Imagining Beyond the Imaginary
The Use of Red Teaming and Serious Games in Anticipation and Foresight

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▶ Key Takeaways

- In 2018, the creation of a "Red Team Defense" by the Ministry of Armed forces reflects its will to appropriate new prospective tools, mostly developed in the United States. It was designed to better apprehend the future strategic environment and the military applications of tomorrow's technological innovations.

- In this perspective, several entities within the Ministry have been restructured, and new thinking formats have emerged, such as brain games, serious games, and the Red Team Defense project.

- These new formats, which favor collective thinking process, aim to bypass the weight of the military hierarchy, the standardization of thought and multiple cognitive biases to avoid blind spots in France's analysis of its strategy.

- The current professionalization of prospective in France creates opportunities to strengthen the "knowledge, understanding and anticipation" strategic function. It should also encourage the integration of France within international prospective networks as well as the ministry's openness to the civilian world.

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Introduction

In September 2022, *The New York Times* revealed that the successful Ukrainian offensive on Kharkiv had been prepared in a series of wargames conducted that summer.[1] Given this success, further wargames have been undertaken with a view to a possible Ukrainian counter-offensive in the spring.[2] This rise in the popularity of wargames, which come in various forms, is due to their ability to immerse participants in a situation, helping them to become aware of their strategic and tactical blind spots and to identify their own vulnerabilities by putting themselves in the enemy's position. The ability to anticipate crises and foresee conflicts is essential in order to maintain the initiative and ultimately win out. Thus, the aim of defense foresight is to understand the different forms future wars might take (asymmetric, hybrid, high intensity), the weapons systems that may be employed (drones, high-velocity missiles), and the factors that could trigger them.[3]

The use of wargames or scenario analyses to facilitate anticipation and foresight goes hand in hand with changes in the relationship between military and political leaders and civilians, who no longer hesitate to hold the former to account when they have failed to foresee a crisis. The German sociologist Ulrich Beck thus refers to the paradox of a society that is keen to predict the future because of its aversion to risk and the fact that it is now much more difficult to foresee what might happen in the short term due to very rapid technological developments.[4] The modern world generates both risks and progress, and the inability to foresee strategic ruptures carries significant political costs, which explains why politicians set so much store in anticipation and foresight.[5]

The initiatives launched by Florence Parly after being appointed French minister of the armed forces in 2017 included promoting experimentation in new cognitive tools. Beyond the issue of technology, the aim was to rethink information management within the ministry in order to make it more agile and cross-cutting.[6] In addition to a significant budget allocated to innovation in the 2019−2025 Military Programming Law,[7] the Ministry of the Armed Forces has drawn inspiration from methods often originating in other organizational cultures, such as start-ups and the private sector, in order to improve its creativity and accelerate its adoption of digital technology.

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1. J. E. Barnes, E. Schmitt, and H. Cooper, "The Critical Moment Behind Ukraine's Rapid Advance", *The New York Times,* September 13, 2022, available at: www.nytimes.com.

2. C. Pietralunga, "L'Ukraine prépare sa contre-offensive avec des 'wargames' organisés par le Pentagone", *Le Monde*, March 8, 2023, available at: www.lemonde.fr.

3. R. Chaouad and J.-P. Maulny, "Penser la 'guerre de demain' : Un exercice incertain", Observatoire de la prospective internationale de défense, Note d'analyse No. 10, 2014, available at: archives.defense.gouv.fr.

4. U. Beck, *Risk Society: Towards a New Modernity*, trans. M. Ritter, London: Sage Publications, 1992.

5. A. Colonomos, *La politique des oracles : Raconter le futur aujourd'hui,* Paris: Albin Michel, 2014.

6. A. Coustillière, "La transformation numérique du ministère des Armées", *Hérodote* 177−178, Nos. 2−3, 2020, pp. 165−177.

7. 1 billion euros per year from 2022, compared to 730 million in 2018. See key figures in the 2019-2025 Military Programming Law, available at: www.defense.gouv.fr.

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The establishment of the Agence de l'innovation de défense (AID) (Defense Innovation Agency) in 2018, and of the Red Team Defense project within it, is proof of this desire to review defense foresight and to discover alternative ways of preparing for war. This initiative has been accompanied by experiments with new aids for analysis and decision-making. These encompass "serious games" (the gamification of planning techniques), which include the already well-known "wargames", as well as more recent formats such as "brain games", all intended to support reflection via role-playing exercises. These approaches help to strip away administrative and organizational red tape and to identify the blind spots in French defense policy. In this article, we explore where these games came from, how they are employed by institutions, and how they fit into the Ministry of the Armed Forces' approaches to anticipation and foresight.

From the Training of Forces to Military Foresight: Dual Origins

Serious games, brain games, red teaming, red cells... Various terms exist to describe ways of responding to the same imperative: the need to envisage the future strategic environment by shedding light on blind spots, and in particular on any developments that might break with past trends. The aim of these "new cognitive tools", often imported from the United States, is to improve decision-making. But in their transposition to France, these methods do not coincide neatly with the American concepts that inspired them. These differences in scope therefore make it difficult to clearly distinguish between anticipation and foresight (the latter usually being considered as a longer-term approach) with regard to their different timescales and administrative perimeters.

Lost in Translation: from *Kriegsspiel* to Red Teaming

In the military domain, the desire to "think about war differently" is closely linked to the concept of *Kriegsspiel* coined by Baron von Reisswitz in 1824. The aim of this "wargame" is to improve tactical reasoning while also training troops more economically.[8] This modeling of war for training purposes rapidly gained popularity in Europe. In 1884, the concept was adopted by the US Naval War College, which, aware of its educational value, codified the rules for an "American Kriegsspiel", which was added to the college's curriculum three years later.

Kriegsspiel, the predecessor of today's wargames, was used in many different ways by the US military in the twentieth century, from board games to "life-size" reenactments of battles, often on a tactical level.[9] This modeling of war is also used directly for planning in peacetime, as it makes it possible to "test" options for one's own (blue) forces and, above all, to identify the maneuvers that the (red) enemy might use against them. In the United

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8. A. Bourguilleau, *Jouer la guerre: Histoire du wargame* (Paris: Passés Composés, 2020).
9. P. P. Perla, "So a Wargamer and a Black Swan Walk into a Bar...", *Phalanx,* Vol. 41, No. 4, 2008, pp. 26–30.

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States, this work is undertaken by red cells, which are teams entirely dedicated to imagining the reaction of adversaries, not only in terms of their way of thinking, but also with regard to their capabilities, the structure of their forces, their doctrine, and their rules of engagement.

Red teaming, a broader concept, encourages participants to play "devil's advocate"[10] in order to test the infrastructure and, more importantly, the thinking of the US Department of Defense (DoD) and in particular of the military command, at the tactical, operational, and strategic levels. In the United States, red teams are defined as "organizational elements comprised of trained, educated, and practiced experts that provide [...] an independent capability to conduct critical reviews and analysis, explore plans and operations, and analyze adversary capabilities from an alternative perspective".[11] Thus, while red cells play the role of the adversary and reflect at the tactical level, the aim of red teams is to test ways of thinking and decision-making biases in a cognitive approach that includes elements of linguistics.[12]

Another factor in the growth of these practices is the development of information technology, which enables more sophisticated modeling and new forms of military exercises.[13] While the modeling of the real through the virtual was already possible in nineteenth-century board games, digital technology allows for greater complexity by increasing the number of data sets and automating calculations in the management of rules, which can become very cumbersome when more and more strategic factors are taken into account. In addition, the progressive digitization of the armed forces has led to specific training in this field, with participants encouraged to use their creativity rather than follow a set plan in order to surprise the adversary. The Eligible Receiver exercise conducted in 1997 by the National Security Agency (NSA) is a textbook case of the concrete advantages of red teaming and of its ability to alert the strategic community to blind spots and biases. Targeting the DoD's critical infrastructure with cyber weapons, the entire network was penetrated in just four days by "white hat hackers", NSA military personnel specialized in penetration testing. Designed to test the DoD's capability to coordinate with other branches of the administration when responding to an attack on critical infrastructure, it did much to raise awareness and led to the Clinton administration's Presidential Decision Directive 62 (PDD-62) the following year, which included cyberattacks as potential threats.[14] In France, various red teams from the cyber defense

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10. The role of "devil's advocate" was formalized in 1234 by Pope Gregory IX in order to help the papacy decide on who should be beatified. The devil's advocate was responsible for opposing the arguments for beatification point by point. Pope John Paul II abolished the role in 1983.
11. Joint Chiefs of Staff, Joint Publication 2-0, "Joint Intelligence", October 22, 2014, pp. 1–28.
12. Joint Chiefs of Staff, Joint Doctrine Note no. 16, "Command Red Team", May 16, 2016, available at: https://irp.fas.org.
13. The 1983 film *WarGames*, directed by John Badham, portrays a simulation of a nuclear attack based on a pirated video game. It helped to alert people to the possibilities of these new technologies both as threats and for training.
14. "PDD-62 - Protection Against Unconventional Threats to the Homeland and Americans Overseas", May 22, 1998, available at: www.clinton.presidentiallibraries.us.

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command (COMCYBER) or communications units take part in the annual DefNet exercises, whose aim is to train cyber combatants to deal with large-scale cyberattacks against military targets or critical national infrastructure.

The distinction between red cells and red teaming has been lost in the French understanding of these practices, and this has generated uncertainty about the meaning of these terms within the Ministry of the Armed Forces. In France, red teaming is generally understood to be a way of putting oneself in the enemy's position, and it is applied at the strategic, operational, and tactical levels.[15] Since 2019, however, the Red Team Defense project—led by the AID in conjunction with the État-major des Armées (EMA) (Defense Staff), the Direction générale de l'Armement (DGA) (Directorate General of Armaments), and the Direction générale des relations internationales et de la stratégie (DGRIS) (Directorate General of International Relations and Strategy)—has provided a broader definition of the concept. It is now also used to refer to the development of scenarios for the engagement of forces over the 2030–2060 timeframe, thus participating in a work of foresight on possible future wars, even going so far as to use science fiction to explore new threats. This use of the term "red team" has been criticized for the confusion it may cause, but it is defended by the project's creators, who wish to expand the meaning of the concept. For them, the use of fiction draws on participants' subjectivity and makes it easier for them to project themselves into the future. This helps them to appreciate the risks and to question ways of thinking.

A Common Epistemological Approach

These new formats contribute toward a reflection on the nature of military structures, which are inherently hierarchical. They respond to a desire to evaluate the institution's procedures and culture in order to optimize them. Since soldiers have a different work culture from civilians and have all undergone the same basic training, most officers approach challenges and design solutions in a similar way. Furthermore, the system of career progression based on ratings by one's superiors may discourage the voicing of criticism, which can be perceived as inappropriate or even insolent.[16] By way of example, a study by the US Army War College shows that the most highly rated senior officers are those who are the least likely to try out new ideas in the professional sphere.[17] This illustrates the tension between a declared willingness to tolerate original thinking, which can be productive, and the difficulty of rewarding it within a highly hierarchical, vertical structure.

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15. On enemy modeling, see S. Caplain, "Penser son ennemi : Modélisations de l'adversaire dans les forces armées", *Focus stratégique* 82, Ifri, July 2018.

16. On the issue of dynamics and impediments to innovation in the United States Armed Forces, see B. R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars,* Ithaca, NY: Cornell University Press, 1984; D. D. Avant, *Political Institutions and Military Change: Lessons from Peripheral Wars,* Ithaca, NY: Cornell University Press, 1994.

17. M. Zenko, *Red Team. How to Succeed by Thinking Like the Enemy,* New York: Basic Books, 2015.

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To address this problem, the United States Army has brought out a handbook entitled *The Red Team Handbook: The Army's Guide to Making Better Decisions,* which encourages the formalization and dissemination of these tools.[18] The handbook stipulates that sessions dedicated to the generation of new ideas should be structured around four pillars: applied critical thinking, fostering cultural empathy, groupthink mitigation and decision support, and self-awareness and reflection. A number of methods are laid out in order to limit the instinct to conform: individual recording of thoughts before group discussion; anonymous feedback; rules to structure turn taking; and conclusion exercises in order to analyze which information has been retained and is therefore rated as most important.

A range of techniques, such as the *5 Will Get You 25*, which enables feedback to be weighted, and the *6 Empathic Questions*, designed to make personnel more aware of their cognitive biases by using a questionnaire to recreate an adversary's perception of the world, are taught at the University of Foreign Military and Cultural Studies at Fort Leavenworth, Kansas, created in 2004.[19] The training at this "Red Teaming University", under the aegis of the United States Army Training and Doctrine Command (TRADOC), which is delivered mainly by personnel with a background in cognitive psychology or by political scientists in cultural and area studies, is conducted at school and brigade level, not at the regimental level. Red teaming is integrated with wargaming, and during the organized games the participants are invited to practice the red teaming reflexes learned earlier. The three main questions participants are encouraged to ask themselves are: "What if I'm wrong?"; "What do I know?"; and "How do I know it?" The creation of this university was partly a response to a problem also encountered by the French defense foresight community, namely the absence of career opportunities for foresight experts and thus the lack of opportunities to develop their own methods. Although the Futuribles association in France,[20] created in 1967 by Bertrand de Jouvenel, offers training courses that are open to all, it is difficult to obtain administrative support for enrolling officers from the Ministry of the Armed Forces, and the rotation of personnel does not make it easy for officers to capitalize on what they have learned.

The internet is another important vector for the development of these new methods that use computer tools to formalize reflections, digitize wargames, and compile data by expanding the samples thanks to online platforms accessible to the wider public. Inspired by Philip E. Tetlock's work in political science, and used by companies such as Hypermind, the prediction market method, for example, enables a group of non-specialists to gather information and bring a fresh perspective to a subject without being trapped by prejudices

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18. This handbook is available online: https://usacac.army.mil.

19. The Trump administration decided to cease funding for the university from October 2021. However, an increase in funding has been decided by the Biden administration and should be effective as of 2024. B. Hoffman, "U.S. Army Moves to Close Red Teaming University", *Forbes*, October 26, 2020, available at: www.forbes.com.

20. Futuribles is a foresight center founded in 1960 by Bertand de Jouvenel. The name is a contraction of the French words "*futurs*" and "*possibles*". See: www.futuribles.com.

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of the "expert". This idea gave birth in 1988 to the Iowa Electronic Markets model, which was designed to predict the outcome of the US presidential election by enabling traders to bet on the predictions that seemed most credible to them. Similarly, the Delphi method, developed in the 1950s by the RAND Corporation to understand the effects of technological development on military practice, is now automated by means of ExpertLens software, which draws on anonymous questionnaires, feedback representing the group response, and the possibility of revising one's responses in order to reach a consensus.[21]

Despite these tools originating in different locations and disciplines, they are all based on the same epistemological approach: the idea that a deeper understanding of the strategic environment can be obtained by contrasting points of view and overcoming individual biases by creating a scenario around which a collective reflection can take place. The common denominator of these descendants of *Kriegsspiel* is the desire to think differently, by formalizing a reflection and drawing on the subjectivity of each actor. The aim is to reduce the cognitive biases that impede strategic innovation. These include:

- Status quo bias, which refers to the tendency to take a negative approach to change and to have a marked preference for conservatism;[22]

- Wishful thinking, which refers to the tendency to dismiss facts that contradict one's own values or aspirations. This results in over-rating indicators that are in line with one's own aspirations and underestimating contrary indicators;

- Impact bias, or the tendency to overvalue scenarios that have the greatest impact;

- Data bias, which refers to the fact that a failure to update data may lead to an erroneous result. The latter is strikingly illustrated in the black swan theory, developed by Nassim Taleb,[23] which shows that an event that is highly unlikely to occur risks being discarded altogether by decision-makers. The name comes from the experience of Westerners who were amazed upon discovering the existence of black swans in Australia, a fact that they could not have anticipated from the data they had at the time. A black swan event has three characteristics: the event is unlikely; it has major consequences; and it is rationalized retrospectively as if it could have been anticipated. This bias is also referred to as "failure of imagination" and has been used to explain events as diverse as the sinking of the Titanic in 1912, the Japanese attack on Pearl Harbor in 1941, and the 9/11 attacks.[24]

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21. Colonomos, *La politique des oracles oracles : Raconter le futur aujourd'hui, op. cit.*
22. This bias was identified in the work of Samuelson and Zeckhauser. See W. Samuelson and R. Zeckhauser, "Status Quo Bias in Decision Making", *Journal of Risk and Uncertainty* Vol 1, No. 1, 1988, pp. 7-59.
23. N. N. Taleb, *The Black Swan: The Impact of the Highly Improbable,* New York: Random House, 2007.
24. For a roundup of foresight methods, see F. Gaub, "Gouverner et prévoir : L'art de la prospective et la décision publique", *Le Collimateur*, November 30, 2021.

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These cognitive tools, which are currently being adopted by the armed forces, are characterized by a distancing from written production, openness to civil society, and a relaxing of hierarchy, which should encourage freer expression. Thanks to their relatively sophisticated scenarios, they also make it possible for participants to break away from existing frameworks and operate within a "safe to fail" environment. This can be difficult to grasp for a French culture that is rather different from the Anglo-American approach that gave birth to these tools.

The Adoption of New Tools by the Military

There are two main types of tools that are currently being used by the French defense community: those that adopt a gamification approach (brain games, wargames), in which role-playing plays an important part, and highly elaborate scenarios designed to imagine a radically different long-term future.

Brain Games, Serious Games, and Wargames: The Use of Gamification in Anticipation

Ever since the invention of *Kriegsspiel*, simulation games have been recognized for their ability to encourage participants to consider various possibilities of engagement and to adopt a long-term approach. These games require special equipment, however, and their mechanisms are not always easy to grasp for authorities with busy schedules. In order to overcome these difficulties, General Burkhard, who became Chief of the Defense Staff (CEMA; Chef d'état-major des Armées) in 2021, decided to introduce brain games.[25] Organized by EMA/ASO, a strategic anticipation unit created within the EMA in the summer of 2022, they bring together some twenty officers from the Ministry of the Armed Forces (from CEMA, the Directorate of Military Intelligence, the subdirectorate for operations, etc.) as well as civilian experts, who act as members of the international community in fictional scenarios.[26] Lasting only a short period of time (less than three hours), the aim of these sessions is to enable the CEMA to rapidly grasp a complex subject through an immersive approach and to identify major trends over the next two years. This format makes it possible to include people with a range of different skills and to avoid groupthink.

However, this short format does not make it possible to address complex problems or to test multiple hypotheses, which is where serious games—and the military variant, wargames—come in. While tactical-historical wargames were less well known in previous decades, they are now making a real comeback in the military domain and are being

25. F.-X. Polderman, "D'urgence, essayons !", *Revue Défense Nationale*, special issue No. 3, 2022.
26. In October 2022, a session designed to imagine a Middle East with no American presence involved former French ambassadors, who played the role of the leaders of the countries in which they had served. Similarly, in February 2023, researchers and diplomats met to play out scenarios of the evolution of the war in Ukraine.

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developed for use at the strategic level. Often designed around a board game or on a computer, with each player embodying an entity with its own interests and resources, serious games enable complex geopolitical situations to be modeled, with a few simplifications that need to be weighted in order not to bias the final result. Thanks to physical representations (a board, tokens, cards, dice, etc.) and rules (turn-based or simultaneous play, fixed number of moves per turn), they limit the contingencies of real life while enabling players to become completely immersed in their roles, which encourages them to take the game seriously while also allowing them cognitive freedom.[27]

Tactical-operational wargames tend to be developed internally by French military institutions,[28] while strategic games seem to be the prerogative of the private sector and associations. Several companies and associations offer these formats, which include games like Fitna (about the Middle East) and Alindien (about the Indian Ocean) developed by the researcher Pierre Razoux, which are regularly played by personnel from the Ministry of the Armed Forces, under the supervision of the Centre d'études stratégiques de la Marine (CESM) (Strategic Studies Center of the French Navy). The Fondation pour la recherche stratégique (FRS) (Foundation for Strategic Research) also has its own set of matrix games, a flexible format enabling an exchange of ideas around a scenario.[29] Not dedicated exclusively to defense, another valuable resource is the Serious Games Network, a group of companies specialized in strategic serious games and who now collaborates with the Secrétariat général de la Défense et de la Sécurité nationale (SGDSN) (Secretariat General for National Defense and Security) and other ministries.

Given the growing politicization of the results of wargames, a welcome innovation is the creation of a "wargame advisor"[30] within the Centre interarmées de concepts, de doctrines et d'expérimentations (CICDE) (Joint Center for Concepts, Doctrines, and Experimentations), designed to combine the various initiatives at the Ministry of the Armed Forces. Although they should not be used as strictly predictive tools but rather as a way of testing hypotheses and revealing key variables during a conflict, the results of wargames are now being used by the United States for multiple purposes, including influence and deterrence.[31] The repeated failure of Chinese attempts to invade Taiwan during a wargame may reassure Taipei, while pushing Beijing to question its own capabilities, focusing Chinese policy-makers' attention on the need to invest in disruptive

27. T. Fouillet, *Wargame : Un outil de recherche stratégique,* Paris: L'Harmattan, 2022.

28. One could cite *Duel Tactique* and *Logops*, developed by the École de guerre-Terre. See A. Bourguilleau, "Usages et mésusages du jeu de guerre par les militaires", *Défense et Sécurité Internationale* 164, March–April 2023, pp. 82–85.

29. J. Curry, C. Engle, and P. Perla (eds.), *The Matrix Games Handbook,* Morrisville, NC: Lulu Press, 2018.

30. État-major des Armées, "Doctrine et wargaming : Le CEMA en visite au CICDE", December 6, 2022, available at: www.defense.gouv.fr.

31. M. F. Cancian, M. Cancian, and E. Heginbotham, "The First Battle of the Next War: Wargaming a Chinese Invasion of Taiwan", CSIS, January 9, 2023, available at: www.csis.org. See also A. Sheldon-Duplaix, "Modéliser 'la première bataille de la prochaine guerre'", *Défense et Sécurité Internationale* 164, March–April 2023, pp. 48-53; and Pietralunga, "L'Ukraine prépare sa contre-offensive".

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capabilities in order to pull off this strategic maneuver. Lastly, with France hosting the first Wargaming Initiative for NATO conference in October 2022,[32] French initiatives would benefit from being included in the current NATO dynamic, which now has an operational wargame design capability at the Joint Warfare Centre in Stavanger that includes wargaming among its strategic priorities, considering it useful for facing "tomorrow's challenges".[33]

The AID's Red Team Defense Project, between Marketing Tool and Foresight Aid

While wargames are mainly useful for testing hypotheses and improving tactical decision-making, the aim of the Red Team Defense project is to explore possible futures and disruptive developments in order to broaden thinking and ensure that no possible leads are left unexplored. This appears to complement more "classic" foresight activities conducted by other bodies within the ministry, particularly the DGRIS. Launched in 2019 by the AID, the Red Team Defense project brings together science fiction authors, scriptwriters, and designers (the "Red Team") and Ministry of the Armed Forces personnel (the "Blue Team") in order to produce disruptive scenarios for the 2030–2060 timeframe. In addition, a "Purple Team" provides academic expertise, a "Black Team" coordinates the project, and a "White Team" provides scientific advice. Two seasons have already resulted in six scenarios that are available online[34] and in two books[35]; other scenarios have been developed that remain classified. With a budget of more than 2 million euros,[36] Red Team Defense has an agreement with the Université Paris Sciences & Lettres, which provides the AID with an ecosystem of researchers who advise military personnel and writers on specific topics.

The initiative is widely recognized within the Ministry of the Armed Forces foresight community as having "opened the chakras" of the hierarchy[37] and as having acted as "itching powder" for ministry cadres on certain topics that are sometimes neglected in both strategic anticipation and capability foresight, such as environmental issues or cognitive warfare, which are dealt with in several of the three seasons' scenarios. The Red Team acts as a marketing tool for the ministry,[38] as it pays particular attention to its

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32. École de l'Air et de l'Espace, "Les élèves et cadres de l'École présents lors du Wargaming Initiative for NATO", October 28, 2022, available at: www.ecole-air-espace.fr.

33. NATO, "The Joint Warfare Centre Declares Full Operational Capability for Wargame Design", February 2, 2022, available at: www.jwc.nato.int.

34. See: redteamdefense.org.

35. Red Team, *Ces guerres qui nous attendent : 2030 – 2060,* Sainte-Marguerite-sur-Mer: Edition des Équateurs, 2022; and Red Team, *Ces guerres qui nous attendent: 2030 – 2060, saison 2,* Sainte-Marguerite-sur-Mer: Edition des Équateurs, 2023.

36. P. Chapleau, "Deux millions d'euros pour la RED TEAM de l'Agence de l'innovation de défense (AID)", *Lignes de défense* on *Ouest-France*, February 18, 2021, available at: https://lignesdedefense.blogs.ouest-france.fr.

37. Interview at the CDEC, July 2022.

38. Interview at the AID, October 2022.

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graphic design and has a high media profile. It aims to modernize the image of the institution by opening it up to profiles from a wide variety of socio-professional and even political backgrounds. Some members prefer to remain anonymous, however, in order to avoid criticism of being too closely associated with defense institutions.[39]

The Red Team Defense project and its scenarios have not yet permeated the entire ministry, however, which suggests that adaptations will be necessary in order to improve internal reception when the contract is renewed. The 2030–2060 timeframe is sometimes perceived as too far-off, as it is difficult to conceive what might happen between now and the scenarios described by the Red Team, in both technological and strategic terms. Rather than being a flaw of the Red Team, which was conceived from the beginning as an initiative to suggest disruptive scenarios without taking into account intermediate stages, this criticism voiced by several state foresight actors seems to underline a gap in the timeline of French strategic foresight and the need to pay renewed attention to the 10–15-year timeframe, notably with public documents.[40] Similarly, on the technological level, the appropriation of scenarios by the Plans/Programs offices must be encouraged in order to adjust them to the different fields and environments of interest to the military, making it possible to respond to more specific needs.

Lastly, the failure to refer to existing adversaries by name in the published scenarios decontextualizes the intuitions and conclusions, potentially hampering their appropriation within the ministry. It should be pointed out that other countries that practice red teaming and wargames do not take these political precautions. Moreover, this anonymous approach makes it difficult to think about the evolution of threats over the next 5–10 years, even though the ministry has a good knowledge of what competitors are doing.

Conclusion

This overview of the new cognitive tools used by the armed forces to reflect on future conflicts demonstrates clearly that the French military is seeking to question the epistemological frameworks of strategic thinking and to challenge its *idées reçues* in order to avoid blind spots. This means shunning commonly accepted ideas by formalizing group discussions in new ways, sometimes by hiring external service providers and diversifying the recruitment of foresight staff and increasing funding for them.

In this respect, several measures could be taken by the Ministry of the Armed Forces to strengthen its "knowledge, understanding, and anticipation" efforts. With regard to human

39. H. Robert, "La Red Team, discrète cellule d'auteurs de science-fiction au ministère des Armées", *Slate*, January 28, 2022, available at: www.slate.fr .
40. F. Gouttefarde, "Avis sur le projet de loi de finances pour 2021, tome II – Défense: Environnement et prospective de la politique de défense", No. 3360, Commission de la défense nationale et des forces armées, Assemblée nationale, October 21, 2020.

"Imagining Beyond the Imaginary"
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resources, the professionalization of a foresight sector, with an effort to sustain the skills acquired, could go hand in hand with the use of talent from the civilian world by drawing on the operational reserve to support contracted staff, in accordance with the directives of the President of the Republic. In the long run, the foresight sector could represent a way of opening the ministry up to the civilian world, incorporating innovative technological tools (virtual reality, artificial intelligence, etc.) and expertise from the business world. Within the ministry itself, rationalization of the anticipation and foresight ecosystem, with a 2-to-10-year timeframe, would make it possible to structure current work so it can be more effectively incorporated into existing international foresight networks, principally within NATO. Finally, training on the diversity of the formats proposed (notes, reports, scenarios, serious games) could acculturate the entire armed forces to anticipation and foresight, in a context where tensions in the international system make it essential for the armed forces to be well adapted and resilient.

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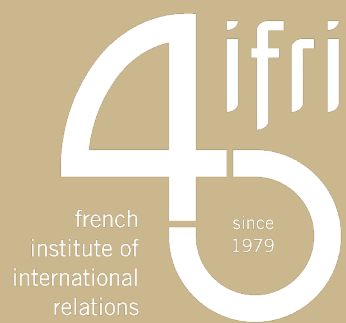
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