The Making of New ‘Space’—The Case of Transatlantic Astropolitics

SHENG-CHIH WANG

Ph.D. Student, Department of Political and Social Science, Free University Berlin, Germany

Abstract

What does space mean to Europe1 and the United States (US) in the context of transatlantic security community? Why do they simultaneously cooperate and compete2 in different space projects? More precisely, under what conditions do they adopt cooperative space strategy, and under what conditions do they compete? This paper attempts to establish two major claims in addressing these questions. First, Europe and the US have transcended tangible geographical constraints on their terrestrial territories and generated new geopolitical relations in space with advanced space technology. Second, the interaction between Europe and the US in large-scale space application projects, which I term the transatlantic astropolitics, reveals an instrumental rationality that both sides pursue interests with cost-effective calculation rather than with the norms of appropriateness and their collective identity. The wide-accepted notion of ‘transatlantic security community’ ignores the resurgence of geopolitical concerns in the transatlantic astropolitics. This paper provides a coupling between the studies of political geography and international relations (IR) on space issue area, and explores the phenomenon of geopolitical demarcation in space that emerges above the shrinking territoriality.

INTRODUCTION: POLICY, TECHNOLOGY, AND GEOPOLITICAL DEMARCATION OF SPACE

This section discusses the role of space, space policy, and space technology in modern geopolitics. The launch of Soviet Sputnik satellite in 1957 manifested the geopolitical prospect of space. Geopolitical exploitation of this new spatiality3 then entered the security concerns of the US and the Soviet Union. Space-related issues burgeoned in their policy agenda, large numbers of funds for space technology

---

1 Here I confine ‘Europe’ to the political institutions along with their member states in the European Union (EU), the European Space Agency (ESA), and the two ESA’s predecessors—European Space Research Organization (ESRO) and European Launcher Development Organization (ELDO), but not the broader historical or cultural meanings.

2 Competition and conflict refer to different connotations. While conflict typically means head-on confrontation between actors, competition implies parallel efforts, and the society can benefit from it. To wit, instead of destroying the opponents in conflict, in competition the actors only try to do better than what their competitors do. See Richard Swedberg, Principles of Economic Sociology (Princeton: Princeton University Press, 2003), 21.

3 I use the term ‘spatiality’ to refer to the spatial setting which has effects on human activities. The term ‘space’ in this paper is reserved for the outer space.
development were invested, and several space-based military systems, such as espionage and reconnaissance satellites, were under construction. The advanced space capability not only implies state’s relative security status and prestige of world leadership, but also serves as the key instrument to exploit and master this new geographical vacancy.

The structural change after the cold war, the increasing members of Space Club, and the popularization of civilian space technology make economic benefits and social welfare from space utilization (e.g. commercial communication, global navigation, and Earth remote sensing) the major goals of space policy and space technology development in space-faring states. However, these changes do not totally obliterate the very importance of security use of space. New types of threat, for example, international terrorism and global environmental problems, make it a difficult task for states to guard their territorial security. Advanced space technology can help states monitor these protean threats as well as develop the capability of security management from space.

The Meaning of Space to Europe and the US

Space, like land, sea, and air in the past days, serves as a new geographical vacancy not only for human exploration but also exploitation. Space technology makes the exploration and exploitation of this new spatiality possible. Space-faring states have transcended tangible geographical constraints on their terrestrial territories and generated new geopolitical relations in space with advanced space technology. Space may be physically infinite, but for space exploitation there are still constraints on several parameters that lead to bargaining over resources allocation. As a result, the new geopolitical relations can be characterized by the struggles for limited space resources and activity room, for example, geostationary satellite orbit and the ownership of space station. Geopolitical interests in space can be defined as the opportunities to achieve maximum action freedom, develop full space capacities, and seize pivotal positions and space resources. The essence of space activity is to pursue these interests with the most cost-effective means from limited options. The transatlantic astropolitics also reveals such instrumental rationality.

A cogent example occurred during the cold war, when the US enjoyed space supremacy and European dependence. Before the success of European Ariane launcher, France turned to the Soviet Union for launching the Franco-German Symphonie communication satellites in 1971, just because the US proviso for launch was that these satellites can only be used for experimental but no commercial

---

purposes, which seriously undermined European freedom of action and space capability development.

Besides, cooperation in space application project even occurred between the US and the Soviet Union, which denounces collective identity and shared norms as determinants of state’s space strategy. The first international human spaceflight cooperation—Apollo-Soyuz Test Project in 1975—not only represented US and Soviet convergent symbolic policy preferences to reduce the cold war tensions, but also satisfied their functional policy preferences that the US obtained firsthand glance of Soviet space capability and the Soviet Union ensured equivalent space technology and know-how to the US. The space cooperation between the US and Russia reached pinnacle by the inclusion of Russia in the International Space Station (ISS) project in 1993. The US even departed from its traditional policy guidelines of space cooperation to transfer NASA’s funds to Russia because the US needed the critical technologies and hardware of Russian Mir space station, and Russia needed US funds to operate its space programs. The marginalized ideological conflict indicates that rational cost-effective calculation is more common in the transatlantic astropolitics.

**Space Policy and Space Technology in Modern Geopolitics**

Since that space serves as a new geographical vacancy for human exploitation, geopolitical variables largely dictate the formation of space policy and the direction of space technology development. To explain the transatlantic astropolitics, it is important to study these geopolitical variables, including state’s (US) and institutional (Europe) sovereignty, pivotal position in space, and community identity.

Sovereignty can be defined as the exclusive authority and autonomy of a political entity on its own affairs. The impact of globalization changes the extent of European and US autonomy in space activities, but not their authority for space policy making. The transatlantic interaction in large-scale space application projects are principally conducted by the institutions of EU and ESA, their member states’ governments, and the US government. Space facilities and resources are for the most part under the disposition of governments and institutions. Europe and the US, as unitary sovereign actors, pursue interests with respective cost-effective space policy and corresponding space technology. Sovereignty remains a critical component of the transatlantic astropolitics.

---


To seize pivotal position in space implies the power to define space issues, to gain a greater share of space resources, and to master this new spatiality. Advanced space technology is the key instrument to facilitate state’s policy goal of seizing the pivotal position in space. Governments can focus resources to develop desired space technology. And the advanced space technology may offer greater flexibility and broader range of policy options than that were available in the past.\(^7\)

As to the community identity, the notion of “pluralistic security community” proposed by Karl W. Deutsch and subsequently developed by constructivist liberalism argues that the transatlantic interaction is guided by the ‘logic of appropriateness’ embedded in a highly institutionalized democratic community, which is underpinned by three principles: collective identity and shared democratic norms, intensive economic interdependence, and common security institutions (i.e. the North Atlantic Treaty Organization). This community, born from the cold war geopolitical rivalry with the Soviet Union, ensures its member states to interact on the basis of mutual trust, sympathy, and loyalty (we-feeling).\(^8\) However, it ignores the resurgence of geopolitical concerns in the transatlantic astropolitics. The goals of European and US space policy and space technology development are always to gain interests with their most cost-effective strategy. The collective identity between Europe and the US as a ‘pluralistic security community’ vanishes in the transatlantic astropolitics. These three geopolitical variables will be elaborated in the third section.

Geopolitics is a dynamic struggle among strong states who seek to seize new spatiality and organize it to fit their own interests. Therefore, the ascending European space capability makes the struggle between Europe and the US for the mastery of space the central part of the dynamism of transatlantic astropolitics. As the key instruments to pursue such mastery, the formation of space policy and development of space technology in Europe and the US are quite sensitive to the demands of different types of geopolitical interests.

**Essence of the Transatlantic Astropolitics: Pragmatic and Flexible Balance of Geopolitical Interests in Space**

---


Although globalization together with the rise of non-state actors decreases states’ autonomy and their representation as major actors on the Earth, space remains a state-dominated and geopolitically demarcated realm. The transatlantic astropolitics takes on a resemblance of terrestrial geopolitics, in which states’ geopolitical interests and struggle for mastery of space revive as principal components.

I argue that the strategic variation in the transatlantic astropolitics can be better understood in a strategic setting than from cognitivist emphasis on culture and identity. This strategic setting consists of preferences and beliefs of self-interested actors and the structural situation in which they interact.9 The configuration (game) of actors’ preferences and beliefs in a specific structural situation determine their strategy and the resultant outcome. As a result, different configurations of European and US space policy preferences10 and beliefs in different structural situations will generate variant strategies in the transatlantic astropolitics. This is the reason why Europe and the US cooperate in the ISS project but simultaneously compete for launch capability.

Strategic variation even occurred within single case. Europe initiated Galileo satellite navigation program in the late-1990s as an alternative to US Global Positioning System (GPS) because of the unreliable US data provision. The US opposed to Galileo program for signal interference (and jeopardizing its dominance, though tacitly), and asked Europe for continuous dependence on US GPS. Such interaction generated a deadlock, in which the US preferred European dependence but Europe preferred autonomy. However, the drastically increased security needs after the September 11 terrorist attacks in 2001 and the shortage of Galileo program funds changed the original structural situation, thereby altered their interest configuration to a co-adjustment game, in which Europe and the US judged cooperation more cost-effective to develop Galileo system as well as to counter-terrorism, and signed an agreement to ensure the complementarity and interoperability between their satellite navigation systems.11 This case clearly explicates that European and US space

---

9 Preference is actor’s ranking of possible outcomes. Belief is actor’s perception of others’ preferences. The structural situation refers to the environment of interaction, which is composed of available actions and an information structure that defines what the actors can know for sure and what they have to infer from the behavior of each other. See David A. Lake and Robert Powell, “International Relations: A Strategic-Choice Approach,” in Strategic Choice and International Relations, eds. David A. Lake and Robert Powell (Princeton: Princeton University Press, 1999), 8-11.


11 After three-year intensive negotiation, the EU and the US signed the “Agreement on the Promotion and Use of Galileo and GPS Satellite-Based Navigation Systems and Related Applications” at the end of the Summit held in Ireland on 26 June 2004, in which confirmed Galileo and GPS services will be fully compatible and interoperable. The full text of this agreement is available at
strategy is determined by their interest configuration and the specific structural situation in which they interact.

The practice of Europe and the US evinces the pragmatic and flexible balance of geopolitical interests as the guiding logic of transatlantic astropolitics. They always jockey or cajole each other with respective cost-effective strategies in order to gain a greater share of space resources. This logic is conspicuously demonstrated in their criteria for space cooperation. Europe has four major motives for space cooperation: the field is worth pursuing, the technology developed is critical to European industry, the savings of human and financial resources deriving from the pooling of efforts, and political advantage. And the US will cooperate only if its partners accept its four space policy guidelines, including clearly defined and independent managerial interfaces, no exchange of funds, distinct technical responsibility, and protection of sensitive technology. These criteria elucidate that the logic of rational cost-effective calculation is indigenous in the transatlantic astropolitics.

This paper treats space policy preferences, beliefs, and structural situations as independent variable, the interest configurations as intervening variable, and strategic variation as dependent variable. I focus primarily on the intensive interest bargaining proceeded in state- or institution-initiated large-scale space application projects, but exclude the plethora of transnational scientific cooperation for their intrinsic harmony of interests. This selection clearly amplifies the rationale of transatlantic astropolitics, and is so much that can be done in one paper.

The following section elaborates the corresponding geopolitical thoughts in three major IR theories, including realism/traditional geopolitics, neoliberal institutionalism/geoeconomics, and constructivism/critical geopolitics. The third section examines each theory with three case studies. This paper concludes with the significance of geopolitical interests in the transatlantic astropolitics, and indicates the malfunction of transatlantic collective identity in space.

INTERNATIONAL RELATIONS THEORIES AND GEOPOLITICAL APPROACHES: A SYNCHRONOUS DEVELOPMENT

This section firstly elaborates the geopolitical thoughts in three major IR theories, and secondly derives competing hypotheses about the causes of strategic variation (cooperation or competition) in the transatlantic astropolitics in light of the deductive logic of each theory in the strategic setting. Each theory contains various

---

theoretical approaches, so I elaborate only their shared analytic concerns.

The development of geopolitical approaches is approximately synchronous with the shift of analytic concerns of IR theories. This phenomenon provides a proper platform to couple the studies of IR and political geography (showed in Table 1).

Table 1: The Coupling of IR Theories and Geopolitical Approaches

<table>
<thead>
<tr>
<th>Phase</th>
<th>IR Theory</th>
<th>Geopolitical Approach</th>
<th>Shared Analytic Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>before mid-20th century</td>
<td>realism</td>
<td>geography-power approach, (traditional geopolitics)</td>
<td>linkage between geographical factors and state’s power</td>
</tr>
<tr>
<td>1970s</td>
<td>neoliberal institutionalism</td>
<td>political-economic approach, (geoeconomics)</td>
<td>linkage between the conquest of markets (by technological superiority) and economic benefits</td>
</tr>
<tr>
<td>after 1980s</td>
<td>constructivism</td>
<td>social constructive approach, (critical geopolitics)</td>
<td>the constitutive effect of norm, discourse, and identity</td>
</tr>
</tbody>
</table>

**Realism and Traditional Geopolitics**

Realism emphasizes relative power acquisition and regards competition as the normality of international relations. In order to survive in the anarchic international system, states always struggle for maximizing power and therefore possess conflicting interests. States cooperate only expeditiously to counter common security threats. Balance of power and bandwagoning are the patterns of international cooperation. Balance of power theory argues that states facing an external threat will align with the weaker side to prevent the threat from destroying them. States may also align with other strong states to balance a weaker power if it is deemed more dangerous. Contrarily, bandwagoning theory argues that states will align with the most threatening power because of the aggregate capabilities or geographic proximity.14

The analytic axis of traditional geopolitics is the relation of state’s power to the geographical setting. Traditional geopolitics at the international level also focuses on competition among major states in the international system.15 Natural resources, strategic location, and the ability of power projection are regarded critical elements of

state’s power and security status.

As above, realism and traditional geopolitics share the analytic concern of the linkage between geographical factors and state’s power. For realism, the linkage between geography and power resides in states’ ability to move power to influence or control desired territory which is deemed to be of strategic importance.\textsuperscript{16} From the nineteenth to the mid-twentieth century, geopolitical analysis also focuses on states’ strategic location and power projection. The British scholar Halford Mackinder’s argument of heartland, German scholars Friedrich Ratzel’s Lebensraum and Karl Haushofer’s study of political space organisms and structure, Swedish scholar Rudolf Kjellen’s Linnaeanization of state’s attributes, and US scholars Alfred Mahan’s sea power and Nicholas Spykman’s rimland are all representatives.

According to realism and traditional geopolitics, space nowadays is full of geopolitical significance, which implies that the state most able to occupy the pivotal positions becomes the dominator of space. Under this assumption, competing for space dominance is not only the key to maximize power in the Space Age, but the dynamism of the transatlantic astropolitics as well.

\textit{Neoliberal Institutionalism and Geoeconomics}

Neoliberal institutionalism, encompasses liberalism, regards cooperation as the normality of international relations and emphasizes the functions of institution\textsuperscript{17} on international economic interaction, especially in trade and finance issue areas. It argues that states’ interests are not inevitably conflicting because they pursue absolute-gains rather than relative-gains. States are utility maximizers but not power maximizers. Hence there are some issue areas in which states possess coincident interests. Besides, international institutions can provide focal points for states to identify common interests, and are effective to regulate states’ behavior. States compete only when they interact in a mixed motive situation, in which they judge non-cooperation or competition more effective to realize their interests than cooperation, and therefore have no incentives to establish relevant institutions.

Accordingly, international cooperation occurs under common interests and institutional arrangements. The more interdependent states are, the more common interests they can find to form agreements determining the rules of cooperation.


\textsuperscript{17} International institution includes international regime and international organization. They are not synonyms. International regime is defined as sets of principles, norms, rules, and procedures accepted by states, and it is issue-specific. International organization is an entity with capacity to act and respond to events, and needs not be restricted to a specific issue area. International organization is embedded in international regime, and international regime is performed by international organization. See Andrea Hasenclever, Peter Mayer, and Volker Rittberger, \textit{Theories of International Regimes} (Cambridge: Cambridge University Press, 1997), 10-11.
(coordination problem). But states sometimes fail to cooperate under international anarchy even when they possess common interests. The fear of being defected deters states from fulfilling reciprocal obligations (collaboration problem). International institutions are thus established to provide higher levels of regularity, improve information transparency, curtail the high transaction costs of cooperation, and stabilize the expectation of reciprocity. States choose and design institutions because they encounter problems that can be solved through institutional arrangements, and they expect the rewards from complying with these regulations. Besides, international institutions can constrain and shape states’ behavior to maintain cooperation even as they are challenged or reformed by their member states, mainly because the costs are much higher to create a new one.

Neoliberal institutionalism and geoeconomics gained theoretical power in the 1970s because several momentous international economic events occurred, for example, the 1971 collapse of the Bretton Woods monetary system, the 1973-1974 oil crisis, and the demands of the Third World for a New International Economic Order in the mid-1970s. These events unfolded great impacts of international economic issues on international politics that realism ignored. The growing importance of international economics has been matched by a corresponding decline in the value and importance of territorial conquest of states. The benefits (common interests) of economic cooperation among states greatly exceed that of military competition and territorial control. Since the 1970s state elites began to recognize that wealth is determined by their share of the world market in value-added goods and services. Complex layers of economic interdependency and institutions ensure that states can not act aggressively without risking economic penalties imposed by other members of the international community. Economic development through international cooperation is a much more attractive and beneficial strategy.

Following the collapse of the Bretton Woods system, the world has undergone a vast expansion of a volatile financial system based on major capital transfer cities.

---


Besides, rapid movements of capital, goods, labor, and services around the world have vociferously challenged the ability of states to limit transactions across and within their borders. The analytic axis of geoeconomics is the linkage between the conquest of markets and economic benefits by technological superiority. The most powerful state in the geoeconomic world is the one who has the ability to move goods, services, and information most rapidly and efficiently by its advanced communication and transportation technology from one point to another.

For neoliberal institutionalism and geoconomics, the major policy goal of states is the conquest or protection of desirable roles in the world market. Geoeconomic issues are spreading, and becoming the dominant phenomena in the central arena of world affairs. International institutions are therefore needed to determine the rules of international economic interaction. In sum, traditional geopolitics has been displaced by geoconomics, in which states pursue economic supremacy through institutional regulation with their advanced technologies. Under this assumption, the utilization of space implies spectacular emerging markets and comprehensive commercial interests. Self-interested states will adopt the most effective and profitable strategy to win these space-related markets.

Constructivism and Critical Geopolitics

The main objective of constructivist inquiry is to serve as an alternative to actor-centric rational-choice IR theories and as emancipation from dominant discourses, power structures, and ideologies. This objective of inquiry corresponds to that of critical geopolitics, which argues that geography is the discourses about the forms of the relation between power and knowledge. The analytic axis of critical geopolitics aims at emancipating our inherited geographical imagination about the world so as to make other geographical discourses possible. As a result, geopolitics should be critically reconceptualized as a discursive practice by which social actors spatialize (construct) international politics.

On international cooperation problem, both constructivism and critical geopolitics focus on social actors’ identity (i.e. role-specific understandings and expectations about self to larger social group and the world) and the cultural context in which they interact (e.g. understanding, experience, and language).

---

geopolitics emphasizes the narratives each party tells about itself and the other. Identities are constructed around popular memories, and groups invent and maintain identities by associating with particular places and the images such places communicate to larger audiences. Constructivism also argues that human capacity of learning has its greatest impact on how social actors attach meaning to the material world and how they know, experience, and understand the world. The term ‘learning’ can be defined as the ability of policy makers to adopt new interpretations of reality that are introduced firstly into the state political system and subsequently into the international level. This learning process is embedded in international institutions that produce intersubjective consensus among relevant actors.

According to this assumption, international institutions are more than the aggregation of rules and norms. They may enhance cognitive evolution. Cognitive evolution means that social facts are socially constructed by collective understandings of the physical world that are subject to authoritative political selection and thus to evolutionary change. Cognitive evolution is the process of innovation, domestic and international diffusion, political selection, and effective institutionalization of intersubjective understanding on which interests, practices, and behavior of governments are based. Arising from these shared needs, knowledge, and interests, institutional arrangements may contribute to a learning process that enhances the prospects for convergent state policies, which implies international cooperation.

For constructivism and critical geopolitics, common political action, that is, international cooperation, results from the extent to which a particular set of premises is shared within and among institutions, states, and other social groups. Under this assumption, European and US space strategy is determined by the extent of their collective identity and the regulative force of community norms as well as the compatibility of their discourses to spatialize space.

I then put these IR theories and geopolitical approaches in the strategic setting (showed in Table 2), draw competing hypotheses, and thereby examine their validity with the case studies in the third section.

---

Table 2: Strategic Setting and Deductive Logic of Theories

<table>
<thead>
<tr>
<th>IR Theory and Geopolitical Approach</th>
<th>Assumption</th>
<th>Structural Situation (IV)</th>
<th>Preferences and Beliefs (IV)</th>
<th>Interest Configuration (IntV)</th>
<th>Strategy (DV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>realism and traditional geopolitics</td>
<td>struggle for power; conflicting interests</td>
<td>under common threat</td>
<td>balance or bandwagon to ensure survival</td>
<td>expedient coincidence or assurance game</td>
<td>cooperation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>without common threat</td>
<td>power aggregation, relative-gains, and space dominance</td>
<td>security dilemma</td>
<td>competition</td>
</tr>
<tr>
<td>neoliberal institutionalism and geoeconomics</td>
<td>common interests in some issue areas; institutions as focal points of interests</td>
<td>harmonious interests</td>
<td>reciprocity</td>
<td>coincidence or assurance game</td>
<td>cooperation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mixed motive situation</td>
<td>prefer cooperation to competition, reciprocity assured by institutions</td>
<td>co-adjustment game</td>
<td>cooperation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mixed motive situation</td>
<td>prefer competition to cooperation</td>
<td>deadlock</td>
<td>competition</td>
</tr>
<tr>
<td>constructivism and critical geopolitics</td>
<td>constitutive effect of identity, norm, and discourse</td>
<td>clear identity, strong regulative norms, and compatible discourses</td>
<td>logic of appropriateness</td>
<td>meta-norms game</td>
<td>cooperation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ambiguous identity, weak norms, and competing discourses</td>
<td>try and error</td>
<td>norms game</td>
<td>effective strategy</td>
</tr>
</tbody>
</table>

According to this strategic setting, Europe and the US adopt cooperative space strategy, when:
1. they confront with common threats and tend to align expediently to counter that threat, thereby generate an expedient coincidence game or assurance game (realism/traditional geopolitics);
2. they possess common interests and expect reciprocal interaction, thereby generate a coincidence game or assurance game (neoliberal institutionalism/geoeconomics);
3. they prefer cooperation to competition in a mixed motive situation and establish
institutions to assure the reciprocal obligations, thereby generate a co-adjustment
game that help them move to Pareto-optimal in the original Prisoners’ Dilemma
(neoliberal institutionalism/geoeconomics);
4. they share clear collective identity, strong regulative force of community norms,
and compatible discourses about space, thereby generate a meta-norms game \(^{31}\)
(constructivism/critical geopolitics).

On the other hand, Europe and the US adopt competitive space strategy, when:
1. they interact in the environment without common threats and emphasize relative
power aggregation and space dominance, thereby generate a security dilemma
(realism/traditional geopolitics);
2. they prefer competition to cooperation in a mixed motive situation and no one is
willing to concede unconditionally, thereby generate a deadlock (neoliberal
institutionalism/geoeconomics);
3. they possess ambiguous collective identity, weak regulative force of community
norms, and competing discourses about space, thereby generate a norms game \(^{32}\),
in which effective strategies are more likely to be retained than ineffective strategies
through try and error process (constructivism/critical geopolitics).

ALLIANCE ABOVE THE CLOUDS: CASES OF THE TRANSATLANTIC
ASTROPOLITICS

This section discusses three large-scale space application cases in the
transatlantic astropolitics, including the competition between European Ariane
launcher and US launch vehicles, the multilateral cooperation in the US-led ISS
project, and the settlement of disputes between European Galileo satellite navigation
system and US GPS. The competing hypotheses developed above will be examined
with the case study findings.

Cutting the Umbilical Cord: French Gaullism and the Transatlantic Launch
Capability Competition, 1970s to Present

The French Gaullism (aims at restoring French independence and greatness
through continuous technological revolution), soon pervaded as Euro-Gaullism
(suggests more vigorous integration by pooling resources and talent to achieve
European independence from the US), provided the major impetus for the
development of European Ariane launcher and the subsequent transatlantic launch

\(^{31}\) A norm exists in a given social setting to the extent that actors usually act in a certain way and the
violators are often punished. And a meta-norm refers to that not only the violators of the norm are
punished, but those who refuse to punish the violators will be punished as well. See Robert Axelrod,
1095-1111.

\(^{32}\) *Ibid.*
capability competition. During the 1960s and 1970s, the US successfully controlled the access of almost all Western payloads to orbit. Throughout the 1970s, the US repeated assurance to launch European payloads, thereby dissuaded Europe from developing autonomous launch capability that would threaten US monopoly. However, the US strict proviso and high prices for launch made the US control over European access to space an increasing misgiving to European officials.

The unpleasant experience of 1971 Franco-German Symphonie communication satellites triggered Europe, upon French initiative, to develop autonomous launch capability. In August 1964, Western industrial countries signed an international agreement and assigned the regulative authority of international satellite communication to the Intelsat Organization, which was 56% owned by the US government. According to Article 14 of this international agreement, member states should not take detrimental actions to the Intelsat Organization (which implies US interests). The commercial use of Franco-German Symphonie communication satellites was regarded as a threat to the monopoly enjoyed by the US launchers and satellite makers. Although France and Germany firmly argued that Symphonie would not undermine US interests, their argument failed to be persuasive. France then dramatically turned to the Soviet Union for launching Symphonie, but the Soviet Union refused French request for fear of irritating the US. France and Germany had no choice but to go back to the US, who agreed to launch Symphonie, but stipulated Symphonie only to be used for experimental and no commercial purposes. From this bitter lesson, Europe learned the absolute importance of autonomous launch capability for its space interests. To wit, the European decision to develop Ariane launcher could be regarded as a declaration to cut the political and technological umbilical cord from the US.

After detailed inside-Europe bargaining and the management failure of ELDO and ESRO, European states merged these two organizations in 1975 to a single organization—ESA. The French-led Ariane launcher (France absorbed 63.9% and Germany 20.12% costs) was one of the three major optional programs at the beginning of ESA. The successful launch of Ariane on 24 December 1979 confirmed European autonomous launch capability and lifted US control over European industrial and commercial interests.

In 1980, a French-led European consortium formed the commercial firm Arianespace to market the Ariane launcher. With the rigid determination of France to pursue autonomous access to space, the US realized that it could no longer pursue the

34 Brian Harvey, *Europe’s Space Programme: To Ariane and Beyond* (London: Springer, 2003), 160.
most preferred outcome—confine Europe to depend on its launch vehicles. Therefore, the US shifted its strategy from the full-use of Space Shuttle to upgrade its expendable launch vehicles (ELVs) after the 1986 Challenger accident to regain the competitive advantage over Ariane launcher (the second preferred outcome of the US).

This case disconfirms realism and constructivism, and is seemingly consistent with the deductive logic of neoliberal institutionalism. The transatlantic launch capability competition is parallel efforts rather than threat of mutual destruction. Besides, the European security dependence and the cold war ideological conflict should sustain strong collective identity and community norms under constructivist assumption. However, Europe and the US still adopt respective cost-effective strategy in this case. The US strict restrictions on launch service, combined with the Euro-Gaullism and increasing European space capability, changed the original harmonious structural situation to a mixed motive one, in which the US preferred European dependence but Europe, particularly France, preferred autonomy because it judged developing autonomous launch capability was the only way to free Europe from US restriction and more cost-effective to realize European space interests. This interaction made their interest configuration a deadlock. No one was willing to concede unconditionally, and thereby lead to the continuous competition.

On the geopolitical variables, Europe was reluctant to cede its sovereignty of industrial, commercial, and space capability development to the US when it could not obtain satisfactory substitutions. In this case, to establish autonomous access to space was the most cost-effective strategy for Europe to seize pivotal position as well as industrial and commercial interests. The transatlantic community identity was obviously vanished in this case with the US strict restriction, Euro-Gaullism, and the French request to the Soviet Union. To sum up, this case corroborates that Europe and the US have transcended tangible geographical constraints on their terrestrial territories and generated new geopolitical relations in space with advanced space technologies, and both sides pursue interests with cost-effective calculation rather than with the norms of appropriateness and their collective identity.

Wrestle between Costs and Expectation: The Halting Cooperation in the International Space Station Project, 1980s to Present

The multilateral cooperation in the US-led ISS project can be regarded as a wrestle between huge costs and expectation of benefits. The benefits to use the ISS and the high degree of interdependence in constructing it generated clear common interests among the US and its partners. However, the ISS project experienced many crises throughout its development because it involved more than pure scientific cooperation. Developing a space station capable of human habitation was an
extremely expensive project, and raised several interest concerns in the US government before the signature of intergovernmental agreements in 1985. The first was about whether Europe and other partners had the technological capability to build sophisticated and reliable hardware because the US criteria for space cooperation avoid sensitive technology transfer. The second was about whether the US invitation would stimulate Europe and other partners to develop technological capability that might subsequently compete with the US.\(^{36}\) In order to attain Congress approval, NASA was keen to invite international participation to disperse the extremely huge costs. But the US State Department, Department of Defense, Commerce Department, Central Intelligence Agency, and Arms Control and Disarmament Agency all had interests in protecting US technology and were less willing to consider substantial international cooperation in the ISS project.\(^{37}\) Besides, the Congress intervention on budget also led to many squandering project redesigns, which undermined the partners’ interests and caused instability to cooperation.

Multilateral cooperation may also add the complexity to project design and management.\(^{38}\) Nevertheless, the expected benefits won this wrestle, and served as the common impetus of all partners to maintain commitment to cooperation. On the one hand, Europe and other partners could gain international prestige, the experience of space flight, and the access to US high technology. On the other hand, the US could obtain abundant economic benefits and remain its supremacy in space exploration. However, they still needed institutions to regulate the rules of cooperation and to assure the reciprocal obligations. As a result, they signed intergovernmental agreement and memorandum of understanding, and established a Multilateral Program Coordination Committee. This case denounces realism and constructivism, and is seemingly consistent with the deductive logic of neoliberal institutionalism. The multilateral cooperation in the ISS project was neither triggered by common threat, nor by the transatlantic collective identity. The interaction between Europe and the US made their interest configuration an assurance game, in which they possess coincident interests but need institutions to assure the fulfillment of obligations.

On the geopolitical variables, Europe and the US were reluctant to cooperate if their interests could not be realized through cooperation. In this case, cooperation was the most cost-effective strategy for all partners to seize pivotal position as well as industrial and commercial interests because no state could build space station alone. Finally, this case has nothing to do with the transatlantic collective identity because it


was obviously interest-based interaction between US and its partners, especially with Russia. Again, this case verifies that Europe and the US have transcended tangible geographical constraints on their terrestrial territories and generated new geopolitical relations in space, and both sides pursue interests with cost-effective calculation rather than with the norms of appropriateness and their collective identity.

**Rising Demand for Security: Settlement of the Transatlantic Satellite Navigation Capability Competition, late-1990s to Present**

Before European Commission and ESA initiated Galileo program, the US maintained a successful coincidence game, in which the US preferred European dependence on its GPS and such dependence was consistent with European space interests. However, the US Department of Defense unilaterally installed an artificial error called Selective Availability into civilian-use signal to deteriorate its accuracy for fear of potential antagonistic use. Such unilateral installation not only undermined the interests of worldwide civilian GPS users, but also diminished US reliability of satellite navigation data provision. The unreliable US data provision and increasing European space capability changed the transatlantic interest configuration to a deadlock, in which US tried hard to undercut European willingness to move ahead, but Europe judged developing autonomous satellite navigation capability more cost-effective to realize European interests.

Afterward, the September 11 terrorist attacks in 2001 and the shortage of Galileo program funds changed the structural situation again and generated a new interest configuration of co-adjustment game that made Europe and the US start to negotiate and redirect their competitive strategy to the complementarity and interoperability of their systems for the improvement of counter-terrorist capability.

This case is seemingly consistent with both realism and neoliberal institutionalism, but in different phases. The first phase is the development from successful to failed coincidence game under the deductive logic of neoliberal institutionalism. The breakdown of the transatlantic common interests in satellite navigation was mainly caused by the US unilateral installation of artificial error in its signal provision. When they encountered international terrorism, they identified common security interests under the prediction of balance of power theory, and started to align to counter terrorism. They finally signed an intergovernmental

---

39 The military-use signal (Precision-code) provides users with accuracies of 21 meters horizontally and 29 meters vertically. Under ideal conditions, the civilian-use signal (Coarse/Acquisition-code) can provide an accuracy of 20-30 meters horizontally, which is very close to the military-use signal. Therefore, the US Department of Defense installs SA to degrade the civilian-use signal to the accuracies of 100 meters horizontally and 140 meters vertically, thereby reduces the potential damage of hostile use. See Irving Lachow, “The GPS Dilemma: Balancing Military Risks and Economic Benefits,” *International Security* 20, no. 1 (Summer 1995): 126-129.
agreement to determine the rule of cooperation after three-year bargaining, which formed a neoliberal institutionalist co-adjustment game.

However, the realist assumption that relative-gains concerns impede states from substantial and sustained security cooperation fails to explain the integration of the two satellite navigation systems and the expected transatlantic intelligence sharing, though their strategic shift was triggered by the threat of international terrorism. The transatlantic satellite navigation competition is capability-based parallel efforts rather than threat of mutual destruction. Relative-gains comparison and power maximization are not the central concerns in the transatlantic astropolitics.

This case also disconfirms constructivism and demonstrates that security cooperation is contingent in the transatlantic astropolitics. Satellite navigation system is a dual-used (civilian/military) technology. As mentioned above, the European Galileo system was originally designed as an alternative to US GPS, because Europe was reluctant to cede the sovereignty of its airspace and security assurance to the unreliable US data provision.  

Europe judged developing autonomous satellite navigation capability more cost-effective to satisfy its security needs than continuous depending on US GPS. Besides, the European-Chinese technological exchange in developing Galileo system is considered a betrayal by the US, when the US adopted a technological containment strategy toward China.  

If their collective identity functioned well in this security-implicated case, Europe and the US should cooperate to develop Galileo system in the very beginning rather than triggered by the threat of international terrorism. This case proves that Europe and the US pursue interests in the transatlantic astropolitics with cost-effective calculation rather than with the norms of appropriateness and their collective identity.

CONCLUSION: RESURGENCE OF GEOPOLITICAL CONCERNS IN THE TRANSATLANTIC ASTROPOLITICS

This section provides a synthetic analysis of the three case studies and unveils significant characteristics of the transatlantic astropolitics—geopolitical interest as the major determinant of European and US space strategy, marginalization of security dependence and ideological conflict, and vanished transatlantic collective identity in space (showed in Table 3). The case studies explicate that European and US practice

---


in the transatlantic astropolitics is like an alliance above the clouds—mutable and without solid foundation. Europe and the US regard space as a critical source of interest and a symbol of technological superiority. Their interest configuration in specific structural situation determines the most cost-effective strategy to gain greater share of limited space resources and activity room.

Table 3: Geopolitical Variables and Characteristics in the Cases

<table>
<thead>
<tr>
<th>variables cases</th>
<th>Sovereignty</th>
<th>Pivotal Position</th>
<th>Community Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launch Capability Competition</td>
<td>effective</td>
<td>effective</td>
<td>ineffective</td>
</tr>
<tr>
<td>International Space Station Cooperation</td>
<td>effective</td>
<td>effective</td>
<td>ineffective</td>
</tr>
<tr>
<td>Satellite Navigation Capability Competition and Subsequent Cooperation</td>
<td>effective</td>
<td>effective</td>
<td>ineffective</td>
</tr>
</tbody>
</table>

- significance of sovereignty and geopolitical concerns
- vanished transatlantic collective identity
- marginalization of security dependence and ideological conflict; pragmatic and flexible balance of geopolitical interests in space

**Geopolitical Interests as the determinant of Space Strategy**

According to the three case studies, the interest-based theory—neoliberal institutionalism is more potent to explain the transatlantic astropolitics than power- or knowledge-based theories, which indicates that geopolitical interest is the major determinant of European and US space strategy.

Sovereignty and pivotal position in space serve as their major geopolitical
interest concerns in all three cases. In their launch capability competition, Europe recognized the importance of autonomous launch capability and developed Ariane launcher to retrieve its sovereignty over commercial and industrial interests from the US. In the ISS cooperation, the US tried hard to avoid sensitive technology and funds transfer to Europe, but transferred funds to Russia in exchange of Russian hardware and technology. In the satellite navigation case, Europe was reluctant to cede its air and space sovereignty to the unreliable US data provision and therefore developed its own Galileo system. These cases also explicates that vigorous space competition emerged not only between the US and the Soviet Union, but between the US and its allies as well. And the determinant of transatlantic cooperation and competition is their geopolitical interest configuration in specific structural situations.

Marginalization of Security Dependence and Ideological Conflict, and Vanished Transatlantic Collective Identity in Space

Constructivism emphasizes the functions of shared norms and collective identities embedded in the logic of appropriateness. Actors are imagined to follow rules that associate particular identities to particular situations, assess similarities among current identities, choices, and situations before action. The logic of appropriateness may change egoistic actors to more altruistic ones as well as lead to evolution of community, where actors identify the legitimate interests of each other and respect them in their decisions. With the proliferation of international cooperative institutions in world politics, the actors acquire more collective identities. This is also the assumption of constructivist liberalism about the sustainability of the transatlantic security community after the cold war.

The European security dependence on the US and the cold war ideological conflict between democratic and communist blocs should sustain strong transatlantic collective identity and community norms under constructivist assumption. However, Europe and the US still adopt strategy from respective cost-effective calculation in the transatlantic astropolitics. Several indications of the malfunctioned transatlantic collective identity can be found in all three case studies. Before the success of European Ariane launcher, France requested the Soviet Union for launching Symphonie communication satellites to maintain European commercial and industrial interests when it encountered US strict launch proviso. During the ISS construction, the US needed the critical technology and hardware of Russian Mir space station and therefore departed from its traditional policy guidelines of space cooperation to

---

transfer NASA’s funds to Russia as the expense. In order to achieve more effective development of Galileo satellite navigation system, Europe signed an agreement with China on technological exchange in Galileo program regardless of simultaneous US technological containment strategy toward China. To sum up, all three cases reveal the pragmatic and flexible balance of geopolitical interests to the structural situation as the determinant of the transatlantic space strategic variation, but not the security dependence, ideological conflict, and the transatlantic collective identity.

The Future Transatlantic Space Cooperation

The doctrine of ‘leadership’ is inherently ingrained in the core of US space policy. However, ascending European space capability successfully diminished European dependence on the US and countered the US ‘leadership’ doctrine with one of ‘autonomy.’ Europe gradually becomes an equal partner with the US in the transatlantic astropolitics. An equal partner indicates symmetry technological capability, interdependent contributions to critical path technology and infrastructure components, participation in systems and technical management, and shared project leadership. By the late-1980s, European capability in ELVs, telecommunication, Earth remote sensing, and space science were not only comparable to that of the US, but were commercially more successful. The US has to face the prospects of both cooperation and competition in its relations with Europe.

Space is coming down to Earth with human capability to utilize it. Increasing geopolitical concerns about space exploitation are integrated into states’ space policy and technology development. From the research findings of these cases studies, the freedom of sovereignty and the seizure of pivotal position in space play the determinant role for European and US space strategy, whereas the transatlantic collective identity vanishes. Pragmatic and flexible balance of respective geopolitical interests serves as the major dynamism of the transatlantic astropolitics. To make a bold prediction, the future transatlantic space cooperation will remain highly interest-guided, that is, contingent on the degree of coincidence of European and US geopolitical interests in space.

---

BIBLIOGRAPHY


Gourevitch, Peter Alexis. “The Governance Problem in International Relations.” In Strategic Choice and International Relations, eds. David A. Lake and Robert


Trachtenberg, Marc. “The Iraq Crisis and the Future of the Western Alliance.” In The


