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US-French nuclear cooperation: its past, present and future

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SOMMAIRE[1]

[1] This paper has benefitted from informal conversations held by the authors with former and current US, UK and French administration officials, including at the occasion of a workshop held in Paris in December 2012, co-hosted by the Monterey Institute for International Studies (MIIS) and the Fondation pour la recherche stratégique (FRS). The paper is part of a broader project made possible by two generous grants of the Richard Lounsbery Foundation, in 2012 and 2014.

It is now a matter of public record that France and the United States conducted in-depth cooperation on ballistic missiles and, later, on nuclear weapons safety and security starting with the Nixon and Pompidou Administrations.

The existence of a deep France-US strategic nuclear cooperation exists as a historical counter-narrative to the notion of France as a fully independent nuclear power, but also as a reluctant US strategic partner.

Today, both countries conceive of their interests globally, and share similar outlooks regarding strategic challenges from countries such as Russia, China, Pakistan, Iran and North Korea. The United States and France have worked particularly closely in the P5+1 context to reach a diplomatic solution to Iran's growing nuclear capabilities. As permanent members of the United Nations Security Council, they are key partners on crisis management, regarding Libya, Syria, or Ukraine. Cooperation on counterterrorism has been stepped up since the events of January 2015 in France. The two countries cooperate closely in Sahel and in Iraq.

This short briefing provides new information on past nuclear cooperation and seeks to address the following question: given the existence of deep US-UK and UK-French nuclear ties, would enhanced US-French cooperation – the "third side of the triangle" – be useful either strategically, in terms of enhancing the stability of deterrence, or financially?[2]

The Surprising Extent of US-French Technical Nuclear Cooperation

The United States and France engaged in a long program of cooperation on strategic forces, beginning in the Nixon Administration. Although this cooperation is one of the more interesting collaborations in contemporary international relations, it is not well understood since the program operated in secret. Nixon officials made no mention of the program in their memoirs and, quite surprisingly, the program did not leak to the press despite the Nixon Administration's frustration with national security leaks over Vietnam policy, negotiation to revert Okinawa to Japanese control, and crisis decision-making after North Korean shot down a US reconnaissance plane.

Word of the program did not leak until the late 1980s, when Princeton Professor Richard Ullman learned of it during a series of interviews he conducted on both sides of the Atlantic from 1987-1989. Ullman published the outlines of cooperation in an article for Foreign Policy entitled "The Covert French Connection".[3] A second wave of information became available in 2010, when William Burr at the National Security Archive published more than fifty declassified US documents detailing the first few years of the exchange.[4]

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[2] On French sources, we would like to acknowledge the work of journalist and author Vincent Nouzille, who in addition to his work on US archives managed to get access to some rare and sensitive French official sources. We are much grateful for Nouzille to have given us access to his original material, including sources not used in his publications cited in this short briefing.

[3] Richard Ullman, "The Covert French Connection", Foreign Policy n° 75, Summer 1989.

[4] William Burr, "US Secret Assistance to the French Nuclear Program, 1969-1975: From 'Fourth Country' to Strategic Partner", Wilson Center, 2011, http://stage-wilson.p2technology.com/publication/us-secret-assistance-to-the-french-nuclear-program-1969-1975-fourth-country-to-strategic. For a brief comment, see Bruno Tertrais,

Still, these accounts are only part of the story. They reflect a largely American perspective and neglect a number of French accounts that have been made available in recent years, or which have not been made public.[5] They also focus heavily on the initial period of cooperation, when France had less to contribute to what knowledgeable insiders have described as a "two-way street".

The United States had excluded France from the Manhattan Project. But Paris benefitted from US resources in the 1950s to gain nuclear weapons and delivery systems experience, both bilaterally and through NATO. By late 1959-early 1960, however, Paris had made its mind to build a fully independent nuclear force, which made cooperation more difficult. Still, throughout the 1960s the French sought US assistance to save time and money (in addition to the sale of US refueling aircraft by the Kennedy administration, which was critical for the French strategic air forces established in 1964).

Meanwhile, a *de facto* US scientific and technological input also continued to exist through the use of open source publications, the training of French engineers at institutions such as MIT and Stanford (where they learned a lot about inertial guidance, for instance), as well as industrial cooperation (for instance on propulsion).[6]

Critically, the Nixon administration decided that it was in the US interest to help the French in order to secure their participation in the Western deterrent, gain knowledge about the French program, and limit its "independent" nature. It was, in a sense, a logic of "if you can't beat them, join them". The 1969 Nixon strategic decision was put in practice by two National Security Decision Memoranda of 1971, as well as a memorandum of understanding (the "Blancard-Foster agreement") that same year, focusing on delivery systems.[7]

Throughout the 1970s, both countries – largely under the pressure of Paris – expanded the scope of their cooperation. Though focusing on US assistance to the development of French ballistic missiles, it also included nuclear safety and security, the subject of a 1972 accord. In 1973, the US administration agreed to help France in a number of key areas. This included information on nuclear effects simulator types, characteristics and usage; the sale of small simulators; general hardening technology applicable to missiles, re-entry vehicles and silos;

"US-French Nuclear Cooperation: Stretching the Limits of National Strategic Paradigms", WMD Junction, 26 July 2011, http://wmdjunction.com/110726_us_french_cooperation.htm

[5] For the former category, see (by chronological order) : George-Henri Soutou, "La menace stratégique sur la France à l'ère nucléaire: les instructions personnelles et secrètes de 1967 et 1974", Revue Historique des Armées, 3ème trimestre 2004; ibid, "La problématique de la détente et le testament stratégique de Georges Pompidou", Cahier n° 22, Centres d'études d'histoire de la défense, 2004; Vincent Nouzille, *Des secrets si bien gardés. Les dossiers de la Maison-Blanche et de la CIA sur la France et ses présidents 1958-1981*, Paris, Fayard, 2009 ; ibid., *Dans le secret des présidents. CIA Maison-Blanche, Elysée : les dossiers confidentiels 1981-2010*, Paris, Fayard, 2010; Henri Conze, *Des tranchées à la chute du Mur*, Berlin, DiverGens, 2010. For the latter category, we rely in particular on official documents accessed by Vincent Nouzille and made available to us, as well as on informal personal testimonies and sources.

[6] See Jacques Villain, *La Force stratégique française. L'aide des Etats-Unis,* Paris, Institut de Stratégie Comparée, 2014.

[7] "Military Cooperation With France", NSDM 103, 29 March 1971; "Cooperation With France on Nuclear Safety", NSDM 104, 29 March 1971.

and Soviet ABM information.[8] This also included the design of a primary for its thermonuclear weapons, though only through the use of "negative guidance" techniques.[9]

Now-available French sources reveal how Paris expanded its shopping list dramatically, extending requests to explicit warheads design assistance by President Valéry Giscard d'Estaing himself in December 1974, the key meeting with President Ford which launched this new phase of cooperation, what the French would call "Operation Apollo".[10] It included in particular assistance to the development of the French multiple-warhead M4 missile, transitioning to underground testing, the sale of modern advanced computers, but also some warhead design assistance. (Washington was adamant that assistance on M4 design was conditioned by the limitation of its performances, which were not to reach counterforce levels.[11]) Re-entry vehicles samples were tested in 1975 in Nevada.[12] Contemporary interviews in France have indicated that there was discreet and informal US assistance to the miniaturization of warheads.[13] The US government had made a difference between discussions on arming and fusing, which were opened to nuclear safety discussions, and the physics package, which was not. There never was *"any exchange of warhead designs"*, but certain sensitive data were exchanged in order to make exchanges on safety valuable.[14] (US sources have confirmed that nuclear safety was understood at the time in a *"flexible"* way in order to not alert Congress.[15])

US-French cooperation continued during the Carter Administration with full presidential support. The election of François Mitterrand could have complicated the picture due to the presence of communist ministers in his government. But after getting guarantees from Mitterrand, President Reagan blessed the continuation of cooperation in April 1982. Reagan also approved new tests of French materials in the Nevada.[16] Anecdotally, during the Williamsburg May 1983 G7 Summit, the US National Security Adviser William Clark threatened to cut it off if France did not bow to US demands for the communiqué.[17] A 1985 agreement replaced and enlarged the 1961 one (see below), making cooperation on nuclear safety and security qualitatively different.[18] It reportedly put the exchanges in conformity with

[8] Henry A. Kissinger, "Memorandum for the Secretary of Defense", 9 March 1973.

[9] Memorandum for Mr. Kissinger, "Nuclear Cooperation with France – Galley-Schlesinger Meeting, September 25, 1973', 24 September 1973.

[10] See Vincent Nouzille, *Des secrets si bien gardés*, op. cit. pp. 390-404.

[11] The M4 ended up being a MIRV (and not MRV) system, but with very limited accuracy, devoted to "counter-population" targeting. Général Guy Méry, Note au Président de la République, Objet: entretiens avec le president Ford, 11 décembre 1974, Annexe 1.

[12] National Security Council, "Memorandum for the record: Meeting with M. Conze of France", 25 November 1975. These tests had been scheduled for Frebuary 1975. Méry, op. cit.

[13] Testimony of CEA engineer Pierre Billaud in Nouzille, *Des secrets si bien gardés*, op. cit., p. 401.

[14] See the testimony of French CEA physicist Alain Vidart in Jean-Damien Pô, *Les moyens de la puissance. Les activités militaires du CEA (1945-2000)*, Paris, Ellipses, 2001, p. 198.

[15] Testimony of Richard Perle in Nouzille, *Dans le secret des presidents*, op. cit., p. 25.

[16] See Vincent Jauvert, "François Mitterrand vu de Washington", Affaires étrangères, 22 August 2010.

[17] Jacques Attali, *C'était François Mitterrand*, Paris, Fayard, 2005, p. [135].

[18] Amendment modifying the Agreement between the Government of the United States of America and the Government of the French Republic for Co-operation on the Operation of Atomic Weapons Systems to provide

US law.[19] New US sales of computers were also authorized (through a redefinition of what an "advanced" computer was for legal reasons).

But US-French cooperation was gradually becoming a two-way street.

One good example is in the field of lasers. In the 1970s, physicist Raoul Dautray, one of the "fathers" of the French nuclear weapons program, was the first foreign fellow at Los Alamos National Laboratory.[20] Back to France, he initiated bilateral cooperation on lasers. In 1972, following a US request, the French CEA transferred high power, high energy solid state laser technology to US labs.[21] A cooperation agreement was signed in 1978. US and French labs worked on common concepts, technologies and even procurement to build the Phebus laser at the CEA facility of Limeil-Valenton and the Nova laser at LLNL; both lasers operated from the mid-1980s to the late 1990s.[22] (The 1978 agreement on lasers was renewed in 1988.[23]) After the shutdowns, cooperation continued at Laboratory for Laser Energetics, using the US Omega laser.[24]

French assistance was not limited to lasers. We understand for instance that at some point during the 1980s, a US warhead design underwent peer review in France and was found to not be one-point safe.[25]

The United States and France further updated their nuclear relationship in the mid-1990s, as they stopped nuclear testing. The 1978 agreement on lasers was complemented by a new one signed by CEA and DoE in 1994 (renewed in 2004).[26] In 1996, as both parties looked to a future under the Comprehensive Nuclear Test Ban Treaty, to take into account each country's stockpile stewardship programs, a new agreement was signed and made public.[27] This led a significant and exemplary cooperation program on high-powered lasers. The optics needed, based on French designs, were fabricated in the United States in a facility belonging to a French industrial group. Two production chains existed. The facility was disbanded after

for Co-operation on the Safety and Security of Nuclear Activities and Installations for Mutual Defense Purposes, Paris, 22 July 1985.

[19] Ullman, op. cit., p. 31.

[20] Raoul Dautray, *Mémoires. Du Vel' d'Hiv à la Bombe H*, Paris, Editions Odile Jacob, 2007, p. 191.

[21] Testimony of C. Bruce Tarter in Commissariat à l'énergie atomique, "40ème Anniversaire de la Direction des Applications Militaires", p. 61.

[22] Raoul Dautray, *Mémoires. Du Vel' d'Hiv à la Bombe H*, Paris, Editions Odile Jacob, 2007, p. 191 ; Testimony of C. Bruce Tarter in Commissariat à l'énergie atomique, "40ème Anniversaire de la Direction des Applications Militaires", p. 63.

[23] See Nouzille, *Dans le secret des presidents*, op. cit., p. 244.

[24] See CHOCS Focus n° 1, 10 Years of Collaboration on Omega Laser Facility, June 2010, http://www.lle.rochester.edu/media/publications/cea/Focus1-CD.pdf

[25] Personal sources.

[26] See CHOCS Focus n° 1, 10 Years of Collaboration on Omega Laser Facility, June 2010, http://www.lle.rochester.edu/media/publications/cea/Focus1-CD.pdf.

[27] Memorandum of Agreement on Co-operation Concerning Nuclear Safety and Security, Washington, 4 June 1996.

production, but the United States and France share the same spare parts stockpile.[28] Cooperation also existed on X-Ray radiography: the first axis of the EPURE installation in France is based on common research and development.

US assistance has been precious to the French, reportedly allowing them to gain, time, money and self-confidence. Three particular areas are repeatedly mentioned: MIRVing, miniaturizing, and hardening.[29] For instance, French engineers say that it would have been difficult for them to master the separation process of M4 warheads in due time without US help. Reaching one-point-type safety (*"auto-sûreté"*) is also cited as a benefit.[30] (According to a former high-level official familiar with both countries, France is now *"more advanced"* than the United States in the fields on miniaturization and one-point safety.[31])

However, US-French technical nuclear cooperation has been important to the United States. It was partly a *quid pro quo* for enhanced participation of French forces in NATO operations (as well as, for Henry Kissinger, an attempt to divide the Europeans[32]), and a way to ensure the credibility of France as a "third center of nuclear decision-making" in the Atlantic Alliance, complicating the Soviet calculus (hence the June 1974 recognition by NATO of Paris and London as contributing to the overall deterrence of the Alliance). But there were also technical benefits.[33] For these reasons, it did not suffer from breakdown in the US-French bilateral relationship in 2003 (whereas they had been frozen for six months in the first part of 1974, due to a crisis in US-French relations). Indeed, Washington is said to have benefitted very substantially from cooperation with Paris, because the French approach certain problems differently from the Americans.[34] It should be assumed, for instance, that French experience with "robust"-type warheads (which are now operational in France) is discussed and is useful to the US.

The United States and France also appear to have an ongoing exchange regarding nuclear forensics, although officials are reluctant to speak on the record about this program. During the March 2012 Seoul Nuclear Security Summit, the US, France and UK released a Joint

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[28] Discours de Manuel Valls, Visite du CESTA, Le Barp, 23 October 2014 (http://www.gouvernement.fr/sites/default/files/document/document/2014/10/23.10.2014_discours_de_manuel_valls_premier_ministre_-_visite_du_cesta_le_barp.pdf); and personal sources.

[29] See Robert Norris et al., Nuclear Weapons Databook, Volume V: British, French and Chinese Nuclear Weapons, Washington, NRDC, 1994, p. 192; Valéry Giscard d'Estaing, Le Pouvoir et la Vie, Tome II: l'Affrontement, Paris, Hachette, 1992, p. 184, and Tome III: Choisir, Paris, Compagnie 12, 2006, p. 504; Nouzille, Des secrets si bien gardés, op. cit., p. 391, p. 401.

[30] Personal sources. See also the testimony of Alain Vidart in Pô, op. cit., p. 198.

[31] Personal source.

[32] See "Memorandum of Conversation", Western White House, 17 August 1973; and "Memorandum of Conversation, The Pentagon, 5 December 1973. The latter document suggests that that time, there were tensions and misunderstandings between the two countries on the use of "negative guidance". As some point of the conversation, Dr. Kissinger states: *"I would like to back [the French] down without breaking them"*. This also happened at a time of uncertainty, from the US standpoint, about the future of German policy (Chancellor Willy Brandt's "Ostpolitik").

[33] A key French source mentions in particular tridimensional materials and hardening of ground-to-ground systems to HA-EMP effects. Conze, op. cit., p. 264. French laser technology was also helpful to the United States in the 1970s (see above).

[34] Personal sources.

Statement on Nuclear Terrorism described *"a focused effort"* to strengthen detection and response capabilities to a nuclear event.[35]

There are also regular conversations (Nuclear Staff Talks) between the French Nuclear Forces Division of the Joint Staff and USSTRATCOM as well as informal discussions and exchanges between French forces (air and sea) and their US counterparts on issues such as force management and operations.

Finally, there is in-depth broader scientific cooperation between the Military Applications Division of the French Atomic Energy Commission (CEA/DAM) and the US DoE National Nuclear Security Administration (NNSA). A 2000 French initiative, driven by the realization that *"spectacular advances in computational technology offer new prospects in the use of more fundamental physics than in the past"*, resulted in a bilateral agreement on "Cooperation on Fundamental Science Supporting Stockpile Stewardship" was signed in March 2002. It covers roughly 80 projects, many of them having now been completed. This scientific cooperation has given birth to more than 125 joint publications.[36]

Coordinated Deterrence? US-French Debates on Nuclear Policy and Planning

The NATO framework

As other allies did, France benefitted from the delivery of US nuclear systems when it was still fully integrated in NATO. A bilateral 1961 agreement set up the conditions of French operation of US systems.[37] During three years, between 1964 (when France became a nuclear power) and 1967 (when it decided to leave the integrated military structure), one could say there was a *de facto* extended French nuclear guarantee to NATO allies since Paris was fully committed to Alliance solidarity. French officers participated in some of the meetings of the Joint Strategic Targeting Planning Staff in Omaha, Nebraska.[38] As a matter of fact, the first US contribution to the French deterrent was know-how and expertise on nuclear planning, operations, and organization.

US (and UK) thinking on nuclear deterrence was also critical to French nuclear "learning". Many of the pioneers of the French deterrent became familiar with nuclear concepts during their postings at NATO. This remains a "repressed memory" in France.[39]

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[35] Joint Statement on Nuclear Terrorism, 27 March 2012, http://seoul.usembassy.gov/p_rok_032712b.html.

[36] "History of the agreement", in CHOCS, Focus n° 3: 2002-2012: 10 ans de l'accord CEA/DAM – DoE/NNSA, Commissariat à l'énergie atomique, 2012, pp. 2-3.

[37] Agreement between the Government of the United States of America and the Government of the French Republic for Co-operation in the Operation of Atomic Weapons Systems for Mutual Defense Purposes, 27 July1961.

[38] "The Nerve Center of US Strategy", NATO Letter, May 1966 (quoted in Shaun Gregory, Nuclear Command and Control in NATO. Nuclear Weapons Operations and the Strategy of Flexible Response, New York, St. Martin's Press, 1996, p. 145).

[39] See Bruno Tertrais, "'Destruction Assurée': The Origins and Development of French Nuclear Strategy, 1945-1981", in Henry D. Sokolski (ed.), Getting MAD: Nuclear Mutual Assured Destruction, Its Origins and Practice, Carlisle, Strategic Studies Institute, 2004.

But what about the next phase, after the French withdrawal, effective in 1968? The open literature documents bilateral discussions from the mid-1970s in the NATO framework on the practical consequences of France's new nuclear status in case of an East-West conflict.[40] These are supplemented by information given by former officials. Taken together, these sources make it clear that coordination between French and NATO nuclear forces was an option.

France and NATO military chiefs signed the "Ailleret-Lemnitzer" agreement in 1967 regarding the relations between the French II Army Corps in Germany and the Central Army Group (CENTAG) and its possible engagement of the former in support of the latter. This agreement made it clear that *"nuclear weapons under [US] control would support French forces in wartime"*.[41] This was reported by French sources as *"the Americans would provide"* nuclear weapons to the French.[42] This was to happen *"in case the battle became nuclear"*.[43] In 1970, another France-NATO agreement ("Fourquet-Goodpaster") defined the relationship between air forces.

As France deployed theater nuclear weapons of its own (in 1972 for air forces, and 1974 for ground forces), interest grew in Washington for making special arrangements with the French.[44] This was particularly important for the United States: De Gaulle had initially seen these theater nuclear forces as a "trigger" which might force the United States to cross the nuclear threshold to defend Europe.[45] But France too had its reasons. In the event of independent nuclear operations, it wanted to be able to use NATO air corridors, and possibly get intelligence from its allies; in case of common operations, deconfliction and avoidance of mutual collateral damage were needed.[46] President Pompidou signaled to Nixon that he would be interested in discussing such issues in 1970.[47] Nixon instructed general Goodpaster to explore *"all feasible improvements in practical relations between US and French theater nuclear forces, including in the area of tactical nuclear weapons"*.[48] Pompidou fixed the

[40] See in particular Bruno Tertrais, "La coopération militaire depuis 1969: la France, l'OTAN, et la question nucléaire", in Frédéric Bozo et al., *La France et l'OTAN, 1949-1996*, Brussels, Editions Complexe, 1996, pp. 621-623.

[41] Henry A. Kissinger, "Military Relations with France and the Pompidou Visit", Memorandum for the President, 23 February 1970, p. 4.

[42] Testimony of general Valentin in Histoire orale, Inventaire analytique de la sous-série 3K, tome I, Service historique de l'armée de Terre, 2001, p. 16.

[43] Diego A. Ruiz Palmer, "La coopération militaire entre la France et ses alliés, 1966-1991: entre le poids de l'héritage et les défis de l'après-guerre froide", in Frédéric Bozo et al., *La France et l'OTAN, 1949-1996*, Brussels, Editions Complexe, 1996.

[44] In 1970, Kissinger had mentioned joint theater nuclear planning as being *"highly desirable"* for Washington. Henry A. Kissinger, "Military Relations with France and the Pompidou Visit", op. cit., p. 4.

[45] See Tertrais, "'Destruction Assurée'…", op. cit.

[46] See Tertrais, "La coopération militaire depuis 1969", op. cit.

[47] Memorandum of Conversation, The President's Office, 24 February 1970.

[48] Henry A. Kissinger, Memorandum for the President, 10 March 1970, and Draft memorandum for general Andrew J. Goodpaster, appended.

terms of reference of US-French discussions in October 1973.[49] Paris made it known to Washington that it considered eventual coordination with US/NATO theater nuclear forces as *"essential"*.[50] The Valentin-Ferber agreements (1974) opened the possibility of having the whole I French Army participating in NATO operations (including with its Pluton missiles). In 1975, formal conversations on theater nuclear operations issues were engaged by Chief of Staff general Guy Méry and SACEUR general Alexander Haig. They were concluded by the signature of a "technical agreement".[51] Arrangements included the ability of the nuclear-armed *Force d'Action Tactique* (FATAC) to operate above the First Army in a 40-kilometer wide corridor, and the possibility of returning French pilots to use NATO bases.[52] According to French historian Frederic Bozo, there were also procedures for "*mutual consultations and information designed to ensure the efficiency and security of strikes"*, principles to avoid redundant and/or fratricide strikes, as well as excessive military or civilian collateral damage.[53] At one occasion at least, in 1977, the French Prime Minister mentioned publicly the possibility of using nuclear weapons along with its allies (*"in case we were to decide do act together"*).[54]

During Mitterrand's mandate, consultations on theater nuclear operations took place between Méry and Haig's successors, generals Jeannou Lacaze and Bernard Rodgers. By that time, changes in the French posture (separation of theater nuclear and conventional forces, extension of the range of nuclear systems) and NATO doctrine (the priority given to long-range strikes) made the question of coordination a less urgent one. This made Paris more at ease to discuss coordination: there was less US pressure for attempting to "control" French theater nuclear operations. The question of a possible coordinated use of French and NATO theater nuclear forces was discussed at the highest level in Paris.[55] Defense minister Jean-Pierre Chevènement publicly mentioned the value of NATO-France consultations on this matter.[56] Hubert Védrine – then a close adviser to Mitterrand – proposed around 1987-1988 to threaten a nuclear "final warning at Three" in case of a conflict against the Warsaw Pact.[57] All this seems to lend some credence to Richard Ullman's 1989 affirmation (otherwise unsubstantiated and unconfirmed) according to which there were plans for French

[49] Testimony of general Valentin, op. cit., p. 17. President Pompidou had recommended *« prudence »* to general Maurin (written annotation to Note de M. l'ambassadeur de France aux Etats-Unis, Washington, 19 April 1975, 5AG2-100).

[50] Helmut Sonnenfeldt, Memorandum for Mr. Kissinger, 3 November 1970.

[51] See Tertrais, "La coopération militaire depuis 1969", op. cit.; and testimony of general Méry in Histoire orale, op. cit., p. 46.

[52] Personal sources.

[53] Frédéric Bozo, *La France et l'OTAN: de la guerre froide au nouvel ordre européen*, Paris, Masson, 1991, p. 121.

[54] Prime Minister Raymond Barre, Speech at the Camp de Mailly, 18 June 1977.

[55] Jacques Attali, *Verbatim II 1986-1988*, Paris, Fayard, 1995, p. 300; and correspondence with Bruno Tertrais, August 1995.

[56] Quoted in Olivier Debouzy, *Anglo-French Nuclear Cooperation: Perspectives and Problems*, London, RUSI, 1991, p. 49.

[57] Hubert Védrine, *Les mondes de François Mitterrand. A l'Elysée de 1981 à 1995*, Paris, Fayard, 1996, p. 727. The « final warning » is a French concept of a single, non-repeatable limited and selective use of nuclear weapons to restore deterrence.

participation, alongside its allies, to NATO's General Nuclear Release (the full execution of the SACEUR's Nuclear Operations Plan).[58]

What is also clear is that there were always limits to this NATO-France cooperation. The French were reluctant to embark in formal peacetime common nuclear planning.[59] No "nuclear division of labor" was ever agreed upon; US requests for withholds (time, space or yield limits on nuclear strikes), for instance, were never met by the French, who were keen to maintain their freedom of action.[60]

The Bilateral Framework

France and the United States also cooperated on deterrence policy issues at the bilateral level. This included questions of nuclear planning, though the evidence remains unclear as per what was achieved or not.

There is a not-well-known US commitment to *"consult with France on the use of nuclear weapons (..) unless an attack were so imminent that survival of the US is at stake"*.[61] This commitment was made by President Kennedy when he met with De Gaulle on June 1, 1961.[62] It is not clear whether the two countries consider it as still valid.

It is well-documented that De Gaulle considered favorably the coordination and use at Three.[63] US authorities naturally favored such an option, as suggested for instance by Defense Secretary McNamara in the mid-1960s. But French insistence on the independent nature of France's forces made it impossible in practice. However, there is fragmentary evidence that joint use or coordinated planning of strategic nuclear forces was discussed at several occasions by the two countries in the 1970s and 1980s.

Kissinger reported in 1970 that "the French military have already displayed some interest and Pompidou himself has publicly referred to the possibility of joint [strategic nuclear] targeting".[64] Pompidou confirmed his interest when he visited Nixon, signaling that there would need to be discussions and possibly coordination if not deconfliction when French

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[58] Ullman, op. cit.

[59] Jeannou Lacaze, "La politique militaire", Défense nationale, novembre 1981, p. 12; Philip H. Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy, Princeton*, Princeton University Press, 1994, p. 54; and interviews conducted by Bruno Tertrais with two former high-level NATO officials (Brussels, February 1990, and Washington, DC, April 1990).

[60] Personal sources. US interrogations about withholds were spelled out in NSSM 100, Military Cooperation with France, vol. I, Issues Paper, mars 1970.

[61] L.D. Battle, *Memorandum for Mr. McGeorge Bundy*, "Check List of Presidential Actions", 28 July 1961. This commitment also mentioned that any use of US bases in France would require a joint decision.

[62] See Constantine A. Pagedas, *Anglo-American Strategic Relations and the French Problem, 1960-1963: A Troubled Partnership, Abingdon*, Routledge, 2000, p. 157. During that meeting, Kennedy also agreed to schedule tripartite talks on the use of nuclear weapons.

[63] We explore this issue in a separate paper to be published in Survival (2015).

[64] Henry A. Kissinger, *Memorandum for the President*, "Military Relations with France and the Pompidou Visit", 23 February 1970, p. 3.

SSBNs would be operational.[65] Nixon instructed general Goodpaster to explore "any feasible way to move toward the joint targeting of US and French strategic forces".[66] The US government favored a tripartite arrangement, but a bilateral one was possible as a second best; among US concerns was for instance the need to avoid Paris escalating a conflict to counter-cities while Washington restrained its operations to military targets.[67]

Jacques Attali, a close adviser to President Mitterrand, has testified that various forms of coordinated US-French nuclear options were discussed during the 1980s at the Elysée.[68] Other former French officials have stated that some forms of deconfliction were achieved during the mid-to-late 1980s.[69] There is however no hard public evidence of existing official arrangements.

A formal and general nuclear policy dialogue was initiated in the early 1990s, under the auspices of the Pentagon (Office of the Secretary of Defense) and the French ministry of defense (the newly-formed Policy Division). It focuses nuclear deterrence but also included missile defense, proliferation and non-proliferation, and disarmament. It is not known to include in-depth discussion of concrete deterrence scenarios. (Contrary to technical cooperation, this dialogue suffered from the 2002-2003 crisis in US-French relations but was rejuvenated in 2009, through bilateral consultations on the US Nuclear Nuclear Posture Review.)

Bilateral conversations since the end of the Cold war have included fresh exchanges on nuclear planning. At several occasions since the early 1990s, US and French bureaucracies have pushed for more exchanges, but political authorities of at least one of the two countries have often been reluctant to go far in that direction.

Washington and Paris both signed the trilateral March 2012 Seoul Nuclear Security Summit *Joint Statement on Nuclear Terrorism*, which was meant to contribute to the deterrence of State-based nuclear terrorism.[70]

Prospects for Enhanced US-French Nuclear Cooperation

Existing US-French nuclear cooperation channels are said to remain compartmentalized, with only a few officials having access to the whole range of cooperation. But clearly, more has been taking place than is generally understood. Many taboos were broken, many avenues were opened. This begets the following question: could deterrence and national nuclear programs benefit from enhanced cooperation? We offer a prudent "yes" as an answer.

[65] *Memorandum of Conversation*, The President's Office, 24 February 1970.

[66] Henry A. Kissinger, *Memorandum for the President*, 10 March 1970, and Draft memorandum for general Andrew J. Goodpaster, appended.

[67] *NSSM 100, Military Cooperation with France*, vol. I, Issues Paper, mars 1970.

[68] Attali, op. cit., p. 300; and written correspondence with Bruno Tertrais, August 1995.

[69] Personal source.

[70] Joint Statement on Nuclear Terrorism, 27 March 2012, http://seoul.usembassy.gov/p_rok_032712b.html.

Deterrence and Crisis Management

A major question is whether deterrence in future contingencies involving the United States and France would benefit from additional bilateral cooperation or consultation. Our sense is that, in general, the three countries have intersecting interests. So, for example, in the case of Iran, France has three defense commitments (Kuwait, Qatar, the United Arab Emirates) and a base in the Gulf. Even were France to refrain from direct participation in a military action, France would seek to ensure that strategic deterrence held, either in other areas or by making it clear, as it did during the 2003 Iraq War, that the use of nuclear, chemical or biological weapons would change the perspective of Paris on the conflict. The new M51 submarine-launched ballistic missile is deliberately an intercontinental one, reflecting France's broader commitment to ensuring that strategic deterrence remains credible even in a crisis involving a distant Asian country such as China, North Korea or Pakistan.

A second question, which we believe has been terribly neglected, is how the respective nuclear deterrence forces of the United States and France would interact in a hypothetical nuclear crisis? There is no known dedicated nuclear consultation or coordination mechanism. Yet all two forces have established procedures for increasing their alert status in various crises. If we wish for the heterogeneity of our operationally independent forces to reinforce deterrence in a crisis, we must coordinate in advance so that independent nuclear deterrents do not work at cross-purposes. Independence, perhaps paradoxically, depends in part on coordination. [71]

It is clear that, as a national matter, each party wishes to retain the ability to speak and act as independently from each other as possible. Yet the two parties also desire the option to speak and/or act jointly in case it was judged necessary to enhance deterrence. Doing so in a crisis requires careful planning in advance – a topic that we take up below in the context of trilateral cooperation.

Finally, an important question relates to the political obstacles for enhanced bilateral cooperation on deterrence. Although the United States and France have sustained an extraordinarily close relationship on strategic matters for many decades, the parties have felt compelled to do so in secret. Part of the problem relates to French sensitivities. France remains outside the NATO Nuclear Planning Group and its subsidiary High Level Group, for political reasons. At the same time, we would argue, based on the historical record, that when the stakes are high, France places a premium on alliance solidarity.

Moreover, some differences in US and French nuclear declaratory policies have diminished. Both states restrict the use of nuclear weapons to "extreme circumstances of self-defense" touching on the "vital interests" of the nation. France has now implicitly signaled that it no longer embarks in demographic targeting. To be sure, Paris has refrained from reinforcing its "negative security assurances" as Washington did in its 2010 Nuclear Posture Review. But the two parties appear to have broadly consistent views of how to use nuclear weapons can shape, deter and respond to threats.

[71] A DoD official told one of us in 1989 that US-French nuclear coordination could easily be improvised if it was about using « *two dozen* » nuclear weapons.

Our judgment is that US-French relations are strong enough to imagine deeper cooperation among the parties in crisis management. The first step is for the parties to begin to understand how each envisions the role for nuclear forces and declaratory statements in managing crises. A useful exercise might be the introduction of joint tabletop or one-day command post exercises.

Systems and Weapons

Our research suggests that many legal, technical and programmatic obstacles remain to enhanced US-France cooperation on strategic systems. Fiscal policies and choices, however, may change this perspective. Given the tremendous financial pressures that will constrain the modernization of strategic forces and the supporting complex in both countries, we could imagine four areas in which at least limited cooperation may be of some value.

- The United States is now facing very serious questions about its ability to replace the current inventory of air-launched cruise missiles (ALCM). France has maintained a high level of investment/competence in air-launched missiles, including the co-development with the United Kingdom of the Storm Shadow ALCM. The United States might choose to purchase a longer-range dual capable Storm Shadow successor or co-develop a strategic ALCM with France.[72] At present France plans to replace its ASMPA missiles with a new, hypersonic missile around 2035 code-named ASN4G; two different concepts are being studied, one putting a premium on stealth, the other one on speed. The USAF has a more urgent need (its Long-Range Stand-Off missile is needed by 2025-2030), but technical exchanges should be feasible.

- Both countries are seeking to minimize the costs associated with stockpile stewardship/simulation and the maintenance of safe, secure and reliable deterrents (including hydrodynamics, high-power lasers, etc.) The United States faces severe financial difficulties in replacing existing facilities to support plutonium research. Funding is currently unavailable for the Chemistry and Metallurgy Research Replacement – Nuclear Facility (CMRR-NF) at Los Alamos. France, on the other hand, maintains a strong plutonium science sector. Much of CMRR-NF was intended to be laboratory space that might be of interest to both countries seeking to ensure modern facilities to conduct research.

- Nuclear safety and security aboard submarines are common concerns. We understand that proprietary information, classification and bureaucratic traditions have hampered serious bilateral discussions on these issues in the past. However, any major incident happening to one of the two countries would indirectly impact the other.[73] At the very least, the two countries should make sure that, should an incident, happen, there would be ways to quickly inform the other party (as well as the United Kingdom of course), and later to have debriefings and "lessons-learned" discussions.

[72] Note that MBDA is a UK-French company.

[73] The United States and France have different ways to manage their nuclear safety standards. France has unified standards. The United States has different civilian and military standards, with the latter reportedly less stringent than the French (or US civilian) ones.

- Finally, building on previous US-French bilateral cooperation, Washington could join the UK-French EPURE X-Ray Radiography facility in Bourgogne. Both London and Paris have made it clear that a third partner could be added, perhaps for the third axis of the machine.

On paper, other avenues of cooperation could be open, but we do not believe that they currently warrant serious consideration.

- Although the United States and France are both replacing ballistic missile submarines and submarine-launched ballistic missiles, the two parties continue to place political emphasis on independence, despite the tremendous convergence of interests. (One particular obstacle, among others, is the US Navy's extraordinarily cautious attitude on bilateral cooperation when it comes to programs such as nuclear propulsion.) The timeline in France and the United States to replace existing ballistic missile submarines is compatible, although many critical design decisions have already been made and attempts to examine serious cooperation options have failed so far. One hypothetical possibility in case of future drastic budgets cuts in Paris would be for France to adopt the US Common Missile Compartment (CMC) and conclude a leasing arrangement with regard to the Trident D5. Such an effort would raise a number of political, legal and technical issues. Could French safety standards accommodate the presence of a batch of Trident D5 in Brittany? Could France build a new SSBN with the CMC at a cost not exceeding that of its current generation? Could the berths at l'Ile longue accommodate a submarine with the CMC? We thus see this scenario as extraordinarily unlikely. Furthermore, precisely because of budgetary pressures, France has decided in 2014 that it would continue to update the M51 (including through the procurement of a future "M51.3") rather than develop a new missile. This also means that the next generation of French SSBNs will be quite similar, in terms of architecture, to the current SNG submarines.

- In the (very hypothetical) case that France were to seek to resume testing nuclear weapons, it would need to find a suitable test site. France dismantled its former nuclear test site at the Moruroa and Fangataufa atolls in 1998 after signing and ratifying the Comprehensive Nuclear Test Ban Treaty (CTBT). Although France and the United States are both committed to the Comprehensive Test Ban Treaty, Paris might well view access to the Nevada Test Site, such as enjoyed by the UK, as both a useful location to conduct subcritical testing, which is not prohibited by the CTBT, and as a safeguard in the event of a global return to testing. We mention this hypothesis for the sake of comprehensiveness, but we do not believe that it is a credible one.

We would like to emphasize that the extent of past and present US-French technical nuclear cooperation is not a guarantee of success for the future. On these matters, services (in particular in the United States) tend to be very cautious about new forms of bilateral cooperation, and nothing will happen without strong political leadership and guidance from the top.

We understand the desire of all parties for discretion, but we wish to end on a note of optimism. We would observe that the 2010 revelation of the extent of US-France cooperation was a political non-event – in contrast to the crisis generated by the revelation of contemporary secret agreements reached between the United States and Japan. The steady revelation

of the depth of US-France cooperation did not produce a political crisis, despite the obvious reasons to worry it might. Like Sherlock Holmes's dog that did not bark, the absence of a public reaction to the revelation is revealing. Perhaps it is because our common interest in strategic cooperation is so obvious that most people would have been more surprised to learn there had been none.