

A Certain Idea of Space:  
How Leaders Shape Military Space Posture in Europe

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**Abstract**

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Why do regional powers facing similar external constraints adopt different approaches to the military uses of space? The history of Western European space actors, from the Cold War through the present, demonstrates variation in how states and their leaders perceive the space domain and its utility for military purposes, national security, and political ends. We can expect these states to adopt similar capabilities in a tenuous regional security environment and common alliance context. However, Western European states differed in their views on space and the degree of autonomy from the United States they sought, including in terms of military space capabilities.

This dissertation investigates the development of military space posture in Western Europe from the Cold War to 2000. I focus on France, Germany, and the United Kingdom because they are Europe's most powerful political, economic, and military actors and faced

similar external constraints during the Cold War. I argue national leaders and heads of government refract inputs from the international system through their unique strategic outlooks to produce distinct military space posture outcomes. Domestic factors, including budget constraints and industry incentives, further shape national leaders' decisions about military space posture and affect the state's ability to implement military space programs in response to systemic shifts. Using qualitative analysis, archival documents, interviews, and process tracing, I assess my hypotheses through detailed historical case studies on the development of military space posture outcomes in France, Germany, and the United Kingdom. Understanding how leaders shape military space posture adds value to current debates about space security in the New Space Age and heightened great power competition. Additionally, this dissertation makes a modest contribution to the history of military space programs in Europe.

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**Abbreviations**

<b>ABM</b>	Anti-Ballistic Missile
<b>ASAT</b>	Anti-Satellite Weapon
<b>BAE</b>	British Aerospace
<b>BIS</b>	British Interplanetary Society
<b>BMD</b>	Ballistic Missile Defense
<b>BMFT</b>	<i>Bundesministerium für Forschung und Technologie</i> (Federal Ministry for Research and Technology)
<b>BMWF</b>	<i>Bundesministerium für Wissenschaft und Forschung</i> (Federal Ministry of Scientific Research)
<b>BNSCR</b>	British National Committee for Space Research
<b>CDU</b>	Christian Democratic Union of Germany
<b>CEMA</b>	<i>Chef d'État-Major des Armées</i> (Chief of Staff of the Armed Forces)
<b>CES</b>	<i>Comité d'Études Spatiales</i> (Committee for Space Studies)
<b>CETS</b>	<i>Conférence Européenne des Télécommunications par Satellites</i> (European Conference on Satellite Communications)
<b>CFSP</b>	Common Foreign and Security Policy
<b>CIA</b>	Central Intelligence Agency
<b>CIE</b>	<i>Commandement Interarmées de l'Espace</i> (Joint Space Command)
<b>CIFAS</b>	<i>Consortium Industriel Franco-Allemande Pour le Satellite Symphonie</i> (Franco-German Industrial Association for Symphonie)
<b>CNES</b>	<i>Centre Nationale d'Etudes Spatiale</i> (National Center for Space Studies)
<b>COF</b>	Columbus Orbital Facility
<b>COPERS</b>	<i>Commission Préparatoire Européenne de Recherches Spatiales</i> (European Preparatory Commission for Space Research)

<b>CPE</b>	<i>Centre de Prospective et d'Évaluations</i> (Evaluation and Analysis Center)
<b>CSDP</b>	Common Security and Defense Policy
<b>CSG</b>	<i>Centre Spatiale Guyanais</i> (Guiana Space Center)
<b>CST</b>	<i>Centre Spatiale de Toulouse</i> (Toulouse space center)
<b>CSU</b>	Christian Social Union of Bavaria
<b>DARA</b>	<i>Deutsche Agentur für Raumfahrtangelegenheiten</i> (German Agency for Space Flight Affairs)
<b>DFVLR</b>	<i>Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt</i> (German Test and Research Institute for Aviation and Space Flight)
<b>DGA</b>	<i>Direction Générale d'Armement</i> (Defense Ministry's Acquisition Arm)
<b>DGSE</b>	<i>Direction Générale de la Sécurité Extérieure</i> (French Foreign Intelligence Service)
<b>DLR</b>	<i>Deutsche Forschungsanstalt für Luft- und Raumfahrt</i> (German Research Institute for Aviation and Space Flight), later <i>Deutsches Zentrum für Luft- und Raumfahrt</i> (German Center for Aviation and Space Flight)
<b>DM</b>	<i>Deutsche Mark</i>
<b>DOD</b>	Department of Defense
<b>DRM</b>	<i>Direction du Renseignement Militaire</i> (Military Intelligence Directorate)
<b>DSCS</b>	Defense Satellite Communications System
<b>DTIB</b>	Defense Technical Industrial Base
<b>EC</b>	European Commission
<b>EDC</b>	European Defense Community
<b>EDF</b>	European Defense Force
<b>EEAS</b>	European External Action Service
<b>EEC</b>	European Economic Community

<b>ELDO</b>	European Launcher Development Organisation
<b>EPIC</b>	<i>Établissement Public à Caractère Industriel et Commerciale</i> (Public Institutional Framework)
<b>ESA</b>	European Space Agency
<b>ESC</b>	European Space Conference
<b>ESOC</b>	European Space Operations Center
<b>ESRO</b>	European Space Research Organisation
<b>EU</b>	European Union
<b>EURATOM</b>	European Atomic Energy Community
<b>EUREKA</b>	European Research and Coordination Agency
<b>FCO</b>	Foreign Commonwealth Office
<b>FDP</b>	Free Democratic Party of Germany
<b>FOIA</b>	Freedom of Information Act
<b>FRG</b>	Federal Republic of Germany
<b>GCHQ</b>	Government Communications Headquarters
<b>GDP</b>	Gross Domestic Product
<b>GEO</b>	Geosynchronous (or Geostationary) -Earth Orbit (35,786 km to 42,264 km above Earth's equator)
<b>GES</b>	<i>Groupe d'Études Spatial</i> (Space Studies Group)
<b>GfW</b>	<i>Gesellschaft für Weltraumforschung</i> (German Space Research Society)
<b>GLONASS</b>	<i>Global'naya Navigatsionnaya Sputnikovaya Sistema</i> (Global Navigation Satellite System)
<b>GNSS</b>	Global Navigation Satellite System
<b>GPS</b>	Global Positioning System
<b>HHG</b>	Helsinki Headline Goal

<b>ICBM</b>	Intercontinental Ballistic Missile (range > 5,000 Km)
<b>IDCSP</b>	Initial Defense Communications Satellite Program
<b>IGY</b>	International Geophysical Year
<b>INF</b>	Intermediate-Range Nuclear Forces
<b>IRBM</b>	Intermediate Range Ballistic Missile (3,000 Km - 5,000 Km)
<b>ISR</b>	Intelligence, Surveillance, Reconnaissance
<b>JIC</b>	Joint Intelligence Council
<b>KGB</b>	<i>Komitet Gosudarstvennoy Bezopasnosti</i> (Committee for State Security)
<b>KTO</b>	Kuwait Theater of Operations
<b>LEO</b>	Low-Earth Orbit (less than 2,000 km above Earth's surface)
<b>LPM</b>	<i>Loi de Programmation Militaire</i> (Military Program Law)
<b>MBB</b>	Messerschmitt Böklow Blohm
<b>MEO</b>	Medium-Earth Orbit (2,000 km to 35,786 km above Earth's surface)
<b>MNC</b>	Multinational Corporation
<b>MoD</b>	Ministry of Defence
<b>MP</b>	Member of Parliament
<b>MUSIS</b>	Multinational Space-based Imagery System
<b>NASA</b>	National Aeronautics and Space Administration
<b>NATO</b>	North Atlantic Treaty Organization
<b>NRO</b>	National Reconnaissance Office
<b>NSA</b>	National Security Agency
<b>OOA</b>	Out-Of-Area
<b>PAC</b>	Public Accounts Committee

<b>PFI</b>	Private Finance Initiative
<b>PM</b>	Prime Minister
<b>PNT</b>	Positioning, Navigation, Timing
<b>PPSM</b>	<i>Plan Pluriannuel Spatial Militaire</i> (Multi-Year Military Space Plan)
<b>PSIS</b>	Permanent Secretaries' Committee on the Intelligence Services
<b>RAE</b>	Royal Aircraft Establishment
<b>RAF</b>	Royal Airforce
<b>RPE</b>	Rocket Propulsion Establishment
<b>SAM</b>	Surface-to-Air Missile
<b>SAMRO</b>	<i>SAtellite Militaire de Reconnaissance Optique</i> (Military Optical Reconnaissance Satellite)
<b>SAR</b>	Synthetic Aperture Radar
<b>SATCOM</b>	Satellite Communications
<b>SCAT</b>	Satellite Communications Air Transportable
<b>SCOT</b>	Satellite Communication Ocean Transportable
<b>SDI</b>	Strategic Defense Initiative
<b>SDI</b>	SDI Organization
<b>SDR</b>	Strategic Defence Review
<b>SEREB</b>	<i>Société d'Etude et de Réalisation d'Engins Balistique</i> (Society for the Study and Design of Ballistic Engines)
<b>SHAPE</b>	Supreme Headquarters Allied Powers Europe
<b>SHF</b>	Super-high frequency
<b>SIGINT</b>	Signal Intelligence
<b>SIS</b>	Secret Intelligence Service

<b>SLBM</b>	Submarine Launched Ballistic Missile
<b>SPD</b>	Social Democratic Party of Germany
<b>SPOT</b>	<i>Satellite Probatoire pour l'Observation de la Terre</i> (Experimental Satellite For Earth Observation)
<b>STS</b>	Space Transport System
<b>TWTA</b>	Traveling Wave Tube Amplifiers
<b>UHF</b>	Ultra-High Frequency
<b>UK</b>	United Kingdom
<b>UNPROFOR</b>	UN Protection Force
<b>UNSC</b>	United Nations Security Council
<b>UNSCR</b>	UNSC Resolution
<b>US</b>	United States
<b>USSF</b>	United States Space Force
<b>USSPACECOM</b>	United States Space Command
<b>USSR</b>	Union of Soviet Socialist Republics
<b>VSC</b>	Vehicular Satellite Communications
<b>WEU</b>	Western European Union
<b>WEUSC</b>	WEU Satellite Center
<b>WMD</b>	Weapons of Mass Destruction

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## Chapter 1: Introduction

In 1999, the Council of the European Union officially declared the intention to develop a satellite navigation system to increase Europe's independence from the United States. As it became known, the GALILEO program was the EU's first space system. Developed in collaboration with the European Space Agency, GALILEO depended on the EU Member States to take "appropriate measures for participation" and to "support the work of the Commission in an appropriate manner."<sup>1</sup> In other words, the Member States would have to develop and build the satellites comprising GALILEO. The EU envisioned GALILEO as a civilian alternative to the American military's global positioning system (GPS) and the Russian GLONASS (*Global'naya Navigatsionaya Sputnikovaya Sistema*). GALILEO was also the European Commission's first space program wholly funded and operated by the EU, not ESA. Various factors motivated the EC to pursue GALILEO, including industrial independence from the U.S. for PNT services and political autonomy during future conflicts or security missions involving the U.S. or the EU.<sup>2</sup> A 2002 Commission report on GALILEO argued the logic for greater European strategic autonomy in the space sector:

It is crucial for Europe and the world as a whole to have a choice and not remain dependent in the current monopoly of the American GPS system ... [T]he EU wishes to develop, with GALILEO, a system over which it has control and which meets the need for accuracy, reliability, and security ... There is no question of coming into conflict with the United States which is and will remain an ally, but simply a question of putting an end to a situation of dependence. If the EU finds it necessary to undertake a security mission that the US does not consider to be in its interest, it [the EU] will be impotent unless it has satellite navigation technology that is now indispensable.<sup>3</sup>

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<sup>1</sup> "COUNCIL RESOLUTION of 19 JULY 1999 on the Involvement of Europe in a New Generation of Satellite Navigation Services - Galileo-Definition Phase," *Official Journal of the European Communities* 42, no. 1999/C 221/01 (August 3, 1999): 1–3.

<sup>2</sup> Bastian Giegerich, "Navigating Differences: Transatlantic Negotiations Over Galileo," *Cambridge Review of International Affairs* 20, no. 3 (September 2007): 496.

<sup>3</sup> European Commission, "Galileo: yes, at last!", IP/02/478, March 26, 2002, quoted in Giegerich, "Navigating Differences," 496.

Ostensibly a civilian system, European Commission members debated GALILEO's availability for EU military forces, an important consideration given the ongoing American military adventurism in Iraq, which many in the EU opposed. While no one disputed the utility of GNSS for military operations, the UK initially opposed GALILEO's use by European forces, citing a conflict with NATO standards, which used the U.S.-owned GPS.<sup>4</sup> However, France indicated their forces would primarily use GALILEO signals for PNT, furthering the country's autonomy from the United States. The UK eventually lost all access to GALILEO in 2020 after exiting the European Union.<sup>5</sup>

What explains the different national perspectives on the military utility of GALILEO? How did each country's historical approach to military space posture influence Europe's push for greater autonomy from the United States in military space? And what role did national leaders have in shaping the EU's first military space system? The questions raised by the GALILEO debate reflect the growing importance of space in the security interests of states and multilateral institutions.

While much scholarship focuses on the security dynamics between the great powers and their military activities in space, there has been relatively little theorizing on the military space postures and security policies of similarly situated regional powers. Military space posture, this study's dependent variable, reflects a country's material and physical capabilities to exploit space for strategic ends and national purposes.<sup>6</sup> I focus on military space postures in France, the United Kingdom, and Germany, from each country's entry into space during the Cold War to the

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<sup>4</sup> de Selding, "Britain, France at Odds Over Military Use of Galileo Service."

<sup>5</sup> Megan Gannon, "UK Ends Galileo Talks, Says It Will Explore a Homegrown Alternative," *SpaceNews*, December 4, 2018, <https://spacenews.com/uk-ends-galileo-talks-says-it-will-explore-a-homegrown-alternative/>.

<sup>6</sup> I distinguish military space posture from spacepower, which Bleddyn Bowen describes as "a concept defined by how any actor can use outer space and what it possesses or effectively calls upon to enable it to do so." Bleddyn E. Bowen, *War in Space: Strategy, Spacepower, Geopolitics* (Edinburgh: Edinburgh University Press, 2020), 22.

1990s. I consider the distribution of power in the international system and structural changes stemming from the end of the Cold War as the independent variable affecting military space posture. State-level intervening variables refract structural inputs from the international system. Specifically national leaders, their beliefs about national security, their decisions about military space posture, and the degree of autonomy they sought from the United States in their country's use of space for national security and political ends. I also consider the effects of domestic industrial considerations and budgetary constraints on national leader decision-making. Therefore, my study concerns itself with not only the material distribution of spacepower in the international and regional systems but also how national leaders view spacepower and how they think about security, threats, and their country's role in the international system.<sup>7</sup>

In this study, I assess countries that are Europe's most powerful political, economic, and military actors that faced similar external constraints during and after the Cold War. In addition to their relative parity in aggregate material power, wealth, and industrial capacity, these countries are post-colonial powers with residual interests abroad. Additionally, France and the United Kingdom are nuclear-armed states that have employed military force in pursuit of national security interests outside the confines of the NATO Alliance. Each possesses national military space capabilities and is a founding member of NATO and the European Space Agency (ESA). Further, Tony Blair and Jacques Chirac committed to building the EU's independent military capacity, including the ability to act autonomously in space, through the St. Malo agreement in 1998. After World War II, West Germany developed a robust high-technology domestic industry but had strong external and domestic bureaucratic constraints imposed on national leader decision-making and foreign and security behavior. Following the Cold War,

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<sup>7</sup> Charles A. Kupchan, *The Vulnerability of Empire* (Ithaca, NY: Cornell University Press, 1994), 5.

Germany unified and became a more assertive international security actor, especially during the Balkan conflicts of the 1990s. By the end of the 20<sup>th</sup> century, France, the UK, and Germany remained the most powerful and influential members of the European Union. They fostered greater security and defense policy integration under the aegis of the EU's Common Security and Defence Policy (CSDP).

### **Research Puzzle**

When the Soviet Union orbited SPUTNIK in 1957, the United States and the Soviet Union entered a space race for space superiority. The space race was as much about prestige and scientific achievement as about security and control of the “ultimate high ground.” Space capabilities, including satellite communications and photoreconnaissance, offered a decisive advantage for those who could muster the economic and industrial resources to implement military space programs. Unconstrained by terrestrial geography and the tyranny of physical distances, space systems reduced uncertainty about the military activities of other states, which improved the information and time available for decision-making by national leaders, especially during crises. In other words, traditional notions of security in the space age required access to space capabilities. During the Cold War, the United States and the Soviet Union dominated the development of new technologies and capabilities to maximize the use of space for security purposes.

Despite superpower domination, some regional powers also saw the potential for military space capabilities and pursued autonomous military space postures. Specifically, European powers and NATO allies collaborated on military space programs during the Cold War. They did so among themselves and with the United States. While the end of the Cold War reduced

incentives for expanding military capabilities due to a reduction in perceived threats from easing East-West tensions, European powers accelerated their military space programs. They sought independent military space capabilities, even as the United States continued to dominate military space in the 1990s.

Interestingly, states that otherwise had a restrained view of military force had greater autonomy in their military space posture than states with a more favorable view of military force. What explains the different degrees of autonomy in the military space postures of regional powers facing similar external constraints? What effect did the end of the Cold War have on European military space posture?

This dissertation examines the development of military space posture in Europe's most powerful countries, the degree of autonomy from the United States, and the decision-making and conditions leading to different posture outcomes. It asks the following questions: First, what spurred the growth in military space posture in Europe during the Cold War? Second, why did some NATO allies pursue independent military space systems while others favored greater cooperation with the United States? Third, what effect did the end of the Cold War have on national leaders and their decision-making on military space posture, and to what degree did the systemic shift affect each country's decision-making on military space posture? The dissertation adopts "military space posture" as the dependent variable, measured in terms of a state's independent military space systems, capabilities, and policies focused on exploiting the space domain for security purposes. Military space posture varies on a spectrum from *autonomous*, which enables a state to access and use space capabilities without relying on a stronger power, to *dependent*, in which a regional power is reliant on a great power for access to space functions.

Figure 1.1 depicts the variation of military space posture among European powers in the late 1980s, before the end of the Cold War.

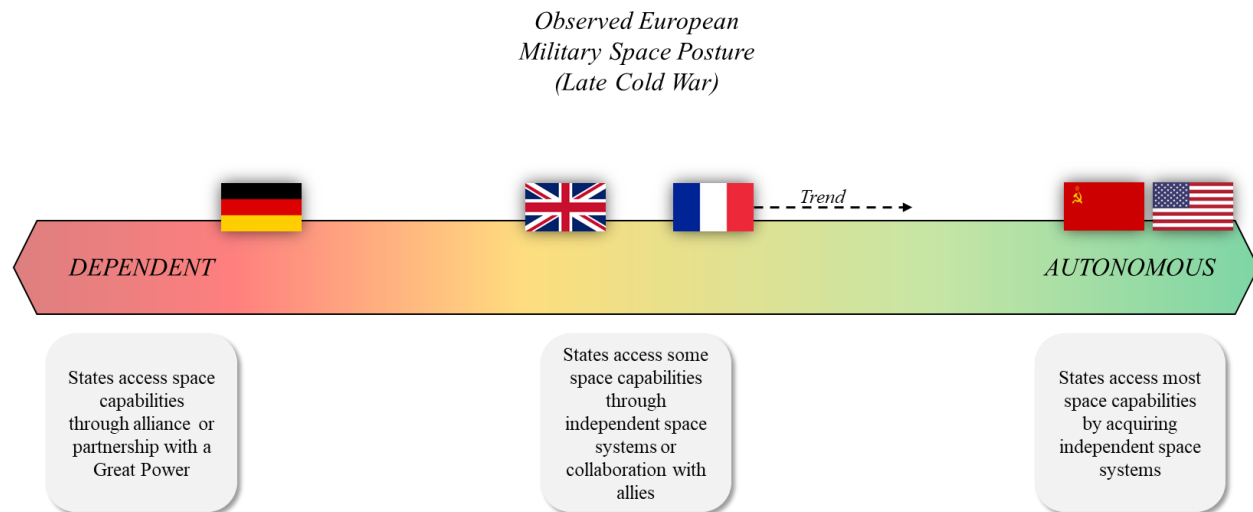


Figure 1.1 – *Military space posture of European powers in the late Cold War*

## The Argument

### *Leaders, Strategic Outlook, and Decision-Making*

The dissertation’s central argument is that national leaders perceive and refract systemic signals from the international distribution of power, including threats, through their strategic outlook, influencing and informing their decision-making on military space programs and the degree of military space posture autonomy. Shifts in the distribution of power or structure of the international system are, by themselves, insufficient to explain military space posture outcomes. State leaders, especially heads of government such as presidents, prime ministers, and chancellors, adopt a strategic outlook based on their individual experiences and values that are situated in their state’s unique historical context. Leaders’ views on the utility of military force, threat perceptions, and their country’s overall place and future trajectory also comprise a leader’s strategic outlook. Additionally, leaders consider their strategic outlook when deciding whether to

acquire military capabilities in the face of domestic budget constraints. Strategic outlook expands on the concept of leader images outlined in the *Neoclassical Realist Theory of International Politics* by Ripsman, Taliaferro, and Lobell.

This dissertation is a study of how individual national leaders make decisions about their country's military space posture. Military space posture is a state's ability and willingness to exploit the space domain for strategic ends and national security interests. It encompasses individual military space capabilities, systems, and programs with a military space policy that defines how states view and approach the space domain for military and security purposes. Military space capabilities refer to the services and functions states derive from the space domain, including intelligence, surveillance, and reconnaissance (ISR); satellite communications (SATCOM); and positioning, navigation, and timing (PNT), among others. Military space systems comprise satellites, orbital platforms, and technical payloads that states operate in the space domain to provide military space capabilities. Military space programs are national endeavors undertaken by governments to fund the acquisition of military space systems to develop a national military space capability. During the Cold War, national leaders of the European powers necessarily situated their decisions about military space posture within the NATO alliance context and their countries' relationship with the United States.

Theoretically, the argument applies a neoclassical realist framework to help explain the conditions under which states develop a national military space capability as part of a broader military space posture. In this view, leader decision-making based on strategic outlook is a unit-level intervening variable that refracts inputs from the international system and conditions how states respond to international systemic pressures that affect military space posture.<sup>8</sup> Strategic

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<sup>8</sup> Norrin M. Ripsman, Jeffrey W. Taliaferro, and Steven E. Lobell, *Neoclassical Realist Theory of International Politics* (New York, NY: Oxford University Press, 2016), 58.

outlook thus shapes a state's foreign and security policies, which affect the degree of military space posture autonomy.

Military space posture autonomy is not binary. Rather, it varies from complete autonomy, in which a state possesses all the military space systems necessary to obtain independent access to space capabilities, to complete dependence, in which a state lacks military space systems and relies on an ally for access to space capabilities. Generally speaking, military space programs are costly endeavors, and thus few countries possess the economic resources to achieve complete military space posture autonomy. Yet, even great powers, such as the United States and Russia (previously the Soviet Union), face budget constraints, especially on military space programs. Still, budget constraints alone do not necessarily preclude a regional power from seeking greater autonomy, even if the country cannot achieve complete autonomy.

The neoclassical realist framework of military space posture upon which I base the argument is descriptive and predictive. The argument can reveal the conditions and factors that shaped national leaders' decisions on military space programs during the Cold War. It can also help us better understand why similarly situated European regional powers made different decisions when presented with the same international systemic pressures. Additionally, the argument can help predict how national leaders might approach the space domain given the proliferation of space systems and capabilities and rapidly increasing technology in an era of renewed great power tensions and geostrategic competition.

## **Literature Review**

The international security literature is vast, and therefore a complete review of all the schools of thought is beyond the scope of this dissertation. However, several segments of the

literature are useful in advancing our understanding of military space posture and the conditions under which states pursue greater military space posture autonomy. It is, therefore, useful to situate our analysis within the relevant literature. This section begins with a review of structural or neorealism, balance of power, and the alliance literature that stems from the realist school of international relations. Then, this section reviews the relevant literature on European integration and considers the role of the European Union as a security actor. A review of space security literature follows, focusing heavily on the space race between the superpowers during the Cold War and considering European space institutions.

### *Structural Realism, Balance of Power, and Alliances*

A structural realist explanation for military space policy might suggest that states interpret shifts in the distribution of spacepower from a perspective dominated by state survival and the need to assure state interests. According to Waltz, states are undifferentiated in their tasks but vary based on their material capabilities and ability to accomplish vital tasks.<sup>9</sup> But it is the system's polarity, or the number of great powers in the system, that generates balancing behavior and causes states to mirror the practices of others. Structural realism might predict that similarly situated states, such as France, Germany, and the UK, should match the military space capabilities of stronger powers, if not their capacity, to maximize their security under uncertainty.<sup>10</sup> Given the United States' shifting attention towards the Indo-Pacific, we might expect the European powers to strengthen their military space postures and shore up Europe's

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<sup>9</sup> Kenneth N. Waltz, *Theory of International Politics*, Addison-Wesley Series in Political Science (Reading, MA: Addison-Wesley Pub. Co, 1979), 96-97.

<sup>10</sup> João Resende-Santos, "Anarchy and the Emulation of Military Systems: Military Organization and Technology in South America, 1870-1930," in *Realism: Restatements and Renewal*, ed. Benjamin Frankel (London: Frank Cass, 1996), 203-204.

ability to preserve access to vital space functions for both military and economic purposes. Glenn Snyder builds on Waltz's work to describe the effects of systemic factors, or structural modifiers, on the interactions between states.<sup>11</sup> Military and space technologies are structural modifiers because they are material factors that affect the system's structure in generating balancing behavior and strategic interactions among states and great powers.<sup>12</sup>

One of the main common factors shared by France, the United Kingdom, and Germany is their membership in the multilateral NATO Alliance. Based on the neorealist assumption that states are the primary actors in the international system, alliances are thus formed by and exist among states.<sup>13</sup> The European powers remain allied with the U.S. under the auspices of NATO, but the Alliance does not explain variation in military space posture. Alliance politics affect national decision-making through bargaining during alliance formation and management. Glenn Snyder argues that alliances are stronger when states share security interests.<sup>14</sup> Alliance members cooperate against external threats but also exert leverage over one another, especially when there is a power asymmetry, such as between the United States and West Germany during the Cold War.<sup>15</sup> Snyder discounts the domestic or unit-level factors facing national leaders, in alliance management, especially for weaker members. External threats are the primary determinant for alliance formation and management.<sup>16</sup>

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<sup>11</sup> Glenn H. Snyder, "Process Variables in Neorealist Theory," *Security Studies* 5, no. 3 (1996): 169.

<sup>12</sup> Ripsman, Taliaferro, and Lobell, *Neoclassical Realist Theory of International Politics*, 40.

<sup>13</sup> Stephen Walt asserts that states will prefer to form alliances by balancing against the state that poses the greatest threat. See Stephen M. Walt, *The Origins of Alliances* (Ithaca, NY: Cornell University Press, 1987), 27.

<sup>14</sup> Glenn H. Snyder, *Alliance Politics* (Ithaca, NY: Cornell University Press, 1997), 10.

<sup>15</sup> Snyder, *Alliance Politics*, 13.

<sup>16</sup> Other scholars who build on Walt and Snyder and focus on alliance management in the neorealist tradition include Jeremy Pressman and Paul Poast. Pressman argues that alliance member states restrain other members from taking unfavorable action through resource mobilization. Poast argues that member-state compatibility in ideal war plans is the primary determinant in alliance formation. However, this dissertation is less concerned with NATO formation and more with how individual national leaders perceived the costs and benefits of NATO membership, specifically their relationship with the United States. See Jeremy Pressman, *Warring Friends: Alliance Restraint in International Politics* (Ithaca, NY: Cornell University Press, 2008); and Paul Poast, *Arguing About Alliances: The Art of Agreement in Military-Pact Negotiations* (Ithaca, NY: Cornell University Press, 2019).

*European Integration and the European Union*

Any analysis of state behaviors in Europe must consider the effects of European integration, specifically the role of the European Union (EU). John McCormick approaches the European Union with a simple question: what is the European Union? In short, McCormick argues there is no straightforward answer, and one must situate the EU within the context of changing structural dynamics in the international system. The EU is thus a global actor with normative and liberal ideals that preferences multilateralism and soft power approaches to crisis management rooted in international law.<sup>17</sup>

Despite the challenges of explaining what the EU is, there is a growing recognition among scholars and policymakers in Europe that states are no longer the only actors on the international stage. Jolyon Howorth argues that the birth of the EU as a security actor occurred in 1998 in St. Malo after the painful lessons of the Gulf War and the Balkan conflict, during which the EU failed to act meaningfully as a security actor to manage and resolve the crisis. At St. Malo, UK Prime Minister Tony Blair reversed the UK's long-standing opposition to increasing European security capacity. Blair also endorsed a policy with French President Chirac that the EU should have the capacity for autonomous action, appropriate measures for security decision-making, and possess credible military forces and means to employ them.<sup>18</sup>

While Howorth is optimistic, if cautious, about the EU's potential as a security actor, Hugo Meijer and Stephen G. Brooks downright reject the notion that Europe can achieve any semblance of strategic autonomy. By strategic autonomy, Meijer and Brooks specify Europe's ability to independently plan and conduct military operations across the full spectrum of conflict

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<sup>17</sup> John McCormick, *European Union Politics* (London: Macmillan International Higher Education, 2020), 427.

<sup>18</sup> Jolyon Howorth, *Security and Defence Policy in the European Union* (New York, NY: Palgrave Macmillan, 2014), 7-8.

(including high-intensity conflict) and independently produce the capabilities required to do so without assistance from the U.S.<sup>19</sup> The authors cite Europe's profound defense capacity shortfalls due to years of haphazard defense budget cutbacks and "strategic cacophony." Strategic cacophony is a condition endogenous to the EU in which threat perceptions and national-level attitudes about the utility of military force in international politics diverge among EU members.

Daniel Fiott discusses defense industrial issues at the EU level. Fiott finds that intergovernmental bargaining at the EU institutional level allows state governments to retain control over their national defense technical industrial base (DTIB) firms.<sup>20</sup> In other words, EU institutions foster integration and cooperation by accounting for national preferences and interactions between public and private interests. National governments remain the most important actors in European defense cooperation because the EU cannot procure weapons for itself, does not own shares in defense firms, and does not control military instruments of its own.<sup>21</sup> The EU thus shapes the European defense industrial sector through a policy framework that reflects a liberal and regulated market at the EU level, shares common policy and legal competencies, and encourages cooperation to lower defense procurement costs for EU members.<sup>22</sup>

European defense cooperation remains complicated, especially regarding space strategy, military space posture, and the utility of force in the space domain. The preference for commercial uses and scientific exploration of space espoused by the European Space Agency (ESA) reflects a skepticism toward hard power and military force. However, the literature

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<sup>19</sup> Hugo Meijer and Stephen G. Brooks, "Illusions of Autonomy: Why Europe Cannot Provide for Its Security If the United States Pulls Back," *International Security* 45, no. 4 (April 20, 2021): 8.

<sup>20</sup> Daniel Fiott, *Defence Industrial Cooperation in the European Union: The State, the Firm and Europe* (New York, NY: Routledge, 2020), 3.

<sup>21</sup> Fiott, *Defence Industrial Cooperation in the European Union*, 4.

<sup>22</sup> Fiott, *Defence Industrial Cooperation in the European Union*, 25.

reviewed here leaves room to understand how political and security integration in Europe supports or enhances European states' military space programs. To what degree did European space actors cooperate on military space programs, and why? A neoclassical realist framework that considers national leaders' strategic outlook in shaping strategic decisions can help us understand European military space posture variations.

### *Military Space Posture and Space Security*

Cold War bipolarity describes the general distribution of power between two poles, the United States and its allies and the Soviet Union and its partners. The advent of military space capabilities during the Cold War, beginning with satellite-based reconnaissance, which the U.S. and Soviet Union pursued enthusiastically, increased the information available to both superpowers. John Lewis Gaddis argues that space-based reconnaissance capabilities, a form of “non-intrusive espionage,” fostered international stability between the superpowers by facilitating arms control verification, providing early warning, and guarding against surprises.<sup>23</sup> Gaddis succinctly explains the utility of military satellites as a form of technology to help stabilize the international system by reducing uncertainty between superpowers. However, Gaddis's analysis leaves room to investigate the utility of military space systems for regional powers, especially those allied with one of the superpowers, in our case, the United States.

Similarly, James Clay Moltz argues that the U.S.-Soviet space race during the Cold War was characterized by military space restraint. However, Moltz suggests that mutual interests based on the inherent risks of space flight and the dangers of the space environment have limited the threatening behaviors of the great powers during the Cold War and broadly influenced space

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<sup>23</sup> John Lewis Gaddis, *The Long Peace: Inquiries into the History of the Cold War* (New York, NY: Oxford University Press, 1987), 206-209.

security.<sup>24</sup> Moltz also acknowledges that national leaders in the U.S. and Soviet Union decided to reduce tensions based on space security considerations. Exogenous factors alone were insufficient to explain the relative stability between the superpowers.<sup>25</sup> His analysis gives us additional room to investigate how national leaders of regional powers think about space security and collaboration during great power tensions, such as during the Cold War.

Lilach Gilady helps us understand the role that international prestige plays in states' pursuit of expensive projects like space systems. Although Gilady's analysis focuses on scientific space projects, Gilady argues that ambitious national space programs reflect state prestige-seeking behavior that rivals the pursuit of power.<sup>26</sup> Gilady describes how states justify the costs of "Big Science" programs, such as national space programs, based on expected benefits on the international stage, especially in terms of prestige vis-à-vis an ideological opponent, such as during the Cold War.<sup>27</sup> "Big Science" programs are also useful stand-ins for scientific research that advances military technology and capabilities and strategic investments to stimulate domestic industry necessary for economic growth.<sup>28</sup> Gilady illustrates other factors that national leaders may consider when deciding to embark on a military space program.

However, a state that fields a military space system may also heighten threat perceptions in other powers, reflecting a security dilemma in orbit. Brad Townsend argues that the long-term trend of space as a sanctuary from conflict may soon end as the emergence of a multi-polar world upsets international stability and places space systems at risk of attack.<sup>29</sup> Townsend further

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<sup>24</sup> James Clay Moltz, *The Politics of Space Security: Strategic Restraint and the Pursuit of National Interests* (Stanford, CA: Stanford University Press, 2019), 46.

<sup>25</sup> Moltz, *The Politics of Space Security*, 47.

<sup>26</sup> Lilach Gilady, *The Price of Prestige: Conspicuous Consumption in International Relations* (Chicago, IL: The University of Chicago Press, 2018), 1; 123-125.

<sup>27</sup> Gilady, *The Price of Prestige*, 127.

<sup>28</sup> Gilady, *The Price of Prestige*, 127.

<sup>29</sup> Brad Townsend, *Security and Stability in the New Space Age: The Orbital Security Dilemma* (New York, NY: Routledge, 2020), 3.

argues that the growing linkage between warfighting capabilities on Earth and space systems suggests that competition or conflict on Earth between great powers is likely to extend to the space domain.<sup>30</sup> The lack of trust between space actors with competing interests results in an upward spiral of space system proliferation, up to and including anti-satellite weapons (ASATs). The orbital security dilemma is a product of the anarchic international system that defines the realist school of international relations. The existence of international institutions is insufficient to limit or control state behavior without the backing of hard power that remains situated in state actors.<sup>31</sup>

### *National Leader Decision-Making*

States are the privileged actors in the international system. But understanding state behavior, policy decisions, and strategy choices requires an understanding of the role of individual leaders in international relations.<sup>32</sup> Deborah Larson investigates why leaders of rival powers fail to cooperate, even when their interests overlap. Such missed opportunities, as Larson calls them, occur when policymakers draw incorrect inferences about the motives and interests of other states.<sup>33</sup> Larson builds on structural realist constraints of the international system and draws

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<sup>30</sup> Townsend, *Security and Stability in the New Space Age*, 4.

<sup>31</sup> Institutionalism, including historical institutionalism that relies on processes, critical junctures and path-dependent explanations generally falls short in explaining variation in strategic decision-making among similarly situated regional powers. See Robert O. Keohane and Joseph S. Nye, *Power and Interdependence* (New York, NY: Longman, 2001); Kazuto Suzuki, *Policy Logics and Institutions of European Space Collaboration* (Burlington, VT: Ashgate Publishing Company, 2003); Seth A. Johnston, *How NATO Adapts: Strategy and Organization in the Atlantic Alliance since 1950* (Baltimore, MD: Johns Hopkins University Press, 2017); Paul Pierson, "Increasing Returns, Path Dependence, and the Study of Politics," *The American Political Science Review* 94, no. 2 (2000): 251-267; Giovanni Capocchia and R. Daniel Kelemen, "The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism," *World Politics* 59, no. 3 (2007): 341-369; and

<sup>32</sup> Kenneth Waltz dismissed the role of individuals in explaining war. This dissertation takes the view that individual leaders operate within domestic and international constraints, guided by their strategic outlook. See Kenneth N. Waltz, *Man, the State, and War: A Theoretical Analysis* (New York, NY: Columbia University Press, 1959).

<sup>33</sup> Deborah Welch Larson, *Anatomy of Mistrust: U.S.-Soviet Relations During the Cold War* (Ithaca, NY: Cornell University Press, 1997), 4.

on social psychology to explain how trust and mistrust manifest in international relations. Humans are the intervening variable between objective systemic inputs and foreign policy outcomes defined by trust or mistrust. Leaders, and their efforts over time to build trust among states, are also important determinants of successful or missed opportunities for collaboration.

Elizabeth Saunders explores leader threat perceptions and argues that variation in threat perceptions can help explain different foreign policy outcomes.<sup>34</sup> Specifically, Saunders explores foreign military intervention by the United States during the Cold War and focuses on the Eisenhower, Kennedy, and Johnson presidencies. Saunders finds that presidents form their beliefs and threat perceptions before entering office, and they generally remain consistent while in office.<sup>35</sup> Although not explicitly a neoclassical realist framework, Saunders's examination of leader beliefs and threat perceptions in explaining U.S. military interventions is a useful construct upon which I base my examination of leader strategic outlook in Europe.

Michael C. Horowitz, Allan C. Stam, and Cali M. Ellis focus on individual leader agency, alongside structural realist constraints, to explain why states go to war. The authors uncover several characteristics that make leaders more likely to initiate a military conflict, including prior military service and age.<sup>36</sup> Importantly, the authors argue that leader characteristics and structural factors are "complementary and intertwined," suggesting that individual leaders and how they view the world matter regarding foreign policy outcomes, in this case, war.<sup>37</sup>

But what conditions cause a national leader of a regional power to confront decisions about military space programs or whether to pursue greater military space posture autonomy?

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<sup>34</sup> Elizabeth N. Saunders, *Leaders at War: How Presidents Shape Military Interventions* (Ithaca, NY: Cornell University Press, 2011), 2.

<sup>35</sup> Saunders, *Leaders at War*, 19.

<sup>36</sup> Michael Horowitz, Allan C. Stam, and Cali M. Ellis, *Why Leaders Fight* (New York, NY: Cambridge University Press, 2015), 4.

<sup>37</sup> Horowitz, Stam, and Ellis, *Why Leaders Fight*, 185.

Several domestic political processes and factors contribute to the agenda-setting and specification of policy alternatives, including interest groups, such as domestic industries and firms, and budget constraints.<sup>38</sup> Heads of government and other senior government officials certainly have the prerogative to set military space posture decisions on a policy agenda. As John Kingdon explains, there are bureaucratic processes by which agendas and policy alternatives are specified.<sup>39</sup> External stimuli can present security problems for national leaders that affect their threat perceptions. This study primarily concerns itself with systemic inputs that affect national leader decision-making on military space posture autonomy. However, endogenous factors, specifically those relating to a country's domestic aerospace and high-technology industries, also contribute to agenda-setting and specification of alternatives. Also, political competition among parties can shape national leader decision-making, especially when considering expensive military space programs. For this study, I focus on heads of government and their decisions about military space programs in their respective countries. I make an effort to uncover the factors that lead the heads of government to make a decision but do not necessarily engage in a deep analysis of agenda-setting and alternative specification processes.

I approach my analysis of military space postures in Europe through a neoclassical realist lens because such a framework accounts for unit-level variables and domestic factors while respecting the anarchic nature of the international system and the distribution of power that characterizes military space operations. Institutions and international regimes, such as those in Europe, might overcome realist tendencies to explain greater European foreign policy and security cooperation since the end of the Cold War. But space remains the vacuum in which

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<sup>38</sup> Agendas are lists of issues or problems to which government officials, including national leaders, are paying serious attention. John W. Kingdon, *Agendas, Alternatives, and Public Policies* (New York, NY: HarperCollins College Publishers, 1995), 3.

<sup>39</sup> Kingdon, *Agendas, Alternatives, and Public Policies*, 16.

states are the primary actors guided by self-interest to assure their security and survival. Still, national leaders, influenced by domestic factors, interpret and refract signals from the international system in a way that structural realism doesn't fully account for.

## **Neoclassical Realism, Autonomy, and Military Space Posture in Europe**

### *Structural Realist Foundations*

Structural realism is the theoretical point of departure for the dissertation. The assumption that states are undifferentiated in their pursuit of security and power in an anarchic international system underpins the research agenda. States adjust their power internally and externally in response to shifts in the distribution of power. International institutions, such as the European Union, are venues for aggregating power and centralizing the influence of Europe's most powerful countries, which continue to act in a self-interested manner, especially in the security realm. Europe did achieve greater security integration in the post-Cold War era through the CSDP framework, despite the absence of an external threat. However, although the EU consists of 27 member states, France, Germany, and the UK (before Brexit) were Europe's primary drivers of security integration and capability development.<sup>40</sup> These countries have the largest defense budgets in Europe, and their aerospace and defense conglomerates are Europe's leaders in developing military space capabilities.<sup>41</sup> With few exceptions, the EU primarily relies on the national capabilities of its members for vital space functions.<sup>42</sup>

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<sup>40</sup> Seth G. Jones, *The Rise of European Security Cooperation* (New York, NY: Cambridge Univ. Press, 2007), 11.

<sup>41</sup> Jones, *The Rise of European Security Cooperation*, 12.

<sup>42</sup> One notable exception is the Galileo Navigation Satellite System, which is funded and operated by the European Union. See Mathieu Bataille and Valentine Messina, "ESPI Report 72 - Europe, Space and Defense - Full Report" (Vienna, Austria: European Space Policy Institute, February 2020), 20.

Given the constraints outlined in structural realism, we expect similar countries, such as France, Germany, and the UK, to pursue military space capabilities, subject to material and resource constraints. However, as Charles Kupchan notes, structural realism's limitation focuses on how elites should understand power and security rather than how they actually *do*.<sup>43</sup> My preliminary research suggests there is a noticeable variation in at least one dimension of each country's military space posture. For example, France has created a military space force and space command, developed systems that afford it independent access to vital space functions, and declared a willingness to use force in orbit.<sup>44</sup> Germany, which has traditionally held a restrained view of military force and a collective view of national security, has also developed military space systems.

Conversely, the UK's military space posture is limited to a constellation of communications satellites and a nascent space command. The UK's underdeveloped military space program, relative to France and Germany, suggests the UK depends on access to American space capabilities as part of its special relationship and Atlanticist view of national security. See Table 1.1 for a summary of preliminary findings.

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<sup>43</sup> Kupchan, *The Vulnerability of Empire*, 6.

<sup>44</sup> Bataille and Messina, "ESPI Report 72 - Europe, Space and Defense - Full Report," 45.

TABLE 1.1 *Preliminary observations: Military Space Posture of the European Powers as of 2020*

	Satellite Imagery	Signals Intelligence	Satellite Communications	Space Domain Awareness	Positioning, Navigation, Timing	Coercive Capabilities	Military Space Institutions
<b>France</b>	<ul style="list-style-type: none"> <li>• HELIOS-2</li> <li>• CSO 1, 2</li> <li>• Pleiades</li> </ul>	<ul style="list-style-type: none"> <li>• ELISA</li> <li>• CERES</li> </ul>	<ul style="list-style-type: none"> <li>• SYRACUSE 3-4</li> <li>• Athéna-Fidus</li> <li>• Sicral 2</li> </ul>	<ul style="list-style-type: none"> <li>• SPIRALE</li> <li>• GRAVES</li> <li>• SATAM</li> </ul>	<ul style="list-style-type: none"> <li>• GALILEO</li> </ul>	<ul style="list-style-type: none"> <li>• Announced</li> </ul>	<ul style="list-style-type: none"> <li>• Space Force</li> <li>• Space Command</li> </ul>
<b>Germany</b>	<ul style="list-style-type: none"> <li>• SAR-LUPE</li> <li>• SARah</li> </ul>		<ul style="list-style-type: none"> <li>• SATCOMBw</li> </ul>	<ul style="list-style-type: none"> <li>• TIRA</li> </ul>	<ul style="list-style-type: none"> <li>• GALILEO</li> </ul>	<ul style="list-style-type: none"> <li>• Opposes</li> </ul>	<ul style="list-style-type: none"> <li>• Air and Space Operations Center</li> </ul>
<b>United Kingdom</b>	<ul style="list-style-type: none"> <li>• Carbonite 2</li> </ul>		<ul style="list-style-type: none"> <li>• SKYNET 4-6</li> </ul>			<ul style="list-style-type: none"> <li>• Unknown</li> </ul>	<ul style="list-style-type: none"> <li>• Space Command</li> </ul>

Sources: Bataille and Messina, “ESPI Report 72 – Europe, Space, and Defense – Full Report,” 58-79.

How do we explain the differences in each country's military space posture? Is increasing security and capability integration through the EU and a cozy U.S.-UK "special relationship" sufficient to explain these differences? Structural factors and distributions of power are useful theoretical frameworks to understand policy outcomes and the international relations between states. But these concepts, as Henry Kissinger argues, are "always applied through individual human agency and filtered through human perceptions," namely those of national leaders.<sup>45</sup>

While holding firm to its realist underpinnings, the dissertation acknowledges that a purely structural view of military space posture cannot explain the variation among these European countries. This dissertation peers into the realist's "black box" to consider the role of unit-level factors in pursuing military space programs among similar European states. Here a neoclassical realist framework may bear fruit in helping uncover the causal variables that intervene systemic stimuli and posture outcomes.<sup>46</sup> Neoclassical realism builds on the structural constraints outlined in Waltz's conception of the international system but considers the intervening role of unit-level factors in refracting systemic inputs and policy outcomes.

As Saadia Pekkanen argues, neoclassical realism is useful in understanding why states approach space security matters the way they do. Neoclassical realism brings into focus the internal attributes that affect leader decision-making on military space posture, including ideational frames, historical priors, and the considerations of domestic interest groups.<sup>47</sup> Domestic attributes are relevant to military space posture decision-making due to the expense and high visibility of space programs. As a result, state leaders, especially the heads of

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<sup>45</sup> Henry Kissinger, *Leadership: Six Studies in World Strategy* (New York, NY: Penguin Press, 2022), xxvi.

<sup>46</sup> Ripsman, Taliaferro, and Lobell, *Neoclassical Realist Theory of International Politics*, 33.

<sup>47</sup> Saadia M. Pekkanen, "Neoclassical Realism in Japan's Space Security," in *The Oxford Handbook of Japanese Politics*, ed. Robert J. Pekkanen and Saadia M. Pekkanen, online ed. (Oxford University Press, 2022), 765-766, <https://doi.org/10.1093/oxfordhb/9780190050993.013.38>.

government (i.e., presidents, prime ministers, and chancellors), are the key individuals responsible for strategic decision-making about national security and alliances and, therefore, military space posture. National leaders comprise the intervening variable in the causal chain between systemic inputs and military space posture outcomes.

Still, I acknowledge that each country differs in its constitutional structure and affords different powers, authorities, legal constraints, and bureaucratic obstacles to the respective chief of government. For example, on the one hand, the President of the French Fifth Republic exerts greater power in foreign and security policy. On the other hand, the German Constitution, or Basic Law (*Grundgesetz für die Bundesrepublik Deutschland*), adopted after World War II, places greater restrictions on the chancellor concerning foreign and security policy. Indeed, the German political bureaucracy can be an obstacle to effective national leadership. For these reasons, this research prioritizes the strategic outlook of individual heads of government to identify the relevant factors and conditions that shaped decision-making on military space posture vis-à-vis the United States and NATO.

Several elements thus comprise a neoclassical realist framework that could explain differences in military space posture in Europe. First, the framework builds on structural realist assumptions about the distribution of power in the international system as the independent variable. Interests, power, and security drive state behavior. Second, state budgets constrain the military space posture decisions. Third, domestic industry incentives and considerations can affect national decision-making on military space posture. Finally, leaders' strategic outlook guide and influence the military space posture outcomes based on signals from the international system. Table 1.2 summarizes these elements and the resulting propositions.

TABLE 1.2 *Explanations and Propositions*

Explanation	Proposition	Observable Indicators
<b>Structural Realism and Shifts in the Balance of Power (Independent Variable)</b>	<ul style="list-style-type: none"> <li>• Changes in the structure of the international system that affect balance of power or polarity will cause changes in a state's military space posture</li> <li>• Regional powers are more likely to pursue military space posture autonomy when external threats to their security are low</li> <li>• Regional powers are more likely to prioritize alliances and collective security when threats are high</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in the structure of the international system occur</li> <li>• Increase in autonomous military space posture following a structural change</li> <li>• Changes in military space posture outcomes result from changes in threat perceptions</li> </ul>
<b>Budgetary Constraints (Intervening Variable)</b>	<ul style="list-style-type: none"> <li>• Regional powers will pursue independent military space programs if they are not facing recession or economic hardship</li> <li>• Regional powers will not pursue independent military space programs when facing domestic economic hardship</li> </ul>	<ul style="list-style-type: none"> <li>• States initiate military space programs during periods of economic growth or stability</li> <li>• States refrain from military space programs during economic recessions</li> <li>• Legislative debates and policy documents weigh military space program costs</li> </ul>
<b>Legal and Constitutional Constraints (Intervening Variable)</b>	<ul style="list-style-type: none"> <li>• National leaders who are constitutionally empowered with greater autonomy in defense and military policy will pursue greater military space posture autonomy</li> <li>• National leaders who are constitutionally limited in defense and military policy will depend on allies or partners for military space capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Leader statements regarding the security and military utility of the space domain</li> <li>• Regional powers with presidential systems will pursue greater military space posture autonomy</li> <li>• Regional powers with parliamentary systems will depend on allies and partners</li> </ul>
<b>Industry Incentives and Considerations (Intervening Variable)</b>	<ul style="list-style-type: none"> <li>• Regional powers will pursue independent military space systems to stimulate their domestic aerospace and high-technology industries</li> <li>• Regional powers will pursue independent military space systems when pressured to do so by their domestic aerospace and high-technology industries</li> </ul>	<ul style="list-style-type: none"> <li>• Leader statements regarding the industrial and economic benefits of domestic space programs</li> <li>• Industry statements regarding the economic benefits of domestic space programs</li> <li>• Military space programs produce economic incentives</li> </ul>

TABLE 1.2 *Explanations and Propositions (cont.)*

Explanation	Proposition	Observable Indicators
<b>Strategic Outlook (Intervening Variable)</b>	<ul style="list-style-type: none"> <li>• National leaders will favor autonomous military space posture when they favor greater political independence from great powers</li> <li>• National leaders will favor greater political independence from great powers when they perceive low threats to their security</li> </ul>	<ul style="list-style-type: none"> <li>• Leader threat perceptions and alliance considerations</li> <li>• Leader beliefs about a country's role in the geopolitical landscape</li> <li>• Elite beliefs about a country's role in international institutions</li> </ul>

### *Budgetary and Bureaucratic Constraints*

National leaders face various domestic constraints when implementing security policies or military posture decisions, regardless of what external shocks they face.<sup>48</sup> As Gordon Adams and Cindy Williams argue, national security budgets are consistent and dependable indicators of a state's security priorities; money, as it were, is policy.<sup>49</sup> I examine the budgetary and bureaucratic constraints in a democracy because space systems, military or otherwise, are expensive. The costly nature of space flight alone is why so few countries have independent space flight capability. Decision-makers are constrained by the resources available and the bureaucracy for allocating those resources in each state.

Budgetary constraints in France, Germany, and the UK are intervening variables. They can thus affect the military space posture decisions that national leaders might otherwise make in response to systemic inputs. For example, a president might prefer an autonomous military space posture but lacks the resources to pursue such an outcome and would thus opt for a collective

<sup>48</sup> Steven E. Lobell, "Threat Assessment, the State, and Foreign Policy: A Neoclassical Realist Model," in *Neoclassical Realism, the State, and Foreign Policy*, ed. Steven E. Lobell, Norrin M. Ripsman, and Jeffrey W. Taliaferro (Cambridge: Cambridge University Press, 2009), 63.

<sup>49</sup> Gordon Adams and Cindy Williams, *Buying National Security: How America Plans and Pays for Its Global Role and Safety at Home* (New York, NY: Routledge, 2010), 1.

posture or abandon a program altogether. In such instances, the analysis should demonstrate that leaders correctly assessed the utility of military space systems but were constrained in their ability to pursue a particular military space posture outcome. Alternatively, the resource bureaucracy could facilitate military space program development if the distribution of power in the international system warrants pursuing a costly military space program, either independently or collectively, by aggregating resources with similar powers. Therefore, the degree of autonomy in a country's military space posture is weighed against the costs of implementing the necessary programs.

### *Legal and Constitutional Constraints*

Legal and constitutional constraints stemming from different political systems limit the authority and autonomy of heads of government and national leaders on security and military policy. For example, dictators can more easily divert resources to expensive projects such as spaceflight to enhance their country's prestige because they face fewer domestic constraints.<sup>50</sup> However, leaders in democracies, such as in Europe, face various systems of checks and balances, including opposing political parties and accountability to the electorate, which constrain their ability and willingness to loosen the purse strings for ambitious military space projects.

Among democracies, a presidential or semi-presidential domestic political system, such as in France, tends to empower the head of government with executive authority on security and military policies. However, in a parliamentary political system, such as in the United Kingdom and Germany, heads of government derive their executive authority from the legislature.

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<sup>50</sup> Gilady, *The Price of Prestige*, 29-30.

Parliamentary systems can further constrain a leader's autonomy on security and defense matters when they attain their position as a result of a coalition government. For example, German domestic politics often produce coalition governments, which, coupled with interministerial debates over funding and authorities, can hamper effective national leadership on contentious or costly issues related to military space posture.

### *Industry Incentives and Considerations*

In democratic states with market economies, it is plausible that industry groups and firms exert pressure on national governments and leaders to pursue a particular foreign or security policy approach. Stephen Brooks considers the role of international commerce and globalization in state actors' foreign and security policymaking. Brooks argues that globalization of production has altered the international security environment through the advent of multi-national corporations (MNCs). MNCs have altered how arms and military capabilities are manufactured, fostering stability among security rivals by reducing the economic incentives of military conquest.<sup>51</sup> In this respect, MNCs shape the foreign and security policies of states and national leaders. The findings are relevant to my analysis of strategic decision-making concerning military space posture and whether sufficient economic incentives exist to pursue greater military space posture autonomy.

Though the space sector in Europe is rooted in military and security concerns, the study of Japan's space industry is useful in identifying the central role of aerospace firms and corporations in security policymaking, including in space. Saadia Pekkanen and Paul Kallender-Umezumi examine the ongoing "market-to-military" trend in Japan whereby space-related

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<sup>51</sup> Stephen G. Brooks, *Producing Security: Multinational Corporations, Globalization, and the Changing Calculus of Conflict*. (Princeton, NJ: Princeton University Press, 2007), 18-21.

technologies, which originated for civilian and commercial purposes, are being shifted toward military purposes.<sup>52</sup> Pekkanen and Kallender-Umezu argue that militarization of space systems reflects the enduring economic and industrial interests of Japan's aerospace and high-technology firms that manufacture space systems. Japan's military space posture emerged from the civilian space sector thanks to the inherently dual-use nature of space systems. Thus, it was politically and economically feasible for Japan to develop military space capabilities when external circumstances warranted such investments, despite Japan's "anti-militaristic" culture.<sup>53</sup>

### *National Leaders and Strategic Outlook*

The beliefs and images held by national leaders, as the key decision-makers concerning national security, are important intervening variables that may influence military space posture outcomes in each state.<sup>54</sup> Leaders possess cognitive filters and biases that affect their perceptions of systemic stimuli, which I call their strategic outlook.<sup>55</sup> As previously discussed, I focus on national leaders and heads of government as the key individuals involved in major national security decision-making. I do not suggest that heads of government of different European countries share the same decision-making authority or that each state implements national security decisions the same way, including military space posture. However, I argue that signals from the international system are processed by national leaders responsible for each state's national security. Generally speaking, these leaders include the heads of government, namely the

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<sup>52</sup> Saadia M. Pekkanen and Paul Kallender-Umezu, *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford, CA: Stanford University Press, 2010), 20.

<sup>53</sup> Pekkanen and Kallender-Umezu, *In Defense of Japan*, 2.

<sup>54</sup> Ripsman, Taliaferro, and Lobell, *Neoclassical Realist Theory of International Politics*, 61. See also Larson, *Anatomy of Mistrust*; Saunders, *Leaders at War*; and Horowitz, Stam, and Ellis, *Why Leaders Fight*.

<sup>55</sup> Ripsman, Taliaferro, and Lobell, *Neoclassical Realist Theory of International Politics*, 62. See also Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976), 13; Yuen Foong Khong, *Analogies at War: Korea, Munich, Dien Bien Phu, and the Vietnam Decisions of 1965* (Princeton, NJ: Princeton University Press, 1992), 9.

French President, the UK Prime Minister, and the German Chancellor. Where appropriate, I also examine the views and beliefs of foreign ministers, defense ministers, and military leaders, especially concerning military space posture.

Strategic outlook refers to the prevailing beliefs about national security and a country's future security trajectory that guide elite behavior. I focus on national leaders and their strategic outlook, which builds on Ripsman, Taliaferro, and Lobell's concept of leader images. Strategic outlook comprises leaders' unique perspectives, threat perceptions, views on the utility of military force, and attitudes about their country's role and future position in the world, which are informed by personal and historical experiences. Due to the high-technology nature of military space posture, the long-duration of military space programs, and the international political implications of military space posture autonomy, especially on alliances, a leader's strategic outlook thus shapes and informs decisions about military space posture outcomes.

Strategic outlook differs from strategic culture, a concept that emerged from the constructivist literature that includes national identity, norms, and beliefs as causal elements in state behavior in international relations. Strategic culture is problematic for analyzing and comparing state behavior across cases. The strategic culture scholarly literature has definitional, methodological, and tautological differences. For example, Colin Gray favors a broad, ethnonational definition that views strategic culture as a "shaping context for behavior and itself as a constituent of that behavior." At the same time, Alastair Iain Johnston treats strategic culture as a narrower, falsifiable concept that can be evaluated empirically.<sup>56</sup> Both examples are difficult

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<sup>56</sup> Colin S. Gray, "Strategic Culture as Context: The First Generation of Theory Strikes Back," *Review of International Studies* 25, no. 1 (1999): 50; Alastair Iain Johnston, "Strategic Cultures Revisited: Reply to Colin Gray," *Review of International Studies* 25, no. 3 (1999): 522.

to measure. I do not attempt to contribute to the literature and debates over strategic culture, only to acknowledge that they exist.<sup>57</sup>

I distill strategic outlook into fundamental beliefs critical to how elites shape military policy and space posture decisions.<sup>58</sup> I assess two beliefs in considering France, Germany, and the UK and their shared post-World War II context. First, how leaders view national security and how those views change over time.<sup>59</sup> National security views manifest primarily as autonomy, the ability to provide for their own security, and collective, or the desire to rely on an alliance for security. These are ideal types, and most national leaders' views are somewhere in between. Second, how willing are national leaders to use military force to pursue political aims? We could expect national leaders whose strategic outlook differs in one or both dimensions to adopt different military space postures.<sup>60</sup> Beliefs can vary among leaders of one country or among leaders of different countries. The weight of strategic outlook on military space posture outcomes may also vary depending on the domestic political system. For example, French Presidents hold perhaps the most consistent strategic outlook that prioritizes national independence and strategic autonomy, regardless of party persuasion. In this view, France is the ideal case for this study. Alternatively, German chancellors face such bureaucratic constraints that their beliefs may have

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<sup>57</sup> For relevant literature on constructivism and strategic culture, including in European security, see Ronald L. Jepperson, Alexander Wendt, and Peter J. Katzenstein, "Norms, Identity, and Culture in National Security," in *The Culture of National Security: Norms and Identity in World Politics*, ed. Peter J. Katzenstein (New York, NY: Columbia University Press, 1996), 33-76; Alastair I. Johnston, *Cultural Realism: Strategic Culture and Grand Strategy in Chinese History*, Princeton Studies in International History and Politics (Princeton, NJ: Princeton University Press, 1995); Adrian Hyde-Price, "European Security, Strategic Culture, and the Use of Force," *European Security* 13, no. 4 (January 1, 2004): 323-43; Christoph O. Meyer, *The Quest for a European Strategic Culture: Changing Norms on Security and Defence in the European Union* (New York, NY: Palgrave Macmillan, 2006); Bastian Giegerich and Maximilian Terhalle, *The Responsibility to Defend: Rethinking Germany's Strategic Culture*, 477 (Abingdon, Oxon: Routledge, 2021); Lawrence Sondhaus, *Strategic Culture and Ways of War* (New York, NY: Routledge, 2009). For a discussion on the methodological and tautological difficulties of strategic culture as a concept, see Ulrich Krotz and Richard Maher, "International Relations Theory and the Rise of European Foreign and Security Policy," *World Politics* 63, no. 3 (2011): 548-579.

<sup>58</sup> Kupchan, *The Vulnerability of Empire*, 67.

<sup>59</sup> Saunders, *Leaders at War*, 5.

<sup>60</sup> White, "Subcultural Influence on Military Innovation," 28.

little bearing on Germany's military space posture outcomes. Figure 1.2 depicts the causal diagram set forth above.

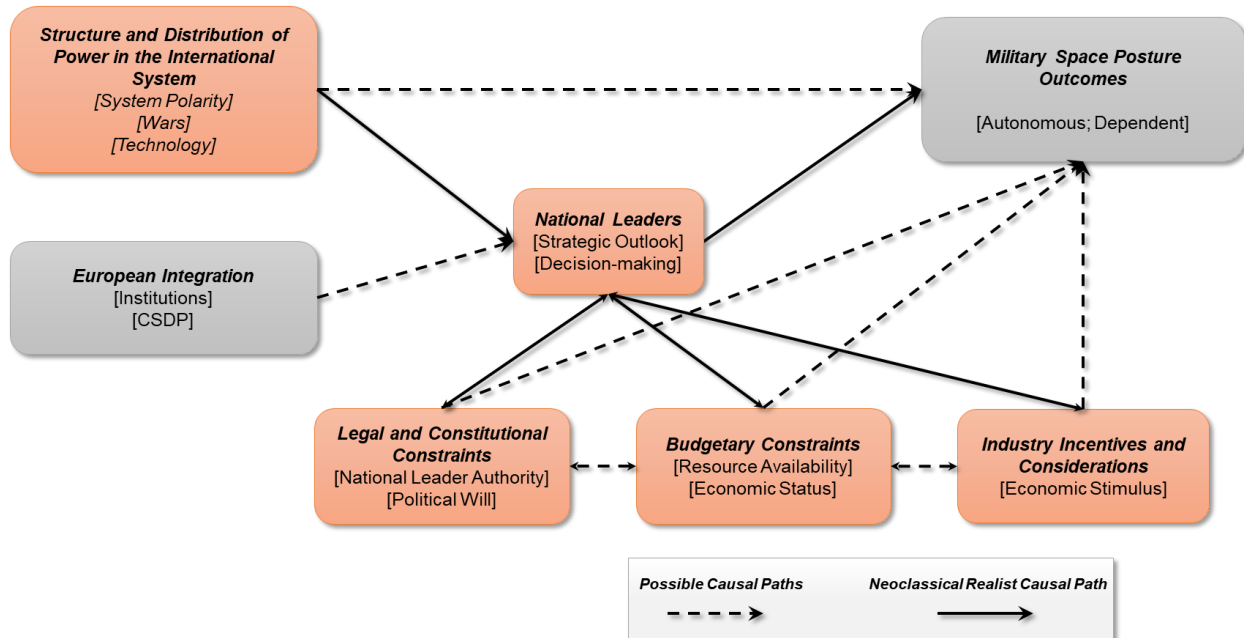


Figure 1.2 – How national leaders and other unit-level variables influence Military Space Posture outcomes

## Research Design

A case-based research design is most appropriate to investigate the empirical puzzle. Narrow scope conditions can help expose the underlying causal mechanisms at work but sacrifice a degree of generalizability.<sup>61</sup> My interest in military space posture reduces the number of potential cases, especially since I focus on states other than the U.S., China, and Russia. I explore a chain of military space posture outcomes in each country over a roughly 45-year period, beginning with France's first satellite launch in 1965 through 2000. Given the small-N

<sup>61</sup> Andrew Bennett and Jeffrey T. Checkel, eds., *Process Tracing: From Metaphor to Analytic Tool*, Strategies for Social Inquiry (Cambridge: Cambridge University Press, 2015), 13.

nature of my study, I favor qualitative methods to trace the military space posture decision-making process in each case. I rely on process tracing to uncover causal mechanisms and conditions underlying strategic decision-making to link systemic inputs from the distribution of power in the international system to discrete military space posture outcomes in each country. Examining the conditions under which national leaders made decisions about military space posture can help determine whether the above propositions were relevant to observed outcomes.<sup>62</sup>

### *Historical Cases*

This dissertation attempts to uncover conditions that caused some Western European powers to seek greater military space posture autonomy from the United States over a roughly 45-year period. The study begins during the Cold War, following the advent of space flight and revelations about the military utility of space. Understanding the causes of divergent military space postures among regional powers requires an analysis of historical episodes where countries pursued independent military space systems to achieve greater military space posture autonomy. A main criterion for case selection is the technical and industrial ability to develop sophisticated space systems and place them into orbit. Negative cases where countries decided not to pursue an independent system or cancel a program are useful to identify the conditions that lead a state to remain dependent on a great power for access to military space postures.

Additionally, to maximize consistency, the dissertation considers regional powers that developed space capabilities in the NATO context and partnership with the United States. Thus, I look at military space posture in France, Germany, and the United Kingdom, because they share

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<sup>62</sup> Ripsman, Taliaferro, and Lobell, *Neoclassical Realist Theory of International Politics*, 131; Stephen Van Evera, *Guide to Methods for Students of Political Science* (Ithaca, NY: Cornell University Press, 1997), 64.

greater similarities than non-European U.S. allies. These countries shared relative parity in their gross domestic product (GDP) and military spending. Figure 1.3 depicts each country's GDP from 1960 to 2000, and Figure 1.4 depicts each country's military expenditures.

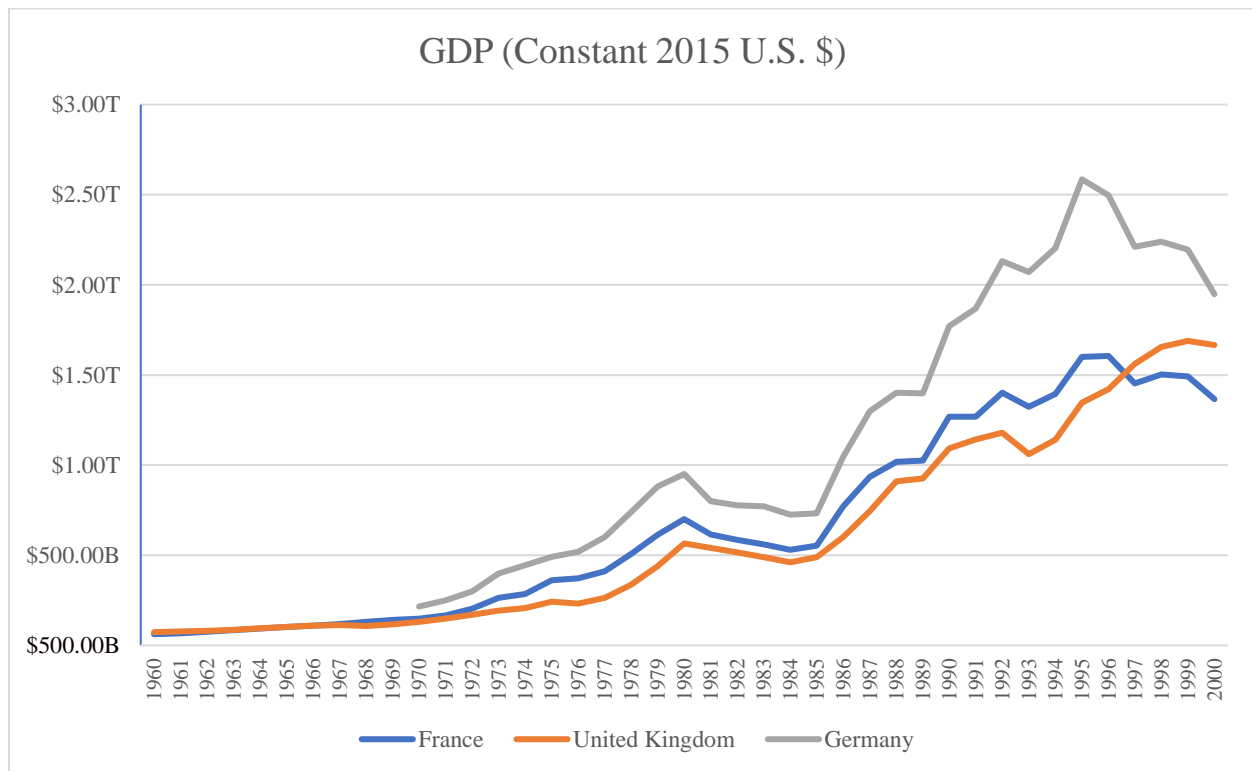


Figure 1.3 – Gross Domestic Product (GDP) of France, the United Kingdom, and Germany<sup>63</sup>

<sup>63</sup> “World Bank National Accounts Data, and OECD National Accounts Data Files,” The World Bank, accessed April 21, 2023, <https://data.worldbank.org>.

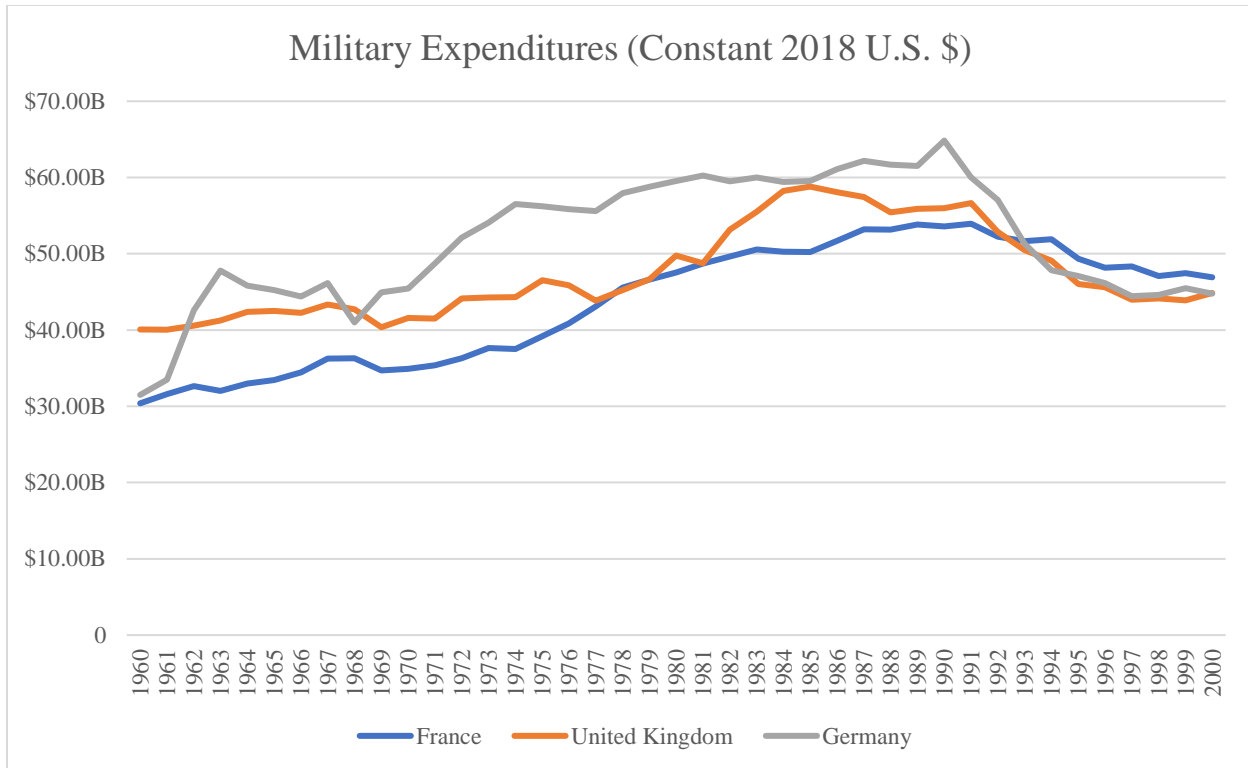


Figure 1.4 – *Military Expenditures of France, the United Kingdom, and Germany*<sup>64</sup>

I rely on case studies to strengthen my comparative historical analysis. Cases focus on a series of outcomes in a single country across a broader temporal range and the outcomes of different countries during a single time frame.<sup>65</sup> Specific outcomes examined herein consist of strategic decisions made by national leaders in each country in response to systemic inputs. I consider outcomes in each country and in an institutional context during and after the Cold War to examine how changes in the international distribution of power affected decision-making related to military space posture. I also look at outcomes involving military space systems and the capabilities they provide. Satellites and their functions comprise an element of a country's military space posture. For example, the 1991 Persian Gulf War showed that military space

<sup>64</sup> "SIPRI Military Expenditure Database," Stockholm International Peace Research Institute, accessed May 13, 2022, <https://milex.sipri.org/sipri>.

<sup>65</sup> I take cues on case selection criteria from Charles Kupchan's work analyzing the strategic behavior of great powers in the 19<sup>th</sup> and 20<sup>th</sup> centuries. Kupchan, *The Vulnerability of Empire*, 9.

capabilities could provide a decisive advantage in a military conflict. The war also revealed France and the UK's dependence on the U.S. to access those space capabilities.

Additionally, U.S. President Ronald Reagan's Strategic Defense Initiative (SDI), which sought to develop an orbital ballistic missile defense capability in space, undermined the nuclear deterrence regime in the eyes of many European leaders. Yet the French Presidents, UK Prime Ministers, and German Chancellors responded differently to the American proposal and adjusted their foreign and security policies accordingly. The dissertation thus considers forward-looking policymaking in each country surrounding national military space capabilities and institutions. Historical cases provide evidence that national leaders' strategic outlook influences decisions about military space posture outcomes.<sup>66</sup> The cases also inhabit a relatively controlled international context, punctuated by the end of the Cold War and a structural shift from bipolarity to unipolarity. Table 1.3 summarizes cases and military space posture outcomes.

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<sup>66</sup> Saunders, *Leaders at War*, 17.

TABLE 1.3 *Historical Cases*

<b>France</b>			
Case	Systemic Input	National Leader	Military Space Posture Outcome
<b>SAMRO (1978-1982)</b>	Bipolarity	Giscard-d'Estaing	Autonomy, ISR
<b>HELIOS (1985-1999)</b>	Bipolarity; Chad-Libya War	Mitterrand	Autonomy, ISR
<b>SDI (1983-1987)</b>	Bipolarity; SDI	Mitterrand	Autonomy
<b>Strategic Adjustment (1990-1999)</b>	End of Cold War; Gulf War; EU; Balkan Conflict	Mitterrand; Chirac	Autonomy
<b>United Kingdom</b>			
Case	Systemic Input	National Leader	Military Space Posture Outcome
<b>SKYNET (1967-1999)</b>	Bipolarity; End of Cold War; Gulf War; Balkan Conflict	Wilson, Heath, Thatcher	Autonomy, SATCOM
<b>ZIRCON (1982-1987)</b>	Bipolarity; Falkland Islands War	Thatcher	Autonomy, ISR
<b>SDI (1983-1987)</b>	Bipolarity; SDI	Thatcher	Dependence
<b>Strategic Adjustment (1990-1999)</b>	End of Cold War; Gulf War; EU; Balkan Conflict	Thatcher, Major	Dependence
<b>Germany</b>			
Case	Systemic Input	National Leader	Military Space Posture Outcome
<b>SYMPHONIE (1970-1974)</b>	Bipolarity	Brandt, Schmidt	Dependence, SATCOM
<b>[Reconnaissance Satellite] (1982-85)</b>	Bipolarity	Kohl	Dependence, ISR
<b>SDI (1983-1987)</b>	Bipolarity; SDI	Kohl	Dependence
<b>Strategic Adjustment (1990-1999)</b>	End of Cold War; Unification; EU; Balkan Conflict	Kohl, Schröder	Autonomy, ISR

*Methods*

Cross-case comparisons and process tracing can establish whether variation in strategic outlook is convincingly linked to observable differences in military space posture outcomes. I examine military space posture outcomes in France, Germany, and the UK because these countries are good candidates for cross-case comparisons using the method of difference. I also examine each country's involvement in European institutional space posture outcomes.

To uncover how national leaders perceive and interpret signals from the structure of the international system, I examine primary source documents, archival records, and public statements made by the relevant national leaders, including speeches, government documents and publications, and published commentary. I will also examine the historical record to understand how national leaders viewed the use of military force across time. For example, France and the UK regularly deployed military forces during the Cold War and engaged in combat operations worldwide. Germany did not deploy forces abroad and remained entirely focused on territorial defense, suggesting a more restrained German view of military force. Later, the end of the Cold War and changes in threat perceptions altered Germany's conception of security. Yet my focus on national leaders and strategic outlook may offer only a partial explanation for changes in German foreign and security behavior, especially after the Cold War. The political bureaucracy places such constraints on German leadership that further study is warranted to examine the causes of German security behavior, including in space.

Additionally, I conducted semi-structured interviews with scholars, subject matter experts, and current and former government officials in each country to obtain evidence about military space posture decision-making and the conditions under which leaders decided to pursue greater military space posture autonomy. I also assessed military space policy documents for

evidence about how each state perceived threats in the space domain and how each state configured its military forces, which are useful referents for a country's overall military space posture.<sup>67</sup> Along the way, I uncover the conditions under which national leaders make favorable decisions about military space posture, leading to greater autonomy from the United States.

However, leader statements and government documents may not necessarily reveal the factors motivating a particular military space policy decision. It is possible that military space posture outcomes do not reflect true leader preferences, regardless of their strategic outlook, and that other forces, including budgetary or legislative constraints, influenced a particular outcome. I investigate military budgets, including military space programs, to assess how states prioritize military space posture decisions in the overall budgetary context. These data are useful indicators of actual government space policy priorities. Demonstrating budgetary change, up or down, can reflect changes in the policies elites convey in statements and policy documents. Linked to other sources, government spending on military space policy outcomes helps “triangulate” indicators of the causal mechanisms.

## **Contributions**

This research makes the following contributions to literature and policy. First, the research helps uncover how and why states invest in military space capabilities. It adds to the budding neoclassical realist literature in considering the intervening role of the national leaders and their strategic outlook on shaping military space policies in the 21<sup>st</sup> century. Additionally, strategic outlook can help account for leader beliefs and images without taking ontological risks in a strategic culture argument.

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<sup>67</sup> Jennifer M. Lind, *Sorry States: Apologies in International Politics* (Ithaca, NY: Cornell Univ. Press, 2010), 19.

Second, I uncover the conditions under which national leaders make favorable decisions about military space posture, leading to greater autonomy from the United States. Orbital space systems and military space capabilities, a state's ability to develop those systems through domestic aerospace and high-technology industries, and a state's membership in international institutions and military alliances are necessary but not sufficient conditions for leaders to pursue greater military space posture autonomy. External threats are also not sufficient conditions to generate a need for greater military space posture autonomy. Nor are budget constraints, whether due to economic downturns or not, sufficient reasons for states not to pursue greater military space posture autonomy. For example, by 1980, Germany had a higher GDP than France or the UK, yet had not developed a single military space system. This study's findings suggest that national leader decision-making, informed by strategic outlook and military requirements stemming from security interests, are key factors that favor greater military space posture autonomy in regional power. However, I acknowledge that other factors, including domestic politics, legal and constitutional limits on the authority of national leaders regarding defense and military policies, and industrial considerations, can affect national leader decision-making on military space posture. France is the closest ideal type for an argument based on a consistent strategic outlook. The argument is less convincing for Germany; domestic politics can diminish the explanatory weight of German Chancellors' strategic outlook.

Finally, as Earth's orbital regimes become more congested, competitive, and contested, uncertainty about the dual-use nature of space systems helps contribute to a security dilemma and the unsettling prospect of greater weaponization in space. This research can help reduce uncertainty by addressing why states pursue certain military space capabilities and the conditions

that favor greater military space posture autonomy. Less uncertainty about military space activities could reduce the risks of conflict extending into the space domain.

### **The Way Ahead**

This chapter set forth the analytic framework I will use to evaluate the domestic factors and conditions that underlie strategic decision-making about military space posture in France, the United Kingdom, and Germany. I base the framework on the neoclassical realist theory of international politics set forth by Ripsman, Taliaferro, and Lobell. I do not advance a novel theory about military space posture outcomes. As a result, I do not engage in quantitative theory testing but peer into the empirical record to help us understand how national leaders thought about the military uses of space in the context of the Cold War and the post-Cold War era. The next three chapters focus on France, the UK, and Germany, in which I briefly describe the fundamental tenets of strategic outlook, followed by a brief history of each country's path to space. I then delve into the case studies depicted in Table 1.3. Chapter 5 concludes the study by reviewing our findings and discussing the findings' implications for the future of European security, especially given the dramatic rise in external threat perceptions due to Russia's invasion of Ukraine in 2022.

## CHAPTER 2: Military Space Posture Development in France, 1965-1995

### Introduction

U.S.-Soviet nuclear tensions characterized superpower relations during the Cold War in the 1960s, 1970s, and 1980s. What explains the strategic choices made by regional powers during a time of such great power rivalry? France's emergence as the world's third space power, and an autonomous military space actor, began with the presidency of Charles de Gaulle, who championed France's early space program as an adjunct to its nuclear program. De Gaulle firmly believed that France's *rang* (rank) in the international system and *grandeur* demanded that the country establish itself as a third pole in the bipolar Cold War era to maintain its national autonomy and independence of decision and action. Gaullist tenets, including France's national autonomy from other powers, status in the world, and independence of decision and action, exemplified the strategic outlook of the presidents who succeeded de Gaulle. Valéry Giscard-d'Estaing (1974-1981), a center-right former Gaullist, and François Mitterrand (1981-1995), a Socialist who previously opposed de Gaulle and Giscard-d'Estaing in presidential elections before winning the job in 1981, both maintained and evolved view of Gaullism in their strategic outlook.

Despite their political differences, Giscard d'Estaing and Mitterrand navigated France on a consistent course through a tumultuous period that witnessed rising nuclear threats, the sudden shock of the Soviet collapse, and the end of the Cold War. The late Cold War was also a time when the commercial and military utility of space became apparent, especially after Ronald Reagan announced the Strategic Defense Initiative. Military space capabilities became increasingly important to ensure the credibility of France's strategic nuclear deterrent and improve intelligence and command and control in support of conventional military operations.

While the Cold War forced France's leaders to prioritize the nuclear force, the country's experience in the Persian Gulf War painfully exposed France's dependence on the United States for space-based intelligence. French dependence on U.S. space superiority starkly contrasted with the political rhetoric of national independence.

Mitterrand understood that the country needed a national military space system to maintain France's status as an independent actor. With the Cold War over, the ability of French political authorities to make decisions on emerging regional crises in France's traditional sphere of influence, including Africa and the Middle East, required access to timely and independent intelligence. In response to the changing international system, Mitterrand marshaled his political will to advance France's military space program despite budgetary and bureaucratic obstacles. That enabled France to emerge as Europe's leading military space power and retain its national independence from the United States.

The chapter begins by reviewing France's history as a space actor, including France's role in early European space collaboration and the growth of France's national civilian space program. The next section provides a brief overview of the founding of the French Fifth Republic and the political philosophy of Charles de Gaulle, the founding president. While this dissertation is not a study of Gaullism, I argue that Gaullist tenets of French foreign policy in the Fifth Republic formed the core of each president's strategic outlook. Leaders' strategic outlook refracted systemic inputs that drove political decisions on France's military space programs. The chapter then explores four case studies, two program-specific and two systemic, to evaluate the merit of the analytic framework proposed in the introduction.

## The French Space Program: A Brief History

Following World War II, the United States and the Soviet Union rapidly expanded their nuclear arsenals and the means to deploy them. When the Soviet Union shocked the world by orbiting the world's first manmade satellite, SPUTNIK, the military utility of space flight became clear. As in other countries, France's national space program emerged from a military necessity to develop ballistic missiles to deliver nuclear weapons as it sought to navigate the geopolitical tensions of a bipolar world in the Cold War era. Against the wishes of its American allies, France embarked on an ambitious pursuit of an independent nuclear deterrent, the so-called *force de frappe*, or strike force, at the behest of General Charles de Gaulle and against the wishes of the United States. De Gaulle, who became President of the Fifth Republic in 1958, directed a parallel rocket development program to maintain military and political parity with the superpowers. Following World War II, and eager to regain its major power status, France hired several dozen rocket experts from the German military facility at Peenemünde that produced the notorious V-2 rocket.<sup>1</sup> These rocket experts collaborated with their French hosts to develop the suborbital sonic *Véronique* rockets that would form the technical basis for France's ballistic missile capability.<sup>2</sup> By 1956, the German rocket experts who remained in France began working on a French multi-stage rocket, the *Diamant*, and used an adapted V-2 design called *Emeraude* to develop the rocket's first stage.<sup>3</sup>

De Gaulle wanted an arsenal of land- and sea-based ballistic missiles to bolster the French nuclear strike force. In response, the French government established the *comité d'études*

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<sup>1</sup> Jürgen Scheffran, "Space Policy and Missile Control in Europe," in *Space Power Interests*, ed. Peter Hayes (Boulder, CO: Westview Press, 1996), 91.

<sup>2</sup> *Véronique* is shorthand for "Vernon électronique," the French space program's initial site in the Eure Department. Scheffran, "Space Policy and Missile Control in Europe," 91.

<sup>3</sup> Brian Harvey, *Europe's Space Programme: To Ariane and Beyond* (Chichester, UK: Praxis Publishing Ltd., 2003), 58; Scheffran, "Space Policy and Missile Control in Europe," 91.

*spatiales* (CES, or space research committee), which reported directly to the prime minister, to organize and focus the various space research programs ongoing in France at the time.<sup>4</sup> CES partnered with the armed forces ministry's *société d'étude et de réalisation d'engins balistique* (SEREB, or organization for the study and development of ballistic engines). SEREB focused on the *Saphir* medium-range ballistic missile that was based on the older *Véronique* designs, as well as on the three-stage *Diamant* rocket. The French Army successfully tested *Saphir* at the launch site in the Algerian Sahara at Hamaguir.<sup>5</sup> Early successes emboldened CES, which realized that further research and testing would outstrip the committee's mandate and limited capacity. Spaceflight and satellites were no longer military tools and had demonstrated scientific and commercial potential, especially in the emerging global telecommunications industry.

In 1961, CES proposed to Charles de Gaulle that France fully commit to a national space program. Despite the high cost, de Gaulle quipped "just do it" to his ministers.<sup>6</sup> In August, the National Assembly enacted France's first law focused on space to establish the national space agency CNES: *centre nationale d'études spatiales*, through a public institutional framework called EPIC, or *établissement publique à caractère industriel et commerciale*.<sup>7</sup> The same year, France committed to developing an indigenous satellite and placing it into orbit atop a French rocket.<sup>8</sup>

However, despite initial successes, the French rocket program was years behind the American and Soviet counterparts and faced technical challenges. The V-2-based *Diamant* rocket suffered several catastrophic failures during test launches in Algeria. Not wanting to delay

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<sup>4</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 25.

<sup>5</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 64.

<sup>6</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 25.

<sup>7</sup> In France, an EPIC is a state-backed public undertaking established by law to organize and direct state resources, including funding, institutions, research agencies, and manufacturing centers, toward a specific commercial or industrial purpose. Louis de Gouyon Matignon, interview by Frank Kuzminski, Zoom, November 7, 2021.

<sup>8</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 57-58.

satellite development, the French military organized two parallel satellite programs. One team would build an indigenous French satellite called A-1 slated for launch atop a French rocket from Hamaguir, Algeria. At the same time, another team would build a similar satellite, FR-1, to be launched by the Americans from Vandenberg Air Force Base.<sup>9</sup> The FR-1 program was effectively a hedge against the possibility of a catastrophic failure of the unproven French *Diamant* rocket to ensure France would achieve a satellite capability by the mid-1960s.

France achieved that capability on November 26, 1965, when the three-stage *Diamant-A* rocket successfully placed the A-1 satellite into orbit.<sup>10</sup> The A-1 satellite launch, dubbed *Astérix* by the French press after the popular comic book character, established France as the world's third spacepower and a leader among European nations in spaceflight capability development. France launched three more satellites atop *Diamant-A* rockets from Hamaguir, Algeria, before moving on to the more powerful *Diamant-B* rocket, which would be launched from France's new launch complex in Kourou, French Guiana.

France enjoyed international prestige with the success of the *Diamant-A* rocket program, the *Astérix* satellite, and the *Diapason* and *Diadème* satellites that followed. However, France's access to the Hamaguir launch facility in the Sahara Desert became tenuous due to the political situation in Algeria following the country's war for independence from France (1954-1962). Consequently, France sought to develop launch facilities on sovereign French soil to ensure its access to space. CNES considered 14 sites among French territorial possessions, former colonies, and the French mainland (i.e., France *Métropole*) suitable for a permanent launch facility. Safety concerns from the possibility of falling rocket debris eliminated sites in mainland France, while

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<sup>9</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 58.

<sup>10</sup> United Press International, "France Launches First Satellite," UPI Archives, November 26, 1965, <https://www.upi.com/Archives/1965/11/26/France-launches-first-satellite/7861511630886/>.

exposure to volatile tropical weather eliminated Guadeloupe, a French possession in the Caribbean, from consideration. CNES ultimately selected French Guiana as the site for France's permanent space launch facility for various practical, technical, and political reasons.<sup>11</sup>

In 1968, France launched the first rocket from French sovereign territory at a newly built facility near Kourou. A French Department on the eastern coast of South America near the equator, French Guiana, offered favorable launch conditions and enabled rockets to take advantage of Earth's rotational inertia to place heavier payloads into orbit. In 1970, the *centre spatiale Guyanais* (CSG, or Guiana space center) became the exclusive French and European space launch facility for scientific, commercial, and military payloads.

#### *French Role in European Space Cooperation*

Among Western European countries, France had the greatest ambitions for space. The country was partly motivated to achieve greater economies of scale but also to reduce Europe's reliance on the United States to launch satellites and prevent a "brain drain" of space-related technical talent to the United States. Although France achieved independent spaceflight in the 1960s, the country also collaborated with other European nations on space matters, including rocket and satellite development. France was also an early advocate for greater European cooperation on scientific and space matters.<sup>12</sup> While France focused on its national space program, it fostered the creation of European space organizations in the early 1960s. Thus, one must consider the broader European context in which France's space program flourished to understand how France became the leading European spacepower.

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<sup>11</sup> "Histoire du CSG," Centre Spatial Guyanais, August 20, 2019, <https://centrespatialguyanais.cnes.fr/fr/centre-spatial-guyanais/histoire-du-spatial-en-guyane>.

<sup>12</sup> Walter A. McDougall, *The Heavens and the Earth: A Political History of the Space Age* (New York, NY: Basic Books, 1985), 426.

France supported formal European space cooperation following the burst of international scientific cooperation during the international geophysical year (IGY), 1957-1958. With the advent of spaceflight, European leaders struggled to characterize Europe's role in the technological future, with the nations of the old-world continent relegated to second-tier status among nuclear-armed superpowers. Europe's ability to remain relevant and influential in global affairs, especially in former colonies, demanded that Europe muster the technical and scientific potential necessary to achieve independent spaceflight. For France, maintaining its traditional influence over Africa and Southeast Asia required various space-based capabilities, including communications, navigation, and meteorology.<sup>13</sup> European representatives attended intergovernmental conferences from 1959 to 1962 under the auspices of the European Preparatory Commission for Space Research (COPERS, or *Commission Préparatoire Européenne de Recherches Spatiales*), the first of which was held in Paris. The representatives at COPERS drafted the Convention for the European Space Research Organisation (ESRO), which became operational in 1964. Ten European states signed the ESRO Convention to participate in and fund satellite development, with France contributing 18.22% of the organization's eight-year budget.<sup>14</sup> Headquartered in Paris, ESRO oversaw European satellite and spacecraft development in the member states for exclusively peaceful and scientific purposes. However, ESRO's sister entity, the European Space Vehicle Launcher Development Organisation (ELDO), had its roots in Britain's defunct *Blue Streak* IRBM project (See Chapter 4).

ELDO emerged in 1962 from the same intergovernmental deliberations that resulted in ESRO. Europeans agreed to separate launcher development from satellite development housed in

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<sup>13</sup> Jacques Tassin, *Vers l'Europe Spatiale* (Paris: Denoel, 1970), 18.

<sup>14</sup> The ten ESRO members were: Belgium, Britain, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden and Switzerland. Harvey, *Europe's Space Programme: To Ariane and Beyond*, 40.

ESRO.<sup>15</sup> As the French experience with *Diamant* foretold, launcher development proved more technically challenging than satellite development and relied heavily on ballistic missile technologies developed by the military. ELDO developed the *Europa* rocket, a three-stage heavy launch vehicle that integrated a British first stage (based on *Blue Streak*), a French second stage, and a third stage built in Germany.<sup>16</sup> Chapters 3 and 4 offer a more detailed discussion of the origins of the German and British space programs, respectively.

However, it is important to note that France strongly favored a collaborative program to develop a European launch vehicle to reduce dependence on the U.S. and to access British rocket and guidance system technology. At the time, France struggled with its rocket program to operationalize the nascent *force de frappe*. The diplomatic compromise between Paris and London over launcher development cost-sharing under ELDO hinged on the French military obtaining British “rocket techniques ... relevant to the delivery of nuclear weapons and other purposes, [and] promising closer Anglo-French activity in the nuclear field.”<sup>17</sup> Yet, it took Charles de Gaulle and Harold Macmillan to achieve the diplomatic breakthrough that ushered Anglo-French collaboration toward a European launcher. The French President and British Prime Minister discussed the matter at length during their meeting in early 1961 that preceded Britain’s application to the European Economic Community (EEC).

De Gaulle hosted Macmillan at *Chateau de Rambouillet* for a private meeting to discuss the matter in January 1961. De Gaulle was motivated by the idea that Europe could become “the third spacepower” and personally committed France to support Britain’s concept for the *Europa*

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<sup>15</sup> J. Krige and A. Russo, *A History of the European Space Agency 1958-1987: The Story of ESRO and ELDO, 1958-1973*, vol. 1, 2 vols. (The Netherlands: ESA Publications Division, 2000), 81.

<sup>16</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 90.

<sup>17</sup> McDougall, *The Heavens and the Earth*, 7-9; Krige and Russo, *A History of the European Space Agency 1958-1987*, 90.

launcher based on *Blue Streak* and “against the advice of all the experts.”<sup>18</sup> Unstated at the meeting, of course, was de Gaulle’s interest in obtaining access to British rocket technologies built under license from the U.S., which would be useful for his ambitions for France as an independent nuclear and spacepower.<sup>19</sup> Military and economic independence underpinned de Gaulle’s vision of French *grandeur*, which, in the missile and space age, meant focused research on nuclear and rocket technologies despite American policies.<sup>20</sup> American nuclear nonproliferation policies precluded deeper cooperation with the French on rocket technologies because of their obvious military utility in the nuclear age. De Gaulle’s entreaties to Macmillan about Europe becoming a spacepower underscores the importance of the French President’s strategic outlook and perceptions in driving French national policy concerning space. Indeed, De Gaulle sought even deeper cooperation on strategic matters with Germany, France’s erstwhile adversary from the two World Wars.

The 1963 Elysée Treaty between France and Germany heralded both countries’ commitment to political reconciliation and European integration. It sparked an era of Franco-German collaboration on various political, economic, and strategic issues, including space, that continues today.<sup>21</sup> In 1966, the two countries pledged to pool resources and collaborate on a pair of communications satellites called SYMPHONIE 1 and 2, the first such joint endeavor under the terms of the Elysée Treaty.<sup>22</sup> The countries worked together under the *consortium industriel*

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<sup>18</sup> “Discussions with Other Governments on Use of ‘Blue Streak’ Missile in Connection With...,” 1961 1960, PREM 11/3513, The National Archives. See also Michelangelo De Maria and John Krige, “Early European Attempts in Launcher Technology: Original Sins in Eldo’s Sad Parable,” *History and Technology* 9, no. 1–4 (January 1, 1992): 109–37, <https://doi.org/10.1080/07341519208581820>.

<sup>19</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 91.

<sup>20</sup> McDougall, *The Heavens and the Earth*, 423.

<sup>21</sup> Ministère de l’Europe et des Affaires étrangères, “Elysée Treaty,” France Diplomacy - Ministry for Europe and Foreign Affairs, accessed July 27, 2021, <https://www.diplomatie.gouv.fr/en/country-files/germany/france-and-germany/elysee-treaty/>.

<sup>22</sup> Harvey, *Europe’s Space Programme: To Ariane and Beyond*, 160.

*France-Allemand pour Symphonie* (CIFAS, or the French-German industrial association for Symphonie) to produce the first European telecommunications satellites for geostationary orbit (GEO). CIFAS planned to use the newest ELDO launch vehicle, *Europa-II*, to place the satellites in orbit. However, ELDO (and ESRO) was chronically underfunded and suffered from bureaucratic disputes over the distribution of contracts among member states.<sup>23</sup> *Europa-II* design changes compounded delays, as every technical challenge of the international project had to be solved by an international committee. When *Europa-II* was finally ready, the rocket repeatedly failed during test launches. The catastrophe heralded the collapse of ELDO. Without a viable European launcher, CIFAS sought assistance from the United States and NASA, relegating the Europeans to a “second-fiddle position that the French especially despised.”<sup>24</sup> NASA launched both SYMPHONIE satellites from Cape Canaveral in 1974 and 1975.<sup>25</sup>

France and other European countries recognized the ill-conceived nature of the European space organizations, ELDO and ESRO. At the European Space Conference (ESC) ministerial in Brussels in December 1972, attending members resolved to form a single European Space Agency (ESA). ESA would integrate ESRO and ELDO functions, be responsible for launch vehicle and satellite development, and manage European cooperation with NASA.<sup>26</sup> Member states pledged to fund the centrally managed Agency and its long-term budget program, while France eagerly volunteered to host the headquarters in Paris.

The SYMPHONIE experience was a bitter lesson for France about the apparent American monopoly on space launch services and the absolute need for an independent

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<sup>23</sup> McDougall, *The Heavens and the Earth*, 427.

<sup>24</sup> McDougall, *The Heavens and the Earth*, 428.

<sup>25</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 160.

<sup>26</sup> “New Organisation Formed out of ELDO and ESRO, Its Aim and Projects,” December 20, 1972, ESC-130, Historical Archives of the European Union, <https://archives.eui.eu/en/fonds/137678?item=ESC-130>.

European launch system.<sup>27</sup> The French delegation lobbied the ESC to continue funding the development of an expendable European launch system to service Europe's growing need for commercial satellite services in GEO. To sweeten their proposal, the French committed to fund 60% of development costs, cover 100% of budget overruns, and manage the project through CNES.<sup>28</sup> At the time, the Americans were working on the post-Apollo space transport system (STS), commonly known as the space shuttle. Despite being an innovative space launch technology, STS was designed to service low-earth orbit (LEO) requirements and was less suitable for placing communications satellites in their high orbits. Initially open to collaboration with Europe on STS, the Richard M. Nixon administration's enthusiasm for European firms building major STS components in exchange for launch privileges declined as domestic considerations came to the fore in an election year.<sup>29</sup> Additionally, with the growth of the commercial satellite market, Europe's ability to use NASA launchers and satellites became increasingly conditional as NASA tended to favor American needs over European ones.<sup>30</sup> The French were thus insistent that Europe develop an independent launch capability.

Initially, the ESC resisted the French proposal for a new rocket due to recent experiences with *Europa-2* and high expected costs. The ESC debated the issue at the same December 1972 ministerial, where the ESC committed to forming a single space agency.<sup>31</sup> The cost was a major obstacle. Importantly, it took French President Georges Pompidou, the former Prime Minister under de Gaulle, to convince West German Chancellor Willi Brandt of the importance of a

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<sup>27</sup> See Chapter 4, this dissertation. Harvey, *Europe's Space Programme: To Ariane and Beyond*, 160.

<sup>28</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 158.

<sup>29</sup> Henry A. Kissinger, "282. Memorandum From the President's Assistant for National Security Affairs (Kissinger) to Secretary of State Rogers and the Administrator of the National Aeronautics and Space Administration (Fletcher)," June 1, 1972, Foreign Relations of the United States, 1969–1976, Volume E–1, Documents on Global Issues, 1969–1972 - Office of the Historian, <https://history.state.gov/historicaldocuments/frus1969-76ve01/d282>.

<sup>30</sup> [INTELSAT]; See also Tassin, *Vers l'Europe Spatiale*, 19.

<sup>31</sup> "New Organisation Formed out of ELDO and ESRO, Its Aim and Projects." See also Harvey, *Europe's Space Programme: To Ariane and Beyond*, 161.

European launcher and to join the French proposal.<sup>32</sup> France got its wish when Germany committed to funding 20% of the new launcher project; the ESC committed to developing a new *Europa-III* launch vehicle, L3S.<sup>33</sup> Pompidou was the second French President to personally throw his weight behind the European launcher project, further reinforcing the notion that leadership informed by a consistent strategic outlook drives national space policy. France's Defense Minister under Pompidou, Michel Debré, later revealed that France would have proceeded alone with a heavy space launch vehicle project.<sup>34</sup> Not developing LS3, and leaving spaceflight to the other world powers, was anathema for the French.

*Europa-III*, later dubbed *Ariane*, would be based on a new rocket design to place satellites in geosynchronous orbit and not on ballistic missile technology.<sup>35</sup> France provided the majority of funding for the *Ariane* project through CNES, even at the expense of other French space initiatives, and centrally managed by CNES at *Centre Spatiale de Toulouse* (CST, or Toulouse Space Center). While *Ariane* was decidedly a European engineering and manufacturing collaboration, the French state-owned aerospace manufacturer Aerospatiale served as the prime contractor for the rocket project.<sup>36</sup> The French project managers also had major influence over contracting decisions for *Ariane* component manufacture that would shape the European space industry for decades.<sup>37</sup>

On Christmas Eve, 1979, France successfully *launched Ariane* from CSG in Kourou, French Guiana, culminating nearly two decades of European efforts to develop an independent launch vehicle. Although ESA nominally operated the rocket program, *Ariane* was synonymous

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<sup>32</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 161.

<sup>33</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 161.

<sup>34</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 161.

<sup>35</sup> McDougall, *The Heavens and the Earth*, 428.

<sup>36</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 166.

<sup>37</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 166.

with the French space program. The rocket reflected French enthusiasm for a European launcher that could compete with the American space shuttle and the enduring presidential conviction that France would not remain dependent on other world powers to access space. Valéry Giscard d'Estaing, the third President of the Fifth Republic, embodied that conviction by personally pressing the launch button for *Ariane's* maiden flight.<sup>38</sup>

### *Evolution of the French Space Industry*

A few months after *Ariane's* first flight, France and ESA created a state-backed venture through CNES and CSG called Arianespace to market and manage launch and business operations for the world's first commercial space launch services provider.<sup>39</sup> The corporate entity was registered in France under French law, with major backing from the French government. France maintained control and influence over the nominally European space program with a nearly 60% stake in the company. France controlled its interest through CNES, which held a 32.45% share, and Aerospatiale, the French state-back prime contractor for the *Ariane* program, held a 27% share.<sup>40</sup> Other European aerospace and financial firms held the balance of company shares. *Arianespace* capitalized on the burgeoning commercial space industry to regularly underbid NASA's space shuttle for launch services and attract new customers, including INTELSAT, a regular user of American launch vehicles.<sup>41</sup> *Ariane's* success epitomizes the advanced technology and industrial capacity of European, but primarily French, aerospace industries.

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<sup>38</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 169.

<sup>39</sup> Scheffran, "Space Policy and Missile Control in Europe," 87.

<sup>40</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 170.

<sup>41</sup> Harry R. Marshall Jr., "U.S. Space Programs: Cooperation and Competition from Europe" (United States Department of State Bureau of Public Affairs, May 1985), No. 695, Current Policy.

*Ariane* became fully operational in January 1982. In the ensuing decades, the French prime contractor for *Ariane*, Aerospatiale, underwent several mergers with other European aerospace and defense firms, forming aerospace conglomerate European Aeronautic Defence and Space (EADS), which itself transformed into the European aerospace giant Airbus Group SE. The space systems segment split from the main entity and formed Airbus Defense and Space in 2014. *Ariane* operations management was subsumed under a new entity, ArianeGroup, of which Airbus Group is a 50% stakeholder. Safran, a French aerospace component manufacturer that produces rocket engines for *Ariane*, controls the other half of ArianeGroup. The litany of corporate restructuring among Europe's leading aerospace firms has muddled their national identities. Indeed, the major aerospace firms operating in Europe are multinational entities with business and manufacturing operations spread throughout the continent. However, ArianeGroup remains an expression of French aerospace industrial proficiency and interest that dates back to the early days of France's rocketry research and design programs in the 1950s.

With the advent of *Ariane-5* in the 1990s, the *Ariane* project became the world's most prolific and profitable commercial space launch operation. As of 2015, France accounts for 52.7% of production and operating costs, more than double Germany's contribution, the next highest of the thirteen ESA members involved with *Ariane-5*.<sup>42</sup> More importantly, French involvement in these ventures reflects an enduring strategic outlook to maintain national independence and autonomy from other world powers, especially the United States. France's strategic outlook manifests in space through competent and competitive advantage in spaceflight operations for commercial, scientific, and, increasingly, military purposes. As of 2020, France

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<sup>42</sup> Anna Clementina Veclani and Jean-Pierre Darnis, "European Space Launch Capabilities and Prospects," in *Handbook of Space Security*, ed. Kai-Uwe Schrogl et al. (New York: Springer Science and Business Media, 2015), 788.

has the third-largest space budget in the world after the United States and China. CNES's annual budget in 2020 was approximately €2.78 billion (~\$3.37 billion), which included France's €1.4 billion (~\$1.7 billion) contribution to ESA, the largest in Europe.<sup>43</sup>

### **Gaullism and the Tenets of French Strategic Outlook**

France has traditionally held a Gaullist view of its foreign and security policies and, more broadly, of its role in the world. Gaullism is synonymous with a distinctly French view of national security espoused by Général Charles de Gaulle, the French war hero turned founding President of the Fifth Republic in 1959. Gaullism here refers to de Gaulle's vision of France in a world dominated by nuclear-armed superpowers. The distinctive elements of this third era of Gaullism include a strong state to steward the national interest, the dogmatic belief in national independence and decision-making in security matters, and the rejection of subordination to the United States.<sup>44</sup> Scholars have debated Gaullism and its pursuit of French *grandeur* on the international stage.<sup>45</sup> Although this chapter is not a study of Gaullism, it would be impossible to understand the French strategic outlook without understanding de Gaulle's influence on France, its role in the world, and its relationship with the United States. It is thus important to understand the origins of Gaullism and its enduring legacy in French national security and foreign policy.

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<sup>43</sup> Jean-Yves Le Gall, "Un budget exceptionnel," CNES, March 6, 2020, <https://cnes.fr/fr/budget-exceptionnel>.

<sup>44</sup> The first Gaullist era refers to de Gaulle's opposition to the French Vichy government and to join the Allies in the fight against Nazi Germany during World War II. The second era refers to de Gaulle's political opposition to the French Fourth Republic, 1946-1958. The third era began with de Gaulle writing the Fifth Republic's Constitution and becoming its first president in 1959. See Serge Bernstein, "Gaullism," in *The Oxford Companion to Politics of the World*, ed. Joel Krieger (Oxford University Press, 2001), <http://www.oxfordreference.com/view/10.1093/acref/9780195117394.001.0001/acref-9780195117394-e-0272>; Philip H. Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy* (Princeton, New Jersey: Princeton University Press, 1993), 3; and Jean Lacouture, *De Gaulle: The Ruler 1945-1970*, trans. Alan Sheridan, 1st American ed (New York, NY: W.W. Norton and Company, 1991), 363.

<sup>45</sup> Stanley Hoffman and Jean Lacouture argue that Gaullism was means to inspire and revitalize a once proud nation that was humiliated in World War II and the post-colonial era. See Stanley Hoffmann, *Decline or Renewal? France since the 1930s* (New York, NY: Viking Press, 1974), and Lacouture, *De Gaulle: The Ruler 1945-1970*.

This section begins with a review of Charles de Gaulle’s strategic outlook as a point of departure to frame the country’s overarching grand strategic arc in successive years. I argue that French Presidents in the late Cold War, post-Cold War, and post-9/11 eras, including François Mitterrand, Jacques Chirac, and most recently, Emmanuel Macron, each shared a vision for France rooted in the Gaullist tradition of *grandeur* on the international stage.

In the following section, I show the strategic outlook of the first three Presidents of the Fifth Republic, Charles de Gaulle, Georges Pompidou, and Valerie Giscard d’Estaing, with a special emphasis on national autonomy in foreign and security policies and technological capabilities. Readers will recall that strategic outlook comprises prevailing leader beliefs about national security that guide elite behavior, and more specifically, about the country’s role in the world vis-à-vis the United States and Europe and threats. While French Presidents’ strategic outlook evolved in response to systemic shocks and adapted to changes in the structure of the international system, their overall vision for France and its role in the world remained largely consistent with the principles that drove de Gaulle’s foreign and security policies in the 1960s. The Gaullist legacy in France’s strategic outlook framed the development of the country’s space program and refracted systemic inputs at the presidential level to drive military space posture decisions in the late- and post-Cold War eras. However, my analysis is not an attempt to personify the strategic outlook of Charles de Gaulle or any other leader who followed. Instead, I build on existing scholarship demonstrating how Gaullism, in its various forms, “represents a crystallization of traditional French attitudes towards national security into a coherent, well-articulated and largely implemented doctrine” that shaped French security, military, and foreign policies for decades.<sup>46</sup>

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<sup>46</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 6.

*De Gaulle Asserts France's Role in the World*

The French experience in World War II left an indelible impression on Charles de Gaulle and others. The erstwhile military power and global empire had suffered a humiliating defeat at the hands of Nazi Germany. Following the Allied victory, de Gaulle championed French sovereignty and autonomy on the world stage.<sup>47</sup> For de Gaulle, the nation-state was the central feature of his worldview, emphasizing in 1960 that “[n]othing is more important than the legitimacy, the institutions and the functioning of the State.”<sup>48</sup> Thus, de Gaulle viewed threats to France's security and territorial sovereignty and the domestic capacity to maintain military and technological parity with the superpowers as the most important for France's defense and foreign policy. In the post-World War II bipolar world, the primary source of threat stemmed from the Soviet Union to the east and the prospect of general nuclear war.

In his memoirs, de Gaulle conceived of *une certaine idée de la France* (a certain idea of France), which describes the underlying principle that motivated de Gaulle and his successors to carve out a special place for France on the international stage. De Gaulle and his government ensured that France held important positions in the multinational political and security institutions that emerged following World War II – a permanent seat on the United Nations Security Council and the host of NATO's Supreme Headquarters (SHAPE).<sup>49</sup> However, France's contributions to European defense were minimal compared to other members. The French military was organized to fight counterinsurgency campaigns in Algeria and Indochina and not large-scale mechanized warfare on the plains of Europe.<sup>50</sup> Smoldering insurgencies drained

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<sup>47</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 9.

<sup>48</sup> Charles de Gaulle, speech to the Conseil d'Etat, February 1960. Cited in Edmond Pognon, *De Gaulle et l'histoire de France: trente ans éclairés par vingt siècles* (Paris: A. Michel, 1970), 252.

<sup>49</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 23.

<sup>50</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 27.

French money and manpower in a vain attempt to maintain European colonialism in a post-colonial world. France was preoccupied with preserving an image of global power while the core of European defense against a Soviet invasion became a NATO project with a sizeable American dimension. In other words, during the years of the Fourth Republic, France was a “missing pillar” in Western European defense.<sup>51</sup>

Once he became president in 1959, de Gaulle embarked on an ambitious journey to return power and prestige to France on the international stage. National independence would require France's technological, industrial, and economic capacity to chart its own geopolitical course on the international stage. The French public widely viewed technology, especially nuclear and rocket technology, as a means to atone for the humiliation of 1940. With France's successful nuclear test in 1960, and its first satellite launch in 1965, France could once again defend itself and its interests once and had reclaimed its rightful status as a world power.<sup>52</sup>

De Gaulle's rise to power, first as Prime Minister in 1958 and later as president, coincided with changes in the global balance of power and strategic context facing France. By 1959, the Soviet Union had achieved greater parity with the United States regarding its nuclear and ballistic missile arsenals, making Western Europe and NATO especially vulnerable to nuclear coercion by the Soviet Union. For de Gaulle, the notion that Europe (and France) would accept American leadership of Western European defense under NATO auspices in exchange for guaranteed American protection against nuclear blackmail no longer rang true.<sup>53</sup> De Gaulle believed feckless leadership during the Fourth Republic rendered France subservient to the

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<sup>51</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 24.

<sup>52</sup> Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity After World War II* (Cambridge, MA: The MIT Press, 1998), 209.

<sup>53</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 30.

United States for its defense, a condition de Gaulle found intolerable.<sup>54</sup> The principles of national independence and military autonomy for France that de Gaulle held so firmly were inconsistent with American hegemony and leadership of NATO.

Additionally, the proliferation of nuclear weapons and ballistic missiles meant that NATO could no longer guarantee the survival of Europe and France. The Soviet Union's capacity to wipe America off the map overcame its thirst for territorial conquest of Western Europe, even if the latter remained the nominal goal. The advent of SPUTNIK heralded the end of America's massive retaliation doctrine for the defense of Western Europe because the United States was no longer invulnerable to Soviet attack.<sup>55</sup> The resulting stalemate brought on by mutually assured destruction meant the superpowers could only conceivably employ nuclear weapons outside their territory, especially in Europe.

NATO required a serious overhaul, according to de Gaulle. His views were partly motivated by his belief that France was one of the indispensable world powers unjustly relegated outside the Anglo-American "core" of the Alliance and by De Gaulle's rejection of permanent security alignments under a hegemon like the United States. A central issue for de Gaulle was Alliance decision-making regarding the use of nuclear weapons.<sup>56</sup> Due to its lack of nuclear weapons, France was excluded from British and American strategic plans concerning their use. Nor could France weigh in on nuclear weapons use through NATO, which lacked strategic plans for nuclear war.<sup>57</sup> In September 1958, de Gaulle wrote to Dwight Eisenhower and Harold Macmillan to express his concerns that NATO no longer "meets the conditions of security of the

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<sup>54</sup> While de Gaulle disapproved of France being dependent on the U.S. for security, he still held the U.S. in high regard and praised Americans as allies, friends, and liberators. Lacouture, *De Gaulle: The Ruler 1945-1970*, 366.

<sup>55</sup> Michael M. Harrison, *The Reluctant Ally: France and Atlantic Security* (Baltimore, MD: Johns Hopkins University Press, 1981), 73.

<sup>56</sup> Timothy Andrews Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order* (Ithaca, NY: Cornell University Press, 2019), 45-47.

<sup>57</sup> Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 47.

free world and notably [France's] own.”<sup>58</sup> In both letters, de Gaulle enclosed a memorandum in which he proposed that a new tri-partite organization, consisting of the United States, Great Britain, and France, undertake “joint decisions” on global security issues and nuclear plans.<sup>59</sup> By suggesting that NATO was no longer suitable to address the world’s “political and strategic realities,” de Gaulle implied that France could not remain subordinate to the United States and Great Britain on security and political matters. The U.S. and Great Britain rejected de Gaulle’s proposals. Within months, he withdrew the French fleet in the Mediterranean from the NATO command structure, justifying the act by stating that “the defense of France must be in French hands.”<sup>60</sup> By 1966, the political rift in the Atlantic Alliance culminated with de Gaulle formally announcing that France would entirely withdraw from the NATO integrated command structure.<sup>61</sup>

In the meantime, France pressed ahead with its nuclear program. Although fully supported and prioritized by de Gaulle, the French nuclear program began under the Fourth Republic, driven in equal parts by national security concerns and prestige. Speaking at France’s *Ecole Militaire* in 1959, de Gaulle declared that France “must provide ourselves, over the next few years, with a force capable of acting on our own behalf, with what is commonly known as a ‘strike force,’ capable of being deployed at any moment and in any place. The basis of this force must obviously be atomic weapons.”<sup>62</sup> De Gaulle viewed the *force de frappe* as a tool of a

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<sup>58</sup> Charles de Gaulle, “Letter From President de Gaulle to President Eisenhower,” September 17, 1958, 45, Foreign Relations of the United States, 1958–1960, Western Europe, Volume VII, Part 2, <https://history.state.gov/historicaldocuments/frus1958-60v07p2/d45>. See also Charles de Gaulle, *Memoirs of Hope: Renewal, 1958-62; Endeavour, 1962-* (London: Weidenfeld and Nicolson, 1971), 201.

<sup>59</sup> de Gaulle, “Letter From President de Gaulle to President Eisenhower.” See also Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 51.

<sup>60</sup> de Gaulle, *Memoirs of Hope*, 204.

<sup>61</sup> The move mainly affected French military contributions to NATO. France would remain party to the Washington Treaty and a member of the North Atlantic Council. Lacouture, *De Gaulle: The Ruler 1945-1970*, 367. See also Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 75.

<sup>62</sup> The strike force is known as the *force de frappe*. de Gaulle, *Memoirs of Hope*, 204.

nation-state capable of defending its citizens, especially as de Gaulle sought to extricate France from the colonial imbroglio in Algeria that consumed the majority of the French military.<sup>63</sup> Whereas the British, who joined the nuclear club in 1952, received ample assistance from the United States in their nuclear program, France sought full autonomy in weapons development, including ballistic missiles.<sup>64</sup> Nuclear weapons, and the rockets to deliver them, would become the diplomatic instruments of French great power status and *grandeur*.<sup>65</sup> France exploded its first atomic weapon in Algeria in 1960, after which de Gaulle exalted, “hooray for France! Since this morning, she is stronger and prouder.”<sup>66</sup> France became the world’s fourth nuclear power, bringing it closer to equal footing among other powers.

The French desire for equal political footing was aimed at the United States in the Alliance context and the Soviet Union. In de Gaulle’s view, the exclusive dialogue between the nuclear superpowers reduced France and Europe to mere geopolitical pawns in a global struggle between the West and Communism.<sup>67</sup> However, the nuclear stalemate between the superpowers created a strategic dilemma that greatly reduced their diplomatic and military effectiveness.<sup>68</sup> France could thus pursue its own diplomatic and strategic course among the superpowers, distancing itself from the United States and seeking a rapprochement with the Soviet Union. Remarking on this “third way” in his memoirs, de Gaulle explained that his aim was “to establish

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<sup>63</sup> Kennedy, *The Rise and Fall of the Great Powers*, 401; Edward A. Kolodziej, *French International Policy Under De Gaulle and Pompidou: The Politics of Grandeur* (Ithaca, NY: Cornell University Press, 1974), 96-97.

<sup>64</sup> The British scuttled their ballistic missile programs *Skybolt* and *Blue Streak* in favor of the American *Polaris* missile. See Chapter 4 of this dissertation. Charles de Gaulle, “Press Conference by President de Gaulle, Paris, 14 January 1963” (WEU, Political Union of Europe, 1964), Archive of European Integration, <http://aei.pitt.edu/5777/>; Seth A. Johnston, *How NATO Adapts: Strategy and Organization in the Atlantic Alliance since 1950* (Baltimore, MD: Johns Hopkins University Press, 2017), 94; Paul M. Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York, NY: Vintage Books, 1987), 401.

<sup>65</sup> Kennedy, *The Rise and Fall of the Great Powers*, 401.

<sup>66</sup> Kennedy, *The Rise and Fall of the Great Powers*, 401.

<sup>67</sup> Lacouture, *De Gaulle: The Ruler 1945-1970*, 367.

<sup>68</sup> Kolodziej, *French International Policy Under De Gaulle and Pompidou*, 97.

relations with each of the States of the Eastern bloc, first and foremost Russia, with the object of bringing about a détente followed by understanding and cooperation.”<sup>69</sup> France’s approach to geopolitics, in other words, reflected de Gaulle’s vision for an ideal world order that differed from the bipolar order dominated by the U.S. and the Soviet Union. De Gaulle believed that a multipolar world, where regional powers would have greater diplomatic freedom, was more stable than a bipolar one.<sup>70</sup> Yet de Gaulle held no illusions that France could muster the economic capacity and material wealth to equal the superpowers and become a third great power. Only Europe could.<sup>71</sup>

### *France and European Integration*

France (and Western Europe) was weakened after World War II and relegated to the second tier of nations in a world of superpowers. French visions of *grandeur* stood in sharp contrast with the economic and infrastructural realities of a continent ravaged by war. A growing sense in Western European capitals following the war was that political and security integration was the only means for the former great powers to maintain their security and relevance on the world stage. De Gaulle, however, viewed the European Community as an extension of France.<sup>72</sup> De Gaulle was skeptical of a politically integrated and supranational Western Europe as conceived by Jean Monnet. But de Gaulle recognized that political integration through economic collaboration was the only way for Europe to emancipate itself from American hegemony.<sup>73</sup> For de Gaulle, only a “concert of European states,” resulting from a “systemic *rapprochement*,”

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<sup>69</sup> de Gaulle, *Memoirs of Hope*, 202.

<sup>70</sup> Stanley Hoffmann, *Decline or Renewal? France since the 1930s* (New York, NY: Viking Press, 1974), 285.

<sup>71</sup> Stanley Hoffmann, *Decline or Renewal? France since the 1930s* (New York, NY: Viking Press, 1974), 286.

<sup>72</sup> Kolodziej, *French International Policy Under De Gaulle and Pompidou*, 428.

<sup>73</sup> Stanley Hoffmann, *Decline or Renewal? France since the 1930s* (New York, NY: Viking Press, 1974), 289.

could harness rapidly advancing trade, science, technology, and communications to prevent Europe from remaining subordinate to the United States.<sup>74</sup>

Ever the pragmatist, de Gaulle understood the economic imperatives that led to the creation of the European Economic Community and the common market. Specifically, de Gaulle envisioned ensembles of European states with solvent economies, expanded industrial capacities, and advanced technologies that could cooperate on political and economic matters to restore global equilibrium and Europe to a central position among the world's powers. Six continental European states (Belgium, Germany, France, Italy, Luxembourg, and the Netherlands) signed the Treaty of Rome in 1957, establishing the EEC, the first step toward eventual European disentanglement from the Atlantic system and American domination. Noticeably absent from the EEC, however, was Great Britain, whose "special relationship" with the United States and extensive defense (including nuclear) and monetary collaboration were inconsistent with France's interests.<sup>75</sup>

On the other hand, French reconciliation with Germany was vital for deepening European integration and cooperation. In 1960, de Gaulle met with German Chancellor Konrad Adenauer to propose a strong union of states called *Europe des parties*.<sup>76</sup> France sought to partner with Germany to maintain influence in the various European communities, which de Gaulle viewed as increasingly supranational. The French and German leaders agreed to negotiate a formal treaty to signify their reconciliation. In contrast, a European delegation led by the French ambassador to Denmark, Christian Fouchet, would negotiate a plan for the political union of Europe. The Fouchet Plan ultimately failed, partly due to Germany's objections to the marginalized role of

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<sup>74</sup> de Gaulle, *Memoirs of Hope*, 171.

<sup>75</sup> Kolodziej, *French International Policy Under De Gaulle and Pompidou*, 237.

<sup>76</sup> Lacouture, *De Gaulle: The Ruler 1945-1970*, 338.

NATO and the United States in European security.<sup>77</sup> But de Gaulle and Adenauer strengthened the Franco-German relationship with the Elysée Treaty in 1963. The *rapprochement* between the two continental powers, among other political developments, caused Great Britain to reconsider its opposition to the EEC.

In 1961, Harold Macmillan suggested to his French counterpart that Great Britain was interested in joining the EEC. De Gaulle was pessimistic about the sudden policy reversal in London. To him, the British were merely interested in sabotaging the budding European Community from within, acting as little more than a Trojan Horse on behalf of the Americans. In his memoirs, de Gaulle summarized his thoughts that the British, “having failed from without to prevent the birth of the Community, they now planned to paralyze it from within.”<sup>78</sup> De Gaulle and Macmillan met several times to discuss Britain’s prospective entry into the Community. Among the issues that infuriated de Gaulle was the perceived alienation of France by the Anglo-American partnership on nuclear matters. Specifically, the United States agreed to furnish Great Britain with *Polaris* missiles and allowed the British to use the ballistic missiles independent of American or NATO oversight.<sup>79</sup> In 1963, de Gaulle effectively vetoed the British petition to join the EEC. Speaking in Paris, de Gaulle cited a variety of concerns about the incompatibility of the British economy with the continental Common Market, including its dependence on the United States. The Anglo-American relationship, de Gaulle feared, would turn the EEC into “a colossal Atlantic community under American dependence and direction,” adding “that is not at all what France is doing or wanted to do, which is a strictly European construction.”<sup>80</sup> Britain’s failed bid

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<sup>77</sup> Lacouture, *De Gaulle: The Ruler 1945-1970*, 348-349.

<sup>78</sup> de Gaulle, *Memoirs of Hope*, 188.

<sup>79</sup> The British had been developing the *Skybolt* and *Blue Streak* rockets but chose to use the superior *Polaris* missile as a cost-savings measure. *Blue Streak* would later be used as the basis for a European space launch vehicle called *Europa*. See also Lacouture, *De Gaulle: The Ruler 1945-1970*, 357.

<sup>80</sup> de Gaulle, “Press Conference by President de Gaulle, Paris, 14 January 1963.”

to join the EEC proved fatal for Macmillan, who was ousted from Downing Street after his party suffered an electoral defeat at the hands of the Labour Party. Harold Wilson, the new Prime Minister, sought to rekindle British prospects of joining the EEC to strengthen Anglo-French collaboration. Despite the number of agreements to cooperate on industrial projects, including the Concorde supersonic passenger aircraft and the Jaguar fighter aircraft, de Gaulle was not convinced. Great Britain was not “mature enough” to join the Community, and in 1967 the French Presidents vetoed Harold Wilson’s effort to join the EEC.<sup>81</sup> Great Britain would finally accede to the EEC in 1973, only after de Gaulle resigned from the French presidency.

As President, de Gaulle pursued France’s *grandeur* to transform the bipolar international system of bloc politics into a more equitable and stable multipolar world. In 1969, de Gaulle promoted a constitutional referendum in France that would have decentralized the government and reformed the Senate, effectively granting greater power to newly formed *régions* in France *Métropole* and *Outre-Mer*. The referendum failed, and de Gaulle resigned on April 28, 1969. The de Gaulle era had ended.<sup>82</sup> The Cold War did not end, tempering de Gaulle’s ambitions for France and the world during the following decades. But notions of French *grandeur* endured and evolved. The next section will briefly review the French strategic outlook during the presidencies of Georges Pompidou and Valérie Giscard d’Estaing.

### *Strategic Outlook after de Gaulle*

Georges Pompidou, who served as Prime Minister under de Gaulle, became the second President of the Fifth Republic following the General’s resignation in 1969. Pompidou had the unenviable task of replacing de Gaulle and taking over the unfinished tasks of French *grandeur*.

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<sup>81</sup> Lacouture, *De Gaulle: The Ruler 1945-1970*, 360.

<sup>82</sup> Kolodziej, *French International Policy Under De Gaulle and Pompidou*, 583.

Much of de Gaulle's vision for France and the world remained unfulfilled. The Soviet invasion of Czechoslovakia in 1968 reminded Europeans that the Soviet threat of conquest remained as real as ever and that the Cold War did not end after the Cuban Missile Crisis, as de Gaulle believed. Meanwhile, America's deepening involvement in Vietnam raised concerns in Europe about American expansionism and long-term U.S. military posture commitments to the defense of Western Europe. Turmoil in international politics compounded Pompidou's domestic challenges as the French economy suffered from the 1973 oil crisis.<sup>83</sup> While de Gaulle subordinated domestic politics to pursuing French power and prestige internationally, Pompidou prioritized domestic issues during his five years in office. Nevertheless, Pompidou's foreign and security policies reflect an evolved vision of French national independence and autonomy, tempered by the political and economic realities of the time.

Georges Pompidou shared de Gaulle's view that Europe and the EEC were the means through which France could extend its influence abroad more effectively. However, Pompidou recognized that France had limited means to achieve de Gaulle's vision of a fully independent and autonomous France and Europe. Under Pompidou, France expanded its international alignments and lifted the nominal veto on British entry into the EEC. Pompidou remarked on the pending referendum to expand the Community, "France cannot maintain and increase its role in the world except by uniting with other European nations, including England."<sup>84</sup> Pompidou dropped the condition that Britain must relax its trans-Atlantic security ties. In doing so, Pompidou openly acknowledged the importance of American security guarantees to Europe,

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<sup>83</sup> The 1973 oil crisis ended a thirty-year period of economic growth and prosperity in France following World War II known as the *trente glorieuse* ("the glorious thirty").

<sup>84</sup> "M. Pompidou a soulevé sans le résoudre le problème du " vote blanc " Le chef de l'État demande un "oui massif ",<sup>84</sup> *Le Monde.fr*, April 13, 1972.

including France.<sup>85</sup> Pompidou also sharply reduced French criticisms of the United States and its hegemony over Europe. American policies toward Europe, exemplified by the Nixon doctrine, which emphasized more burden sharing with allies for defense, heightened anxieties in France and Europe about U.S. security guarantees to European defense.<sup>86</sup> Welcoming Britain to the EEC could also extend the “special relationship” with the Community.

Pompidou’s support for EEC enlargement to include Britain reflected a shift in strategy for France, but the overall strategic outlook and attendant vision for France in the world remained consistent with de Gaulle’s. Like his predecessor, Pompidou saw Europe as a means for achieving French national interests. He reluctantly supported the 1972 referendum as a necessary step to further the national interest and not as an enthusiastic endorsement of the supranational authority of the European Parliament. Indeed, the principle of national independence so dear to de Gaulle continued to inspire the defense, technological, and scientific developments vital to France’s *force de frappe* and France’s space program, however more modestly.<sup>87</sup> Michel Debré, Pompidou’s defense minister, stated that France’s nuclear capability “enables France to assert an independent policy in Europe in the service of collective security.”<sup>88</sup> Thus, France’s defense doctrine under Pompidou continued to underscore the elements of Gaullist national primacy, even as it expressed growing French interests in the defense of Europe.<sup>89</sup>

Published in 1972, the defense ministry’s *Livre blanc sur la défense nationale* (white paper on national defense) was the first official statement of French national defense policy since

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<sup>85</sup> Kolodziej, *French International Policy Under De Gaulle and Pompidou*, 421.

<sup>86</sup> Kolodziej, *French International Policy Under De Gaulle and Pompidou*, 396.

<sup>87</sup> Hoffmann, *Decline or Renewal?* 321.

<sup>88</sup> Michel Debré, “France’s Global Strategy,” *Foreign Affairs* 49, no. 3 (April 1971): 406.

<sup>89</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 70-71.

the advent of the Fifth Republic. The white paper described the logic of the “Gaullist doctrine” on national interests, nuclear strategy, and the defense of Europe, with all the inherent tensions and contradictions.<sup>90</sup> Statements espousing Gaullist traditions, such as French strength and independence, are repeated throughout the white paper, especially the “exclusively national and essentially defense nature” of France’s nuclear deterrent.<sup>91</sup> However, for the first time, the authors also defined vital interests as situated on national territory and the surrounding areas, including Europe. Regarding Europe, it would be “illusory to claim to ensure the security of our territory without taking an interest in the realities that surround it,” and France’s “geographic and strategic situation on the edge of Europe is such that [France] is necessarily party to the continental situation.”<sup>92</sup> The tensions in French doctrine under Pompidou did not contradict France’s strategic outlook nor call into question whether France would participate in the defense of Western Europe. Instead, French doctrine codified in the *Livre blanc* created a dilemma about an expanding French role in European defense that complicated the nation’s view of its role on the international stage.<sup>93</sup>

Pompidou’s successor, Valérie Giscard d’Estaing, served as President of the Fifth Republic from 1974 to 1981. Widely considered a “post-Gaullist” politician, Giscard adapted French national security policy to the changing balance of power in the international system of the 1970s. However, post-Gaullism refers not to a revision in French defense policy or strategic outlook but to changes in the international system and domestic political situations facing Giscard when he took office. Giscard’s predecessors believed that French *grandeur* meant equal

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<sup>90</sup> Ministère de la Défense, “Livre Blanc sur la Défense Nationale: Tome 1” (CEDOCAR Imprimerie, Juin 1972); Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 71.

<sup>91</sup> Ministère de la Défense, “Livre Blanc sur la Défense Nationale,” 9.

<sup>92</sup> Ministère de la Défense, “Livre Blanc sur la Défense Nationale,” 6.

<sup>93</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 78.

political footing with the U.S. and Soviet Union. However, Giscard conceded that France was a “regional power” but affirmed his ambitions that France should lead other regional powers, especially in Europe.<sup>94</sup> France not only faced a growing realization that Europe would have to shoulder a greater burden for its defense due to policy differences with the United States, but domestic economic crises severely constrained France’s ability to resource national defense priorities.<sup>95</sup> Additionally, Giscard was not a traditional Gaullist politician. Although he supported de Gaulle and his policies as a centrist and held several cabinet positions under the general and Pompidou, Giscard was a generation younger than his predecessors and fundamentally a different kind of politician.<sup>96</sup>

Despite these differences, changes in the international context during Giscard’s presidency from 1974-1981 reflect a transitional period between the Gaullist era, where France pursued its own way, to a post-Gaullist future where France held a primary role in an integrated Europe. America’s policy of détente towards the Soviet Union, which resulted in the signing of the SALT I treaty between the superpowers in 1972, and later SALT II in 1979, undermined the confidence of U.S. security guarantees to Europe.<sup>97</sup> France thus began to adapt its military to assume a greater role in the defense of Western Europe. Giscard oversaw the modernization of the French military and its doctrine around an operational nuclear deterrent and an Army relieved of its colonial obligations. Indeed, France’s military budgets increased nearly 16% during the

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<sup>94</sup> Jerome Lespinois, “Emploi de la force aerienne : Tchad 1969-1987,” *Penser les Ailes Francaises*, no. 6 (Juin 2005): 69.

<sup>95</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 81.

<sup>96</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 82.

<sup>97</sup> Though European leaders publicly supported U.S.-Soviet arms talks and agreed with the principle of nuclear arms control at the strategic level, European leaders were apprehensive that U.S.-Soviet stability might in fact jeopardize Western European security interests. Limiting strategic nuclear weapons, but not intermediate-range weapons that could reach Europe, might decouple the U.S. nuclear arsenal from Europe. Robert L. Pfaltzgraff, “Western Europe and the SALT II Treaty: An American View,” *The Fletcher Forum* 4, no. 1 (1980): 100.

first four years of Giscard's presidency, with the continued development of the *force de frappe* as the "absolute priority."<sup>98</sup>

Also, Giscard upheld French independence of decision on strategic matters, including nuclear planning and use, as well as primacy in science and technology, especially France's space program. Consequently, Giscard managed foreign and defense policy by pursuing a greater role for France in European security affairs while upholding Gaullist principles of national autonomy. Even if Giscard was more pragmatic and measured about the extent of France's *grandeur*, he was able to shepherd the country through the economically tumultuous 1970s into the 1980s. During this time, a revitalized France assumed a leading role in European defense through the end of the Cold War and beyond under the Socialist President of the Fifth Republic, François Mitterrand.

The preceding section reviewed the foreign and defense policies of the first three Presidents of the French Fifth Republic: Charles de Gaulle, Georges Pompidou, and Valérie Giscard d'Estaing. These men steered France through the bipolar international system dominated by the United States and the Soviet Union. They based their foreign policy decisions on a consistent strategic outlook rooted in the Gaullist principles of sovereignty, national independence, and strategic autonomy.<sup>99</sup> The Gaullist legacy in French strategic outlook reflects dominant and consistent views among French Presidents. Those views include a weariness of American hegemony in European affairs; autonomy of decision and action involving the use of nuclear weapons; the ability to conduct independent military operations in a technologically advancing world; and the growing perception that Europe must integrate its foreign and security

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<sup>98</sup> "SIPRI Military Expenditure Database;" Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 91.

<sup>99</sup> Bastien Irondelle, "European Foreign Policy: The End of French Europe?," *Journal of European Integration* 30, no. 1 (March 1, 2008): 155.

policies and capabilities to avoid subjugation by the superpowers. Despite changing international contexts from 1959-1981, the country's strategic outlook, as held by the Presidents of the Fifth Republic, remained consistent across these dimensions. The rest of this chapter examines four case studies surrounding the development of the French military space program in the context of the late Cold War and post-Cold War periods.

### **SAMRO: A First Attempt at an Autonomous Military Observation Satellite**

#### *The Nuclear Deterrence Context*

Interest in France for a dedicated military satellite program began in the late 1960s following France's withdrawal from the NATO integrated command structure in 1966. Although reliant on the United States, the French military and intelligence community faced more difficulty than their British counterparts in requesting and receiving satellite-derived intelligence products and analysis. What is more, the French had no real way to verify the authenticity of the intelligence; images provided by the Americans had to be taken at face value. However, France was limited in the resources it could devote to rebuilding its military. Charles de Gaulle's defense budgetary priority was acquiring delivery systems and platforms for the *force de frappe*, later known as the *force de dissuasion* (deterrence force). In other words, France needed a nuclear triad to ensure a second-strike retaliatory capability as the core of its nuclear deterrence strategy.

Nevertheless, military officials expressed simmering interest in exploiting space for France's security needs, especially after France succeeded with its first satellite in 1965. As early as 1973, the French *chef d'état-major des armées* (CEMA, or chief of staff of the armed forces) Air Force General François Maurin expressed interest in acquiring a satellite reconnaissance

capability exclusively for military purposes. According to one former French Air Force officer, General Maurin was likely influenced by the launch of the American observation satellite LANDSAT in 1972.<sup>100</sup> However, the military viewed dedicated reconnaissance satellite systems as a necessary extension of the nuclear deterrent, but one that would come at the expense of the conventional military trying to modernize its forces and equipment to adapt to increasing requirements for European defense. The conventional forces, still organized for colonial operations, had to compete for the remainder of the meager defense budgets to reorient for post-colonial purposes. Yet by 1976, France had achieved a robust nuclear triad capable of around-the-clock deterrence operations. The deterrence force consisted of 18 silo-based S2 ballistic missiles and short-range *Pluton* missiles; four *Redoutable*-class nuclear submarines carrying 16 M20 submarine-launched ballistic missiles (SLBM) each; and 34 nuclear-capable Mirage IV A strategic bombers.<sup>101</sup>

With a complete nuclear deterrent to assure French security and strategic autonomy, the military could set its sights on acquiring new capabilities to meet modern defense needs. The army, air force, and navy chiefs each had their own acquisition goals to modernize France's conventional forces according to their needs. Specifically, the navy sought a nuclear-powered aircraft carrier; the army was after a new main battle tank that could compete with the Soviet T-72, and the air force wanted new fighter aircraft.<sup>102</sup> The military brass lacked enthusiasm for an expensive satellite project for which they did not see much utility to support conventional tactical

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<sup>100</sup> “The interest and opposition of the French military in satellite reconnaissance for France: a talk with a general officer of the French forces,” interview by Sebastien Matte la Faveur and French Military Officer, March 2005, <https://forum.nasaspacesflight.com/index.php?action=dlattach;topic=41627.0;attach=1388627>.

<sup>101</sup> The four nuclear submarines operational as of 1976 included *Le Redoutable*, *Le Terrible*, *Le Foudroyant*, and *L'Indomptable*. See Robbin F. Laird, *France, the Soviet Union, and the Nuclear Weapons Issue* (Boulder, CO: Westview Press, 1985), 45-49.

<sup>102</sup> The navy would get its aircraft carrier, the *Charles de Gaulle*, in 2001; the army got its Le Clerc MBTs; the air force acquired Dassault Rafale multi-role combat aircraft. “The interest and opposition of the French military in satellite reconnaissance for France.”

operations, especially in the zero-sum game of defense budget bureaucracy. Reconnaissance satellites were essentially an extension of the nuclear deterrent. Additionally, French security experts generally accepted that any potential strategic attack against France would emanate from the Soviet Union, obviating the need for a space-based reconnaissance system designed to detect ICBM launch locations. The military felt that conventional intelligence sources could pinpoint relevant Soviet surface-to-air (SAM) defense and possible anti-ballistic missile (ABM) systems for strategic planning purposes.<sup>103</sup>

Nevertheless, proponents of the satellite reconnaissance system argued that France could not have true independence of decision without access to its modern intelligence sources. The French intelligence community coordinated with the nuclear forces division of the *état-major des armées* to argue that independence of decision was the fundamental element of the principle of national independence held so dear by de Gaulle and his successors.<sup>104</sup> Independence of decision requires access to timely and accurate information. The conventional intelligence sources, which the military felt were sufficient for nuclear deterrence missions, could not provide real-time updates on Soviet strategic systems; only a space system could do that. Despite its quest for international prestige and global status, France depended on the United States for satellite-based technical intelligence, which France could not request or access easily since its departure from the NATO integrated command structure in 1966.<sup>105</sup> While the United States would support France's intelligence requirements in a general confrontation against the Soviet Union, France's desire to achieve modern power status and pursue its own foreign and security policies required an independent satellite reconnaissance system. After all, France had other security interests

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<sup>103</sup> "The interest and opposition of the French military in satellite reconnaissance for France."

<sup>104</sup> "The interest and opposition of the French military in satellite reconnaissance for France."

<sup>105</sup> A. McLean and A. Swankie, "Helios 2—Myth or Reality?," *Space Policy* 14, no. 2 (May 1998): 108, [https://doi.org/10.1016/S0265-9646\(98\)00008-3](https://doi.org/10.1016/S0265-9646(98)00008-3).

around the world, including in Africa and the far east, for which a national satellite reconnaissance capability would be very useful. In contrast, the nuclear deterrent was mainly oriented toward the Soviet Union. Both arguments held merit, and the defense ministry raised the matter with the President, Valéry Giscard d'Estaing.

### *Valéry Giscard d'Estaing Initiates SAMRO*

Valéry Giscard d'Estaing strongly supported France's aspirations in space and agreed with the intelligence and nuclear forces communities that France should pursue a satellite reconnaissance capability. Under Giscard's direction, the defense ministry's acquisition arm, the *direction générale d'armement* (DGA), in collaboration with CNES, undertook a pilot project to investigate the military potential of satellite-based observation capability for military purposes. The project was called the *SATellite Militaire de Reconnaissance Optique*, or SAMRO.<sup>106</sup> CNES was a natural partner for DGA because it had already begun researching and developing a civilian optical satellite that would become the SPOT-1 satellite.<sup>107</sup> Moreover, in 1976, the research project was included in the military program law for 1977-1982 or *4e Loi de Programmation Militaire*. According to the LPM 1977-1982, the purpose of the sustained research effort on military satellites was to facilitate "operational innovations in essential areas which underpin the effectiveness of [the armed] force: precision and firepower, tactical mobility, collection and rapid use of large amounts of information." Citing the need for France to keep

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<sup>106</sup> Jérôme Paolini, "Politique spatiale militaire française et coopération européenne," *Politique étrangère* 52, no. 2 (1987): 440, <https://doi.org/10.3406/polit.1987.3678>.

<sup>107</sup> France proposed SPOT to ESA as a European project, seeking funding from other ESA members. However, there was limited interest in the project, and CNES ultimately pursued SPOT as a national project. Harvey, *Europe's Space Programme: To Ariane and Beyond*, 71.

pace with ongoing technological developments, the LPM 1977-1982 was the first defense budget to devote resources to investigate the military utility of space systems.<sup>108</sup>

Despite an apparent presidential endorsement, SAMRO faced bureaucratic opposition from the army, air force, and navy. Entrenched parochial interests of the three services ultimately doomed the project. Four reasons stand out for SAMRO's failure. First, SAMRO was too closely associated with the nuclear deterrent mission. Based on France's counter-value deterrence strategy, in which France would target an attacker's cities in a nuclear retaliatory strike, military officials did not see the value of a satellite-based reconnaissance system for targeting purposes.<sup>109</sup> Second, an early warning system in orbit would require an entire constellation of SAMRO satellites, for which the LMP 1977-1982 had not accounted. Subsequent program evaluation by the defense ministry's *centre de prospective et d'évaluations* (CPE) found that a two-satellite SAMRO constellation would cost the French government over 5 billion francs in the first five years of operation, far exceeding the initial investments.<sup>110</sup> The opportunity costs for the conventional forces were also high, with up to 200 fighter aircraft for the air force and four times the cost of a nuclear aircraft carrier that the navy wanted.<sup>111</sup> Third, SAMRO's advertised capability was simply unusable for the conventional military and was thus an unwarranted expense in a time of tighter budgets.<sup>112</sup> The army, which had expressed some interest in satellite reconnaissance capabilities, required a multi-spectral platform with a resolution of less than 1 meter that commanders on the ground could task at will. SAMRO could only render images at 10-meter resolution, requiring a completely new design to meet the army's needs. The armed

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<sup>108</sup> Senat de la République Française, Loi n° 76-531 Du 19 Juin 1976 Portant Approbation de la Programmation Militaire Pour Les Années 1977-1982 (sous Certaines Réserves), 3705.

<sup>109</sup> François Heisbourg and Xavier Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération* (Paris: Choiseul Éditions, 2011), 38.

<sup>110</sup> "The interest and opposition of the French military in satellite reconnaissance for France."

<sup>111</sup> "The interest and opposition of the French military in satellite reconnaissance for France."

<sup>112</sup> Xavier Pasco, Interview with Dr. Xavier Pasco, interview by Frank Kuzminski, Zoom, May 13, 2022.

forces quickly lost interest. One senior army logistician working in the Ministry of Defense rendered his unfavorable opinion of the project and regarded the SAMRO proposal as “just another expensive gadget” (« *Avis défavorable: encore un gadget couteux* »).<sup>113</sup>

Finally, SAMRO was simply not a priority for Valéry Giscard d’Estaing when weighed against competing efforts. Although Giscard’s administration was the first to enshrine military space systems in the defense budget law, in terms of space priorities, Giscard’s focus was on finally getting a European launch vehicle off the ground with the Ariane rocket. The commercial potential of space made an independent launch capability the top national priority for France’s space interests. In other words, independent space access was more important to Giscard’s strategic outlook of national independence and autonomy of action than a single satellite with mediocre resolution. SAMRO could not deliver any meaningful capability for France, whose nuclear deterrent strategy was still based on counter-value targeting of cities in the Soviet Union, obviating the need for precision imagery to support targeting.<sup>114</sup>

Additionally, the military favored expanding France’s satellite communications capability by acquiring SYRACUSE satellites, which had a proven performance record based on the Franco-German SYMPHONIE project.<sup>115</sup> Thus, despite steady growth in defense spending during Giscard’s presidency, SAMRO was too expensive for its capability and a budgetary bridge too far. The project was eventually scrapped in 1982 after François Mitterrand became President.<sup>116</sup> In the meantime, CNES had begun working on a commercial observation satellite

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<sup>113</sup> Quoted in “The interest and opposition of the French military in satellite reconnaissance for France.”

<sup>114</sup> “La France suspend le projet de satellite militaire de reconnaissance,” *Le Monde*, Septembre 11, 1982, [https://www.lemonde.fr/archives/article/1982/09/11/la-france-suspend-le-projet-de-satellite-militaire-de-reconnaissance\\_2894267\\_1819218.html](https://www.lemonde.fr/archives/article/1982/09/11/la-france-suspend-le-projet-de-satellite-militaire-de-reconnaissance_2894267_1819218.html).

<sup>115</sup> See Chapter 4 of this dissertation for a discussion on German participation in the SYMPHONIE program.

<sup>116</sup> “La France suspend le projet de satellite militaire de reconnaissance.”

program called SPOT (*satellite probatoire d'observation de terre*) that shared much of the research and development work done for SAMRO.<sup>117</sup>

### *Enter the Socialists and François Mitterrand*

François Mitterrand became the fourth President of the French Fifth Republic in 1981 and the first from the Socialist Party. As a Socialist, Mitterrand opposed de Gaulle in the 1965 election and narrowly lost to Valéry Giscard d'Estaing in 1974. However, a champion of progressive domestic policies, Mitterrand's strategic outlook was a continuity of the evolved Gaullism advanced by his predecessor. Mitterrand firmly subscribed to the Gaullist principles of national independence underpinned by a credible nuclear deterrent force, which formed the core of his strategic outlook for France to be the world's third power and a foil to the superpower blocs. For Mitterrand's *Parti Socialiste*, Europe was vulnerable to superpower coercion and would become the inevitable battleground for global confrontation between East and West.<sup>118</sup> Only France, with its independent nuclear force, could deter such coercion and rally Europe through deeper foreign and security policy integration. As early as 1972, Mitterrand wrote, "who could believe that France alone can recover her world position without the means of power?"<sup>119</sup> France's global status was thus an important element of Mitterrand's strategic outlook, even before he assumed the presidency.

As Mitterrand prepared to run for the third time against Giscard, the Socialist Party was formulating its policy platforms and courting the support of the vocal French Communist Party. In foreign and defense policies, the Communists vehemently opposed Giscard's perceived

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<sup>117</sup> A. McLean and A. Swankie, "Helios 2—Myth or Reality?," *Space Policy* 14, no. 2 (May 1998): 108.

<sup>118</sup> Jolyon Howorth, "Defence and the Mitterrand Government," in *Defence and Dissent in Contemporary France*, ed. Jolyon Howorth and Patricia Chilton (Beckenham, Kent: Croom Helm Ltd, 1984), 96.

<sup>119</sup> *Changer la vie: programme de gouvernement du Parti socialiste*, Parti Socialiste (Flammarion, 1972).

realignment with NATO (a position shared by staunch Gaullists on the right). Giscard's efforts to modernize and integrate France's conventional forces into European defense plans without explicitly rejoining the NATO integrated command structure were costly and unrealistic. The Communists advocated for a more absolutist foreign and security policy agenda, especially regarding nuclear deterrence and relations with NATO and the United States. Specifically, the Communists pushed the more mainstream Socialists to rebalance their antagonism toward the Soviet Union. At the time, the Soviets appeared more interested in trade and détente than the U.S., which was perpetuating "imperialism" in Vietnam and elsewhere.<sup>120</sup> In practical terms, the Communists also supported the traditionally Gaullist deterrence strategy of *tous azimuts*, which sought to reorient a portion of France's nuclear missiles away from the Soviet Union and proclaimed they could be aimed at "all angles" against any adversary around the world.<sup>121</sup>

Additionally, the Communists specifically called on France to cease its reliance on the United States for satellites and intelligence and to fully fund a domestic satellite research program.<sup>122</sup> Although Giscard had funded the SAMRO research program and SYRACUSE communications satellites in the LPM 1977-1982, they were modest efforts by comparison. France would continue to rely on the United States for technical reconnaissance means. Mitterrand, it turned out, was more closely aligned with Giscard on these issues than with the Communists.

Ultimately, changes in the international system and the erosion of détente between the superpower-led blocs led the Socialists to change their strategic outlook and threat

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<sup>120</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 111.

<sup>121</sup> Shaun Gregory, *French Defence Policy into the Twenty-First Century* (Houndmills: Macmillan Press, 2000), 15.

<sup>122</sup> Howorth, "Defence and the Mitterrand Government," 100.

perceptions.<sup>123</sup> First, France had, by 1976, acquired a credible nuclear deterrent triad, providing the country with greater diplomatic leverage on the world stage. Second, Soviet technological advancements, and specifically the fielding of the road-mobile SS-20 intermediate-range ballistic missile (IRBM) targeted at Europe, coupled with America's shift to "flexible response" deterrence strategy, raised the nuclear threat perception in Western European capitals and increased the risk of a limited nuclear exchange occurring on the European continent. The massive Soviet military buildup of the late 1970s that produced the SS-20 IRBM coincided with a general erosion of détente. Pro-Soviet sentiment in France gave way to rising suspicion as the Soviet Union increased its malign behavior in the Third World, culminating with the invasion of Afghanistan in 1979.<sup>124</sup> The Cold War, it seemed, had returned, and the Socialists, Mitterrand especially, endorsed a strategic outlook in which the Soviet Union posed the greatest threat to French and European Security.<sup>125</sup> The nuclear deterrence force remained the guarantor of French independence and security, but France would also need a capable conventional military. Continuity, rather than disruption, would thus characterize Mitterrand's defense policies.

Mitterrand solidified and amplified his strategic outlook at the Socialist Party national conference in 1978. As the putative leader of the Socialist Party and likely challenger in the upcoming presidential elections against Giscard, Mitterrand rejected the Communists' absolutist views on deterrence and anti-Atlanticism. Mitterrand reaffirmed his support for the nuclear deterrence force as an instrument of control and autonomy over European security vis-à-vis superpower hostility in the late 1970s. For Mitterrand and the Socialists, Giscard's efforts to

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<sup>123</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 110; Howorth, "Defence and the Mitterrand Government," 100.

<sup>124</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 111.

<sup>125</sup> Mitterrand would later explicitly name the Soviet Union as the main threat to Western Europe in the LPM 1984-1988. Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 121.

realign the French military with NATO eroded the credibility of France's nuclear deterrent. Only a strong, independent, nuclear France could compete with the superpower on global issues and reduce the risks of nuclear conflict in Europe.<sup>126</sup> Mitterrand would thus assert France's diplomatic leverage as the third global power through nuclear strength. Despite his socialist views on the military's role in the state, Mitterrand "realized that more than a decade of Gaullist foreign and defense policy had begun to acquire a certain permanence" in the French political elite. Mitterrand conceded that the Générale "*a vu juste*" the foreign, security, and strategic contexts facing France ("seen things as they were").<sup>127</sup>

Following his victory in 1981, Mitterrand opted to let Giscard's LPM 1977-1982 run its course while the Socialist government pursued its domestic agenda. In the meantime, Mitterrand sought a foreign and defense policy path between continued realignment with NATO, as Giscard had started, and the total alienation of the United States. There were two reasons for France straddling this middle ground. First, Mitterrand was concerned that the U.S. might attempt to scuttle his Socialist agenda economically. Mitterrand appointed several Communist ministers to the government to quell the potential for large-scale strikes. At the same time, he tried to handle the serious economic crisis in France in the summer of 1981.<sup>128</sup> Although not directly reflecting his strategic outlook, Mitterrand's political appointments concerned the United States. The Socialist President was thus weary of giving the Americans any reason to sabotage his government through economic subversion. Second, France was still dependent on the United States for access to satellite-based intelligence and other technologies for defense systems. Mitterrand considered communications and reconnaissance satellites important tools for French

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<sup>126</sup> Howorth, "Defence and the Mitterrand Government," 106-107.

<sup>127</sup> Howorth, "Defence and the Mitterrand Government," 102-103.

<sup>128</sup> Wayne Northcutt, *Mitterrand: A Political Biography* (New York, NY: Holmes & Meier, 1992), 93.

autonomy and independence of decision for strategic action.<sup>129</sup> But large-scale military space programs incur huge costs and require economies of scale that are difficult for a regional power like France.<sup>130</sup> The country was recovering from the financial shocks of the global energy crisis in the late 1970s. Mitterrand could not afford to undertake such a venture alone. Without a replacement or funding for the soon-to-be-defunct SAMRO program, France would remain dependent on another power for an increasingly vital tool of national defense.<sup>131</sup> Ironically, it was another power's pronouncement that compelled Mitterrand to overcome his reluctance to pursue an independent military space capability.

### **Strategic Defense Initiative**

#### *The Promise and Peril of SDI*

On March 23, 1983, U.S. President Ronald Reagan delivered a televised address in which he proposed that the United States and its allies develop advanced defensive capabilities to neutralize nuclear ballistic missiles targeted at the United States and its allies.<sup>132</sup> Reagan suggested that a concerted and dedicated effort, dubbed the Strategic Defense Initiative (SDI), and later facetiously “Star Wars,” could bring an end to the terror of “mutually assured destruction” and usher in the elimination of nuclear weapons altogether. The U.S. President pitched SDI as a “long-term research and development program to begin to achieve our ultimate

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<sup>129</sup> François Mitterrand, *Réflexions Sur La Politique Extérieure De La France: Introduction à Vingt-Cinq Discours, 1981-1985* (Paris: Fayard, 1986), 25.

<sup>130</sup> Jérôme Paolini, “French Military Space Policy and European Cooperation,” *Space Policy* 4, no. 3 (August 1988): 202, [https://doi.org/10.1016/0265-9646\(88\)90062-8](https://doi.org/10.1016/0265-9646(88)90062-8).

<sup>131</sup> Howorth, “Defence and the Mitterrand Government,” 109.

<sup>132</sup> Reagan did not explicitly state that the U.S. would develop an orbital defensive capability. However, Reagan did say that possible defenses could target nuclear missiles in the post-boost phase, which strongly implied he was talking about a space-based capability due to the exoatmospheric trajectories of ICBMs, “Address to the Nation on Defense and National Security” (Washington, D.C., March 23, 1983), <https://www.reaganlibrary.gov/archives/speech/address-nation-defense-and-national-security>.

goal of eliminating the threat posed by strategic nuclear missiles.”<sup>133</sup> He argued that the capabilities developed through SDI would make the world safer. Not everyone saw things the same way, including the French.

Mitterrand considered SDI nonsensical and potentially destabilizing to the ongoing nuclear arms reduction talks between the United States and the Soviet Union. The French President accused Reagan of embarking on nothing less than an “offensive military strategy” without regard for America’s European allies.<sup>134</sup> He was also worried that Reagan’s call to end the threat of mutually assured destruction and a future where nuclear deterrence was not the hallmark of strategic relations heralded the end of America’s extended deterrence consensus.<sup>135</sup> The French also believed SDI would spark a new arms race on ballistic missile defense (BMD) capabilities, including ground-based and orbital platforms. The latter, which would target nuclear warheads during the exoatmospheric post-boost phase of their ballistic trajectories, would portend the introduction of “offensive” weapons systems into space.

SDI pushed Mitterrand to take the military dimensions of the space domain seriously. Mitterrand, heretofore willing to ignore the idea of military space systems for national defense based on cost and feasibility, perceived the impact of SDI on French national independence and decision-making autonomy through his strategic outlook colored by enduring Gaullist traditions of French national independence and a healthy skepticism of the great powers. The French believed that an American capability to stop enemy missiles in space if such a thing were possible, could also be used to stop allied missiles (i.e., French) when their use might be contrary

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<sup>133</sup> Reagan, “Address to the Nation on Defense and National Security.”

<sup>134</sup> Rachel Utley, *The French Defence Debate: Consensus and Continuity in the Mitterrand Era* (London: Macmillan Press, 2000), 119.

<sup>135</sup> Utley, *The French Defence Debate*, 119; Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 140.

to Washington's interests. Such a system would necessarily subordinate France to de facto American consent and control over France's strategic nuclear deterrent, a notion completely antithetical to the principle of national autonomy and independence of decision. For Mitterrand, SDI's promise of a space-based defensive shield created peril for France and called into question nothing less than the credibility of the French strategic nuclear deterrent.

Mitterrand opposed SDI for three reasons. First, Mitterrand vehemently opposed the militarization of space because he feared it would spark a new arms race that would make the world more volatile and dangerous. Mitterrand reasoned that by militarizing space, SDI would raise insecurity for all by increasing uncertainty about the effectiveness of the nuclear deterrent, reflecting a kind of security dilemma in orbit. Reflecting on the matter and SDI in general, Mitterrand wrote in *Réflexions sur la politique extérieure de la France* (Thoughts on the foreign policy of France) that "SDI will provoke, in the near-term, a Soviet reaction that is contrary to the desired goal. Indeed, the mere prospect of an American space-based ballistic missile defense system makes it less likely that the Soviets will reduce their offensive weapons" (« l'[IDS], visée lointaine, provoquera, dans l'immédiat, une réaction soviétique contraire au but souhaité. En effet, la seule perspective d'une défense spatiale antibalistique américaine rend plus aléatoire l'éventualité d'une réduction des armements offensifs soviétiques »).<sup>136</sup> The French believed that the only rational Soviet response to SDI would be to develop their own BMD capability while expanding their strategic nuclear weapons arsenals. An arms race in space between the superpowers would also violate the 1972 ABM and seriously undermine the ongoing arms reduction talks between the U.S. and the Soviet Union. Mitterrand added that "we will not

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<sup>136</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 60.

restore security to the Earth by extending the battlefield into space” (*« on ne rendra pas la sécurité à la Terre en étendant le champ de bataille à l’espace »*).<sup>137</sup>

Second, due to the likely Soviet response to SDI, Mitterrand understood that SDI would make France and Europe less secure and, therefore, more dependent on American security guarantees.<sup>138</sup> The resulting power imbalance would expose Europe to the unpredictable impulses of Soviet and American strategic calculations and deepen Europe’s dependence on American defenses. Mitterrand found no small amount of hypocrisy in Reagan’s push to deploy nuclear-armed Pershing II IRBMs in Europe as a response to the Soviet SS-20s while simultaneously casting doubt on the utility of intermediate-range nuclear missiles. Mitterrand was emphatic: “this is not the fate I wish for [Europe]” (*« Ce n’est pas le destin que je souhaite pour elle »*).<sup>139</sup>

Finally, Mitterrand believed that SDI and the prospect of a space-based defensive capability undermined the deterrent principles that had preserved peace among the world powers since the end of World War II. French analysts lamented that in weakening the concept of deterrence, SDI would inherently threaten the effectiveness of France’s deterrence strategy.<sup>140</sup> According to Mitterrand, SDI threatened French security and France’s political weight and foreign policy consensus in Europe that French nuclear weapons afforded.<sup>141</sup> Mitterrand also worried that any American progress in neutralizing the Soviet Union’s nuclear capability would unintentionally make the U.S. less likely to defend Europe in a confrontation with the Soviet Union. The dynamic would make France and Europe more vulnerable to Soviet nuclear coercion.

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<sup>137</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 62.

<sup>138</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 60.

<sup>139</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 62.

<sup>140</sup> Utley, *The French Defence Debate*, 120.

<sup>141</sup> Stephen A. Kocs, *Autonomy or Power? The Franco-German Relationship and Europe’s Strategic Choices, 1955-1995* (Westport, CT: Praeger, 1995), 193.

Despite lofty rhetoric from Ronald Reagan, there was no indication that the nuclear powers would soon abandon their weapons. Therefore, turning space into a new battlefield by deploying ostensibly defensive weapons would only destabilize the delicate deterrence regime that had been in place for four decades. Thus, Mitterrand unequivocally opposed SDI and repeatedly rebuffed Ronald Reagan's appeals to join the research project.

Yet Mitterrand knew he could not ignore the American initiative, no matter how much he thought it a fool's errand. The French had little to show regarding military space for all the talk of national independence and autonomy, while the U.S. and Soviets had been fielding satellite systems for years. SDI had revealed the glaring space capability gaps in France's strategic posture, not just in space-based intelligence and early warning but also in the communications, command, and control infrastructure that underpinned a credible nuclear deterrent. But as a regional power, France could not be the lone dissenting voice against the American initiative. SDI had an immediate impact on European security and, therefore, on NATO.<sup>142</sup> Mitterrand believed France would have to encourage a common European response to SDI without alienating the Americans.

#### *Mitterrand and European Views of SDI*

Since the end of World War II, Western European nations, especially non-nuclear states, but also France and the United Kingdom, relied on American extended nuclear deterrence for their security. Mitterrand wanted to keep the Americans close, despite his strategic outlook of national independence and autonomy of decision. The French President viewed European integration as an "alliance within an alliance."<sup>143</sup> However, SDI raised doubts in France and

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<sup>142</sup> Pierre Lellouche, "SDI and the Atlantic Alliance," *SAIS Review* 5, no. 2 (1985): 67.

<sup>143</sup> Northcutt, *Mitterrand*, 54; see also Mitterrand, "Le Réveil de l'Espérance Européenne."

other countries about Americans' willingness to use nuclear weapons to defend Europe. The doubts revealed a central tension in France's strategic doctrine. The growing consensus about the importance of France in European defense contrasted with the country's traditional emphasis on national independence and protecting the sanctuary of French territory.<sup>144</sup> By the 20<sup>th</sup> anniversary of the Elysée Treaty and Franco-German rapprochement, both countries had become firmly wedded to the notion of greater European integration, which implied a greater European role in security and defense built around a Franco-German core.<sup>145</sup> When Reagan announced SDI, Mitterrand had already clearly articulated the importance of France for West German security.<sup>146</sup> Though both countries expressed misgivings about the American effort, the Germans were more muted.

In contrast, the French and Mitterrand were more vocal in their opposition. Even Great Britain, the other European nuclear power led at that time by Margaret Thatcher, was cautious about SDI, having spent years building its deterrent capability.<sup>147</sup> The U.S. announced SDI without first consulting the Europeans, further aggravating trans-Atlantic relations. Alliance cohesions thus suffered in the face of confusion and debate among the Western Europeans about SDI and growing fears over the credibility of American extended deterrence and the militarization of space.<sup>148</sup>

Mitterrand believed that SDI was not feasible.<sup>149</sup> The French President argued that the only way to achieve SDI's goals was if all states were disarmed to comparable levels, thereby

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<sup>144</sup> Laird, *France, the Soviet Union, and the Nuclear Weapons Issue*, 67.

<sup>145</sup> Kocs, *Autonomy or Power?*, 194.

<sup>146</sup> Jeannou Lacaze, "Politique de Défense et Stratégie Militaire de La France," *Revue Défense Nationale*, no. 433 (Juin 1983): 19.

<sup>147</sup> Lellouche, "SDI and the Atlantic Alliance," 71.

<sup>148</sup> Paul Chapat, "François Mitterrand et l'initiative de défense stratégique," *Institut François Mitterrand*, Décembre 5, 2011, <https://www.mitterrand.org/francois-mitterrand-et-1.html>.

<sup>149</sup> "La crédibilité de la dissuasion nucléaire française n'est pas réduite par les armes spatiales à rayons assure M. Védrine, conseiller diplomatique de l'Élysée," *Le Monde.fr*, Février 1, 1985.

increasing security for all.<sup>150</sup> Less than a year after Reagan's address, France proposed to amend the 1967 Outer Space Treaty, which prohibits placing nuclear weapons into orbit, as a direct response to mitigate the militarization of space under SDI.<sup>151</sup> The French wanted to extend "the scope of the prohibition to all other high-tech weapons capable of destroying in space or from space, missiles or satellites."<sup>152</sup>

More importantly, Mitterrand believed Europe could not ignore a U.S. and Soviet space weapons race. Absent multilateral disarmament and convinced that the militarization of space would not stop on its own, Mitterrand declared that "France must herself prepare for it," adding that the adoption of any space strategy would "not be assured unless the project becomes European."<sup>153</sup> France would lead Europe to prepare "to take part in the competition" in space by developing civilian and military space systems, including an orbital space station and a European space shuttle called *Hermès*.<sup>154</sup> However, the problem of costs persisted.

As a regional power, France could not compete by itself with the U.S. and USSR on defense budgets, and especially not on lofty endeavors such as SDI. Mitterrand's government prioritized modernizing France's nuclear and conventional forces over more aspirational endeavors such as military space capabilities. The first defense program law enacted under François Mitterrand on July 8<sup>th</sup>, 1983, the *Loi de Programmation Militaire pour les années 1984-1988* (LPM 1984-1988), devoted over 30% of defense spending on nuclear modernization.<sup>155</sup> Nevertheless, the LPM specifically outlined the need for France to undertake a dedicated research and development program on new technologies to ensure the credibility of

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<sup>150</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 39-40.

<sup>151</sup> Lellouche, "SDI and the Atlantic Alliance," 71.

<sup>152</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 36.

<sup>153</sup> Mitterrand, as quoted in Fenske, "France and the Strategic Defence Initiative," 236.

<sup>154</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 27.

<sup>155</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 115.

France's strategic nuclear deterrent, including "the space observation satellite" (« *le satellite d'observation spatiale* »).<sup>156</sup> Whereas the previous LPM 1977-1982, passed under Giscard-d'Estaing, called for research into the military utility of space, the current law specifically called for a military observation capability as an adjunct to the *force de dissuasion*. By this point, SAMRO was still the nominal program through which the defense ministry allocated funds for satellite research. However, French legislators were under no illusions that SAMRO was anything but a defunct program.<sup>157</sup>

The military observation satellite was a non-partisan issue for the French Senate, with Gaullists and Communists agreeing that France must possess an independent military observation satellite. However, the amount of funding dedicated to the military observation satellite was debated in the *Assemblée Nationale*. During the legislative debate on the LPM, a centrist legislator criticized Mitterrand's defense minister, Charles Hernu, for sacrificing the military observation satellite despite "considerable progress made by the space powers" in space-based ISR, a requirement for national independence.<sup>158</sup> Another legislator and Gaullist, Jacques Baumel, who feared the LPM did not go far enough to modernize France's military, lamented that France would realize it needed a military observation satellite just as its adversaries were ready to shoot it down.<sup>159</sup> Even a member of the Communist party, Guy Hermier, acknowledged that the military observation satellite was "a condition of independent information, and therefore of real control of our choices" (« *condition d'une information indépendante, et donc d'une véritable maîtrise de nos choix* »).<sup>160</sup> However, given Mitterrand's modernization priorities and

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<sup>156</sup> Sénat de la République Française, "LOI N° 83-606 Du 8 Juillet 1983 Portant Approbation de La Programmation Militaire Pour Les Années 1984-1988," Pub. L. No. 83-606, (1983), 2118.

<sup>157</sup> Patricia Chilton, "French Nuclear Weapons," in *Defence and Dissent in Contemporary France*, ed. Jolyon Howorth and Patricia Chilton (Beckenham, Kent: Croom Helm Ltd, 1984), 160.

<sup>158</sup> Lucien Richard, quoted in "Programmation Militaire Pour Les Années 1984-1988: 54e Séance," 1264.

<sup>159</sup> Jacques Baumel, quoted in "Programmation Militaire Pour Les Années 1984-1988: 54e Séance," 1261.

<sup>160</sup> Guy Hermier, quoted in "Programmation Militaire Pour Les Années 1984-1988: 54e Séance," 1247.

the advent of SDI, the military observation satellite would have to wait. In the meantime, Mitterrand had to respond to SDI's research and development implications for Europe.

### *Mitterrand and EUREKA*

One solution to Mitterrand's funding woes, at least on the research and development side, was the European Community. Since becoming president, Mitterrand advocated for greater cooperation and integration among the bloc members. The rapidly evolving international strategic and technological contexts warranted greater European cooperation on security and defense.<sup>161</sup> Mitterrand was concerned about the American research program's impact on Europe's defense technological, industrial base (DTIB). The French President feared that the American invitation to European aerospace firms to bid for and participate in research and development on lucrative SDI contracts would trigger a "*fuite des cerveaux*," or "brain drain" from the old world to the new, from which Europe would never recover.<sup>162</sup> He wanted to retain Europe's industrial and technical competency to compete with the superpowers on future technology initiatives. The long-term implications of SDI extended beyond space weapons and into nuclear research, supercomputing, artificial intelligence, and material advancements, among others, that would be vital for any nation to remain technologically competitive into the 21<sup>st</sup> century.<sup>163</sup> Adding to Mitterrand's anxiety was a simmering though subtle enthusiasm for SDI among several French aerospace firms.<sup>164</sup> Europe needed an alternative aspirational technology initiative focused on space that would improve security without the militarized dimension many

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<sup>161</sup> Utley, *The French Defence Debate*, 119.

<sup>162</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 92.

<sup>163</sup> Paul Lewis, "Mitterrand's Goals: 'Preserving Skills,' 'Protecting Europe,'" *The New York Times*, May 6, 1985, sec. A. World, 13.

<sup>164</sup> John Fenske, "France and the Strategic Defence Initiative: Speeding up or Putting on the Brakes?," *International Affairs (Royal Institute of International Affairs)* 62, no. 2 (1986): 243.

Europeans found distasteful. Mitterrand did not want France relegated back to second-tier status, having just recently achieved independent space flight with the Ariane program.

Space became somewhat of an obsession for François Mitterrand.<sup>165</sup> While he dismissed the possibility of orbital space lasers as distant and dubious, Mitterrand took SDI's impact on Europe's DTIB seriously. In February 1984, Mitterrand spoke at The Hague as the head of the EEC and stressed the need for the European Community (EC) to strengthen its intellectual elan and encourage and support European firms. "Mastery of space," Mitterrand later wrote, "depends on the mastery of other technologies now within our reach," (*« mais la maîtrise de l'espace dépend de la maîtrise d'autres technologies désormais à notre portée »*).<sup>166</sup> In addition to strengthening security in the nuclear arena, a reinvigorated DTIB could secure Europe's presence in space. Through the "conquest of space" (*« la conquête spatiale »*), declared Mitterrand, Europe would be able to "observe, transmit, and therefore thwart any possible threat" (*« qui lui permettra d'observer, de transmettre, et donc de contrarier toute menace éventuelle »*) and therefore achieve a major milestone in European defense.<sup>167</sup> Although he made clear that France would not share nuclear decisions, Mitterrand specifically called for Europe to develop and place into orbit a manned space station that could ensure European security in the shifting strategic paradigm of the "star wars" era.<sup>168</sup> Further, Mitterrand rejected the notion that space should remain the exclusive domain of the superpowers. The French President stressed that a European space community in space, the basis of which was an autonomous presence in space, would be "the response best suited to the military realities of tomorrow" (*« une Communauté européenne*

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<sup>165</sup> Jacques Isnard, "Défense : l'obsession de l'espace," *Le Monde.fr*, November 23, 1985, [https://www.lemonde.fr/archives/article/1985/11/23/defense-l-obsession-de-l-espace\\_2751797\\_1819218.html](https://www.lemonde.fr/archives/article/1985/11/23/defense-l-obsession-de-l-espace_2751797_1819218.html).

<sup>166</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 88.

<sup>167</sup> François Mitterrand, "Le Réveil de l'Espérance Européenne" (Speech, La Haye, février 1984), printed in Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 277.

<sup>168</sup> "Mitterrand Proposes Station In Space for Western Europe," *The New York Times*, February 9, 1984, sec. B.

*de l'espace serait, à mon sens, la réponse la mieux adaptée aux réalités militaires de demain »).*<sup>169</sup>

In April 1985, the French government proposed a European alternative to SDI called the European Research and Coordination Agency (*Agence de la Coordination de la Recherche Européenne*), or EUREKA. In a letter to the ministers of the EEC member states, the French foreign minister Roland Dumas expressed Mitterrand's wish that Europe "master all cutting-edge technologies and become the continent of the twenty-first century" (*« de maîtriser toutes les technologies de pointe et de devenir le continent du vingt et unième siècle »*).<sup>170</sup> Although the project was to remain entirely civilian, partly to broaden its appeal to other EEC members skeptical of SDI's martial attributes, Dumas himself expressed a few months later that research funded through EUREKA could have military applications.<sup>171</sup> Moreover, EUREKA had the space sector as one of its major research and development targets, including the European space station promoted by Mitterrand the year before. In this view, EUREKA was a direct response to SDI because the French recognized that the most important technical and industrial advances would grow out of research on space systems.<sup>172</sup> Europe could only compete with the Americans to develop advanced technologies and space systems by pooling resources in a centralized effort. Through cooperation, Europe could develop space-based command and control systems, influence the course of human events in space, and help level the technological and security playing field vis-à-vis the superpowers.<sup>173</sup>

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<sup>169</sup> Mitterrand, "Le Réveil de l'Espérance Européenne," in Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 277.

<sup>170</sup> "Le projet " Eurêka " d'une Europe de la technologie," *Le Monde.fr*, April 18, 1985, [https://www.lemonde.fr/archives/article/1985/04/18/bull-le-projet-eureka-d-une-europe-de-la-technologie-bull-l-action-de-la-france-en-faveur-des-droits-de-l-homme\\_3047774\\_1819218.html](https://www.lemonde.fr/archives/article/1985/04/18/bull-le-projet-eureka-d-une-europe-de-la-technologie-bull-l-action-de-la-france-en-faveur-des-droits-de-l-homme_3047774_1819218.html).

<sup>171</sup> Roland Dumas, quoted in Fenske, "France and the Strategic Defence Initiative," 235.

<sup>172</sup> Wayne Sandholtz, *High-Tech Europe: The Politics of International Cooperation* (Berkeley, CA: University of California Press, 1992), 259.

<sup>173</sup> Lellouche, "SDI and the Atlantic Alliance," 79.

SDI was a watershed moment for European cooperation on security and defense. The American initiative exacerbated the interdependence between France and the rest of Europe on security that had slowly grown in the preceding decade.<sup>174</sup> When France proposed EUREKA to the other EEC members, it was the only country with sufficient status and autonomy to vehemently reject the false promise of SDI and Reagan's appeals to European countries and firms to enlist in the research effort. Mitterrand told Ronald Reagan that he did not believe SDI was in the best interest of French or European security and that France would not subscribe to the initiative.<sup>175</sup> While other European leaders, including Great Britain's Margaret Thatcher and West Germany's Helmut Kohl, nominally supported Reagan's initiative, Mitterrand sought to chart a different path for Europe. In the months that followed EUREKA's announcement, France, the European Commission, and more than ten other European countries entered into numerous industrial partnership projects that strengthened European cooperation and prevented the brain drain Mitterrand feared. While EUREKA did not produce a European space station, or even the French space shuttle *Hermès*, the project was the most prolific economic, diplomatic, and political European initiative to date. It demonstrated the pragmatism with which Europeans could meet any challenge.<sup>176</sup>

Mitterrand's vision for EUREKA was not to supplant the American-led NATO Alliance but to strengthen the European Community's cooperation and contributions to European defense. In this respect, Mitterrand's strategic outlook strongly influenced his views on SDI and the development of France's military space posture that followed. The French President strongly believed in national independence and autonomy of decisions on security and defense matters,

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<sup>174</sup> Utley, *The French Defence Debate*, 122.

<sup>175</sup> Mitterrand and Reagan discussed SDI at the G-7 Summit in Bonn, Germany, May 2, 1983. Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 52-53.

<sup>176</sup> Chaput, "François Mitterrand et l'initiative de défense stratégique."

especially for its strategic nuclear deterrent. But it became clear to Mitterrand that by the 1980s, France could ensure its independence and autonomy only through greater European cooperation. Thus, he was a staunch advocate of greater European integration, especially on security and defense matters, which required a strong and stable DTIB. EUREKA and the ensuing diplomatic, economic, and political activities in Europe thus reflected Mitterrand's enduring obsession with space.

### **HELIOS: The Military Observation Satellite**

#### *Fits and Starts*

In 1985, SDI and EUREKA were little more than rhetoric, whose expected results were years away. However, the American program fostered a political consensus in France that the country, and Europe more broadly, must possess dedicated military space systems for reconnaissance and communications to maintain France's independence and the credibility of its nuclear forces. Mitterrand was insistent that France acquire these systems by any means necessary. By the 1980s, France had succeeded in increasing French and European autonomy by securing independent space access through the successful Ariane rocket program. But SDI had shifted the space security paradigm and piqued Mitterrand's interest in reducing France's dependence on the United States for satellite-based systems and intelligence. In 1984, the defense ministry approved the first multi-year military space plan (*plan pluriannuel spatial militaire*) to create a constellation of observation and communications satellites to complement France's strategic nuclear forces.<sup>177</sup> The PPSM reasoned that the utility of high-resolution imagery and shortened information access time were vital for France's security and defense

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<sup>177</sup> Paolini, "French Military Space Policy and European Cooperation," 201.

needs as the leading European power.<sup>178</sup> A year later, Mitterrand directed his defense minister, Charles Hernu, to establish the *groupe d'études spatiale* (GES, or space studies group) within the ministry of defense. GES would further evaluate the military dimensions of space as a response to American research and development funded through the SDI organization (SDIO).<sup>179</sup> France had already achieved a nominal satellite communications capability through its SYRACUSE program but still lacked a dedicated military imaging satellite.

As the superpowers teetered on the edge of a space arms race, Mitterrand was also interested in increasing France's capacity to monitor compliance with the existing arms control regimes and keep track of ongoing crises in France's sphere of influence, especially in Africa.<sup>180</sup> Space, in Mitterrand's view, could "serve to reduce tensions rather than aggravate them, as one might fear today" (« *l'espace servirait à réduire les tensions plutôt qu'à les aggraver, comme on peut le craindre aujourd'hui* »).<sup>181</sup> Yet as the largest ESA funder and the nominal leader of the Ariane enterprise, Mitterrand could not credibly back out from supporting the space agency to fund France's military space programs.<sup>182</sup> While the WEU and EC deliberated on Mitterrand's call to space, so to speak, the French President focused on near-term requirements. Despite the legislative debates for LPM 1984-1988 lamenting the lack of funding for the military observation satellite, France did not have sufficient resources to tackle the project alone. France needed a partner to share the expenses of a dedicated military space reconnaissance program.

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<sup>178</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 39.

<sup>179</sup> Jacques Isnard, "M. Hernu installe un état-major de l'espace," *Le Monde.fr*, June 5, 1985, [https://www.lemonde.fr/archives/article/1985/06/05/m-hernu-installe-un-etat-major-de-l-espace\\_2755376\\_1819218.html](https://www.lemonde.fr/archives/article/1985/06/05/m-hernu-installe-un-etat-major-de-l-espace_2755376_1819218.html); see also Utley, *The French Defence Debate*, 54.

<sup>180</sup> Arms control verification was the only function of satellite reconnaissance officially endorsed by the U.S. and the USSR in the SALT I and ABM treaty negotiations. See John Lewis Gaddis, *The Long Peace: Inquiries into the History of the Cold War* (New York, NY: Oxford University Press, 1987), 208.

<sup>181</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 37.

<sup>182</sup> Paolini, "French Military Space Policy and European Cooperation," 209-210.

France attempted to resurrect SAMRO as early as 1983 by courting Germany to partner on the project. Given their previous collaboration on the SYRACUSE I communications satellite in the 1970s, Mitterrand approached his German counterpart with a proposal to build a joint military observation satellite based on SAMRO. Mitterrand pitched the endeavor as a good way to celebrate the 20<sup>th</sup> anniversary of the Elysée Treaty and Franco-German reconciliation. The Germans were initially receptive to collaborating with France on a high-tech joint military space venture, such as an observation satellite. Like France, West Germany relied on the United States for satellite-based intelligence and therefore had to be satisfied with whatever the U.S. chose to share.<sup>183</sup> Mitterrand made the issue of Franco-German collaboration on a military observation satellite a top agenda item for the French President's Summit with his West Germany counterpart, Chancellor Helmut Kohl, in May 1984. The leaders agreed to study the matter and develop a proposal to proceed with the project. In a 1984 letter to Mitterrand, the German Chancellor reiterated his interest in collaborating but highlighted the German preference for an all-weather, around-the-clock observation capability based on synthetic aperture radar (SAR) technology rather than the optical observation technology developed by the French.<sup>184</sup>

However, France based its proposal on SAMRO, which was already in the latter stages of development in collaboration with CNES and the French industry.<sup>185</sup> The proposal also suggested that each country commits to an equal share of development costs to fund the joint satellite project. The Germans balked. France's demand that Germany bear half the program's development costs while most development work and production contracts skewed heavily towards French firms was unsatisfactory. Additionally, the SAMRO platform did not meet the

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<sup>183</sup> Kocs, *Autonomy or Power?*, 172.

<sup>184</sup> See Chapter 4 in this study for a discussion on Franco-German collaboration; Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 38.

<sup>185</sup> Kocs, *Autonomy or Power?*, 173.

technical requirements for Germany's operational needs based on geography and weather. As mentioned in the Chancellor's letter, the Germans favored a SAR capability oriented on the central European front to provide independence intelligence on the disposition of Warsaw Pact forces.<sup>186</sup> SAR would be better suited for German requirements because central Europe was frequently under dense cloud cover and would thus render SAMRO's optical imaging capability useless for much of the year.<sup>187</sup> For their part, the French found an optical satellite sufficient to support their conventional operations in Africa, especially in Chad, because that part of the world was more arid and cloud-free.<sup>188</sup> In September 1984, Germany withdrew from the joint project.<sup>189</sup>

The failed attempt by France to collaborate with Germany on a joint military satellite project reflects the different strategic priorities held by each leader. Mitterrand was adamant that Europe must pursue a greater role in the military dimensions of space exploitation to achieve autonomy from the United States and that France was the logical leader for the continent's ambitions in space. The economic realities of such an expensive endeavor forced France to halt SAMRO, but Mitterrand's vision did not waver, especially after SDI. The German Chancellor felt more strongly about maintaining America's role in European defense and had different security and defense priorities than Mitterrand. Kohl faced different domestic political and bureaucratic constraints than Mitterrand.<sup>190</sup>

However, obtaining an independent military reconnaissance satellite was a top security and defense priority for Mitterrand. He would revisit the issue with Helmut Kohl at their meeting

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<sup>186</sup> Kocs, *Autonomy or Power?*, 173.

<sup>187</sup> Pasco, Interview with Dr. Xavier Pasco.

<sup>188</sup> Pasco, Interview with Dr. Xavier Pasco.

<sup>189</sup> Kocs, *Autonomy or Power?*, 173.

<sup>190</sup> See Chapter 4 of this dissertation for a discussion on German strategic outlook during this period.

in the Élysée Palace in Paris in December 1985, effectively asking the German Chancellor to reconsider his position on the joint military satellite program.<sup>191</sup> A few days before the meeting, Germany announced it would sign on to participate in the American SDI, a major diplomatic setback for Mitterrand that effectively killed the chance of Franco-German collaboration on a military space program.<sup>192</sup>

*Shifting Paradigms: Chad-Libyan Conflict and the Utility of Space for Conventional Operations*

As space became politically more important for Mitterrand, the French military chiefs were still reluctant to support a dedicated military reconnaissance satellite. At the time, DGA provided partial funding for CNES's SPOT program, a civilian optical imaging satellite designed to monitor France's natural resources and forests. However, the military chiefs began changing their attitudes by the mid-1980s. France's ongoing military interventions in Africa, including during the Chad-Libyan conflict, strained the conventional military's logistics and intelligence capacity. The intelligence necessary to support conventional land and air operations in distant parts of Africa stressed the aerial reconnaissance capabilities of the French air force. The situation exacerbated France's continued reliance on American satellite imagery.

Since 1978, the Chadian-Libyan conflict embroiled France, which held Africa and the former French colonies within the French sphere of influence. In 1984, Moammar Gaddafi, the Libyan dictator, and François Mitterrand struck a secret accord to suspend the conflict,

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<sup>191</sup> Jacques Isnard, "La défense spatiale ne rend pas caduque l'arme nucléaire," *Le Monde.fr*, December 18, 1985, [https://www.lemonde.fr/archives/article/1985/12/18/la-defense-spatiale-ne-rend-pas-caduque-l-arme-nucleaire\\_2757525\\_1819218.html](https://www.lemonde.fr/archives/article/1985/12/18/la-defense-spatiale-ne-rend-pas-caduque-l-arme-nucleaire_2757525_1819218.html).

<sup>192</sup> Bernard Brigouleix, "L'engagement de Bonn sur la défense spatiale alourdit le contentieux franco-allemand," *Le Monde.fr*, December 19, 1985, [https://www.lemonde.fr/archives/article/1985/12/19/l-engagement-de-bonn-sur-la-defense-spatiale-alourdit-le-contentieux-franco-allemand\\_2758220\\_1819218.html](https://www.lemonde.fr/archives/article/1985/12/19/l-engagement-de-bonn-sur-la-defense-spatiale-alourdit-le-contentieux-franco-allemand_2758220_1819218.html).

prompting the French military withdrawal from Chad.<sup>193</sup> Libya, however, never fully withdrew and even built a remote airfield inside Chadian territory at Ouadi Doum, deep in the Sahara Desert. The Ouadi Doum airfield was strategically important for Gaddafi because it enabled Libyan aircraft to range the Chadian capital, N'Djamena. In early 1986, the Libyan dictator ordered Libyan-backed rebel forces to strike southern Chad and its capital. In a clear violation of the 1984 accord, Libyan aircraft flying out of Ouadi Doum supported the rebel attacks in southern Chad. The French response was swift.

After the attack, France launched *Operation Épervier* to reintroduce military forces in Chad. In response to Libyan aggression, France agreed to assist the Chadian government in reclaiming territory occupied by Libyan forces in the north of the country.<sup>194</sup> In February 1986, eleven Jaguar fighter-bombers from the *Escadron 1/11 Roussillion*, escorted by four Mirage F1 fighter-interceptors, took off from a military airfield in Bangui, Central African Republic, and headed north towards the Ouadi Doum airfield. Crossing into Chad, the French aircraft flew low to avoid detection by Libyan air defenses. The aircraft struck the runway and destroyed several hangars, rendering the airfield unusable by Gaddafi to support rebel forces fighting in Chad. However, the attack aircraft did not loiter around the airfield to assess the damage. With Libyan forces now aware of the strike, the French planes returned to Bangui quickly. Thus, the French military could not judge the airstrike's effectiveness in a timely manner.

Following the airstrike, the *Direction Générale de la Sécurité Extérieure* (DGSE), the French foreign intelligence service, directed the air force to conduct an aerial reconnaissance mission over Ouadi Doum to assess the damage to the airfield and the airstrike's overall

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<sup>193</sup> The French maintained an expeditionary force in the nearby Central African Republic. Utley, *The French Defence Debate*, 108.

<sup>194</sup> Lespinois, "Emploi de la force aérienne : Tchad 1969-1987."

effectiveness. The only French platform available for the long-range mission was the Mirage IV strategic bomber, which could be modified to carry a reconnaissance pod outfitted with optical film and infrared cameras instead of nuclear bombs.<sup>195</sup> A camera pod-equipped Mirage IV took off from Bordeaux-Mérignac, France, and flew a circuitous route to Ouadi Doum and back. The mission took over 11 hours and required four C-135 tankers to conduct 12 in-flight refueling operations.<sup>196</sup> At the time, the mission was the longest aerial reconnaissance operation undertaken by the French. Ironically, the world's first commercial imagery satellite, France's SPOT-1, was launched from Kourou less than a week after the airstrike on February 22, 1986. However, its greater than 10-meter multispectral resolution was deemed unusable for targeting and reconnaissance purposes.

The French intervention in Chad, and specifically the airstrike on Ouadi Doum, exemplified Mitterrand's strategic outlook and was significant for Mitterrand's ambitions in space for several reasons. First, the intervention demonstrated French commitment to its former African colonies, especially in countering Libyan expansionism under Gaddafi. The French commitment would persist into the 21<sup>st</sup> century with counter-terrorism operations in Chad and Mali after the 9/11 attacks. Second, the airstrike demonstrated French resolve to use military force in conflicts and crises outside the core of European defense. National independence was no longer just about the nuclear deterrent but about France's willingness to exercise force in crisis management and low-intensity conflicts wherever and whenever it saw fit. Mitterrand's decision to undertake *Operation Épervier* reflected a presidential strategic outlook rooted in Gaullism and independence of action and decision that transcended political orientation. Despite his political

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<sup>195</sup> Jean-Marc Marill, *Dictionnaire des opérations extérieures de l'armée française: De 1963 à nos jours* (Nouveau Monde Editions, 2018), 307 ; also Paolini, "French Military Space Policy and European Cooperation," 201.

<sup>196</sup> Albert Grenier, "The Development and History of the Mirage IVA," Royal Aeronautical Society, April 7, 2017, <https://www.aerosociety.com/news/the-development-and-history-of-the-mirage-iva/>.

differences with de Gaulle, Mitterrand was sensitive to public expectations about upholding a strong foreign policy, especially in France's traditional sphere of influence. During Mitterrand's presidency, the French interventions in Chad echoed a manifold continuity in strategic outlook about France's rank and role in the world, its residual commitment to former African colonies, and the need for autonomous military capacity to act independently in pursuit of France's interests.<sup>197</sup>

Third, the military gained an appreciation for the tactical utility and practicality of satellite-based reconnaissance in conventional operations. The logistical demands of long-distance aerial reconnaissance using the Mirage IV platform were impractical. They exposed a capability gap inconsistent with a French status that favored military interventions for crisis management and conflict resolution in the third world. Moreover, the optical imagery research and development that CNES conducted for the soon-to-be operational SPOT satellite, based on the defunct SAMRO program, formed the technical foundation upon which a military system could be developed with substantial cost savings. French military officials thus began to change their attitudes regarding satellite reconnaissance, eroding a major bureaucratic roadblock that had imperiled SAMRO a few years before. The military's operations in Chad further reinforced the utility of satellite imagery for conventional tactical purposes rather than as a strategic asset and strict complement to the nuclear deterrent. France's conventional military capacity for out-of-area operations, strengthened by dedicated military space systems, would later form the core of the EU's crisis management framework and mandate to conduct out-of-area operations.

Lastly, the airstrike at Ouadi Doum and France's military intervention in Chad exposed France's military shortcomings. The lack of sufficient transport capability to support military

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<sup>197</sup> Utley, *The French Defence Debate*, 52.

deployments for *Operation Épervier* in 1986, and France's dependence on the United States for satellite reconnaissance and imagery, emphasized the limited operational capacity of France's conventional forces.<sup>198</sup> Mitterrand had obtained support from Ronald Reagan, the U.S. President, in his decision to intervene against Libya. But France also received American intelligence support and satellite imagery of the Ouadi Doum airfield for targeting and mission planning.<sup>199</sup> The airstrike was another reminder of a glaring gap in France's military capabilities. Given Mitterrand's strategic outlook favoring greater French military interventions abroad, operations in Africa thus underscored the need for France to press forward with modernizing its conventional forces. Modernization would require a dedicated military satellite imaging capability, regardless of cost. In the meantime, SPOT-1 could offer a bridging solution for France's satellite reconnaissance needs, despite lacking the resolution necessary for military purposes and its ostensible civilian and commercial character.

#### *The Observation Satellites: SPOT and HELIOS*

France recognized the need to possess its own satellite imagery capability well before Mitterrand ordered French forces into Chad and before the Ouadi Doum raid. For one, satellites had become the primary tool for international arms control agreement verification by the U.S. and the USSR. French *grandeur* necessitated that it possess its own satellite reconnaissance capability to allow Europe to participate in verification activities.<sup>200</sup> However, satellite technology was prohibitively expensive for France to carry the costs alone. The budgetary

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<sup>198</sup> Utley, *The French Defence Debate*, 111.

<sup>199</sup> "Chad: Prospects for Escalation of the Conflict [REDACTED]: An Intelligence Assessment" (African Division, Office of African and Latin American Analysis: CIA, February 1986), <https://www.cia.gov/readingroom/docs/CIA-RDP88T00768R000100090001-6.pdf>, 10.

<sup>200</sup> Paolini, "French Military Space Policy and European Cooperation," 205.

constraints facing France in the early 1980s forced Mitterrand's government to suspend the SAMRO project in 1982. Mitterrand's attempts to solicit Helmut Kohl for German cooperation and funding on a joint satellite project in 1984 and 1985, and the Chancellor's refusal to join the project, kept France's ambitions for a satellite-based intelligence capability grounded.<sup>201</sup> Meanwhile, France pressed ahead with SPOT, the commercial optical imaging satellite based on SAMRO.<sup>202</sup>

France initiated the SPOT program in the late 1970s through CNES to observe and catalog Earth's climate, oceans, and agriculture for scientific study.<sup>203</sup> Realizing the commercial potential of satellite imagery, CNES also formed a subsidiary, *SPOT Image*, to market and sell SPOT's 10-meter resolution images to customers worldwide, becoming the world's first satellite-based commercial imagery company.<sup>204</sup> When SPOT-1 was launched on February 22<sup>nd</sup>, 1986, it provided France with a high-resolution (for the time) imaging capability. Nominally a civilian and commercial system, SPOT demonstrated the utility of satellite imagery to French national security purposes shortly after its launch. SPOT-1 provided France and the world with some of the first images of the Chernobyl nuclear disaster, refuting early Soviet efforts to downplay the scale of the disaster and images of Soviet space systems and possible anti-ballistic missile capabilities.<sup>205</sup>

On February 2, 1986, Mitterrand directed the ministry of defense to proceed with a dedicated military imaging satellite dubbed HELIOS.<sup>206</sup> The President had had enough of waiting and was tired of relying on the Americans for satellite-based intelligence. Mitterrand had

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<sup>201</sup> Kocs, *Autonomy or Power?*, 172.

<sup>202</sup> McLean and Swankie, "Helios 2—Myth or Reality?" 108.

<sup>203</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 71.

<sup>204</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 71.

<sup>205</sup> France's use of SPOT images for military purposes underscores the dual-use nature of space systems. Harvey, *Europe's Space Programme: To Ariane and Beyond*, 72.

<sup>206</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 38.

been unable to persuade his German counterpart, Chancellor Helmut Kohl, to reconsider Germany's refusal to collaborate on a satellite imaging project at the Franco-German summit in November 1985.<sup>207</sup> The success of SPOT demonstrated that France could develop its own satellite, and Mitterrand was ready to commit funds in the upcoming LPM for 1987-1991. To save on development costs, the ministry of defense would capitalize on CNES's work on SPOT-1 and the work previously done on SAMRO to achieve savings of over 1.3 billion Francs (FrF).<sup>208</sup> HELIOS would thus share 45% of its components with the civilian SPOT satellite but remain an optical imaging capability, despite the military's interest in expanding the payload's spectrum capabilities. In September 1986, CNES formalized the partnership with the defense ministry's procurement arm, DGA, in an intragovernmental agreement brokered by the French cabinet.<sup>209</sup> HELIOS would be developed in conjunction with SPOT-4 and feature a favorable optical resolution of less than 1 meter. The military project was expected to cost around 2-3 billion FrF and consist of orbital and ground-based components to process and analyze space-based intelligence derived from the HELIOS constellation.<sup>210</sup>

Having already expressed his interest in exploiting the military potential of space following the advent of SDI, Mitterrand prioritized both the HELIOS and SYRACUSE programs in the 1986 defense budget and the upcoming military program law for 1987-1991.<sup>211</sup> Enacted on May 22, 1987, the defense program, captured in the *Loi de Programmation Militaire* for 1987-1991 (LPM 1987-1991), reflected Mitterrand's desire to acquire an autonomous military satellite capability. Whereas the previous LPM for 1984-1988, Mitterrand's first since taking office,

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<sup>207</sup> Kocs, *Autonomy or Power?*, 173.

<sup>208</sup> 1.3 billion French Francs (FrF) in 1986 is equivalent to about 500 million USD in 2022; McLean and Swankie, "Helios 2—Myth or Reality?" 108.

<sup>209</sup> M. Lenzer, "WEU and Helios 2" (Paris: Assembly of Western European Union, May 11, 1996), 5.

<sup>210</sup> 2 to 3 billion FrF in 1986 is equivalent to about 775 million to 1.16 billion USD in 2022; Bhupendra Jasani and Christer Larsson, "Security Implications of Remote Sensing," *Space Policy* 4, no. 1 (February 1988): 48.

<sup>211</sup> Utley, *The French Defence Debate*, 54.

directed the defense ministry to study and research a military satellite observation capability as an adjunct to maintaining France's nuclear forces, LPM 1987-1991 reflected Mitterrand's growing "obsession" with military space priorities.<sup>212</sup>

The LPM 1987-1991 directed the acquisition of modern capabilities to, above all else, maintain the credibility of France's strategic nuclear deterrence. Among these capabilities, the LPM specifically called for the acquisition of "means of observation by satellites which will allow an autonomous capability to assess threat and crises." (*« l'acquisition de moyens d'observation par satellites qui permettront une capacité autonome d'évaluation des menaces et des crises »*).<sup>213</sup> While the call for a military satellite capability was ostensibly tied to France's strategic nuclear deterrent, the LPM discussed the importance of France pursuing technical capabilities to exploit space for general security. In a veiled reference to SDI, the LPM highlights "progress made in space technologies [which] leads to a certain evolution of defense concepts and equipment," adding that "France must ensure it draws on this progress, especially since the major powers are devoting significant effort to these [space] technologies" (*« Les progrès accomplis dans les technologies de l'espace entraînent une certaine évolution des concepts et des équipements de défense. La France se doit de veiller à en tirer les conséquences, d'autant plus que des efforts importants sont consacrés à ces technologies par les grandes puissances »*).<sup>214</sup>

The LPM also identifies aspects of France's defense beyond strategic nuclear deterrence that will benefit from space technologies, including satellite-based intelligence, ballistic missile defense, and satellite communications.<sup>215</sup> Moreover, the LPM directs "a special research and development

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<sup>212</sup> Sénat de la République Française, "LOI N° 83-606 Du 8 Juillet 1983 Portant Approbation de La Programmation Militaire Pour les Années 1984-1988," Pub. L. No. 83-606, 2114 (1983); Utley, *The French Defence Debate*, 54.

<sup>213</sup> Sénat de la République Française, "LOI DE PROGRAMMATION N° 87-342 Du 22 Mai 1987 Relative à l'équipement Militaire Pour Les Années 1987-1991.," Pub. L. No. 83-606, 5648 (1987).

<sup>214</sup> Sénat de la République Française, LOI DE PROGRAMMATION n° 87-342, 5649.

<sup>215</sup> Sénat de la République Française, LOI DE PROGRAMMATION n° 87-342, 5649.

effort ... to evaluate and exploit other military technologies adapted to the penetration and use of space” (« *un effort spécial de recherche et de développement sera fait pour évaluer et exploiter les autres technologies militaires adaptées à la pénétration et à l'utilisation de l'espace* »).<sup>216</sup>

The military space priorities enacted in the LPM 1987-1991 reflected Mitterrand’s primary strategic outlook of national independence and parity among the world powers, which he held consistently throughout his nearly 15 years as President. In other words, military space technologies were integral to France’s ability to decide its fate: “*La France, decidera, et elle seule, des affaires de la France*” (“France will decide, and she alone, the affairs of France”).<sup>217</sup>

However, the HELIOS program’s cost continued to plague CNES and the DGA. Having already committed to funding HELIOS in his second LPM, Mitterrand refused to delay the program any longer. The French invited other European partners to join the project. Partners would enjoy partial tasking authority over and could request images taken by the observation satellite in exchange for partial funding. On September 27, 1987, Italy joined the HELIOS program with a 14.1% funding stake, and Spain joined with a 7% funding stake a year later.<sup>218</sup> Despite France retaining only 78.9% of HELIOS funding and the program becoming a nominally tri-party cooperative project with shared tasking authority, HELIOS remained under France’s control. CNES continued to manage the program in collaboration with DGA, and the prime contract was awarded to French aerospace firm Matra – Marconi Space based in Velizy.

Nevertheless, HELIOS engendered European cooperation in military space that Mitterrand had envisioned when he first approached Helmut Kohl. Paolini argues that Franco-Italian-Spanish cooperation on HELIOS reflects the kind of European security and defense

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<sup>216</sup> Sénat de la République Française, LOI DE PROGRAMMATION n° 87-342, 5650.

<sup>217</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 50.

<sup>218</sup> Lenzer, “WEU and Helios 2,” 5.

cooperation favorable to the French insofar as France retains control over the project but opens participation to junior partners in exchange for funding streams.<sup>219</sup> HELIOS thus became a nominally European military space program, although it very much retained its French character and identity and remained under French military control.

*Return on Investment: Chirac and HELIOS in the Post-Cold War Era*

HELIOS-1A, the first of two military observation satellites, was successfully launched from Kourou atop the Ariane rocket on 7 July 1995.<sup>220</sup> By this point, Jacques Chirac was the President of France. A conservative of the Gaullist tradition and erstwhile Prime Minister under Valéry Giscard-d'Estaing (1974-1976) and François Mitterrand (1986-1988 during the so-called Socialist-Conservative co-habitation), Chirac was a strong advocate of French strategic autonomy and championed the success of the HELIOS program. For the new President, HELIOS-1A heralded the arrival of France as a strategic actor and was the culmination of nearly two decades of French political effort to achieve strategic autonomy.<sup>221</sup> France and its European partners now had independent access to intelligence-grade (<1m resolution) satellite images of Europe, the Mediterranean, North Africa, and the Middle East, which fell within France's traditional sphere of influence and where, in the 1990s, several regional crises were brewing.<sup>222</sup>

HELIOS proved its worth in providing France and European Union authorities with independent intelligence in Iraq a year after its launch. In September of 1996, the United States conducted unilateral air and missile strikes against Iraqi targets in Baghdad and Basra after

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<sup>219</sup> Paolini, "French Military Space Policy and European Cooperation," 207.

<sup>220</sup> Jean-François Augereau, "Lancement réussi à Kourou du satellite d'observation militaire Hélios 1-A," *Le Monde.fr*, July 9, 1995.

<sup>221</sup> Mary Dejevsky, "Chirac Says Europe Needs Its Own Spy Satellite, Free of US," *The Independent*, December 4, 1996, sec. News.

<sup>222</sup> Gregory, *French Defence Policy into the Twenty-First Century*, 139.

American intelligence accused Saddam Hussein of massing troops against the Kurdish population in northern Iraq. The alleged offensive violated United Nations Security Council Resolution 688, adopted after the Persian Gulf War, to protect Iraq's Kurdish and Shia populations from retaliation by Hussein.<sup>223</sup> The U.S. military struck air defense sites in southern Iraq based on American intelligence assessments, largely provided by U.S. reconnaissance satellites. The Americans also extended the no-fly zone north from the 32<sup>nd</sup> to the 33<sup>rd</sup> parallel, approximately 111 kilometers.<sup>224</sup> However, France quickly disputed the Americans' claims. The French tasked HELIOS-1A to monitor the situation and could not verify the large-scale troop movements that prompted American airstrikes. Consequently, Chirac's government criticized the U.S. action. France warned that it would withdraw from participating in no-fly zone enforcement under the auspices of Operation Southern Watch if the U.S. continued unilateral airstrikes under false pretexts.<sup>225</sup>

HELIOS-1A fulfilled its purpose by providing French political authorities with the intelligence necessary to maintain the independence of decisions in security and defense matters. HELIOS enabled France and its European partners to correlate or refute intelligence shared by the U.S., thereby ending the American monopoly on satellite-based intelligence. For their part, the Americans were less enthusiastic about the prospect of being publicly challenged by their French allies. President Bill Clinton had previously pressured the Europeans to abandon a European military observation satellite, ostensibly favoring a cheaper alternative from Lockheed-Martin but arguably maintaining American control over satellite-based intelligence in Europe.<sup>226</sup>

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<sup>223</sup> "United Nations Security Council (UNSC) Resolution 688," April 5, 1991, S/RES/688.

<sup>224</sup> Alison Mitchell, "U.S. Launches Further Strike Against Iraq After Clinton Vows He Will Extract 'Price,'" *The New York Times*, September 4, 1996, sec. World.

<sup>225</sup> Jacques Isnard, "Le satellite Helios-1 assure l'autonomie stratégique de la France en Irak," *Le Monde.fr*, September 19, 1996.

<sup>226</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 45.

HELIOS-derived intelligence once again proved useful in 2002 and 2003 during the lead-up to the American-led invasion of Iraq, Operation Iraqi Freedom. Unlike the Persian Gulf War, a decade earlier, the American invasion had far less international support. Jacques Chirac was especially opposed to the invasion. The French President disputed American claims that Saddam Hussein was developing weapons of mass destruction based on a lack of evidence. France's intelligence services under the DRM used HELIOS images to develop their own intelligence assessment. Jacques Chirac's criticism of the American decision to go to war in Iraq was based partly on intelligence developed from HELIOS-1A. The military observation satellite had once again reinforced France's independence of decision and strategic autonomy in the looming crisis. HELIOS-1A supported Chirac in keeping France out of the war and distancing itself from the "Anglo-Saxon" policy in Iraq.<sup>227</sup>

### **The Persian Gulf War**

In August 1990, Iraqi dictator Saddam Hussein invaded neighboring Kuwait to secure the country's oil fields and gain access to Kuwait's port on the Persian Gulf. The unprovoked attack was widely condemned, with Western leaders vowing to expel the invaders by force. Under the authority of UN Security Council Resolution 678, the ensuing effort to compel the status quo ante, dubbed Operation Desert Storm, involved an American-led coalition of 35 countries and became the largest ground conflict in a generation. Additionally, the Gulf War was widely regarded as the first "space war" because it was the first instance in "which the full range of military space systems was used in a conflict against another power."<sup>228</sup> Coalition forces, led by

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<sup>227</sup> Gregory, *French Defence Policy into the Twenty-First Century*, 139,

<sup>228</sup> Peter Anson and Dennis Cummings, "The First Space War: The Contribution of Satellites to the Gulf War," *The RUSI Journal* 136, no. 4 (December 1991): 45. See

the United States Central Command, relied heavily on satellite-based intelligence to identify precise locations of Iraq's air and ground defenses and satellite-based communications to command and control the operation and navigation to maneuver in featureless deserts.

### *Opération Daguet: French Forces in the Gulf War*

France joined the multinational coalition to expel Saddam's forces from Kuwait, deploying over 12,000 troops to form the *Daguet* Division, the aircraft carrier *Clemenceau*, and 40 aircraft to join the coalition war effort.<sup>229</sup> France and the UK were the only European countries contributing ground forces to Operation Desert Storm. However, France's participation in the Gulf War exposed two major foreign and defense policy issues. First, France faced major capability gaps and shortfalls in its conventional forces, which "underscored the gap between France's global rhetoric" and its ability to deploy credible forces outside Europe for military interventions.<sup>230</sup>

Second, the Gulf War continued publicly exposing the extent to which France depended on the United States for advanced capabilities, including satellite-based intelligence, communications, and navigation.<sup>231</sup> This dependence effectively placed the Americans in control of all coalition operations during the war. Further, it undermined France's long-standing assertions of maintaining the independence of decision and autonomy of action. Coalition air, ground, and maritime operational planners only had access to and were "guided by the collection, analysis, and presentation of data" that the U.S. wanted to share with its partners, including France.

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<sup>229</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 181.

<sup>230</sup> Philip Gordon, *French Security Policy after the Cold War* (RAND, 1992), 36.

<sup>231</sup> Gregory, *French Defence Policy into the Twenty-First Century*, 50.

One notable exception to France's dependence was the SPOT-1 satellite. Despite its original purpose to support civilian cartographers and its lackluster panchromatic optical resolution, coalition forces used commercially available SPOT-1 images to assess the disposition of Iraqi forces in Kuwait and along the Saudi border. Western analysts feared that Saddam Hussein might build on his success in capturing Kuwait and invading its southern neighbor Saudi Arabia. As the coalition built up forces in the Persian Gulf region during Operation Desert Shield in 1990, military planners and analysts relied on commercial satellite images from the French SPOT satellites and American LANDSAT satellites to quickly produce maps of the region and descriptions of large infrastructure in Iraq.<sup>232</sup> Once the air war began in January 1991, coalition pilots reportedly used 184 SPOT-derived images to help identify specific targets in Iraq and Kuwait. However, terminal guidance and navigation were still based on more advanced U.S. capabilities.<sup>233</sup> The U.S. Department of Defense reportedly spent \$6 million on commercial satellite imagery during Operation Desert Shield and Desert Storm. The DOD bought images from two American LANDSAT remote-sensing satellites and French SPOT satellites (SPOT-2 was launched on 22 January 1990 with the same capability as SPOT-1).<sup>234</sup> SPOT provided better resolution of the two commercial platforms, and its images were ideal for map-making and terrain analysis.<sup>235</sup> Given the backdrop of a featureless desert, SPOT-1 images had sufficient resolution to "detect, locate, and identify troop encampments in desert terrain," according to one American military assessment, but lacked detail to identify specific types of units and types of

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<sup>232</sup> Anson and Cummings, "The First Space War," 52.

<sup>233</sup> Jean-Paul Dufour, "Grâce à l'achat de ses images par le Pentagone Le satellite français Spot a guidé les raids américains dans le Golfe," *Le Monde*, May 26, 1991.

<sup>234</sup> Anson and Cummings, "The First Space War," 52.

<sup>235</sup> Neil deGrasse Tyson and Avis Lang, *Accessory to War: The Unspoken Alliance Between Astrophysics and the Military* (New York, NY: W.W. Norton & Company, 2018), 343.

forces.<sup>236</sup> Despite France's SPOT commercial imaging satellite and Mitterrand's commitment to developing the HELIOS military observation satellite, France could not contribute meaningful intelligence to the war effort once the war began in January 1991.

### *The First Space War*

Operation Desert Storm was dominated by superior U.S. satellite capability and capacity for reconnaissance and imagery, especially for precision navigation and timing (PNT). The U.S. DOD's NAVSTAR global position system (GPS) proved essential for coalition forces to navigate in the desert and conduct precision strikes against Iraqi targets, thus limiting the need for large-scale bombing and the potential for collateral damage. When the ground campaign began, ground and air forces equipped with GPS receivers outmaneuvered their adversaries under cover of darkness and overwhelmed the vaunted Iraqi army in 96 hours. But the paucity of receivers available meant only a few vehicles had GPS receivers installed to decipher encrypted NAVSTAR GPS signals. The lack of command-and-control systems compatible with American satellites complicated matters for French forces. After France left the NATO integrated military command structure in 1966, French forces could not integrate their systems with the U.S. like British forces were under NATO interoperability standards.<sup>237</sup> In Desert Storm, French forces depended entirely on whatever equipment the Americans could spare. The experience confirmed for Mitterrand that the French military was "painfully inadequate" for the modern battlefield.<sup>238</sup>

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<sup>236</sup> Vipin Gupta and LTC George Harris, "Detecting Massed Troops with the French SPOT Satellites: A Feasibility Study for Cooperative Monitoring" (Livermore, CA: Sandia National Laboratories); Tyson and Lang, *Accessory to War*, 343.

<sup>237</sup> Gregory, *French Defence Policy into the Twenty-First Century*, 50.

<sup>238</sup> Utley, *The French Defence Debate*, 187.

The lack of independent military space capabilities was especially frustrating to Mitterrand. The French President's frustration became more acute as the military campaign unfolded, reminding him of France's dependence on American space systems. In an especially painful episode for Mitterrand, during a meeting of coalition leaders, a senior American intelligence officer showed the French President high-resolution images of the war's area of operations but refused to leave copies with Mitterrand due to the sensitive nature of the photographs.<sup>239</sup> Mitterrand was humiliated and incensed. Two weeks after the war began, Mitterrand replaced his reluctant defense minister Jean-Pierre Chevènement, who opposed using force against Iraq, with Pierre Joxe.<sup>240</sup> Joxe shared Mitterrand's views about the need for France to maintain "son rang" or rank in the emerging post-Cold War context and echoed Mitterrand's concerns over independent military satellite needs. Both saw the independent capacity to collect and analyze battlefield intelligence from space as the new symbols of France's military and political autonomy and its quest for political *rang* and status in the world.<sup>241</sup> For France, military space posture in the post-Cold War world would become as important as the independent nuclear deterrent – the *force de frappe* – had been in the 1960s.

### *France Commits to Military Space*

A few weeks after the war ended, Joxe asserted that "the means of space will bring about changes as important as those brought about by nuclear strategy and deterrence" (« *les moyens de l'espace apporteront des mutations aussi importantes que celles apportées par la stratégie de*

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<sup>239</sup> Alan Riding, "After the War; France Concedes Its Faults in War," *The New York Times*, May 8, 1991.

<sup>240</sup> Riding, "After the War; France Concedes Its Faults in War."

<sup>241</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 181.

*dissuasion nucléaire* »).<sup>242</sup> The new defense minister added that France's experience in the Gulf made it even more important to develop an independent capacity for space observation.<sup>243</sup> In a speech before the French national assembly in June, the defense minister reinforced the importance of France closing the space capability gap:

The weakness of our [intelligence-gathering] means prevented us from having access to information in an autonomous and comprehensive fashion. Without intelligence from the allies, that is, the United States, we were almost blind. To leave our systems in their present state of insufficiency and dependence would considerably weaken our present and future defense effort.<sup>244</sup>

For France, the Gulf War was another watershed moment in the utility of space for military purposes. Although French forces successfully integrated into the tactical scheme of maneuver and performed ably in the air and ground campaigns against Iraq, the Gulf War reinvigorated French determination to distance itself from military dependence on Washington.<sup>245</sup> Desert Storm reinforced the stark lesson Mitterrand had learned since taking office: Europe needed to invest in military space capabilities.

The French legislature agreed. The French domestic political discourse shared the President's view that the Gulf War was a turning point in the utility of space for military purposes. A report to the *Sénat* in 1992, ahead of the legislative debates for the LPM 1993-1997, articulated that "France does not have, in the military field, the space means that its defense policy requires" (« *France ne dispose pas, dans le domaine militaire, des moyens spatiaux que sa politique de défense exige* »).<sup>246</sup> The report also reinforced the importance of timely and

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<sup>242</sup> "Au Forum de l'École de guerre M. Joxe invite l'Europe à développer ses moyens spatiaux," *Le Monde.fr*, April 12, 1991, [https://www.lemonde.fr/archives/article/1991/04/12/au-forum-de-l-ecole-de-guerre-m-joxe-invite-l-europe-a-developper-ses-moyens-spatiaux\\_4164466\\_1819218.html](https://www.lemonde.fr/archives/article/1991/04/12/au-forum-de-l-ecole-de-guerre-m-joxe-invite-l-europe-a-developper-ses-moyens-spatiaux_4164466_1819218.html).

<sup>243</sup> "Au Forum de l'École de guerre M. Joxe invite l'Europe à développer ses moyens spatiaux."

<sup>244</sup> Pierre Joxe, *Transcript of Speech to the Assemblée Nationale 6 June 1991*, quoted in Gregory, *French Defence Policy into the Twenty-First Century*, 50.

<sup>245</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 183.

<sup>246</sup> Xavier de Villepin, "Défense Nucléaire, Espace et Services Communs," Première Session Ordinaire de 1992 - 1993 (Paris: Sénat, November 24, 1992), [https://www.senat.fr/rap/1992-1993/i1992\\_1993\\_0059\\_04.pdf](https://www.senat.fr/rap/1992-1993/i1992_1993_0059_04.pdf), 62.

accurate information for political authorities for crisis management and conflict prevention in the changing geostrategic context. Multiple regional crises of limited but worsening intensity replaced Cold War-era tensions between the East-West blocs.<sup>247</sup> The political inertia driving France's independent military space posture in the wake of the Gulf War is summed up thus: "space systems are an essential component of a modern defense" (« *l'outil spatial [est] un composante essentielle d'un système de défense moderne* »).<sup>248</sup>

The essential nature of military space systems to France's post-Cold War military is evidenced by the country's defense spending in areas of military space. During a time of general decline in defense budgets across Western states due to reduced tensions, including in France, the French government increased its nominal spending on military space. The 1992 defense budget, enacted after the Gulf War, increased military space programs' spending by nearly 18 percent over the previous year.<sup>249</sup>

#### *A New World Order: The End of the Cold War*

The Gulf War occurred against the backdrop of a changing international system in which the balance of power was shifting away from the collapsing Soviet Union and Warsaw Pact and toward the West. The United States was firmly established as the most powerful state in the world. The threat of nuclear annihilation abated, and NATO and Western Europe no longer faced a conventional invasion from the East. Yet the collapse of the Soviet Union amplified the need for satellite-based intelligence to manage the uncertainty that came with the emergence of a handful of new nuclear states, Ukraine, Belarus, and Kazakhstan, which inherited Soviet

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<sup>247</sup> de Villepin, "Défense Nucléaire, Espace et Services Communs," 60.

<sup>248</sup> de Villepin, "Défense Nucléaire, Espace et Services Communs," 59.

<sup>249</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 183.

arsenals.<sup>250</sup> Strategic nuclear deterrence briefly regained prominence among France's defense priorities, while the *état-major* struggled to integrate military space functions into their respective services.

Additionally, while France's Gulf War experience convinced the generals about the utility of satellites for conventional operations, it exposed a gap in intelligence sharing and analysis among the military services. The French military had no holistic system to integrate military space systems within the planning and conduct of military operations. As a military capability, satellites struggled to find a home within the military bureaucracy. Thus, the primary impulse driving the French military to establish and develop its military space posture was political. Mitterrand and Pierre Joxe overcame institutional roadblocks within the armed services to implement their vision of autonomous military space capabilities. At Joxe's direction, the ministry of defense established a new entity, the *direction du renseignement militaire* (DRM), to manage the parochial squabbles and inter-service rivalries that emerged during the Gulf War in the sharing and dissemination of satellite-based intelligence.<sup>251</sup> The DRM reports directly to the CEMA and is staffed by military and civilian personnel from the army, air force, navy, and DGA.<sup>252</sup> The DRM and DGA work together to develop intelligence capability requirements, including space systems, to strengthen France's sovereignty and strategic autonomy.<sup>253</sup>

Germany's reunification in 1990 also promised to change the power landscape in Europe and recast the continent as a major global actor. Initially skeptical of a unified Germany, Mitterrand embraced it as the necessary spark to unite Europe as a single integrated political

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<sup>250</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 138.

<sup>251</sup> The DRM was created in 1992, and reports directly to the CEMA and the President. Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 138.

<sup>252</sup> Laurent Zecchini, "Renseignement français : la galaxie des 'services,'" *Le Monde.fr*, May 22, 2006.

<sup>253</sup> Zecchini, "Renseignement français."

entity. The French President and German Chancellor Helmut Kohl ultimately became chief architects of the Treaty on the European Union – commonly known as the Maastricht Treaty – which was initially signed in February 1992 and came into force in 1993.

Mitterrand and other French leaders now spoke of military space capabilities in the context of a unified Europe. In June 1991, Mitterrand convened his ministers to discuss the lessons of the Gulf War and to debate defense priorities for the forthcoming military program law for 1992-1996 (LPM 1992-1996). The French military would need to be organized for the security challenges of the post-Cold War era, which meant less emphasis on strategic nuclear deterrence and territorial defense of Western Europe and more on out-of-area crisis response and intervention. If space had become an obsession for Mitterrand, then it had become a hobby for Pierre Joxe, the defense minister. The defense minister's role was decisive in implementing Mitterrand's vision of an independent European military space capability.<sup>254</sup> Joxe insisted on "the absolute necessity for Europe to equip itself with its own space observation means, in order to diversify its sources of information."<sup>255</sup> Delaying the acquisition of independent military space systems would relegate France and Europe, which tended to follow France's lead in such matters, subordinate to the U.S.

The changing nature of international crises of the post-Cold War era also increased the intelligence requirements for an integrated Europe that sought to increase its capacity to act independently. With the receding Soviet threat came the rise in low-intensity political conflicts and civil wars in Africa, the Middle East, and the Balkans that frequently devolved into humanitarian crises. These crises, which occupied the space between peace and war and were

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<sup>254</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 138.

<sup>255</sup> Pierre Sevent, "Le débat d'orientation sur la défense Le gouvernement et les députés tirent les enseignements de la guerre du Golfe," *Le Monde.fr*, June 6, 1991.

characterized by uncertainty, threatened Europe's interests in preventing humanitarian disasters and mitigating conflicts. Satellites, argued Joxe, were the only means to provide "photographic proof" of evolving crises deemed essential by political authorities when other means were not feasible.<sup>256</sup> France would have to reorganize its intelligence services to better process and utilize the images derived from the forthcoming HELIOS satellite, including intelligence analysts and other personnel dedicated to the growing space-based intelligence enterprise.

However, the increased data analysis and processing burden allowed for greater European cooperation and integration on security matters. France, which had already partnered with Italy and Spain for HELIOS, viewed space as "a privileged area for European cooperation" on conflict prevention, crisis management, and arms control verification.<sup>257</sup> France's "grand design" in space was to achieve autonomy and independence in a European context rather than a strictly national one and consisted of parallel efforts to develop independent satellite capabilities and strengthen Europe's capacity to utilize satellite-based intelligence.<sup>258</sup> At France's behest in June 1991, the WEU Ministerial Council agreed to establish a WEU satellite center (WEUSC) in Torrejon de Ardoz, Spain, which would report directly to the WEU Council.<sup>259</sup> The French envisioned the WEUSC to support political decision-making in the EU's burgeoning common foreign and security policy (CFSP). The center achieved initial operation capability in 1993 using France's SPOT images, with funding from France, Germany, Italy, the UK, Spain, Belgium and Holland.

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<sup>256</sup> Pierre Joxe, "Defense et Renseignement," *Revue Défense Nationale*, no. 522 (Juillet 1991): 18.

<sup>257</sup> Joxe, "Defense et Renseignement," 19.

<sup>258</sup> Gregory, *French Defence Policy into the Twenty-First Century*, 140; Joxe, "Defense et Renseignement," 19; Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 183.

<sup>259</sup> "Ministerial Decision Setting Up a WEU Satellite Centre Taken at Vianden, Luxembourg, 27 June 1991" (WEU Secretariat General, June 27, 1991), Centre virtuel de la connaissance sur l'Europe, [http://www.cvce.eu/obj/decision\\_of\\_the\\_weu\\_council\\_of\\_ministers\\_setting\\_up\\_a\\_weu\\_satellite\\_centre\\_vianden\\_27\\_jun\\_e\\_1991-en-e5018f3a-04fd-43ea-8c4b-6368fe2852dc.html](http://www.cvce.eu/obj/decision_of_the_weu_council_of_ministers_setting_up_a_weu_satellite_centre_vianden_27_jun_e_1991-en-e5018f3a-04fd-43ea-8c4b-6368fe2852dc.html).

As European security and defense integration began to take shape around the Franco-German core, led by Mitterrand and Kohl, Europe's post-Cold War military space sector remained fragmented. Differences persisted between the two leaders regarding their respective roles in European defense, NATO, and continued American presence and participation in European defense. As previously discussed, Mitterrand envisioned a leading role for France in the post-Cold War era, where France retained its rank and status in the international system, albeit as the nominal leader of a unified Europe. European integration was the means through which France could assert its strategic ambitions vis-à-vis the world powers.<sup>260</sup> Kohl, for his part, was more focused on the political consolidation of unified Germany and European integration and preferred not to bother with complicated and historically loaded security and defense issues, especially if NATO continued to bear the burden. Additionally, German forces remained in the NATO integrated command structure, were organized to operate in a NATO context for territorial defense, and thus had access to NATO for intelligence and military space capabilities. Consequently, the Germans viewed space as primarily a civil domain.<sup>261</sup>

Alternatively, the French, spurred by the end of the Cold War, the Gulf War experience, and emerging regional crises in Africa and the Balkans, reimagined their defense priorities whereby nuclear deterrence was no longer the primary function of France's military. The 1994 Defense White Paper (*Livre blanc sur la défense*), the first since the 1972 edition, characterized the strategic context as [...]. The White Paper explained the need for France to update its doctrine and capabilities because "the circumstances, the threats, the risks are different" (« *[l]es circonstances, les menaces, les risques sont différents* ») in the post-Cold War era, adding that to

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<sup>260</sup> Kocs, *Autonomy or Power?* 237.

<sup>261</sup> See Chapter 4 of this dissertation for a discussion on Germany's strategic outlook during this era, and the country's perceptions of space. Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 139.

maintain France's defense using "outdated conceptions and capacities, to refuse or delay a necessary change, would represent an inadmissible risk" (*« des conceptions et des capacités dépassées, refuser ou retarder une nécessaire mutation, représenterait un risque inadmissible »*).<sup>262</sup> In this context, the White Paper specifically outlined the urgency with which France would bolster its military space capabilities and that Europe had to define and implement a military space policy to support a common European defense.<sup>263</sup>

By the 1990s, France had firmly committed to pursuing an autonomous military space posture. Although HELIOS-1A and subsequent French military space systems were developed with funding and industrial collaboration from other European countries, they remained decidedly French projects, with France in charge of overall management and asset tasking once in orbit. Yet the advent of the EU's CSDP, punctuated by the St. Malo agreement in 1998, meant that France would develop its military space posture in a European context. France became the world's third space power by developing a national space program. France also became the European civil and military space activity leader by advancing the Ariane project and the CSG in Kourou. But by the 1990s, France promoted greater European integration and cooperation on security and defense for the 21<sup>st</sup> century.

## Conclusion

France was the first European country and NATO ally to develop an independent military space posture with the HELIOS-1A military observation satellite launch in 1995. The effort to develop HELIOS spanned over 20 years from 1972 until 1995, a period that included an overt attempt to militarize space by the United States through the Strategic Defense Initiative, the end

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<sup>262</sup> Ministère de la Défense, "Livre Blanc sur la Défense," 1994, 5.

<sup>263</sup> Ministère de la Défense, "Livre Blanc sur la Défense," 134.

of the Cold War, and the collapse of the Soviet Union, the major systemic shock of the latter half of the 20<sup>th</sup> century. For France, a regional power seeking to maintain its *rang* in the international system dominated by the great powers, military space posture became the guarantor of national autonomy and independence of decision and action, the same way that a strategic nuclear deterrent had been in the 1960s. However, France first had to navigate the international and domestic constraints and overcome the institutional and bureaucratic roadblocks precluding the development of an independent military space capability. It was primarily François Mitterrand's leadership, informed by a deeply held strategic outlook tied to Gaullist principles and a vision of an integrated European Union, to generate the political will necessary for France to remain the world's third space power.

In the late 1970s, military space capabilities were seen as peripheral to and, at best, extensions of France's strategic nuclear deterrent. When Giscard-d'Estaing started SAMRO, the military services saw it as little more than an expensive gadget of little military value that would only divert limited military budgets away from the army, air force, and navy. Giscard-d'Estaing's political priority at the time was to develop France's independent space launch capability, the *Ariane* rocket. SAMRO withered as France took full advantage of the commercial possibilities of independent space launch. However, the shift of military space capability from the periphery to a core element of France's national independence began in earnest after François Mitterrand became President. In 1983 U.S. President Ronald Reagan announced his intentions to develop a space-based defensive system to neutralize Soviet nuclear missiles. Mitterrand believed the program would erode the credibility of France's nuclear deterrent and risk making the world less safe by placing weapons in orbit. The stakes for France and Europe were high.

Strategic outlook drove Mitterrand to refuse to participate in SDI. Mitterrand's strategic outlook emphasized national independence and military parity with the U.S. and Soviet blocs. Mitterrand wrote that "one of the simple ideas of French foreign policy [is] the balance between the blocs," (« *l'une des idées simples de la politique extérieure de la France : l'équilibre entre les blocs* »).<sup>264</sup> In this view, Mitterrand also believed that France could only achieve its proper status through an integrated Europe. Mitterrand took France's growing role in the defense of Europe seriously and consequently promoted greater security cooperation in Europe. He fiercely protected France's status in the world and as Europe's leader on military and defense issues, both of which were tied to France's strategic nuclear capability.

By the mid-1980s, the international context that existed when Mitterrand took office in 1981 had shifted, raising the pressure on Mitterrand to strengthen France's contribution to European defense and modernize France's conventional and nuclear forces. In the "Star Wars" era, modern powers required a dedicated military satellite capability with the appropriate resolution for reconnaissance and targeting (generally under 6 meters). SDI made it clear to the French President that space had become an operational domain that France could no longer ignore from a security and defense perspective.

Mitterrand perceived two nuclear-related trends involving the superpowers, which brought the need for greater French autonomy in space into sharp focus. These trends would also help Mitterrand overcome the bureaucratic and budgetary constraints that grounded SAMRO. First, American technical progress on SDI raised questions about the impact of space-based anti-ballistic missile systems on France's nuclear deterrent. The Soviet military buildup in the early 1980s, including its nuclear stockpiles, outpaced the U.S. and the Western Europeans. Mitterrand

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<sup>264</sup> Mitterrand, *Réflexions Sur La Politique Extérieure De La France*, 49.

had already ordered the ministry of defense to modernize France's nuclear deterrent in response to SDI, emphasizing the capability to penetrate any potential ballistic missile defense systems the Soviets may acquire. Satellite reconnaissance became a necessary priority for Mitterrand to maintain the credibility of France's independent nuclear capability, retain autonomy of decision and action involving their use, and instill a permanent nuclear crisis management capacity.<sup>265</sup>

Second, renewed arms reduction talks and the prospect of denuclearization between the U.S. and the Soviet Union raised uncertainty about the long-term strategic balance in Western Europe.<sup>266</sup> The Europeans were concerned that a strategic rapprochement between the superpowers would precipitate the withdrawal of American nuclear weapons from the continent and the promise of extended deterrence that had kept the peace for forty years.<sup>267</sup> Especially concerning for Mitterrand was that France could not influence NATO's nuclear posture in Europe, having withdrawn from the integrated military command in 1966. While France's position allowed it to maintain distance and independence from U.S. nuclear dominance of the Alliance, it also limited intelligence sharing and consultations under the auspices of SHAPE. Chief among Mitterrand's concerns was that growing calls among American elites to adopt a "no first use" of nuclear weapons policy to defend Europe from a conventional Soviet attack was a "disconcerting first step toward a nondeterring policy of 'no use at all.'"<sup>268</sup> Ronald Reagan's vision for the end of mutually assured destruction and the prospect of further denuclearization following the U.S.-Soviet summit at Reykjavik in 1986 further aggravated Mitterrand's concerns. Even Valéry Giscard-d'Estaing, Mitterrand's predecessor from an opposing political

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<sup>265</sup> Paolini, "French Military Space Policy and European Cooperation," 205.

<sup>266</sup> Utley, *The French Defence Debate*, 53-54.

<sup>267</sup> Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 140.

<sup>268</sup> For example, see McGeorge Bundy et al, "Nuclear Weapons and the Atlantic Alliance." *Foreign Affairs*, February 1, 1982. <https://www.foreignaffairs.com/articles/united-states/1982-03-01/nuclear-weapons-and-atlantic-alliance>. Also see Gordon, *A Certain Idea of France: French Security Policy and the Gaullist Legacy*, 140.

party, lamented the “indifference or quasi-indifference” toward European Security on display at Reykjavik.<sup>269</sup> Denuclearization gained further steam in 1987 with the INF Treaty, in which the U.S. and the Soviet Union agreed to eliminate IRBM from their arsenals.

The elimination of ground-based nuclear missiles from Europe and popular pressure in many European countries, especially Germany, to reduce the U.S. military presence there concerned Mitterrand. In an interview in 1987, Mitterrand warned that the INF treaty might precipitate the United States “decoupling” itself from Europe, NATO notwithstanding.<sup>270</sup> Mitterrand understood that France would have to maintain its nuclear deterrent, modernize its conventional forces, and increase its contribution to European defense. The only way to offset the risks of American decoupling from Europe was for France to lead Europe in security and defense cooperation founded on the independent nuclear deterrent. By this point, Mitterrand understood that national autonomy and independence of decision and action required dedicated military space systems, specifically imagery, and communications.

Incidentally, the end of the Cold War and the ensuing collapse of the Soviet Union seemingly reduced the nuclear threat dynamics that drove France to develop its strategic nuclear deterrent. However, by this point, Mitterrand was firmly committed to acquiring an independent military space capability, making it a central tool of French and European independence. The European Union’s emergence from the Cold War as an integrated political and security actor, for which Mitterrand had been among the strongest proponents, reinforced the need for Europe to possess its intelligence tools to reduce the bloc’s dependence on NATO and the Americans. American dominance in satellite-based intelligence during the Persian Gulf War made it

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<sup>269</sup> Valéry Giscard d’Estaing, “Pour Une Expression de Solidarité Européenne,” *Le Monde*, November 8, 1986.

<sup>270</sup> François Mitterrand, Interview de M. François Mitterrand, Président de la République dans “Le Nouvel Observateur” du 18 décembre 1987, interview by Jean Daniel, December 18, 1987, <https://www.vie-publique.fr/discours/137240-interview-de-m-francois-mitterrand-president-de-la-republique-dans-le>.

painfully clear to Mitterrand that space-based systems are not simply extensions of a strategic deterrent. Military space systems were vital tools that could provide political authorities with information to enable decision-making, especially during crises.

When de Gaulle decoupled France from the NATO integrated military command structure in 1966, France occupied a unique status in the international system. As an independent nuclear and space power, the country holds firmly to its Gaullist roots of national autonomy and independence of action and decision. Yet throughout the Cold War, and especially after, the reality often clashed with the political rhetoric from the Elysée Palace about France's *grandeur* and *rang*. It took the leadership, vision, and strategic outlook of the Presidents of the Fifth Republic, especially Mitterrand, to perceive the emergence of space as an operational domain. They marshaled the political will to prioritize the development of military space capabilities in the face of domestic and bureaucratic obstacles to achieve greater independence in space and eventually transform into France's autonomous military space posture in the 21<sup>st</sup> century.

## **CHAPTER 3: Military Space Posture Development in the United Kingdom, 1967-1999**

### **Introduction**

The United Kingdom was the only country among the major European powers that had survived World War II with its major political institutions intact. However, the country was bankrupt and faced the consequences of a disintegrating empire and successive economic crises. As a result, resource constraints and concerns over fiscal solvency dominated British strategic choices throughout the Cold War. They tempered the strategic outlook held by the occupants of Number 10 Downing Street, and their relative lack of decision-making autonomy, especially when compared to France. UK defense policy during this time was a constant exercise in reconciling the mismatch between resources and commitments.<sup>1</sup> The UK was cash-strapped after World War II and leaned heavily on its cousins “across the pond” for big-ticketed defense technologies, such as ballistic missiles for the nuclear deterrent and access to space-based capabilities. The U.S.-UK “special relationship” was borne out of the English-speaking intelligence-sharing community of World War II, known as the “five eyes” and scientific collaboration during the Manhattan Project. Except for a brief interlude during the Suez Crisis of 1956, the “special relationship” was a constant that influenced UK foreign policy, strategy, and decision-making throughout the Cold War and beyond.

First coined in 1946 by Winston Churchill during his famous “Iron Curtain” speech in Fulton, Missouri, the “special relationship” refers to the “fraternal association of the English-speaking peoples,” specifically the United States and the British Commonwealth, which

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<sup>1</sup> Lawrence Freedman, *The Politics of British Defence, 1979 -98* (Basingstoke: Macmillan Press Ltd., 1999), 81.

Churchill believed was necessary to prevent war in the nuclear age. Churchill went on to say, in no uncertain terms, that the “special relationship” required:

[n]ot only the growing friendship and mutual understanding between our two vast but kindred Systems of society, but the continuance of the intimate relationship between our military advisers, leading to common study of potential dangers, the similarity of weapons and manuals of instructions, and ... the continuance of the present facilities for mutual security by the joint use of all Naval and Air Force bases in the possession of either country all over the world.<sup>2</sup>

Thus the “special relationship” was more than a military alliance or mutual defense agreement. It reflected a common set of values and beliefs and a shared perception that the United States was the world’s preeminent power to which the UK had passed the torch of great power status after World War II. The passage also reflects Churchill’s belief that the U.S. and UK should cooperate and collaborate on foreign and security policy and share military capabilities and emerging technologies, which might result in “important financial savings.”<sup>3</sup>

Financial savings and budgetary constraints were primary concerns for UK Prime Ministers throughout the Cold War. Resource constraints tempered material and global ambitions, such as they were, given the disintegration of the British Empire after World War II. The “special relationship” thus granted the UK access to advanced U.S. military hardware and technologies. Examples include the *Skybolt*, *Polaris*, and *Trident* missiles for the UK’s nuclear deterrent and space-based intelligence capabilities. The UK’s technical and industrial capacity was not a limiting factor, especially given the close collaboration between the UK and the U.S. during the Manhattan Project.<sup>4</sup> However, Prime Ministers and other decision-makers faced tight defense budgets and frequent domestic economic crises. Coupled with the relative independence

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<sup>2</sup> Winston Churchill, “The Sinews of Peace (‘Iron Curtain Speech’),” International Churchill Society, March 5, 1946, <https://winstonchurchill.org/resources/speeches/1946-1963-elder-statesman/the-sinews-of-peace/>.

<sup>3</sup> Churchill, “The Sinews of Peace (‘Iron Curtain Speech’).”

<sup>4</sup> Freedman, *The Politics of British Defence, 1979 -98*, 33.

and influence of the Chancellor of the Exchequer, the UK's finance minister, these factors tended to cause a more pragmatic approach to defense acquisitions and materiel procurement, including military space hardware. In other words, the UK would often seek to acquire a better and cheaper capability from the U.S. than developing it at home.

This chapter first reviews the UK's early and promising history in space and then discusses the elements of the UK's strategic outlook in the context of the British political system. The chapter then examines four cases involving the UK's military space posture and decision-making on military space policy. Two case studies explore military space capabilities, SKYNET and ZIRCON, and the decisions and contexts surrounding their outcomes. The other two case studies examine the effects of systemic inputs due to the Strategic Defense Initiative and military space policy decisions in the United States, as well as the crisis in the Persian Gulf and the end of the Cold War. The chapter concludes with a review of the major findings and long-term implications for the UK's military space posture in the 21<sup>st</sup> century.

### **The UK Space Program: A Brief History**

The United Kingdom is no stranger to advanced military technologies. During World War II, British scientists were pioneers in signals intelligence, having cracked the German Enigma cipher, and made groundbreaking discoveries in nuclear physics, which contributed to the success of the Manhattan Project. Similarly, researchers and academics developed an early enthusiasm for the scientific potential of rocketry and space technologies. After World War II, the UK was the first to recognize the scientific and technological implications of Germany's V-2 rockets, which had terrorized the UK late in the war. However, by the 1960s, the UK's economic troubles dwarfed the country's advances in rocket technologies. The persistent Euro-skepticism

in UK politics precluded greater British cooperation on European space programs, despite joining the European Community in 1974. Time and again, the UK favored its “special relationship” with the United States, which extended to space launch and military space capabilities, over deeper collaboration with the rest of the Europeans.

### *British Interplanetary Society*

British scientists and engineers expressed interest in rocketry and spaceflight in the 1930s. The British Interplanetary Society (BIS), formed in 1933, gathered like-minded amateurs from British academia and industry to develop rocket experiments and study the practical utility of rocketry.<sup>5</sup> Unfortunately for the BIS, the British Explosives Substances Act of 1875, known as the Guy Fawkes law, prohibited manufacturing or experimentation with explosive materials, including those used as rocket propellants. As a result, the BIS was limited to theoretical work on rocketry rather than experiments like their German counterparts.

After the war, BIS membership grew, along with Government interest in the military utility of the V-2. Like the Americans, the British seized dozens of German rocket scientists from the V-2 program, including Walter Riedel, one of the chief technical designers of the V-2 rocket.<sup>6</sup> Under what was known as *Operation Surgeon*, the UK’s analog to *Operation Paperclip*, the UK sought to exploit Nazi technical advances, expertise, and state-of-the-art equipment from research institutes and industry associated with the V-2 program and deny the same to the

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<sup>5</sup> Harvey, *Europe’s Space Programme: To Ariane and Beyond*, 33.

<sup>6</sup> The Americans over 100 German rocket engineers and scientists, including Werner von Braun, the overall technical director of the V-2 program, under the auspices of “Operation Paperclip” to work on the budding U.S. space program. Riedel eventually went to work for the United States after the UK abandoned its rocket program. Annie Jacobsen, *Operation Paperclip: The Secret Intelligence Program That Brought Nazi Scientists to America* (New York, NY: Back Bay Books, 2015), 462.

Soviets.<sup>7</sup> UK and German scientists conducted studies on adapting the German V-2 rocket, which had terrorized London during the war, for manned spaceflight.<sup>8</sup> The Ministry of Defence ultimately conducted three V-2 test launches in 1945 with captured rockets, but their interest was purely military. BIS favored utilizing rockets for scientific rather than military purposes and distanced itself from the MoD experiments. Given that BIS was an enthusiast group and not an official Government agency, the military dimensions of the V-2 tests stifled the UK's rocketry programs. Unlike the United States or the Soviet Union, which had developed major national rocket programs to support their space flight interests, the UK only possessed a few smaller programs run by several Government entities and locations.<sup>9</sup>

The Ministry of Supply assumed the Rocket Propulsion Establishment (RPE) from the MoD and directed work on solid and liquid-fueled rockets with about 20 German scientists. Meanwhile, the MoD retained control of the Royal Aircraft Establishment (RAE), which would eventually develop proposals for experimental sounding rockets known as *Skylark*.<sup>10</sup> *Skylark* would become the UK's first successful multistage rocket, launched from Woomera, Australia, in 1957, and set the foundations for later UK rockets, including *Blue Streak* and *Black Arrow*.<sup>11</sup>

### *Blue Streak: The Failed Ballistic Missile Program*

During World War II, the UK embarked on an atomic weapon development program that was later merged with the American Manhattan Project in 1943. British scientists participated in

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<sup>7</sup> Matthew Uttley, "Operation 'Surgeon' and Britain's Post-War Exploitation of Nazi German Aeronautics," *Intelligence and National Security* 17, no. 2 (June 1, 2002): 2.

<sup>8</sup> The V-2 was the military variant of the experimental A-4 rocket designed at Peenemunde. The A-4 was the world's first modern rocket to use internal guidance systems and reach the edge of space. See also Harvey, *Europe's Space Programme: To Ariane and Beyond*, 19-21, 34.

<sup>9</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 34.

<sup>10</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 34.

<sup>11</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 20.

nearly every aspect of the Manhattan Project and helped produce the two bombs that ended World War II. However, after the war, the United States restricted all foreign access to nuclear information, designs, and materials under the Atomic Energy Act of 1946, also known as the McMahon. The UK subsequently restarted its atomic weapon development program, code-named “High Explosive Research,” which culminated with a successful test of an atomic weapon in 1952. The UK thus became the world’s third nuclear power after the United States and the Soviet Union. With its newfound capability, the UK sought to develop more efficient means to deliver atomic weapons to ensure a credible deterrent, including ballistic missiles.

In 1955, the MoD assigned RAE the task of developing a British ballistic missile. The RAE awarded the prime contract to de Havilland Propellers Ltd, a British aerospace company, to research, develop, and test the British missile called *Blue Streak*.<sup>12</sup> However, de Havilland lacked the necessary rocket propulsion expertise for such a large rocket. The MoD and the American Department of Defense brokered a cooperation agreement with U.S. firms Convair, General Dynamics, and Rocketdyne, which were working on a new American rocket, *Atlas*.<sup>13</sup> As a result, the *Blue Streak* and *Atlas* rockets shared similar propulsion and overall design characteristics.

The *Blue Streak* program was a closely guarded secret in the UK until the Suez Crisis caused a rift between the UK and the U.S. in 1956. Additionally, the Soviet Union had increased production of long-range bombers and threatened to punish the UK for their actions in Egypt.<sup>14</sup> The Suez debacle resulted in Anthony Eden’s resignation as Prime Minister and leader of the Conservative Party. His successor, Harold Macmillan, assumed office in January 1957 and

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<sup>12</sup> Kevin Madders, *A New Force at a New Frontier: Europe’s Development in the Space Field in the Light of Its Main Actors, Policies, Law, and Activities from Its Beginnings up to the Present* (Cambridge: Cambridge University Press, 1997), 11.

<sup>13</sup> Harvey, *Europe’s Space Programme: To Ariane and Beyond*, 20.

<sup>14</sup> Madders, *A New Force at a New Frontier*, 12.

sought to immediately repair the U.S-UK “special relationship.”<sup>15</sup> As part of this effort, Macmillan commissioned a White Paper to outline the UK’s defense policy and demonstrate to the Americans the UK’s progress in nuclear capabilities, including ballistic missiles.<sup>16</sup> Thus, in March 1957, the MoD published its “Outline of Future Policy.” The paper acknowledged that scientific advances attendant to rocket technologies had “fundamentally altered the whole basis of world strategy,” committed to developing an independent nuclear deterrent for the UK and declared that “ballistic rockets will be introduced to supplement the V-bombers,” the RAF’s family of nuclear-capable strategic bombers.<sup>17</sup>

When the Soviet Union orbited SPUTNIK in October 1957, the UK Government sought to leverage *Blue Streak* for a national space program to join the space race and launch its own satellites. Beginning in 1958, the UK conducted several successful launches of *Blue Streak* and a satellite-carrying variant called Black Knight at the Woomera rocket range in Australia.<sup>18</sup> Like the U.S., the UK was in a strong position to build its ballistic missile program to become the world’s third space power.<sup>19</sup> Around the same time, the BIS lobbied the government to establish a civilian space agency, akin to a “British NASA,” to fund, integrate, and oversee aerospace technology developments across industry and government research programs, such as RPE and RAE.<sup>20</sup> In 1959, British National Committee for Space Research (BNCSR), a quasi-governmental organization established by the Royal Society, assumed responsibility for discussions and negotiations with NASA on behalf of the UK Government. BNCSR was later

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<sup>15</sup> Donette Murray, “Macmillan and Nuclear Weapons: The SKYBOLT Affair,” in *Harold Macmillan: Aspects of a Political Life*, ed. Richard Aldous and Sabine Lee (New York, NY: St. Martin’s Press, 1999), 217.

<sup>16</sup> Murray, “Macmillan and Nuclear Weapons: The SKYBOLT Affair,” 217.

<sup>17</sup> “Outline of Future Policy” (Ministry of Defence, March 15, 1957), CAB/129/86, The National Archives, 13.

<sup>18</sup> Harvey, *Europe’s Space Programme: To Ariane and Beyond*, 36.

<sup>19</sup> Harvey, *Europe’s Space Programme: To Ariane and Beyond*, 38.

<sup>20</sup> Madders, *A New Force at a New Frontier*, 12.

integrated into a formal committee reporting to the House of Commons leadership.<sup>21</sup> The BNCSR performed the functions and was the basis for the British National Space Centre, founded in 1985.

Despite the success of *Blue Streak* and the demonstrated technical abilities of UK industry, enthusiasm among senior officials for *Blue Streak* as a viable ballistic missile and space launch vehicle began to wane. The UK's proximity to the Soviet Union, and the Soviet's increasing ballistic missile threat, against which there were no defenses at the time, meant that the UK would have minutes to respond to a missile launch warning from the Soviet Union. Since *Blue Streak* missiles were liquid-fueled, they could not be maintained in a ready-to-launch posture and would require about fifteen minutes to prep for launch.<sup>22</sup> *Blue Streak* was vulnerable to a Soviet first strike, making the missile effectively obsolete before it ever entered service. In late 1959, the UK Chiefs of Staff voiced their concerns about the credibility of the UK's independent nuclear deterrent based on *Blue Streak*, which could only be fired from fixed sites.<sup>23</sup> Within months, the Defence Committee decided to abandon *Blue Streak*, not for financial reasons but for operational considerations. As Macmillan recalled in his memoirs:

[I]t was difficult to resist the pressure which was beginning to grow in many quarters against the concept of ballistic rockets fired from a fixed – and therefore vulnerable – site. By the end of 1959, it was clear to me that the future of *Blue Streak* was in doubt. By February 1960, the issue came to a head. After several days of formal debate among the Ministers specially concerned and long informal discussions, the Defence Committee decided on 24 February in principle to abandon *Blue Streak* as an operational weapon.<sup>24</sup>

Instead of land-based ballistic missiles, the Chiefs of Staff advocated for building a credible deterrent around missiles that could be fired from air or sea platforms, namely submarines. The

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<sup>21</sup> Harrie Massey and M.O. Robins, *History of British Space Science* (Cambridge: Cambridge University Press, 1986), 36.

<sup>22</sup> Madders, *A New Force at a New Frontier*, 17.

<sup>23</sup> Harold Macmillan, *Pointing the Way: 1959-1961* (New York, NY: Harper & Row Publishers, 1972), 251.

<sup>24</sup> Macmillan, *Pointing the Way: 1959-1961*, 251.

UK had not developed such a capability. It thus decided to acquire the U.S.-made *Skybolt* missile as an interim solution, which could be launched from the UK's strategic bombers until a suitable SLBM capability could be developed.<sup>25</sup> However, to maintain progress on an independent nuclear deterrent, the UK first had to secure an agreement with the U.S. to acquire *Skybolt* before *Blue Streak* could be canceled.<sup>26</sup>

A credible, independent nuclear deterrent was a major policy priority for Macmillan's Conservative Government, as noted in the 1957 Defence White Paper. Macmillan visited Dwight Eisenhower at Camp David in March 1960 to secure an American commitment to provide the UK with *Skybolt* or *Polaris*, the newly developed American SLBM. *Skybolt* was more suitable and less expensive than *Blue Streak*.<sup>27</sup> Eisenhower agreed to furnish the UK with *Skybolt* and later *Polaris* in exchange for permission to station U.S. nuclear submarines in Scotland.<sup>28</sup> With the UK's nuclear deterrent capability secured, Macmillan returned from the U.S. to inform the Queen and Parliament of the Government's decision to cancel *Blue Streak*. Macmillan wrote to the Queen that he:

[W]as able, while in American, to get an assurance from the President that we shall be able to obtain either *Skybolt* or *Polaris* when we need them. This will enable us without further hesitation to put an end to *Blue Streak*, a weapon which the Chiefs of Staff now feel to be obsolescent and unsuitable. To finish it would cost us another £600 million, and by the time it was ready it would really be out of date.<sup>29</sup>

The Government's decision to abandon *Blue Streak* in favor of the U.S. *Skybolt* and *Polaris* missiles committed the UK to an "independent" nuclear deterrent that was entirely dependent on the United States.<sup>30</sup> Additionally, there was little interest in maintaining *Blue Streak* for

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<sup>25</sup> Murray, "Macmillan and Nuclear Weapons: The SKYBOLT Affair," 218.

<sup>26</sup> Macmillan, *Pointing the Way: 1959-1961*, 252.

<sup>27</sup> "Outline of Future Policy," 4; Macmillan, *Pointing the Way: 1959-1961*, 253.

<sup>28</sup> Madders, *A New Force at a New Frontier*, 17.

<sup>29</sup> Macmillan, *Pointing the Way: 1959-1961*, 253.

<sup>30</sup> John Turner, *Macmillan* (London: Longman Group, 1994), 155.

independent space-launch services.<sup>31</sup> However, an opportunity arose to leverage *Blue Streak* for space cooperation with Europe and to facilitate Macmillan's efforts to join the EEC.

### *UK and European Space Cooperation*

Despite *Blue Streak's* cancellation as a military weapon, the UK in 1960 was one of two budding European space powers with a nominal space launch capability, the other being France. As a result, officials in the BNCSR and industry leaders hoped to adapt the missile into a satellite-launch vehicle.<sup>32</sup> However, no ministry in the government would take on such an expensive project. Coincidentally, in April 1960, a few months after the Government's decision to cancel *Blue Streak*, the Royal Society convened a meeting with scientists from eight European countries to discuss developments in space research and related technologies. The main item on the agenda was a discussion about creating a European organization for space research.<sup>33</sup> France and the UK had nominal space programs, but the French were the most enthusiastic about putting satellites in orbit. As a result, the scientists discussed at length the development of a European space launch vehicle as an alternative to reliance on the U.S. The *Blue Streak* missile, it turned out, was the most promising path forward to achieve that goal.<sup>34</sup>

The French were especially interested in *Blue Streak* for their own space launch and military intentions. When Macmillan met with de Gaulle in January 1961 to discuss the UK joining the EEC, the two leaders discussed *Blue Streak*. They agreed in principle to cooperate on a European launch vehicle called *Europa*.<sup>35</sup> De Gaulle was nominally interested in Europe

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<sup>31</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 38.

<sup>32</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 38.

<sup>33</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 26.

<sup>34</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 27; Harvey, *Europe's Space Programme: To Ariane and Beyond*, 39.

<sup>35</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 41.

becoming the world's third space power. Still, he specifically wanted access to *Blue Streak* as a weapon system and obtain American-inspired designs and technology for France's nuclear deterrent, which the U.S. had withheld.<sup>36</sup> In April 1961, the UK and France presented the *Europa* proposal to the other Western European countries at a meeting in Strasbourg, France, which culminated with the signing of the Convention establishing the European Launcher Development Organization (ELDO).<sup>37</sup> Seven countries signed the ELDO Convention: France, the UK, Belgium, West Germany, Italy, the Netherlands, and Australia, which would provide the launch facilities for *Europa*.<sup>38</sup> ELDO began operations in early 1964 and, together with the European Space Research Organization (ESRO), which was responsible for satellite development, marked the beginning of European collaboration and funding for space. *Blue Streak*, through ELDO, bound the UK to the rest of Europe, even as de Gaulle vetoed the UK's bid to join the EEC in 1963.

As part of its contribution to ELDO and *Europa*, the UK tested *Blue Streak* in Woomera, Australia. However, while the *Europa I* rocket's *Blue Streak*-based first stage test launches were largely successful, tests of the French-built second and German-built third stages in 1967 were largely unsuccessful. ELDO attempted to launch a complete *Europa I* rocket in November 1968, which exploded as the third stage was about to ignite. Two more launches in 1969 and 1970 also failed, resulting in budget increases to overcome technical difficulties and delays.<sup>39</sup> ELDO's persistent troubles with *Europa I* coincided with economic troubles in the UK during the 1960s.

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<sup>36</sup> Roger M. Bonnet and Vittorio Manno, *International Cooperation in Space: The Example of the European Space Agency* (Cambridge, MA: Harvard University Press, 1994), 12; see also Chapter 2 of this dissertation.

<sup>37</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 41.

<sup>38</sup> Madders, *A New Force at a New Frontier*, 41.

<sup>39</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 44; Bonnet and Manno, *International Cooperation in Space*, 13.

Harold Wilson's Labour Government, which assumed power in 1964, was under domestic political pressure to reduce expenditures. In 1965, Wilson's Cabinet decided to end the UK's involvement in ELDO but did not formally announce its decision until years later.<sup>40</sup> The UK finally announced its decision to withdraw from ELDO in 1968 following the Sterling devaluation crisis. According to Brain Harvey, there were two main reasons for the UK's withdrawal. First, the UK could no longer afford *Europa's* development costs, which had ballooned to over £250 million, thanks in part to the British press's unfavorable coverage of ELDO.<sup>41</sup> That a European satellite launch aboard *Europa I* would cost 33% more than an equivalent American launch further underscored the UK's financial concerns.<sup>42</sup> Second, the UK felt ELDO's mandate to develop a European launcher placed the UK in an uncomfortable position of competing directly with the United States.<sup>43</sup> Wilson did not want to unnecessarily antagonize the U.S. because the UK relied on the U.S. for its *Polaris* SLBM, and the Prime Minister had just partnered with the U.S. to develop the UK's first military communication satellite, SKYNET.<sup>44</sup>

Other ELDO members were similarly frustrated with *Europa's* rising costs and continued failures. In 1973, the ELDO Council canceled the development of *Europa II* because the French space agency, CNES, had already begun work on a French-funded launcher called L3-S, which would eventually become *Ariane*.<sup>45</sup> ELDO ceased to operate a year later while ESRO was subsumed by the European Space Agency in 1975. The UK became an ESA member but remained a smaller contributor to ESA projects focusing on scientific and commercial

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<sup>40</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 47.

<sup>41</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 47.

<sup>42</sup> UK analysis suggested each *Europa I* launch would cost approximately £4 million, while a U.S. launch would cost about £3 million. Harvey, *Europe's Space Programme: To Ariane and Beyond*, 47.

<sup>43</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 47.

<sup>44</sup> Harold Wilson, "HC Deb 06 June 1967: SPACE PROGRAMME," *Hansard* 747 (June 6, 1967): 791.

<sup>45</sup> Bonnet and Manno, *International Cooperation in Space*, 14.

applications. At the same time, the UK continued to prioritize its relationship with the U.S. for national security space programs.

### **Prime Ministers and Strategic Outlook**

Despite its similarities as a middle European power and NATO member, the United Kingdom differs from France and Germany in several aspects that affect the strategic outlook underpinning its foreign policy and the country's military space posture outcomes. First, the UK is the only country of the three considered in this study whose government survived World War II intact. Second, it is the only country of the three that did not initially join the European Economic Community (EEC). Third, the UK maintains a privileged security relationship with the United States, including on nuclear and military space matters, that was not extended to France or Germany. Although UK Prime Ministers oscillated somewhat between maintaining the "special relationship" with the United States and gaining economic benefits through membership in the European Economic Community, the country's strategic outlook is decidedly Atlanticist, especially on military space policy. Additionally, decision-makers were constrained by the peculiarities of the British political system and the financial woes that had left the UK nearly bankrupt. As a result, the UK's strategic outlook reflected a deep rationalism and pragmatism that sought to achieve foreign and military policy goals at minimal costs.<sup>46</sup>

The distinction in political systems is important to understand the constraints under which British Prime Ministers had to operate during the Cold War, especially when balancing external threats from the Soviet Union, the "special relationship" with the U.S., and successive domestic economic crises. In the UK's Parliamentary system, the Prime Minister operates within the

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<sup>46</sup> David French, *The British Way in Warfare, 1688-2000* (London: Unwin Hyman, 1990), 232.

confines of the political party to which they belong and, generally speaking, pursues policies that conform with the party's platform and leads the government in a manner that maintains party discipline and preserves the party's majority. As a result, Prime Ministers enjoy less autonomy and independence in major policy decision-making than other heads of state might enjoy, such as in France or the United States, where the President is independent of the legislature, even though the French and American legislatures control the purse strings. The Prime Minister's ability to make and implement decisions on lofty and costly endeavors, such as military space programs, must be considered in such contexts.

The "special relationship" also provides important context to the UK's strategic outlook. Though among the victors in World War II, the UK's loss of power and general decline relative to the United States and the Soviet Union relegated the once global power to the second tier of nations. When Churchill spoke of the enduring bond between the U.S. and the UK, he sought to galvanize a relationship that would help the UK retain power and influence in world affairs despite its relative decline in power. Yet there was no longer any doubt that the relationship was not between equals; the UK would hence be the junior partner.

The Suez Crisis of 1956 was perhaps the greatest test of the "special relationship" when the UK colluded with France and Israel to seize the Suez Canal by force. Dwight Eisenhower, furious that he had not been previously consulted, publicly opposed the military action. The American Government placed substantial public and private pressure on the UK to end the crisis, blocking credit financing from the International Monetary Fund and threatening to sell off the U.S.'s entire holdings of British debt from World War II.<sup>47</sup> During the crisis, the UK was over-leveraged with dwindling reserves. The UK faced the prospect of massive currency devaluation

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<sup>47</sup> David J. Katz, "Waging Financial War," *The US Army War College Quarterly: Parameters* 43, no. 4 (December 1, 2013), <https://doi.org/10.55540/0031-1723.2956>.

if the U.S. sold off its lot of pound-sterling bonds, forcing the UK to drain its dwindling foreign currency reserves to buoy the value of the pound-sterling.<sup>48</sup> Antony Eden, the UK Prime Minister, relented and accepted a U.S.-brokered cease-fire, ending the Suez Crisis and, more broadly, the UK's ability to act independently on the world stage.

Eden soon stepped down as Prime Minister, replaced by Harold Macmillan, who had been Chancellor of the Exchequer under Eden. Macmillan focused the UK's foreign policy on rebuilding the "special relationship" and regaining Eisenhower's trust, who had just been reelected for a second term. One of the chief lessons of the Suez Crisis was that the UK could not afford to find itself at odds with the United States on any major foreign or security policy decision.<sup>49</sup> The U.S. demonstrated that it would not always back its allies unconditionally and would even impose its will on them when it suited American interests. Unlike Charles de Gaulle, whose chief take away from the Suez Crisis was to distance France (and Europe) from the U.S. by developing the capacity to act autonomously, Macmillan realigned the UK to "cleave loyally to U.S. positions," hoping to guarantee American support for UK interests in the future.<sup>50</sup>

However, dependence on the U.S. reflected the UK's overall weakness and lack of purpose. While a close military alliance with the U.S., reaffirmed in 1958 with the signing of the Mutual Defense Agreement, was strategically appealing, there was little prospect of a prominent leadership role for the UK. Macmillan helmed a country adrift and increasingly irrelevant in global affairs. Hope lay across the English Channel, where France was leading the latest chapter of the "European Project." Macmillan watched from London as the Treaty of Rome established the European Economic Community in 1957. The Prime Minister, eager to benefit from access to

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<sup>48</sup> Katz, "Waging Financial War."

<sup>49</sup> Tony Judt, *Postwar: A History of Europe Since 1945* (New York, NY: Penguin Books, 2006), 299.

<sup>50</sup> Judt, *Postwar*, 299.

the newly formed Common Market, steered the UK towards close relations with the EEC while maintaining its close security relations with the U.S. The latter resulted in Macmillan securing American missiles for the UK's nuclear deterrent, which incensed de Gaulle because, in his views, it subsumed one of Europe's nuclear powers under American control.<sup>51</sup> Despite the UK's offer to create a European space program based on the canceled *Blue Streak* rocket, de Gaulle grew weary of the UK's efforts to join the EC, which he saw principally as an economic arrangement rather than a political one. De Gaulle and Macmillan met in December 1962 to discuss Britain's wish to join the Common Market. Yet, de Gaulle vetoed the motion in January 1963 because of fears that the UK's economy and financial troubles were incompatible with the EC.<sup>52</sup>

De Gaulle's veto was a major setback for Macmillan and the UK. Macmillan's Labour Party successor, Harold Wilson, also petitioned to join the EEC in 1967, only to find de Gaulle's veto once again. Wilson faced deepening economic crises during his first tenure as Prime Minister. He initiated the withdrawal of British forces from "East of Suez," which was completed during his second tenure in the 1970s. It wasn't until de Gaulle's resignation in 1969 and death a year later that Edward Heath's Conservative Government restarted negotiations with Brussels for a third bid to join the EEC. Heath, who led negotiations during the UK's first attempt to join the EEC, observed the Prime Minister had to be a "good European" if the UK wanted to join the Common Market, which conflicted with the "special relationship."<sup>53</sup> Heath reduced his public endorsement of the "special relationship," focusing instead on entering the

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<sup>51</sup> See Chapter 2.

<sup>52</sup> Harold Macmillan, *At the End of the Day: 1961-1963* (New York, NY: Harper & Row Publishers, 1973), 352. See also Nesta Roberts, "Emphatic 'No' by de Gaulle," *The Guardian*, November 28, 1967, sec. World news, <https://www.theguardian.com/world/1967/nov/28/eu.france>.

<sup>53</sup> Kissinger, *Leadership*, 329.

EEC. He finally succeeded when the UK ratified the Accession Treaty in 1972, which took effect on January 1, 1973.

However, the UK's economy continued to stagnate throughout the 1970s. Elections in 1974 returned Labour to power and Wilson to Number 10, who faced rising debts and inflation. Wilson's slashed Government spending across the board, including on defense and military space programs. Among the cuts was the cancellation of SKYNET, which had finally achieved success in 1974 after years of setbacks. The UK once again relied on access to American space capabilities, reflecting the pragmatism of decision-makers as the country tried to navigate its decline. By the time James Callaghan replaced Wilson as Prime Minister, the UK's economy was in dire condition. The Labour Government's attempts to stabilize the economy and fight inflation through price controls and fixed wages had failed. The country was ripe for political change.

Margaret Thatcher ascended to the Premiership in 1979 rather surprisingly. Whereas previous Prime Ministers sought to steward the UK's orderly decline, Thatcher's ambition was nothing less than to transform the country and rebuild British pride.<sup>54</sup> In addition to ambitious domestic policies, which were sometimes controversial, Thatcher strongly believed in the "special relationship" with the United States. She felt the two countries had a moral duty to defend Western values from the Soviet Union. She found a strong ally and friend in Ronald Reagan, who shared her views on Communism and the need for a strong national defense, including nuclear weapons.<sup>55</sup> Thatcher raised defense spending and modernized the UK's nuclear deterrent. She was also interested in the military potential of outer space and concerned about Soviet developments in military space capabilities and the prospect of NATO being outmatched

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<sup>54</sup> Thatcher, *The Downing Street Years*, 38.

<sup>55</sup> Kissinger, *Leadership*, 337.

by the Soviets in space. The principal tenets of the UK's strategic outlook under Thatcher were a firm commitment to the NATO central front in Germany, a modern and independent nuclear deterrent, and the preservation of UK sovereignty through a close partnership with the United States.<sup>56</sup> However, Thatcher continued to face the same problem as her predecessors in resourcing British defense commitments.<sup>57</sup> Despite increased defense spending relative to GDP, the UK had insufficient resources to fulfill all its commitments. Yet there was little room for significant collaboration with Europe on foreign and security policy matters.

Margaret Thatcher's time as Prime Minister ended in November 1990 in the waning days of the Cold War. Her successor, John Major, followed Thatcher's military commitments to the U.S. to oust Saddam Hussein from Kuwait during Operation Desert Storm in early 1991. More importantly, Major led the UK through dramatic shifts in the structure of the international system. Bipolarity between the two superpowers had ended, and the world entered a unipolar moment with the United States as the world's sole superpower. "The old verities of foreign policy no longer applied," remarked Major in his memoirs, suggesting that the UK would have to navigate the new international context differently than during the Cold War.<sup>58</sup> The other major development facing Major lay across the Channel, where The Maastricht Treaty formally established the European Union in 1992. Major recognized that the UK would have to strengthen its ties to the EU and the U.S.; a simple either-or mentality that may have characterized Thatcher's outlook was no longer appropriate for the post-Cold War era.

Major embraced both partners. The Prime Minister embraced the "unique rapport" between the UK and the U.S. (he disliked the term "special relationship") and welcomed a

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<sup>56</sup> Kissinger, *Leadership*, 337.

<sup>57</sup> Freedman, *The Politics of British Defence, 1979 -98*, 9.

<sup>58</sup> John Major, *John Major: The Autobiography* (New York, NY: HarperCollins Publishers, 1999), 495.

continued partnership with the new American President, Bill Clinton.<sup>59</sup> Major also sought to strengthen the UK's relationship with France's new President, Jacques Chirac. The two leaders shared a similar outlook since the UK and France were the only nuclear powers in the EU and permanent members of the UN Security Council and the only countries with a truly global foreign policy.<sup>60</sup> Although the two leaders differed in their views about the United States, there was a definite increase in UK and French security collaboration during the 1990s, especially as war engulfed the former Yugoslavia, along with humanitarian crises in Bosnia and later Kosovo. Additionally, both countries' aerospace and defense industrial firms deepened their collaboration on joint defense projects, such as the Eurofighter.

The demise of the Soviet Union also meant that the UK, and the rest of Europe, no longer had to rely exclusively on NATO for their security. Consequently, the Maastricht Treaty also established the Common Foreign and Security Policy (CFSP) as one of the EU's three pillars.<sup>61</sup> The CFSP was a major evolution of the "European Project" because it centralized, to a degree, foreign policy development and interests in the EU. Additionally, the EU sought to develop coordinated defense capabilities and the capacity to conduct autonomous crisis response and conflict resolution in out-of-area operations. The UK, which was previously reluctant to endorse a greater EU defense capacity, was instrumental in its development. Tony Blair, the Labour Prime Minister who replaced John Major in 1997, punctuated the UK's apparent shift during the France-British Summit at St. Malo in December 1998. In the resulting St. Malo Declaration,

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<sup>59</sup> Major, *John Major*, 496.

<sup>60</sup> Major, *John Major*, 504.

<sup>61</sup> Jones, *The Rise of European Security Cooperation*, 84.

Blair and Chirac argued that the “[EU] must have the capacity for autonomous action, backed up by credible military forces.”<sup>62</sup>

The UK stood astride the Atlantic throughout the Cold War, maintaining a strategic relationship and influence in Europe and the United States. In effect, the UK sought the best of both worlds, enjoying a privileged security relationship with the United States while benefiting economically from membership in the EEC and Common Market. If forced to choose, however, the UK impulsively sided with the Americans, especially during Thatcher’s time as Prime Minister. A similar pattern emerged in the UK’s military space programs, whereby the UK’s decision-makers repeatedly chose to forgo deeper collaboration with Europe for cooperation with the United States. The U.S., after all, possessed the most advanced military space technologies in the world. The UK’s ever-declining defense resources were thus better spent accessing the American systems whenever possible or necessary, rather than developing second-rate systems domestically or in Europe while giving up significant control over the resulting capability. The UK’s approach to military space posture thus reflects a pragmatic view of foreign and security policy, which sought to capitalize on a strong bilateral relationship with the United States over a dubious multilateralism with an uncertain future. The rest of this chapter considers four case studies to explore the conditions under which the UK’s military space posture evolved from the late 1960s through the late 1990s.

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<sup>62</sup> Maartje Rutten, ed., “British-French Summit St. Malo, 3-4 December 1998,” in *From St-Malo to Nice: European Defence: Core Documents* (European Union Institute for Security Studies (EUISS), 2001), 8–9, <http://www.jstor.org/stable/resrep06989>.

## **SKYNET – The Military Communications Satellites**

The United Kingdom's most successful, and to date, only military space program is the SKYNET series of military communications satellites commissioned by the Ministry of Defense. Beginning in the 1960s, the UK MoD sought a reliable solution for communicating with British forces stationed around the world. The advent of SPUTNIK had demonstrated the utility of satellites for relaying communications beyond the line of sight, which interested MoD officials who were still dealing with a global UK military footprint. This case study first examines the UK's early efforts to develop an independent space-based communications system, which resulted in SKYNET 1, followed by a discussion on the success – and failures – of SKYNET 1 and 2 and the cancellation of SKYNET 3. Finally, the case study examines the conditions that reignited the UK's interest in military satellite communications, resulting in the SKYNET 4 constellation of satellites and, later, SKYNET 5. The case study concludes with thoughts about the strategic logic underlying the UK's military space posture.

### *SKYNET 1 and 2: Limited Success and Costly Failures*

In the mid-1960s, the UK began collaborating with the United States on an early military satellite communications concept called the Initial Defense Communications Satellite Program (IDCSP). IDCSP would consist of many single-transponder satellites that could provide global coverage without constant attention from ground control system to maintain their station.<sup>63</sup> The MoD soon appreciated the utility of such a system and began working on ground stations that could be deployed around the world at various overseas military installations and placed on ships. The Satellite Communications Air Transportable terminals (SCAT), combined with the

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<sup>63</sup> R.L. (Dick) Harris, "Military Satellite Communications in the UK," *Spaceflight* 37, no. 10 (October 1995): 350.

American IDCSP satellite constellation, could provide near-real time communications with British installations and forces worldwide.<sup>64</sup> When the U.S. launched the first batch of IDSCP satellites in 1966, three Marconi-designed and built SCAT terminals effectively established the UK's first military space capability.<sup>65</sup> Despite some technical flaws involving the American satellites, the system provided more reliable and effective global communications. It sparked the MoD's interest in developing the UK's military satellite communications capability, SKYNET.

However, the UK lacked the technical and industrial capability to design and construct an advanced communications satellite. As a result, the MoD contracted with a U.S. aerospace firm, Philco-Ford, to develop the first two SKYNET satellites, 1A and 1B.<sup>66</sup> Marconi Space and Defence Systems, the British firm that designed the SCAT terminals for use with the U.S. IDCSP, worked closely with Philco-Ford to acquire the technical competence and experience necessary to build subsequent satellites in the UK. Reinvigorating the UK's domestic science and technology programs, including the aerospace industry, was a top priority for Harold Wilson and his Labour Government, which oversaw the decision to initiate the SKYNET program. When questioned in Parliament about the decision to contract with an American company to build the UK's first military communications satellite, Wilson acknowledged that the British aerospace industry had to be modernized, adding that the UK was "trying to build up our own industry on a competitive basis with the Americans. In this case [i.e., SKYNET], the projects of our industry would not have been competitive."<sup>67</sup> Wilson's decisions and comments on the matter suggest the Labour Party Prime Minister was interested in developing greater industrial autonomy and

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<sup>64</sup> Harris, "Military Satellite Communications in the UK," 350.

<sup>65</sup> Keith Hayward, *British Military Space Programmes*, RUSI Whitehall Paper Series 35 (London: Royal United Services Institute for Defense Studies, 1996), 32.

<sup>66</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 100.

<sup>67</sup> Wilson, "HC Deb 06 June 1967: SPACE PROGRAMME," 791.

capacity to advance a domestic political agenda rather than distancing the UK from the U.S. for strategic reasons. The UK continued cooperating with American counterparts to develop SKYNET. It relied on NASA to launch the first four SKYNET satellites, especially after the Government's 1965 decision to withdraw from ELDO by 1971.<sup>68</sup>

The Wilson Government entered office in 1964 and faced mounting domestic economic pressures, including an £800 million deficit, which peaked with the Sterling devaluation crisis in 1967.<sup>69</sup> The MoD subsequently canceled several major defense programs, including a strike and reconnaissance aircraft called TSR-2 and new aircraft carriers. However, the decision to pursue SKYNET was a way for Wilson to reinvigorate the UK's science and technology base, a major domestic initiative on which the Labour Party ran in the 1964 elections.<sup>70</sup>

In November 1969, SKYNET 1A was launched atop an American *Thor Delta* rocket and became the world's first military communication satellite in geostationary orbit. The orbit stabilized the satellite above the Indian Ocean, linking the UK with the Middle East and Asia, which helped SKYNET overcome some of the shortfalls that IDCSP experienced. The Royal Air Force Telemetry and Command station in Oakhanger, England, formally assumed satellite control SKYNET 1A in February 1970 and began transmitting secure UK MoD radio traffic shortly thereafter.<sup>71</sup> The MoD had built two other ground stations in Cyprus and Hong Kong to facilitate communications via SKYNET.<sup>72</sup> By this point, the Royal Navy was also involved,

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<sup>68</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 45-47.

<sup>69</sup> The 1967 decision to devalue the British pound culminated three years of domestic and international economic crises. Wilson's Government also raised interest rates and enacted several major defense budget cuts. "The Cabinet 100 - The 1967 Devaluation of the Pound," (The National Archives), accessed November 19, 2022, <https://www.nationalarchives.gov.uk/cabinet-office-100/the-1967-devaluation-of-the-pound/>.

<sup>70</sup> Harold Wilson, *Labour's Plan for Science: Reprint of Speech by the Rt. Hon. Harold Wilson, MP, Leader of the Labour Party, at the Annual Conference, Scarborough, Tuesday, October 1, 1963* (London: Victoria House Printing Company, 1963).

<sup>71</sup> Ian Hayes, "Britain's Military Satellite," *Spaceflight* 20, no. 2 (February 1978): 67.

<sup>72</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 100.

having contracted Marconi to develop a sea-worthy SATCOM terminal based on the SCAT design, called the Satellite Communication Ocean Transportable (SCOT) terminal.<sup>73</sup> The Royal Navy installed SCOT terminals on HMS *Fearless* and HMS *Intrepid*, with more terminals planned for future installation on other vessels.<sup>74</sup> Despite a relatively low power output of 3 watts, SKYNET 1A still managed to provide 250 voice and telegraph channels, providing the UK with an independent space-based communications system that linked ground and maritime forces around the world with MoD headquarters in the UK.<sup>75</sup>

In August 1970, NASA launched a second satellite, SKYNET 1B, developed in tandem with SKYNET 1A by Philco-Ford. Unfortunately, the launch suffered a catastrophic failure when the solid fuel inside SKYNET 1B's apogee kick motor exploded shortly after liftoff, destroying the satellite and the launch vehicle.<sup>76</sup> Yet SKYNET's bad luck continued. Although it functioned relatively well, SKYNET 1A failed a year after SKYNET 1B was lost. SKYNET 1A suffered a premature failure of its traveling wave tube amplifiers (TWTA), a vital component for amplifying radio frequency signals in the microwave range used by communication satellites.<sup>77</sup> The UK had only enjoyed military SATCOM for 18 months. However, despite the loss of SKYNET 1B and the premature failure of SKYNET 1A, the UK MoD pressed on with a successor military communication satellite system, SKYNET 2. Having invested in the UK space industry and encouraged by SKYNET 1A's short-lived success, the MoD contracted Marconi Space and Defence Systems to develop SKYNET 2 in the UK. The advent of Edward Heath's Conservative Government in 1970, coupled with the demonstrated utility of linking British

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<sup>73</sup> Dennis Cummings, "25 Years of British Military Satellite Communications," *The RUSI Journal* 138, no. 5 (October 1993): 46; Harris, "Military Satellite Communications in the UK," 350.

<sup>74</sup> Hayes, "Britain's Military Satellite," 67.

<sup>75</sup> Hayward, *British Military Space Programmes*, 33.

<sup>76</sup> Harris, "Military Satellite Communications in the UK," 350.

<sup>77</sup> Jack Copeland and Andre A. Haeff, "The True History of the Traveling Wave Tube," *IEEE Spectrum* 52, no. 9 (September 2015): 38. See also Harris, "Military Satellite Communications in the UK," 350.

forces around the world, proved beneficial for the MoD's continued funding and interest in developing SKYNET 2.

SKYNET 2 would be the first UK military satellite developed and built in the UK. Marconi, the prime contractor, had collaborated closely with the American firm that built SKYNET 1A and 1B to gain the expertise and knowledge necessary to produce an advanced communication satellite in the UK. Although Marconi relied on American assistance to build the communication payload, SKYNET 2 is largely considered the first European-built communication satellite.<sup>78</sup> Despite high costs, Wilson's Government chose to proceed with SKYNET 2 specifically because it would further stimulate the UK's economy and help the UK space industry keep pace with European and American firms, especially after the decision to withdraw from ELDO and continued uncertainty about ESRO.

MoD planned to build and launch two SKYNET 2 satellites. Design-wise, SKYNET 2 was nearly identical to SKYNET 1, but Marconi engineers upgraded the TWTA, which had failed prematurely in SKYNET 1A.<sup>79</sup> The increased power output provided more voice and data channels, increasing the utility of military SATCOM. Additionally, SKYNET 2 was outfitted with wide and narrow bandwidth transponders to service strategic and tactical communications. The wider 20 MHz transponder allowed the satellite to communicate between fixed sites in the UK, Bahrain, and Singapore (before the departure of UK forces). The narrower 2 MHz transponders enabled tactical communications with smaller terminals, such as those deployed on the Royal Navy's SCOT terminals.<sup>80</sup>

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<sup>78</sup> Hayward, *British Military Space Programmes*, 33.

<sup>79</sup> Harris, "Military Satellite Communications in the UK," 350.

<sup>80</sup> Hayes, "Britain's Military Satellite," 68.

SKYNET 2A was set to launch in January 1974. The UK again relied on the U.S. to launch the satellite, having recently abandoned ELDO and its own space launch vehicle project over a decade earlier. In another mishap, The *Thor Delta* launch rocket suffered a third-stage malfunction high above Cape Canaveral and was presumed lost. But SKYNET 2A somehow survived the malfunction. The U.S. Ballistic Missile Early Warning System detected the satellite in a low elliptical orbit that was deteriorating rapidly. SKYNET 2A, otherwise functional, would re-enter the atmosphere within 24 hours. The UK's team of launch specialists had to fire the satellite's apogee kick motor to correct the orbit but were unable to determine the satellite's orientation due to the low orbit. In other words, there was, at best, a 50/50 chance that firing the apogee motor would work. The launch specialists decided to fire the motor. Sadly, the satellite was oriented incorrectly, and SKYNET 2A was propelled into a burning fireball above Asia.<sup>81</sup>

After years of setbacks and two successive SKYNET satellite failures, the UK successfully deployed SKYNET 2B in November 1974. SKYNET 2B operated as intended and helped expand the use of satellite communications by the UK military. The Royal Navy expanded the use of SCOT terminals, while the Army began developing a tactical satellite terminal mounted on Land Rover vehicles, known as the Vehicular Satellite Communications (VSC) 501.<sup>82</sup> SKYNET 2B exceeded its operational lifespan of three years and was available to UK forces in the Falkland Islands Crisis in 1982. SKYNET 2B thus formed the backbone of the UK's satellite communications capability and military space posture for years.

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<sup>81</sup> For a detailed first-hand account of SKYNET 2A, see Harris, "Military Satellite Communications in the UK," 351.

<sup>82</sup> Cummings, "25 Years of British Military Satellite Communications," 46.

*Too Little, Too Late: SKYNET 3 and the Mason Defence Review of 1974*

In 1974, the UK finally achieved success with SKYNET 2B, its first domestically produced military communications satellite. Meanwhile, Marconi, the lead contractor on SKYNET 2, continued research and development studies on a more advanced and capable military satellite, SKYNET 3. The Heath Government had ordered the successor military SATCOM platform in their 1974 budget, but the Conservatives delayed the program's final approval until after the 1974 election.<sup>83</sup> Heath's Government oversaw a sustained industrial and economic decline in the UK, resulting in rising domestic political pressure from the Labour Party and Harold Wilson. The Conservatives felt it would be politically imprudent for the MoD to approve a costly new military satellite program before a national election. However, the delay could not overcome changes in national sentiment.

After four years of Conservative rule, the Labor Party narrowly defeated Edward Heath's Conservative Government. Gaining a small majority in the House of Commons, Labour returned Harold Wilson as Prime Minister. Due to the ongoing economic troubles in the UK stemming from post-war reconstruction and the global energy crisis, Wilson's Labour Government concentrated heavily on domestic priorities, including job growth, economic and social reforms, and defense spending reduction.<sup>84</sup> Thus under the Labour Government and its domestic political focus, budget constraints continued to affect the UK's military space posture.

Wilson appointed long-time Labour Member of Parliament Roy Mason to the Cabinet as the Secretary of State for Defence. To facilitate Wilson's domestic priorities, the Ministry of Defence developed the 1974 Defence White Paper, known as the Mason Defence Review. The

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<sup>83</sup> Hayward, *British Military Space Programmes*, 33.

<sup>84</sup> "Harold Wilson," History of the UK Government, accessed November 18, 2022, <https://www.gov.uk/government/history/past-prime-ministers/harold-wilson>.

Defence Review appraised the global strategic context and the UK's world-wide defense commitments. In addition to the UK's central role in NATO's various commands, the UK also maintained substantial forces overseas, many in former colonial possession and territorial dependencies, that stretched the military's capacity and strained defense budgets. This large overseas presence was the impetus for SKYNET 1 and SKYNET 2, which enabled the MoD to maintain constant and real-time communications with forces overseas.

However, the Mason Review concluded that reductions in defense procurement and overseas presence were necessary to achieve the Government's economic and political objectives. Specifically, the Review suggested the UK's military contributions should focus on collective defense in areas that most directly contributed to UK security.<sup>85</sup> The suggestion meant that UK defense resources, force structure, and missions would focus primarily on NATO, which the Review called "the linchpin of British security," and that defense commitments and resources directed outside NATO should be reduced as much as possible.<sup>86</sup> The overseas commitments included permanent garrisons in Malaysia, Singapore, Mauritius, and other areas where British forces had maintained a forward presence for years. The Mason Review envisioned a major reduction of UK military commitments outside the immediate NATO core. Wilson's Government restarted the withdrawal of most UK forces from "East of Suez," a policy that Harold Wilson's previous Labour Government began in 1968.<sup>87</sup> Since SKYNET 2B was successfully launched and operational in November 1974, after Labour took power, the Wilson Government's new military policy undermined the strategic need for SKYNET 3.<sup>88</sup>

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<sup>85</sup> "Statement on the Defence Estimate 1975" (Ministry of Defence, February 25, 1975), I-8.

<sup>86</sup> "Statement on the Defence Estimate 1975" (Ministry of Defence, February 25, 1975), I-8.

<sup>87</sup> Roy Mason, "HC Deb 03 Dec 1974: Defence Review," *Hansard* 882 (December 3, 1974): 1353.

<sup>88</sup> Hayward, *British Military Space Programmes*, 33. See also "Statement on the Defence Estimate 1975" (Ministry of Defence, February 25, 1975), III-19.

The planned withdrawal of UK forces from “East of Suez” would result in the permanent closure of several overseas garrisons. The MoD assessed SKYNET 3 was largely commissioned to expand SATCOM capacity and service communication requirements with overseas military installations.<sup>89</sup> The Royal Navy was the only military service enthusiastic about increased satellite communications capacity since it maintained global requirements. At the time of the Mason Review, the Royal Air Force and British Army did not yet fully appreciate the tactical utility of satellite communications. The UK military generally felt that the existing capacity available through SKYNET 2B and access to America’s Defense Satellite Communications System (DSCS) II and NATO’s satellites were sufficient.<sup>90</sup> Thus, the resulting policy shift emphasizing the NATO core reduced the MoD’s space-system requirements.<sup>91</sup>

The UK’s reliable access to U.S. military space capabilities strongly influenced the MoD’s decision to cancel SKYNET 3. The previous loss of two SKYNET satellites, 1B and 2A, emboldened what Keith Hayward labeled an “anti-satellite lobby” in the MoD. An MoD insider remarked that the “two successive disasters on SKYNET 1B and 2B tested the resolve of the MoD to continue.” The so-called lobby opposed further UK investments in SATCOM due to a perceived high risk of failure at the expense of proven conventional communications and reliable access to American and NATO military SATCOM systems. Dependence on American and NATO SATCOM capabilities to supplement SKYNET 2B was also considered a safer alternative to an otherwise risky and costly venture the UK could not afford.

The cancelation of SKYNET 3 further impacted the UK’s defense and aerospace industrial base, which had struggled to maintain parity with American firms. Marconi Space and

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<sup>89</sup> Harris, “Military Satellite Communications in the UK,” 351.

<sup>90</sup> Hayward, *British Military Space Programmes*, 34.

<sup>91</sup> Neil Pattie, “SKYNET 4: The Unknown Soldier,” *Spaceflight* 31, no. 5 (May 1989): 168.

Defence Systems, the prime contractor for SKYNET 2, had spent years developing the talent and industrial capability to design and build advanced communications satellites. The firm prioritized domestic manufacturing capability after working closely with the American firms that built SKYNET 1A and 1B and after Parliament pressured Harold Wilson in 1967 to shift SKYNET satellite production back to the UK.<sup>92</sup> The firm's investments made sense, with an expectation of long-term contracts for future SKYNET generations. However, the cancellation of SKYNET 3 following the Mason Defence Review reflected an inconsistent UK military space policy that was detrimental to long-term planning, research, and development of advanced defense capabilities. As a result, Marconi and other British aerospace firms were poorly positioned to respond to the military SATCOM policy change in Margaret Thatcher's Conservative Government, especially after the Falkland Islands Crisis of 1982.

#### *SKYNET 4: Relaunching UK's Military SATCOM Capability*

Although SKYNET 2B continued operating in the late 1970s and into the 1980s, the UK military's growing demand for tactical satellite communications would soon exceed the capacity available from external sources. Following the cancellation of SKYNET 3, the MoD relied on American DSCS II and NATO II satellites to supplement the UK's satellite communication capacity.<sup>93</sup> The focus of the UK military's contributions to the NATO core in Germany following the 1974 Mason Defence Review meant that most Royal Air Force and British Army units were constrained to a relatively small geographic area. Their communication requirements could thus be serviced by conventional means and, when necessary, by the UK's existing

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<sup>92</sup> Harold Wilson was asked in the House of Commons in 1967 why the Government outsourced SKYNET 1 development and manufacture to an American firm. Wilson, "HC Deb 06 June 1967: SPACE PROGRAMME," 791.

<sup>93</sup> Harris, "Military Satellite Communications in the UK," 351.

military SATCOM capacity. While technological advancements enabled all three Service branches to adopt smaller tactical satellite communication terminals, the Royal Navy registered the greatest demand for satellite communications with its global “blue water” commitments. Thus, the requirements for secure SATCOM in the UK military shifted from strategic links between fixed sites, the previous justification for SKYNET 3, to the greater numbers of dispersed individual tactical platforms at sea primarily, but also on land and in the air.<sup>94</sup> The U.S. DSCS II could no longer support the UK’s increasing demands.

Two other factors spurred the MoD to reconsider its military communication satellite program. First, the Conservative Party regained control of the Government in May 1979, with Margaret Thatcher becoming Prime Minister. Second, the Falkland Island War in 1982 shined a light on the UK’s limited satellite communication capacity. These factors contributed to a period of increasing UK military spending that would include the SKYNET 4 constellation of satellites.

Margaret Thatcher became Prime Minister during a recession in the UK. Although generally regarded as a hawkish leader who oversaw raises in defense and intelligence spending, the early years of Thatcher’s Government were lean for defense budgets. During Thatcher’s first two years in office, the country’s GDP output fell sharply by 5½ percent.<sup>95</sup> In Thatcher’s first budget in 1979, the Conservative Government sought to control spending to tamp inflation by cutting public expenditures, including defense.<sup>96</sup> However, over the longer term, the Government pledged to increase resources for defense to meet the UK’s pledge of increasing defense spending by 3 percent annually, in accordance with NATO guidelines.<sup>97</sup> To rebalance the budget and achieve better discipline in spending, the Ministry of Defence, under John Nott, conducted a

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<sup>94</sup> Harris, “Military Satellite Communications in the UK,” 351.

<sup>95</sup> Nigel Lawson, *The View from No. 11: Memoirs of a Tory Radical* (London: Bantam Press, 1992), 55.

<sup>96</sup> Thatcher, *The Downing Street Years*, 49.

<sup>97</sup> Thatcher, *The Downing Street Years*, 52.

defense review for 1981 to reassess budgetary priorities. The review, presented in Parliament in June 1981, concluded that the UK would have to change its defense program to keep pace with the increasing sophistication of Soviet weapons and technological advances in the security environment.<sup>98</sup> Among these changes were increased requirements for better and greater satellite communications capacity. By June 1981, the MoD reported in the House of Commons that UK aerospace firms were evaluating the MoD's proposals for a military communications satellite.<sup>99</sup> In late 1981, the MoD chose British Aerospace as the prime contractor for SKYNET 4, with Marconi Space and Defence Systems as a sub-contractor to design and build a new communications payload.<sup>100</sup> The MoD initially ordered two satellites in a contract worth over 80 million, with an option for a third.<sup>101</sup>

The Falkland Island Crisis of 1982 further reinforced the utility of military satellite communications and the wisdom of the MoD's decision to restart an independent UK satellite communications capability.<sup>102</sup> The UK's existing military satellite infrastructure remained oriented on fulfilling the core NATO defense role on the European continent. SKYNET 2B, the only UK military communication satellite operational during the crisis, was positioned above the Indian Ocean. Its footprint fell far short of the South Atlantic, where the British Task Force sailed.<sup>103</sup> SCOT-equipped Royal Navy vessels operating in the South Atlantic had to piggyback their signals off U.S. DSCS II spare capacity. The U.S. accommodated the UK by providing reliable access to DSCS II during the conflict, and there were generally no disruptions to military

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<sup>98</sup> John Nott, *The United Kingdom Defence Programme: The Way Forward* (London: Her Majesty's Stationery Office, 1981), 4.

<sup>99</sup> Geoffrey Pattie, "HC Deb 09 July 1981: Military Satellite (Contract)," *Hansard* 8 (July 9, 1981): 230W.

<sup>100</sup> Pattie, "SKYNET 4: The Unknown Soldier," 68.

<sup>101</sup> Geoffrey Pattie, "HC Deb 08 December 1981: Defence Satellite," *Hansard* 14 (December 8, 1981): 354W; Geoffrey Pattie, "HC Deb 16 December 1981: Military Communications Satellites," *Hansard* 15 (December 16, 1981): 129W.

<sup>102</sup> Cummings, "25 Years of British Military Satellite Communications," 46.

<sup>103</sup> Hayward, *British Military Space Programmes*, 35.

communications. Yet one of the principal lessons of the Falkland Islands War that emerged was the need for greater and more flexible UK military communication satellite capacity to support out-of-area operations.<sup>104</sup>

In an addendum to the 1981 Nott Defence Review following the military campaign in the South Atlantic, John Nott, the Secretary of State for Defence, described the lessons of the Falkland Islands War and the capabilities needed for the UK to improve its ability to conduct out-of-area operations. Dubbed the Falklands White Paper, the 1982 review identified the importance of space-based communications and intelligence capabilities for “effective political control and higher command of the operation” by the UK.<sup>105</sup> Specifically, the review mentioned that “vital importance was shown of satellite communications in operations conducted at great distance,” suggesting the MoD felt strongly about acquiring greater SATCOM capacity for out-of-area operations.<sup>106</sup> Additionally, the paper referenced MoD plans to acquire “a new British military satellite ... which will be a significant improvement,” further reaffirming the MoD decision to pursue SKYNET 4.<sup>107</sup>

Despite renewed enthusiasm in the MoD to relaunch SKYNET, the program endured lengthy delays. It took British Aerospace and Marconi Space several years to regain the technical competence and expertise lost after the cancellation of SKYNET 3 in 1974.<sup>108</sup> Additionally, due to their military nature, the SKYNET 4 satellites were initially booked on the American space transport system (STS), commonly known as the space shuttle. The UK MoD favored U.S.

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<sup>104</sup> Hayward, *British Military Space Programmes*, 35.

<sup>105</sup> For a discussion on the UK’s satellite intelligence program, see section: Project ZIRCON in this chapter. John Nott, “Nott Minute to MT (‘Falkland Islands White Paper’),” November 26, 1982, PREM 19/0642 f20, Margaret Thatcher Foundation, <https://www.margaretthatcher.org/document/210077>, 20.

<sup>106</sup> Nott, “Nott Minute to MT (‘Falkland Islands White Paper’),” 20.

<sup>107</sup> Nott, “Nott Minute to MT (‘Falkland Islands White Paper’),” 20.

<sup>108</sup> Hayward, *British Military Space Programmes*, 34.

launch services for security reasons instead of the recently developed French *Ariane* launcher.<sup>109</sup> Using the space shuttle allowed the UK to include a British military astronaut assigned to the shuttle crew as a payload specialist.<sup>110</sup> However, the U.S. scrapped the UK's SKYNET 4 launch plans after the *Challenger* space shuttle disaster in 1986, and the team of British military astronauts was disbanded.<sup>111</sup>

STS's unique capabilities meant that the U.S. relied on the space shuttle as the exclusive cargo and satellite payload launcher for NASA. Thus, no suitable launchers were immediately available for SKYNET 4A when *Challenger* exploded. MoD re-booked SKYNET 4A on the next available space shuttle, which would not fly for over two years. Meanwhile, the French government pressured the UK to use *Ariane* for SKYNET 4. Absent the availability of American launch options and eager to deploy the brand-new communication satellites, the MoD relented. Since SKYNET 4A was already configured for launch on STS, the MoD directed British Aerospace to configure SKYNET 4B for launch on *Ariane*.<sup>112</sup> SKYNET 4B was thus placed into orbit first when it launched successfully in December 1988.

Technically, SKYNET 4 was a major capability improvement over previous SKYNET satellites. Thanks to SATCOM terminal improvements, SKYNET 4 could transmit communications to the full range of UK military requirements, including individual soldier-portable terminals, combat aircraft, and submarines.<sup>113</sup> SKYNET 4's capability improvements also reflected the resilience of the UK's space industry, which struggled to remain relevant in the 1970s. British Aerospace and Marconi Space and Defense Systems worked on commercial and

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<sup>109</sup> Pattie, "SKYNET 4: The Unknown Soldier," 169.

<sup>110</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 102.

<sup>111</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 102.

<sup>112</sup> Pattie, "SKYNET 4: The Unknown Soldier," 169.

<sup>113</sup> Cummings, "25 Years of British Military Satellite Communications," 47.

civilian communication satellites for ESA and other UK requirements. The technical advancements made in the communication payloads by Marconi were later implemented into SKYNET 4 payloads. By the time SKYNET 4A was ready for launch, British Aerospace and Marconi were among Europe's most sophisticated satellite design firms, if not the world. The firms' proficiency reflected an interdependence between military and civilian satellite technology that has characterized the UK space industry since the 1980s.<sup>114</sup>

When SKYNET 4B achieved full operational capability after launch, it was the most advanced European communication satellite ever built. The initial constellation of three SKYNET satellites would provide global communications for UK military forces and be highly resistant to electromagnetic interference while remaining interoperable with U.S. and NATO networks.<sup>115</sup> Indeed, the level of technical sophistication and capability prompted NATO to select two SKYNET 4 satellites, beating out the American offering, for the Alliance's fourth-generation space segment, NATO IV.<sup>116</sup> UK firms received contracts to produce two satellites based on SKYNET 4, valued at over £100 million. The contracts further stimulated the UK economy and affirmed the UK space industry as a serious player in the global satellite manufacturing arena.

SKYNET 4A eventually flew atop an American *Titan III* rocket in January 1990, almost four years behind schedule, and only after NASA restarted production of expendable launch vehicles. SKYNET 4C also flew atop *Ariane* in August 1990, just in time to support UK and coalition military forces organizing in the Persian Gulf in response to Iraq's invasion of Kuwait. Following the Gulf War, UK, and NATO military forces continued to rely on SKYNET for

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<sup>114</sup> Cummings, "25 Years of British Military Satellite Communications," 47.

<sup>115</sup> Hayward, *British Military Space Programmes*, 38.

<sup>116</sup> Hayward, *British Military Space Programmes*, 37.

reliable communications during crisis response operations in the former Yugoslavia. Eventually, a second tranche of three SKYNET 4 satellites, SKYNET 4D, 4E, and 4F, was launched in 1998, 1999, and 2001, respectively, with improved payload designs to replace the aging first tranche.

### *SKYNET 5 and the Future of UK Military Satellite Communications*

The UK MoD began to consider the need for a new generation of military communication satellites, SKYNET 5, in the mid-1990s. The end of the Cold War and the general shift to crisis management operations placed downward pressure on defense budgets across NATO, especially in the UK. Coupled with the rising costs of high technology systems, a UK-only solution to replace the aging SKYNET 4 was seemingly not feasible financially.<sup>117</sup> The UK initially sought to cooperate with France and Germany on a European military communication satellite called TRIMILSATCOM, with the three countries agreeing in 1997 to pursue studies.<sup>118</sup> The project was hailed as an example of how European countries could collaborate on major defense projects, just as the EU was trying to establish its Common Foreign and Security Policy (CFSP) and independent military capability. However, cooperation on TRIMILSATCOM was intergovernmental rather than supranational at the EU level, resulting in slow progress. Meanwhile, the UK pursued parallel studies to develop a UK-only military communication satellite, SKYNET 5, to hedge against potential delays and complications emerging from TRIMILSATCOM. Less than a year after signing the TRIMILSATCOM memorandum of understanding, the MoD announced the UK's withdrawal from the project and decision to pursue

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<sup>117</sup> Hayward, *British Military Space Programmes*, 55.

<sup>118</sup> Alexander Nicoll, "News: International: UK, France and Germany in Military Satellite Pact," *Financial Times*, December 17, 1997.

a “national solution” to SKYNET 5.<sup>119</sup> The MoD’s defense procurement secretary, Lord Gilbert, stated the official reason for the UK’s withdrawal was concern that the satellite would not be ready by 2005, the UK’s self-imposed timeline.<sup>120</sup> The announcement surprised and angered the Germans and French, whose own military SATCOM requirements were negatively affected by the project’s dissolution.

The UK went ahead with SKYNET 5 but approached the procurement of the new communication satellites in a novel way. Rather than funding the program entirely through the defense budget, as had been done previously, the MoD chose to procure the satellites via a private finance initiative (PFI), the first and largest such venture for a major defense program valued at £2.5 billion.<sup>121</sup> The PFI offered a way to proceed with a national solution for SKYNET 5 while reducing the immediate capital requirements in the constrained budget environment of the 1990s, especially after the Labour Party regained control of the UK Government in 1997. Under the PFI scheme, the private UK aerospace firm contracted to build SKYNET 5 would finance upfront costs for satellite development and retain ownership of the satellite. At the same time, the Government would make payments to “rent” the satellites for the MoD’s exclusive use.

Using a PFI for costly defense programs emerged from the Labour Government’s Strategic Defence Review (SDR) of 1998.<sup>122</sup> The SDR updated the MoD’s policy on defense procurement, which the Labour Government sought to conduct more efficiently.<sup>123</sup> The Review

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<sup>119</sup> Tobias Buck, “Britain Withdraws from Military Satellite Project: Bonn and Paris Are Dismayed as UK Pulls Out of £1BN Flagship Venture,” *Financial Times*, August 13, 1998.

<sup>120</sup> Buck, “Britain Withdraws from Military Satellite Project: Bonn and Paris Are Dismayed as UK Pulls Out of £1BN Flagship Venture.”

<sup>121</sup> In the UK, a PFI is a way for public sector projects to be funded with private funds, similar to a public-private partnership in the U.S. Buck, “Britain Withdraws from Military Satellite Project: Bonn and Paris Are Dismayed as UK Pulls Out of £1BN Flagship Venture.”

<sup>122</sup> Rod Morrison, ed., “SKYNET 5 Takes PFI into Space,” in *500th Edition Special Report: Celebrating over 20 Years of Global Project Finance Coverage* (London: Project Finance International, 2013), 38.

<sup>123</sup> Tom Dodd and Mark Oakes, “Strategic Defence Review White Paper,” (London: House of Commons Library, October 15, 1998), 49.

found that defense procurement in the UK was outdated, resulting in frequent delays and cost over-runs, and suited for a Cold War context rather than the post-Cold War international security environment.<sup>124</sup> Instead, the Review advocated a “smart procurement” approach to defense programs, which featured greater competition for contract awards in the early stages, and greater partnership with industry throughout the program's lifetime.<sup>125</sup> After nearly six years of reviewing proposals and competing offers, the MoD finally closed the SKYNET 5 contract under a PFI with Paradigm Secure Communications in 2003, a UK-based satellite manufacturer founded in 1999.<sup>126</sup>

The SKYNET saga reflects the pragmatism and rationalist strategic outlook guiding UK military space posture. In essence, the UK has sought the best capability to meet requirements at the lowest cost. Regarding the successive SKYNET satellites, the UK had to balance budgetary constraints with operational requirements and the need to stimulate and maintain the UK aerospace industry. National leader decision-making on SKYNET was an important factor in the decision to pursue SKYNET 1 and 2, especially given the economic challenges facing Harold Wilson's Labour Government after the Sterling crisis of 1967. However, beginning with the cancellation of SKYNET 3 by Wilson's second government in the mid-1970s, MoD decisions on UK military satellites were driven as much by budgetary concerns as operational requirements. In this case, the UK's special relationship with the United States and reliable access to U.S. satellite capabilities offered a practical and rational solution to meet operational requirements while minimizing costs.<sup>127</sup> However, the Government's decision to reverse course and begin work on SKYNET 4 was driven by operational requirements, suggesting that MoD decision-

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<sup>124</sup> Dodd and Oakes, “Strategic Defence Review White Paper,” 49.

<sup>125</sup> Dodd and Oakes, “Strategic Defence Review White Paper,” 53.

<sup>126</sup> Morrison, “SKYNET 5 Takes PFI into Space,” 38.

<sup>127</sup> Madders, *A New Force at a New Frontier*, 495.

makers were mindful of and strongly considered the opportunity costs of specific defense program decisions.

Military conflict reinforced the decision already made to proceed with SKYNET 4. The capability gaps exposed during the Falkland Island Crisis of 1982 reaffirmed that developing a national solution for military SATCOM would result in lower opportunity costs for the UK than continuing to rely on access to U.S. space systems. But SKYNET 4 was less about achieving autonomy from the U.S. and more about weighing alternatives and opportunity costs for providing the UK a capability to meet its global requirements. From a policy perspective, the UK's interests in space were exploiting the means available for specific ends while balancing opportunity costs. For this reason, the UK did not participate in the Ariane project, nor support the ESA's vision of "total space autonomy."<sup>128</sup> The UK continued to rely on the special relationship throughout the remainder of the Cold War, and beyond, for access to American satellite data and space launch services. In this respect, and to paraphrase Lawrence Freedman, the UK's SKYNET military SATCOM capability was more of a hedge against future uncertainty than true autonomy.<sup>129</sup> Uncertainty about the ability to rely on American satellite capacity as requirements increased, about the possibility of crises affecting UK national interests arising outside Europe and the NATO core, and about the EU's role in foreign policy, security, and defense matters.

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<sup>128</sup> Lord Reay, "UK Space Policy," *Space Policy* 7, no. 4 (November 1991): 308.

<sup>129</sup> I draw this analogy from Lawrence Freedman's analysis of the UK's nuclear strategy after the Cold War. Freedman, *The Politics of British Defence, 1979 -98*, 164.

## **Project ZIRCON – Expanding Military Space Posture**

With SKYNET, the UK demonstrated the success and future potential of its domestic space industry and satellite communications programs. Following the UK's experience in the Falkland Islands War in 1982, the country's signals intelligence directorate sought to expand British national military space posture to include satellite-based signals intelligence capability. The satellite project, called ZIRCON, faced several hurdles, exacerbated by a public scandal when a leftist news magazine published a series of articles alleging the government violated UK law by concealing the satellite's cost and true purpose. The Conservative Government, led by Margaret Thatcher, attempted to squash the story, and cancel a BBC documentary based on the articles. Despite Thatcher's generous support for UK intelligence agencies, she and her ministers were skeptical of ZIRCON's price tag. Under the US-UK special relationship, the UK had a favorable intelligence-sharing agreement with the U.S. and enjoyed access to sophisticated American intelligence capabilities. ZIRCON did not seem worth the £500M cost. In 1987, Nigel Lawson, the Chancellor of the Exchequer, canceled ZIRCON over budgetary reasons.<sup>130</sup> The ZIRCON affair demonstrates how Margaret Thatcher's strategic outlook that favored the U.S.-UK special relationship and her government's frugal budgetary policies scuttled the Government Communications Headquarters' (GCHQ) attempt to expand the UK's military space posture.

The case study first examines the intelligence sharing between the U.S. and the UK during the Falkland Islands Crisis and some of the shortcomings identified by the Franks Report. Then, the case study explores the origins of the ZIRCON project and the intelligence-sharing context that existed at the time. Finally, the case study reveals the policy debates in Whitehall

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<sup>130</sup> David Fairhall, "Whitehall Cancels £70m Spy Satellite Zircon," *The Guardian*, August 7, 1987; Lawson, *The View from No. 11*, 314; Mark Urban, *UK Eyes Alpha: Inside British Intelligence* (London: Faber and Faber, 1996), 56.

concerning ZIRCON and the public row associated with the project's public disclosure. The case study then draws conclusions about the deterministic value of Margaret Thatcher's strategic outlook in the ZIRCON outcome and UK military space posture.

### *The Falkland Islands Crisis – The Special Relationship in Action*

The dispute over the Falkland Islands, known in Argentina as Islas Malvinas, dates back to the 19<sup>th</sup> century. In 1833, the Royal Navy sailed two warships to the island, then under Argentinian control. With instructions from Parliament to seize the islands for Britain, the small British force occupied the Falklands, which remained under UK control ever since.<sup>131</sup> In the years following World War II, the islands held little economic and strategic value but remained British-dependent territories. As the British empire disintegrated during the Cold War, the inhabitants of the Falklands remained strongly in favor of the UK connection. At the same time, Argentina asserted sovereignty over the islands following a United Nations resolution in 1965 calling for the decolonization of the islands. The dispute intensified through the 1970s until reaching a crisis point in 1981 when the Argentinian Junta Leopoldo Galtieri became the country's leader and stoked nationalist sentiment towards the Falklands to distract from a faltering domestic economy. Following months of diplomacy, Argentina invaded the islands on April 2, 1982. After brief but fierce resistance, the Falkland Islands' governor Sir Rex Hunt surrendered to the Argentinians.

As tensions between the UK and Argentina grew in late 1981 and early 1982, the UK, especially Prime Minister Margaret Thatcher, leaned on their special relationship with the United States and President Ronald Reagan for diplomatic and material support. As Argentina's forces

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<sup>131</sup> With the exception of April - June 1982, when Argentina occupied the islands; Max Hastings and Simon Jenkins, *The Battle for the Falklands* (New York, NY: Norton, 1983), 6.

closed on the Falklands, the UK military was out of position to deter an invasion. In March 1982, Thatcher concluded the UK's "only hope now lay with the Americans" to prevent a war.<sup>132</sup> After weeks of shuttle diplomacy by American Secretary of State Alexander Haig, Reagan dispatched a personal message to Thatcher. He reaffirmed the special relationship and committed to helping the UK. Reagan shared his "concern over the disturbing military steps which the Argentines are taking and regret that negotiations have not succeeded in defusing the problem," after which the President added: "I want you to know how we have valued our cooperation on the challenges we both face in many different parts of the world. We will do what we can to assist you here."<sup>133</sup>

After the war began, America's Defense Secretary Caspar Weinberger fulfilled Reagan's promise to Thatcher. Weinberger marshaled the American military and intelligence apparatus to provide the UK with the support it needed to overcome its deficiencies in the rapidly evolving crisis. The Secretary of Defense ensured the UK had access to American intelligence platforms and technical means, including satellite-based reconnaissance, communications, and signals intelligence.<sup>134</sup> In addition to vital intelligence, the U.S. also provided advanced munitions, supplies, and communications support. During the Falklands crisis, Nicholas Henderson, the UK ambassador to the United States, concluded that "it is impossible to exaggerate the contribution Weinberger made to our cause."<sup>135</sup> For her part, Thatcher stated that "America never had a wiser patriot, nor Britain a truer friend," when she recalled the support Weinberger offered the UK.<sup>136</sup>

Despite American support, the British intelligence regime struggled to develop an accurate assessment of the crisis. The information available to the British supporting the Joint

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<sup>132</sup> Richard Aldous, *Reagan and Thatcher: The Difficult Relationship* (New York, NY: W. W. Norton & Company, 2012), 79.

<sup>133</sup> "Presidential Message to Mrs. Thatcher on Falkland Island Dispute," April 1, 1982, National Security Archive.

<sup>134</sup> Aldous, *Reagan and Thatcher*, 95.

<sup>135</sup> Nicholas Henderson, *Mandarin: The Diaries of an Ambassador, 1969-1982* (London: Weidenfeld and Nicolson, 1994), 443.

<sup>136</sup> Thatcher, *The Downing Street Years*, 188.

Intelligence Council (JIC) assessments during the Falklands crisis was primarily derived from human sources. Reporting from British Foreign Office personnel on the ground in Buenos Aires, including defense attaches diplomats and human intelligence from Argentine sources, comprised the bulk of British intelligence. Thanks to the “special relationship,” the UK also had access to American intelligence from Central Intelligence Agency (CIA) sources, as well as satellite and signals intelligence (SIGINT) from the National Security Agency (NSA).<sup>137</sup> The UK’s equivalent to the NSA, GCHQ, worked closely with the NSA to intercept and analyze SIGINT from American technical means, including satellite-based collection platforms. Thatcher was an enthusiastic supporter of the UK’s intelligence agencies, especially the GCHQ, and had increased their budgets since taking office, despite general budget tightening across the Ministry of Defense.<sup>138</sup>

The UK had limited human intelligence assets in Latin America and relied on American space-based technical means for satellite reconnaissance and signals intercepts. However, the U.S. maintained few intelligence assets oriented on Argentina and the South Atlantic, and the majority of America’s assets at the time were focused on the situation in El Salvador. Additionally, satellite-based intelligence (image and SIGINT) was not immediately available. Due to persistent cloud cover in the region during the crisis, satellite photo reconnaissance images were of little use to the British in the lead-up to and during the war. Indeed, American diplomats showed the Argentinian government commercial LANDSAT images of such poor quality to demonstrate that “the photographs taken by this satellite were not capable of providing

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<sup>137</sup> Hastings and Jenkins, *The Battle for the Falklands*, 58.

<sup>138</sup> Lawson, *The View from No. 11*, 314.

any intelligence of military significance.”<sup>139</sup> The intelligence analysis derived from the American or UK intelligence assets could not accurately predict when Argentina might invade the Falklands. The UK’s Joint Intelligence Council (JIC) predicted it would be months before the Argentinians would move sufficient forces to mount a credible assault.<sup>140</sup> The lack of available intelligence and the GCHQ’s difficulty in tasking American assets to intercept Argentine military communications contributed to the JIC’s inability to predict the invasion. In her memoirs, Thatcher acknowledged she “was not expecting anything like a full-scale invasion” based on recent JIC assessments of Argentina’s intent.<sup>141</sup> The British were thus stunned and left scrambling when the invasion finally occurred. After the war, Whitehall’s Falkland Islands Review, known as the Franks Report, attempted to explain the major intelligence failure.

The Franks Report, presented to Parliament by Margaret Thatcher in January 1983, ultimately cleared the UK government of negligence and wrongdoing in the lead-up to the war. However, the Report criticized the British MOD for undertaking a risky military operation with little intelligence about the disposition and capabilities of the Argentine forces occupying the Falkland Islands, including a lack of satellite images and other space-based intelligence. In seeking to explain why the UK government could not anticipate the invasion, the Franks Report asserted, “there was no coverage of Argentine military movements within Argentina ... there was no intelligence from American sources ... no satellite photography was available on the disposition of Argentine forces.”<sup>142</sup> The Report’s findings suggest Whitehall did not receive American intelligence, including satellite-based intelligence, until after the Argentinians invaded.

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<sup>139</sup> Nicholas Henderson, “UKE Washington Telegram 1428 to FCO (0025Z)(‘Falklands Satellite Coverage’),” April 24, 1982, PREM 19/621 f246, Margaret Thatcher Foundation; see also Hastings and Jenkins, *The Battle for the Falklands*, 58.

<sup>140</sup> Hastings and Jenkins, *The Battle for the Falklands*, 57.

<sup>141</sup> Thatcher, *The Downing Street Years*, 177-178.

<sup>142</sup> “Falkland Islands Review” (London: Parliament, January 18, 1983), Margaret Thatcher Foundation, 93.

During the Falklands crisis, signals intelligence developed from American satellite intercepts proved the most useful satellite-based intelligence. To access SIGINT, the GCHQ had to request the NSA reallocate its assets to the South Atlantic. However, this was no simple task since, in 1982, the NSA had not yet achieved global coverage of its eavesdropping satellites. At the time, the NSA's communications intercept assets, the CANYON and RHYOLITE SIGINT satellite constellations, were primarily oriented on the Soviet bloc to intercept Soviet strategic communications or those involving Soviet nuclear command and control.<sup>143</sup> In the late 1970s, the NSA began replacing the aging satellites with a new constellation of VORTEX SIGINT satellites.

In October 1981, the NSA launched one of its newest VORTEX SIGINT satellites atop a Titan IIIC.<sup>144</sup> Intended as a replacement for the aging CANYON satellites, the VORTEX program consisted of a five-satellite constellation in a non-stationary but synchronous orbit.<sup>145</sup> In early 1982, the NSA allocated its most recently launched VORTEX satellite to support the British GCHQ during the Falklands Crisis. The U.S. government never publicly acknowledged supporting the UK with VORTEX. However, according to documents declassified under the Freedom of Information Act (FOIA) from the American National Reconnaissance Office (NRO), which operates U.S. intelligence satellites, the NRO director, Dr. Donald Kerr, remarked in 2006 on the 25<sup>th</sup> anniversary of a SIGINT satellite, whose name is redacted. Kerr stated that the SIGINT satellite “had to go to war with one of our allies shortly after launch and supported the

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<sup>143</sup> Urban, *UK Eyes Alpha*, 57.

<sup>144</sup> Dwayne Day, “The Lion and the Vortex,” *The Space Review*, March 11, 2013.

<sup>145</sup> CANYON satellites occupied non-stationary but synchronous orbits, while the RHYOLITE satellites occupied Geostationary orbit (GEO). GEO was not suitable for full coverage of the Soviet Union for signals intercepts. As a result, the NRO deployed subsequent SIGINT satellites, including possibly VORTEX, in highly elliptical “Molniya” orbits that peaked over the northern hemisphere. “Identifying the Classified NROL-42 Satellite,” Spaceflight101, accessed October 21, 2022, <https://spaceflight101.com/atlas-v-nrol-42/nrol-42-satellite/>.

United Kingdom in the Falklands War.”<sup>146</sup> Kerr’s remarks appear to corroborate previously published accounts describing how the NSA allocated a VORTEX satellite and supported GCHQ during the Falklands Crisis.

GCHQ was overwhelmed with raw information, contributing to the poor British intelligence situation during the Falklands Crisis. In describing the degree of intelligence support GCHQ received from the NSA, British investigative journalist Mark Urban recounts the lengths to which GCHQ personnel had to go to obtain raw intelligence from NSA’s SIGINT satellite. According to GCHQ officers interviewed for Urban’s book, the British had to “negotiate very hard to get [the satellite] moved, and then only for limited periods.”<sup>147</sup> Additionally, thanks to a long-standing intelligence sharing agreement between the U.S. and UK, GCHQ received only raw information from the satellite downlink, rather than carefully analyzed intelligence that was useful for the JIC and senior UK decision-makers.<sup>148</sup>

During the Falklands Crisis, the UK’s SIGINT experience underscored two major lessons for the British intelligence agencies. First, despite their long-standing intelligence-sharing agreement with the U.S. and the special relationship between the two countries, the UK could only ask the Americans for specific space-based SIGINT; it could not compel them. This dynamic reinforced the high degree of dependence the British had on American space-based intelligence capabilities and the limits associated with the NSA prioritizing U.S. SIGINT requirements over UK requirements. Thatcher concluded that the UK needed an “independent space reconnaissance capability” as much as it needed an independent nuclear deterrent.<sup>149</sup> The

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<sup>146</sup> Donald M. Kerr, “Remarks of Dr. Donald M. Kerr, Director’s Town Hall, Monday, December 18, 2006” (National Reconnaissance Office Information Management Services Center, December 7, 2012), [https://www.governmentattic.org/7docs/NRO\\_TownHallIntranetPages\\_2003-2008u.pdf](https://www.governmentattic.org/7docs/NRO_TownHallIntranetPages_2003-2008u.pdf).

<sup>147</sup> Urban, *UK Eyes Alpha*, 57.

<sup>148</sup> Urban, *UK Eyes Alpha*, 57.

<sup>149</sup> Aaron Bateman, “Intelligence and Alliance Politics: America, Britain, and the Strategic Defense Initiative,” *Intelligence and National Security* 36, no. 7 (November 10, 2021): 948.

second lesson surrounded the importance of space for signals intelligence and communications intercepts. Once the NSA's VORTEX satellite was servicing GCHQ requirements in the Falklands, GCHQ analysts were amazed by the capabilities. One analyst described the intelligence potential of such technology as "mind-blowing."<sup>150</sup> However, the technology imbalance that became apparent to the British in the Falklands Crisis caused worry for some in the UK's intelligence community. The UK was clearly the junior partner in the intelligence-sharing enterprise between the two countries. Some worried that British contributions were becoming insignificant, which might lead the U.S. to become more reluctant in how much they shared with the UK.<sup>151</sup> The special relationship was possibly at risk, and the GCHQ conceived of a solution to improve the UK's technical competence and SIGINT capability.

#### *A Vision for ZIRCON*

By the mid-1980s, some UK government insiders believed GCHQ's status as a world-class intelligence agency was little more than a delusion. Martin Morland, a former Chief of Assessments in the JIC, worried the U.S.-UK special relationship, where "everything is meant to be completely shared," was eroding and that the U.S. was withholding information due to the inequalities that existed between the GCHQ and its American counterpart.<sup>152</sup> Additionally, in 1983, an investigation into Geoffrey Prime, British signals intelligence officer who worked at GCHQ, revealed he had been a KGB agent and provided Soviet intelligence with highly classified information about British and American technical signals intelligence collection

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<sup>150</sup> Urban, *UK Eyes Alpha*, 58.

<sup>151</sup> Urban, *UK Eyes Alpha*, 59.

<sup>152</sup> Urban, *UK Eyes Alpha*, 60.

means.<sup>153</sup> The revelation further undermined GCHQ's credibility and the integrity of the U.S.-UK intelligence-sharing relationship.

The GCHQ director at the time, Sir Brian Tovey, was a major proponent of computers and other advanced eavesdropping technologies, which the Americans had pioneered at the NSA. Tovey, who became GCHQ director in 1978, believed the British intelligence agency had to embrace emerging technologies to keep pace with the growing sophistication of global telecommunications and encryption, including those used by the Soviet bloc.<sup>154</sup> As part of a broader effort to refocus GCHQ on pioneering technology, Tovey conceived of a British signal intelligence satellite as the logical expansion of GCHQ to space.<sup>155</sup> The satellite project, codenamed ZIRCON, would also reinvigorate GCHQ's relationship with the NSA by allowing the UK to produce independent communications intercepts, which GCHQ could share with the NSA. Tovey convinced Thatcher, a major supporter of Britain's intelligence agencies, to study the ZIRCON proposal.<sup>156</sup> Thatcher's Cabinet Office approved initial feasibility studies in 1983, shortly before Tovey retired as GCHQ director.<sup>157</sup>

The UK Ministry of Defence planned to launch ZIRCON in 1988 and position the satellite in a geo-stationary orbit above the Asian continent to collect electronic communications throughout the Soviet bloc.<sup>158</sup> The satellite was to be built by two UK aerospace contractors, British Aerospace (BAE) and GEC-Marconi. However, ZIRCON would be primarily based on U.S. technology used on NSA eavesdropping CHALET and MAGNUM satellites, thanks to a

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<sup>153</sup> Robert W. Pringle, *Historical Dictionary of Russian and Soviet Intelligence* (Lanham: Rowman & Littlefield, 2015), 245.

<sup>154</sup> "Sir Brian Tovey - Obituary," *The Telegraph*, January 28, 2016.

<sup>155</sup> Urban, *UK Eyes Alpha*, 60-61.

<sup>156</sup> "Sir Brian Tovey - Obituary."

<sup>157</sup> Urban, *UK Eyes Alpha*, 61.

<sup>158</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 103.

technology transfer agreement with an American firm, TRW, brokered by the NSA.<sup>159</sup> The MoD never disclosed the project's cost. Still, independent analysis in the British press, based on sources in the Defence Ministry, estimated ZIRCON's total cost over the project's five-year lifespan to be between £400 million and £500 million (about \$750 million).<sup>160</sup> Included in the cost was the construction of ground segment infrastructure to receive signals from ZIRCON in addition to the satellite's construction. The project's costs became a contention within Thatcher's cabinet and drew unwanted scrutiny from the British press.

Moreover, a single SIGINT satellite would not provide the UK with an independent SIGINT capability, which fostered a debate within Whitehall about the project's utility. The UK would need at least three ZIRCON satellites to achieve a truly independent SIGINT capability, albeit at greater expense. The cost was generally considered insurmountable and a non-starter for Thatcher and her Cabinet.<sup>161</sup>

### *The ZIRCON Affair*

In January 1987, British investigative journalist Duncan Campbell disclosed the highly classified ZIRCON project in a story for the British news magazine *New Statesman*.<sup>162</sup> Thatcher's government learned that the journalist had interviewed several former Ministry of Defence officials familiar with ZIRCON for a television documentary on the subject that was to be broadcast by the BBC in Scotland as part of a series called *The Secret Society*. Whitehall compelled the BBC to suspend the series and considered an injunction against Campbell to

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<sup>159</sup> Duncan Campbell, "The Parliamentary Bypass Operation," *New Statesman*, January 23, 1987, 10.

<sup>160</sup> Campbell, "The Parliamentary Bypass Operation," 9. Duncan Campbell, "The Cost of Zircon," *New Statesman*, February 27, 1987.

<sup>161</sup> Urban, *Uk Eyes Alpha*, 61.

<sup>162</sup> See Campbell, "The Parliamentary Bypass Operation" for the original story.

prevent him from disclosing ZIRCON.<sup>163</sup> When Campbell learned Whitehall might seek legal action against him, he published the article in the *New Statesman*. Campbell alleged that Thatcher's government had violated British law in failing to disclose the ZIRCON project and its cost to Parliament's cross-party Committee of Public Accounts Committee (PAC). The disclosure requirement for major defense programs emerged in 1982 after the *Chevaline* affair.

*Chevaline* was the MoD's Polaris submarine-launched ballistic missile (SLBM) modernization program, which began in 1967. When Thatcher disclosed *Chevaline* to Parliament in 1980, the program's cost had nearly tripled to over £500 million. Following the political scandal associated with *Chevaline*, the PAC in 1982 reformed when and how the MoD must disclose its spending to Parliament.<sup>164</sup> Under the 1982 reforms, Whitehall was required to disclose major defense procurement programs that exceeded £200 million (later increased to £250 million in 1986) in an annual Major Projects Statement. According to Campbell's investigative reporting, Whitehall deliberately withheld ZIRCON due to the classified nature of the intelligence project by attempting to pass the satellite off as another SKYNET communications satellite.

After Campbell's story broke, Thatcher "instructed Michael Havers, the Attorney General, to issue an injunction against [Campbell] and every newspaper in the country," recalled Nigel Lawson, the Chancellor of the Exchequer.<sup>165</sup> Officers from the London Metropolitan Police Special Branch raided Campbell's residence and the editorial offices of the *New*

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<sup>163</sup> Richard Brooks, "BBC Gag on £500m Defence Secret," *The Observer*, January 18, 1987; Lawson, *The View from No. 11*, 314.

<sup>164</sup> The UK's Polaris SLBM modernization program, which began in 1967, was called *Chevaline*, and estimated to cost £174 million; however, the costs rose to over £500 million, and Parliament was not informed of the program or its costs, until 1980. See "Holding Government to Account—150 Years of the Committee of Public Accounts" (London: Committee of Public Accounts, 2007), 21.

<sup>165</sup> Lawson, *The View from No. 11*, 314.

*Statesman* to recover classified materials and other details of the ZIRCON project.<sup>166</sup> With the injunction and the police raids, Thatcher had raised the stakes in the ZIRCON affair and demonstrated how strongly the Prime Minister felt about the need to protect sensitive intelligence programs, regardless of the political cost.<sup>167</sup>

The political cost materialized in Parliament after Campbell's story in the *New Statesman*. Members of Parliament criticized Thatcher for attempting to hide ZIRCON from Parliament under false pretenses and then fumbling to cover the matter up in reaction to Campbell's story. Neil Kinnock, a Labour Party MP, and leader of the Opposition, questioned whether the government's actions were "a sufficient way in which to safeguard national security." Kinnock somewhat rhetorically added that the ZIRCON affair had "been produced by lateness, clumsiness and vindictiveness" of the Thatcher government.<sup>168</sup> Other Labour MPs piled on. Roland Boyes asked if "the Prime Minister [would] like to comment on the ... media criticism of her reckless, dubious, bungling ways?" while Frank Haynes asked if Thatcher was "aware that the House and the nation are watching the Government farce on ZIRCON?"<sup>169</sup> Responding to the accusations against her government, Thatcher held her ground. She told Members of Parliament that "the trouble has arisen because of Left-wing organs like the *New Statesman* and people anxious to ferret out the secrets of national security in order to sell them either for personal gain or some kind of personal notoriety."<sup>170</sup> Thatcher went on to say that "unfortunately for all of us, there seem to be people who are more interested in trying to ferret out and reveal information of use to our enemies than in preserving the defence interests of this

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<sup>166</sup> David Wilby, "The Zircon Affair 1986," *BBC*, 2006.

<sup>167</sup> Urban, *UK Eyes Alpha*, 61.

<sup>168</sup> Margaret Thatcher, "House of Commons PQs," January 27, 1987, Hansard HC [109/177-82], Margaret Thatcher Foundation.

<sup>169</sup> Thatcher, "House of Commons PQs."

<sup>170</sup> Thatcher, "House of Commons PQs."

country.”<sup>171</sup> Thatcher’s statements reflect her firm conviction that intelligence matters, especially sensitive collections means, and sources, were the exclusive purview of a state’s most senior leaders.<sup>172</sup> The ZIRCON affair drew unwelcome attention to the decision facing Thatcher and the UK’s future in space-based intelligence.

According to Sir Frank Cooper, a former MoD official interviewed by Campbell, the primary justification for pursuing ZIRCON was to maintain the UK’s international standing. Cooper alleged that ZIRCON was a way for the UK, and the GCHQ specifically, to “maintain a special relationship on intelligence and nuclear policy” and help GCHQ, and the UK more broadly, keep up with the American in the critical field of signals intelligence.<sup>173</sup> However, ZIRCON’s cost precluded the UK from achieving an independent British SIGINT capability. But the goal of the Prime Minister remained unchanged. With or without ZIRCON, the UK must remain a player in the space-based intelligence game.<sup>174</sup> In other words, Britain would need to strengthen its special relationship with the U.S. to maintain access to satellite-based SIGINT.

In August 1987, Michael Evans wrote in *The Times* an updated account of the political decisions facing Thatcher about the UK’s future in space-based intelligence. In the months leading up to Campbell’s disclosures, the GCHQ and senior members of Thatcher’s cabinet became increasingly convinced that proceeding with ZIRCON was not financially feasible.<sup>175</sup> There was no way the UK could afford to field the number of ZIRCON satellites necessary to achieve the degree of global coverage required for true independence from the United States. In

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<sup>171</sup> John Jones, “Britain Reportedly Developing Secret Spy Satellite,” *UPI Archive: International*, January 23, 1987, Gale General OneFile.

<sup>172</sup> Urban, *UK Eyes Alpha*, 68.

<sup>173</sup> Sir Frank Cooper, quoted in Campbell, “The Parliamentary Bypass Operation,” 9.

<sup>174</sup> In the mid-1980s, the entire GCHQ budget was approximately £350 million. Fielding ZIRCON would have added about £100 million per year for five years to the budget, an insurmountable sum, even for Thatcher. Urban, *UK Eyes Alpha*, 62.

<sup>175</sup> Michael Evans, “Zircon Spy Satellite Is Abandoned: Thatcher Opts to Rely on US Technology,” *The Times*, August 6, 1987.

February 1987, after completing the ZIRCON feasibility study at the cost of £70 million, members of Thatcher's Cabinet and senior intelligence officials, a group known as the Permanent Secretaries' committee on the Intelligence Services (PSIS), presented the Prime Minister with three options. First, the UK could proceed with a "go it alone" option by pursuing ZIRCON at the cost of £400 million to £500 million per satellite. Second, the UK could "subscribe" to an American system by funding part of an upcoming constellation of SIGINT satellites in exchange for tasking rights and access to raw information. Third, the UK could abandon the goal of becoming active in space-based intelligence and rely on whatever intelligence the U.S. would share instead.<sup>176</sup> That the PSIS presented Thatcher with these options mere weeks after Campbell revealed the ZIRCON project was merely a coincidence.

Thatcher felt very strongly about the UK maintaining a space-based signal intelligence capability, especially about maintaining the U.S.-UK intelligence-sharing relationship. In a meeting with Reagan's Secretary of Defense Frank Carlucci in the summer of 1987, after ZIRCON was canceled, Thatcher noted the importance of nuclear and intelligence cooperation between both countries. Regarding space-based satellite intelligence, Thatcher emphasized that she hoped "very much that we shall be able to reach agreement on *overhead systems* and a successor to *Zircon* [emphasis in the original]," adding that the UK wanted "to stay in this game."<sup>177</sup> To stay in the game, the UK struck a complex agreement with the U.S. in which the UK contributed about £500 million, about the cost of a single ZIRCON satellite, towards the NSA's newest three-satellite SIGINT constellation called MAGNUM.<sup>178</sup>

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<sup>176</sup> Evans, "Zircon Spy Satellite Is Abandoned;" see also Urban, *UK Eyes Alpha*, 62-63.

<sup>177</sup> Charles Powell, "Charles Powell Briefing for MT ('Meeting with Mr. Carlucci)," July 31, 1987, PREM 19/2891 f361, Margaret Thatcher Foundation.

<sup>178</sup> Urban, *UK Eyes Alpha*, 65.

The ZIRCON affair was a watershed moment for UK intelligence and the special relationship. Conceived after the Falkland Islands Crisis, ZIRCON was viewed as a national signals intelligence platform to grant the British greater control over their intelligence requirements. But unlike the French satellite intelligence programs, which were meant to decrease France's dependence on the U.S., ZIRCON was intended to reinforce the U.S.-UK special relationship by increasing British contributions to the intelligence-sharing enterprise between the two countries.

According to Mark Urban, the new dynamic offered advantages and disadvantages to the British. On the one hand, the "subscription" model afforded the UK economies of scale that its domestic industry could not replicate and ensured the GCHQ had access to the latest signals intercept technology without duplicating the NSA's efforts.<sup>179</sup> On the other hand, the ministerial decision to forgo the ZIRCON "go it alone" option effectively transformed the UK into a client of American space-based intelligence services rather than an equal partner and reinforced UK national dependence on US intelligence.<sup>180</sup>

The ZIRCON affair also reflected the constraints of limited budgetary resources for regional powers and the difficult strategic choices that leaders of an erstwhile great power must make. By abandoning ZIRCON, Thatcher demonstrated how she favored maintaining and strengthening the U.S.-UK special relationship above an independent British space-based SIGINT capability in the face of domestic bureaucratic and budgetary constraints. Thatcher felt strongly that the UK's special relationship with the U.S., especially in intelligence matters, trumped considerations of autonomy and grandeur that her French counterparts might have found appealing. Facing tightening budgets and embarrassment thanks to the Campbell revelations in

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<sup>179</sup> Urban, *UK Eyes Alpha*, 64.

<sup>180</sup> Urban, *UK Eyes Alpha*, 64.

the *New Statesman*, the Prime Minister fell back on her strategic outlook to inform decision-making on the UK's military space posture.

### **SDI – Thatcher, Reagan, and the “Special Relationship”**

When Ronald Reagan declared in March 1983 the United States' intention to develop the capability to neutralize Soviet nuclear weapons, Margaret Thatcher was taken aback. Reagan's announcement set the foundation for the Strategic Defense Initiative (SDI) and surprised the Prime Minister. Reagan famously did not consult Allied leaders, including Thatcher, not to mention members of his cabinet, before making his speech.<sup>181</sup> The advent of SDI came less than a year after the Falkland Islands War, which reinforced the UK's dependence on the United States for satellite-based intelligence. After months of internal deliberations with her Cabinet, Thatcher agreed with SDI's principles in a statement during her meetings with Reagan at Camp David in December 1984.<sup>182</sup> A year later, the UK entered into a bilateral agreement with the U.S. to participate in research and development related to SDI programs.<sup>183</sup>

The UK's experience with SDI reflects the degree to which the military space policies of the United States and the Soviet Union affected the UK's foreign and security policies, particularly with the United States. Although SDI did not directly affect the UK's military space posture, the UK's nuclear strategy and military space posture strongly influenced Thatcher's decisions related to SDI. Specifically, Thatcher strongly considered the UK's privileged access to U.S. space-based intelligence, the potential of SDI's science and technology research

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<sup>181</sup> Aldous, *Reagan and Thatcher*, 134.

<sup>182</sup> Margaret Thatcher, “Press Conference after Camp David Talks (the ‘Camp David Declaration’) | Margaret Thatcher Foundation,” December 22, 1984, The Margaret Thatcher Foundation, <https://www.margaretthatcher.org/document/109392>, accessed November 29, 2022.

<sup>183</sup> Michael Kandiah and Gillian Staerck, eds., *The British Response to SDI* (London: Centre for Contemporary British History, University of London, 2005), 20.

outcomes for UK industry, and the overall balance of power between the West and the Soviet Bloc during a time of heightened tensions. Collectively, these factors reflected the sensitive nature of the UK's relationship with the United States. As a result, Thatcher took a personal interest in the matter. As Thatcher recalled in her memoirs:

I kept tight personal control over decisions relating to SDI and our reactions to it. I knew that irreparable harm could have been done to our relations with the United States had the wrong line or even tone been adopted. I was also passionately interested in the technical developments and strategic implications. This was one of those areas in which only a firm grasp of the scientific concepts involved allows the right policy decisions to be made.<sup>184</sup>

The passage reveals the degree to which Thatcher was involved in UK decisions on military space policy and the importance she ascribed to personally managing the special relationship with the United States.

### *Initial Reactions in the UK*

A few days after Reagan's speech in 1983, Michael Heseltine delivered to Thatcher the MoD's assessment of Reagan's appeal for new defensive technologies and the implications for UK national interests. The assessment focused on the shift from deterrence to active defense implicit in Reagan's speech, how it might affect U.S. commitment to the 1972 Anti-Ballistic Missile (ABM) treaty and arms control more broadly, and the future of the UK's independent strategic deterrent.<sup>185</sup> Specifically, the MoD was concerned that an effective defensive system against Soviet nuclear weapons, as envisioned by Reagan, would have profound consequences for deterrence in Europe and the threat of nuclear escalation. In other words, SDI might be a

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<sup>184</sup> Thatcher, *The Downing Street Years*, 463.

<sup>185</sup> "President Reagan's Speech on Defensive Technology," PREM 19/1188, The National Archives, 2, accessed November 29, 2022, <https://www.margaretthatcher.org/source/prem19/prem19-1188>.

pretext for the U.S. to decouple from NATO and the defense of Europe, leaving the continent vulnerable to nuclear coercion from the Soviet Union.<sup>186</sup>

Over several months, UK officials consulted with European counterparts on SDI. The Europeans, led by the French, shared some of the MoD's concerns and were especially alarmed by the prospect of an ASAT arms race in outer space.<sup>187</sup> A general sentiment favoring new arms control measures, including an outright ban on ASATs, began forming among UK and European ministers. The Foreign Commonwealth Office (FCO) and MoD assessed that the U.S. and NATO relied more on satellite-based surveillance and communications than the Soviet Union. The U.S. and NATO would thus be at a disadvantage in an ASAT arms race since their satellites in LEO, including those used for nuclear command and control, were more vulnerable to ASATs.<sup>188</sup> The FCO and MoD thus shared the European allies' concerns about arms control and believed it would be in the UK's national interest to pursue stronger arms control measures.<sup>189</sup>

In June 1984, the FCO and MoD sent Thatcher a joint study that focused on U.S. and Soviet military space activities, including ASAT development, and their implications for SDI and arms control and the militarization of space. The study characterized the military balance in space that existed between the U.S. and the Soviet Union, the two powers with the most advanced military space technologies. Among the key points, the study highlighted the Soviet advantage in military space systems, noting that only the Soviets had an operational ASAT and limited ABM capability.<sup>190</sup> Additionally, the study noted that "the West places more reliance on surveillance and communications satellites" than the Soviets for military operations, suggesting

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<sup>186</sup> "President Reagan's Speech on Defensive Technology," PREM 19/1188, 3.

<sup>187</sup> See Chapter 2 for a discussion on France's reaction to SDI.

<sup>188</sup> Michael Heseltine and Geoffrey Howe, "Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control," June 19, 1984, PREM 19/1188, The National Archives, accessed November 29, 2022, <https://www.margaretthatcher.org/source/prem19/prem19-1188>.

<sup>189</sup> Heseltine and Howe, "Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control."

<sup>190</sup> Heseltine and Howe, "Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control."

the West was more vulnerable to the proliferation of ASATs and therefore more likely to pursue “anti-ASATs,” thus sparking a space arms race.<sup>191</sup>

According to the FCO and MoD, there was an inextricable link in the U.S. eyes between ASATs and ballistic missile defense (BMD), which was limited in principle by the ABM Treaty of 1972. SDI was, therefore, an effort to circumvent ABM Treaty restrictions by developing a new class of defensive technologies in space.<sup>192</sup> However, an ASAT ban would likely have prohibited the U.S. from pursuing SDI and the attendant scientific research and technology development due to the similarity between ASATs and BMD technology.<sup>193</sup> The joint study thus recommended a more aggressive arms control regime in collaboration with European partners to ban Soviet and American ASATs and suggested such a ban was in the UK’s national interest.<sup>194</sup>

Thatcher chaired a high-level cabinet meeting on July 16, 1984, to discuss the joint FCO/MoD paper on ASATs and arms control, during which she expressed that she disagreed with several of the paper’s conclusions and recommendations. Specifically, Thatcher did not agree that an arms control regime that would ban both U.S. and Soviet ASATs would be in the UK’s national interests. She also did not want to appear to dictate to the Americans how to proceed on military space policy, given that the Americans “had a great deal more technical knowledge than the UK, and we would risk annoying them needlessly.”<sup>195</sup> Top of mind for

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<sup>191</sup> Heseltine and Howe, “Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control.”

<sup>192</sup> In particular, the U.S. was developing an air-launched, two-stage ASAT missile that featured a miniature homing vehicle (MHV) interceptor. The U.S. eventually abandoned the ASAT.

<sup>193</sup> Aaron Bateman, “Space Reconnaissance and Anglo-American Relations during the Cold War,” *The Space Review*, March 9, 2020, <https://www.thespacereview.com/article/3896/1>.

<sup>194</sup> Heseltine and Howe, “Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control.”

<sup>195</sup> Charles Powell, “Powell minute on Anti-Satellite and Arms Control meeting chaired by PM, in Defence (Military Uses of Laser Technology in Space; Anti-Satellite Systems and Arms Control; Ballistic Missile Defence; the United States Strategic Defence Initiative) (Part 1),” PREM 19/1188, The National Archives, accessed November 29, 2022, <https://www.margaretthatcher.org/source/prem19/prem19-1188>.

Thatcher was the special relationship with the United States and the UK's dependence on American space capabilities, which undoubtedly informed her perspectives on SDI.

*SDI and the UK's Privileged Access to U.S. Space Capabilities*

Given the UK's limited military space posture, the UK's privileged access to American space-based intelligence capabilities, both photoreconnaissance, and SIGINT, was a major consideration weighing on Thatcher and her Government's deliberations on SDI. The Prime Minister worried that a strong negative British reaction to SDI, such as France's (see Chapter 2), could negatively affect the U.S.-UK special relationship, especially on intelligence matters.<sup>196</sup> Senior officials in the FCO, MoD, and the intelligence services also recognized the sensitive political nature of SDI for the UK and the risks attendant with pursuing stronger arms control measures.<sup>197</sup>

The UK and U.S. intelligence relationship has been a central thread in their bilateral security relationship, especially since the U.S. and the UK entered a mutual defense agreement in 1958. The 1958 agreement, which focused primarily on U.S.-UK cooperation on nuclear strategy, reaffirmed the "special relationship" on foreign, security, and defense matters that existed in practice since World War II but was disrupted during the 1956 Suez Crisis.<sup>198</sup> Recent scholarship by Aaron Bateman suggests that the UK's privileged access to U.S. space-based intelligence capabilities was a central element of the U.S.-UK special relationship during the Cold War. According to Bateman, the UK, and Thatcher, in particular, were acutely aware of

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<sup>196</sup> Bateman, "Space Reconnaissance and Anglo-American Relations during the Cold War."

<sup>197</sup> Aaron Bateman, "Intelligence and Alliance Politics: America, Britain, and the Strategic Defense Initiative," *Intelligence and National Security* 36, no. 7 (November 10, 2021): 948.

<sup>198</sup> Aaron Bateman, "Science, Technology, and the 'Special Relationship': A Re-Examination of Britain's Support for the Strategic Defense Initiative," *Science & Diplomacy* 8, no. 1 (May 2019).

their privileged standing among other European allies regarding U.S. military space systems and that maintaining this arrangement remained a primary foreign policy objective of Thatcher's Government.<sup>199</sup>

In their memorandum to the Prime Minister, Heseltine and Howe acknowledged that the UK must carefully handle its response to SDI because the UK was "largely dependent on the U.S. for space-derived intelligence."<sup>200</sup> Indeed, the security of American space systems, upon which the UK depended, formed the basis of the FCO/MoD rationale for siding with the Europeans in advocating for an ASAT ban.<sup>201</sup> But the two ministries also cautioned that the U.S. might withhold access to satellite-based systems to the Europeans, and possibly to the UK, due to "premature enthusiasm about arms control in outer space," suggesting broader implications of SDI on the Anglo-American intelligence relationship.<sup>202</sup>

Thatcher disagreed with the ministries' suggestion to oppose SDI. In her view, science and technology progressed with the research and development of new weapons. She fundamentally agreed with Reagan's vision for SDI, even if she disagreed with his vision of a nuclear-free world. Thatcher noted it was impossible to "hold back research on SDI any more than you could prevent research into new kinds of offensive weapons."<sup>203</sup> Given the Soviet advantage in ASATs and military space systems, it was imperative for the United States, with the UK's assistance, to achieve parity with the Soviets and be the first to realize the science and technology required for a space-based defensive shield.<sup>204</sup>

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<sup>199</sup> Bateman, "Space Reconnaissance and Anglo-American Relations during the Cold War."

<sup>200</sup> Heseltine and Howe, "Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control." See also Aaron Bateman, "Keeping the Technological Edge: The Space Arms Race and Anglo-American Relations in the 1980s," *Diplomacy & Statecraft* 33, no. 2 (April 3, 2022): 360-361.

<sup>201</sup> Bateman, "Keeping the Technological Edge," 361.

<sup>202</sup> Bateman, "Keeping the Technological Edge," 361; Heseltine and Howe, "Heseltine and Howe minute to Thatcher: Anti-Satellite Systems and Arms Control."

<sup>203</sup> Thatcher, *The Downing Street Years*, 466.

<sup>204</sup> Thatcher, *The Downing Street Years*, 466.

*Science and Technology Implications of SDI*

Margaret Thatcher differed sharply with Ronald Reagan that a world free of nuclear weapons was safer, let alone achievable.<sup>205</sup> For Thatcher, the American and UK nuclear arsenals helped maintain peace and stability with the Soviet bloc for decades, and Reagan's vision would profoundly undermine the nuclear deterrence regime. However, the Prime Minister recognized that SDI would require significant long-term scientific and technological advancements, not to mention investments, to achieve the capabilities Reagan had envisioned in his speech. Additionally, Thatcher understood that the U.S. would have to rely on scientists from the allies to fulfill the SDI research agenda. As a result, participating in SDI allowed the UK to access U.S. funds and contracts for major research and development in advanced technologies, including super-computing and orbital guidance capabilities.

Thatcher believed UK policy on SDI had to be informed by a firm grasp of the program's technical elements. As a scientist with degrees from Oxford University, she expressed strong interest in, and knowledge of, the technical aspects of SDI. Indeed, Thatcher had kept herself apprised of Soviet advances in ASAT technologies even before she became Prime Minister, fearing the Soviets were gaining an advantage over the West in military space capabilities.<sup>206</sup> She regularly studied scientific journals and reporting from industry press, including *Aviation Weekly* and *Space Technology*, leading aerospace industry publications. Thatcher's personal interest in SDI was matched only by how seriously she took the potential for Soviet domination in advanced technologies.

Conversely, Thatcher felt her own Cabinet did not take SDI seriously enough, remarking that "[l]aid back generalists from the Foreign Office – let alone the ministerial muddlers in

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<sup>205</sup> Thatcher, *The Downing Street Years*, 463.

<sup>206</sup> Thatcher, *The Downing Street Years*, 464.

charge of them – could not be relied upon.”<sup>207</sup> Indeed, the archival record shows that the Prime Minister had repeatedly asked the ministries for the joint paper mentioned above, which contained technical and strategic analysis of SDI, ASATs, and arms control measures. In February 1984, the Prime Minister requested from the FCO and MoD a detailed technical analysis of SDI and the broader implications of ASAT development on the military balance in space before deciding how to engage with the Americans.<sup>208</sup> A few weeks later, the Prime Minister’s office sent another request to the FCO and MoD, stating that the “Prime Minister still wishes to see the paper commissioned in my letter of 24 February and indeed hopes that it will now be made available very soon.”<sup>209</sup> In June 1984, a third request from Number 10 Downing Street went out, stating emphatically:

The Prime Minister has enquired insistently when she may expect the papers on controls on anti-satellite systems ... which the Defence Secretary has undertaken to produce. She recalls that it is now some months since both were commissioned and hopes that they can be available very shortly.<sup>210</sup>

That same day, the Foreign Secretary, Geoffrey Howe, sent a letter to Michael Heseltine, the Defence Secretary, with a copy to the Prime Minister, describing the European, particularly the French, position on SDI and arms control measures on ASATs. Howe also remarked that the FCO and MoD should circulate the paper, which the Prime Minister had requested months earlier, as soon as possible. Interestingly, Charles D. Powell, Thatcher’s private secretary, wrote a note for Thatcher on the copy sent to the Prime Minister that Howe’s letter was “further

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<sup>207</sup> Thatcher, *The Downing Street Years*, 463.

<sup>208</sup> A.J. Coles, “Minute to P.F. Ricketts, Esq., Foreign and Commonwealth Office (‘Controls on Anti-Satellite Systems’),” February 24, 1984, PREM 19/1188, The National Archives, 200.

<sup>209</sup> A.J. Coles, “Minutes to Nick Evans, Esq., Ministry of Defence (‘Controls on Anti-Satellite Systems’),” March 12, 1984, PREM 19/1188, The National Archives, 199.

<sup>210</sup> A.J. Coles, “Minute to Richard Mottram, Esq., Ministry of Defence,” June 14, 1984, PREM 19/1188, The National Archives, 198.

pressure on MoD to disgorge a paper.”<sup>211</sup> Thatcher sought information from UK ministries on SDI and ASATs to help formulate UK policy and support her decision-making but was left frustrated. Thatcher summed up the experience in her memoirs thusly:

[n]either the Foreign Office nor the Ministry of Defence took SDI sufficiently seriously. Time and again I had to press for papers which had been promised and these, when they came, consistently underrated the technical possibilities opened up by the research and the American administration’s determination to press ahead with it.<sup>212</sup>

Part of the reason why Thatcher took SDI so seriously was because of the potential for the UK’s industry to receive large sums of research and development funds.<sup>213</sup> However, the Prime Minister didn’t truly appreciate the importance of the technology associated with SDI until Ronald Reagan dispatched U.S. Air Force Lieutenant General Jim Abrahamson, the first director of the SDI Organization (SDIO), to personally brief Thatcher. Although a junior partner in the special relationship, the UK’s participation in SDI was vital for Reagan. SDI could not survive without the enthusiastic participation of America’s closest ally. Thus, Thatcher was the only foreign leader to whom Reagan extended the courtesy of receiving personal briefings from Abrahamson.

Following the signing of the U.S.-UK memorandum of understanding at Camp David in December 1984, Lt. Gen. Abrahamson made several visits to London to discuss SDI with Thatcher. According to Charles Powell, Abrahamson had regular access to the Prime Minister for several years and briefed her regularly on the latest SDI technological developments until his retirement in 1989.<sup>214</sup> The briefings further impelled Thatcher’s commitment to participate in

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<sup>211</sup> Geoffrey Howe, “Minute to Secretary of State for Defence (‘Military Developments in Outer Space’),” June 14, 1984, PREM 19/1188, The National Archives, 197

<sup>212</sup> Thatcher, *The Downing Street Years*, 464.

<sup>213</sup> Bateman, “Keeping the Technological Edge,” 363.

<sup>214</sup> Charles D. Powell, quoted in Kandiah and Staerck, *The British Response to SDI*, 51.

SDI by reinforcing her belief that it was impossible to prevent further research or development once a specific capability or technology had been envisioned.<sup>215</sup>

The U.S. began soliciting interest in SDI among UK aerospace firms as early as January 1985. The UK Ambassador to the U.S., Oliver Wright, sent a cable to the Foreign Secretary that same month to argue that the UK should collaborate enthusiastically with the Americans on SDI. Citing the Prime Minister's conviction on SDI, Wright asked Howe, somewhat rhetorically, "are we going to exclude ourselves from the revolution in defence technology that the SDI research programme is likely to ignite?"<sup>216</sup> Others joined the growing chorus of voices in the Government pushing for the UK's participation in SDI. One of Thatcher's policy advisors, Nicholas Owen, wrote to the Prime Minister in July 1985 to express his disagreement with Heseltine on collaborating with the Europeans. Owen declared that the UK's "participation is worth a high price and the Americans expect to pay one."<sup>217</sup> Owen went on to state that the Americans,

[V]alue the quality of our research in the relevant technologies. The political value of our participation will be enhanced by the lukewarm or negative attitudes of other Allies. So we should not undersell our technology, and we should look for a political premium on top of that.<sup>218</sup>

Yet, UK industry participation in SDI-related research had to be formalized through contracts to prevent a brain-drain of the UK's top scientists and engineers, a concern shared by Owen, François Mitterrand, and the French.

To prevent a brain drain from Europe, the French President proffered an SDI alternative called EUREKA to stimulate European research and development (see Chapter 2). However,

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<sup>215</sup> Thatcher, *The Downing Street Years*, 466; see also Powell, quoted in Kandiah and Staerck, *The British Response to SDI*, 32.

<sup>216</sup> Oliver Wright, "UKE Washington Letter to Howe ('Strategic Defence Initiative')," January 29, 1985, PREM 19/1443 f79, The National Archives, 2.

<sup>217</sup> Nicholas Owen, "Policy Unit Minute for MT ('SDI Research: UK Participation')," July 10, 1985, PREM 19/1445 f201, The National Archives.

<sup>218</sup> Owen, "Policy Unit Minute for MT ('SDI Research: UK Participation')."

Thatcher was skeptical of the European response to SDI because of the Europeans' different attitudes and because a multi-lateral European approach would make the U.S. reluctant to share their technologies.<sup>219</sup> Thatcher also recognized that an American-led research agenda on defense technologies held the greatest promise for advancements in computing and industry and the greatest potential for funding. Important were the U.S.-UK special relationship (not to mention Thatcher's friendship with Reagan) but also the potential for SDI to generate new technologies that could greatly affect the UK's national security interests. In other words, from foreign policy, national security, and technology perspectives, it was more important for Thatcher that the UK participate in SDI than in EUREKA.<sup>220</sup>

#### *Nuclear Strategy Implications of SDI*

Despite Thatcher's strong relationship with Ronald Reagan, the President's vision of a nuclear-free world was problematic. For one thing, the Prime Minister "differed sharply" with Reagan on nuclear weapons, believing that a world without nuclear weapons "was neither attainable nor even desirable."<sup>221</sup> Indeed, when Thatcher first spoke to Reagan in person about SDI at their meeting in December 1984, the Prime Minister remained concerned about Reagan's position on nuclear weapons. However, Thatcher and Reagan eventually agreed that SDI was principally a research program designed to uphold and enhance nuclear deterrence, not undermine it.<sup>222</sup>

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<sup>219</sup> Owen, "Policy Unit Minute for MT ('SDI Research: UK Participation')."

<sup>220</sup> Bateman, "Keeping the Technological Edge," 365.

<sup>221</sup> Thatcher, *The Downing Street Years*, 463.

<sup>222</sup> Frances FitzGerald, *Way Out There in the Blue: Reagan, Star Wars, and the End of the Cold War* (New York, NY: Simon & Schuster, 2000), 256.

Soviet ASAT advancements, SDI, and the promise of a nuclear-free world were also problematic for the UK because of the potential impact of strategic defenses on the credibility of the UK's nuclear deterrent.<sup>223</sup> The UK Government had recently decided to purchase the U.S.-made *Trident* submarine-launched ballistic missile to replace *Polaris*, modernize the UK nuclear arsenal, and ensure a credible deterrent capability into the 21<sup>st</sup> century.<sup>224</sup> U.S.-UK nuclear cooperation dated back to the Mutual Defense Agreement signed between the two nations in 1958 and formed the other central thread in the special relationship. *Trident* was the main component of the UK's nuclear strategy and a major contribution to NATO. Most importantly, Thatcher strongly believed in the centrality of nuclear weapons, particularly *Trident*, in maintaining the UK's international standing and political relevance.<sup>225</sup>

In addition to the *Trident* purchase, Thatcher had allowed the U.S. to station nuclear-armed intermediate-range cruise missiles in Britain in response to Soviet nuclear deployment across the Warsaw Pact.<sup>226</sup> However, public opinion in the UK opposed the *Trident* deal, largely based on cost but also due to a growing sentiment of anti-Americanism.<sup>227</sup> The political pressure over nuclear weapons mounted in late 1982 and early 1983, especially after the Labour Party adopted an anti-nuclear stance. Thus, when Reagan delivered his SDI speech in March 1983, his vision of a nuclear-free world complicated matters. The Prime Minister would have to navigate SDI carefully and balance domestic constraints with the U.S.-UK special relationship.

SDI provided the UK an opportunity to gain access to valuable scientific breakthroughs and American technology in exchange for political support. Thatcher thus separated SDI into two

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<sup>223</sup> Bateman, "Intelligence and Alliance Politics," 948.

<sup>224</sup> Suzanne Doyle, "The United States Sale of Trident to Britain, 1977–1982: Deal Making in the Anglo–American Nuclear Relationship," *Diplomacy & Statecraft* 28, no. 3 (July 2017): 477.

<sup>225</sup> Bateman, "Science, Technology, and the 'Special Relationship'."

<sup>226</sup> Thatcher, *The Downing Street Years*, 241.

<sup>227</sup> Thatcher, *The Downing Street Years*, 267.

policy issues: a research program, which she supported, and Ronald Reagan's goal to abolish nuclear weapons. Aaron Bateman argues that the policy distinction enabled the UK to benefit from SDI research cooperation while minimizing "the strategic and geopolitical consequences of a fully operational SDI capability."<sup>228</sup> Consequently, Thatcher sought to influence U.S. foreign policy and shape Reagan's views on nuclear weapons while publicly supporting SDI.

### **The Persian Gulf War and the Post-Cold War Security Landscape**

In the summer of 1990, the U.S.-UK special relationship seemed especially strong, buoyed by the apparent easing of Cold War tensions. When Iraq invaded neighboring Kuwait, both countries' leaders, President George Bush and Prime Minister Margaret Thatcher, shared in their conviction that Saddam Hussein's aggression must be stopped. Thatcher relied on her wartime experience during the Falklands Crisis to counsel Bush and strengthen her resolve. However, by this point, the United States was firmly entrenched as the stronger and more capable world power, including in the military space posture that informed decision-making in Washington, D.C., and London alike.

#### *Crisis in the Gulf and Lessons from the Falkland Islands War*

American satellites provided the first evidence of the brewing crisis in the Persian Gulf when overhead imagery identified Iraqi forces massing along Iraq's southern border with Kuwait. On July 24, 1990, U.S. KH-11 photoreconnaissance satellites identified two Iraqi Republican Guard divisions, including over 20,000 troops and hundreds of combat vehicles, massing along Iraq's border with Kuwait.<sup>229</sup> It was impossible for the Iraqis to conceal their

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<sup>228</sup> Bateman, "Science, Technology, and the 'Special Relationship'."

<sup>229</sup> Urban, *UK Eyes Alpha*, 144.

movements because, unlike the South Atlantic, the arid climate in the Middle East is ideal for satellite-based photoreconnaissance due to the desert backdrop and lack of cloud cover.<sup>230</sup> Signal intercepts were more difficult, and the NSA and GCHQ concluded that Iraqi forces limited radio communications in favor of a national system of secure landlines.<sup>231</sup> For these reasons, American and UK intelligence agencies could easily identify the disposition of Iraqi forces in near real-time but had much more difficulty discerning intent.

In 1990, the Cold War may have been waning, but American and UK intelligence agencies remained focused on the Soviet bloc. As a result, fewer intelligence analysts covered matters in the Middle East. Nevertheless, the UK's intelligence apparatus had been reorganized in the wake of the Falkland Islands War based on the recommendations from the Franks Report. Subsequent defense budgets expanded the resources available to the Joint Intelligence Committee, which was given greater autonomy in the Cabinet Office reporting directly to the Prime Minister.<sup>232</sup>

Percy Cradock, the JIC director who oversaw much of the reorganization of the UK intelligence apparatus, assembled the JIC on July 26, 1990, to discuss the situation in Iraq. The JIC mulled over satellite images provided by the U.S. National Reconnaissance Office (NRO) and other intelligence reports. There was disagreement initially about the seriousness of Iraq's troop movements, with the JIC arriving at a vague assessment that there existed a possibility of fighting "at some stage," the timing and extent of which remained uncertain.<sup>233</sup> UK intelligence officials compared notes with their counterparts in the U.S., including at the CIA and the

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<sup>230</sup> Readers will recall from the previous chapter that France pursued a photoreconnaissance satellite, HELIOS, due partly to its security interests in Africa.

<sup>231</sup> Urban, *UK Eyes Alpha*, 144.

<sup>232</sup> Urban, *UK Eyes Alpha*, 146.

<sup>233</sup> Urban, *UK Eyes Alpha*, 146.

Defense Intelligence Agency (DIA). The Americans had increased the coverage of the Gulf region with “national collection assets,” mainly photoreconnaissance and other intelligence-gathering satellites, which provided more information than was available to the British.<sup>234</sup> With additional information on the disposition of Iraqi forces, American intelligence analysts at DIA and the Pentagon became increasingly convinced that Saddam Hussein posed a serious threat to Kuwait.

Having consulted with his American counterparts and reflecting on the JIC’s initial vague assessment, Percy Cradock drafted a minute to the Prime Minister on July 27, 1990, to convey his concerns. Cradock reiterated some intelligence findings but emphasized that “military action is possible before too long.”<sup>235</sup> Being entirely reliant on American intelligence, the JIC was at a disadvantage in formulating its assessments. Cradock’s minute sought to balance the JIC’s formal perspectives with a reasonably informed prediction based on U.S. intelligence that Hussein might act soon. From a military perspective, satellite imagery only showed that Iraqi forces would soon possess the resources to conduct a military offensive. Overhead images are less useful in determining an adversary’s decision-making. The ongoing negotiations between Iraq and Kuwait, hosted by Saudi Arabia in Jeddah, suggested Hussein was setting conditions to negotiate from a position of strength.

Despite the JIC assessment and Percy Cradock’s minute note to the Prime Minister, Thatcher felt that Saddam Hussein's rhetoric and military activities were little more than saber rattling.<sup>236</sup> Recalling events during the Falklands Crisis, many in Whitehall, including Thatcher,

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<sup>234</sup> A Congressional Research Service report suggests the coalition employed as much as 85% of U.S. reconnaissance assets during Operation Desert Shield and Desert Storm. Richard A. Best, “CRS Report for Congress: Intelligence Implications of the Military Technical Revolution” (The Library of Congress: Congressional Research Service, May 1, 1995), 7.

<sup>235</sup> Percy Cradock, “Cradock Minute to MT (‘Iraq’),” July 27, 1990, PREM 19-3073, The National Archives.

<sup>236</sup> Thatcher, *The Downing Street Years*, 814.

felt Iraq would exhaust all diplomatic avenues before resorting to military force. Discerning intentions is more an art of judgment and experience, and Thatcher felt Iraq would not invade Kuwait. The ongoing negotiations informed Thatcher's misjudgment about Hussein's intentions in Jeddah between Iraq and Kuwait. The Prime Minister proceeded to the Aspen Institute conference in Aspen, Colorado, and planned to speak with President George Bush about the crisis. Unlike during the Falkland Islands War, the UK and American intelligence apparatus had provided their respective political leaders the intelligence that suggested military action was likely. But even the best and most timely intelligence is useless if political leaders lack the will to act on that intelligence. In this view, the UK's dependence on American intelligence was not a causal factor in the U.S. and the UK's failure to predict when Hussein would invade.

### *Iraq Invades*

On August 2, 1990, Iraq invaded Kuwait. Thatcher met with Bush at Aspen the next day, where the President asked for Thatcher's assessment. The Prime Minister leaned on her judgment gained from her experience during the Falklands Crisis to convey with firm conviction that the U.S. and UK must move quickly to stop Iraq's aggression and restore Kuwait's sovereignty.<sup>237</sup> Thatcher recognized that only the U.S. could lead the international effort to eject Iraq from Kuwait. During a joint press conference with Bush at Aspen on August 2, 1990, Thatcher explicitly supported American leadership by reflecting on the need for the world to act through the United Nations Security Council. Bush stated that he found himself "very much in accord with the views of the Prime Minister." At the same time, Thatcher remarked that "the Security Council acted swiftly last night under United States leadership" to pass a resolution

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<sup>237</sup> Thatcher, *The Downing Street Years*, 815.

demanding Iraq's immediate withdrawal from Kuwait.<sup>238</sup> By invoking American leadership in the UNSC, Thatcher implicitly reinforced the UK's junior status in the U.S.-UK special relationship and the UK's deference to American leadership in the Gulf Crisis and the forthcoming coalition effort to eject Iraq from Kuwait.

During her time in Aspen, Thatcher further reflected on American leadership in military space that would be decisive in the Persian Gulf War. On August 3, 1990, Thatcher visited the Strategic Air Defense Monitoring Center at Cheyenne Mountain. She was amazed by what she described as "America's scientific and technological achievement" in the ability to observe and track satellite launches and monitor the space domain.<sup>239</sup> She also visited the nearby SDI National Test Facility and remarked on the importance of the work to "keep our defenses sure and ... our technology well ahead."<sup>240</sup> Thatcher punctuated her visit by telling the researchers and scientists, "as your country and mine stand together, the world will always be free."<sup>241</sup> Thatcher's experience in Colorado reaffirmed her support for Reagan's SDI and the special relationship and strengthened her resolve to stand with the U.S. against Iraqi aggression.

Following the Aspen Conference, Thatcher flew to Washington instead of back to the UK for further consultations with Bush. The American President invited Thatcher and her private secretary, Charles Powell, into the White House situation room for a small group strategy discussion on the situation in the Gulf. The meeting was itself an expression of the special relationship in which Bush shared with Thatcher various intelligence assessments, including classified satellite imagery, depicting the disposition of Iraqi forces in Kuwait. Thatcher reflected

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<sup>238</sup> Margaret Thatcher and George Bush, "Joint Press Conference with President Bush (Iraqi Invasion of Kuwait)," August 2, 1990, Margaret Thatcher Foundation.

<sup>239</sup> Thatcher, *The Downing Street Years*, 819.

<sup>240</sup> Margaret Thatcher, "Speech Visiting SDI National Test Facility," August 3, 1990, Margaret Thatcher Foundation.

<sup>241</sup> Thatcher, "Speech Visiting SDI National Test Facility."

on the meeting, “I was never taken into the Americans’ confidence more than I was during the two hours or so I spent that afternoon at the White House,” noting especially the “clear photographs – which the President passed around to us” that showed Iraqi forces were in position to move against Saudi Arabia.<sup>242</sup>

However, the White House meeting also revealed differences between the UK and the U.S. about whether United Nations authorization was necessary to take further military action against Iraq. On the one hand, the U.S., especially Secretary of State James Baker, felt the U.S. and UK should pursue further UN Security Council Resolution authorizing the use of force. In contrast, Thatcher felt UNSCR 660, which had already passed on August 2, 1990, combined with Article 51 of the UN Charter, granted sufficient authority to respond. Thatcher’s skepticism of the UN stemmed from her own difficulties with the body during the Falklands Crisis. In her memoirs, Thatcher recalled she was concerned that “there was no certainty that the wording of the resolution, which was always open to amendment, would finish up by being satisfactory.”<sup>243</sup> More importantly, Thatcher also strongly believed in the moral authority and ability of sovereign states to act in pursuit of their own interests. Though a strong supporter of international law, Thatcher was concerned that “if it became accepted that force could only be used – even in self-defense – when the United Nations approved, neither Britain’s interests nor those of international justice and order would be served.”<sup>244</sup> In a call with Bush on August 26, 1990, to discuss options for dealing with Saddam Hussein, Thatcher encouraged the American President to enforce UNSC resolutions by whatever means, including force. As a more seasoned leader with prior wartime experience, Thatcher reminded Bush, “[t]his was no time to go wobbly.”<sup>245</sup> Thatcher’s

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<sup>242</sup> Thatcher, *The Downing Street Years*, 820.

<sup>243</sup> Thatcher, *The Downing Street Years*, 821.

<sup>244</sup> Thatcher, *The Downing Street Years*, 821.

<sup>245</sup> Thatcher, *The Downing Street Years*, 824.

views towards the UN underscored her belief in the special relationship and her conviction that in matters of international peace and security, there simply was “no substitute for the leadership of the United States.”<sup>246</sup>

Margaret Thatcher resigned as Prime Minister and leader of the Conservative Party in November 1990 after a series of political setbacks and a challenge to her Party leadership from Michael Heseltine, Thatcher’s former defense secretary. Thatcher’s downfall stemmed from her unpopular domestic economic policies, skepticism towards the European Community, and opposition to Britain joining Europe’s Economic and Monetary Union.<sup>247</sup> Thatcher’s sudden departure surprised President George Bush and other world leaders. Bush was especially concerned about the UK’s role in the coalition to oust Saddam Hussein from Kuwait. Thatcher’s replacement, John Major, became Prime Minister a few weeks before the UN-imposed deadline for Iraq to withdraw from Kuwait.<sup>248</sup>

John Major flew to Washington, D.C., in December 1990 to meet with George Bush and assuage the American President’s concerns about the UK’s role in the coalition. Major had to ensure the special relationship remained intact, especially on the eve of war. Major recalled the visit in his memoirs, writing, “I had to secure the confidence of the Americans, who were still rocked by Margaret’s departures.”<sup>249</sup> Fortunately for both parties, Major and Bush got along well during the Prime Minister’s visit to the White House. Major reaffirmed the UK’s commitment to Operation DESERT STORM and support for the American-led coalition. Major stated that “[t]he Gulf War was an American-led war, with the UK, and essential supporting force, accepting

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<sup>246</sup> Thatcher, *The Downing Street Years*, 821.

<sup>247</sup> Thatcher viewed economic and monetary policy as issues of sovereignty and felt that Britain joining the EMU was a “way of abdicating control over our own monetary policy.” Thatcher, *The Downing Street Years*, 690.

<sup>248</sup> UN Security Council Resolution 678, adopted on November 29, 1990, set January 1, 1991, as the deadline for Hussein to withdraw all forces from Kuwait and restore the status quo ante.

<sup>249</sup> John Major, *John Major: The Autobiography* (New York, NY: HarperCollins Publishers, 1999), 224.

tactical command by the U.S., with General Norman Schwarzkopf the commander-in-chief of the coalition forces. We had no difficulty with this concept,” adding that the UK “never doubted the desirability of working with the United States, on this occasion, as so often, our foremost ally.”<sup>250</sup> Major’s strategic outlook was consistent with his predecessor’s, prioritizing the U.S.-UK special relationship above other concerns.

### *Operation GRANBY – UK Forces in the First Space War*

Within days of the invasion, Thatcher dispatched an initial tranche of troops to the Gulf region, consisting primarily of Royal Navy ships, to secure sea lines of communication in the Persian Gulf and keep oil flowing. Together with the American Navy, the Royal Navy ships comprised the bulk of initial combat forces in the region. Tornado and Jaguar combat aircraft from the Royal Air Force (RAF) and covert action teams from the UK’s secret intelligence service (SIS) soon followed. Additionally, Thatcher committed ground forces to the coalition effort, consisting of the 7<sup>th</sup> Armoured Brigade, equipped with the UK’s advanced Challenger tanks. The UK’s ground contingent grew to include the 4th Armoured Brigade, which was stationed in Germany, and artillery and engineer units. The UK’s ground forces were organized under the 1<sup>st</sup> UK Division. Over 50,000 UK forces deployed in support of Operation GRANBY, the UK’s codename for British military operations during the Persian Gulf crisis.

With the deployment of UK forces to the Middle East, the UK’s intelligence apparatus, especially the Defence Intelligence Staff, had to rapidly transform from an analytical entity supporting political decision-making at Whitehall into an organization supporting British forces in combat.<sup>251</sup> U.S. intelligence support and integration with UK intelligence agencies were

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<sup>250</sup> Major, *John Major*, 226.

<sup>251</sup> Urban, *UK Eyes Alpha*, 158.

critical for this effort. American intelligence agencies, including the NSA and NRO, established liaison teams within the headquarters of their UK counterparts to facilitate information sharing and dissemination of intelligence, especially from America's advanced space-based intelligence platforms. Photoreconnaissance and signals intelligence satellites provided timely and accurate information to U.S. and UK analysts, which collated the information into detailed assessments of the disposition of Iraqi military forces.<sup>252</sup> NSA and NRO liaison teams processed UK intelligence requests, which, thanks to the large quantities of data from satellites, the Americans often fulfilled with raw information. UK intelligence analysts at GCHQ headquarters in Cheltenham and the Defence Intelligence Staff thus enjoyed unprecedented access to the best intelligence available, far more than France and other coalition members. The degree of access suggested the UK enjoyed a privileged status during the Gulf Crisis stemming from the special relationship.

The Gulf War was the first armed conflict where military satellites and space systems played a vital role in achieving a decisive victory. In addition to ground, air, and maritime forces, the UK's SKYNET 4 constellation of communications satellites made a vital contribution to the coalition war effort. Although American satellites comprised most of the space systems used by the coalition, coalition forces relied on the UK's SKYNET 4 satellites for secure communications, providing the real-world justification for the UK's investments in military space.<sup>253</sup>

When Iraq invaded Kuwait in August 1990, the U.S. and UK had already achieved near-global coverage with their communications satellite constellations, including the Persian Gulf. Military satellites, including SKYNET 4, enabled real-time communications between field

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<sup>252</sup> Urban, *UK Eyes Alpha*, 159.

<sup>253</sup> Anson and Cummings, "The First Space War," 45.

commanders and coalition leaders in the capitals of the various coalition members. Despite the lack of forces in the region in the early days of the crisis, the American and British military space postures enabled the command and control of rapid deployment forces by assuring high-quality, secure voice and data communications. However, ground forces would need mobile ground satellite communications to exploit the satellite infrastructure overhead. UK engineers had been working on satellite communications adaptors for the British Army's Ptarmigan combat radio network, which UK forces quickly put into action upon arriving in the Gulf.<sup>254</sup> However, due to the bandwidth requirements for data and voice communications between forces in the Gulf and their headquarters in the UK, the MoD had to borrow American ground-link terminals to complement the Ptarmigan network. UK engineers worked tirelessly to modify TSC 100 and TSC 93 ground stations to meet British communications standards and protocols and equip elements of the UK 1<sup>st</sup> Armoured Division arriving in the Kuwait Theater of Operations (KTO).<sup>255</sup> In the six months between Iraq's invasion and the start of Operation Desert Storm, UK forces' satellite communications ground terminal capacity increased five-fold.<sup>256</sup>

The UK's experience in the Persian Gulf War demonstrated the importance of military space capabilities and especially satellite communications, but also exposed enduring limitations of the UK's military space policy decision since the Falklands Crisis. Unlike the Falklands crisis, where the UK was almost entirely dependent on American military space capabilities, the UK contributed vital space services to the coalition effort. In addition to expanding ground terminal capacity, the UK increased its complement of SKYNET 4 communications satellites with the launch of SKYNET 4C in August of 1990. The three SKYNET satellites provided strategic

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<sup>254</sup> Anson and Cummings, "The First Space War," 47.

<sup>255</sup> Anson and Cummings, "The First Space War," 47.

<sup>256</sup> Anson and Cummings, "The First Space War," 46.

communications between the Headquarters British Forces Middle East in Riyadh, Saudi Arabia, and other clusters of UK forces in the Gulf region and the Joint Headquarters at High Wycombe in the UK.<sup>257</sup> With all three SKYNET satellites focused on the Gulf, the UK had spare secure SATCOM capacity that it offered to the American-led coalition in exchange for the ground terminals mentioned above.<sup>258</sup>

UK military forces in the Gulf struggled to expand their SATCOM capacity. Despite previous expeditionary experience during the Falklands Crisis, the MoD was slow to acquire sufficient ground terminals for the UK's otherwise vital satellite communications capability. Working with the American military to adapt U.S. equipment to UK receivers, the British Army relied on improvised satellite connections to facilitate command and control during the ground assault, which began on February 24, 1991. The improvised Ptarmigan system worked, but software modifications to encrypt communications were problematic at best.<sup>259</sup> Additionally, the coalition faced interoperability problems due to different satellite communications protocols. Despite NATO standards, the U.S. and UK forces relied on different satellite bands to communicate across their respective SATCOM networks.

When the Gulf Crisis began, Royal Navy vessels dispatched to the region employed satellite communications across super-high frequency (SHF) bands, whereas U.S. Navy ships relied on ultra-high frequency (UHF) bands. UHF bands were the most popular frequencies for satellite communications, which meant they were congested and subject to interference from high traffic. According to one analysis, the U.S. Navy relied on commercial satellite network providers in the UHF band, which carried over 30 percent of military traffic during the Gulf

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<sup>257</sup> Hayward, *British Military Space Programmes*, 40.

<sup>258</sup> Hayward, *British Military Space Programmes*, 40.

<sup>259</sup> Hayward, *British Military Space Programmes*, 41.

Crisis.<sup>260</sup> The Royal Navy's SHF satellite communications system (SCOT) proved more favorable for secure military communications due to its wider bandwidth, making it ideal for data transmission and its resistance to jamming.<sup>261</sup> However, Royal Navy vessels operating in the Gulf region had to be retrofitted with UHF receivers, including commercial INMARSAT terminals, to communicate with U.S. Navy ships and civilian merchant vessels.<sup>262</sup> During the Gulf War, UK forces, including combat aircraft, relied on U.S. GPS satellites for precision, navigation, and timing. The UK and other coalition members purchased commercial GPS receivers from several manufacturers, including Trimble Navigation and Magellan Systems Corporation, and installed them on various combat platforms, from tanks to Tornado fighter bombers.<sup>263</sup>

Following the Gulf War, all three branches of the UK military, the army, the navy, and the air force, embraced the utility of military space systems. Despite the decrease in military threats to Europe after the Cold War, the UK soon found itself operating in the Balkans alongside NATO forces. UK forces would continue to rely on SKYNET for secure satellite communications and American space capabilities to support peacekeeping and crisis response operations into the 1990s.

#### *UK Military Space Posture in the Post-Cold War Security Landscape*

The end of the Cold War and the attendant decline in serious military threats to Europe formed the backdrop of the UK's actions in the Persian Gulf. While UK military forces fought

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<sup>260</sup> Anson and Cummings, "The First Space War," 47.

<sup>261</sup> Christopher J. Bushnell, "U.S. Navy SHF SATCOM: Past, Present and Future" (Monterey, CA, Naval Post Graduate School, 1994), 11.

<sup>262</sup> Anson and Cummings, "The First Space War," 47.

<sup>263</sup> Anson and Cummings, "The First Space War," 50.

alongside coalition partners, namely the U.S. and France, to oust Saddam Hussein from Kuwait, a broader discussion about the changing security landscape emerged. The Cold War's end forced the UK and other Western European countries, especially France and Germany, to reevaluate basic assumptions about their security relationship with the U.S. Given the collapse of the Soviet Union, many analysts predicted that America would withdraw from Europe.<sup>264</sup> Regarding military space posture, the UK's nearly unencumbered access to the world's most advanced military space systems was suddenly less certain. With the emergence of the European Union, European aspirations for greater autonomy, led by France and François Mitterrand, centered on the debate about a common European security and defense policy and the acquisition of independent military capabilities, especially in space. The latter would be especially important if Europe and the UK sought a greater foreign policy and security role in the post-Cold War world.

Military space capabilities provide near-real-time information and intelligence that support political decision-making, especially on national security matters. While the U.S. strategic capabilities apparatus remained focused on the former Soviet bloc, the UK began considering the prospect of out-of-area operations, especially for NATO. In a speech to the North Atlantic Council in June 1990, Margaret Thatcher raised the issue, asking, "Ought NATO to give more thought to possible threats to our security from other directions?" Thatcher added, "it would be only prudent for NATO countries to retain a capacity to carry out multiple roles, with more flexible and versatile forces."<sup>265</sup> The near total American monopoly on military space capabilities during the Gulf War made it painfully clear to the European members of the

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<sup>264</sup> For two notable examples, see John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War," *International Security* 15, no. 1 (1990): 5–56; and Kenneth N. Waltz, "The Emerging Structure of International Politics," *International Security* 18, no. 2 (1993): 44–79.

<sup>265</sup> Margaret Thatcher, "Speech to North Atlantic Council at Turnberry," June 7, 1990, Margaret Thatcher Foundation, <https://www.margaretthatcher.org/document/108106>.

coalition, especially France and the UK, that Europe could not act militarily of its own accord and in pursuit of its interests.<sup>266</sup> European countries relied on NATO, specifically U.S. military space posture, throughout the Cold War to access important capabilities. Following the Cold War, the debate among EU members over foreign and security policy matters hinged on Europe's ability to develop or acquire independent military space systems. The UK's official position favored a more pragmatic approach that balanced emerging EU needs with costs.

The UK's position on military space postures in Europe, and its pragmatism toward material capability acquisition, was largely based on the UK's concern about developing costly strategic capabilities in the EU that would duplicate the advanced capabilities available from the U.S. through NATO. On the one hand, the UK's driving principles of cost-effectiveness and affordability dictated the UK's position on the development of European military space systems that matched U.S. capabilities.<sup>267</sup> On the other hand, relying on the U.S. aerospace industry to purchase "off the shelf" satellites would pose a risk to European aerospace firms, including the largest in the UK, which in the 1990s included British Aerospace and Marconi Space Systems. To shore up Europe's defense technical and industrial base, French aerospace firm Matra Espace merged with Marconi Space Systems in 1990 to form Matra Marconi Space.<sup>268</sup> Due to costs, purely British military space systems were not feasible. In 1991 MoD officials began discussing with France the possibility of cooperation on expanding military space posture, a significant departure from long-standing UK policy.

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<sup>266</sup> Hayward, *British Military Space Programmes*, 52.

<sup>267</sup> Hayward, *British Military Space Programmes*, 65.

<sup>268</sup> In 1998, MMS merged with German aerospace firm DaimlerChrysler Aerospace AG (DASA), forming the European aerospace conglomerate Astrium, a subsidiary of the European Aeronautic Defence and Space Company (EADS). EADS. EADS Astrium later merged with Airbus Military and underwent restructuring to form Airbus Defense and Space, a division of Airbus SE. Airbus Defense and Space is a pan-European aerospace conglomerate, and the world's second largest space company after Boeing. "Who We Are," Airbus, June 14, 2021, <https://www.airbus.com/en/who-we-are>.

The scope of Anglo-French cooperation was limited to the next generation of the UK's SKYNET military communications satellites, SKYNET 5. Despite some technical and policy differences between French and UK defense officials, there was sufficient ground for collaboration to meet the UK's replacement schedule for SKYNET.<sup>269</sup> Sophisticated satellite communications raised the prospect of increasing costs to maintain pace with rapidly expanding technologies and capacities. The British rationalized cooperation with France largely on the grounds of cost savings. Another factor driving Anglo-French satellite cooperation stemmed from both countries' increased satellite communications requirements following the Gulf War. UK and French ministries of defense both had to expand their satellite communications capacity to meet army, air force, and navy requirements, especially as both countries became interested in out-of-area (OOA) operations after the Cold War. Lastly, UK and French concerns about diverging U.S. security interests in the post-Cold War era further fueled anxieties about the dependability of access to American military satellite capabilities.

UK and French anxieties were further aggravated during the conflict in the former Yugoslavia in the mid-1990s. Following the declarations of independence by Slovenia and Croatia in 1991, and their subsequent recognition by the European Community as independent states, a conflict along ethnic lines erupted. The EC also recognized Bosnia in 1992, further aggravating the conflict, with Serbia attacking the Yugoslav republic to maintain control over ethnic Serbian areas in Bosnia and Herzegovina. Serbian forces, led by Slobodan Milosevic, viciously besieged Sarajevo, and other parts of Bosnia, resulting in millions of refugees fleeing the onslaught. NATO members, including the UK, sent troops under the auspices of the United Nations to protect refugees and other humanitarian efforts.<sup>270</sup>

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<sup>269</sup> Hayward, *British Military Space Programmes*, 58.

<sup>270</sup> Major, *John Major*, 535.

Over 1,800 UK troops deployed to the former Yugoslavia as part of the UN Protection Force (UNPROFOR) in October 1992, with UK Lieutenant General Rupert Smith eventually taking command in 1995. Unlike during the Cold War and the Persian Gulf War, the Europeans would lead the crisis response effort in the Balkans. The newly elected U.S. President, Bill Clinton, who ran on domestic issues, was inclined to let the Europeans take the lead in the Balkan crisis. John Major favored a strong NATO-led intervention on humanitarian grounds, including ground and air forces to protect civilians. NATO forces, including the UK, would have to rely on U.S. military space capabilities for precision targeting and navigation. U.S. space-based reconnaissance and intelligence capabilities were also vital for verifying and enforcing the arms embargo imposed by UNSCR 713 against all territories in the former Yugoslavia, including Bosnia and Serbia.<sup>271</sup> The Clinton administration, facing domestic pressure to act more decisively on the humanitarian crisis in Bosnia, sought to lift the arms embargo as early as May 1993 as a way to shift the military balance in favor of Bosnia and to attack Serbian military targets using precision airstrikes.<sup>272</sup>

However, the European leaders of UNPROFOR, including François Mitterrand and John Major, strongly favored the UN arms embargo. Major opposed Clinton's proposed "lift and strike" policy. The Prime Minister argued that lifting the arms embargo was "only superficially compelling" and would place UN peacekeepers, including UK troops, in greater danger.<sup>273</sup> The Clinton administration followed the Europeans' lead for over a year while facing domestic

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<sup>271</sup> The UN arms embargo was implemented to establish peace and stability in the former Yugoslavia. UN peacekeepers relied on U.S. space systems because France's SPOT satellites lacked the necessary resolution to identify specific weapons systems, and the HELIOS-1A photoreconnaissance satellite would not be launched until 1995. "United Nations Security Council (UNSC) Resolution 713," September 25, 1991, S/RES/713, <http://unscr.com/en/resolutions/713>.

<sup>272</sup> Elaine Sciolino, "How Unity Eluded Clinton on Bosnia," *The New York Times*, May 12, 1993, sec. A., pg 1, <https://www.nytimes.com/1993/05/12/world/how-unity-eluded-clinton-on-bosnia.html>

<sup>273</sup> Major, *John Major*, 542.

backlash for perceived inaction. In late 1994, Clinton suspended U.S. participation in enforcing the UN arms embargo against Bosnia. The decision alarmed the Europeans, who depended on U.S. intelligence to enforce the embargo. To make matters worse, U.S. forces would no longer provide intelligence and other verification information to Western European nations enforcing the embargo, including information derived from U.S. military space systems, because that would be contrary to the Clinton Administration's policy shift in response to domestic political pressure.<sup>274</sup> The situation particularly aggravated members of John Major's government, who were alarmed at the sudden denial of access to U.S. intelligence and space systems. Sir Dudley Smith, a British Member of Parliament and head of the legislative assembly of the Western European Union, which handled matters of security and defense for the nascent EU, remarked that the American decision demonstrated "just how much Europe needs to be autonomous where intelligence-gathering, satellite reconnaissance," and other advanced capabilities are concerned.<sup>275</sup> For the French, the move further strengthened Mitterrand's resolve to reduce Europe's dependence on the United States.

Shortly after the Clinton administration announced its new policy, John Major spoke more broadly about the U.S. commitment to NATO and U.S.-European security relations at a joint press conference with French President François Mitterrand in Chartres, France. Major emphasized the fundamental importance of the NATO Alliance in the defense of the West and stressed that there was no uncertainty about America's commitment to NATO.<sup>276</sup> But in light of America's refusal to cooperate with Western European allies in enforcing the UN arms embargo,

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<sup>274</sup> Craig R. Whitney, "Move on Bosnia By U.S. Alarms Allies in NATO," *The New York Times*, November 12, 1994, sec. World., pg. 1, <https://www.nytimes.com/1994/11/12/world/move-on-bosnia-by-us-alarms-allies-in-nato.html>

<sup>275</sup> Whitney, "Move on Bosnia By U.S. Alarms Allies in NATO."

<sup>276</sup> John Major and François Mitterrand, "Mr. Major's Joint Press Conference in Chartres," November 18, 1994, John Major Archive, <https://johnmajorarchive.org.uk/1994/11/18/mr-major-s-joint-press-conference-in-chartres-18-november-1994/>.

Major also stressed the importance of developing “a capacity for further collaboration between western European NATO allies,” which would implicitly include the realm of military space systems.<sup>277</sup> The WEU, for its part, drew similar lessons from the Balkan Crisis and the Gulf War on the utility of military space systems for the EU.

In a report presented to the fortieth session of the WEU Assembly in June 1995, a special rapporteur concluded that an independent European military space capability “is an essential element in guaranteeing Europe’s security and a basic tool for developing a European defence policy.”<sup>278</sup> The report drew specifically on the U.S. policy shift in 1994 to stop implementing the arms embargo to amplify the recommendations, adding that:

Europe’s role in terms of world security can be neither understood nor guaranteed if it does not have the necessary space-based means to accomplish its task, and, furthermore, if its dependence on foreign means, even those of our allies, continues, such dependence can only prevent Europe from playing its part in the management of world peace and security and will consequently lead to a loss of the political weight that it should rightly have in the international scene.<sup>279</sup>

Yet, despite the shock at the U.S. policy shift in 1994, UK military space policy largely remained centered on access to and reliance on U.S. military space posture. This policy is largely due to the rationalist view of the UK’s role in the world held by Prime Ministers since the Cold War, especially Margaret Thatcher and John Major. Indeed, in the summer of 1990, before Thatcher resigned as Prime Minister, the Minister of State for Defence Acquisition, Alan Clark, summed up the Government’s rational perspective on military space to the Parliamentary Space Committee as “the main focus of MoD space efforts was still to work with the US, mainly for

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<sup>277</sup> Major and Mitterrand, “Mr. Major’s Joint Press Conference in Chartres.”

<sup>278</sup> M. Lenzer and M. Valleix, “Towards a European Space-Based Observation System,” Proceedings: Fortieth Ordinary Session (Paris: Assembly of Western European Union, June 1995), Archive of European Integration, <http://aei.pitt.edu/53469/1/B0888.pdf>, 4-5.

<sup>279</sup> Lenzer and Valleix, “Towards a European Space-Based Observation System,” 5.

cost reduction reasons and to maintain commonality within the Alliance.”<sup>280</sup> The rationalist view holds that investments in strategic capabilities, especially space capabilities, would be “a waste of scarce European defence money.”<sup>281</sup> In this view, the UK’s strategic outlook as the most Atlanticists European country with long-term security and intelligence relationships with the United States, both bilaterally and through NATO, differs from that of France and Germany, and those countries’ broader interpretations of European security in the post-Cold War era.

## Conclusion

The UK emerged as a space power during the Cold War when nuclear deterrence and great power rivalry defined the bipolar international system. Originally intent on developing domestic military space systems, the UK soon cooperated extensively with the U.S. in a cost-conscious approach to military space posture. Macmillan’s deal with Eisenhower, and later Kennedy, to secure *Polaris* for the UK’s “independent” nuclear deterrent was both ironic and symbolic of the central tension in the UK’s military space, foreign, and security policy debates during the Cold War. Namely, how to contribute to and participate in collective security in Europe while preserving the “special relationship” with the U.S. and its ability to exploit access to the best military space systems in the world?<sup>282</sup>

The American partnership also enabled the UK to remain tethered to the top rung of international politics, a position it once held but dominated after World War II by the U.S. and the Soviet Union. As Lawrence Freedman argues, the strategic outlook driving UK decision-making on foreign policy, and indeed on military space posture, rested on two key factors: first,

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<sup>280</sup> Alan Clark, quoted Hayward, *British Military Space Programmes*, 55.

<sup>281</sup> Hayward, *British Military Space Programmes*, 66.

<sup>282</sup> Freedman, *The Politics of British Defence, 1979 -98*, 31.

the UK could not achieve any major international political objective without the United States; second, the UK had to maintain sufficient capabilities to influence U.S. actions and policies through the UK's own participation.<sup>283</sup> Thus the UK required sufficient independent capacity to contribute to American strategy meaningfully. UK decision-makers' challenge was balancing the needs of an independent capability with the cost. External factors, including the Soviet threat and American strategy, mattered but were refracted through domestic considerations by decision-makers.

For example, the UK's only truly autonomous military space capability, the SKYNET communications satellites, was as much a response to external factors stemming from Soviet military threats as it was a means for stimulating the UK's domestic aerospace industry. Even amid the Sterling Crisis of 1967, Harold Wilson committed to building SKYNET 1 with help from American firms to develop the UK's domestic industrial capacity for subsequent systems. As shown above, the decision to cancel SKYNET 3 following the withdrawal of British forces from "East of Suez" was detrimental to the domestic aerospace industry. When the Government decided to restart the SKYNET program and develop a newer generation of military communications satellites to take advantage of smaller ground terminals, it took industry several years to reacquire the necessary technical expertise before building SKYNET 4 satellites. In the meantime, the UK remained dependent on the U.S. for space-based services. A dependence that was further reinforced during the Falkland Islands Crisis of 1982.

The UK's combat experience in the South Atlantic reinforced the need for independent satellite capabilities. The UK relied on American satellites to communicate with the task force throughout the Falklands campaign, exposing a capability gap hindering the UK's ability to

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<sup>283</sup> Freedman, *The Politics of British Defence, 1979 -98*, 31.

meaningfully operate on the modern battlefield and contribute to U.S.-led deterrence and defense of NATO. Unlike France, the UK was less motivated by a desire to distance itself politically and militarily from the United States. The Falkland Islands War occurred far outside the NATO core, the defense of which Margaret Thatcher's Government had sought to optimize its budgets. In other words, the conflict was arguably the one for which the UK was least prepared.<sup>284</sup> However, while Thatcher's Government worked to overhaul the MoD budget to account for greater out-of-area capabilities, the UK was already committed to SKYNET 4. In the realm of signals intelligence, the UK flirted with an independent capability, ZIRCON, out of fear that the U.S. might withhold some intelligence streams in the future. Yet, cost-conscious pragmatism prevailed again when the UK ultimately chose to forgo ZIRCON in favor of a "subscription" to a better American system that would prove cheaper in the long run.

With SKYNET 5, the UK overhauled defense acquisitions to streamline procurement and improve cost efficiencies by using a PFI for the first time. The Soviet demise and absence of a major threat to European security provided part of the justification for private financing. There was also less risk of upsetting the Americans by increasing UK military space capabilities to support the EU's expanding portfolio of out-of-area operations. Thus, the desire to trim defense budgets following the Cold War while meeting expanding operational requirements under the provisions of the St. Malo Declaration influenced the decision to proceed with the SKYNET 5.

The U.S.-UK "special relationship" was perhaps the biggest factor shaping the UK's decision-making on military space posture. Despite a brief schism during the Suez Crisis of 1956, the UK has enjoyed a privileged position among America's NATO allies, having unrivaled access to U.S. space capabilities and intelligence. Such access infused decision-making on

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<sup>284</sup> Freedman, *The Politics of British Defence, 1979 -98*, 83.

military space requirements with a deep pragmatism on defense spending, reflecting a strategic outlook that David French said was designed to achieve “dominant policy aims at minimum cost.”<sup>285</sup> More often than not, with *Blue Streak* and ZIRCON as particular examples in this chapter, the UK chose to purchase a U.S. space system rather than attempt to build one domestically at greater expense, or in collaboration with Europe, at the expense of control.

The UK maintains a strong collaborative relationship with Europe on civilian and scientific space programs through its membership in ESA. And while the UK launched several SKYNET satellites atop *Ariane* rockets, the U.S.-UK “special relationship” was more important than the relationship with Europe, especially on military space posture. Consequently, as with its broader foreign policy, the UK favored strong Anglo-American cooperation on military space over deep collaboration with Europe, especially France. This trend continued into the 21<sup>st</sup> century, with the UK reaffirming its partnership with the United States while distancing itself from the European Union.

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<sup>285</sup> French, *The British Way in Warfare, 1688-2000*, 232.

## **Chapter 4: Military Space Posture Development in the Federal Republic of Germany, 1961-1999**

### **Introduction**

We now draw our attention to Germany, which in terms of military space posture, is the least autonomous of the three countries considered in this study. To be sure, Germany is different from France and the UK for various reasons, not the least because Germany emerged from World War II as a defeated state under Allied occupation and is not a nuclear power. Additionally, the Allies were weary of German rearmament after World War II, even as the Soviet Union and the Warsaw Pact marshaled their forces, raising the threat of war on German soil. Additionally, domestic political constraints and a generation of anti-militarist public sentiment limited the ability of German Chancellors to maneuver in the foreign and security policy domains, including in space. These factors meant that the Federal Republic of Germany (FRG), commonly known as West Germany, was nearly entirely dependent on NATO, especially the United States, for its defense.

While France and the UK pursued space flight for security and prestige, Germany embraced spaceflight for peaceful purposes, such as science and exploration. However, the advent of the space race demanded that Germany focus its industrial and technical capacity on high-technology endeavors to ensure the long-term viability of its economic potential. Germany was unable to develop independent launchers due to security constraints, so it embraced a multilateral strategy to achieve its space-faring goals. Germany would realize its space interests through bilateral collaboration with France or the U.S. and multilateral collaboration in Europe.

During the Cold War, Germany's space program emerged from the Federal Republic's commitment to the integrated European space programs, first ELDO and ESRO, and later ESA. Indeed, Germany did not create a national space program akin to NASA or CNES until 1989.

Despite possessing some of the most advanced scientific research programs and aerospace industries, Germany did not produce a military space system throughout the Cold War or in its immediate aftermath. Instead, Germany depended entirely on the United States and NATO for access to military space capabilities to provide for a narrow description of security: nuclear deterrence and defense against conventional attack.

This chapter considers German strategic outlook during the Cold War and how changes in the international system following the collapse of the Soviet Union precipitated changes in German strategic thinking. Germany shifted its military space posture from dependence to greater autonomy based not on external threats from the international system but on a reinterpretation of security that made using space technologies for foreign and security policy more politically acceptable. Unsurprisingly, the shift in German military space posture coincided with the advent of the European Union as a political actor seeking to assert a greater role for its common foreign and security policy in the late 1990s. Germany could marshal its technological and industrial capacity to develop military space capabilities that would support multilateral action under EU auspices and in pursuit of security interests and military requirements that were not necessarily consistent with those of the United States.

This chapter first reviews a brief history of Germany's space program after World War II, followed by a discussion of Germany's strategic outlook and how it changed following the end of the Cold War. The chapter then considers three case studies involving Germany's space policy, SDI, and the post-Cold War security environment to illustrate the conditions that affect German decision-making on military space posture. Since Germany did not develop a military space posture until the early 2000s, most case studies seek to expose the factors that were initially

missing in the Cold War and the early 1990s that precluded German military space posture development.

### **The German Space Program: A Brief History**

Germany was the first country to exploit space technology for military purposes. During World War II, German scientists at Peenemunde developed the V-2 rocket, the world's first ballistic missile capable of reaching space. The Nazi regime employed V-2 rockets against civilian targets with devastating effects. Like atomic power, space flight and rocket technologies were associated with warfare and had profound implications for international relations. As a result, the Allies restricted Germany's industry and scientific communities from pursuing space flight and rocketry after the war.<sup>1</sup> Former Peenemünde workers who remained in Germany after the war continued to collaborate unofficially through loosely organized space societies, including the "*Gesellschaft für Weltraumforschung*" (GfW) or German Space Research Society.<sup>2</sup> Yet space flight and rocketry remained relatively dormant in West Germany throughout the 1950s, even as Konrad Adenauer, the first Chancellor of the Federal Republic of Germany, pursued a national nuclear energy program through integration with other European powers in the European Atomic Energy Community (EURATOM). The stigma of World War II meant that Germany could only pursue high-technology research through multilateral frameworks and international cooperation, even if there were latent interests in these technologies from the Defense Ministry.<sup>3</sup>

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<sup>1</sup> Peter Fischer, "The Origins of the Federal Republic of Germany's Space Policy 1959-1965 - European and National Dimensions'," History Study (Noordwijk: European Space Agency, January 1994), 2.

<sup>2</sup> Fischer, "The Origins of the Federal Republic of Germany's Space Policy 1959-1965 - European and National Dimensions'," 3.

<sup>3</sup> Andreas Stucke, "Die Raumfahrtspolitik des Forschungsministeriums," *Leviathan* 20, no. 4 (1992): 549-550.

In 1955, after the Federal Republic of Germany regained full sovereignty, a former Peenemunde rocket engineer, Eugen Sänger, who had spent the post-war years working for the French, became the director of a small jet propulsion research institute in Stuttgart.<sup>4</sup> Other engineers soon followed, and by the late 1950s, Sänger's work on spaceflight for transportation services had attracted the attention of the Federal Transport Ministry.<sup>5</sup> Unlike previous space research under military circumstances, the research institute's practical focus made space and rocket technology politically acceptable. However, Sänger was mindful of the ongoing ballistic missile research and testing between the superpowers. Given his background, he continued publicly expressing the military relevance of "international missiles," which was politically problematic in Germany.<sup>6</sup> The Ministry ultimately dismissed Sänger, partly because of his militaristic views of space, but largely because of some consulting work he did for Egyptian President Gamal Abdel Nasser, who was attempting to develop ballistic missiles for the Egyptian military.<sup>7</sup>

In 1960, the Federal Republic considered the proposal to participate in European space research activities, namely ESRO and ELDO. The Federal Government was relatively immature, and the country's space and high-technology research initiatives were spread among several ministries, resulting in muddled policy outcomes. The Transport and Interior Ministries each had domestic industry equities. At the same time, the Foreign and Defense Ministries weighed the merits of the British proposal to use Blue Streak as the foundation for a European satellite launcher. The Foreign Ministry, which generally favored greater European integration, strongly

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<sup>4</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 119.

<sup>5</sup> Niklas Reinke, *The History of German Space Policy: Ideas, Influences and Interdependence, 1923-2002*, trans. Barry Smerin and Barbara Wilson (Paris: Beauchesne, 2007), 49.

<sup>6</sup> Reinke, *The History of German Space Policy*, 50.

<sup>7</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 119.

supported the ELDO and ESRO constructs. At the same time, the Defense Minister, Franz Jozef Strauss, strongly insisted that Germany engage in space on a bilateral basis with the United States. Thus, an exogenous impulse was necessary for Germany to take space research seriously when the UK offered France and Germany the chance to collaborate on a European launcher based on its Blue Streak missile.<sup>8</sup>

For Adenauer, German collaboration in European space efforts offered opportunities to encourage greater European integration and unity.<sup>9</sup> International cooperation under European auspices was also a means for German industry to regain competence and political respectability and achieve greater parity with France and the UK when the superpowers pursued rocket technologies for military purposes.<sup>10</sup> In a conversation with Harold Macmillan in February 1961, Adenauer conveyed his enthusiasm for the British proposal to use *Blue Streak* as the foundation for ELDO. He even suggested the Federal Republic would soon join the project.<sup>11</sup> In June, the Federal Cabinet endorsed a Commission recommendation to join ELDO on the condition that “German science and industry were given an adequate share of the work to be done” and that it not come at the expense of Germany’s security relationship with the United States.<sup>12</sup> Adenauer thus fully committed the Federal Republic to both organizations, initiated a national space program, and personally told Macmillan.

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<sup>8</sup> Fischer, “The Origins of the Federal Republic of Germany’s Space Policy 1959-1965.” 13.

<sup>9</sup> Stucke, “Die Raumfahrtspolitik des Forschungsministeriums,” 549.

<sup>10</sup> David Weldon Thornton, *Airbus Industries: The Politics of an International Industrial Collaboration* (London: Macmillan Press, 1995), 64.

<sup>11</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 94.

<sup>12</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 95.

*Reorganizing the Government for the Space Age*

Following the decision to join ELDO and ESRO formally, Adenauer directed the Federal Ministry for Atomic Affairs to assume responsibility for space research and technology in the Federal Republic. Despite objections from other ministries, Adenauer marshaled the political will to establish the Federal Republic's official political structure for space policy.<sup>13</sup> The Atomic Affairs Ministry was the logical choice for Adenauer because it had already established relationships with the U.S. and European partners on atomic energy matters and had primary oversight over high technology research in the Federal Republic. A year later, the Atomic Affairs Ministry transformed into the Federal Ministry of Scientific Research (*Bundesministerium für Wissenschaft und Forschung*, or BMWF).<sup>14</sup>

But the Federal Government still lacked an overall space policy and failed to fully prioritize space research and development in a country with strong intellectual and industrial underpinnings. Niklas Reinke argues that maximizing new technologies' industrial and economic potential is a state's political responsibility, or sovereign task, which must be adequately resourced and funded through a national program.<sup>15</sup> In the early 1960s, just as ESRO and ELDO were forming, Germany was poorly positioned to maximize its participation in a rapidly evolving space technology sector. Germany's position was especially problematic because high technology required human capital to conduct research and development. Reimar Lüst, a German astrophysicist who would later serve as the director general of ESA, lamented that unless Germany "achieve[s] high-performance levels in both space science and space technology, German involvement in international space research will prove an illusion."<sup>16</sup> Germany lacked

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<sup>13</sup> Reinke, *The History of German Space Policy*, 50.

<sup>14</sup> Stucke, "Die Raumfahrtspolitik des Forschungsministeriums," 550.

<sup>15</sup> Reinke, *The History of German Space Policy*, 118-119.

<sup>16</sup> Reimar Lüst, as quoted in Reinke, *The History of German Space Policy*, 119.

the political will to fund a national space program to a level comparable to other European countries, including France and the United Kingdom.

To help remedy the situation and make recommendations to the Government, the Research Ministry directed the German Space Research Commission (GfW) in 1963 to develop a long-term plan for a German space program and its objectives.<sup>17</sup> In 1965, the Commission issued its recommendations to the BMWF in a document titled “Memorandum on Space Research in the Federal Republic of Germany.”<sup>18</sup> The document highlighted the growing technology gap between Germany and the rest of Europe and the United States and that satellites should be the main aspect of Germany’s involvement in the space sector. Given budget constraints and restrictions on military capabilities, the Federal Research Ministry’s report, based on the Commission’s Memorandum, stated that:

[S]pace research is not a question of national prestige, but is indispensable for securing future scientific and technical standards. The waiver of German cooperation in space research and technology would result in the technological level of our industrial products falling comparatively, and thereby the competitiveness of our national economy would be impaired.

Prestige and military considerations, which factored heavily in the space activities of France, the UK, and the superpowers, were notably absent from the Commission’s recommendation for a national space program in the Federal Republic of Germany.<sup>19</sup> Yet the lack of a central political actor meant that space research proceeded on an ad hoc basis within the context of ELDO.<sup>20</sup> Germany sponsored the third stage of the *Europa* launcher, named *Astrid*, which failed during several test launches. Meanwhile, the evolving ELDO crisis culminating with Britain’s

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<sup>17</sup> Reinke, *The History of German Space Policy*, 123.

<sup>18</sup> Reinke, *The History of German Space Policy*, 123.

<sup>19</sup> Reinke, *The History of German Space Policy*, 123.

<sup>20</sup> Stucke, “Die Raumfahrtspolitik des Forschungsministeriums,” 551.

withdrawal undermined the Federal Government's interest in forging ahead with a dedicated, well-funded, and long-term national space program.

Despite lacking an independent national space program, Germany had established itself as a leader in European space technology and scientific exploration of the cosmos. Under Dr. Gerhard Stoltenberg, the Ministry of Scientific Research, Germany launched several probes and satellites with American assistance. With probes such as AZUR and HELIOS (no relation to the French reconnaissance satellite), German scientists made important discoveries and contributions to the study of solar particles and their effects on Earth's ionosphere, the radiation belts in surrounding space, and various other cosmic phenomena.<sup>21</sup> Additionally, Stoltenberg successfully lobbied ESRO for Germany to host the facility to provide satellite control and tracking for the organization's satellites.<sup>22</sup> In 1967, the European Space Operations Center (ESOC) was opened in Darmstadt.

In 1969, the United States formally invited Germany to participate in the post-Apollo program. As part of the deal, the U.S. also stated that Germany could launch its satellites atop American launch vehicles. Indeed, Germany's first satellite, a small scientific probe called *Azur*, was launched from Cape Canaveral the same year.<sup>23</sup> The Federal Ministry, frustrated with ELDO's dissolution, was apprehensive about relying exclusively on American launch services because of a perceived "space fatigue" in the U.S. Congress, suggesting reduced American funding for space activities in the 1970s and beyond.<sup>24</sup> Yet the Ministry was also reluctant to continue launcher development with France, which announced its intention to proceed even after ELDO collapsed. The main friction point for the Research Ministry was France's desire to

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<sup>21</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 119.

<sup>22</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*,

<sup>23</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 119.

<sup>24</sup> Stucke, "Die Raumfahrtspolitik des Forschungsministeriums," 555.

leverage the rocket program for its nuclear deterrent. Thus, the future of Germany's space program in the early 1970s faced a dilemma: go with the American offer and all its attached strings or continue with European launcher development under French direction.<sup>25</sup>

The Research Ministry ultimately favored the American option. As justification, it offered three main reasons. First, American launchers were proven and reliable and could support various European satellite projects. Second, there were too few European countries capable of developing satellites, making the market for a European launcher too small to warrant the significant expense. And third, the French-led *Europa* launcher program would offer little benefit to German industry because most of the research and development had already been completed.<sup>26</sup> The decision ignited a major debate among the other Federal Ministries and the Federal Chancellery.

Several German constituencies supported an independent European launcher. The Foreign Ministry, a major advocate of European integration, strongly favored the European launcher option under a banner of Franco-German cooperation. Additionally, the Defense Ministry maintained a latent interest in European launchers to preserve the future possibility of launching German military satellites without worrying about American objections. German industry was understandably also in favor of participating in European launcher development. Yet noticeably absent from the debate was the SPD Chancellor, Willy Brandt, who was more focused on East-West relations under his controversial "*Neue Ostpolitik*" approach and reforming domestic policies. The decentralized nature of the Federal Government meant competing Ministries could argue over space policy and exert pressure on the politically

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<sup>25</sup> Stucke, "Die Raumfahrtspolitik des Forschungsministeriums," 555.

<sup>26</sup> Stucke, "Die Raumfahrtspolitik des Forschungsministeriums," 555.

marginal Research Ministry.<sup>27</sup> In 1972, the Research Ministry reversed course and adopted a Euro-centric approach to space policy, emphasizing collaborative projects under ESRO and ELDO auspices, provided the European Space Conference overhauled the stagnant programs.

In 1975, what remained of ESRO and ELDO was folded into the European Space Agency, a new organization with centralized authority overseeing the European launcher project initiated by France, now called *Ariane*. With ESA's establishment, the Federal Republic of Germany focused its space activities through the Agency. The Research Ministry oversaw and coordinated various space-related activities, including Germany's participation in *Ariane* and the American *Spacelab* space station project. Yet in the 1970s, the Research Ministry found itself caught between the technological opportunities of space projects and the foreign and industrial policy considerations that influenced the direction of Germany's national space program. In 1976, Germany discontinued its national space program and chose to focus its scientific and technological space efforts exclusively through its participation in ESA.<sup>28</sup>

### *Later Years*

By the 1980s, Europe had demonstrated that it was a capable space actor, provided it could marshal political, technical, industrial, and financial collaboration among Western European states. To make further advances in the space sector, Europe needed the financial and economic support of the Federal Republic of Germany, which had established itself as the continent's industrial and economic engine.<sup>29</sup> In 1989, Germany established two agencies to restart the national space program and manage the country's affairs in space flight. DLR

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<sup>27</sup> Stucke, "Die Raumfahrtspolitik des Forschungsministeriums," 556.

<sup>28</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 121.

<sup>29</sup> Reinke, *The History of German Space Policy*, 345.

(“*Deutsche Forschungsanstalt für Luft- und Raumfahrt*”), the German Research Institute for Aviation and Space Flight, which emerged from the DFVLR, (“*Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt*”), the German Test and Research Institute for Aviation and Space Flight, and DARA (“*Deutsche Agentur für Raumschiffahrtangelegenheiten*”), the German Agency for Space Flight Affairs. DARA was later merged with DLR and renamed the German Center for Aviation and Space Flight, also abbreviated as DLR (“*Deutsche Zentrum für Luft- und Raumfahrt*”). Germany ostensibly restarted its national space program to prepare for its participation in Europe’s manned space program.<sup>30</sup> There was a growing sense by the late 1980s in Europe that the old world was ceding political influence in space to other powers due to the lack of a coherent space policy. As the German political scientist Karl Kaiser observed, “it will be a matter of deeply symbolic political significance if, at the end of the coming century, the only people in space are the Americans, the Russians, the Japanese, and possibly the Chinese.”<sup>31</sup>

The United States and Japan, which had firmly established reputations as high-technology centers in the West and Asia, were also members of the exclusive “space club.” The Federal Republic, in turn, recognized that it too had to be part of the “space club” to establish itself as Europe’s high technology center. Ultimately, there would be no European manned space program, but the high-technology era of the late 20th century had arrived. The German government reprioritized space research efforts and resumed launching commercial satellites and scientific aircraft atop *Ariane* and the U.S. Space Shuttle. Germany continued to broker

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<sup>30</sup> Europe’s manned space program began with SKYLAB, a small space station developed by ESA and placed into orbit by the U.S. Space Shuttle. The program was later subsumed into ESA’s participation in the ISS. See Harvey, *Europe’s Space Programme: To Ariane and Beyond*, Chapter 6.

<sup>31</sup> Karl Kaiser, “Elemente Einer Deutschen Weltraumpolitik in Europäischen Verbund,” in *Weltraum Und Internationale Politik*, ed. Karl Kaiser and Stephan Freiherr von Welck (München: Oldenbourg, 1987), 599.

transatlantic partnerships in the space sector as perceptions of Cold War-era threats diminished, and the prospect of a globalized economy powered by information technology emerged.

In the mid-1990s, the United States prepared to launch the GALILEO probe, an ambitious project to explore Jupiter and its moons. NASA awarded the contract for the probe's orbital entry thrust engine to a German firm, Messerschmitt Böklow Blohm (MBB), the first time such a major component was designed and built by a non-American firm. Thanks largely to the end of the Cold War and the reduction of international threats, Germany and Europe had become more active and more equitable partners in international space collaboration.

### **Chancellors of the Federal German Republic and Strategic Outlook**

In 1949, West Germany regained partial sovereignty from the Allied occupation (the Allies maintained nominal control over the German military and security policy) and implemented the *Grundgesetz für die Bundesrepublik Deutschland* or the Basic Law for the Federal Republic of Germany. East Germany, formally known as the *Deutsche Demokratische Republik* or Germany Democratic Republic, remained under the sway of the Soviet Union and the Warsaw Pact. Meanwhile, the Federal Republic would join an expanding array of international institutions, from NATO to the European Coal and Steel Community, to the defunct European Defense Community. However, some Western states, especially France, but also the Soviet Union, were suspicious of German accession into the Western Alliance and were weary of the potential for German rearmament so soon after the cataclysmic effects of two world wars.<sup>32</sup> The so-called "German question" affected everything from European integration to East-West relations and the nuclear arms race. Throughout the Cold War, the Federal Republic played a

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<sup>32</sup> Johnston, *How NATO Adapts*, 41-42.

central role in the defense of the West. Geographically, Germany was located at NATO's central front and would bear the brunt of a conventional attack from the East. Economically, Germany exhibited significant technical and industrial potential. Germany rearmed and hosted thousands of American, British, and French troops, including nuclear weapons. In other words, German security interests were synonymous with NATO's. West German leaders and their threat perceptions were vital to maintaining peace and East-West stability during the Cold War. Chancellors from CDU and SPD, including Konrad Adenauer, Helmut Schmidt, and Helmut Kohl, navigated Germany's role in Europe and the world and relations with the United States, which affected German ambitions in space.

#### *Konrad Adenauer and International Institutions*

When NATO was formed in 1949, the Federal Republic did not immediately join the Alliance. A coterie of Western institutions had sprung up after World War II to stabilize the international system and contain communist expansion. Konrad Adenauer, a member of the conservative Christian Democratic Union (CDU) and the former mayor of Cologne, became the first Chancellor of the newly sovereign Federal Republic. Meanwhile, the Eastern and Western blocs debated the future of a divided Germany. On the one hand, both the U.S. and the Soviet Union favored German unification in their own way; officially, the former believed Germany should be united democratically, while the latter felt united Germany should emerge as a neutral state, void of all foreign (meaning American) troops.<sup>33</sup> Unofficially, both superpowers, and to a large extent the French and British, were not unhappy with a divided Germany because the

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<sup>33</sup> Judt, *Postwar*, 243.

former allies felt division and the presence of foreign troops was the best way to prevent German rearmament and revanchism during the periods of instability.<sup>34</sup>

Adenauer, for his part, viewed the future of German security and prosperity not in rearmament and nationalism but in closer integration with Europe and the United States through the various institutional mechanisms.<sup>35</sup> In 1951, the European Coal and Steel Community (ECSC) bound West Germany economically to five other Western European countries, including France. Building on political integration through the Council of Europe, economic integration was another important step in ensuring war in Europe was “not only unthinkable but materially impossible,” as argued by Robert Schuman, the French foreign minister, and the Community’s architect.<sup>36</sup> On defense matters, French Prime Minister René Pleven proposed the creation of a European Defense Community (EDC) a year later, which would include a European Defense Force (EDF) comprised of troops for EDC members. The U.S. and the UK reluctantly supported the idea, and the Bundestag ratified the EDC Treaty in May 1953.<sup>37</sup> Ironically, France opposed Germany’s rearmament under any circumstances, and funding a European Army was politically infeasible given the ongoing French military debacles in Indochina.<sup>38</sup> France failed to ratify the treaty, scuttling the whole idea.

Adenauer, for his part, was extremely concerned that the scuttling of the EDC at French hands would result in nationalistic impulses across Europe, including in Germany. Adenauer feared the prospect of national armies without an institutional security framework to manage them, such as the EDC. The Chancellor stated he was “firmly convinced, 100 percent convinced,

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<sup>34</sup> Judt, *Postwar*, 243.

<sup>35</sup> Kissinger, *Leadership*, 9.

<sup>36</sup> Robert Schuman, “Schuman Declaration May 1950,” European Union, May 9, 1950, [https://european-union.europa.eu/principles-countries-history/history-eu/1945-59/schuman-declaration-may-1950\\_en](https://european-union.europa.eu/principles-countries-history/history-eu/1945-59/schuman-declaration-may-1950_en).

<sup>37</sup> Judt, *Postwar*, 243.

<sup>38</sup> Judt, *Postwar*, 243.

that the national army to which [French Prime Minister Pierre] Mendes-France is forcing us will be a great danger for Germany and Europe,” adding that “I don’t know what will become of Germany, unless we still manage to create Europe in time.”<sup>39</sup> Given the threats from the Soviet bloc, German security required greater integration with the West. Absent the EDC, NATO was the logical and only choice.

As a result, the Western Allies, baffled by the “German Question,” agreed to allow the Federal Republic of Germany to join NATO under strict constraints. In 1954, the Allies modified the Brussels Treaty to formally end the U.S., French, and British occupation of West Germany, which would accede to the Alliance as a full member. Allied forces would remain in Germany in a forward-stationed capacity under a newly formed integrated military command structure, not as occupiers, but as defenders of the NATO territory in the central front.<sup>40</sup> The Modified Brussels Treaty also created the Western European Union (WEU), a nominal international military organization consisting of the European members of NATO, that provided the political justification to end the military occupation of West Germany.

Adenauer understood that the United States was the key element in the Atlantic Alliance that made deterrence and the defense of Europe and Germany possible and credible. However, when the Soviet Union launched SPUTNIK in 1957, opening the space age and extending the threat of nuclear war to American territory, Adenauer began to doubt the American commitment to the defense of Europe.<sup>41</sup> The German Chancellor personally engaged with the American secretary of state, John Foster Dulles, when Dulles was in Paris for a meeting of the NATO heads of government in December 1957. Recounting the conversation in a memorandum, Dulles

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<sup>39</sup> *Der Spiegel*, October 6, 1954, 5, cited in Gordon Alexander Craig, *From Bismarck to Adenauer: Aspects of German Statecraft* (Baltimore, MD: Johns Hopkins University Press, 1958), 110.

<sup>40</sup> Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 26.

<sup>41</sup> Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 43.

remarked, “[t]he Chancellor expressed fear that there might be a change of U.S. sentiment due to the fact that it would come under fire from Soviet ICBMs. He feared also that this might lead to the U.S. exercising its right to withdraw from NATO.”<sup>42</sup> On the agenda for the NAC meeting was the Eisenhower administration’s plan to stockpile American nuclear weapons and intermediate-range ballistic missiles in Europe, specifically Germany. The stockpile plan was based on a nuclear sharing proposal that would strengthen U.S. commitment to the defense of Europe while granting the Europeans a stake in nuclear planning and use decisions during a crisis.<sup>43</sup> Adenauer, for his part, was confident that the Bundestag would approve the storage of American nuclear weapons in Germany. However, he cautioned Dulles that there would be a vigorous debate and potential push-back from the opposition parties.<sup>44</sup> By the decade's end, hundreds of NATO controlled nuclear weapons accompanied thousands of NATO troops stationed in West Germany. The stockpile plan provoked the Soviet Union and precipitated the Berlin Crisis of 1958.

Konrad Adenauer shepherded a fractured Germany through a reckoning with its past and toward a new national identity. Regarding strategic outlook and Germany’s role in the world, Adenauer strongly believed that German security and eventual unification could only be assured through closer political and economic integration with Europe under the security umbrella provided by NATO. As Hans Morgenthau argued, the United States was the cornerstone of

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<sup>42</sup> John Foster Dulles, “Memorandum of a Conversation Between Secretary of State Dulles and Chancellor Adenauer, Bristol Hotel, Paris, December 14, 1957, 5 p.m.” (Government Printing Office, December 14, 1957), Document 137, Foreign Relations of the United States, 1955-1957, Central and Southeastern Europe, Volume XXVI, <https://history.state.gov/historicaldocuments/frus1955-57v26/d137>.

<sup>43</sup> Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945-1963* (Princeton, NJ: Princeton University Press, 1999), 194.

<sup>44</sup> Dulles, “Memorandum of a Conversation Between Secretary of State Dulles and Chancellor Adenauer, Bristol Hotel, Paris, December 14, 1957, 5 p.m.”

European military and political stability through its active participation in NATO.<sup>45</sup> Yet Adenauer also firmly believed in morality and international law in the conduct of foreign policy. In other words, Adenauer believed Germany should pursue its foreign policy interests without aggression.<sup>46</sup> Following Adenauer, a tradition of German strategic outlook emerged based on these principles and participation in international institutions, chief among them being the European Community and NATO. Adenauer's successors, including SPD members like Willy Brandt and Helmut Schmidt, whom Wolfram Hanrieder described as the personification of Germany's "commitment to the Atlantic security community," would model German foreign policy and their strategic outlook on his traditions.<sup>47</sup>

#### *Nuclear Weapons and the NATO Context*

To further understand the conditions in Germany that precluded the development of military space posture, it is important to consider the effects of Germany's membership in NATO and the growing fears of an East-West nuclear conflict on the European continent. As a divided nation, the Federal Republic of Germany had to carefully manage its relations with the Soviet Union while relying on NATO for its defense. For Willie Brandt and Helmut Schmidt, two SPD Chancellors, détente between the superpowers was the most effective way to mitigate the risks of conflict on German soil, West and East.<sup>48</sup> Brandt pursued more normalized relations with the Soviet Union under *Ostpolitik*, or "Eastern policy," which Schmidt later described as a method of "patient, persevering, matter-of-fact diplomatic dialogue" with East Germany, the

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<sup>45</sup> Hans J. Morgenthau, "The United States and Europe in a Decade of Détente," in *The United States and Western Europe: Political, Economic and Strategic Perspectives*, ed. Wolfram F. Hanrieder (Cambridge, MA: Winthrop Publishers, 1974), 4.

<sup>46</sup> Scott Erb, *German Foreign Policy: Navigating a New Era* (Boulder, CO: Lynne Rienner, 2003), 3.

<sup>47</sup> Wolfram F. Hanrieder, ed., *Helmut Schmidt: Perspectives on Politics* (Boulder, CO: Westview Press, 1982), 9; Kissinger, *Leadership*, 47.

<sup>48</sup> Erb, *German Foreign Policy*, 47.

Soviet Union, and other Warsaw Pact members to reduce tensions.<sup>49</sup> Part of that approach meant encouraging arms talks and nuclear disarmament between the U.S. and the Soviet Union.

In the late 1970s, the Soviet Union championed disarmament talks while modernizing their conventional forces and doctrine and fielding short- and intermediate-range nuclear missiles. The deployment of SS-20 IRBMs altered the balance of power in Europe in favor of the Warsaw Pact.<sup>50</sup> The Soviet SS-20 IRBMs, which could deliver nuclear warheads to Western Europe in minutes, alarmed Allied and especially German leaders. Schmidt, who succeeded Brandt as Chancellor in 1976, pressed U.S. President Jimmy Carter to modernize the American nuclear force in Europe in response to SS-20 deployments, which seemingly contradicted the arms control approach preferred by the German Left.<sup>51</sup> In 1979, NATO arrived at the so-called “dual-track” decision, whereby the U.S. would deploy 550 nuclear-armed Pershing missiles to Europe while simultaneously pursuing arms control negotiations with the Soviets. In 1981, the newly elected Reagan Administration took a hard-nosed approach to arms control. Schmidt appealed to the new President to refrain from a confrontational approach to arms talks, reflecting growing concerns across Europe of a renewed nuclear arms race.<sup>52</sup> For his part, Reagan talked tough about increasing defense spending to deal with the Soviet menace.

Widespread popular reaction to “dual-track” and perceived American bellicosity was overwhelmingly negative across Europe, and especially in Germany. Thousands marched across European capitals and American cities, protesting the deployment of nuclear weapons to Europe. Some German politicians dismissed antinuclear protests as youthful ignorance, with one CDU

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<sup>49</sup> Helmut Schmidt, “Germany in the Era of Negotiations,” in *Helmut Schmidt: Perspectives on Politics*, ed. Wolfram F. Hanrieder (Boulder, CO: Westview Press, 1982), 18.

<sup>50</sup> Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 193.

<sup>51</sup> Erb, *German Foreign Policy*, 56.

<sup>52</sup> Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 206.

politician lamenting that for Germany's youth, "war and the post-war experience have no meaning ... peace itself had largely lost its uniqueness."<sup>53</sup> For his part, Helmut Schmidt, who had committed to supporting the U.S. and its policies, publicly championed the "dual-track" decision and the deployment of nuclear missiles to Germany. However, SPD members began questioning the legality of such a move, citing a provision in Article 26 of the German Constitution prohibiting preparations for offensive warfare in Germany.<sup>54</sup> The controversy contributed to cracks in the SPD-led coalition, which had developed over domestic issues. In 1982, the coalition fell apart, and the liberals ousted Helmut Schmidt as Chancellor.

When Helmut Kohl, head of the CDU/CSU/FDP coalition, became Chancellor, he cast the debate over nuclear missiles in terms of loyalty to the Western Alliance and not the Soviet threat. Recognizing that West Germany's security rested with NATO and continued American engagement in Europe, Kohl stressed to the Bundestag that accepting the stationing of Pershing missiles in Germany was necessary to remain a loyal member of the Alliance.<sup>55</sup> The Bundestag ratified the NATO plan to deploy Pershing missiles on German soil on November 22, 1983.

Kohl recognized that the missiles were necessary to restore the balance of power in Europe, and once that had been accomplished, his government could resume diplomatic engagement. Yet rather than abandon "*Ostpolitik*" in favor of renewed Cold War tensions, Kohl's coalition government expanded diplomatic contacts with East Germany and the Soviet Union. Hans-Dietrich Genscher, the West Germany Foreign Minister since 1974 and FDP member, played an important role in maintaining engagement with the East.

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<sup>53</sup> Sayle, *Enduring Alliance: A History of NATO and the Postwar Global Order*, 208.

<sup>54</sup> Erb, *German Foreign Policy*, 59.

<sup>55</sup> Erb, *German Foreign Policy*, 61.

Due to compartmentalized policy authorities in the Federal Government, Genscher greatly influenced German foreign policy during the 1980s. Genscher believed that as a divided nation, the Federal Republic of Germany could serve as a bridge between East and West and help reduce tensions during the contentious 1980s. At times, that meant adopting policy positions at odds with the U.S. and other NATO allies, leading to accusations of a “quasi-neutrality” in German foreign policy known as “Genscherism.”<sup>56</sup> A central tenet of “Genscherism” was strong advocacy for internationalism and negotiated settlements to security disputes through international institutions such as the United Nations and, later, the European Union. This belief led to Mr. Genscher opposing military action against Saddam Hussein in Kuwait during the 1991 Persian Gulf Crisis.<sup>57</sup>

Thus, Helmut Kohl sought to balance firm alignment with NATO and greater engagement with the East. His principal foreign policy objectives were to prevent war in Europe through closer political integration, both institutionally in the West and through diplomacy in the East. This delicate balance reveals the limited, though widely shared, political consensus that existed in Germany regarding foreign and security policy. The pursuit of military space capabilities, regardless of their utility, was not politically feasible given the balance of power in Europe and the tenuous political situation in West Germany.

### *Helmut Kohl and the Strategic Outlook of Multilateralism*

Throughout the latter half of the Cold War, the Federal Republic of Germany managed its international relations and security policies through institutions. The country’s security interests

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<sup>56</sup> Stephen Kinzer, “GENSCHER AT EYE OF POLICY DEBATE,” *The New York Times*, March 22, 1991, sec. World, <https://www.nytimes.com/1991/03/22/world/genscher-at-eye-of-policy-debate.html>.

<sup>57</sup> Kinzer, “GENSCHER AT EYE OF POLICY DEBATE.”

were essentially nested within NATO. As a divided nation, Germany was also the NATO member most sensitive to the state of East-West relations. German Chancellors had to consider how Moscow would react to any foreign policy or security action undertaken by the Federal Republic. Due to successive Berlin crises from 1958 to 1961 and heightened tensions between the Soviet Union and the U.S., Germany remained a relatively weak state militarily, even as it amassed economic and industrial power. Thus, to ensure its security, the Federal Republic had to remain closely allied with NATO and specifically with the United States, whose troops the country had hosted since World War II. The dependence on the United States, in turn, placed Germany at a disadvantage and imposed limits on its foreign and security policies, including in space.

Helmut Kohl of the CDU became Chancellor in 1983 after Helmut Schmidt's decision to endorse placing American Pershing IRBM's in Germany as part of NATO's dual-track decision accelerated fractures in the SPD-led coalition and contributed to his political demise.<sup>58</sup> Kohl embraced the decision to station American nuclear weapons in Germany. Despite domestic protests against the decision, Kohl understood clearly, as had his predecessors, that Germany's security interests required the United States to remain firmly committed to the defense of Europe.

Kohl also understood the European Community's importance to German economic interests and was among the staunchest proponents of increasing European political and economic integration. In furthering these goals, Kohl developed a close working relationship with Mitterrand, revitalizing Franco-German economic and security cooperation under the auspices of the 1963 Élysée Treaty. Kohl navigated two seemingly opposite foreign policy

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<sup>58</sup> Karl Hugo Pruys, *Kohl, Genius of the Present: A Biography of Helmut Kohl*, trans. Kathleen Buntin (Chicago, IL: Edition Q, 1996), 180.

objectives that frustrated previous Chancellors and Western Europeans: increasing Franco-German economic, political, and security collaboration while maintaining strong relations with the United States under NATO auspices to keep the Soviet Union in check. Kohl navigated these objectives through what Scott Erb called multilateralist policy logic.<sup>59</sup>

Helmut Kohl's multilateralist policy logic reflected a strategic outlook that emphasized promoting Western values, such as democracy and free markets, and developing cooperative institutions, not expanding national power and prestige.<sup>60</sup> While Kohl and Mitterrand developed the institutional frameworks that would eventually form the European Union, the German Chancellor continued to broker transatlantic relations with the United States. This logic endured through the end of the Cold War, German unification, and the advent of the European Union. After the Soviet Collapse and the apparent reduction in existential threat, German and European security interests assumed a new perspective that expanded the definition of security, one not necessarily congruent with the United States' security interests. In the 1990s, the United States reconsidered its international military presence and commenced with troop reductions in Europe. However, as the European Union came into existence, Germany reimagined its foreign and security policy. Military force was no longer just for the aggressive pursuit of political ends but for peace preservation, humanitarianism, and crisis management.<sup>61</sup>

### *Case Studies in German Military Space Posture*

Throughout the second half of the Cold War and into the post-Cold War era, German Chancellors situated the Federal Republic in the institutions and international order that emerged

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<sup>59</sup> Erb, *German Foreign Policy*, 72.

<sup>60</sup> Erb, *German Foreign Policy*, 72.

<sup>61</sup> Erb, *German Foreign Policy*, 176.

after World War II. The Western Allied powers continued to pursue national interests through military power, including in space. Yet the Federal Republic's strategic multilateralism reflected a post-sovereign identity centered on collaborative international institutions and the promotion of mutual interests, international law, and human rights.<sup>62</sup> Thus the conditions that fueled the development of autonomous or semi-autonomous military space postures in France and the UK, such as prestige, military necessity, and national interests outside of Europe, were absent from Germany during the Cold War. In the 1990s, the broadening of Germany's definition of security began to set conditions for developing a more autonomous military space posture in the 21<sup>st</sup> century. A national political consensus and leader perceptions of the distribution of power in the international system contributed to establishing these conditions. The rest of this chapter considers Germany's entry into space, France's attempts to engender a bilateral military reconnaissance capability with Germany, and the effects of systemic shocks on German military space posture: SDI and the end of the Cold War.

### **Military Space Programs under Franco-German Collaboration**

Due to legal restrictions and persistent anti-militarism during the Cold War, the Federal German Republic did not develop military space capabilities. However, Germany recognized the commercial, scientific, and security implications of space technologies early and developed the industrial competence to fulfill many of those requirements for Europe's integrated space programs. Yet as the two leading funders of European space programs, the Franco-German axis produced Europe's first communications satellite under bilateral cooperation but failed to produce a reconnaissance satellite. Both programs had military and security applications, but

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<sup>62</sup> Erb, *German Foreign Policy*, 73.

Germany and France had different reasons for undertaking these endeavors, which helps explain why SYMPHONIE succeeded, but the reconnaissance satellite failed.

*SYMPHONIE: The Franco-German Axis in Space*

Franco-German collaboration on Europe's first communications satellite originated out of the European Conference on Satellite Communications, or CETS (« *Conférence Européenne des Télécommunications par Satellites* »). CETS was the early institutional embodiment of a joint European program to develop a European communications satellite. CETS sponsored the satellite's development, which ESRO would design and build, and which ELDO would launch.<sup>63</sup> However, the program was mired in a bureaucratic morass of committees debating the economic viability of a European satellite communications network.

While costly, a European satellite would, in the long run, secure Europe's place in the space telecommunications industry and reduce dependence on the United States. However, the technology available in the 1960s meant satellite-based telecommunications were more expensive yet less effective than conventional ground-based communications.<sup>64</sup> The lack of a unifying political and institutional framework compounded the matter. As one British study concluded, CETS was "not an organization, but a continuing conference [whose] continued existence in its present form would appear unlikely to achieve any useful purpose."<sup>65</sup> For its part, the UK, generally apprehensive about European efforts to develop satellite and launcher technologies that might antagonize the Americans, chose not to participate in CETS. Favoring

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<sup>63</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 271.

<sup>64</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 273.

<sup>65</sup> Estimates Committee (1967), pp. xix and xxvi-xxvii. The definition of the CETS as a "continuing conference" was suggested to the Committee by the Head of the Foreign Office's Scientific Relations Department, E.G. Willan, on p. 103. See Krige and Russo p. 274.

the existing Anglo-American security framework, the UK eventually developed its own communications satellite systems with U.S. assistance called SKYNET (see Chapter 3).

Unlike the UK, France and Germany strongly advocated for European autonomy in space and were the biggest funders to ESRO and ELDO. However, both countries prioritized their national programs over CETS. France and Germany sought to develop their own national satellite communications programs to remain competitive in the aerospace and industrial sectors. Additionally, bilateral technical collaboration would facilitate European integration by reducing economic and commercial barriers between the two countries.<sup>66</sup> Following the success of the ASTERIX probe, France undertook a national telecommunications satellite program called SAROS (later renamed SAFRON), which would relay telephone and television broadcasts from France to Africa and other overseas territories. Germany began working on a television relay satellite called OLYMPIA, with which the Federal Government hoped to broadcast the 1972 Summer Olympic Games in Munich.

While the European satellite program under CETS faltered, by 1967, it became apparent to France and Germany that the costs of their respective national satellite programs exceeded what either country could feasibly fund.<sup>67</sup> Thanks to the Elysée Treaty and Franco-German rapprochement, a technological and political partnership was the logical way to develop a satellite communication capability. In June 1967, Paris and Bonn signed a bilateral agreement to collaborate on a Franco-German communications satellite called SYMPHONIE.<sup>68</sup>

The Franco-German agreement on SYMPHONIE was important for several reasons. First, it ensured the future of a German national space program. The Federal Ministry for Science

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<sup>66</sup> Reinke, *The History of German Space Policy*, 114.

<sup>67</sup> Reinke, *The History of German Space Policy*, 113.

<sup>68</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 118-119.

and Research (BMWF), which oversaw Germany's space program, had previously suggested an imbalance existed between West German financial obligations to the European projects, ESRO and ELDO, and the technological returns for German industry.<sup>69</sup> In other words, Germany was not getting a sufficient return for its investments in the European space organizations. The BMWF, renamed later as the Ministry for Research and Technology (*Bundesministerium für Forschung und Technologie*, BMFT), concluded that a limited national space program and bilateral cooperation with other spacepowers would yield better results for German aspirations in space and other high-technology endeavors. The German Space Policy enacted in 1967 by BMWF explained the rationale for the agreement, stating:

[t]he scientific knowledge and industrial expertise that are the preconditions for future German participation in the creation of international applications satellite systems, and hence the commercial exploitation of space technology, can be acquired only through involvement in a concrete project of limited duration.<sup>70</sup>

Second, Franco-German collaboration on SYMPHONIE was politically vital for the new West German Chancellor Kurt Georg Kiesinger of the Christian Democratic Union (CDU). Kiesinger had pursued a policy of deeper economic and industrial cooperation with France following the Élysée Treaty. The SYMPHONIE project would be the perfect catalyst for strengthening Franco-German relations and was the first collaborative endeavor undertaken by both countries under the auspices of the Elysée Treaty.<sup>71</sup>

Third, SYMPHONIE would provide the Federal Government rationale for expanding Germany's high technology industry and scientific capacity. West Germany's high technology and scientific sectors were weak at the time compared to other leading powers in Europe, and

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<sup>69</sup> Madders, *A New Force at a New Frontier*, 86-87.

<sup>70</sup> "First German Space Policy," quoted in Reinke, *The History of German Space Policy*, 114.

<sup>71</sup> H. Schramm, former German coordinator for SYMPHONIE, quoted in Madders, *A New Force at a New Frontier*, 105.

especially the United States. German firms could access French industry through the cooperation agreement, allowing both countries to design and construct a modern communications satellite. SYMPHONIE would fulfill the German government's goal of broadcasting the 1972 Summer Olympic Games in Munich to the world while securing German industry for the future. The agreement also signaled to the other ESRO members that France and Germany would not sit idle as the United States continued to advance its high-technology industry and expand its market share.<sup>72</sup>

However, smaller European partners were less enthusiastic about the SYMPHONIE program. Smaller states like Belgium and Italy considered SYMPHONIE contradictory to the mission of European space collaboration, whereby the organizations' two largest members flexed financial resources to advance national interests at the expense of European interests and the exclusion of the smaller states.<sup>73</sup> The smaller states complained that SYMPHONIE would undermine ESRO's satellite project by diverting French and German resources and industry towards national projects. For their part, France and Germany felt encumbered by ESRO's decision-by-committee governance structure and solicited contracts from national industry.

Mirroring the spirit of Franco-German political collaboration on SYMPHONIE, the leading French and German aerospace firms formed an aerospace industrial consortium. The Franco-German consortium, CIFAS (*consortium industriel franco-allemande pour le satellite Symphonie*), was the prime contractor for designing and manufacturing both satellites. CIFAS comprised six firms, Messerschmitt-Bölkow-Blohm (MBB), Siemens and AEG-Telefunken from Germany, Aérospatiale, Thomson-CSF, and SAT from France.<sup>74</sup> CIFAS would report to a

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<sup>72</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 119

<sup>73</sup> Krige and Russo, *A History of the European Space Agency 1958-1987*, 275.

<sup>74</sup> Georg Mosl, "The Symphonie Project Organization," in *The Space Congress*, vol. 3, 1973, 11.

bilateral executive committee that would, in turn, be responsible to a directors' council formed with representatives from each country's respective space agency, CNES in France and BMFT and GfW in Germany.<sup>75</sup>

Unlike the UK, Germany and France were strong advocates for European autonomy in space. While both countries were interested in greater strategic autonomy from the United States to facilitate their political, economic, industrial, and commercial interests, France was specifically concerned with reducing its dependence on the United States for security and defense matters. Germany's participation in SYMPHONIE was primarily motivated by the commercial potential of satellite communications and promoting domestic industry. In either case, the United States had monopolized nearly all aspects of spaceflight, which France and Germany sought to break through SYMPHONIE.

The Americans exercised their satellite communications monopoly through the International Telecommunications Satellite Organization, or INTELSAT. INTELSAT was the principal framework governing commercial satellite communications around the world and emerged from the Communications Satellite Act of 1962, signed by President Kennedy. A few years later, an international agreement signed under the auspices of the United Nations assigned responsibility for international satellite communications to INTELSAT, a nominally private corporation in which the U.S. Government maintained a 56% ownership stake.<sup>76</sup> Hence the effective American monopoly on international satellite communications.

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<sup>75</sup> Mosl, "The Symphonie Project Organization," 16.

<sup>76</sup> "Agreement Relating to the International Satellite Organization 'INTELSAT' (with Annexes)." (United Nations, August 20, 1971), I-19677, United Nations Treaty Collection, <https://treaties.un.org/doc/Publication/UNTS/Volume%201220/volume-1220-I-19677-English.pdf>; see also Harvey, *Europe's Space Programme: To Ariane and Beyond*, 160.

The Americans also possessed a monopoly on space launch. While France and Germany successfully developed SYMPHONIE outside ESRO, the lack of a European launcher further embarrassed the European space effort. France and Germany intended to launch the satellites atop the *Europa II* launchers being developed by ELDO. Yet ELDO canceled the *Europa* launcher program in 1973 after successive *Europa II* test launch failures, and the organization folded following the UK's withdrawal from ELDO (see Chapter 3). The Europeans had no choice but to contract with NASA to launch SYMPHONIE.

However, France and Germany were parties to the INTELSAT convention. Members agreed not to undertake actions or acquire capabilities that could be financially detrimental to INTELSAT without prior approval from the board of directors. In other words, the United States considered SYMPHONIE a threat to the American satellite communications monopoly.<sup>77</sup> To circumvent the restrictions of the INTELSAT convention, the French and German heads of CNES and GfW argued that the satellites were “experimental,” if only as a condition under which NASA would launch a European communications satellite.<sup>78</sup> In its analysis of the project, the U.S. Embassy in Paris concluded that,

[...] successive redefinitions of the SYMPHONIE project, and the various French [and German] ends which the satellite could serve (space, telecommunications, technology, cultural and information exchange, military, broadcasting, propaganda) reflect a spectrum of French [and German] interests in the possibility of using such a satellite for other than purely “experimental” purposes.<sup>79</sup>

NASA was adamant that it would only launch SYMPHONIE if neither of the satellites would be used for commercial purposes.<sup>80</sup> Hoping to salvage some degree of freedom and future use,

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<sup>77</sup> Harvey, *Europe's Space Programme: To Ariane and Beyond*, 160.

<sup>78</sup> “Communications Satellite SYMPHONIE: What Is It?” (Department of State, December 16, 1968), 2014-045 Doc 6, National Archives, <https://www.archives.gov/files/declassification/iscap/pdf/2014-045-doc6.pdf>.

<sup>79</sup> “Communications Satellite SYMPHONIE: What Is It?”

<sup>80</sup> Reinke, *The History of German Space Policy*, 116.

French administrators from CNES discretely approached the Soviet Union at one point to seek their assistance.<sup>81</sup> The Soviets balked at the suggestions, fearing such an act would needlessly antagonize the U.S. The French and Germans went back to NASA to negotiate an agreement in which both countries agreed that SYMPHONIE would remain purely “experimental.” While the negotiations dragged on, INTELSAT satellites broadcast the Munich Olympics to the world, a major domestic political setback for Germany.<sup>82</sup> NASA eventually launched SYMPHONIE 1 and 2 in December 1974 and August 1975, respectively.

On a technical level, the SYMPHONIE satellites were a major success for France and Germany and a source of personal pride for Valerie Giscard d’Estaing and Helmut Schmidt. Indeed, to test the satellite’s capabilities, SYMPHONIE 1 facilitated a conversation between the two European leaders in January 1975, the first satellite communication using a European-designed and built system. The demonstration proved that SYMPHONIE, and specifically European industry, could field a viable satellite communications network for commercial and other purposes. But the agreement with NASA precluded the Europeans from fully exploiting their capabilities. The total dependence on the United States was a bitter pill to swallow and reinforced the determination in Paris, and to a lesser degree in Bonn, to develop a European launcher and more independent satellite systems.<sup>83</sup> The determination paid off a few years later when France successfully launched the *Ariane* rocket in 1979 (see Chapter 2).

SYMPHONIE was not a military capability but demonstrated the utility of satellite communications to support France’s military footprint outside Europe, especially in Africa. The program’s success led France and Germany to continue collaborating on satellite

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<sup>81</sup> Harvey, *Europe’s Space Programme: To Ariane and Beyond*, 160.

<sup>82</sup> Reinke, *The History of German Space Policy*, 116.

<sup>83</sup> Reinke, *The History of German Space Policy*, 117.

communications technologies, especially television broadcasts. Television was an important cultural and political tool for both countries because it allowed France to perpetuate “*francophonie*” in Africa and former colonies. At the same time, the Federal Republic could spread Western themes to East Germany. Following the advent of an independent European launcher with the success of *Ariane* in 1979, France and Germany would no longer be subject to restrictions on commercial broadcast imposed on them by the INTELSAT convention.

In 1980, the two countries formed a bilateral agreement to develop a pair of television broadcast satellites for geostationary orbit, which ESA would launch in the mid-1980s. The “Agreement between France and Germany on technical and industrial cooperation in the field of broadcast satellites” was important for Germany’s continued industrial engagement in the growing space field. Yet, the bilateral agreement was somewhat contradictory to the integration of European space policy. West Germany was among the most enthusiastic proponents of integrating European space activities under the European Space Agency and second only to France in providing funding for the intergovernmental body. However, in 1980 ESA was still too cumbersome of an institution to take on a major European project. Whatever progress it achieved in the launcher program was driven primarily by national actors, namely France and Germany.<sup>84</sup>

The agreement was also important for strengthening the European space industry and the Franco-German “axis” in the European economy. As with SYMPHONIE, Franco-German industrial consortium called Eurosatellite received the contract to design and build the two satellites. Eurosatellite comprised several French and German firms: MBB, AEG-Telefunken, and Aérospatiale. The Federal Ministry for Research and Technology (BMFT) and the West German Research Institute for Aerospace (DFVLR) supported the new consortium, which hoped

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<sup>84</sup> Reinke, *The History of German Space Policy*, 202.

to compete with well-funded American satellite manufacturers with years of experience.<sup>85</sup> Despite a lack of military or intelligence satellite design and manufacture experience, the German firms were among Europe's most sophisticated and technically competent aerospace manufacturers, thanks to high technology program studies funded by the Research Ministry in the preceding decades.<sup>86</sup> As a result, the German firms in Eurosatellite, namely MBB and AEG-Telefunken, performed most of the work.

The collaborative effort resulted in two television broadcast satellites, TV-SAT and TDF-1, launched by *Ariane* rockets in 1987 and 1988, respectively. However, political debates over media policy in France and Germany during the 1980s overshadowed the project's economic and industrial benefits. Political debates over the ethics of satellite television broadcasting touched on questions of sovereignty and international law. Public opinion in Europe was suspicious of satellite broadcast technology; some officials believed it even infringed on state sovereignty of information.<sup>87</sup> At a time when Germany was seeking greater European integration, national particularism characterized the emergence of advanced satellite broadcasting technology, not bounded space collaboration through ESA.<sup>88</sup>

France later built a dedicated military communication satellite in the 1980s based on an improved SYMPHONIE design called SYRACUSE. However, Germany was not interested in the military dimensions of satellite communications, mainly due to strong domestic opposition to

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<sup>85</sup> Kenneth Dyson and Peter Humphreys, "Satellite Broadcasting Policies and the Question of Sovereignty in Western Europe," *Journal of Public Policy* 6, no. 1 (1986): 76.

<sup>86</sup> Reinke, *The History of German Space Policy*, 203.

<sup>87</sup> Signals from direct broadcast satellites, such as TV-SAT and TDF-1, could spill over national boundaries of smaller states in Europe, making them commercially attractive for European firms seeking to expand their markets across the continent. Dyson and Humphreys, "Satellite Broadcasting Policies and the Question of Sovereignty in Western Europe," 77.

<sup>88</sup> Dyson and Humphreys, "Satellite Broadcasting Policies and the Question of Sovereignty in Western Europe," 75.

the military applications of space technologies.<sup>89</sup> But Germany hoped to position its industry as a leader in commercial satellite communication technology. Therefore, Germany continued to rely on the U.S. for military space-based capabilities and on NATO more broadly to defend itself against the prospect of Soviet aggression.

#### *A Franco-Germany Military Reconnaissance Satellite?*

By the early 1980s, Germany had succeeded as a leader in European satellite technology, having developed several scientific and commercial satellites, including SYMPHONIE. So, it was unsurprising when France approached Germany in 1983 to develop a European satellite reconnaissance capability to salvage the SAMRO project (see Chapter 2). Chancellor Helmut Kohl and President François Mitterrand discussed the proposal during their summit meeting in May 1984. They agreed to form a bilateral study group to explore the idea further.<sup>90</sup> Yet despite an initial mutual interest to pursue a Franco-German project, the two countries had different political reasons for developing an independent satellite reconnaissance capability.<sup>91</sup>

As previously discussed, France had political and security interests beyond its borders, the forces necessary to pursue those interests, and the will to deploy those forces, especially for intervention in Africa (see Chapter 2). With the exception of monitoring Warsaw Pact activities across the Iron Curtain, Germany did not have the same foreign security interests as France, or the capacity to deploy forces beyond the NATO central front. However, Germany's divided position at NATO's core fueled an interest in obtaining real-time satellite information on

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<sup>89</sup> James D. Bindenagel and Philip A. Ackerman, "Germany's Troubled Strategic Culture Needs to Change," The German Marshall Fund of the United States, October 2018, <https://www.gmfus.org/news/germanys-troubled-strategic-culture-needs-change>.

<sup>90</sup> Kocs, *Autonomy or Power?* 172.

<sup>91</sup> Reinke, *The History of German Space Policy*, 305.

Warsaw Pact forces on the other side of the Iron Curtain. Given the escalation of East-West tensions in the early 1980s, Germany appeared to have a military requirement for an autonomous military satellite capability.

The political conditions in Germany in the early 1980s also seemed to favor the development of military reconnaissance satellites. The Foreign Ministry viewed satellite intelligence as an important technical complement to German foreign policy for the independent verification of arms control and disarmament agreements.<sup>92</sup> Additionally, independent satellite intelligence would amplify Germany's voice in the ongoing East-West dialogue and support Hans-Dietrich Genscher's goal of distancing Germany's foreign policy from U.S. influence. A Franco-German satellite would further strengthen bilateral cooperation between the two countries on foreign and security policies.

Given the success of the Franco-German collaboration on SYMPHONIE, and the development of a European launcher with *Ariane*, a bilateral project to develop a Franco-German military reconnaissance satellite, Europe's first, seemed logical. While France had developed the commercial SPOT observation satellite for civilian purposes (see Chapter 2), the Western European Union had not defined a comprehensive military space policy for Europe. As Reinke explains, Western Europeans "proved to be incapable of settling their security policy differences or even defining specific universally recognized requirements for an independent military use of space."<sup>93</sup> The situation was untenable for France, which viewed the ability to obtain independent information as vital for strategic autonomy. Germany, growing concerned about the direction of U.S. nuclear strategy and military space policy, also deemed it necessary to develop an

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<sup>92</sup> Reinke, *The History of German Space Policy*, 305.

<sup>93</sup> Reinke, *The History of German Space Policy*, 303.

autonomous European satellite reconnaissance system. Thus, the Chancellor and Foreign Minister were interested in collaborating with the French.<sup>94</sup>

In 1984, following Ronald Reagan's SDI announcement, the Assembly of the Western European Union (WEU) debated the military uses of space, including satellite reconnaissance. While most WEU representatives, including French and some British, supported the idea of a European satellite reconnaissance program, the German delegation was split. Conflicting views about the military uses of space among the German delegation reflected the ongoing domestic debate over the stationing of tactical nuclear weapons in Germany, arms control, and deterrence in general. While there was broad support among members of the CDU/CSU coalition and FSP, some members cautioned against Europe comparing itself to the military developments of the superpowers, advocating instead for a European focus toward general disarmament and other social problems. Roland Vogt, a Green Party (*Die Grünen*) member, stated during a debate in June 1984 that,

It would be disastrous to be guided by the superpowers, because sooner or later this would result in Europe itself becoming a superpower simply because it was using the wrong yardstick. There are so many problems to be solved in Europe – the whole problem of environmental pollution, for example – that we should devote all our energy to solving them [...] but the Europeans should make it clear that they have no interest in the use of space for military and strategic purposes.<sup>95</sup>

Despite the stabilizing effects of an independent European satellite reconnaissance capability for verifying arms control agreements, the Greens' opposed the Franco-German satellite reconnaissance project because of France's nuclear arsenal. In November 1984, Green Party member Petra Kelly noted during a Bundestag debate on the military use of space that by

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<sup>94</sup> Reinke, *The History of German Space Policy*, 306.

<sup>95</sup> Roland Vogt, "Assembly of the Western European Union Proceedings, Thirtieth Ordinary Session, First Part, Volume II," Minutes: Official Report of Debates (Paris: Western European Union, June 1984), <http://aei.pitt.edu/66201/1/WEU110.pdf>, 220.

participating in the bilateral satellite reconnaissance project, the Federal Republic would implicitly support French military reconnaissance and targeting for its nuclear strike force.<sup>96</sup>

For one thing, military programs were generally associated with more lucrative contracts than scientific or even commercial programs. Another reason was that German firms felt they were losing the technological edge to their French and American counterparts, given the growing importance of the space sector in commercial and security applications. Additionally, the German aerospace industry, which had developed a strong competence in satellite technology through various scientific programs, was very receptive to collaborating with French industry on a military reconnaissance satellite. Dornier System, the German firm awarded the prime contract for ESA's earth observation satellite (ERS-1) and therefore well positioned to develop a military reconnaissance satellite, lobbied the Federal Government to undertake the French offer.<sup>97</sup> In a 1982 memorandum, Dornier System remarked on the growing importance of Earth observation in European commercial and scientific applications, noting that the capability was also vital for military and security applications.<sup>98</sup>

However, the project's development costs remained the main obstacle for the Federal Government. While Federal ministries discussed the budgetary and technical dimensions of the French proposal, various ministers' foreign policy views and a degree of executive weakness muddled the German strategic outlook. Genscher and the Foreign Ministry supported the idea of an independent military satellite, despite the program's estimated 3-4 billion Deutsche Mark (DM) price tag. Meanwhile, Germany's nominal civilian space institute, the *Deutsche*

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<sup>96</sup> Petra Kelly, "Statement during the debate on a treaty to restrict the military use of space," Stenographic Record, November 8, 1984, p. 7058. See also Reinke, *The History of German Space Policy*, 308.

<sup>97</sup> Reinke, *The History of German Space Policy*, 306.

<sup>98</sup> "Memorandum Zur Erdbeobachtung Aus Dem Weltall" (Dornier System GmbH, October 1982), Airbus Corporate Heritage, 3.

*Forschungs- und Versuchsanstalt für Luft- und Raumfahrt* (DFVLR), which succeeded GfW in 1969, strongly opposed having its modest funds redirected towards a military satellite program.<sup>99</sup> Yet the Defense Ministry worried the project would unnecessarily frustrate the Americans after rising popular sentiment against NATO's "dual-track" decision to tactical nuclear weapons on German soil. The Defense Ministry also worried the Federal Government would fund its share of the satellite project out of the defense budget, an estimated and unachievable 500 million DM per year.<sup>100</sup>

Ultimately, prospects for bilateral cooperation on a reconnaissance satellite collapsed due to the technical specifications of the French proposal, which was based on optical photoreconnaissance technology designed for the SPOT satellite. An optical satellite would be less useful for West German intelligence requirements due to its geographic location in North-central Europe, which is frequently under dense cloud cover. An infrared or synthetic aperture radar capability would be more useful for monitoring the movement of conventional forces behind the Iron Curtain. Additionally, since a large segment of the proposed venture would be based on existing French technology used for the SPOT satellites, the German aerospace industry would miss out on funding and development opportunities, despite the Federal Government's obligation to provide 50% of funding.<sup>101</sup> After all, if the Federal Government were to finance half the program's costs, it would expect to obtain half of the development work. After further prodding from the French, Chancellor Kohl officially declined President Mitterrand's invitation to develop Europe's first satellite reconnaissance capability through bilateral cooperation at their

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<sup>99</sup> Kocs, *Autonomy or Power?* 173.

<sup>100</sup> "Weltraumprojekt mit Paris in Bonn umstritten," *Die Welt*, 29 August 1985. See also Reinke, *The History of German Space Policy*, 307.

<sup>101</sup> Reinke, *The History of German Space Policy*, 308.

summit in November 1985. Two months later, Mitterrand decided to develop the satellite independently (see Chapter 2).

While a military requirement for an autonomous military satellite reconnaissance capability existed, German leaders lacked the political will to finance a project primarily benefiting French industry. Despite ongoing debates between the Chancellery and the Foreign and Defense Ministries about the project's costs and rationale, there was no true strategic need for independent satellite reconnaissance. The Bundeswehr was structured for collective and territorial defense in the NATO framework, which included the United States and its vast military space posture.<sup>102</sup> The Bundeswehr was not organized to support foreign and security interests independent from NATO and the United States. As a result, acquiring an independent reconnaissance satellite was not worth the cost.

The Federal Republic would not fully appreciate the utility of an independent satellite reconnaissance until after unification and the end of the Cold War, when it assumed a more prominent international role in the 1990s, especially during the Balkan conflict. During that time, a newly unified Germany gained foreign and security interests under EU auspices, which were not necessarily consistent with those of the U.S., warranting greater military space capabilities to support multilateral out-of-area action under an EU mandate.

### **SDI and the German Surprise**

The Federal Republic's space program grew out of a desire for scientific exploration and technological advancement rather than out of military necessity, like in the superpowers, France, and the UK. While the U.S. and Soviet Union developed and tested anti-satellite weapons

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<sup>102</sup> Giegerich and Terhalle, *The Responsibility to Defend*, 43.

(ASATs) during the 1970s, Germany focused on industrial and technical competence to manufacture advanced satellites. However, Germany's growing presence in orbit reflected its pursuit of national interests as the economic engine of the European Community. Thus, Germany could no longer afford to look past the foreign and security policy implications of the space domain, especially after rising nuclear tensions and Ronald Reagan's SDI announcement

SDI and Reagan's vision to eliminate the threat posed by Soviet strategic nuclear weapons created a political problem for Helmut Kohl. On the one hand, the technical feasibility of a space-based missile defense system was dubious at best. Many European leaders, including Kohl, Mitterrand, and Thatcher, were skeptical that the United States could credibly field a space-based missile defense system. But Kohl and Thatcher at least recognized the opportunities for their countries to participate in U.S. Department of Defense-funded research. On the other hand, the SDI concept threatened to undermine the nuclear deterrence regime between NATO and the Soviet Union. It was only designed to address intercontinental ballistic missiles, which threatened North America, but not Europe. As a result, NATO's European allies would remain vulnerable to superior Soviet conventional and intermediate-range nuclear forces while facing the prospect of the U.S. retrenching to "fortress America."<sup>103</sup> For the Western Europeans, especially the Germans, SDI undermined extended deterrence, which was the "indispensable myth of the Alliance embodying the fiction that the allies were sharing benefits and risks in equal measure."<sup>104</sup>

While SDI was ostensibly a program for developing new technologies, it reflected an American political reality that was problematic for the Federal Republic. A space-based missile

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<sup>103</sup> Reinke, *The History of German Space Policy*, 287.

<sup>104</sup> Wolfram F. Hanrieder, *Germany, America, Europe: Forty Years of German Foreign Policy* (New Haven, CT: Yale University Press, 1989), 124.

defense shield was useless to Germany, which would bear the brunt of a Soviet conventional or tactical nuclear attack. The Federal Republic, therefore, had no military requirement for SDI because such a system would be ineffective against short- and intermediate-range nuclear weapons.<sup>105</sup> Despite the perceived technical limitations, the notion of a space-based strategic defense shield as a political symbol upset the long-standing tenets of extended deterrence underpinning the Transatlantic Alliance and German American relations.<sup>106</sup>

### *Domestic Debates on SDI*

German perspectives on deterrence and defense influenced the Federal Republic's views of SDI. According to Wolfram Hanreider, Germany during the Cold War viewed deterrence, provided by the Americans through their extended nuclear umbrella, as a "reassuring intent to prevent the outbreak of hostilities," whereas "defense meant that deterrence had failed and that hostilities had broken out."<sup>107</sup> In the context of the Cold War in the 1980s, hostilities meant war on German territory. Hanreider continues,

The perceived effect of SDI on the question of "differentiated security" was the main reason why the defense experts of the Bonn government – most prominently Defense Minister Manfred Wörner and the chief of his planning staff, Hans Rühle – strongly opposed SDI when it was first announced, recanting only later with a set of reasons not nearly as persuasive as their initial objections. The traditional German aversion to singularity, along with the fear that SDI would ultimately lead to American unilateralism, were at the core of Bonn's uneasiness about a defense-dominated American strategy.<sup>108</sup>

Wörner and Rühle conveyed their initial reactions to SDI during a meeting of the NATO Nuclear Planning Group shortly after Reagan's speech, describing the whole concept as a "wholly distant

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<sup>105</sup> Pierre Lellouche, "SDI and the Atlantic Alliance," *SAIS Review* 5, no. 2 (1985): 74.

<sup>106</sup> Hanreider, *Germany, America, Europe*, 123.

<sup>107</sup> Hanreider, *Germany, America, Europe*, 124.

<sup>108</sup> Hanreider, *Germany, America, Europe*, 124.

echo” and rejecting the vision of strategic defense.<sup>109</sup> For its part, the Bundestag opposed the deployment of space-based weapons, regardless of their purpose. However, Kohl’s ruling coalition was acutely aware that domestic criticism of NATO nuclear strategy and the “two-track” decision by the previous government precipitated the fall of Schmidt’s coalition.<sup>110</sup> In 1984, an interministerial working group headed by the Federal Chancellery’s foreign policy division was established to develop the Federal Republic’s official position on SDI.<sup>111</sup> Additionally, the Genscher-led Foreign Ministry competed with the Chancellery on foreign policy matters. The Defense Ministry ran working groups focused on SDI, reflecting the disjointed nature of foreign and security policymaking in the Federal Republic. Given the context of the ongoing U.S.-Soviet arms controls negotiations over intermediate-range missiles and space weapons, SDI was another project affecting the strategic balance in Europe, specifically Germany. Chancellor Kohl’s central issue was managing NATO politics to preserve Alliance unity over its core missions of deterrence and defense of Western Europe.

Mindful of the political costs incurred by his predecessor for endorsing the NATO “dual-track” decision, Kohl straddled a fine line between alliance and domestic politics. Indeed, several members of the ruling coalition, including Franz Josef Strauss, the head of the CSU, criticized SDI as a threat to the Transatlantic Alliance.<sup>112</sup> Additionally, opposition members, including the Greens and some Social Democrats, publicly rejected SDI because it would result in the “active

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<sup>109</sup> Reuters, “REAGAN ARMS PLAN DEBATED IN EUROPE,” *The New York Times*, March 26, 1983, sec. World, <https://www.nytimes.com/1983/03/26/world/reagan-arms-plan-debated-in-europe.html>; see also Reinke, *The History of German Space Policy*, 287.

<sup>110</sup> Reinke, *The History of German Space Policy*, 287.

<sup>111</sup> Reinke, *The History of German Space Policy*, 288.

<sup>112</sup> Strauss later reversed his position on SDI, and advocated Germany’s support for SDI, ostensibly for access to lucrative industrial contracts. Elizabeth Pond, “W. Germany Is Key to Whether Europe Joins US ‘star Wars’ Effort. United States Hopes Bonn Will Support the Research Program and Lead the Way for the Rest of Europe,” *Christian Science Monitor*, July 8, 1985, <https://www.csmonitor.com/1985/0708/obonn.html>; see also Richard Ned Lebow, “Assured Strategic Stupidity: The Quest for Ballistic Missile Defense,” in *Technology, Strategy, and Arms Control*, ed. Wolfram F. Hanrieder (Boulder, CO: Westview Press, 1986), 87.

use of space for military purposes” and predicted a major public outcry and increased political tensions between the U.S. and Western Europe.<sup>113</sup>

For their part, the Greens opposed any space system that could be used for military purposes, including ballistic missile defenses, satellite communications, and the newly deployed American global positioning system, which could be used to direct precision munitions. The Greens also viewed SDI and its associated research program as an abject violation of the 1972 Anti-Ballistic Missile (ABM) Treaty between the U.S. and the Soviet Union, which limited the development of ballistic missile defense systems.<sup>114</sup>

Chancellor Kohl also had reservations about SDI in terms of the ABM Treaty. He publicly insisted at the Munich International Defence Studies Meeting in February 1985 that the ABM Treaty’s provision must continue to apply until a new agreement governing strategic defenses could be negotiated.<sup>115</sup> But Kohl also had to consider the economic opportunities that SDI offered to the German aerospace industry. Like the Apollo program of the 1960s, the Federal Republic’s interministerial working group concluded that Germany should support SDI to achieve major technological advances for participants.<sup>116</sup>

### *Kohl and SDI: Weighing Opportunities and Risks*

Perhaps the most important factors weighing on Chancellor Kohl were the state of German American relations and NATO solidarity. Kohl shared some of the same reservations about SDI as his European counterparts. Nuclear deterrence remained the indispensable strategic

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<sup>113</sup> SPD, “Haltung der SPD-Bundestagsfraktion zu Fragen der Weltraumzusammenarbeit,” Bonn, April 9, 1985, 5; See also Reinke, *The History of German Space Policy*, 290.

<sup>114</sup> BorgmGreens, “Militarisierung des Weltraums,” BT-Drs. 10/2296, May 23, 1985, 1.

<sup>115</sup> “Chancellor Helmut Kohl Told a Conference of Top Western...,” UPI, February 9, 1985, UPI Archives, <https://www.upi.com/Archives/1985/02/09/Chancellor-Helmut-Kohl-told-a-conference-of-top-Western/9774476773200/>.

<sup>116</sup> “Chancellor Helmut Kohl Told a Conference of Top Western...”

framework for the German Chancellor. In April 1985, Kohl emphasized that “Europe’s security must not be decoupled from that of the United States” and added, “NATO’s strategy of flexible response must remain fully valid as long as no more promising alternative is found for preventing war.”<sup>117</sup> Yet Kohl, who arrived in office in 1982 as head of a tenuous CDU/CSU/FDP coalition promising to improve German-American relations, ultimately voiced his support for SDI and got his defense minister to toe the line. In doing so, Kohl sidestepped the security issues that SDI would create for his country if implemented in favor of smoother relations with the United States.<sup>118</sup> Kohl sought to avoid further straining American relations and develop a stronger personal rapport with Reagan than Helmut Schmidt could achieve, even at the expense of German security interests.

In an interview with *Time Magazine* in May 1985, Kohl was emphatic, stating, “With reference to SDI, I strongly support this idea,” citing, among other things, the civilian benefits of the attendant research program and his wish for the other European powers to join, including France and the United Kingdom.<sup>119</sup> Mitterrand, of course, was strongly critical of SDI, and the German Chancellor found himself in a rather unusual position of agreement with Margaret Thatcher and not his French counterpart.

While the German aerospace industry was attracted to the prospect of working on well-funded space research programs under SDI, the German space program was organized for peaceful purposes through ESA. But German political and industrial support for SDI was not without risks. Social Democrats within the Federal Republic feared that German commitment to

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<sup>117</sup> Helmut Kohl, “Speech during Bundestag Debate on SDI, 18 April, 1985,” in *Statements and Speeches*, vol. VII, 2 (New York, NY: German Information Center, 1985), 3; as quoted in David S. Yost, “Western Europe and the U.S. Strategic Defense Initiative,” *Journal of International Affairs* 41, no. 2 (1988): 284.

<sup>118</sup> Hanrieder, *Germany, America, Europe*, 124.

<sup>119</sup> Helmut Kohl, “Helmut Kohl: My Objective Was Reconciliation,” interview by William McWhirter, *Time Magazine*, May 6, 1985, <https://content.time.com/time/subscriber/article/0,33009,967530-3,00.html>.

SDI research would compromise the integrity and independence of Germany's industry and research sectors while hampering Europe's own high-technology aspirations in space.<sup>120</sup> The aerospace industry was enthusiastic about participating in the SDI research program but sought the Federal Republic's assurances and political protection for dealing with the Americans.

The French President's counterproposal to SDI, EUREKA (see Chapter 2), was designed to harness European aspirations for space, science, research, and technology for civilian purposes, not military ones like SDI. The pan-European research program, Mitterrand argued, would offer European industry the same opportunities as SDI without risks of compromising its independence or integrity to secure American defense contracts. The Federal Republic, in turn, had to weigh the merits of both programs to determine which would be given political priority.<sup>121</sup>

Genscher and the Research Ministry, which oversaw the German space program, favored Mitterrand's EUREKA proposal. Kohl and the Defense Ministry favored SDI and viewed German participation in EUREKA as complementary to SDI because of the French program's civil and military aspects.<sup>122</sup> Genscher, like Mitterrand, believed the only way Europe could maintain its autonomy from the U.S. while retaining influence over U.S. strategic decisions was to pool resources through a concept like EUREKA.<sup>123</sup> Genscher and the FDP also worried that the Chancellor's endorsement of SDI would damage West German relations with Eastern Europe and prospects for renewed détente.<sup>124</sup> In the Bundestag, the CDU/CSU supported Germany's

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<sup>120</sup> Reinke, *The History of German Space Policy*, 291.

<sup>121</sup> Reinke, *The History of German Space Policy*, 295.

<sup>122</sup> Karl Kaiser, "Für Genscher ist das Einvernehmen mit Paris wichtiger als eine SDI-Beteiligung," *Frankfurter Allgemeine Zeitung*, May 8, 1985.

<sup>123</sup> Lellouche, "SDI and the Atlantic Alliance," 79.

<sup>124</sup> William Drozdiak, "Bonn Agrees to Talks on Participation In SDI Research," *Washington Post*, December 19, 1985.

participation in EUREKA to complement SDI. In contrast, the FDP and SPD only supported the civilian scientific research agenda, and the Greens rejected the whole concept altogether.<sup>125</sup>

Negotiations between the interministerial working group and party leaders within the ruling coalition dragged on for months. Despite Kohl's vocal support for SDI, the Chancellery lacked the authority to enter into a negotiated agreement with the U.S. without the Bundestag's endorsement. The Federal Republic eventually reached a compromise after a fact-finding delegation traveled to the United States. The German delegation, consisting of government officials, industry representatives, and members of Germany's scientific community, met with counterparts in September 1985 to discuss the economic and research opportunities afforded by the SDI program.<sup>126</sup>

As part of the political compromise, the Federal Republic would allow the German aerospace industry to participate in the SDI research program but would not contribute government funds. The Federal Republic also developed a framework to ensure German firms were afforded reciprocal rights for the transfer and exchange of scientific and technical knowledge to be negotiated with the United States.<sup>127</sup> As a result, the Federal Minister of Economic Affairs, not the Defense or Foreign Ministers, would lead German negotiations on SDI, further separating economic and security issues to appease domestic political anxieties.

### *The Deterrence Context*

For Germany, SDI, broader discussions about nuclear weapons, and the strategic imbalance in Europe during the early 1980s brought to light the realistic possibility of deterrence

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<sup>125</sup> Reinke, *The History of German Space Policy*, 295-296.

<sup>126</sup> Reinke, *The History of German Space Policy*, 299.

<sup>127</sup> Drozdiak, "Bonn Agrees to Talks on Participation In SDI Research."

failure and the prospect of conventional war in Europe.<sup>128</sup> If neither superpower faced the prospect of destruction by the other, the burden of defending the territories of Western Europe would fall on the Europeans. The proximity and superiority of Soviet conventional and tactical nuclear forces created a strategic imbalance that heavily favored the Soviet Union. The strategic imbalance lowered Soviet risk calculus for aggression, increasing threat perceptions in Europe and the risk of conventional war.<sup>129</sup> In other words, an effective American ballistic missile system envisioned by SDI raised, rather than lowered, the risk of open war in Europe.

A renewed focus in Germany on territorial defense and conventional force posture would also create military requirements for military space capabilities, including reconnaissance satellites and communications, as part of a credible conventional deterrent. Given the massive financial and political burden of modernizing and expanding conventional forces in Germany, Kohl recognized that a German refusal to endorse SDI, while favorable to domestic audiences, might precipitate American disengagement from Europe and the subsequent collapse of NATO.<sup>130</sup> As with the “dual-track” decision, Alliance politics trumped domestic politics.

Kohl’s support for SDI was based on the political necessity to maintain unity between American and German security interests. But he also insisted that Europe develop a unified position on SDI, which might contribute to an integrated multilateral European participation in SDI research rather than at the national level. In an April 1985 statement endorsing SDI, Kohl stated that “participation by European countries would give Europe a historic opportunity to assert its political, strategic and technological interests.”<sup>131</sup> The Chancellor’s statement reflected his preference for multilateralism and an integrated European approach to foreign and security

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<sup>128</sup> Lellouche, “SDI and the Atlantic Alliance,” 76.

<sup>129</sup> Karl Kaiser, “Kernwaffen als Factor der internationalen Politik,” *Europa Archiv* 40, no. 9 (May 10, 1985): 261.

<sup>130</sup> Hanrieder, *Germany, America, Europe*, 126.

<sup>131</sup> Kohl, “Speech during Bundestag Debate on SDI, 18 April, 1985.”

problems facing Germany. Unfortunately, Europe lacked the central organized political process and authority to follow through with Kohl's vision. As a result, Kohl felt strongly that the Federal Republic could only achieve its security interests through an integrated NATO approach that necessarily included the United States.

By embracing SDI, Kohl ensured that the conditions necessary for developing military space capabilities did not materialize in Germany. As Chancellor, Kohl lacked the political autonomy to implement military and security policies, and he could not afford to antagonize the Americans and risk further eroding their security guarantees. Kohl believed that Germany's security interests corresponded with U.S. security interests in Europe. If those interests diverged and America retrenched, Germany would have to rearm to reestablish conventional deterrence and need an autonomous military space posture. Kohl understood that the Federal Republic could not bear the financial or political cost of such rearmament nor risk demilitarizing Germany completely and abandoning NATO, an alternative that many on the Left preferred.<sup>132</sup>

Fortunately for Kohl, SDI lost momentum in the United States after successful arms control negotiations resulted in the signing of the INF Treaty in 1987 and after Ronald Reagan left office. The waning days of the Cold War and the twin prospects of German unification and European integration overcame whatever dangers SDI harbored for the Federal Republic. But with the end of the Cold War, unified Germany would face a different international system and security environment.

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<sup>132</sup> Hanrieder, *Germany, America, Europe*, 127.

## Unification, Integration, and the Post-Cold War Security Environment

Unlike France and the UK, Germany did not participate in the Persian Gulf War. Except for offering political and some logistical support to the coalition effort, the newly unified Germany was absent from the first space war. But the sudden changes in the international order – namely German unification, the Soviet collapse in 1991, and the formation of the European Union a year later – coincided with the reduction of the primary threat facing the Federal Republic during the Cold War: territorial conquest from the East. Changes in threat perception altered the military requirements for an autonomous military space posture. After all, why would Germany need a satellite reconnaissance system to peer behind the Iron Curtain when it was now unified with the territory most likely to serve as a staging area for a conventional attack?

Germany celebrated the arrival of a new era where deterrence and defense appeared no longer necessary. Cold War bipolarity between competing superpowers gave way to an ambiguous unipolar moment. A triumphant U.S. and diminished Russia meant that the German public no longer feared the threat of nuclear or conventional war on their soil.<sup>133</sup> Reduction in threat perception by German leaders also warranted an attendant reduction in defense spending as military requirements changed. The advent of the European Union also provided a new, legitimate framework for multilateral solutions to Europe's foreign and security matters. Helmut Kohl, who oversaw the ambitious and rapid integration of the GDR into the Federal Republic and was one of the primary drivers of European integration through The Maastricht Treaty, viewed European multilateralism as Germany's path to space.

However, the Social Democrats viewed European space autonomy driven by French ambitions as a relic of the Cold War and the contest between the superpowers. Social Democrats

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<sup>133</sup> Judt, *Postwar*, 638.

believed expensive prestige projects, such as the French *Hermes* space plane and the *Columbus* module, Europe's contribution to the American-led International Space Station project, had no place in the post-Cold War era.<sup>134</sup> Genscher, who generally viewed European and German space autonomy favorably, believed that advanced aerospace technologies were important aspects of German industry and must be preserved. However, the FDP chairman, Count Lambsdorff, viewed space infrastructure as a kind of “megalomania.”<sup>135</sup>

In late 1991, Helmut Kohl and François Mitterrand met to discuss, among other issues, the future of European space projects. Both leaders faced domestic pressure to reduce defense-related spending, a source of funding for space programs in both countries. The leaders agreed to reduce their respective contributions to ESA, which cut its overall budget by 5% in November 1991, largely following the recommendations of the German and French representatives.<sup>136</sup> *Hermes* was eventually canceled as European interests and ambitions in space became less important aspects of European strategic autonomy after the Cold War.

### *Space Program of Unified Germany*

When Germany unified, the Federal Republic assumed the political and security institutions of East Germany. East Germany, more formally the German Democratic Republic (GDR), did not develop military space capabilities and instead bandwagoned with the Soviet Union for under the Warsaw Pact and communist solidarity for access to space and military space capabilities. For example, Sigmund Jähn, an East German air force pilot, became the first

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<sup>134</sup> Josef Vosen, SPD Press Release, October 29, 1991; Lothar Fischer, “Statement during space policy debate,” Stenographic Record, November 14, 1991, p. 4798.

<sup>135</sup> Reinke, *The History of German Space Policy*, 404-405.

<sup>136</sup> Reinke, *The History of German Space Policy*, 405.

German to orbit the Earth aboard a Soviet *Soyuz* spacecraft.<sup>137</sup> However, beyond such prestige displays, the GDR did not have a space policy, nor were East German leaders interested in the security or industrial aspects of the space sector.

The newly unified Germany in the early 1990s focused on cooperative space programs through ESA. The largest such program at the time was the European contribution to the International Space Station. The *Columbus* module, now known as the *Columbus Orbital Facility* (COF), was the premier ESA program, which the ministers of the ESA council hailed as “the greatest cooperative venture of all time, with significant scientific, technical, and political implications.”<sup>138</sup> Germany had the largest stake in COF at 41% of the total budget, and ESA appointed DASA, the German aerospace consortium, as the prime contractor. Domestic political opposition waned, with SPD declining to speak against the project because the end of the Cold War meant the SPD could shift its attention towards other initiatives as space projects were less inclined to be used for military purposes. At the same time, the newly formed Greens/Alliance 90 party opposed the ISS on environmental grounds rather than for military aspects.

Surprisingly, German left-wing parties did not object to a U.S.-Russian agreement that each country reserved the right to use their respective modules for “national security” purposes; the COF was notably excluded from such applications without the expressed consent of ESA.<sup>139</sup> The reduction in perceived external threats to NATO and the reinterpretation of the international balance of power by the Federal Government voided the military requirements for independent space systems. Once again, Helmut Kohl had no reason to generate political consensus for expensive military space programs.

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<sup>137</sup> Hanrieder, *Germany, America, Europe*, 349.

<sup>138</sup> Reinke, *The History of German Space Policy*, 422.

<sup>139</sup> Reinke, *The History of German Space Policy*, 428.

*Redefining Security and the Utility of Military Space Posture*

The collapse of the Soviet Union may have reduced the threat of nuclear and conventional war in Europe, but that did not mean the world was suddenly safer or more peaceful. A spate of regional crises along Europe's periphery and in its former colonial strongholds in Africa, including transnational crime, mass migrations, and the proliferation of WMD, shattered the illusions of a peaceful new world order. For the first time in generations, Germany's security interests lay outside the confines of the European continent. Additionally, the EU, and by extension Germany, sought to embody the principles of a peaceful society that rejected war and violence, a view that differed sharply from the United States, further diverging the security interests of the NATO members.

As the EU sought to assert a greater international role and establish a common foreign and security policy centered on crisis management, conflict prevention, and humanitarian intervention, the European powers began to appreciate the utility of military satellites in a different light.<sup>140</sup> From monitoring ceasefires to obtaining information about reclusive regimes to supporting peacekeeping operations in Africa and the disintegrating Yugoslavia, the EU and Germany saw a greater role for themselves in global politics to preserve peace. France, the UK, and Germany had each demonstrated the ability to develop advanced communications and photoreconnaissance platforms, but the EU lacked the political will to fund and acquire its own military space capabilities. As a result, the EU largely continued to rely on the United States for access to military space capabilities during the Balkan crises, undermining the bloc's resolve and

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<sup>140</sup> Wulf von Kries, "European Cooperation in Military Space," *Space Policy* 11, no. 2 (May 1995): 101; Alasdair McLean, "Integrating European Security Through Space," *Space Policy* 11, no. 4 (November 1995): 242.

readiness to act on its own.<sup>141</sup> For the time being, the three European powers would have to continue developing national capabilities.

While France and the UK had each developed a moderate military space posture in the early 1990s, the use of space for security, foreign policy, or military purposes was a novel concept for Germany. Whereas threats to German security during the Cold War stemmed mainly from the Warsaw Pact, in the 1990s, German scholars and policymakers broadened the definition to include, as one German scholarly report suggested, “any possible threat to living conditions in Europe today.”<sup>142</sup> In this view, the strictly military dimensions of satellite systems were less important. Still, the capabilities of military systems were vital for independent use by the European Union during crises. For example, the German report assessed that an independent European satellite reconnaissance capability of military caliber was necessary to inform political decision-making at the national and EU level during rapidly evolving crises. This view reflected greater congruence with France than with the United States. Indeed, Helmut Kohl endorsed the idea of a European satellite reconnaissance system as early as April 1990.<sup>143</sup> The report concluded, “the use of space, including its use for security purposes, is not a luxury but a necessity if the state is to fulfill its obligations. Observation satellites are becoming an essential tool in the exercise of power to prevent future risks.”<sup>144</sup> The international security context had

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<sup>141</sup> Kries, “European Cooperation in Military Space,” 102.

<sup>142</sup> “Beobachtungssatelliten Für Europa: Bericht Einer Expertengruppe” (Bonn: Forschungsinstitut der Deutschen Gesellschaft for Auswärtige Politik, 1990), 81. See also Andreas Hasenkamp, “Beobachtungssatelliten Für Europa: Bericht Einer Expertengruppe (Reconnaissance Satellites for Europe: Report of an Expert Group): Forschungsinstitut Der Deutschen Gesellschaft Für Auswärtige Politik, Bonn, 1990, 102 Pp,” *Space Policy* 7, no. 1 (February 1, 1991): 84–85, [https://doi.org/10.1016/0265-9646\(91\)90052-J](https://doi.org/10.1016/0265-9646(91)90052-J).

<sup>143</sup> Hasenkamp, “Beobachtungssatelliten Für Europa,” 84.

<sup>144</sup> “Beobachtungssatelliten Für Europa: Bericht Einer Expertengruppe,” 10.

changed, and so had the views of the Federal Republic of Germany; military space capabilities would not be used to wage war but to preserve peace.<sup>145</sup>

Declining defense budgets and absence from the Gulf War notwithstanding, the Federal Republic recognized the utility of military satellite systems in the post-Cold War Era. The French, who learned bitter lessons during the Gulf War about dependence on American satellite systems, and who were reluctant to hand over operational control of their HELIOS satellites to a multilateral institution, once again approached Germany to develop the next generation of military reconnaissance satellites.<sup>146</sup> The ongoing Bosnian conflict provided further impetus for France and Germany to develop military reconnaissance capabilities because of the divergent approaches to the conflict between Europe and the United States.

Despite EU ambitions to resolve the Bosnian matter, Brussels still lacked the capacity and capability to act autonomously. The Europeans once again depended on the U.S. for access to satellite information. However, the Clinton administration's decision to suspend the enforcement of an arms embargo against the Bosnian Government in 1994 revealed the divergent security interests between the United States and the European allies, including Germany.<sup>147</sup> Additionally, the U.S. refused to supply the satellite information necessary for enforcement to the Europeans, who were still enforcing the arms embargo.<sup>148</sup> For his part, Chancellor Kohl welcomed the prospect of Franco-German collaboration on a military satellite project to reenergize the Franco-German axis in the newly formed EU. Germany realized for the first time

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<sup>145</sup> According to Reinke, the CSU/CDU coalition and the SDP had strongly supported the development of a European satellite surveillance system. Reinke, *The History of German Space Policy*, 449.

<sup>146</sup> See Chapter 2; see also Reinke, *The History of German Space Policy*, 449.

<sup>147</sup> Craig R. Whitney, "Move on Bosnia By U.S. Alarms Allies in NATO," *The New York Times*, November 12, 1994, sec. World.

<sup>148</sup> McLean and Swankie, "Helios 2—Myth or Reality?" 109.

that there were no iron-clad American security guarantees in the post-Cold War era. Dependence on the U.S. to access military satellite systems could undermine German security interests.<sup>149</sup>

Germany seemed primed for pursuing an independent military space capability with the prospect of renewed Franco-German collaboration on a new generation of optical and synthetic aperture radar (SAR) military satellites that would form the core of an autonomous European security capacity. First, German leaders' expanded view of security that went beyond strict military applications would overcome the anti-militarism that was so pervasive during the Cold War and limited the Federal Republic's ability to build a credible force. Second, the Bosnian crisis revealed that Germany's security interests diverged from the United States and the NATO Alliance construct, which had previously assured Germany's narrow security requirements during the Cold War. Third, there appeared to be increasing political consensus among the domestic parties or at least less vocal opposition to acquiring a military space capability.

Kohl and Mitterrand once again discussed the satellite reconnaissance proposal at the Franco-German summit in Baden-Baden in 1995. This time, the leaders agreed to share the development costs of the next generation satellite reconnaissance projects that would build on HELIOS-1 and Germany's commercial SAR technology. The memorandum of understanding signed by the Chancellor and President outlined cost-sharing and operational control sharing for HELIOS-2, the next-generation French photoreconnaissance satellite, and a new German SAR satellite called HORUS.<sup>150</sup>

However, cost once again became the major obstacle for the Franco-German projects. Germany's budgetary outlays for HORUS and HELIOS-2 from 1998-2009 would exceed six

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<sup>149</sup> McLean and Swankie, "Helios 2—Myth or Reality?" 109.

<sup>150</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 141.

billion DM (~ € 3 billion), half of which would come from German defense budgets.<sup>151</sup>

Unfortunately, the Federal Government had slashed defense budgets to the point that in 1996, Defense Minister Volker Rühle of the CDU declared that the Defense Ministry would be unable to fund Germany's share of the Franco-German HELIOS-2 and SAR military satellite projects. The Foreign Ministry, ostensibly responsible for Germany's foreign and security policy, had neither the budget nor acquisition expertise to manage such a project. Complicating matters was an unusual offer by the United States in 1994 to sell Germany a SAR satellite manufactured by Lockheed Aerospace for DM 500 million. The American offer, which reflected Bill Clinton's view that Europe should not undertake "useless duplication" of strategic capabilities, suggested an unfavorable reaction to the prospect of greater European autonomy in military space.<sup>152</sup>

Despite the tempting American offer, it was, perhaps ironically, EU integration that forced Germany to abandon the bilateral military satellite effort. Germany and other Maastricht Treaty signatories were under pressure to meet strict 3% fiscal policy convergence criteria set forth at Maastricht to set conditions for entry into the European Monetary Union in 1999.<sup>153</sup> The fiscal requirements imposed on Germany and the other signatories of The Maastricht Treaty were a greater budgetary priority for the Federal Government than military space systems or defense spending in general. A 1997 report by the German think tank Hessische Stiftung Friedens- und Konfliktforschung (HSFK), which analyzed the French and German satellite reconnaissance programs, concluded that the Federal Government lacked a sufficient and coherent rationale for developing a satellite reconnaissance program.<sup>154</sup> In July 1997, the Federal

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<sup>151</sup> Heisbourg and Pasco, *Espace Militaire: L'Europe Entre Souveraineté et Coopération*, 141.

<sup>152</sup> Reinke, *The History of German Space Policy*, 450.

<sup>153</sup> McLean and Swankie, "Helios 2—Myth or Reality?" 111.

<sup>154</sup> According to HSFK, the cost of HORUS did not justify its limited capabilities, especially in detecting civil conflicts and the proliferation of nuclear weapons. Bernd W. Kubbig and Tillman Elliesen, "Wozu sollen die europäischen Satelliten Helios II und Horus dienen? Die früherkennungs-, industrie- und europapolitischen

Government announced it would have to postpone its participation in HELIOS-2 and HORUS. The German government could not reconcile costs with requirements to justify the acquisition of an autonomous military space posture. Europe still only possessed a single optical satellite reconnaissance system, France's HELIOS-1A.

The ongoing Balkan conflict and Europe's continued dependence on NATO for intelligence had frustrated German and EU officials. HELIOS-1A improved French decision-making autonomy in the Balkans and elsewhere (see Chapter 2). With the proverbial "dust" of the Cold War's end and German unification settled, and the internationalization of German foreign policy in the 1990s, the conditions seemed favorable for Germany to acquire an independent military satellite reconnaissance system.<sup>155</sup> Additionally, by 1998 a cost-conscious SAR-based satellite reconnaissance system appeared within reach due to technological advancements in the commercial sector. Despite canceling HORUS over costs, the Defense Ministry and DLR began initial studies for a SAR-based satellite reconnaissance system in 1998.<sup>156</sup>

### *Kosovo, the Helsinki Headline Goal, and SAR-LUPE*

In 1999, Gerhard Schröder, the recently elected Chancellor and SPD member, who headed a left-leaning coalition of the SPD and Alliance 90/Greens, known as the Red-Green coalition, had ordered Germany's armed forces into combat for the first time since World War

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Begründungen der Befürworter auf dem Prüfstand," HSFK-Report 3/1997 (Frankfurt am Main: Hessische Stiftung Friedens- und Konfliktforschung, März 1997), 50.

<sup>155</sup> Mark Luetzner, Interview with Mark Luetzner, Head of Research Group, DLR, interview by Frank Kuzminski, Zoom, February 1, 2023.

<sup>156</sup> Sascha Lange, "SAR-Lupe Satellites Launched," *Strategie & Technik - International Edition II* (2007), [https://www.swp-berlin.org/publications/products/fachpublikationen/SAR\\_Lupe\\_ks.pdf](https://www.swp-berlin.org/publications/products/fachpublikationen/SAR_Lupe_ks.pdf), 15.

II.<sup>157</sup> In March, German forces participated in NATO air strikes against Serbian forces during the Kosovo Crisis. However, German aircraft depended on NATO and the U.S. for satellite imagery and targeting. According to Defense Minister Rudolf Scharping, the U.S. only provided the Bundeswehr with few images and limited access to filtered satellite information.<sup>158</sup> Whereas France and the UK had learned this lesson during the Persian Gulf War, Germany was only now experiencing constraints of total dependence on the U.S. and the discomfort of being unable to verify intelligence and targeting information independently. The situation filled Rudolf Scharping with “anger in my stomach.”<sup>159</sup>

When the air campaign ended in June after Serbia’s withdrawal, NATO established a peacekeeping force in Kosovo known as KFOR, led for a time by a German commander, General Klaus Reinhardt. German participation in the Kosovo air campaign and KFOR was under NATO auspices and lacked a United Nations mandate. Despite political support in the Bundestag, many Germans vehemently opposed the use of military force. After all, Germany’s political leadership had conditioned its approach to foreign and security policy since the end of World War II as non-aggressive, legalistic, and humanitarian, suggesting Germany would only act through multilateral institutions.<sup>160</sup> But the humanitarian crisis in Kosovo required action. Yet Germany and the EU could not act without NATO or the United States, despite the promises of the St. Malo declaration of 1998.

Drawing on the Kosovo experience, the EU Council met in Helsinki, Finland, in 1999 and developed discrete force and capability requirements known as the Helsinki Headline Goal

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<sup>157</sup> Nina Werkhäuser, “Combat Troops,” dw.com, March 24, 1999, <https://www.dw.com/en/ten-years-on-germany-looks-back-at-return-to-war-in-kosovo/a-4123734>.

<sup>158</sup> Alexander Szandar, “Strategische Aufklärung: Bundeswehr Belauscht Die Welt,” *Der Spiegel*, September 1, 2008, sec. Politik, <https://www.spiegel.de/politik/deutschland/strategische-aufklaerung-bundeswehr-belauscht-die-welt-a-575417.html>.

<sup>159</sup> Szandar, “Strategische Aufklärung.”

<sup>160</sup> Howorth, *Security and Defence Policy in the European Union*, 25.

(HHG). The HHG addressed the EU's strategic deficiencies and described the forces and capabilities that the EU could draw on to accomplish EU-only missions, including the three outlined in the Petersberg Tasks (humanitarian assistance, peacekeeping, and peacemaking).<sup>161</sup> The rationale for the HHG was for the EU to conduct Kosovo-type humanitarian intervention and crisis management without having to depend on the United States or NATO. After the meeting, Schröder remarked, "the Europe of the future must be able to defend its interests and values effectively worldwide." But Schröder emphasized that "close and confidential cooperation between the European Union and NATO is essential," adding that "there must and will be no thought of competition here."<sup>162</sup> Among the various capabilities included in the HHG were space-based communications and reconnaissance for command and control, intelligence gathering, and precision targeting for modern munitions.

In 2001, the Ministry of Defense announced that it had awarded the contract to develop Germany's first military satellite reconnaissance system to OHB-System AG, a Bremen-based aerospace firm. Germany planned to deploy five satellites, called SAR-LUPE, which would rely on synthetic aperture radar (SAR) technology with a resolution of roughly 1 meter that was sufficient for military uses.<sup>163</sup> At the 2002 Franco-German Summit in Schwerin, Germany, Gerhard Schröder and Jacques Chirac agreed to deepen military cooperation and integrate their military satellite imaging systems.<sup>164</sup> In the agreement, Germany would provide SAR-generated imagery to France in exchange for optical imagery provided by France's HELIOS-2 satellites.<sup>165</sup>

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<sup>161</sup> Howorth, *Security and Defence Policy in the European Union*, 79.

<sup>162</sup> Craig R. Whitney, "MILITARY POSTURE OF EUROPE TO TURN MORE INDEPENDENT," *The New York Times*, December 13, 1999, sec. World, <https://www.nytimes.com/1999/12/13/world/military-posture-of-europe-to-turn-more-independent.html>.

<sup>163</sup> Schrogl et al., *Handbook of Space Security*, 834; Harvey, *Europe's Space Programme: To Ariane and Beyond*, 129.

<sup>164</sup> "EU Reform Debate Tops Franco-German Summit Agenda," dw.com, July 30, 2002, <https://www.dw.com/en/eu-reform-debate-tops-franco-german-summit-agenda/a-600614>.

<sup>165</sup> Lange, "SAR-Lupe Satellites Launched," 15.

At the summit, Schröder and Chirac discussed the ongoing conflict in Afghanistan, to which both France and Germany had committed forces, and it is likely that military considerations factored into the satellite-based intelligence sharing agreement.

In addition to being Germany's first military space system, SAR-LUPE was significant for several reasons. First, it was Europe's first satellite reconnaissance system that used SAR rather than optical technology that was only useful during cloudless weather, greatly expanding Europe's reconnaissance capabilities from orbit. Second, SAR-LUPE was a more cost-effective solution than previous German military satellite programs, such as HORUS, because the SAR technology was based on commercial systems adapted for military purposes rather than a novel design.<sup>166</sup> As a result, each SAR-LUPE satellite cost €370 million rather than HORUS's five-billion-euro price tag. Thus, it was much easier to marshal the political will to fund the system. Lastly, and perhaps most importantly, SAR-LUPE signified Germany's arrival as a prominent security actor in the international system, especially in terms of early crisis warning, crisis prevention, and crisis management.<sup>167</sup> Independent access to satellite-based intelligence enhanced Germany's ability to engage in international consultation and decision-making during crises, especially in international forums, giving greater voice to Germany and its preference for multilateralism through institutions such as the European Union. Germany would follow SAR-LUPE with a military satellite communication system, SATCOMBw, in 2009.<sup>168</sup>

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<sup>166</sup> Lange, "SAR-Lupe Satellites Launched," 15.

<sup>167</sup> Eduard Muller, "SAR-Lupe, Germany's First Satellite-Based Reconnaissance System, Now Completed" (German Aerospace Center, July 22, 2008), News Archive Space 2008, [https://www.dlr.de/content/en/downloads/news-archive/2008/20080722\\_sar-lupe-germany-s-first-satellite-based-reconnaissance-system-now-completed\\_13077.pdf?\\_blob=publicationFile](https://www.dlr.de/content/en/downloads/news-archive/2008/20080722_sar-lupe-germany-s-first-satellite-based-reconnaissance-system-now-completed_13077.pdf?_blob=publicationFile).

<sup>168</sup> Gerhard Hegmann, "Bundeswehr rüstet im All auf," *Financial Times Deutschland*, September 23, 2009, <https://web.archive.org/web/20090928033905/http://www.ftd.de/politik/international/:militaerische-raumfahrt-bundeswehr-ruestet-im-all-auf/50014149.html>.

## Conclusion

Germany has exhibited a substantial shift in military space policy, from total dependence on the United States and NATO at the height of the Cold War to developing a credible and autonomous military space posture by the early 2000s. The shift was not a response to changes in threats or the structure of the international system but rather stemmed from a political awakening to the opportunities for Germany in the realm of international security that followed unification and integration under the European Union. Since World War II, German political leadership has favored multilateral and collective solutions to security challenges rooted in international law. The end of the Cold War and changes in threat perceptions allowed Germany's political leadership to capitalize on a broader interpretation of security beyond strict military requirements. Nested within the EU's concept of a more assertive common foreign and security policy, German leaders' strategic outlook evolved to consider security interests and military requirements that were no longer congruent with the United States and NATO. Germany, in other words, had grown to become a serious foreign and security actor on the international stage and required the attendant military space capabilities to fulfill its new roles.

With SAR-LUPE, Germany had achieved the conditions to develop an independent military space system. Germany's first combat role during the Kosovo campaign had exposed a military requirement for independent access to satellite-based intelligence and communications. Additionally, the advent of European multilateral crisis response capability through the evolution of a common security and defense policy and reinforced by national leader commitments to develop the necessary capabilities for independent action catalyzed a shift in Germany's security orientation away from total dependence on the United States and NATO towards meaningful multilateralism under EU auspices. Finally, reduced costs of satellite technologies, thanks partly

to advances in commercial satellite technology and Germany's induction into the European Monetary Union, had freed the Chancellor to generate the political will to spend the necessary resources for military space capabilities.

Shifts in the international system after the Cold War, characterized by the collapse of the Soviet Union, fundamentally altered the security environment facing Germany. Newly unified, the country no longer faced the threat of conventional aggression against its territory or the prospect of nuclear war in Europe. A conflict between NATO and the Warsaw Pact, in which Germany would be the most likely battlefield, was replaced with simmering crises along Europe's periphery and coincided with the rise of the EU's ambitions to be a global leader in multilateral crisis management and conflict resolution. Germany focused its foreign and security roles through the EU to overcome the stigma of greater military capabilities. It developed its military space capabilities to strengthen the EU's voice in high politics.

The conditions that led Germany to develop its military space posture were notably absent during the Cold War and in its immediate aftermath. Despite being the first country in the world to use space capabilities for military purposes, the German space program was oriented on the economic, scientific, and technological development of West Germany at a time when the superpowers dominated those areas. As Niklas Reinke observed,

The initiation of space policy in the Federal Republic was made possible by the concurrent emergence of independent and often widely divergent research, industrial and political interests that were nevertheless objectively interconnected, in a situation where there was fiscal room for maneuver and the basic technological know-how was already internationally documented. In contrast to the United States, interest in space activities arose essentially from the pursuit of civil objectives rather than military research.<sup>169</sup>

The political factors restricting the development of a dedicated military space program in Germany reflected the broader constraints on German foreign policy and military capability

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<sup>169</sup> Reinke, *The History of German Space Policy*, 133.

development in the post-World War II environment. Whereas the superpowers, France, and Britain jumped into the space race primarily for security reasons and to balance each other during the Cold War, Germany had no such impulse. For most of the Cold War, Germany's main interest in space was scientific exploration and the domain's commercial potential; the country was generally reluctant to develop military space capabilities.<sup>170</sup> Insofar as the Federal Government promoted German activities in space, it was to increase the competitiveness of the German aerospace industry and close the technology gap with the rest of Europe and America, which could otherwise not be done due to the lack of military contracts.<sup>171</sup>

Germany did play an important role as a facilitator of European cooperation on military space activities, as well as with the United States. Germany had to straddle both sides of the Atlantic because its security and survival depended entirely on the United States and NATO. Still, its economic future lay with Europe and the Common Market. Germany's traditional security concerns ended with the Cold War and fundamentally changed with the signing of The Maastricht Treaty, as the EU sought to assume a greater role in international politics. Germany, one of the principal drivers of European integration, now had a European multilateral framework to exercise its foreign and security policy. That framework needed modern military space capabilities to fulfill its foreign and security mandate. Germany, with Europe's most advanced aerospace sector, was essential in developing Europe's military space posture.

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<sup>170</sup> Scheffran, "Space Policy and Missile Control in Europe," 86.

<sup>171</sup> Reinke, *The History of German Space Policy*, 134.

## Chapter 5: Conclusion

This study considers the conditions under which Europe's most powerful state actors developed their military space posture, from the origins of the space age in the Cold War, through the end of the Cold War and up to the turn of the century. The study employed a framework derived from the neoclassical realist literature to understand how and why similarly situated states in Western Europe vary in their degree of autonomy in the military use of space. The study explored leader decision-making and domestic factors that intervene systemic inputs and military space posture outcomes. This approach recognizes that external threats, the balance of power, and the structure of the international system affect strategic decision-making at the unit level but that those inputs are refracted through the beliefs, perceptions, and political considerations of national leaders and decision-makers who helm the state. Beliefs about national security interests, domestic political considerations, views on a country's role in the world, threat perceptions, and views on security relationships comprise a leader's strategic outlook. Strategic outlook is informed by prior individual experiences and values situated in the state's unique historical context. This approach builds on what Ripsman, Taliaferro, and Lobell refer to as leader images in their Type III model of neoclassical realism.<sup>1</sup>

One of this study's main findings is that national leaders matter when it comes to decisions about military space systems. Whether or not a state acquires a military space system, which provides the capabilities necessary to exploit the space domain for military and security purposes, often depends on strategic decision-making at the highest levels of government. Due to costs and potential effects on the balance of power and alliances, presidents, prime ministers, and chancellors personally engage in debates and decision-making about their country's military

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<sup>1</sup> Ripsman, Taliaferro, and Lobell, *Neoclassical Realist Theory of International Politics*, 61.

space programs. Leaders consider several factors in addition to external threats, perceptions, and inputs from the structure of the international systems. These factors include alliance considerations, such as NATO and U.S. relations, military requirements for specific security interests, and domestic political will.

However, this study's cross-country comparison reveals limits to the deterministic value of national leaders' strategic outlook. The salience of strategic outlook appears to depend on a country's political system and specifically on how much autonomy the national leader has on foreign, security, and defense policy matters. This study suggests that strategic outlook carries more weight as an intervening variable in France than in Germany or the UK. For example, French Presidents' inclination to pursue national independence and strategic autonomy with great conviction, regardless of political affiliation, suggests the country is a good fit for the analytic model set forth in Chapter 1. Gaullists and Socialists, namely François Mitterrand, made similar and consistent military space posture decisions over roughly 40 years, suggesting they shared a similar strategic outlook through which systemic inputs were refracted.

German Chancellors were more constrained in their military space posture decisions. The German Constitution placed greater restrictions on German Chancellors and granted greater independence to government ministries. Additionally, German foreign and security policymaking required coordination among political coalitions and ministries that were often led by members of different parties. Consequently, Chancellors were driven as much by their strategic outlook as by other factors, including domestic politics and alliance dynamics. In the UK, Prime Ministers also faced domestic political constraints, but not to the same degree as their German counterparts.

Regarding domestic factors, party politics, and national leaders' political disposition appear to have less bearing on whether or not they choose to support or oppose a particular military space program. At different times, Socialists and Conservatives supported and opposed pursuing greater military space autonomy in France, the UK, and Germany for different reasons. This finding suggests there were other domestic factors at play beyond party politics. Industry considerations likely contributed to decision-making on military space posture. Indeed, one element of domestic policy nearly all national leaders prioritized was the aerospace and high-technology industry.

The study suggests the importance of a country's domestic aerospace and high-technology industry in senior leader decision-making on military space systems. The space age brought an explosion of high-technology research and funding for advanced capability development, largely in the United States and the Soviet Union. European leaders wanted to preserve human capital and expertise to fuel the high-technology age and rebuild their economies after World War II. Space systems, both civilian and military, were means through which the Europeans could maintain the viability of their domestic industries. Just as in the United States and the Soviet Union, by the 1980s, the aerospace and high-technology sectors underpinned the civil, commercial, scientific, and security interests of the European powers.<sup>2</sup>

But space systems are expensive undertakings, and as this study shows, budgets constrained most European proposals for military space systems. However, budget constraints are insufficient to explain several major program failures considered in this study, including SAMRO, ZIRCON, and others. Budgets may have been a proximate reason to cancel a project. Still, another reason usually undermined the political consensus necessary to devote vast

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<sup>2</sup> Pekkanen and Kallender-Umezu, *In Defense of Japan*, 223.

resources to a military space program, either due to alliance politics or capability limitations. The study also examined cases when a country successfully developed a military space system, such as the UK's SKYNET 1 communications satellite, despite lean budgets. Yet, the findings remind us that national leaders are sensitive to domestic material and resource constraints, especially when facing decisions about military space programs, and consider dual-use technologies that serve military and civilian purposes.<sup>3</sup>

The *Ariane* program is an example of a dual-use capability that was ostensibly developed for Europe's civilian space programs but went on to fulfill military requirements. Despite *Ariane* and several successful commercial and scientific satellite programs, European powers achieved greater military space posture autonomy alone or by collaborating directly with select partners, not through institutions or European integration. Yet budget constraints for space system development fostered greater European collaboration and integration. Institutions and greater European integration resulted from the quest for military space posture autonomy. Unable to compete directly with American or Soviet spending, Europeans pooled their resources to collaborate on space efforts, multilaterally as with the European launcher and bilaterally as with the Franco-German communication satellite. But institutions such as ESRO, ELDO, and ESA lacked the centralized political authority to govern space program development. They were subject to the influence of the most powerful actors, chiefly France and Germany, the UK, and their respective national interests. Thus, while institutions played a central role in Europe's ascendance as a credible space actor in the commercial and science sectors, they had a more limited role in military space posture development.

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<sup>3</sup> Pekkanen, "Neoclassical Realism in Japan's Space Security," 772.

Finally, the three states considered in this country were situated in an international security context dominated by their relationship with the United States. The U.S. security relationship with Europe was exercised through NATO, but the study suggests that bilateral relations with each country also affected strategic decision-making on military space systems. Though each country considered in this study is a NATO member, they each have a relationship with the U.S. regarding security interests and military requirements. France and the UK, for example, maintained global interests and conducted military operations outside the scope of NATO's core mission. West Germany was entirely focused on the defense of its territory. Access to military space capabilities for different military requirements was often a key consideration in each country's bilateral security relationship with the United States. Thus, it is impossible to separate a state's decision-making on military space systems without considering the effects of their reliance on the United States for access to military space capabilities.

Changes in the balance of power in the international system, exemplified in this study as the end of the Cold War and the collapse of the Soviet Union, did not immediately translate to changes in European military space posture. France had already committed substantial resources to acquire HELIOS and, therefore, greater autonomy. France's experience in the Gulf War reinforced Mitterrand's desire for French and European autonomy. The structural shift from bipolarity to unipolarity had a negligible effect on French military space posture. France was committed to acquiring maximum autonomy, even if it had to do so through an institutional or collaborative approach, such as under the EU.

Similarly, the UK did not change its strategic approach to military space after the Cold War, even if it refined its method for financing and acquisition of the next generation of SKYNET satellites. Only Germany, newly unified and free from the immediate concerns of

defending its territorial sovereignty, gained a greater appreciation for the utility of military force and space capabilities. Following the country's experiences in the Balkan conflicts, Germany finally decided to develop a domestic satellite reconnaissance system, which it would share with France and the rest of the EU. Figure 5.1 depicts the changes in European military space posture relative to each country's degree of autonomy from the U.S.

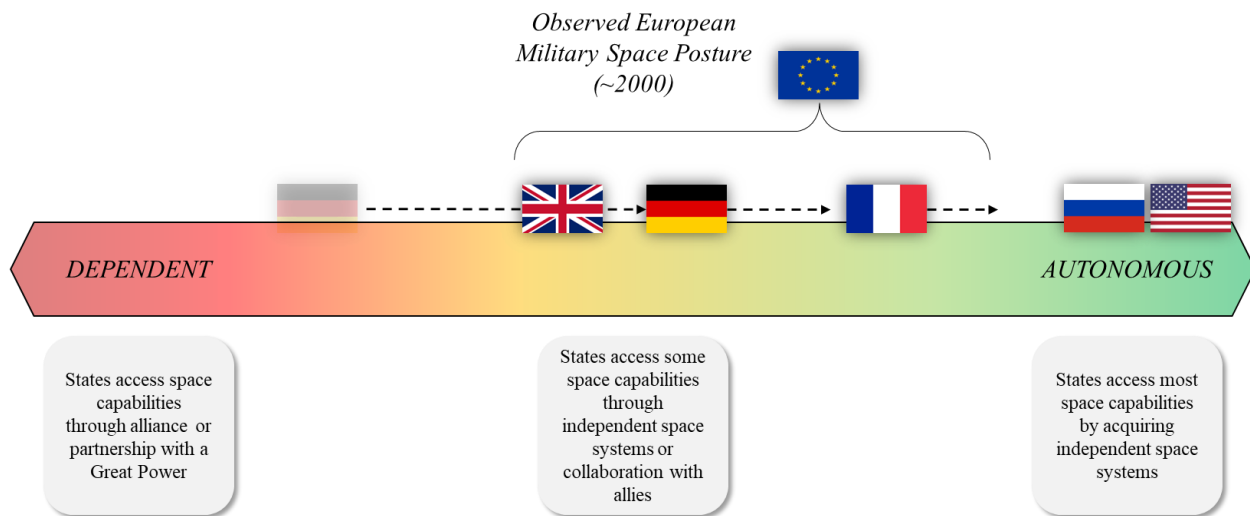


Figure 5.1 – Updated military space posture of European powers after the end of the Cold War

The historic cases reviewed in this study suggest additional conditions must exist to provide strategic utility for greater military space posture autonomy. The existence of a space-based military system and military space capabilities (such as satellite reconnaissance and communications), the presence of a sufficiently competent domestic aerospace and high-technology industry, and the existence of international institutions and alliances were all necessary but not sufficient conditions to develop military space systems in pursuit of military space autonomy. Additionally, budget constraints and access to U.S. space systems were not, by themselves, obstacles to military space system development. Leadership and strategic decision-

making, informed by military requirements and security interests expressed by the country's strategic outlook, have been the key factors furthering greater military space posture autonomy. The next three sections review the empirical findings of the historical case studies in France, the United Kingdom, and Germany.

## **France**

By the time Charles de Gaulle became President of the French Fifth Republic in 1959, the United States and the Soviet Union had ushered in the space age. Great power competition in the Cold War extended to space, as both superpowers sought to develop ballistic rockets capable of delivering nuclear warheads around the globe. De Gaulle envisioned France as a third pole to balance the U.S. and the Soviets by preserving national autonomy for strategic decision-making and independence of action. Thus, de Gaulle's pursuit of an independent nuclear deterrent, the *force de frappe*, and the attendant national rocket program underscored a "Gaullist" strategic outlook, which would color French military ambitions in space for the remainder of the 20<sup>th</sup> century.

France's ambition to become the world's third space power was rooted in de Gaulle's certain idea of France. Yet de Gaulle recognized that France could not compete with the superpowers on its own and would have to lead the Western European states to achieve independent access to space. France was a strong advocate for European collaboration on space launch vehicles and satellite technologies if France could control the agenda. European collaboration and integration were means for the French to achieve greater autonomy from the United States and the Soviet Union.

Eager to develop a three-stage launcher under the auspices of ELDO, de Gaulle solicited the UK Prime Minister, Harold Macmillan, to access *Blue Streak*. The UK ballistic missile could provide the basis for the *Europa* launch vehicle while allowing French engineers access to American rocket technologies upon which *Blue Streak* was based. De Gaulle's wish for a European launcher was partly based on his desire to acquire a credible nuclear deterrent. However, the French quickly recognized the utility of military space capabilities, especially satellite-based reconnaissance, to support the nuclear force and its targeting requirements. SAMRO, France's ill-fated first attempt at an autonomous military space reconnaissance capability, reflected the consistent principles of Gaullist strategic outlook because the satellite was intended to reduce France's dependence on whatever information and images the United States was willing to share.

Satellite communications also proved useful as France maintained overseas territories and residual security interests from its colonial legacy. Satellite communications could facilitate command and control of French forces around the world and spread French-language radio and television to spread French culture and perpetuate *francophonie* throughout the former French colonies, especially in Africa. But the American monopoly on space launch and satellite communications through the INTELSAT convention limited France's ability to develop an autonomous capability, further irritating the French. *Ariane's* successful launch in 1979 finally provided Europe with an autonomous capability that greatly expanded commercial and military satellite opportunities for Europe.

Insofar as Cold War bipolarity affected France's strategic outlook, the French Presidents were committed to maintaining a credible nuclear deterrent independent of the NATO command structure and U.S. control. SAMRO was initially envisioned as a complement to the French

nuclear deterrent to help achieve strategic autonomy and facilitate independent decision-making during crises. When Ronald Reagan announced SDI and the American plan to deploy space-based missile defenses, Mitterrand was the most vocal opponent to the prospect of weaponizing space. The French President rejected Reagan's vision of space-based ballistic missile defenses as science fiction and proposed EUREKA, the European alternative to harness the scientific and technological potential of such an endeavor, but without the military connotations.

But Mitterrand was most concerned about the prospect of the Americans developing a space-based ballistic missile defense capability that would effectively neutralize France's nuclear deterrent, rendering it and Europe more vulnerable to political and nuclear coercion. Thus, Mitterrand perceived a threat to France's security interests not from Soviet aggression but from American technological advancements. For the French President, opposing the American weaponization of space required a unified European political front, which ultimately proved difficult to organize given Margaret Thatcher's and Helmut Kohl's support for SDI. Mitterrand's inability to marshal unified opposition undermined European political institutions of the time from a security standpoint because European leaders perceived their threats and security interests differently.

Yet it was France's military intervention during the Chad-Libyan conflict at the behest of François Mitterrand, the Fifth Republic's first socialist President, that demonstrated the utility of satellite reconnaissance for conventional tactical military purposes. While Mitterrand attempted to revive SAMRO by seeking a bilateral partnership with Germany, the French aerospace industry developed SPOT, the commercial imaging satellite. So, when Mitterrand decided to pursue HELIOS, the military reconnaissance satellite, the French based their designs on

commercial technologies that helped lower the program's overall costs; France commissioned two HELIOS satellites for launch atop *Ariane* in the early 1990s.

When the Cold War ended and the Soviet Union collapsed, the perceived reduction in external threats to France and NATO did not have an appreciable effect on France's pursuit of an autonomous military space posture. The country already had an operational military satellite communication system in SYRACUSE (see Chapter 4), and the two HELIOS military reconnaissance satellites were already in production. If anything, France's participation in the Persian Gulf War reinforced Mitterrand's desire to reduce France's dependence on the Americans for satellite intelligence and imagery. When France launched HELIOS-1A in 1995, the European Union was ready for an independent European military satellite reconnaissance system as it struggled to manage the Balkan conflict. Jacques Chirac, the Gaullist French President who replaced Mitterrand in 1995, would continue to champion European strategic autonomy and benefit from France's greater autonomy in military space posture into the 21<sup>st</sup> century and the looming American-led conflicts in Afghanistan and Iraq.

### **The United Kingdom**

The United Kingdom emerged from World War II as a triumphant but diminished and effectively bankrupt nation. Following the UK's ill-fated effort to seize the Suez Canal in 1956, a kind of dying gasp of a once great power, the United Kingdom bound itself to the United States in its foreign and security policy from 1956 onward. Unlike French Presidents, whose strategic outlooks remained consistently focused on achieving greater autonomy from the United States, UK Prime Ministers centered their strategic outlook on the relationship with the United States.

UK Prime Ministers perceived nuclear threats caused by East-West tensions similarly to their American counterparts and pursued a nuclear deterrent and defense posture accordingly. Yet, based on the tenets of the “special relationship” with the United States, the UK approached space flight and resultant military space posture from deep pragmatism that sought to maximize capabilities at the lowest cost. Usually, that meant purchasing or obtaining access to superior American space systems rather than developing a less effective system at home, often at a greater cost.

There were exceptions to the UK’s willing dependence on American military space posture. Like France, the UK possessed overseas security interests that lay outside the core NATO defense and deterrence commitments. As a result, the UK developed Europe’s first military satellite communications system, SKYNET 1, in the late 1960s, despite its economic recession. The Labour Prime Minister, Harold Wilson, specifically pursued an independent military satellite communication system with U.S. support because it would help stimulate the UK’s aerospace industry. In the context of the global balance of power and external threats, domestic concerns informed Wilson’s decision-making on the military space system. A successive Labour government later canceled the next generation of SKYNET satellites following the UK’s withdrawal of forces from “East of Suez.” Yet, by the time Margaret Thatcher arrived at No. 10 Downing Street, the UK had commissioned the fourth generation of SKYNET military communications satellites, partly due to evolving technologies and partly due to rising East-West tensions stemming from the Soviet nuclear build-up in the late 1970s and early 1980s.

Thatcher, a Soviet hawk who developed a close partnership and a similar worldview as Ronald Reagan, entertained developing an independent military signals intelligence satellite

named ZIRCON after the Falkland Islands crisis of 1982. The brief conflict in the South Atlantic challenged the UK military, which was singularly postured to support NATO's defense of Europe. The Ministry of Defence had limited intelligence available to plan its operations and relied entirely on the United States for access to satellite-based intelligence. But even the United States, which supported the UK during the conflict, struggled to provide the UK with intelligence. The UK, it turned out, required independent military space systems to support its military requirements outside the NATO core.

However, Thatcher, through her strategic pragmatism, recognized that pursuing ZIRCON would be too costly for the UK, especially given the U.S. offer to collaborate on a trio of advanced military signals intelligence satellites in exchange for tasking rights. Like Helmut Kohl, Thatcher understood that the UK's security was tied to a close relationship with the United States. As a junior partner in the "special relationship," the UK would use its status in international forums and institutions, including the UN Security Council and the European Community, to advance American perspectives in exchange for a privileged status among America's European allies. Thatcher thus supported Reagan's SDI and the attendant scientific and high-technology research initiatives, even as she convinced the American President to reaffirm the U.S. commitment to nuclear deterrence. The UK's strategic pragmatism in the 1980s meant pursuing a military space posture complementary to the United States.

Throughout the Cold War, the UK had a tenuous relationship with the rest of Europe, especially in the space sector. Unlike Helmut Kohl, Thatcher was skeptical of European political and economic integration, even as the country pursued deeper ties with the bloc. Although the UK was an early supporter of greater European autonomy in space, security considerations due to threat perceptions meant following its withdrawal from ELDO and later ESRO. The UK

would be, at best, a token participant in European space programs. France and Germany consistently outspent the UK in ESA programs, which had the benefit of un-, or at least less encumbered, access to American space capabilities.

When the Cold War ended, the UK continued to pursue military space systems that complemented the “special relationship” with the U.S. The Persian Gulf War and military interventions in the Balkans demonstrated the importance of the close security and military relationship between the UK and the United States. Perhaps the biggest change in UK military space posture stemming from the end of the Cold War was how the country acquired its military space systems. The private finance initiative used to acquire SKYNET 5 reflected a new yet pragmatic way to acquire expensive space systems. The novel acquisition approach reflected the growing trends of space sector commercialization and democratization of access to space capabilities previously restricted to state actors.<sup>4</sup> These trends would change the nature of military space posture in the New Space Age.

### **The Federal Republic of Germany**

During the Cold War, the Federal Republic of Germany faced constraints on its foreign and security policy that France and the UK did not have to contend with, including limits on military power and rearmament. These constraints, which the Allies imposed on the Federal Republic after World War II, affected the country’s ability to pursue satellite and rocket technologies at the height of the Cold War. Unable to exploit the economic potential of military space programs, the Federal Republic embraced multilateralism for its economic and security

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<sup>4</sup> Pekkanen, “Governing the New Space Race,” 92.

interests. Germany sought greater political and security integration in Europe and NATO while pursuing science and exploration through ESA.

German Chancellors, beginning with Konrad Adenauer, believed that the Federal Republic could only achieve its security and economic well-being through greater integration with Europe, beginning with the Coal and Steel Community and eventually with the European Union. Regarding its security, German leaders clearly understood the importance of NATO and especially continued U.S. commitment to the defense of Western Europe. As a non-nuclear power at the NATO central front, the Federal Republic would be the main battleground in any East-West conflict, whether conventional or nuclear. Thus deterrence, underpinned by the United States' nuclear arsenal, was the primary security strategy favored by German leaders.

The strategic outlook of German leaders was thus remarkably consistent throughout the Cold War. West Germany had to deepen collaboration and cooperation on various economic and security initiatives with its European partners and the United States. Unlike for the French, for Germany, one could not come at the expense of the other. German leaders clearly understood they needed both European collaboration and U.S. security guarantees, sometimes at a great personal political cost due to general public opposition to militarism in Germany. For example, the Bundestag ousted Helmut Schmidt in 1982 when the Socialist coalition broke down in part due to a loss of confidence in Schmidt due to his endorsement of the NATO "dual-track" decision while pursuing *Ostpolitik*.<sup>5</sup> Popular opinion was strongly antimilitaristic during the late 70s and early 80s, often opposing greater security integration with NATO. The middle road

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<sup>5</sup> Bradley Graham, "Parliament Ousts Schmidt," *Washington Post*, October 2, 1982, <https://www.washingtonpost.com/archive/politics/1982/10/02/parliament-ousts-schmidt/6bcdcf8a-3dcd-420f-a092-bad8dacdc18e/>.

approach to maintaining the credibility of the Atlantic Alliance while deepening European political integration affected German leaders' decisions on military space programs.

Thanks to a relatively narrow view of security during the Cold War and the proximate threat from the East, the Federal Republic could ill afford to alienate the United States politically. Thus, Germany was often weary of European efforts to achieve greater autonomy from the United States in the space sector. While the Federal Republic endorsed an independent European space launch and communications capability through the *Ariane* and SYPMHONIE programs, it rejected European autonomy in the military dimensions of the space domain. France later approached Germany to resuscitate SAMRO and develop a bilateral military reconnaissance capability. Yet, German Chancellor Helmut Kohl cited the satellite's capability limitations and lack of work equity for German industry as reasons to decline collaboration, despite possessing a valid military requirement for such a system.

However, the broader security context and fears of U.S. retrenchment suggest Helmut Kohl had to consider the effect of a Franco-German military satellite reconnaissance program on the U.S. security commitments to European and, specifically, German security. Especially since the U.S. generally opposed European efforts to develop military space capabilities that would compete with those developed by American firms. Kohl's support for Ronald Reagan's SDI reflects a similar strategic outlook. Kohl worried that strong German opposition to SDI would unnecessarily antagonize the U.S. President and precipitate an American retrenchment behind a space-based ballistic missile defense system, leaving Europe vulnerable to nuclear coercion. A deeper investigation into German strategic decision-making during this time is thus warranted to uncover further primary source evidence that could support or refute these assertions.

Interestingly, the systemic changes brought about by the end of the Cold War and the rapid reduction in perceived threats to German security were the external stimuli that prompted a reinterpretation of security among German leaders that warranted the pursuit of a genuine autonomous military space posture. Once unified, Germany had met the political and economic commitments to the European Economic and Monetary Union set forth in The Maastricht Treaty. The country was better positioned to assert a more global and internationalist foreign policy through the EU. The Balkan conflicts exposed gaps between American and EU security interests, even as the Europeans relied on American support and military resources, including space capabilities, to manage the ongoing crisis.

Thanks in part to reduced threat perceptions and political and economic integration through the European Union, German leader reframed their conception of security and the utility of military force. The German strategic outlook changed to reflect a new vision for Germany as an important actor on the international stage, which was no longer entirely dependent on the United States for its security. Deterrence and territorial defense had given way to a new security paradigm that prioritized crisis management, conflict resolution, and humanitarian intervention outside Western Europe. The new security paradigm, in turn, required Germany and Europe broadly to pursue greater military space posture autonomy.

Germany fully realized the importance of independent military space capabilities and autonomy from the United States when German forces participated in their first combat operations since World War II during the NATO air campaign in Kosovo. By then, Germany had already begun working on its first military space system, SAR-LUPE. The SAR-LUPE satellites were the first steps towards an autonomous German military space posture that would provide German leaders with independent information and decision-making during crises in the 21<sup>st</sup>

century. Thanks to technological advances and the success of Germany's commercial aerospace, and industrial sectors, the cost of SAR-based reconnaissance satellites was no longer an obstacle to consensus in a German political environment that scrutinized defense spending.

The neoclassical realist framework proposed in Chapter 1 might carry greater explanatory power in the German cases, given a scope condition of a "unipolar" international system that characterized the post-Cold War era. The "bipolar" international system that characterized the height of the Cold War in the 1980s produced relatively high external threat perceptions against German territorial security. High external threat perceptions demanded that German Chancellors prioritize alliance politics and U.S. force stationing requirements over domestic or European military space posture considerations. In this view, the deterministic value of German Chancellors' strategic outlook about an expanded view of security and threats might carry greater weight in explaining Germany's trend toward greater military space posture autonomy after the Cold War.

### **Implications for European Security in the New Space Age**

The European trend toward greater military space posture autonomy after the Cold War reflected the convergence of security interests and outlooks among European leaders. Specifically, the European Union committed to developing the capacity to make independent security decisions and acquire the capabilities to conduct autonomous military operations without dependence on NATO or the United States. When European Union Member States ratified The Treaty of Lisbon in 2009, the bloc formally adopted the Common Security and Defense Policy (CSDP). The CSDP provided for the deployment of military and civilian missions under EU auspices for crisis management and peace preservation. The Lisbon Treaty

and CSDP also memorialized mutual defense provisions for EU Member States, reflecting a European alliance structure parallel to NATO.

As the EU integrated its foreign, security, and defense policies, Member States contributed military forces for EU missions. France and Germany integrated their military space postures into the European institutional security framework. Multilateral cooperation through the EU enabled Member States to pool their respective military space resources to multiply their capabilities cost-effectively. For example, the Multinational Space-based Imagery System (MUSIS) is an EU initiative that integrates France's optical military reconnaissance capability with Germany's SAR reconnaissance capability (through SARah, the replacement to SAR-LUPE) and those of several other Member States. MUSIS aims to produce a full-spectrum space-based intelligence and reconnaissance framework available to the EU for military operations and strategic decision-making.<sup>6</sup> GALILEO, the EU's global navigation satellite system (GNSS), is another example of the EU integrating space capabilities under an institutional framework to increase strategic autonomy and reduce the EU's dependence on the United States.

The increase in European strategic autonomy in the military uses of space came when Europe's security interests diverged from U.S. security interests after the terrorist attacks on 9/11. Following the attacks, the United States invoked NATO's Article 5 for the first time in the Alliance's history. All three European powers discussed in this study participated in American-led military operations in Afghanistan. Yet the schism between Europe and the United States over the latter's invasion of Iraq provided further justification for increased European autonomy in space. Of the three major European powers, only the UK joined the U.S. in Operation Iraqi

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<sup>6</sup> Christina Giannopapa, "Space Security Programs Worldwide: An Introduction," in *Handbook of Space Security: Policies, Applications and Programs*, ed. Kai-Uwe Schrogl et al. (New York, NY: Springer Science and Business Media, 2015), 723.

Freedom, reflecting the enduring strength of the “special relationship.” Meanwhile, France and Germany converged their strategic outlooks on European strategic autonomy.

This study’s review of the conditions under which the Western European powers pursued autonomy in their military space postures suggests that leader threat perceptions influence strategic decision-making. When leaders perceived threats to their state’s security, such as Germany and, to a lesser extent, the UK, during the last decade of the Cold War, they tended to eschew the pursuit of expensive and independent military space systems in favor of closer security relationships with the United States. In other words, the greater the threat to security, the greater the dependence on the United States, including in space. Indeed, the EU and the Western European powers did not fully embrace enhancing military space posture autonomy until the early 2000s. At that time, after more than a decade of relatively low external threats to Europe, the EU and its Member States had the maneuvering room to distance themselves from the United States politically and in terms of security interests. That meant the Europeans could pursue greater autonomy in military space without worrying about upsetting the Americans because the Europeans were less dependent on the U.S. for security.

In addition to the security considerations, threat perceptions, and strategic outlooks of individual European states, the EU’s expanding role as an international security actor in the 21<sup>st</sup> century suggests a greater influence for EU leaders, especially the President of the European Commission and the High Representative of the Union for Foreign Affairs and Security Policy. The President of the European Commission, elected by the European Parliament to a five-year term, leads the EU’s executive branch. Formed in 1958, the roles and responsibilities of the President of the European Commission have grown since the EU’s inception to encompass

greater authority in foreign and security policy, including representing the EU abroad along with the High Representative.

The High Representative is a relatively new position created to implement the EU's CSDP as part of The Treaty of Lisbon in 2009. The High Representative acts as the EU's foreign minister and leads the European External Action Service (EEAS), the EU's de facto foreign and defense ministry. In March 2023, the EEAS published the "EU Space Strategy for Security and Defence," reflecting the greater EU interest in the security dimensions of the space domain, previously the exclusive purview of sovereign states.<sup>7</sup>

While neoclassical realism prioritizes states as primary actors in the international system, there is no denying that the EU increasingly emulates state behavior regarding security interests and threat perceptions. Consequently, both the President of the European Commission and the High Representative possess a strategic outlook that, in conjunction with other "unit-level" factors, such as budgetary constraints, industry incentives, and legal authorities, refracts systemic inputs that shape defense policy outcomes for the EU, including in space. The question moving forward is how Russia's 2022 invasion of Ukraine affects the strategic outlook and decision-making of Europe's leaders, whether at the EU or in the capitals of the respective Member States.

### *The Russia-Ukraine War*

The unprovoked Russian invasion of Ukraine upended decades of peace and stability in Europe. As of this writing, it is the largest and costliest war in Europe since World War II. For

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<sup>7</sup> "JOINT COMMUNICATION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL: European Union Space Strategy for Security and Defence" (European Commission, March 10, 2023), JOIN(2023)9, Register of Commission Documents, [https://ec.europa.eu/transparency/documents-register/detail?ref=JOIN\(2023\)9&lang=en](https://ec.europa.eu/transparency/documents-register/detail?ref=JOIN(2023)9&lang=en).

all its support to Ukraine and talk of bolstering its military force, Europe has instead deepened its dependency on the United States and NATO for military power, logistics, and intelligence derived from military space systems.<sup>8</sup> Despite being the third largest aid provider to Ukraine, Germany appears to look toward Washington, D.C., rather than Brussels, for guidance and leadership on providing lethal aid to Ukraine.<sup>9</sup> Olaf Scholz, the SPD Chancellor, suggested he would only commit to sending several dozen *Leopard 2* main battle tanks to Ukraine if the United States committed to sending its own tanks.<sup>10</sup> Scholz was weary of drawing Moscow's ire and sought to nest German policy within a broader alliance effort led by the United States. The Chancellor's announcement reflects a strategic outlook that must balance Germany's political and economic commitments to NATO and the EU and the country's long relationship with Moscow. The German policy also parallels the Federal Republic's policies in the late Cold War period.

The Russia-Ukraine war has heightened perceptions of external threats to Europe's security. Europe's renewed dependence on the United States for security, including nuclear deterrence and defense, suggests the EU, and its Member States, will be less likely to pursue greater military space posture autonomy, especially in the emerging capabilities and active defenses pursued by the great powers. France may be a notable exception. Emmanuel Macron,

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<sup>8</sup> Steven Erlanger, "When It Comes to Building Its Own Defense, Europe Has Blinkered," *The New York Times*, February 4, 2023, <https://www.nytimes.com/2023/02/04/world/europe/europe-defense-ukraine-war.html?smid=nytcore-ios-share&referringSource=articleShare>.

<sup>9</sup> "Ukraine Support Tracker - A Database of Military, Financial and Humanitarian Aid to Ukraine," Kiel Institute for World Economy, January 15, 2023, <https://www.ifw-kiel.de/topics/war-against-ukraine/ukraine-support-tracker/?cookieLevel=not-set>.

<sup>10</sup> Steven Erlanger and Erika Solomon, "Germany's Reluctance on Tanks Stems From Its History and Its Politics," *The New York Times*, January 22, 2023, sec. World, <https://www.nytimes.com/2023/01/22/world/europe/germany-tanks-history.html>.

France's President, declared in 2019 that France would develop active defense measures in response to suspected Russian harassment of its military communications satellites.<sup>11</sup>

However, the Ukraine conflict has also shown the widespread use of commercial space capability providers for security purposes. For example, Ukraine, lacking a native military space posture, contracted with *ViaSat*, an American commercial communications firm, to obtain secure high-bandwidth satellite communications for the Ukrainian military.<sup>12</sup> Yet on February 24, 2022, *ViaSat* reported a massive disruption of its KA-SAT "consumer-oriented satellite broadband service," affecting thousands of customers in Ukraine.<sup>13</sup> The episode reveals the promise of greater commercialization and the attendant risks of space system disruption by other actors.

Greater commercialization of space systems and capabilities suggests that more state and non-state actors can exploit the space domain for security purposes. Once the exclusive domain of the superpowers, commercialization is lowering the threshold for smaller states and non-state actors to access space capabilities. As Brad Townsend discusses, pairing commercial satellite services with state-owned military space systems can increase redundancies for critical space infrastructure. It can also signal benign intent in space and promote deterrence by denial against would-be adversaries operating in the space domain.<sup>14</sup> However, the creation of military space forces and institutions in the United States, Russia, China, and France, among others, suggests the world's space actors will continue to seek more military space power as the world's dependence on space increases.

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<sup>11</sup> Macron, "Discours aux armées à l'Hôtel de Brienne."

<sup>12</sup> Clémence Poirier, "The War in Ukraine from a Space Cybersecurity Perspective," ESPI Short Report (Vienna, Austria: European Space Policy Institute, October 2022), <https://www.espi.or.at/reports/new-espi-short-report—the-war-in-ukraine-from-a-space-cybersecurity-perspective/>,

<sup>13</sup> "KA-SAT Network Cyber Attack Overview," ViaSat, March 30, 2022, <https://news.viasat.com/blog/corporate/ka-sat-network-cyber-attack-overview>.

<sup>14</sup> Townsend, *Security and Stability in the New Space Age*, 216.

*Limitations and Areas for Further Study*

However, this study is imperfect, and several empirical and methodological shortcomings limit its generalizability and explanatory power beyond the European context. First, this study focused on historical military space posture outcomes in France, the United Kingdom, and Germany. Several other European countries, including Spain and Italy, are active space actors that operate military space systems and share the institutional and alliance arrangements with the countries considered in this study. Though the dissertation suggests national leader decision-making and strategic outlook are important factors affecting the degree of military space posture autonomy, a more complete analysis warrants further study of military space posture in other European countries. Similarly, several regional powers that are space actors and U.S. allies exist outside Europe and NATO. For example, Japan, South Korea, and Australia possess robust national and military space programs and collaborate with the United States in the space domain. Each country is an opportunity to evaluate the merits of the neoclassical realist framework outlined in this study.<sup>15</sup>

Second, this study suffered from language barriers and limited access to archival records. The cross-case comparison among three countries necessarily limited the depth and scope of the analysis. Focused analysis into the military space postures of individual countries that combines deep archival research with interviews can offer a richer understanding of the factors affecting strategic decision-making. Additionally, the sensitive nature of military space systems means that many records about strategic decision-making and military space policy remain classified, precluding a more complete analysis of the conditions driving military space posture outcomes.

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<sup>15</sup> For a thorough neoclassical realist analysis of Japan's space security, see Pekkanen, "Neoclassical Realism in Japan's Space Security."

Finally, my personal biases as a U.S. Army officer are worth noting. I approach broad questions of strategy and the use of force from an American military perspective, which generally has a less constrained view of military force and its use for political ends. My American perspective also colors my personal views about the European Union, especially its role as a foreign policy and security actor. Although I did my best to represent empirical evidence faithfully, isolating the dissertation's findings from my inherent biases is impossible.

### *Whither the Space Forces*

When U.S. President Donald Trump announced the creation of the U.S. Space Force in 2019, he declared space as a warfighting domain and that the United States must achieve “dominance in space” to defend itself.<sup>16</sup> While several popular culture outlets satirized America's newest military branch, other countries noticed and followed suit.<sup>17</sup> For example, Macron announced France would reorganize the French air force into the French air and space force ( *l'armée de l'air et de l'espace* ).<sup>18</sup> In 2021, the United Kingdom established the UK Space Command, a Joint Command staffed with members of the Royal Air Force, Navy, and British Army, to oversee military space functions under a single military commander.<sup>19</sup> Later that year, Germany established a military space command center ( *Weltraumkommando der Bundeswehr* ) to monitor space debris and safeguard European, Allied, and commercial satellites in Earth's orbital regimes.<sup>20</sup> Military space forces, it seemed, were no laughing matter.

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<sup>16</sup> Trump, “Trump Directs Establishment of U.S. Force to Dominate Space.”

<sup>17</sup> Mark Yarm, “The General of the Space Force Has Heard Your Jokes,” *The New Yorker*, November 22, 2021, <https://www.newyorker.com/magazine/2021/11/29/the-general-of-the-space-force-has-heard-your-jokes>.

<sup>18</sup> Macron, “Discours aux armées à l'Hôtel de Brienne.”

<sup>19</sup> Ministry of Defence, “UK Space Command,” GOV.UK, June 23, 2021, <https://www.gov.uk/guidance/uk-space-command>.

<sup>20</sup> Elliot Douglas, “Germany Sets up Space Command Center,” *dw.com*, July 13, 2021, <https://www.dw.com/en/german-bundeswehr-sets-up-space-command-center/a-58250738>; “German Military

The move to establish space forces reflects a change in how states view the space domain. During the period covered in this study, states exploited space capabilities to pursue their security interests on Earth, whether to enable nuclear deterrence or provide timely intelligence to support decision-making during crises. However, in the New Space Age, states' security interests necessarily extend into the space domain. Rather than simply using space to advance interests on Earth, states are pursuing commercial and security interests in space, including sending astronauts to the Moon and Mars.

The Artemis Accords, a non-binding multilateral arrangement between the United States and 23 other states signed in 2020, sought to establish a framework for peaceful use of outer space, exploration of the Moon, and beyond.<sup>21</sup> Though the Accords build on the principles of the 1967 Outer Space Treaty, the lack of widespread adoption, notably by China, Russia, and Germany, suggests the future of space exploration will be characterized by competition rather than peaceful collaboration. Future research on military space posture and the military uses of space should consider how 21st-century leaders perceive their state interests in space in the context of great power competition and the New Space Age.

Seth Johnston argues the recent tensions between Russia and the West, compounded by Russia's invasion of Ukraine in 2022, have reinvigorated the debates about NATO's role, relevance, and importance in the 21<sup>st</sup> century, including in space.<sup>22</sup> As of this writing, France, the UK, and Germany appear to be pursuing national military institutions focused on military operations in space, suggesting a desire for greater national autonomy in the New Space Age. The challenge for Europe, which continues to find its footing as a global political and security

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Launches Space Junk Tracking System," dw.com, September 21, 2020, <https://www.dw.com/en/german-military-launches-space-junk-tracking-system/a-55002401>.

<sup>21</sup> "NASA: Artemis Accords," NASA, October 13, 2020, <https://www.nasa.gov/specials/artemis-accords/index.html>.

<sup>22</sup> Johnston, *How NATO Adapts*, 176.

actor, will be to reconcile the disparate security interests of its members on Earth with a coherent approach to space security interests in the future.

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