

# The Challenges of Russian Militarization in Outer Space

by *Stefan Cako*

## Resumé

Den ständigt växande användningen av satelliter från USA har även lett till ökat beroende av dem för viktiga områden som täcker militär underrättelsetjänst liksom allt fler civila områden. Detta har inte gått obemärkt förbi, då samarbetet mellan Ryssland och Kina intensifieras genom att samla ihop resurser och vetenskaplig expertis för och kunna undergräva och utnyttja dessa tydliga sårbarheter i rymden. Samtidigt som de framgångsrikt för fram ett effektivt narrativ om att stödja fred i rymden och icke-militarisering. Artikelnen utvärderar det ryska hotet i rymden i skenet av den ökande användningen av ryska gråzonsoperationer och sårbarheter för amerikanska och andra aktörers satelliter. Således sårbarheten för just sådana aktiviteter vilka inom en snar framtid kommer att omfattas av att allt fler diffusa aktörer kommer att nyttja rymden i samband med pågående kommersialisering av densamma.

THE CONTINUOUSLY GROWING dependency of the United States on satellites for vital areas covering military, intelligence and even civilian use has not gone unnoticed. Russian and Chinese cooperation is intensifying through pooling resources and scientific expertise in order to undermine and exploit the clear vulnerabilities in space while propagating an effective narrative on endorsing peace in space and non-militarization. This article assesses the Russian threat posed to outer space in light of the increasing use of Russian grey zone operations and the susceptibility of the U.S. satellites to such activities in the near future.

## The Development of the Russian Space Forces

The collapse of the Soviet Union heralded the first iteration of the Russian Space Forces with its initial formation in August 10, 1992. It was initially assigned the responsibilities of oversight for space launch, space defences

and long-range radars. Already by 1997 it was dissolved into the Strategic Missile Troops and then reformed once again in 2001. Only to be finally dissolved again in 2011 and replaced by Russian Aerospace Defence Force. This lengthy chain of events represents responses to what was perceived as offensive strategies by the U.S. at the time, such as the operations in Yugoslavia and Afghanistan to name a few. By 2015 it was merged with Air Force in order to focus on a wide Aerospace theater (air, space and missile) as they were growing closer and were subsequently afflicted with overlapping tasks. This final reform is vital as it represents a coherent and unified theater and has become the norm since then, effectively shedding the old lines that created divided theatres headed by multiple actors in order to instead opt to successfully intertwine them.

Announcing the merger in 2015, Russian Defence Minister Sergei Shoigu said the merger “makes it possible [...] to concentrate

in a single command all responsibility for formulating military and technical policy for the development of troops dealing with tasks in the aerospace theater and [...] to raise the efficiency of their use through closer integration.”<sup>1</sup>

The website of the Russian Ministry of Defence features a section on the Russian Space Force where it states it holds the responsibility to solve a wide range of tasks and then proceeds to list what it identifies as the main ones:

- Observation of space objects and the identification of Russian threats in space and from space, and, if necessary, the parry of such threats.
- Providing top management with reliable information about the detection of ballistic missile launches and warning of a missile attack.
- Launching spacecraft into orbits, controlling military and dual-use (military and civilian) satellite systems in flight and the use of some of them in the interests of providing the Russian Federation troops (forces) with necessary information.
- Maintaining the established composition and readiness for the use of satellite systems for military and dual-use, their launch and control means and a number of other tasks.<sup>2</sup>

## Launching Geopolitics into Space through Astropolitics

Much like geopolitics, astropolitics, while serving as the extension of grand strategy between states, finds itself similarly overused with diminishing explanatory power. One of the first attempts to remedy this is the will-to-space-based-hegemony theory dubbed as astropolitik. The man behind it, Carl Dolman Everett, is a firm realist with

suspensions of the possibilities for sustained political and economic cooperation, meaning that the Clausewitz dictum that war is a continuation of political discourse by other extreme means applies. Astropolitik, like its inspiration realpolitik, is hardnosed and pragmatic in the same spirit. However, this does not necessarily outright project a future with applied violence in space. Dolman instead suggests a possible realist-liberal synthesis, utilizing the common goal of deterrence and democracy, in order to achieve an economically robust and peaceful exploration of outer space by humanity. This is achieved by shifting the dispute of the role of military forces to shaping social and political institutions and is the ultimate contribution of astropolitik.<sup>3</sup> Most of the criticism tends to target the assumptions of the theory and with good reason, as it is the weak point. Dolman draws on human history, highlighting the domination of the seas and argues that militarization of space, while inevitable, is just the means to an end.<sup>4</sup>

As long as astropolitik controls space it is necessary in order to reverse the current international malaise and enable an efficient way to engage in space exploration.<sup>5</sup> This assumption relies on the actor securing the LEO (low-Earth orbit), becoming unchallenged in space with, at least enough, benevolence in the long term. Effectively also setting the stage for asymmetrical rationales in the short term, if not longer depending on framing the control of space as a public good. Under these conditions the only valid option according to Dolman is the United States--only it can guide humanity through upholding liberalism and free market principles.<sup>6</sup>

Havercroft and Duvall evaluate the dangers of these assumptions through their critical perspective of astropolitics. They identify an entrenchment of asymmetry among the

nations, as the result of this domination would render all relationships hierarchical with the imperial hub at the top.<sup>7</sup> The ramifications of dominating the entire globe from above would also eliminate all the effective means of resistance used against land-power occupations, consequently, rendering a bio-political control turning all inhabitants into “bare life”.<sup>8</sup> The likelihood that such an imperial centre would be benevolent, let alone uncorrupted in its total domination of earth, is improbable to say the least.<sup>9</sup> The proverb “power tends to corrupt; absolute power corrupts absolutely” rings true here, more so than ever before perhaps.

Havercroft and Duvall also lift an alternative they label liberal-republican astropolitics by Deudney that start with a similar premise. It deviates from the aim of designating the right monopoly and aims to establish the issue as a collective problem instead. Through continued cooperation and utilizing technologies, such as spy satellites to monitor and ensure all actors abide by treaties, Deudney argues for an over-time effect of “forging missiles into spaceships”. The crucial point is solving the security dilemma through the development of co-binding security without sacrificing sovereignty.<sup>10</sup> This symmetrical binding of units does on the other hand assume that no unit can come to dominate the others, in effect ignoring power and the asymmetrical relations structures that will exist in reality. States will always have their own aims amidst disproportionate balance of powers.<sup>11</sup> The effect of this has already begun to manifest in space.

With the theoretical foundation laid by these authors, a more modern take on space reflecting the great power competition is facilitated. Bowen dismisses some of notions Dolman presented, such as viewing space as a new ocean and cautioning against outright accepting a single hegemony in space.

He instead opts to define spacepower as a separate part of modern strategy and examine it with the wisdom of famous military theorists, such as Clausewitz. His reasoning behind this lies in how decision makers for space will not have the luxury of waiting until after a conflagration in space and therefore need the tools for solving these problems in advance. The purpose of these tools is to help frame analyses rather than outright questions such as how to win wars. This is primarily achieved through his seven propositions of spacepower theory. He ultimately constructs a spacepower theory as a coherent whole while discussing and critiquing existing theories in order to mix or augment them into his pedagogy.<sup>12</sup> This leads to the increasingly problematic situation the world is currently facing with the great power competition reaching to include outer space.

## The Sino-Russian Joint U.N Proposal

With Russia recognising their clear disadvantage in aerospace and the outer space beyond it, arose the determination to remedy this. These measures have included the reforms discussed above, development of technology with missiles and rockets capturing the most attention.<sup>13</sup> And finally, the cooperation with another major power sharing some of its goals, as famously advocated through the Russian multipolarity notion, perhaps best embodied by Alexander Dugin as a guest lecturer in Shanghai.<sup>14</sup> China has not been idle when it comes to expansion into the dimension of space. It has had a long-standing cooperation with Russia on space (Su 2010: 84).<sup>15</sup> This cooperation is not limited to outer space alone and at the time of this writing, the Sino-Russian relations are stronger than ever as seen with the

recent Russian decree announcing the year of scientific cooperation.<sup>16</sup>

China has been particularly active in the last four years when it comes to outer space. The PLA Strategic Support Force is seen as a technological juggernaut with space warfare included among its wide and comprehensive arsenal. Much like Russia, the space dimension is just one of many areas that China has been pouring vast resources into. It is part of a larger drive, with efforts undertaken in big data, blockchain, artificial intelligence, and quantum computing, with the aim of surpassing the U.S. as seen with the blue water navy ambition for example.<sup>17</sup> While China is still seen as a new actor, they have quickly assumed a leading role in space.<sup>18</sup> With the Chinese companies LandSpace, LinkSpace and OneSpace already acting as growing suppliers,<sup>19</sup> and more recently completing the launch of the final satellite for the Beidou network on time, despite the Covid-19 effects. With the primary feature of enabling a GPS coverage of their own.<sup>20</sup>

The most vital point of cooperation between China and Russia is the promotion of the so called “peaceful purposes principle in outer space” and part of The Draft Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects, proposed by Russia and China.<sup>21</sup> The treaty is based on a continuation of the UN treaties from the 1960 and 1970 on preventing weaponization of outer space amidst the cold war.

At the time of this writing it is still being discussed with its progress grinding to a halt for years due to the refusal of both the U.S. and the EU to sign it. The objections stem from inadequate definition of space weapons and conveniently overlooking the entire class of weapons relating to anti-satellites.<sup>22</sup> The standstill this situation represents allows Russia and China to both create a narrative

as the actors promoting peace together.<sup>23</sup> That further allows them to harshly censure the Western powers from not reciprocating and more importantly lambast any attempts towards reacting defensively, or at all, towards any developments in outer space.<sup>24</sup> One example of this is seen below with Putin reacting to the creation of the U.S. Space Force:

”The U.S. military-political leadership openly considers space as a military theater and plans to conduct operations there,” Putin said at a meeting in Sochi with defense officials, citing the recently created U.S. Space Force. ”The situation requires us to pay increased attention to strengthening the orbital group, as well as the rocket and space industry as a whole.”<sup>25</sup>

This comes in the context of how the U.S. Defence Intelligence Agency has warned through a report earlier this year that both the nations of China and Russia have developed “robust and capable” space services for intelligence, surveillance and reconnaissance.<sup>26</sup> Combine this with how the Outer Space Treaty of 1967 was not any newly emerging universalism, it was rather a manoeuvre by the U.S. to check for Soviet expansion; generating a disconcerting development.<sup>27</sup> To understand the underlying importance of this, one needs to recognise the vulnerabilities that the U.S. satellites are exposed to today.

## The Advent of Space Pearl Harbor

Weichert assesses in “Preparing for a Russian Space Pearl Harbour” the vulnerability of the U.S. satellite constellations in relation to the overreliance of them across all activity comprising both military and non-military.<sup>28</sup> This includes everything from military communications, to early missile warning systems, intelligence and even civilian banking

transactions and other infrastructure. In terms of numbers, seventy percent of the army's major weapons and equipment rely on satellites to operate.<sup>29</sup> Similarly, each Army brigade requires at least 2,500 PNT (positioning, navigation, and timing) devices and 250 satellite communications terminals to operate.<sup>30</sup> Weichert asserts that taking the satellites constellations out of commission would successfully render the U.S. military "deaf, dumb, and blind". As it heavily relies on the instantaneous communication and coordination provided by the satellites, meaning it presents a lucrative opening for a resurgent Russia that holds grand geopolitical ambitions despite being militarily weaker.<sup>31</sup> The magnitude of the threat combined with the swiftness of its application has been summarized by the former Secretary of Defence Donald Rumsfeld as "Space Pearl Harbor".<sup>32</sup> This concern was overshadowed at the time, in no small part due to the September 11 attacks taking place later the same year.

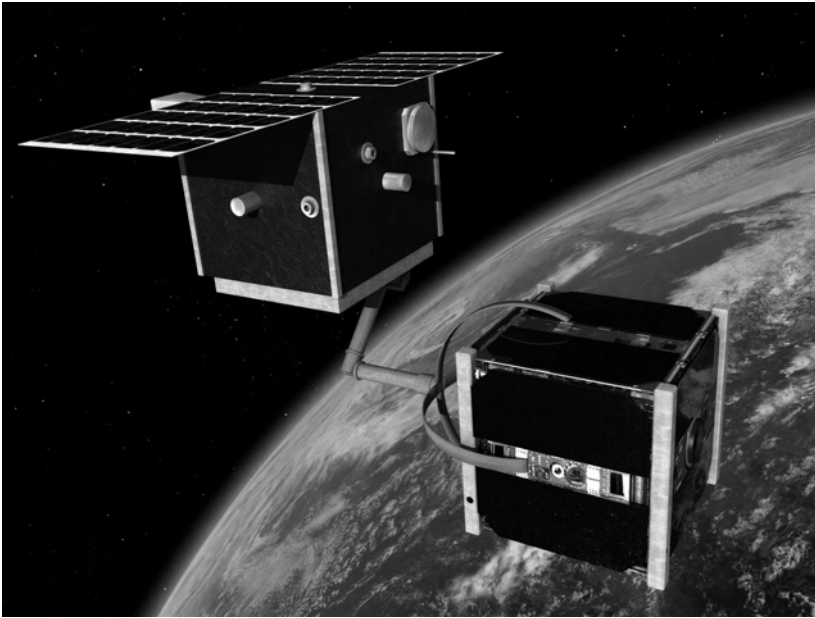
With the changes of what constitutes a war and how war is waged, many commentators have concentrated on the broader application it represents. Such as espionage, disinformation cyberwar, propaganda and other type of threats that constitute the grey zone non-linear warfare. It is in this context that the Russian space warfare capability has been neglected by most, while the few that cover it all note a growing threat. This is particularly vital regarding the Russian capability to target satellites in outer space.<sup>33</sup>

The primary threat this constitutes by the Russian Space Force is the Russian co-orbital satellites, better known as space stalkers. The space warfare expert Brian G. Chow describes them as "a rudimentary satellite that possesses grappling arms and an efficient engine. They are designed to tailgate behind a targeted American satellite and, in the event of war, latch on to American

satellites, and either physically damage them or simply push them out of orbit, rendering them useless".<sup>34</sup> Chow further believes that these relatively cheap weapons can be used to coordinate simultaneous attacks with little warning, thus depriving the U.S. of adequate time to save the targeted satellites and effectively lead to the dreaded "Space Pearl Harbour" scenario that Rumsfeld feared. This implies that the space stalkers hold the potential to be the instrument to turn his fear into reality.<sup>35</sup> Some of the potential targets for this include the Military Satellite Communications (MILSATCOM) network and early missile warning systems.<sup>36</sup>

The technology behind these space stalkers is fundamentally the same as that of the debris disposal devices. The functionality is to push debris, such as decommissioned satellites, out of the orbit or towards Earth itself in order to dispose of it.<sup>37</sup> The need for these devices is clear as decades of defunct space debris continually pose a danger for functioning satellites.<sup>38</sup> As there are many companies working on such projects without evident military application, it allows Russia to utilize them to further their ambitions while remaining aligned with its peaceful narrative on not placing "defined" weapons in space, extending the existing problematical grey zone into outer space that is gradually becoming crowded.

Dr Colucci points out in his article to USNews.com how ever since 2010, the Russian military has devoted substantial resources towards its space capabilities. This covers both modernization of existing capabilities and the expansion through new, such as ASAT (anti-satellite weapons and systems). Colucci further contends that the clear design of these systems is to negate U.S. supremacy in orbit. It is through these investments that Russia holds the ability to



*Image of proposed cube satellite from École Polytechnique Fédérale de Lausanne (EPFL). Russian space stalkers could use the same principle to push satellites out of orbit.<sup>39</sup>*

deny the U.S. their critical domain of space during the outset of any conflict by rendering them blind.<sup>40</sup>

In June 2017, a significant development occurred with the launch of the Russian satellite that became known by the nickname “nesting doll” in the West. It at first appeared to be nothing more than a standard communications satellite, it was only once it was in space that it opened in order to reveal another smaller satellite, and that one finally revealed a third miniature satellite, much like that of the Russian nesting dolls. The concerns regarding this development were further amplified when the Russian Ministry of Defence took it upon themselves to act as the announcer, indicating military purpose.<sup>41</sup> To make matters worse, the announcement was limited only to the release of the first small satellite of this secret project; neglecting to mention the third satellite. Another satellite known as Kosmos 2499 that was launched in 2014 also held experimental

characteristics and potential ASAT capabilities characterized as offensive.<sup>42</sup> This development also continued in similar fashion throughout 2018 as seen with the launching of additional military communications satellites also carrying undisclosed additional payloads.<sup>43</sup> These satellites, under the guise of inspection satellites, have already begun actively tailing vital U.S. satellites such as the USA 245.<sup>44</sup> This is not an isolated incident as two more satellites have engaged in the same threatening behaviour.<sup>45</sup> In more recent time Russia has been accused of actively testing anti-satellite weapons,<sup>46</sup> provoking strong denouncement from the U.S.<sup>47</sup>

While the current purpose of this action may seem limited to only obtaining detailed reconnaissance for now, it is more important to consider that it provides vital maneuverer training for when a potential real conflict breaks out. As the tension surrounding the announcement of U.S. Space Force have already begun heating up. As seen with the

Japanese announcement covering the creation of its own Space Force for defensive purposes.<sup>48</sup> Indicating that other nations are beginning to follow suit in light of the increased security risks and developments in space – sparking a securitization.

Yet all is not harmonious in the Russian space sector as the two most prestigious projects of the decade have both encountered several humiliating failures stemming primarily from corruption: GLONASS being the Russian satellite navigation system alternative and the other project concerning the new cosmodrome Vostochny, reliving the Russian dependence on Baikonur in Kazakhstan. The objective for both of these ventures is above all to decrease Russian reliance on foreign systems and sites. These entanglements have culminated in billions of roubles missing and the Director of the Research Institute of Space Instrumentation fleeing to Europe.<sup>49</sup> It is in light of these events that the Russian momentum has temporarily halted and inadvertently created a respite, providing the U.S. with a unique opportunity to address their vulnerable space sector through properly catching up by applying remedies that are long overdue.

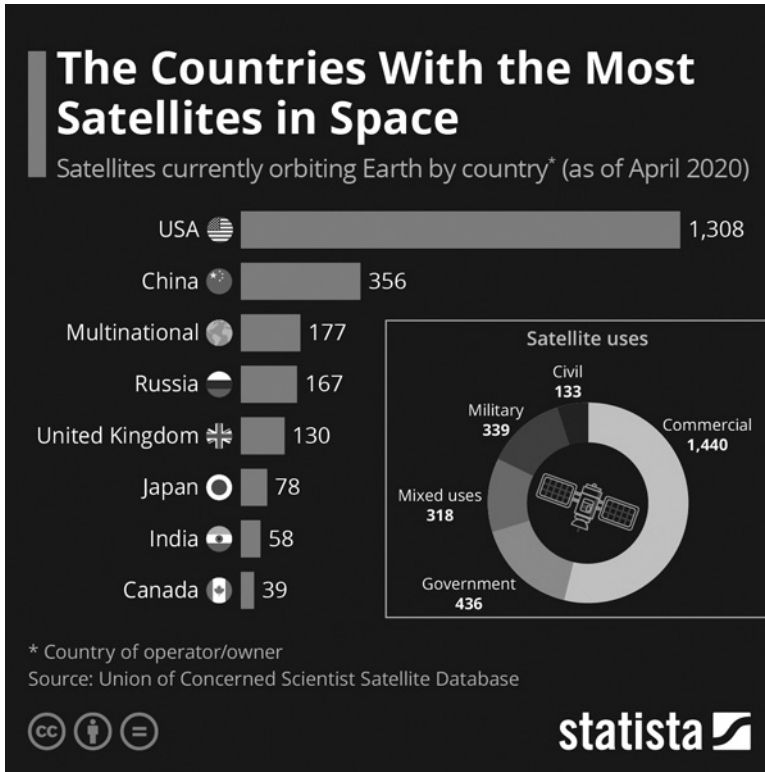
## The Need for American Reform in Space

Weichert argues that this situation demonstrates U.S. weakness and enables the Russian pursuit of amassing resources with the culmination to adequately exploit it. The clear example is embodied by the Russian merge in 2015 of its air, rocket and military space operations has not had a counterpart in the U.S. reforms. In other words, American weakness in space is an invitation to Russian aggression.<sup>50</sup> He summarizes this as “[...] rather than deter an asymmetrical attacker, such as Russia, the space superiority concept

will compel a rival relying on a doctrine of unconventional warfare to attack American satellites without warning. This prospect is why the Russians have embraced counter-space techniques with great enthusiasm in recent years”<sup>51</sup> Weichert argues that the vulnerable state of the American military satellites combined with the new asymmetrical Russian approach of using cheap and stealthy space stalkers to debilitate satellites constitutes a major threat. He goes as far as to say it could effectively neutralize the ability of the U.S. to resist an invasion of Eastern Europe and instead opt to sue for peace, in order to avoid the cost of a world war without the use of its satellites.<sup>52</sup> For illustration of the current situation, see the figure below.<sup>53</sup>

This is part of a larger picture, as it gives insight into Russian mindset. Russia cooperates with China in order to lay claim on the narrative as a peaceful actor and reserve violence for self-defence, allowing the nations to pool their scientific expertise and funding into challenging the U.S. dominance. While it opens up the space domain for being subjected to the characteristic asymmetrical Russian operations, such as the controlled chaos doctrine, with the Russian Space Force tasks being aligned to allow the use of space stalkers for just such type of operations.

While the U.S. Space Force is still behind in the reforms needed to properly address these types of threats, Weichert also points out that with the Trump administration Space Force “[...] the issue of interoperability across the various services, such as the Air Force and the Army, remains unaddressed”.<sup>54</sup> While Todd Harrison, who directs the Aerospace Security Project, has described the purpose of the Space Force as “It will create a centralized, unified chain of command that is responsible for space, because ultimately when responsibility is fragmented, no one’s



responsible”.<sup>55</sup> While it does not go as far as the Russian merger in 2015, it recognises that very same necessity – four years later. Demonstrating that aside from how the problematic this reform is, there is an additional need to catch up to the Russian counterpart that is undoubtedly ahead in some areas.

This is further exacerbated by how space capabilities and operations are not limited to military departments and intelligence agencies. Requiring sieving the right “pieces” out of the all the involved parties and even then, as a by-product, effectively adding more bureaucracy according to Johnson.<sup>56</sup> Beyond the interoperability between all the branches utilizing space technology, there is also the issue military theorists have had since the cold war regarding where to draw the line between air and space activities. Where the

U.S. effectively assigned everything above ground to the air force while the Soviet Union drew a line with clear distinguished zones that in turn offered divided responsibilities until their reform.<sup>57</sup> This now holds the potential of afflicting the U.S. Space Force through subordinating it to the U.S. Air Force as has been the norm in the past.<sup>58</sup>

### Congested, Competitive, and Contested Space

Haas points out how the present situation in space is marked by complex and often ambiguous interests, while the global competition among the great powers is increasingly becoming a hostile competition with possibility for military conflicts with knock-on effects for critical infrastructure in space.<sup>59</sup> To this



comes as for the first time ever privately financed initiatives, albeit with substantial government support, are about to become the decisive drivers for dual-purpose cutting-edge space technology development.<sup>60</sup>

Such developments open up outer space to the grey zone and asymmetrical operations that are already comprehensively utilized by Russia in advancing its geopolitical ambitions. Fridman has in his exploration of the Russian understanding of war identified several key changes since the Soviet era. These are primarily phrased as increasingly blurring the lines between war and peace as the areas of warfare through non-linear means such as economy, ideological, psychological, informational and so on are emphasized. The traditional characteristic of armed violence is losing its role as the main indicator of being in a state of war resulting in the non-military means becoming violent with information often as the weapon of choice.<sup>61</sup> There is a perception within Russia that it already considers itself to be at war, effectively allowing President Putin to engage in the risky escalations that threaten the West with escalations to actual linear war.<sup>62</sup> While launching satellites and constructing space stalkers still remain out of the hand of most actors, the near future is already being characterized as a “space boom” in terms of commercial interests.

The increased competition, with emphasis for achieving more cost effective and reusable launch system for miniature satellites and their payload, is already sparking a commercialisation of space. This can have far-reaching consequences as the increasing accessibility allows additional actors admission into outer space that can generate security concerns or even threats for the state actors. This is already manifesting through the German Bundeswehr announcing it would commission Musk’s SpaceX to deliver its SARah radar satellites.<sup>63</sup> This yields

glimpses of both opportunities and risks in the next decade as the use of outer space is intensifying and ever more dynamic.

These developments have significant implications when considering the Russian understanding of war. It opens up a myriad of possibilities for grey zone operations to employ in domination of both space itself and geopolitical goals. These could take the form of the defensive in militarizing space under the guise of guarding against unknown interests operating in space and companies with obvious Western leanings. While the offensive direction could take the form of aggressive actions under the facade of companies or unknown private initiatives, reminiscent of the “little green men” employed during the annexation of Crimea, both sowing doubt and disinformation amidst ongoing Russian action.

The consistent trend of Russian investment into dubious inspection type of satellites and consistent experimental launches exhibits long term plans and grand strategic ambitions in outer space. This combined with how there is no longer any sphere left outside the warfare domain on Earth, be it economical or somewhere out in cyberspace, heralds the coming of various forms of operations in space, as it provides a continuation for the already ongoing influence operations and controlled chaos to name just a few guises of the distinctive Russian playbook. This essentially transitions warfare to include outer space with definite militarization through the experimental satellites spearheaded by Russian Ministry of Defence, all done efficiently under the guise of acting for peace, as it is aligned with the U.N PPWT proposal. This results in a continuation of the Terran<sup>64</sup> blurring of the lines between war and peace through a non-linear approach to warfare that is in no way limited to only Russia in the future.

## Conclusion

Russia has through its gradual integration of space forces with its air force managed to create a unified theater, removing the lines and separate theatres of the past that afflicted its command structure during the Soviet era. It saw itself at clear disadvantage in the aerospace and beyond, actively pouring vast resources towards the ambition to procure a remedy amidst facing questionable economic conditions.<sup>65</sup> This gamble has despite considerable failures been met with great success as seen with the deployments of today. Russia is furthermore publicly promoting a dubious proposal on an international pledge to refrain from first placement of weapons in outer space. The treaty is backed by China that has also been involved in the process of its creation. It is a treaty that does not adequately define space weapons and overlooks the most pressing issue of all: anti-satellite weapons, rendering it a biased accord that allows its creators to continue with their ambitions and military projects for space.

This results in the promotion of this seemingly peaceful treaty while also actively aiming for domination in space through continuously testing anti-satellite weapons to achieve this determination, all aligned with the officially appointed tasks of its Space Force. This allows Russia to create its own narrative on the space dimension, effectively giving them the tool for denouncing any western response to space stalkers or any other form of aggression, as seen with Russian officials continuously describing themselves as for peace in outer space while branding the U.S. as belligerent whenever approaching the subject.

This fundamentally renders the conceptualization of space Pearl Harbor as no longer a distant threat; it has become an existing threat within the current reality through

being already achievable due to the overreliance of satellites by the Western Forces military apparatus across all service branches and coordination. This reliance that is far less shared by Russia and China, as seen by the number of satellites per country chart. Russia has perceived itself as behind the U.S. in space and sought to remedy this with the Chinese cooperation.

Russia is embracing its asymmetrical role through giving up on the old Soviet ambition of trying to catch up to the U.S. in space symmetrically and instead concentrated on measures in exploiting the resulting U.S. reliance. This grants them distinct advantages in a possible space conflict against the West. As they are successfully developing weapons for conflicts in this dimension and are well aware of the dangers in relying entirely on satellites for information and other military uses, through blending the fields of space and cyberwarfare. These conditions successfully generate the perfect cards for President Putin to play in the risky Russian game of increasing aggression and tensions with the Western Powers, in order to ask for concessions.

While Sweden is not a major space actor, these developments still hold significant and noteworthy implications, as the Swedish space strategy intends a peaceful space through international cooperation with Swedish space industry playing an active role. However, this strategy is directly threatened by the grey zone menace. Even without the Space Stalkers, the commercialization of space will be threatened by cyberattacks, where the same effects of rendering an actor blind could be achieved through hacking. This effect is further amplified as the Swedish military also share some of the U.S. dependence on satellites and have begun eyeing the space domain. The increased nongovernmental interest in space has generated renewed

interest in clarifying how international law applies to space, giving Sweden the opportunity to become a vital actor in paving the way forward and alleviating geopolitical tensions through its diplomatic ability.

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## Noter

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