UC San Diego
SITC Research Briefs

Title
The Israeli Approach to Defense Innovation

Permalink
https://escholarship.org/uc/item/4t07267h

Journal
SITC Research Briefs, Series 10(2018-7)

Author
Adamsky, Dmitry

Publication Date
2018-05-30

RESEARCH BRIEF

The Israeli Approach to Defense Innovation

Dmitry (Dima) Adamsky

Since its establishment, the State of Israel has cultivated itself as a defense technological-industrial power. This intentional and focused policy has made it possible for Israel to embark upon significant programs of military technological and industrial development and has spurred Israel to major advances in military innovation, defined here as radical defense transformation, in which new organizational structures, together with novel force deployment methods, usually but not always driven by new technology, change the conduct of war of a given actor and contribute significantly to its overall military effectiveness. This research brief argues that the Israeli approach to military innovation has been a function of geopolitical drivers and shaped by the social-organizational characteristics of the country's strategic mentality and culture. The brief reflects on the evolution of the Israeli approach to military innovation and describes its proclivities, in order to enable comparative analysis and a more generalizable analytical framework. It first describes the structural factors that account for the Israeli fixation on the military-industrial complex and defense innovation; then it outlines the social-organizational factors, which have enabled and conditioned its realization. It concludes with an evaluation of the strengths and weaknesses of the Israeli approach and a review of recent trends.

STRUCTURAL FACTORS DRIVING ISRAEL'S APPROACH TO INNOVATION

The main driver of the Israeli approach to defense innovation is a persistent social belief in the objective necessity of excelling in security affairs as a pledge for survival. This interpretation of the geopolitical reality is not just an abstract notion, it has had concrete implications for the allocation of resources and the organizational energy devoted to the subject within the strategic community over several decades.[1] Since its establishment, Israel has been embroiled in warfare more than any other country since the end of World War II. Israel's encirclement by enemies with greater populations, resources, and militaries has contributed to the self-perception of an "inferior few" against a "superior many," regardless of the actual correlation of forces on the ground. Moreover, the fact that most of Israel's adversaries have been supported conceptually and materially by the Soviet Union over several decades, including by transfers of modern weaponry, has made the situation more demanding.

Two basic national security assumptions have emerged for Israel. First, Israel is fated to live in a hostile strategic environment and engage in recurrent rounds of violence with its neighbors for the foreseeable future. Second, due to the severe material and quantitative asymmetry between Israel and its adversaries, it can outperform them only asymmetrically, by benefiting from a qualitative military edge. These assumptions have been widely shared by both decision-makers and the general public. This threat perception, multiplied by the traditional Jewish-Israeli siege mentality,

has resulted in the sanctification of the national security sector and legitimization of constant and generous pouring of resources into the military-industrial complex. The latter has drawn many of the country's talented, patriotic youth, who have been eager either to contribute to it for a certain period of their professional lives or to make it a long-term career.

Prior to the introduction of the term "military innovation" or "defense transformation" into the professional lexicon, the Israeli strategic community for decades referred to very similar notions under the rubric of "qualitative military edge" (QME). A means to counterbalance the numerical superiority of adversaries, QME referred to acquiring weapons more sophisticated than those of the enemy, and handling them more professionally. The quest for and preservation of this edge became the fundamental motif of the Israeli national security approach. In theory, the qualitative edge rested on the harmonic synthesis of technological and non-material factors. Beyond technology, Israel has emphasized the high personal and educational qualifications of its conscripts, high motivation and unit cohesion, and finally, creative operational stratagems, sometimes referred to as the "indirect approach." These three "force multipliers," backed by state-of-the-art technology, became central to the Israeli Defense Forces' theory of victory.

Self-sufficiency, driven among other things by traumatic experiences with unreliable allies before and after the Holocaust, has been an important factor in the Israeli approach. The young state's experience of being unable to obtain essential weapons in the face of isolation left a lasting mark

on the Israeli psyche and shaped its defense industry. Self-reliance in weapons production became a national obsession and resulted in the establishment of a highly innovative defense industry. In its first years, the Israeli Defense Forces (IDF) had little understanding of military technology and deployed obsolete weaponry. Quantitative inferiority was compensated for by the higher caliber of the Israeli soldier, creative planning, and the ingenuity of an indirect operational approach.

During the 1950s, weapons procurement improved but lacked synchronization and was sporadic and poorly balanced across the services. Following the Six-Day War, the IDF came to regard technological solutions more and more as a panacea in security affairs, to the point that it became a reflex to look for solutions through the prism of technology. Driven by a fundamental sense of insecurity, and motivated by its technological and operational successes, Israel strove to attain full autonomy in weapons production wherever possible. Eventually, it established an ultra-sophisticated and innovative defense industry to ensure QME. This fixation on preserving and increasing its qualitative edge vis-à-vis neighboring militaries enabled it to develop a technological arsenal in select areas so advanced that the superpowers did not possess, let alone deploy, a fraction of it.

In sum, the Israeli approach to the QME was divided from the beginning. Israel frequently saw in advanced technology a "quick fix" for minimizing war costs, duration, and fatalities, and the IDF always sought to be one step ahead technologically. This tendency was partly offset

1 This research brief draws on Dima Adamsky, *The Culture of Military Innovation* (Palo Alto, CA: Stanford, 2010); Uri Bar-Joseph, *Israel's National Security Towards the 21st Century* (London: Routledge, 2002); Issac Ben-Israel, *Tfisat Ha Bitachon Shel Israel* (Tel Aviv: Universita Meshuderet, 2011); Martin Van Creveld, *The Sword and the Olive* (New York: Public Affairs, 2002); Charles Freilich, *Zion's Dilemmas* (Ithaca, NY: Cornell, 2014); Jason Gewirtz, *Israel's Edge* (Jerusalem: Gefen Publishing House, 2016); Michael Handel, "The Evolution of Israel's Strategy," in *The Making of Strategy,* ed. Williamson Murray (Cambridge: Cambridge University Press, 1996); Avi Kober, *Practical Soldiers* (London: Brill Publishers, 2015); Zeev Maoz, *Defending the Holy Land* (Ann Arbor: University of Michigan, 2008); Eitan Shamir, *Transforming Command* (Palo Alto, CA: Stanford, 2011); Dan Sinon and Saul Singer, *Start-Up Nation* (New York: Twelve, 2009); Avner Yaniv, *Politics and Strategy in Israel* (Tel Aviv: Sifriat Hapoalim).

by the value placed on non-material factors. However, the systemic emphasis on the stratagem and operational art began to vanish after 1967, in favor of the technological component of the QME. The role of technology in the Israeli culture of war grew steadily against the backdrop of its achievements, which were not only translated into procurement to satisfy internal needs, but also utilized for competitive arms sales.

CULTURAL-ORGANIZATIONAL FACTORS SHAPING ISRAELIS' APPROACH TO INNOVATION

The founders of Israel's quest to create a vibrant scientific-technological-educational infrastructure, as one of the main vectors of national development, was a defining condition for the Israeli approach. However, several aspects of Israeli strategic culture created favorable conditions for materializing these aspirations in the realm of defense innovation. A number of societal-cultural traits have affected the managerial approach of the defense industry to research and development (R&D) and to technological solutions for strategic-operational problems.

Israelis perceive themselves as citizens of a nation with guts that does not play by the rules, tries the impossible, and has a relatively high tolerance for risk-taking. Impudence, in the Israeli interpretation, has acquired a positive meaning of nonconformist and gutsy audacity. Israeli strategic culture celebrates the spirit of "can-do" managers and commanders who push ahead, disregarding the hardest obstacles, not philosophers but pragmatic and realistic people of action who prefer deeds to words. Israeli decision-making is pragmatic, and military experts tend to view issues from a problem-solving perspective. Given their pragmatic instrumentalism, acute sense of practicality, assertiveness, and tendency to improvise, the mainstream of Israeli defense thinking favors a focus on the essentials and on simplifying everything, from organizations to procedures, and seeks tailor-made solutions for concrete operational challenges rather than general strategic problems.

Israelis also see themselves as assertive, flexible about plans, casual about rules, and improvisational. The latter refers to a characteristic of management, when a spontaneous recombination of knowledge results in problem-solving grounded in the realities of the moment. Israelis equate improvisation with creativity and proudly present a national capacity to improvise as a hallmark of excellence in security affairs. According to societal beliefs, this approach has guaranteed survival in situations of uncertainty and assured flexibility in times of crisis, without formulating objectives in advance. Exploiting the ability to orient, think, and bounce ideas around quickly, Israeli managers and commanders do not hesitate to opt for "not by the book" solutions, even if it means sacrifice existing procedures and integrated planning for pragmatic improvisation.

The typical Israeli lack of distance in superior–subordinate relations, a cult of simplicity, and social informality have been profound multipliers of innovation. Egalitarian social norms have produced a casualness of behavior and inattention to hierarchy. The relatively lean and simple organizational structures of the military and defense industrial bureaucracies, coupled with an open atmosphere, foster innovative ideas in a bottom-up manner through informal organizational shortcuts. This has enabled quick organizational learning and tactical adaptation through effective exploitation of short lines of communication. The norms of Israeli managerial culture encourage subordinates to challenge the ideas of their superiors, suggest modifications, and come up with innovative solutions to problems. Otherwise, one might be perceived as lacking initiative, self-confidence, and backbone.

However, this low level of respect for imposed authority does not come at the expense of loyalty to collective missions, if guidance related to the specific innovation is transmitted in a top-down manner.[2] Historical reliance on technological solutions, which has been widespread across various services and parts of the strategic community, has resulted in a wide range of "niche" techno-tactical innovations. As the changing character of war highlights the broader potential embodied in a new technology, the defense innovation system has relatively easily concentrated efforts in this direction and further developed the desired tool.[3]

Traditionally, Israeli leaders skillfully have produced a balance between the deep perception of science and technology as equalizers of Israel's quantitative inferiority and exploiting the Israeli culture of improvisation, ingenuity, and entrepreneurship. Historically, the political leadership and defense bureaucracy have generated maximum effectiveness out of these social-organizational proclivities and have produced a vibrant national ecosystem in which education, science, technology, military, and economic considerations coexist in symbiosis. As part of this approach, the state identifies and trains the best and the brightest of its scientifically and technologically-oriented youth during compulsory military service.

---

2 The Iron Dome project serves as an illustration of the above traits.

3 The Israeli odyssey into the cyber domain is one of the best manifestations of this phenomenon, when an innovation was incepted as a narrow and parochial novelty for the need of the concrete service, and then ballooned into a major transformation. The history of the Israeli IT-RMA, which started as a response to the specific operational challenge following the traumas of the 1973 War, illustrates the same phenomenon.

As a result, annually a cadre of technologically educated and experienced youth enters the military and then leaves it and joins the professional and academic workforce, enhancing the national technological-industrial ecosystem. Israeli universities and high schools, well supported by the government, ensure a solid scientific-academic foundation for providing this human capital prior to the draft. Geographical-institutional proximity, an informal communication style, a non-hierarchal business atmosphere, and networking culture have ensured cross-pollination and made Israel a natural hub for technological cooperation, competition, and innovation. This is a second-order effect which projects back on the initial impulse for innovation and empowers it.

MILITARY INNOVATION: ART VERSUS SCIENCE

Since military innovation and overall effectiveness in national security affairs is much broader than just the technological components of transformation, the Israeli approach has some downsides. Although initially the Israeli qualitative edge was based on a balanced synergy between creative stratagems, the superior personal qualities of the country's soldiers, and technology, since the 1970s the IDF has turned more often than not to sophisticated weaponry as a cure-all in military affairs. Military organizations focused on the material and technological aspects of war frequently neglect other dimensions of military theory that demand a greater degree of abstract thinking. Growing reliance on technology in Israel resulted in a certain neglect of the realm of military strategic thought. The IDF often preferred force multipliers of smart weapons rather than smart concepts. A significant part of its intellectual vigor concentrated on the techno-logistical issues that gave solutions to specific problems, at the expense of a comprehensive inquiry into the nature of modern war. Newly developed and procured weaponry was often incorporated into the existing force structures and concepts of operations without any profound defense transformation.

Israeli military innovations usually have resulted from a synergy among canny stratagems, advanced technology, and assertiveness on the battlefield. Innovations rarely have been the product of thorough deductive thinking, and have occurred largely due to creative improvisations by assertive officers of a particular service. These niche innovations were slow to produce subsequent major transformations of the IDF's way of war. Vigorous technological innovations and creative ad hoc improvisations often have coexisted with conceptual conservatism in the IDF. Although a pioneer in technology implementation, the IDF has been very slow to take paradigmatic leaps forward in its vision of future war. Technical ambitions and interests of the defense industry frequently have prevailed in the vacuum created by the lack of an overall concept of operations.

Technological optimism has projected on strategic-operational problem framing. Most of the IDF responses to its military failures have taken the form of quantitative-technological upgrades rather than qualitative-conceptual modifications. Israelis have believed that mechanical improvements in range and accuracy of the firepower or maneuverability could yield large differentials in combat effectiveness. Quantity often became a form of quality and predisposed the subjects of Israeli strategic culture to believe that "what doesn't work with force will work with more force" of technology. As a side effect of this tendency, the necessity to pose fundamental theoretical questions about the art of war gradually has diminished. This inclination also projected on the approach to lessons learned. Although Israeli military culture has manifested a historically "impressive learning curve" in the techno-tactical realm, in most of its wars it has tended to repeat similar operational mistakes. Israelis believe that "their" campaigns are peculiar, so when learning from others they tend to focus on the technological attributes of the innovation and are less disposed to considering conceptual ones.

In the realm of military thought, the IDF has produced a culture of conservative and incremental innovation that has "resisted fundamental transformations." The most damaging consequence of this tendency has been a disinclination and, eventually, a fundamental inability to adapt conceptually in advance of changing military regimes. During the last several years, however, the IDF seems to be going through a major change. Traditionally, in its approach to military innovation, the IDF has been inclined to the model of wartime, bottom-up adaptation rather than peacetime, top-down anticipation. In recent years there has been a deliberate effort to transform the IDF towards a defense paradigm of anticipation—conceptualizing the emerging military regime and streamlining weapons R&D, doctrinal developments, and the transformation of organizational structures with it. This is a major departure from the basic organizational and procedural instincts of the Israeli strategic community. It is still too early to say whether this quest to reform its approach to defense innovations will produce a major change. However, as compared to all the previous efforts, this is the most sophisticated one, and it has expressions in the staff work and bureaucratic processes within the Israeli strategic community.

Dmitry (Dima) ADAMSKY is a head of the BA honors track in strategy and decision making at the School of Government in the IDC Herzliya, Israel. His research interests include international security, cultural approaches to international relations, modern military thought, and American, Russian, and Israeli national security policy. He has published on these topics in *Foreign Affairs, Security Studies, Journal of Strategic Studies, Intelligence and National Security*, *Studies in Conflict and Terrorism,* and *Journal of Cold War History*. His next book on religion and strategy is forthcoming with Stanford in 2018.