

# The space war will not happen

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As its Giralducian-sounding title illustrates, this article is intended as a reference to the work of Thomas Rid<sup>1</sup>. Because war in the tradition established by Clausewitz involves the instrumental use of physical violence in the service of a political objective, Rid argues that talk of “cyberwar” in the past or present is inappropriate, and likely will remain inappropriate in the future. According to him, the notion is a misleading use of language because it obscures rather than sheds light on conflictual practices in the cyber environment: such practices act as *a substitute for open conflict* and help to keep violence below a certain “controlled” threshold – absence of human loss, in particular – and thus constitute a means of framing international relations, if not encouraging appeasement.

This reasoning could in part be reiterated concerning the space environment. While almost all of the uses of space are informational in nature, it presents, in the same way as cyber, features that “are prone to clandestine action and manipulation,” in the words of the 2017 *Strategic Review*<sup>2</sup>. As for satellites in orbit, if they have owners and operators, they have no mothers in case of an attack as the catchphrase goes.

Clausewitz’s threshold of war may seem implausible, but there has never been a shortage of doom-sayers prophesizing the inevitability of “Star Wars”. If they have found in Hollywood a mental and metaphorical foundation – to the point of giving its name to the strategic defense initiative of the Reagan years – their origin goes back to the beginnings of the “conquest of space” and traditionally opposes the *space warriors*, partisans of the development of “space weapons” as soon as possible, to the *space worriers*, convinced that this would be to condemn space to a cycle of mutually assured destruction because of the advantage attributed to the offensive over

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1. T. Rid, *Cyber War Will Not Take Place*. Oxford, Oxford University Press, 2013.

2. Ministry for the Armed Forces, *Defense and National Security Strategic Review*, October 2017, p. 72.

the defensive. When the latter considers that space must remain a “sanctuary”, the former is based on a quest for invulnerability. Even if the arguments and agendas are different, a shared and recurrent feature of these opposing discourses remains the possibility of the outbreak of a “space war” distinct from a war on Earth – when space rather reflects the fact that it does not transcend terrestrial political dynamics. The deterministic and obsessive link that is established with the question of arsenals – even if the “weapons” mobilized in the competition between powers are not necessarily always military – is also a point shared by these two positions.

At a time when the announcements of the advent of “space forces” in the world once again invite all kinds of fantasies, the objective of our reflections is to understand what conflicts in space really represent today by describing, first of all, the conceptual and practical impasse of space weapons, then by outlining the contours of space warfare such as it is imagined in the absence, to date, of any first-hand experience and finally, by offering a more nuanced and empirically tested threefold reading of the practices of rivalry and competition, or even confrontation, between nations in space.

### **1/ The problem of space weapons**

Space has been built and organized as a military terrain since the beginning<sup>3</sup>. It was born in the collective consciousness by appearing first of all as an environment through which objects transit whose vocation is not to remain in orbit. The ballistic missiles that appeared in the wake of the V-2 include an intermediate space stage, distinguishing them from space launchers. This explains why they are excluded from the scope of space law. This is even an essential point of the 1967 Outer Space Treaty, which limits the authorized uses – also called “peaceful” uses – of space: while the Moon and other celestial bodies are demilitarized, the only explicit prohibition appearing in the treaty with regard to the Earth’s orbit concerns the placement of weapons of mass destruction. If this amounts to authorizing the specific use of ballistic missiles, it also authorizes a “liberal”<sup>4</sup> interpretation that is now generally accepted, according to which the peaceful character corresponds to a “non-aggressive” activity and not to a “non-military” activity.

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3. This reading, now well documented, may seem counterintuitive. Indeed, the European experience is original in that it was structured around the scientific exploration of space, seen as both a unifying factor and a badge of identity. Even today, the Defense aspect of space appears to be the neglected part of European space cooperation. Other major space programs, starting with the United States, follow a different approach, mainly oriented by military needs. If the “space race” and then the “race to the Moon” are perceived by the general public as the focus of twentieth-century space efforts, they actually conceal the efforts undertaken in a secret but continuous manner to develop the military uses of space. See, for example, W. A. McDougall, *The Heavens and the Earth. A Political History of the Space Age*. Baltimore, Johns Hopkins University Press, 1985, and P. B. Stares, *The militarization of space. U.S. Policy, 1945-84*. New York, Cornell University Press, 1985.

4. Ministry for the Armed Forces, *Space Defence Strategy*, 2019, p. 15.

Space is thus also a place for the placement of objects used for military purposes. In the aftermath of *Sputnik* in 1957, the usefulness for the United States of having means capable of monitoring adversary activities from orbit was all the more accepted since it had already been under discussion for ten years. Indeed, the “preliminary design of an experimental world-circling spaceship”, which was also the name of the report produced under the aegis of the future RAND Corporation, had been the subject of work since 1946, through secret programs. The reason this study is so fascinating, is that it already describes the whole range of satellite applications which, by helping in decision-making and in the prevention of strategic surprise, will allow “the nuclear balance of power to function”<sup>5</sup>. In doing so, it prefigures the “tactical and operational” functions that have become central to the planning and conduct of operations in the theater of conflict (observation, electromagnetic eavesdropping, targeting, combat damage assessment, navigation, communications, meteorology, etc.). Thus, the military uses of space are ambivalent: on the one hand, military space appears to be the guarantor of strategic stability as an essential tool for reducing the risks of misunderstandings when under the threat of the ultimate “surprise attack”; on the other hand, it is also a factor in the enhancement of forces, contributing to capability to project conventional military power (but at the risk of making satellites prime targets).

This hypothesis, also anticipated by the RAND report, accounts for a third and final use. It is no longer a question of speaking of “militarization” *stricto sensu*, which refers to the strategic intelligence and support systems for ground operations described above, but of “*space weaponization*”, i.e. the deployment of “weapons” that can reach land-, air-, sea- or space-based targets. Even if we focus on a narrow definition (by nature), the field to be examined is very broad and of unequal importance, maturity and feasibility: it can contain systems specifically designed to hit targets on Earth from orbit, from space to space or Earth to space. The list is even longer in the case of “weapons by destination”, which any object in orbit may be implemented for, given the duality of technologies, the laws of space mechanics and the intrinsic fragility of satellites: for example, missile defense systems used for anti-satellite purposes (ASAT) or in-orbit rendezvous and proximity capabilities (debris removal, refueling, etc.). More broadly, it is the question of intent that must be highlighted: space surveillance methods can help improve transparency and trust, but they can also hide a “*dormant*” capability (such as an inspection satellite), it being understood that they are an essential prerequisite for conducting effective defensive and offensive operations. On the other hand, depending on whether the result intended is reversible

5. X. Pasco, “L’espace et les approches américaines de la sécurité nationale”, *L’Information géographique*, Vol. 74, n°2, 2010, p. 87.

(temporary) or irreversible (permanent), partial (producing only disruption) or complete (entailing full destruction), or ease of detection and attribution, the number of systems to be included under this heading can be reduced (by excluding, for example, certain modes of action relating to electronic warfare, laser blinding or cyber-attacks).

In addition to the difficulty of defining what a space weapon is, the instrumental and symbolic motivations behind the development of certain capabilities are often intertwined. This observation is reinforced by the fact that the technical and operational advantages appear in the most blatant cases to be difficult to discern and, in any case, not very competitive compared with more traditional and more effective alternatives. Finally, the confusion is often maintained and exploited by the actors themselves to justify their activities and denounce those of their rivals. Space-to-Earth weapons, which are a matter of hypothesis if not fantasy, continue to be a source of concern for a number of countries, often more out of a desire to follow the arguments put forward by Moscow and Beijing, than out of real understanding. As for the United States, while they denounce the fact that Russia and China “have weaponized space”<sup>6</sup>, they also maintain at the same time that it is impossible to define precisely what a space weapon is.

## **2/ From space war to “Star Wars”**

Despite this complexity, the tendency is too often to see the militarization and weaponization of space from an “all or nothing” perspective. What we refer to in this article as “Star Wars” is part and parcel of this binary logic and refers to a set of suggestive rhetoric and images, more or less deliberate and asserted, but which have become omnipresent in thinking about conflicts in space. Summarized simply, and even if the content may vary, “Star Wars” is structured around the idea that the absence to date of any apparent direct experience of a conflict beginning in space (or extending into this environment) is counter-intuitive, constitutes an anomaly, and therefore cannot be durable.

In the most sophisticated models, the theory may be both deterministic -- where space is inevitably destined to become a war zone – and which reveals a certain technological fetishism – “space weapons” are the first step in this direction. The risk of creating a self-fulfilling prophecy is real. Given the difficulty of grasping what space in general is in concrete terms, “Star Wars” can also refer to a method by analogy, i.e. reasoning that functions by extrapolation and is based on historical, strategic or geopolitical references.

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6. U.S. Department of Defense, *Defense Space Strategy*, June 2020, p. 1, 3.

In this perspective, a first widespread approach argues the immutability of “human nature”, that is to say that the existence of weapons and war can be explained by the intrinsically bellicose character of humanity, which applies to space in the same way as to land, sea and air. More fundamentally, it is the “march of History” that is referred to: the evolution of *seapower* and more particularly of *airpower* would reveal by analogy an inexorable tendency according to which the development of human activities in space will unavoidably fall victim to. The emergence of a layer of new applications focused on controlling space, and not only using it to operate in other environments, is already proof of this. A last variant, which is experiencing a revival following the creation of the American *Space Force*, maintains that space is called upon to play the role in world trade that is currently enforced by sea and that necessarily – to paraphrase Bismarck – space weapons “will have to follow trade”.

A second approach, more strategic in nature, focuses on the supposed military attractiveness of space-based weapons, especially those directed against Earth, whether associated with planetary strike or missile interception systems. Space, we hear repeatedly, is the “high ground”. While it is true that it occupies, spatially speaking, the position of overhang *par excellence* – although the measure is always relative – the formula as it is generally used does not merely repeat the seductive, albeit banal, logic of the “commanding positions” dear to the art of war. Its implications are more revolutionary in that it associates space with the “ultimate position” whose occupation provides a decisive advantage, thus becoming as desirable as the possession of the “ultimate weapon”.

In this, it is partly confused with a last approach, of geopolitical inspiration. Inspired by the tradition of Mackinder and Spykman, which translates into military terms as the “gravity well theory”<sup>7</sup>, this third form of analogy is traditionally contained in two axioms: “whoever controls the Moon controls the Earth” and “whoever controls the Lagrange points L4 and L5 (where the gravity fields cancel each other out) controls the Earth-Moon system”<sup>8</sup>. The issue was fully revised and refined by Everett Dolman in a work with neo-conservative leanings which, although it has marked research and oriented in part the American strategic production of the 2000s, has not been followed up, which somehow questions its importance: “Who controls low-Earth Orbit controls near-Earth Space. Who controls near-Earth space dominates Terra. Who dominates Terra determines the destiny of humankind”<sup>9</sup>.

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7. That is, the idea that the notion of topography also applies to space, with notably the same phenomenon of choke point as on Earth.

8. See for example G. H. Stine, *Confrontation in Space. Wars of the Future Will Be Fought in Space*. Englewood Cliffs, Prentice-Hall Inc, 1981, p. 55-61.

9. E. C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age*. London, Routledge, 2002, p. 8.

### **3/ Return to Earth**

Obviously, this reversal of priorities justifying “Star Wars” for its own sake, and not for its consequences on Earth where the real stakes are, is theoretically open to criticism. As a general observation on the inevitability of a conflict in space, it also appears to be of little use, even unusable, unless it is considered as an event that can occur in the short term. From this point of view, it is empirically invalidated. The obsession with space weapons obscures the restraint and caution with which states approach the issue. Although its importance is undeniably growing, the militarization of space – which must be understood as a global phenomenon and viewed along a continuum – has so far remained extraordinarily selective. While at the lower end of the spectrum, the militarization of space in the strict sense has long been known and accepted by (almost) everyone, weaponization at the other end of the spectrum has been confined to a few R&D programs, followed by occasional test campaigns, the history of which is well known: nuclear bombs in orbit, anti-satellite missiles and killer satellites. This does not mean that space is not a place of confrontation: three major realities deserve to be understood from this point of view.

#### **The choice of under-weaponization**

The first of these realities refers to what is called the *de facto* “sanctuarization” of space, a categorization that is empirically absurd and more normative than descriptive, which we prefer to replace with the more nuanced concept of “under-weaponization”<sup>10</sup>. In fact, this has never meant an absence of competition and is a concept that is hardly self-evident. The product of trial and error, this choice first developed in a negative way, due to a growing awareness of the undesired consequences that the unlimited use of space weapons could wreak. This learning of interdependency – “my behavior affects (and is affected by) that of others” – began with the conviction that in order to avoid a suicidal nuclear exchange, satellite espionage had to be tolerated, or even preserved from any interference. Indeed, targeting the relevant “national technical means” would have been tantamount to announcing the intention to launch a first-strike attack. This “nuclear learning”, centered on the balance of power on Earth, was subsequently coupled with learning of a more space-based nature, also known as “environmental”, based on the obvious unsustainability of a policy of unlimited military development in orbit (the persistent nature of the radiation created by an electromagnetic explosion at high altitude, the uncontrolled and exponential nature of the creation of long-lived debris...).

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10. G. Penet, *America in orbit, or the anomaly of the under-weaponization of space since the end of the Cold War. A reflexive realism analysis*. PhD thesis, University of Bordeaux, October 2017.

This dual legacy has remained limited, however. These interactive, irregular, and iterative processes have only ever defined which tools could be used and which others should be set aside, at least temporarily. And they have not been without backtracking. For example, three ASAT tests with interception of a target, resulting in debris generation, and carried out as demonstrations of power, have followed one another since the end of the Cold War<sup>11</sup>. These processes have never directly led to “establishing any formal international rules to control space weapons”. This failure can be explained by the fact that the actors have remained faithful to a primarily national conception of their security, convinced “that they are better off by arming, even if it means that the other side will arm, too”<sup>12</sup>.

A more positive, potentially more enduring form of under-weaponization has nonetheless emerged. This has to do with the understanding that space is, because of its encompassing character even more than its elevated position, a primary political and normative vector. If there is a final lesson to be drawn from the history of space, it is that the raw power relationship, which is one of constraint, matters as much as the manner in which it is expressed. In other words, in space, power, in order to be effective and at the risk of provoking resistance, must go hand in hand with the search for influence, that is to say the capacity to make one’s positions prevail on a basis that appears to be legitimate. It is therefore a question of formulating a discourse that is likely to be listened to and to lead others. This “hegemonic learning” – a notion which, according to Greek etymology, evokes a mixture of adherence to common values and well-understood interests – accounts for an approach to asserting and legitimizing power that is not only incompatible with the deployment of space weapons, but also makes their *raison d’être* obsolete.

Its implementation, in particular by the United States, can thus be presented as a continuation of *space dominance* by other means. The temptation to prefer short-term gains is of course never absent, and even constitutes a permanent tension, as certain episodes with European countries (from the Symphony satellite to the Galileo program) can attest. On the whole, however, a distinctive feature of the American approach lies in its unparalleled ability to organize and renew its efforts to be a structural power, that is, also a hegemonic one: there is no “leader” without “followers”. The *New Space* thus appears to be the latest incarnation of an old trend. The United States, eager to adapt its space initiative to the post-Cold War era, had already decided to practice a policy of unprecedented openness (invitation of Russia to participate in the International Space Station, deregulation of Earth ob

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11. With a first dramatic demonstration by China against one of its satellites in 2007, followed by a U.S. test the next year, then another by India in 2019.

12. M. M. Mutschler, *Arms Control in Space: Exploring Conditions for Preventive Arms Control*. London, Palgrave Macmillan, 2013, p. 168-169

servation and telecommunications, access to the GPS array, etc.) to better organize worldwide activity and to influence that of its allies, partners and possible competitors.

### **Preference for ambiguity**

The second reality concerns the preference among actors for ambiguous actions that are either complex to track, detect and attribute (interpretive dilemma) or at least aimed at limiting the thresholds for possible response or open conflict (response dilemma). This propensity towards a “grey zone” ambiguity – which results in a form of impunity, allowing certain countries to deliberately maintain a blur around their activities, which could increase the risk of miscalculation – is not specific to the space environment, but is facilitated and even amplified by certain aspects. Space is indeed an inhospitable environment that subjects systems and equipment to adverse conditions, especially since it is also partly a victim of its own success, especially on certain very busy “corridors”. Combined with its immensity and the impossibility of accessing the satellite *in situ*, this constraint makes it difficult to characterize with certainty the causes of any suspicious failure. In fact, it will never be possible to totally exclude the effect of the environment itself and thus to distinguish the intentional from the accidental, accidental events representing most incidents.

This is not insignificant at a time when the possibilities offered by *New Space* (miniaturization, electric propulsion, robotics...) are so great. The densification of orbits, which can lead to congestion, with for example the projects of mega-constellations of thousands of satellites, suggests an even more extensive revolution. It would be easy for an actor to more successfully conceal its intentions and actions by using discrete capabilities (camouflaged satellites or “nesting dolls”), modes of action with no visible physical damage or with delayed effects and which can target ground, communication and space segments equally well (jamming, laser blinding, cyber-attacks), or even “dual” means diverted from their primary civil, scientific or commercial use (sounding rocket, maintenance or logistics satellites).

The absence of a definition to date of what is or is not “unfriendly”, “dangerous” or “irresponsible” behavior does not help to frame this evolution, which is taking root in the landscape and extending to all fields, not only military, but also diplomatic and informational – if we are to believe the “narrative wars”, against a background of mutual accusations between large countries. This is all the more the case since the eventual multiplication throughout the world of powerful space surveillance systems, whether governmental or commercial, will not be the panacea we have been waiting for: although it may help to reduce uncertainties and even allow a form of “discouragement” – what the American strategist John Klein calls *space fo-*

*rensis*<sup>13</sup> – it will not, however, make the “fog of war” disappear, which is ultimately a matter of human psychology. In a space context made more complex by the increase in traffic and the evolution of technologies and practices that contribute to blurring the boundaries between civil and military, private and public, attribution, i.e. the identification of the origin, will remain more than ever a primarily political decision.

### Defense bonus

In this context, the third reality is that we simply do not know when, in a conflict, the space component can intervene or influence the course of events. At most, we can say that space warfare is currently only of interest in its relationship with the Earth, and can only be thought of as a “continuation of Terran politics by other means”<sup>14</sup>. From this point of view, the idea of “Star Wars” is curious, even dangerous, in that it could lead to subordinating strategy to tactics. It also leads to a reductionist posture, to the detriment of a more systemic and global understanding defended in this article. Through naivety, ignorance or informational bias, it fails to consider the possibility that the triggering element of a conflict may take place in another environment than space, that victory cannot be decided on the basis of space means alone and finally that space weapons are not the fantasized strategic *quick fix*.

This is problematic because, at least on the theoretical level, there is nothing to suggest that the hypothesis of a massive and devastating surprise attack, unleashed at the very beginning of a symmetrical high-intensity conflict, in order to deprive an actor of any possibility of using its space-based surveillance and support capabilities (observation, monitoring, telecommunications), is more likely than any other, nor that it serves as the sole frame of reference for thinking about conflict in space. Often referred to as a potential “space Pearl Harbor” since the alert launched in 2001 by the Commission to Assess United States National Security Space Management and Organization - also called the Rumsfeld commission -, this scenario owes its popularity to the construction of the “Chinese threat” as being more and more serious, especially since the ASAT launch of 2007. The generalization of the politics of “plausible deniability” and of the *fait accompli* aimed at establishing a favorable balance of power explains why it has remained relevant. Finally, it owes its strength of mobilization to the perception of a “vulnerability dilemma”, i.e. the idea that space as both a vector and a source of power is not only the Achilles’ heel of American power but also a Damocles’ sword.

13. J. J. Klein, *Understanding Space Strategy: The Art of War in Space*. New York, Routledge, 2019, p. 223.

14. B. E. Bowen, *War in Space: Strategy, Spacepower, Geopolitics*. Edinburgh, Edinburgh University Press, 2020, p. 3.

Another strategy, which could be qualified as “*counterspace-in-being*”, does appear to be possible<sup>15</sup>. This strategy takes into account the fact that strategic confrontation is not only a continual interaction, a dialectic of intentions and of intelligence, but is subject to constant change. In this context, an adversary may wish to continue to benefit from the advantages provided by space and, rather than a full-scale assault at the very beginning of hostilities, will on the contrary take the gamble of waiting for the right moment, in order to consolidate a gain in the course of the conflict and possibly tip a phase of the conflict in its favor. In the meantime, it will maintain its capabilities in a latent state or will only implement them in a graduated and proportionate manner.

This hypothesis starts from the observation that the military uses of space and thus the related dependencies are widely shared, and while being the object of an asymmetrical competition, are also part of a movement towards emulation<sup>16</sup>. It is supported theoretically by the idea that “defensive strategy is the stronger form of warfare in space”<sup>17</sup>. This is also supported empirically by developments centered on *deterrence by denial*, which consists in limiting the advantages that an aggressor could obtain from an attack by convincing him that it could not succeed or that it was not worth the effort since it would not prevent the service rendered by space from continuing<sup>18</sup>. The most promising avenue in this perspective – the most emblematic of the efforts launched today by the United States and, in a rather predictable way, probably also by China – is the deployment of alternative and resilient space architectures known as “disaggregated” (low earth orbit constellations).

### **What are the implications?**

If, as this article maintains, *the space war will not happen*, then the urgency seems less to prepare for it, than to manage and channel the potentially destabilizing tensions that already pervade the space environment. At the international level, this implies a deeper understanding of the risks that could be created by a gap between discourse (i.e., legitimacy) and action (i.e., constraint), which could lead on the one hand to demonstrations of force embodied in intimidation, and on the other, to a “dissuasive posture” that includes the threat of retaliation (*deterrence by punishment*) in an excessively disproportionate or unbalanced manner. At the national level, this is a question of concentrating efforts on factors that one can be certain of impacting.

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15. *Ibid.* p. 228-229.

16. China is in fact today the second military space power in terms of the number of satellites in orbit.

17. J. J. Klein, *Understanding Space Strategy*, *op. cit.* p. 30-31

18. P. Swarts, “Loverro: defense is the best deterrent against a war in space”, *Space News*, October 14, 2016.

In the face of growing threats and the announced risk of congestion – for which there are no levers of action and which come up against opposition by third parties – resiliency, which depends only on oneself and allows one to envisage the future over the long haul, is undoubtedly one of the priority areas of focus. The paradox of this point of view is that the actions seen as non-escalatory, undertaken in this direction by the major countries (constellations, responsive launch capabilities, etc.), can also contribute to the technological and strategic marginalization of France and Europe if they are too slow to mobilize the necessary resources. At a time when Brussels and Paris are displaying new ambitions, it is imperative to develop the protection and resilience of our space capabilities by taking advantage of the opportunities offered by *New Space* and preparing for future transformational developments in new space architectures.