

Technodiplomacy: A Concept and Its Application to U.S.-France Nuclear Weapons Cooperation in the Nixon-Kissinger Era

John Krige

The place of technology in American foreign relations has attracted considerable attention from diplomatic historians in recent years. Indeed, at least three signature lectures by eminent scholars published under the auspices of their flagship society, the Society for Historians of American Foreign Relations (SHAFR), have been specifically directed to the topic. In 2000 Walter LaFeber devoted his presidential address to “Technology and U.S. Foreign Relations,” describing how three pivotal U.S. policymakers related successive technological revolutions—ending with the information revolution of the post-1960s—to their foreign policies at home and abroad.¹ That same year, Odd Arne Westad’s Bernath Lecture proposed three possible paradigms for a “New International History of the Cold War,” one of which was Technology.² Ideology and a focus on the Third World were the others. Westad specifically urged historians to “explore the purposes for which technology was developed” on both sides of the Iron Curtain in the



A ceremony at the Pentagon on September 25, 1973. French Defense Minister Robert Galley (left) had secretly negotiated earlier with National Security Adviser Henry Kissinger and Secretary of Defense James Schlesinger (center) for technical nuclear support for France. They are accompanied by the Chairman of the Joint Chiefs of Staff Thomas Moore.

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¹ Walter LaFeber, “Technology and U.S. Foreign Relations,” *Diplomatic History* 24:1 (2000): 1–19.

² Odd Arne Westad, “The New International History of the Cold War: Three (Possible) Paradigms,” *Diplomatic History* 24:4 (2000): 551–65.

service of their opposing ideologies, highlighting the role of strategic missiles, satellite transmissions, and computer networks in maintaining the balance of power. David Engerman's 2007 Bernath Lecture moved beyond Westad's focus on ideological confrontation and expansion backed by increasingly sophisticated hardware to consider also the social sciences as a source of power. He distinguished three different kinds of American knowledge that could serve both as a "form" of American foreign relations and a resource that "shaped" American foreign policy as traditionally defined: knowledge *of*, knowledge *as*, and knowledge *for* power.³ Thus, while Westad focused on technological hardware (bombs, rockets, satellites, computers) that embodied superpower rivalry, Engerman was more concerned with the role of knowledge produced and disseminated by academia and think tanks in making the world legible,⁴ and so more malleable and receptive to the projection of American power abroad.

These are just a few markers of an increasing emphasis on technology and foreign relations. In one more example, Niall Ferguson in his introduction to a pathbreaking collection of articles on contemporary forms of globalization lists a range of technological advances (notably communications technologies) that provided the networked infrastructure for the global world as we know it today.⁵ The diversity of the approaches adopted by these scholars alerts us that technology and, more generally, technical knowledge can take many different forms and can be mobilized to many different purposes. This article attempts to contribute to this debate by exploring *the role of knowledge and know-how as a strategic resource in interstate relations*. Bargaining and negotiation are, of course, core features of the relationship between states. This discussion explores the place that technology—in the restricted sense of knowledge/know-how—plays in negotiations between a dominant and a recipient state. Several intersecting ideas about the relationship between scientific and technical knowledge and power are fused in this argument and coalesce in the concept of technodiplomacy.

In what follows, I spell out the concept of technodiplomacy in some detail, stressing its fusion of insights from the history of science and technology and,

³ David C. Engerman, "American Knowledge and Global Power," *Diplomatic History* 31:4 (2007): 599–632.

⁴ James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1999).

⁵ Niall Ferguson, "Introduction: Crisis, What Crisis?" in Niall Ferguson, Charles S. Maier, Erez Manela, and Daniel Sargent, eds., *The Shock of the Global: The 1970s in Perspective* (Cambridge, MA: Belknap Press, 2011).

more generally, from Science and Technology Studies (STS) and from the history of foreign relations. I then flesh out its meaning through a detailed case study of the negotiations in the early 1970s between the American and French governments over upgrading the French nuclear weapons arsenal. This is not to suggest that the concept's value is restricted to nuclear weapons policy. The concept can throw valuable light on how a major power uses knowledge to project its power abroad, shaping the scientific and technological trajectories of friend and foe alike in line with its interests.⁶ Indeed, as the world's leading power, backed by the pursuit of pre-eminence in science and technology since World War II, the United States was particularly well-positioned to mobilize technodiplomacy in this way.

At its core, technodiplomacy involves negotiations and decisions over sharing or denying sensitive knowledge in the international system. Analyzing diplomatic relations through the lens of technodiplomacy embeds scientific and engineering knowledge and know-how in interstate relations, offering more complex views of the pursuit of U.S. interests in the global theater. It also reveals diplomatic agendas not based solely on the paradigm of superpower rivalries, situating the United States at the hub of a transnational system of knowledge sharing and denial in an increasingly interconnected world that engages a range of social actors beyond the political elites that dominate many studies of foreign relations. The cultural turn in diplomatic history has taught us that the attraction of a nation's music, movies, and education can be used by governments to exert influence abroad.⁷ Technodiplomacy includes advanced scientific and technological knowledge among the repertoire of instruments that powerful states have to get others to do what they want.

Knowledge/Know-how as an Instrument of State Power

Diplomatic historians trend to treat technology as hardware, as "things" or commodities. During the heyday of the Cold War they were particularly concerned, of course, with hardware that provided one state with a comparative military advantage over its rivals (as represented typically in counts of nuclear weapons

⁶ It is the guiding thread of John Krige, *Sharing Knowledge, Shaping Europe: US Technological Collaboration and Nonproliferation* (Cambridge, MA: MIT Press, 2016).

⁷ For now-classic studies, see Victoria de Grazia, *Irresistible Empire: America's Advance Through Twentieth-Century Europe* (Cambridge, MA: Harvard/Belknap Press, 2006) and Christina Klein, *Cold War Orientalism: Asia in the Middlebrow Imagination, 1945–1961* (Berkeley: University of California Press, 2003).

and their delivery systems).⁸ These studies, valuable as they were, tended to take a national perspective, and to do no more than to compare the technological assets of each major power with one another, without exploring the flows of technology between them. Indeed, dominated by a narrative of interstate rivalry, such flows were taken for granted as being minimal and constrained by regulatory systems (like the ITAR—International Traffic in Arms Regulations), which kept nationally developed technological hardware safely behind high domestic walls.

The concept of technodiplomacy does not exclude this factor in interstate relationships. However, technodiplomacy does not limit the place of technology in interstate relationships to weapons counts, nor does it draw a sharp line between intangible “knowledge” and material “technology.” Rather it builds on Gabrielle Hecht’s concept of techno-politics that holds that “politics can be strategically enacted through technological systems” that can themselves be appropriated and shaped by the social and political contexts in which they are embedded.⁹ My concept of technodiplomacy extends Hecht’s concept to highlight the exercise of political power in the act of sharing or denying knowledge in interstate relationships. Building on Francis Bacon’s famous aphorism that knowledge is power, it studies how states can use the knowledge produced in their national research and development (R & D) systems to advance their strategic interests in interstate relationships. Used as an analytical tool, the concept of technodiplomacy thus requires a multidisciplinary approach, combining insights from STS and from diplomatic history or the history of foreign relations to explore the dynamics of interstate bargaining.¹⁰

The knowledge at stake in technodiplomacy includes not only “technology” as such—that is, “things” that embody knowledge—but also formal and tacit knowledge, knowledge that is embodied in models, prototypes, sketches, blueprints, software, and hardware, and intangible knowledge or know-how in the minds and

⁸ For fine examples, see William Burr and David Allen Rosenberg, “Nuclear Competition in an Era of Stalemate, 1963–1975,” and Francis J. Gavin, “Nuclear Proliferation and Non-proliferation During the Cold War,” both in Melvyn Leffler and Odd Arne Westad, eds., *Cambridge History of the Cold War, Vol. II. Crisis and Détente* (Cambridge, UK: Cambridge University Press, 2010), 88–111 and 395–416, respectively.

⁹ Gabrielle Hecht, “Theory Talk #64,” July 14, 2014, available at <http://www.theory-talks.org/2014/07/theory-talk-64.html> (accessed June 19, 2019).

¹⁰ Glenn E. Schweitzer, *Techno-diplomacy: U.S.–Soviet Confrontations in Science and Technology* (Berlin: Springer, 1989), uses the term in his title but does not use it as an analytical tool in his study of scientific and technological exchanges between the United States and the Soviet Union in the Gorbachev period. Christopher Lawrence gave a paper at the Belfer Center in February 2019 on the place of light-water reactors in U.S.–North Korea relations that uses the concept in the way I use it; the paper has not been published. No scholarly work that I know of has used the concept in a systematic way.

hands of “knowledgeable bodies.” From this point of view, the technologies engaged in interstate bargaining are social assemblies, complex, interconnected systems of knowledge-based components whose pertinence to the functioning of the whole changes over time and draws on ongoing face-to-face encounters between experts and hands-on learning of new skills and techniques. Their evolution requires research and development, production, testing, operation, and maintenance. They can be improved or even supplanted by more “advanced” systems with expanded functionality. As the cutting-edge of knowledge advances, so do the possibilities for improving existing technologies and enhancing their role in a web of interconnected social and political relationships. It is because a technology can be disaggregated into distinct, relatively autonomous components, each of which has its own life history, that specific parts of the whole can be used as bargaining counters in interstate relationships. They can be used selectively as a stick (denied) or as a carrot (shared) to shape the technological capacity of another state along desired lines.¹¹

The broad range of the concept of technology invoked here is also a product of the author’s research with Mario Daniels on the complex of legal and administrative practices authorized by the Export Administration Act, the International Traffic in Arms Regulations, and, more recently, the Committee on Foreign Investment in the United States (CFIUS).¹² These key institutions of the National Security State are normally ignored by diplomatic historians. Yet, they are crucial to the military and economic security of the realm. They define the limits set by the president on global trade by American industries (and by foreign direct investment in high technology). They also target the global circulation of *knowledge*, broadly conceived. The management of the boundary between what knowledge can be shared and what knowledge has to be withheld has been a major preoccupation of the apparatus of the National Security State since its inception in the 1940s,

¹¹ Lawrence uses this language in the resume for his presentation of U.S.–North Korean relationship, <https://www.belfercenter.org/event/normalization-other-means-failed-techno-diplomacy-light-water-reactor-export-north-korean-0> (accessed July 26, 2019).

¹² For some of our preliminary results, see Mario Daniels, “Japanese Industrial Espionage, Foreign Direct Investment, and the Decline of the U.S. Industrial Base in the 1980s,” *Bulletin of the German Historical Institute* 63 (Fall, 2018): 45–66; John Krige, “Regulating International Knowledge Exchange: The National Security State and the American Research University from the 1950s to Today,” *Technology and Culture* Vol. 60:1 (January 2019): 252–77. See also our chapters in John Krige, ed., *How Knowledge Moves: Writing the Transnational History of Science and Technology* (Chicago: University of Chicago Press, 2019). While the EAR and ITAR regulate, respectively, the cross-border circulation of sensitive nonmilitary and military goods, processes, and knowledge/know-how in the name of national security, CFIUS restricts the acquisition of American high-tech firms by foreign entities in the name of economic security (understood as maintaining the United States’ competitiveness in sectors crucial to global technological and military leadership).

as it sought to strike a balance between the free circulation of people, ideas, and commodities and the protection of the United States' technological, economic, and military supremacy.

Why does regulating the circulation of knowledge matter so much to major powers like the United States? There are three reasons. First, knowledge is universal in the sense that the laws of nature are the same all over the world. This means that any country that has a trained cohort of scientists, engineers, and project managers, and the industrial capacity, the financial means, and the political will, can mobilize such resources to produce ever more sophisticated goods and services. Indeed, it is often said that the most effective instrument of technology transfer is the demonstration that a new, innovative device can, in fact, work in practice. This takes the uncertainty out of what is technologically possible, and so stimulates rivals to emulate the technological leader. In principle, then, no state can be indefinitely denied the acquisition of a new technology: all one can do is to slow technological rivals down, obliging them to invest ever more time and money in acquiring what one has produced if they seek it.

The second reason to regulate the circulation of knowledge is because, once shared, knowledge and, above all, know-how cannot be taken back. This point was emphasized by Fred J. Bucy, the then-executive vice-president of Texas Instruments in a famous report published for the Department of Defense in 1976. In it, Bucy and his panel called for a redefinition of export controls away from targeting the *products* of innovation (the devices and the hardware that serves as bargaining chips in interstate relationships) to the *process* of innovation (notably, the role of intangible or tacit knowledge, the knowledge of “the detail of how to do things”). As the Bucy report put it, “the release of know-how is an irreversible decision. Once released, it cannot be taken back nor controlled. The receiver of know-how gains a competence which serves as [the] base for many subsequent gains.”¹³ Bucy successfully called for a reform of export control legislation that put vigilance over the transfer of sensitive knowledge and know-how to friend and foe alike at the core of national and economic security.

The third, and most important, reason for controlling knowledge flows was mentioned above: knowledge is power. This was one of the major historical lessons of the role of science and technology in World War II. The role of advanced

¹³ *An Analysis of Export Control of U.S. Technology: A DOD Perspective. A Report of the Defense Science Board Task Force on Export of U.S. Technology*, Office of the Research Director of Defense Engineering, February 4, 1976. Bucy chaired the task force.

technologies in that conflict—radar, guided missiles, the atomic bomb, and penicillin—propelled the pursuit of scientific and technological knowledge to the heart of the political process. Governments concluded that national military capability and economic strength depended on having a robust educational and industrial base built on ongoing research, development, and production. That base would be built by astutely combining a dynamic domestic R&D capacity with a web of international relationships through which one could tap into the expanding global pool of knowledge and technology. Correlatively, dominance of the research frontier provided a state with the ability to control the circulation of knowledge in its own interests: it provided the stuff of which technodiplomacy is made.

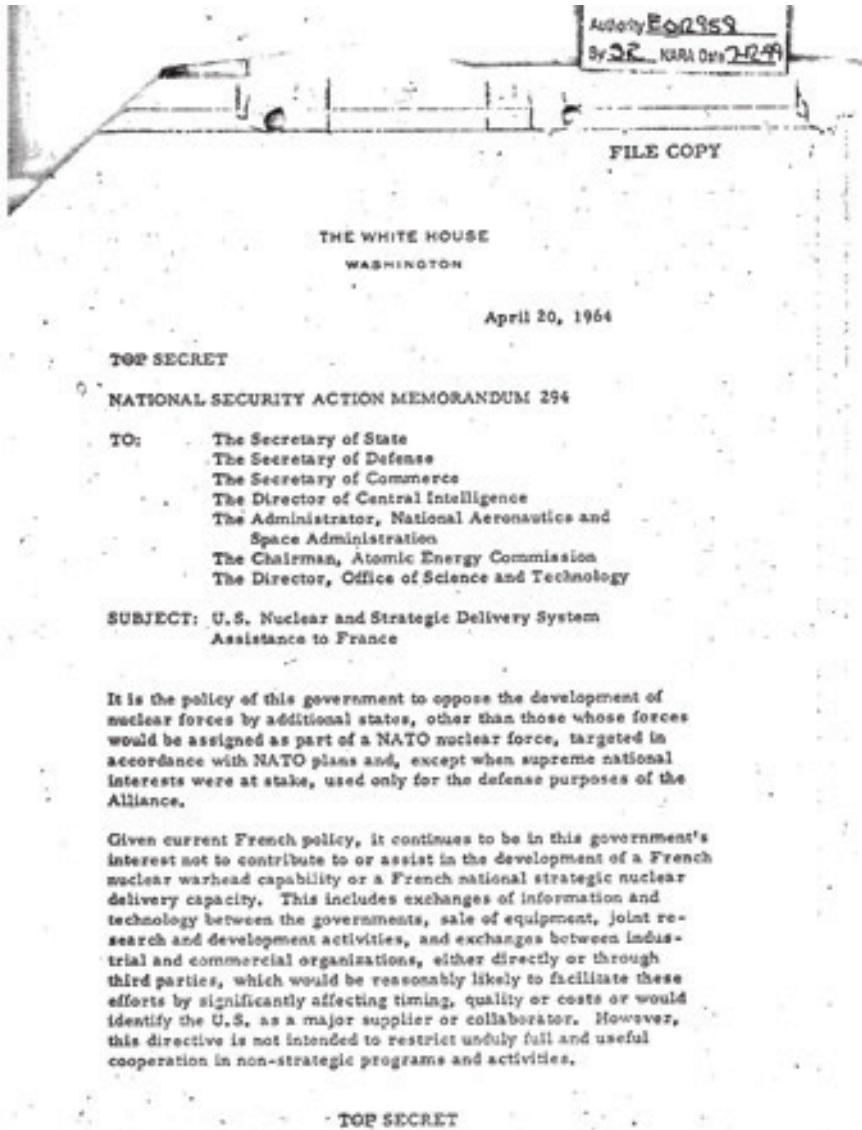
America's perception of its role in the world—and how to achieve it—elevates technodiplomacy to a major instrument of U.S. foreign policy. The United States' determination to reshape the world order in its own image under American leadership, to produce what Daniel Sargent recently called a global Pax Americana,¹⁴ was premised on a domestic agenda committed to maintaining scientific and technological pre-eminence: global military, industrial, and ideological supremacy was premised on maintaining global scientific and technological pre-eminence. Indeed, by making the pursuit and maintenance of scientific and technological leadership one of the cardinal objectives of state policy since World War II, the United States is particularly well-positioned to use knowledge as an instrument of state power.¹⁵ Leadership bestows leverage; technodiplomacy is the means to that end.

While a focus on mechanisms of knowledge denial is crucial to grasping the dynamic of the Cold War, an emphasis on rivalry and protectionism has two major drawbacks: First, it overlooks the major role played by technological sharing through trade and education, including with the Soviet Union (e.g., during the period of détente of the 1970s).¹⁶ Second, it obscures the role of technological collaboration, including both sharing and denial, in the United States' relationship with its major allies. The Cold War, as Christina Klein has emphasized, was not simply “a unique historical era defined by the conflict between the United States and the Soviet Union.” It can better be seen as a chapter in the “ongoing process

¹⁴ Daniel J. Sargent, “Pax Americana: Sketches for an Undiplomatic History,” *Diplomatic History* 42:3 (2018): 357–76.

¹⁵ John Krige, “Diplomacy (post 1945), Science and Technology,” in Hugh R. Slotten, ed., *Oxford Encyclopedia of American Science, Medicine and Technology* (Oxford: Oxford University Press, 2014), 252–67.

¹⁶ For insights on U.S.-Soviet knowledge relations during the period of détente, see Krige, “Regulating International Knowledge Exchange.”



National Security Action Memorandum, NSAM294, April 20, 1964, page 1.

of globalization,” and so was “as much about creating an economically, politically, and militarily integrated ‘free world’ as it was about waging a war of attrition against the Soviets.”¹⁷ Knowledge and technology served as tools both to maintain the United States in a state of permanent war preparedness, of qualitative over

¹⁷ Klein, *Cold War Orientalism*, 16.

quantitative war-fighting superiority, *and* to build an integrated “free world” under U.S. leadership. In short, denying and sharing knowledge are two sides of the same coin in interstate relationships. These twin goals were—and often still are—implicit in official and informal statements of American policy. Thus, technodiplomacy is embedded in both collaborative and competitive interstate relationships in which knowledge crosses borders.

Case Study: U.S.–France Knowledge Sharing on Nuclear Weapons Systems in the 1970s

Having sketched some main features of technodiplomacy, we can turn to a concrete example to illustrate its value in practice, specifically for the light it throws on the spectrum of possibilities made available by using technology as an instrument of state power. In particular, we can explore in more detail U.S. nuclear weapons collaboration with its ally France in the early 1970s. This is of interest not simply because President Richard Nixon’s national security adviser, Henry Kissinger, reversed a longstanding policy of technological denial in U.S.-French military relationships. It is also because a few years ago William Burr published an invaluable set of previously classified papers under the auspices of the National Security Archive’s Nuclear Documentation Project.¹⁸ These documents provide a rich source of primary source material for an analysis of technodiplomacy.¹⁹

When Nixon entered office in 1969, U.S. policy toward France’s independent deterrent was still defined by National Security Advisory Memorandum 294 (NSAM294), signed by McGeorge Bundy in April 1964.²⁰ NSAM294 was directed against Charles de Gaulle’s refusal to place his nuclear strike force under NATO command. It stipulated that the United States would not “contribute to or assist in the development of a French nuclear warhead capability or a French national strategic nuclear delivery capability.” Multiple modes of assistance were excluded, beginning with “exchanges of information and technology between governments, sale of equipment, joint research and development activities, and exchanges between industrial and commercial organizations.” This is the policy directive that Nixon, or rather Kissinger, turned upside down, advocating a broad program

¹⁸ Available at <https://nsarchive2.gwu.edu/nukevault/ebb346> (accessed June 19, 2019). These records are from National Security Files, the Richard Nixon Presidential Library, and Records of the Department of State, National Archives at College Park, Maryland (hereinafter NSA).

¹⁹ For a more general discussion, see Krige, *Sharing Knowledge, Shaping Europe*.

²⁰ Available at <https://digitalarchive.wilsoncenter.org/document/110246.pdf?v=fe2419621b90fa5c8a9467b8d862b62a> (accessed July 2, 2019).



Secretary of Defense Melvin Laird (left) and Director of Defense Research and Engineering John S. Foster, October 2, 1972. Foster provided technical guidance on acceptable knowledge sharing with the French.

for the sharing of knowledge and technology with France. How was that policy implemented in practice?²¹

As stressed above, establishing the boundary between knowledge to be shared or denied is at the heart of technodiplomatic relations. This boundary is drawn by invoking epistemological considerations (the *kind* of knowledge involved) as well as domestic and international political and legal obligations. These concerns were never far from the minds of the American decision-makers in this case, and appear over and over again in the set of documents used here. Classified and Restricted Data were the first

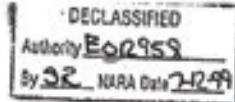
categories of knowledge (defined by the Atomic Energy Act) that would not be shared. But so too was sensitive unclassified knowledge, which was given a very precise definition by Secretary of Defense Melvyn Laird: “sensitive” knowledge, he suggested, had to satisfy two criteria. It

connotes U.S. information which, if released, could bring another party up to U.S. state-of-art in areas where we believe we enjoy a technological advantage, and where such technological advantage is a significant factor in our relative weapons posture.²²

Laird thus defined a zone of knowledge between that which was classified/restricted (and so could not be shared with other countries without establishing high-level formal agreements) and that which could circulate freely (i.e., “open source” information

²¹ For work by French scholars on this topic, see Maurice Vaisse, “Un dialogue de sourds. Les relations nucléaires franco-américaines de 1957 à 1960,” *Relations internationales* 68 (1991): 407–23; Pierre Melandri, “Aux origines de la coopération franco-américaine,” in Maurice Vaisse, ed., *La France et l’atome: Etudes d’histoire nucléaire* (Brussels: Brill, 1994); George-Henri Soutou “Le Président Pompidou et les relations entre les Etats-Unis et l’Europe,” *Journal of European Integration History* 6 (2000): 111–46; Maurice Vaisse, “Les ‘relations speciales’ franco-américaines au temps de Richard Nixon et Georges Pompidou,” *Relations internationales*, 119 (2004): 345–62.

²² NSA, doc 17.



SECRET

Areas of Possible Concern

It might be well to cite several areas of concern.

First, regarding information release, per se. We have been careful in our dealings with the UK not to release information which could be used to develop a counter to our weapons, or information bearing upon the nature and levels of vulnerability -- particularly vulnerability to nuclear effects -- as well as information on advanced technology. I would suggest we adopt a similar approach in this matter, and that we go even further and restrict -- again, at least initially -- the technological information flow in such manner as not to provide any significant technical impetus to French capabilities or release any design or manufacturing information which could be considered sensitive. Sensitive in this sense connotes U.S. information which, if released, could bring another party up to U.S. state-of-art in areas where we believe we enjoy a technological advantage, and where such technological advantage is a significant factor in our relative weapons capability or posture. Of necessity, the delineation of such sensitive areas is a matter of considered technical judgment.

Another point which I suggest be considered is the impact upon SALT. I do not propose to discuss it further here, but mention it because I believe that moving toward cooperation with the French in the missile field could easily have an effect on SALT, particularly given the interest expressed by the Soviets at Helsinki in limiting strategic transfers to third parties.

SECRET

Memorandum of Secretary of State Melvin Laird, page 4, in which he defined "sensitive knowledge" during the French request for assistance with their ballistic missile program.

disseminated without restriction). This narrow band of knowledge was at the core of technodiplomatic relations between the United States and France as Kissinger sought to re-open knowledge sharing in nuclear matters with a major European ally now that its obstreperous President Charles de Gaulle was no longer at the helm.

The protective fence built by these national security considerations was reinforced with concerns that both Congress and the Joint Committee on Atomic Energy should not be given reason to oppose technological collaboration with France. The resistance from the executive branch also had to be taken into consideration: Kissinger remarked that their general attitude was that “the French should be isolated and if possible should be penalized for their actions.”²³ There were also international obligations to consider: the possible damage done to UK-U.S. relations that was based on a special nuclear relationship that had, until then, explicitly excluded support for a French nuclear program, and to U.S.–German relations, notably a Germany that had just been pressured into signing the nuclear nonproliferation treaty. Most significantly, perhaps, was the risk to the SALT I Treaty with the Soviet Union. As one document explained,

If the SALT effort is aimed at creating a more stable strategic relationship with the USSR, it is not compatible with a simultaneous effort to create additional nuclear power centers in the West, which could in time become destabilizing (as far as the Soviets are concerned) and jeopardize the basic SALT understanding.²⁴

This entire cluster of impediments to knowledge sharing was resolved by making it clear to the French that the United States would only help them “fix their present systems, so they work in a reliable manner and achieve their design objectives, rather than to help make major performance advances in these systems or help develop next-generation systems with significantly improved performance characteristics.”²⁵ By setting the bar for the general level of technological collaboration with the French at this level, U.S. authorities found a defensible way to reverse standing policy toward the national French nuclear deterrent. They also believed that they had taken adequate precautions to persuade other stakeholders in the issue.

Kissinger and his advisers did not only take great care to define *what* new knowledge they offered to France. They also worried about *how* that knowledge would be shared so as to deflect congressional criticism should their as yet-unauthorized

²³ *Ibid.*, doc 41.

²⁴ *Ibid.*, doc 19A.

²⁵ *Ibid.*, doc 26.

collaboration become publicly known. To that end, they went to great lengths to define with the French a detailed roadmap specifying who would have the right to know what. They also devised an ingenious procedure for sharing highly sensitive knowledge on nuclear warheads that Kissinger labeled “negative guidance.” Negative guidance was informally known among the scientists and engineers as “Twenty Questions.”²⁶ As Kissinger explained it, though we “may not be able to give you information” in some cases, “we can critique what you are doing. We can say ‘That’s the wrong way’. . . . It can be like a seminar; you can say you have three possibilities and we can tell you, ‘That’s wrong; that’s complicated, etc.’”²⁷

What kind of help was given within these limits? It must be emphasized that it was predominantly scientific and technological *information*, and that it did not concern hardware, as such, but the manufacturing, maintenance, and operation of weapons components. Unreliable performance by rocket motors in flight tests of French land-based IRBMs had revealed flaws in propulsion, mechanical assembly, and cabling. The French traced these back to “their fabrication and associated test and inspection procedures” and turned to the United States for help with “manufacturing and quality control techniques.”²⁸ They sought information to improve the performance and extend the life of their submarine navigation systems and so reduce their vulnerability: the more reliable their navigation systems were, the less frequently the vessel had to surface to calibrate its equipment. They learned how to reduce the risk of inadvertently igniting missiles in submarine tubes. They were given specific information on test procedures and techniques to “harden” silos, and to protect missiles and re-entry vehicles from the danger of “fratricide” (i.e., to avoid serious damage to materials and components on incoming missiles and warheads by X-rays, gamma rays, neutrons, and electromagnetic pulses produced by weapons that had already struck a target in the same attack).²⁹ They sought information on chaff, on decoys, and on ways of hardening nuclear warheads to improve their effectiveness. These and other sites of cooperation that can be exploited in technodiplomacy are occluded by traditional approaches to the Cold War that reduce technology to hardware, and that ignore the leverage provided by access to advanced scientific and engineering *knowledge*.

Technodiplomacy as a form of power depends on a receiving state seeing certain advantages in collaborating with a dominant partner. U.S. experts were clear that the French were extremely competent and could have solved all of the problems

²⁶ Richard H. Ullman, “The Covert French Connection,” *Foreign Policy* 75 (1989): 3–33.

²⁷ NSA, doc 46.

²⁸ *Ibid.*, doc 19.

²⁹ *Ibid.*, doc 40.

MEMORANDUM

THE WHITE HOUSE
WASHINGTON~~TOP SECRET~~/SENSITIVE
EXCLUSIVELY EYES ONLY

MEMORANDUM OF CONVERSATION

PARTICIPANTS: Robert Galley, French Minister of the Armed Forces
Jean Blancard, Ministerial Delegate for Armaments
Henry A. Kissinger, Assistant to the President
for National Security Affairs
Dr. John S. Foster, Jr.
Helmut Sonnenfeldt, NSC Senior Staff
General Vernon Walters, Dep DCI (Interpreter)
General Brent Scowcroft, Deputy Assistant to the
President for National Security Affairs
Peter W. Rodman, NSC Staff

DATE AND TIME: Friday, August 31, 1973
10:15 a.m. - 12:45 p.m.

PLACE: The patio of Dr. Kissinger's Office
The Western White House
San Clemente, California

Kissinger: If anything should get out to the press, we'll just say that you stopped here on your way back from Tahiti.

Galley: We took every precaution to insure secrecy. I'm sure no one knows on our side.

Kissinger: The trouble on our side is that the Air Force people see your plane.

Walters: We can just say the plane landed here because the other field was closed. It was to land at March but it had to go to El Toro instead.

Kissinger: We'll say you are an old acquaintance, your plane was diverted to El Toro, you called to pay your respects, and I asked you down. There is very little possibility that this will happen, but I like to be prepared.

Galley: The press is not interested in things on weekends.

~~TOP SECRET~~/SENSITIVE
EXCLUSIVELY EYES ONLY

DECLASSIFIED
E.O. 13526, Section 3.5
AREA 27-11/12 per sec. 3.5-2(a)(1)(i), 4a
By [redacted] NARA, Date 10/22/2009

[p. 1 of 1]

Meeting at his office in the summer White House in San Clemente, Kissinger takes elaborate precautions to ensure that knowledge of his negotiations over nuclear sharing with the French is limited to a restricted circle of confidants and not leaked to the press.

they described to their American counterparts without any help. Why then did the French seek assistance? The overriding reason was to save the time and the money otherwise required to solve their problems on their own. In 1973 Robert Galley, the French minister of the Armed Forces, told Kissinger that “in 1982 France will be at the same technological point where the Americans were in 1969,” equipped with an “obsolete” defense system but confronted by a “profound” Soviet rival.³⁰ By sharing scientific and technological knowledge—and with “no massive transfer

³⁰ Ibid., doc 41. This is a poor translation, I believe, of the French “profonde,” by which Galley surely meant “extremely dangerous.”

of hardware”³¹—the United States could help her upgrade her weapons system. By studying what difficulties the French were having, and explaining how the United States solved them, American scientists, engineers, and select consultants from industry could help the French develop a credible deterrent more rapidly and efficiently.³² Indeed, in one estimate, by October 1973, some 18 months of sharing knowledge on land- and sea-based missiles had saved the French “on the order of several years at least, and possibly millions of dollars.”³³

Technological sharing requires reciprocity. No country gives away the advanced technology that it has, thus narrowing the lead that it has built up at immense cost and effort to itself, without getting something in return. What benefits did the United States derive from assisting France? It was clear from the start that there would be no meaningful knowledge acquired by having access to the *force de frappe*. This was in contrast to UK-U.S. collaboration in which, from 1958 onward there was a significant circulation of advanced technological knowledge between the two partners.³⁴ The French were too far behind technically to have significant new knowledge to share with their more advanced partner.

Kissinger saw distinct political benefits, however. Some were very specific. For example, it was pointed out that if the French—who were still conducting atmospheric tests in the Pacific—were given assistance with underground nuclear testing, it would not only save them money and improve their technical capacity. It would also “reduce the world-wide opposition to all nuclear testing (including our own) and the resulting pressures for the early consideration of a Comprehensive Test Ban Treaty.”³⁵ Most arguments for knowledge sharing were strategic, though. In Kissinger’s view, the “real quid pro quo” for U.S. assistance was “the basic orientation of French policy” toward a more favorable, nonconfrontational relation with the United States.³⁶ More specifically, as he explained to Galley, “our belief is that it is very important for the West that the French be strong from a military, moral and political point of view.” There was no point in France acquiring a counterforce capability: this was far beyond France’s means technically and financially. But a credible deterrent would be useful, since it would raise the

³¹ Ibid., doc 41. Kissinger’s words.

³² Industrial partners are indirectly engaged in technodiplomacy in that it is they who will export (or not) new technologies to partners as allowed for by agreements brokered at the diplomatic level.

³³ Ibid., doc 40.

³⁴ John Baylis, “Exchanging Nuclear Secrets: Laying the Foundation of the Anglo-American Relationship,” *Diplomatic History* 15:1 (2001): 23–61.

³⁵ NSA, doc 36.

³⁶ Ibid., doc 47.

price the Soviets would pay for attacking the West. America would help France achieve this goal. Previous administrations took the opposite line to the French independent deterrent. Kissinger told Galley, however, “now that it exists, it is important that it be effective and above all that it does not become irrelevant.” If a major French military program collapsed, Kissinger added, “the French alternative would be neutralism,” something neither of them wanted.³⁷

Kissinger’s approach was of a piece with what Jeremi Suri sees as his “global federalism.”³⁸ Kissinger believed that the onset of globalization in the 1970s was producing a multipolar, polycentric world in which the power of the nation state was being diffused. As he saw it, the United States could take advantage of this situation by proactively building a world order that moved beyond bipolar confrontation to engage and coordinate multiple centers of decision making. In Europe, in particular, he sought to build an Atlantic Federation of States under Washington’s leadership. This would involve a deeper integration of diplomatic and military strategies in a politically cohesive North Atlantic Community with a federal system that would become what Suri calls “a new kind of postnationalist alliance, addressing issues beyond military defense alone.”³⁹ The respect for France’s sovereignty, the willingness to help it enhance its independent nuclear deterrent, the refusal to provide knowledge that would help it to develop a new generation of weapons and so to narrow the gap between the U.S. and French systems, and the speculation on how French capacity could be coordinated into NATO’s overall strategy—all these policy decisions flow down from Kissinger’s broader strategic vision for the defense of the West in a global age.

Conclusion

Two main points stand out from this analysis of technodiplomacy. First, we can see the cardinal importance of scientific and technological knowledge and information in the negotiations between the U.S. and French governments. Diplomatic historians who study the place of nuclear technology in interstate relations tend to concentrate on hardware. This case study emphasizes that nuclear hardware has a life history and is made up of components embedded in a

³⁷ *Ibid.*, doc 41.

³⁸ Jeremi Suri, “Henry Kissinger and the Geopolitics of Globalization,” in Ferguson, et al., ch. 10. See also, Marc Trachtenberg, “The French Factor in U.S. Foreign Policy During the Nixon–Pompidou Period,” *Journal of Cold War Studies* 13 (2011): 4–50. For a critical review of Kissinger’s “back-handed diplomacy,” see Tony Judd, “The Illusionist: Henry Kissinger and American Foreign Policy,” in his *Reappraisals. Reflections on the Forgotten Twentieth Century* (London: Vintage Books, 2008), ch. 20.

³⁹ Suri, “Henry Kissinger and the Geopolitics of Globalization,” 178.

complex assembly of interconnected technological, social, political, and military relationships. The French, by and large, did not want to acquire a new weapons system. They wanted American help to upgrade the reliability and performance of the one they had. They traced its flaws back to the manufacture, quality control, testing and maintenance of specific components whose malfunctioning undercut its credibility as a deterrent and rendered it vulnerable to Soviet attack. By working with the United States, they saved time and money, and produced missiles and warheads that could inflict serious damage on the enemy—that could “tear the arm off the Russian bear” as President de Gaulle once put it.

More generally and importantly, reading the Cold War through the lens of technodiplomacy establishes lines of continuity that help give substance to American foreign policy after the collapse of the Soviet empire in 1991. Westad, for example, has contrasted the profound changes in Russia over the past two decades with the continuity in U.S. foreign policy that “rolled on” after December 1991, “unperturbed by any significant adjustments in strategic vision or political aims.”⁴⁰ What he calls U.S. “post–Cold War triumphalism” promoted its economic and military dominance in the face of globalizing pressures that redistributed power and influence in a multipolar, interdependent system of states. The multiple instruments of technodiplomacy that had been put in place in the Cold War to meet the Soviet threat and to construct a global Pax Americana were refashioned and strengthened to meet new challenges posed by the proliferation of ballistic missiles and nuclear weapons among rogue states, as well as the emergence of China as a technological rival, economic competitor, and military threat. The global circulation of highly qualified scientists and engineers, along with their knowledge and know-how, made it increasingly difficult to stop any nation that had the financial resources and the political will to challenge the United States’ scientific and technological pre-eminence. National security was redefined to encompass both economic and military security, legitimating increasingly invasive interventions by the president in the so-called free market, using instruments like CFIUS to deny foreign firms access to advanced knowledge. If we see the Cold War as a global system configured by the management of knowledge flows to secure U.S. technological dominance in the face of the Soviet threat and to construct a Pax Americana, the end of the Cold War heralds a refashioning of those same regulatory instruments to meet the new challenges to U.S. attempts to stabilize world order from other powers, first Japan and now China.

⁴⁰ Odd Arne Westad, *The Cold War: A World History* (London: Penguin Books, 2018), 617.

Placing knowledge at the core of interstate relationships, and tracking its use as a bargaining instrument opens new vistas to historians of science and technology and to diplomatic historians. In a global system in which access to new knowledge is a crucial economic and military resource, it engages all actors in the R&D system—from research universities, to government laboratories, to innovative corporate laboratories and firms—as partners in foreign policy making. In the current political stand-off with China, for example, it demands that we look behind the recourse to trade wars to see the deep concerns in the U.S. administration over China’s acquisition of advanced technology through direct foreign investment in, and joint ventures with, U.S. high-tech companies, as well as through scientific and technological collaboration in programs like China’s Thousand Talents Program.⁴¹ Negotiations over the circulation of knowledge are the stuff of diplomatic bargaining when that knowledge is tightly coupled with the strength of the military industrial base and the economic competitiveness of national firms in the global market place. As diplomatic historians move beyond a focus on “high politics” and engage with the role of science and technology in the construction and maintenance of state power, the concept of technodiplomacy can be an invaluable tool to probe into the fine structure of interstate bargaining over knowledge denial or sharing, and to track its evolution over time as different “sticks”/ “carrots” are invoked to achieve specific political objectives.

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⁴¹ *Scholars or Spies: Foreign Plots Targeting America’s Research and Development*. Joint Hearing Before the Subcommittee on Oversight & Subcommittee on Research and Technology of the Committee on Science, Space and Technology, House of Representatives, 115th Cong., 2nd Sess., April 11, 2018 (Washington, DC: U.S. Government Printing Office, 2018).