European theatre of operation; namely with the 40th and 46th field artillery in West Germany, in support of the 7th Army and NATO. For the Soviet Union, however, a ballistic missile was more than an artillery system; on a doctrinal basis, it was the Soviet means to compensate for strategic inferiority. The U.S. military avionics and air-to-air ammunition technology surpassed that of the Soviet Union, which in turn derived the Soviet to increase their investment in means that can compensate for its aerial inferiority; namely its ability to safely deliver destructive payloads to Western Europe. For that reason, the Soviet ballistic missile program, during the early years of the Cold War, has seen much more progress than its American counterpart due to its relative strategic weight for the Soviet. If compared to the American ballistic program between 1951 and 1953, the Soviet program conceived 11 ballistic missile designs with different ranges, whereas the U.S. only conceived four with limited tactical ranges. It was the tactical rationale that increased the military value of ballistic missiles in the Soviet Union, and at the same time decreased its value in the Western Bloc. It was until 1957, when the Soviet successfully tested the R-7 missile, the World's first ICBM with an extended range capable of reaching U.S. homelands that the U.S. tactical rationale switched in favor of allocating resources for ballistic missiles' R&D to catch up with the Soviet Union and a speed produce a similar ICBM system capable of carrying a nuclear payload to the Soviet mainland upon a push of a button that became latter the SM-65 Atlas missile (operational in 1959).

Still, this tactical rationale was nuclear-oriented. Ballistic missiles, in general, were and still are inaccurate delivery vehicles recording circular error probable (CEP) values up to hundreds of hundreds meters, which makes it the least accurate delivery vehicle among the other mean of delivery. A CEP value in hundreds of meters can be acceptable when it comes to delivering a non-conventional payload such as nuclear warheads, as these warheads have wide blast radius that covers tens of kilometers. But when it comes to delivering conventional high explosive payloads, ballistic missiles are without doubt the most ineffective and inefficient delivery systems due to its ill-accuracy and the loss of most of the explosive payload value upon impact, as most of the destructive wave would travel vertically rather than horizontally delivering less desirable results. The Economist once referred to the use of ballistic missiles to dump conventional payloads as "using a Ferrari to collect groceries." Taking that in to account, an important question emerges, why would states with no nuclear military capabilities indigenously develop or procure cost inefficient and ineffective means of delivery such as ballistic missiles when they can develop or procure re-usable and more accurate alternatives such as aircrafts? To answer this question, one must understand the moment of ballistic consciousness and tactical rationale that derived each case go ballistic

Applying this approach to the proliferation of ballistic missiles in the Middle East might result in thought-provoking outcomes apart from the already existent theoretical frameworks. Despite the radical variances in the economic, technological, or military capabilities among the Middle Eastern countries, the majority of countries within the Middle East, 12 out of 17, have either procured or developed ballistic missile capabilities. Asymmetrically, should large-scale warfare take place among the Middle Eastern countries, the region can turn to be the world's most extensive ballistic theatre of operations. The interesting question should be what led the majority of these states to procure ballistic missile capabilities when, with the only the exception of Israel, they do not possess valuable unconventional payloads to deliver? Most of these countries share a number of commonalities including similar modes of governance, culture, religion, security perceptions, and evens similar levels of conventional ineffectiveness, with the exception of Israel. The mode of governance, religion, culture or security perceptions might contribute to the political decision to seek out ballistic capabilities as already discussed by the orthodox proliferation theories. However, when it comes to the tactical rationale, regional similarities such as the mode of governance, culture or religion will have almost constant values, because this rationale only recognizes military calculations that are based upon a country's military's vulnerabilities and the means to address/compensate for these vulnerabilities.

Though, what type of military vulnerability can influence a country's ballistic behavior?

country might be militarily vulnerable if it lacks 3rd generation armor, but this type of vulnerability will not catalyze a need to procure ballistic missiles. This type of vulnerability can at best

contribute to procuring 3rd generation armor, modernizing 2nd generation armor fleet to 3rd generation standards, or installing Anti-Tank Guided Missiles (ATGMs) turrets on 2nd generation armor to increase its fire power against superior armor. When it comes to military vulnerability and ballistic missiles, one must consider the tactical rationale. A ballistic missile is a means of delivery through which a country can deliver a payload (whether conventional or unconventional) beyond its borders. Henceforth, the military vulnerability with regard to ballistic missiles would have to do with a country's capability or incapability to traject firepower beyond borders. Theoretically, a country's military can traject firepower beyond borders through means of delivery that includes: manned aerial vehicles such as tactical or strategic bombers, unmanned aerial vehicles (UAVs), cruise missiles, ballistic missiles and hypersonic glide vehicles.

Out of all these options, ballistic missiles suit these countries' military needs more than the other alternatives, how? Each of the delivery systems mentioned above has a limitation; for instance, when it comes to UAVs, the region's access to this technology, with the exception of Israel, is limited to Medium Altitude Long Endurance (MALE) whose range or payload capacity is limited to few hundred kilometers denying its operators the ability to strike deep into the enemy's territories. Cruise missiles such as the American Tomahawk or the Russian 3M-54 Kalibr have extended operational ranges > 1,000 km. Still cruise missiles, despite their accuracy, have one shortcoming; they cruise, which means that they can be easily intercepted and shot down by an enemy with a sophisticated air force or Ground-based Air Defences (GBADs) network. Hypersonic glide vehicles can travel faster than any operational missile, which decreases the chances of its interception, but its technology is currently restricted to those who manufacture these systems namely the United States, the Russian Federation and China, and none of these countries offered to export those systems to second users. This leaves the region with two options; either manned aerial vehicles or ballistic missiles. Manned aerial vehicles have universally served as the primary means for delivering conventional payloads since the early twentieth century, buy Delivering a payload via a manned aerial vehicle requires fulfilling at least five conditions:

- An operational (tactical or strategic) bomber to deliver a payload deep into the enemy territory
- explosive payloads
- A fighter fleet to escort the bombers safely to the drop site
- Skilled pilots who can operate the bomber and fighter fleets.
- An effective command and control system to brain the aerial operations.

If a country fulfills these five conditions, then the tactical rationale of its acquisition strategists will most probably decrease the strategic weight of procuring or developing ballistic missiles due to the presence of more efficient and effective alternatives. However, in the absence of any of these conditions, a moment of ballistic consciousness will take place, and catalyze a tactical rationale that increases the strategic weight of procuring or developing ballistic missiles perceiving them as a remedy to a country's military vulnerability, when it comes to delivering payloads beyond its borders. Aerial ineffectiveness can be affiliated to one of three causes: intentional causes, unintentional causes, or a combination between both intentional and unintentional causes. Intentional causes refer to a country's deliberate weakening of its armed forces. A country might sacrifice its military effectiveness (including aerial effectiveness), when it prioritizes its regime security over its overall state security. This practice was defined by James Quinlivan in 1999 as coup-proofing techniques. Among those practices techniques is adopt a military promotion criterion based on loyalty instead of meritocracy, exploiting ethnic and religious fidelities as a recruitment standard, creating a paramilitary force to counter-balance the national armed forced, and above all create a centralized chain of command and control systems that discourage initiative and creativity in favor of paralyzing potential military usurpers. All these practices, despite the possibility of a country's access to cutting edge military technologies, degrades the overall military effectiveness of the armed forces leading to aerial ineffectiveness, and by extension incapability to traject its firepower beyond its borders against an organized enemy. A regime that practices coup-proofing techniques is well-aware of its side effects that make a country theoretically vulnerable against external attack. These practices can steer the strategists' tactical rationale towards procuring or developing unmanned systems that does not require high military skills or creativity to operate such as ballistic missiles, which in turn can compensate for the aerial ineffectiveness of coup-proofed regimes. For instance, during the First Gulf War, Saudi Arabia operated some of the cutting edge aerial systems including the F-15 and the Panavia Tornado, still it performed poorly if compared to other operators who operated similar system in the same war as per the first-hand testimony of this war's veteran Norvel De Atkine. The Saudi poor effectiveness was attributed to their centralized command and control system that decapacitated the pilots to take the initiative if a window of opportunity appeared, or to find an out-of-manual tactic to better increase the overall Saudi aerial performance.

On the other hand, Unintentional causes can be associated with countries that cannot:

- procure advanced aerial systems that suit its military needs
- maintain aerial operational effectiveness in terms of its logistical access to ammunition and spare parts

DISCUSSION AND CONCLUSION

The aerial effectiveness of a country that lacks the indigenous industrial to support its air force would be subject to the level and nature of strategic cooperation with the country's foreign supplier/s. For instance, Nasser's aggressive diplomacy against Britain had drastically impacted the Egyptian Air Force whose entire fighter and bomber fleet was British made through-out the early 1950s. Under King Farouk I, Britain equipped Egypt Gloster Meteor MK.13 fighter and Handley Page Halifax bombers. However, when Nasser and the free officers took over in 1952, the level and nature of Egypt's military cooperation with the United Kingdom eroded. Nasser sought to restructure the Egyptian military after the Soviet model. In 1955, Nasser concluded a deal with the Soviet Union that was later known as

the Czechoslovakian arms deal to refurbish the Egyptian Air Force fleet with Mig-15bis and the Il-28 bombers as a substitute to aging Meteors fleet that lacked ammunition and spare parts. As a part of the deal, the Soviet Union took over training Egyptian pilots in Soviet military academies. The inferiority of Soviet pilots' skills and equipment against Western systems, was, henceforth, transmitted to the Egyptian newly modelled Air Force. in 1955, the former British air attaché in Cairo submitted a report to London analyzing the newly structured Egyptian Air Force. In this report, Air Commodore C.M. Heard testified that the majority of the pilots had inherited the poor Soviet flying techniques and were quite below standard in both instrument and night flying. When the armies of Britain, France and Israel started hostilities against Egypt as a part of the 1956 Suez Crisis 1956, the Egyptian MIG-15bis fleet failed to achieve air supremacy over Port said, the Sinai, the Canal Cities and Cairo. Worst of all, it failed to escort Il-28 bomber fleet to the British and French Camps in Port Said, and by extension, the Egyptian military's ability to traject fire power beyond the range of its ground forces was neutralized. It was due to the poor equipment and training of the Egyptian Air Force pilots that the Egyptian strategists, after 1956, witnessed a moment of ballistic consciousness leading to the tactical rationale that gave birth to an indigenous ballistic missile program towards the late 1950s, Al Kaher and Zafer programs.

Other countries' aerial ineffectiveness might be attributed the combination between intentional and unintentional causes. In the 1970s, Iran possessed by far the most effective and efficient air force in the Middle East. Iranian pilots under the rule of the Shah received extensive trainings in the U.S. and operated some of the cutting-edge systems at that time including the F-14, F-4 and F-5. Even though Iran's traditional regional rival, Iraq, started to develop an indigenous ballistic program in the 1970s, Iran felt no need to invest in a similar program. The Iranian tactical rationale, at that time, decreased the strategic value of investing in a ballistic program due to Iran's then-possession of more efficient and effective means of delivery. However, when Iranian Islamic revolution took place in 1979, the U.S. stopped the transaction of military equipment, spare parts, and ammunition to Iran; henceforth, decapacitated the ability of the Iranian Air Force to deliver conventional payloads on the long-run. Rubbing salt in the wound, the Iran-Iraq war broke out in 1980, and the Iranian Air Force's stock of spare parts and ammunition dwindled in the early years of the war. The outcome was devastating for the Iranian war strategists, as their ability to traject fire power beyond borders was compromised. Adding to that, the post-revolution regime started to marginalize the Iranian national military and counter-balance it with a less professional but more loyal paramilitary force that became later the Iranian Revolutionary Guard Corps (IRGC). Innovation and creativity among the ranks of the Iranian national military was suppressed by a regime that feared a counter-coup to reinstall the Shah as in 1953. Even the Iranian national air force was counter-balanced by less professional paramilitary pilots who served in the IRGC Aerospace Force. All these practices have decreased the operational effectiveness of the national Iranian Air Force as a fighting force capable of delivering payloads into an enemy's territories. Unintentional lack of ammunition and spare parts besides the intentional coup-proofing practices in Iran created a moment of ballistic consciousness that derived the Iranian tactical rationale increase the strategic weight of ballistic missiles as a alternative to traject firepower beyond borders [10].

The absence of more efficient and effective means of delivery due to the reasons mentioned above constitutes the foundation of a moment of ballistic consciousness, which in turn steers a tactical rationale towards procuring or developing ballistic capabilities as a substitute.

REFERENCE

1. Steff R. Strategic thinking, deterrence and the US ballistic missile defense project: from Truman to Obama. Routledge; 2016 Apr 1.
2. Conrad W. The Future of Tactical Nuclear Weapons. Air and Space Power Journal-Spring 2011. 2001 Jun;26.
3. Mistry D. Ballistic missile proliferation and the MTCR: A ten-year review. Contemporary Security Policy. 1997 Dec 1;18(3):59-82.
4. Lackenbauer W. 'Defence Against Help'Revisiting a Primary Justification for Canadian Participation in Continental Defence with the United States. Journal of Military and Strategic Studies. 2021 Feb 1;20(2):62-89.
5. Mistry D. Containing Missile Proliferation: Strategic Technology, Security Regimes, and International Cooperation in Arms Control. University of Washington Press; 2003.
6. Bowen WQ, Freedman L. The politics of Ballistic Missile nonproliferation. Macmillan; 2000 Apr.
7. Gartzke E, Kaplow JM, Mehta RN. The determinants of nuclear force structure. J Confl Resoln. 2014 Apr;58(3): 481-508.
8. de Roode S. Great power relations and hybrid tactics.
9. Davis CJ. The Ballistic Missile as a Symbol of Asymmetry in East Asia. MARINE CORPS COMMAND AND STAFF COLL QUANTICO VA; 2000 Jan 1.
10. KHAN M. The politics of southern Asian ballistic missiles: towards a framework for a mutual restraint regime (Doctoral dissertation, Durham University).