

# To the Moon and Back: A Critical Space Criminological Perspective on Serbo-Chinese Collaboration in Lunar Missions

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This paper examines the collaboration between China and Serbia on lunar missions through a critical space criminological perspective. China's ambitions to gain a permanent presence in Europe, demonstrated by its control of key transport hubs like the Port of Piraeus and the Port of Hamburg, have been strengthened by its collaboration with Serbia. This relationship is based on a strategic partnership and cooperation in international forums, supported by (geo)political ties, as well as military collaboration with Serbia, deploying the FK-3 air defense system. Moreover, Serbia has joined the International Lunar Research Station (ILRS) program, which extends Serbo-Chinese ties into space. Building on the emerging field of space criminology, we propose to apply critical space criminology to explore how terrestrial geopolitical and economic struggles are extended and amplified into outer space in Serbo-Chinese relations. We deliver an analysis of how China's terrestrial actions, such as its mineral mining investments in Serbia, may parallel its ambitions in outer space, which suggests that these cosmic ambitions have a complex relationship with Earth-bound conflicts. They hint at how power dynamics and neocolonial logics additionally might be reproduced and extended into a new frontier. Finally, based on the analysis, we point out that these global and cosmic dynamics could inform regional concerns in the Balkans more broadly, leading the way toward Balkan space criminology.

**Keywords:** space criminology, Balkan criminology, Serbo-Chinese geopolitics, power

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## 1 Introduction

Since the 2000s, China has been aiming to establish a permanent presence in Europe, for instance by taking control of key transport hubs, such as the Port of Piraeus in Greece and the Port of Hamburg in Germany (Liu et al., 2022), but also by strengthening its collaboration with Serbia. China has become an important economic partner for Serbia, driven by investments, which offer both opportunities and challenges (Jovičić et al., 2020). Serbia, in return, views China as a key partner in its foreign policy, alongside the EU, Russia, and the U.S. (Dimitrijević, 2020). Their relationship mostly entails strategic partnership and cooperation in international forums, being supported by strong (geo)political ties (Jovičić et al., 2020). Moreover, Serbia has strengthened its defense ties with China, deploying the FK-3 air defense system by January

2025. While Serbia views this as military modernization, the U.S. and other Western nations are concerned about the impact on Serbia's EU integration prospects (Gosselin-Malo, 2025; Stojanovic, 2022). The most recent development includes advanced Serbo-Chinese cooperation in space technology and defense when they signed in June 2020 a memorandum on space research, focusing on satellite systems for agriculture, telecommunications, environmental monitoring, and geolocation. Also, Serbia joined the International Lunar Research Station (ILRS) program in May 2024, which contributes to a China-Russia-led initiative to build a permanent lunar base (Faleti, 2024; N1, 2020; SpaceWatch Global, 2020).

Building on the emerging field of space criminology, we propose to apply critical space criminology (Eski, 2025d) in section 2 to explore how terrestrial geopolitical and economic struggles are extended and amplified into outer space in Serbo-Chinese relations. We then move on to an analysis in section 3 of how China's terrestrial actions, such as its mineral mining investments in Serbia, seem to parallel its ambitions in outer space, suggesting that these cosmic ambitions have a complex relationship with Earth-bound conflicts. Based on the analysis, we discuss in section 4 how on Earth power dynamics and neocolonial logics might be reproduced

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and extended into a new frontier, and vice versa. Finally, in section 5, we point out that these global and cosmic dynamics could inform regional concerns in the Balkans more broadly, leading the way toward Balkan space criminology.

## 2 A Critical Space Criminological Perspective

### 2.1 Space Criminology

The recent development of the multidisciplinary field of space criminology includes examining crime, harm, justice, and governance issues related to outer space activities. It is grounded in particular green criminological concerns and addresses the challenges that arise from the increasing human presence in outer space, including conflicts involving states and non-state actors, environmental degradation, resource exploitation, and militarization in outer space. There is a specific focus on how space debris accumulation, hostile acts between actors, and the exploitation of extraterrestrial resources pose new forms of anthropogenic harm that are to this point not adequately or not at all addressed by existing legal or governance frameworks (Eski & Lampkin, 2025; Lampkin & Takemura, 2024; Lampkin & White, 2023; Lampkin & Wyatt, 2025; Rothe & Collins, 2025).

The central focus within space criminology on anthropogenic activities that generate both direct and indirect harms includes studies on the creation of orbital debris threatening both space missions and Earth-based infrastructure, competitive and sometimes aggressive behavior between state and private actors, and extractive practices that replicate patterns of environmental exploitation known from terrestrial contexts (Eski, 2023; Lampkin & McClanahan, 2024). As such, space criminology critically considers the socio-political and ethical dimensions of these harms, calling attention to how space activities reproduce and extend existing inequalities and colonial logics (Poss et al., 2025; Rothe & Collins, 2025).

Given that empirical fieldwork in space on off-Earth anthropogenic harms, and any harm or crime for that matter, is virtually impossible, to still address these complexities empirically, space criminology develops a range of interdisciplinary methods. Specifically, it is designing, deploying and advancing emergent/extended reality (XR) methodologies, which include virtual reality (VR), augmented reality (AR), and mixed reality (MR) simulations. These have been utilized to explore scenarios of space crime and justice, in order to enable researchers to visualize and anticipate potential future conflicts and governance challenges (Eski, 2025b; van Sintemaartensdijk, 2025). Analogue astronaut missions and other experimental

methodologies can provide relevant insights into human behavior (and relevant policy responses) in enacted extraterrestrial environments, which is another way to widen the empirical scope of space criminology (Kaiser, 2025).

Moreover, because space criminologists advocate for integrating perspectives from green criminology, geopolitics, postcolonialism, and existential philosophy to build robust regulatory and preventive frameworks for space crimes and harms, space criminology conceptualizes outer space not just as a pristine environment that remains free from human socio-political dynamics. Instead, it considers outer space as an extension of Earth's complex histories of conflict, exploitation, and power struggles, critically analysing the spreading of geopolitics on Earth to astropolitics in space.

### 2.2 The Astropolitical Turn Toward a Critical Space Criminology

Logically, building upon these epistemological, ontological, topical and methodological foundations, recent space criminological literature emphasizes the need for an astropolitical turn toward critical space criminology (Poss et al., 2025; Rothe & Collins, 2025). It argues that outer space governance is inseparable from terrestrial geopolitical and economic struggles, as has been argued in literature on astropolitics that analyzed the political, strategic, and economic activities relating to space as a domain of power and influence. Deudney (2020), for example, argues that space expansionism tends to replicate and amplify colonial logics of competition, domination, and environmental degradation, which altogether could become an existential risk for humanity's collective future, maybe even leading to what is called astrocide (Eski, 2025a).

By acknowledging that interconnected replication and amplification, a critical space criminology has the potential to analyze how astropolitical developments echo back into Earth's socio-political landscapes, reshaping power relations and governance structures. To do so, it should treat space governance and policing not as disentangled from terrestrial politics and policing but rather, as simultaneous extensions and amplifications of ongoing geopolitical contests, and vice versa, as Poss et al. (2025) have argued regarding off-Earth spaceports. "Out there," interpersonal violence between two astronauts "out there" can lead to geopolitical conflict "down here", and the other way around. Rothe and Collins (2025) have developed a criminology of space expansionism by situating it within neoliberal and neocolonial frameworks. They argue that the push to exploit extraterrestrial resources and establish off-Earth settlements reflects a continuation of (former colonial and) existing systems of economic inequality and state-centric power struggles.

Therefore, and from this viewpoint, space activities should be analysed not only as technical or scientific projects but especially as political-economic projects that are fundamentally embedded in colonial dynamics. As such, the astropolitical perspective assists space criminology in understanding emerging ethical and legal challenges of outer space, including the militarization of space, governance of extraterrestrial commons, and justice for affected human and non-human actors (Haramia, 2025; Rothe & Collins, 2023).

Therefore, we think that it is through these analytical lenses that space criminology has the potential to contribute more holistically to critical debates about the future of humanity and the (inter)planetary environment. It could do so by urging scholars and policymakers to recognize how space activities tend to reproduce historical injustices and

### 3 Serbo-Chinese On and Off-Earth Collaboration

#### 3.1 Serbo-Chinese Relations and Post-COVID-19 Multipolar Geopolitics

The relationship between Serbia and China has grown into one of Serbia’s most important international partnerships over the past two decades. Initially, it started with formal diplomatic ties back in 1955, which have evolved into what both sides proudly see as a comprehensive strategic partnership, reflecting their political, economic, and even cultural cooperation that has expanded (Dimitrijević, 2020). In particular, economically, it appears that the two countries have found common ground (Figure 1).

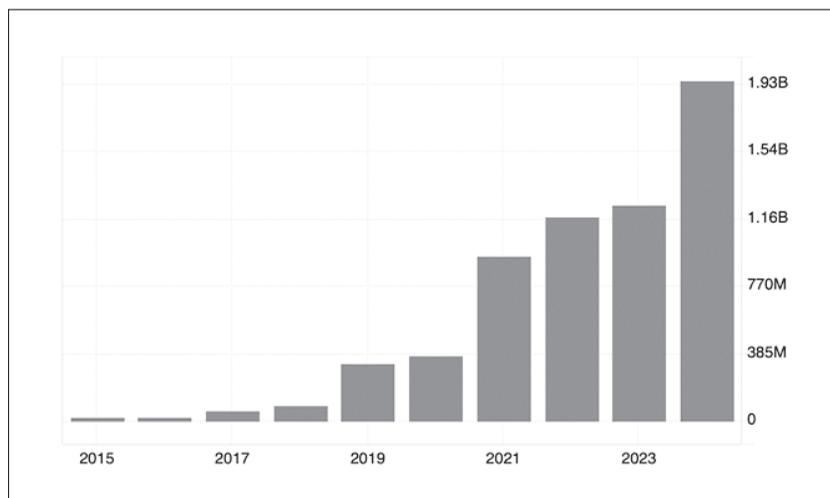


Figure 1: Serbia exports to China (Source: Trading Economics, 2025)

power asymmetries, even when framed as inclusively opening new frontiers “for all humankind.” This is why a critical space criminological perspective is essential, because it reveals the astropolitical dimension of space expansionism not as separate from Earth-bound conflicts and resource struggles, but as their symbiotic extension and amplification. This becomes evident when examining China’s growing space cooperation with Serbia, as we will show. In particular, their lunar collaboration illustrates how cosmic ambitions can reinforce regional political and security objectives. Applying a critical space criminology to the ways space and terrestrial geopolitics co-produce each other, therefore, sets the stage for the detailed examination of China–Serbia relations in the following section.

In the early 2000s, China’s focus was primarily on Europe, while Serbia’s old regime was dismantled, reducing China’s prominence in the country, despite Milosevic’s historically close ties with Beijing dating back to the socialist era. Since 2012, however, China’s steadily expanding presence in Serbia has led to significant investments in infrastructure, the energy sector, and manufacturing (Božić-Miljković, 2021). These investments represent more than just financial support for Serbia, which considers them as an opportunity for growth, modernization, and, importantly, greater international visibility. Moreover, China’s structural investment in Serbia’s territorial integrity created a trust relationship between the two nations, also in relation to the geopolitically sensitive issue of Kosovo (Božić-Miljković, 2021). Especially the Belt and Road

Initiative (BRI), a large-scale global development project by China, has significantly contributed to Serbian infrastructure, from railways to highways and energy projects (Dimitrijević & Jokanović, 2016; Gledić, 2020), turning Serbia into one of China's key partners, vis-à-vis a "foothold," in Central and Eastern Europe. The intensified cooperation between the two countries has been considered an enduring "iron friendship," not just financially but also symbolically communicated to the world stage with high-level visits, public gestures of goodwill, and cultural exchanges that have all helped cultivate this image. However, whereas these ties may appear as bottom-up friendship, they have been largely government-driven and top-down, and critics caution that these gestures of friendship result predominantly from political decisions rather than deep societal connections, in particular exploited during the COVID-19 pandemic (Gledić, 2020).

The COVID-19 pandemic turned out to be a catalyst and, according to some, a defining moment for both countries. Global uncertainty was high and medical supplies were scarce, and it was China that stepped in with help for Serbia (Božić-Miljković, 2021): large shipments of masks, ventilators, and protective gear arrived, along with Chinese medical experts, and most importantly, Serbia became the first country in Europe to widely use China's Sinopharm vaccine in early 2021. It led to China's President Xi Jinping being called "Brother Xi" by Serbian President Aleksandar Vučić, reflecting how China's assistance during the pandemic was not merely about health but even more so about solidarity, while other nations remained slow to respond. Simultaneously, the COVID-19 pandemic enabled China to demonstrate its global power, considered by some as "mask diplomacy"/"vaccine diplomacy," through which China could

position itself not just as an economic power but as a reliable international partner for especially the Western Balkans, where many countries felt left behind by traditional Western allies (Dimitrijević, 2020). In sum, whereas the COVID-19 crisis accelerated and strengthened Serbo-Chinese economic, political, and symbolic ties, it revealed at the same time how a global crisis was exploited by and for especially Chinese geopolitical opportunities.

Especially nowadays, such geopolitical opportunistic mentalities of China, as well as other global powers, including the U.S. and Russia, are filtering through in proxy wars and other regional conflicts. Noting how the global order is shifting away from U.S.-led unipolarity toward a multipolar world, a new system is shaped by rising powers like China, indeed accelerated by the COVID-19 pandemic, but also the 2008 financial crisis, the war in Ukraine and ongoing atrocities in Gaza, and between Israel and Iran (Peters, 2023). As a result, economic interdependence and geopolitical competition are increasing, while Western dominance is gradually declining and new allegiances all over the world are forged. In that rapidly evolving post-COVID world, Serbia, as a relatively small country, is becoming even more dependent on China to secure its position on the global stage (Peters, 2023), on Earth (section 3.2) and off-Earth (section 3.3).

### 3.2 Resource Utilization on Earth: Chinese Mineral Mining in Serbia

There are two key Chinese investments in the extractive and raw materials industries in Serbia (Krstinowska & Vuksanovic, 2023). First, there is a steel mill in Smederevo, and second, there is a mining and smelting complex in Bor. The

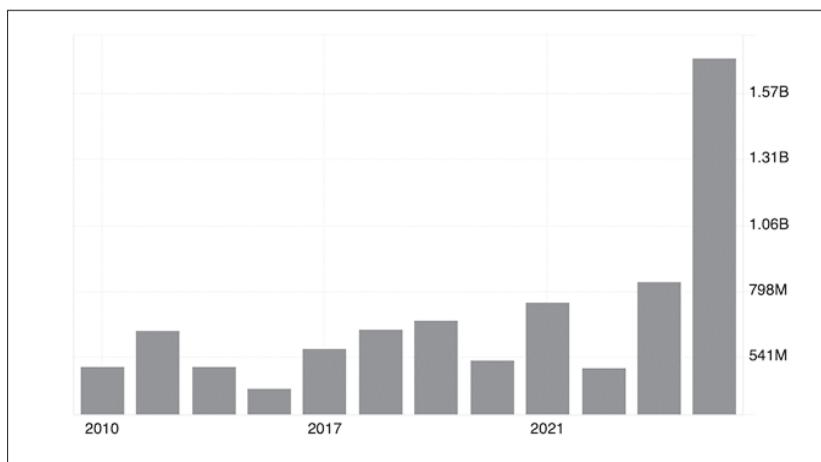


Figure 2: Serbia's exports of copper (source: Trading Economics, 2025)

steel mill was originally bought by U.S. Steel in 2003 as part of the privatization process, while Serbia was transitioning from a Yugoslav socialist economy to a wartime isolated economy during the 1990s, and then to a capitalist economy after the revolution of the 5th of October 2000. U.S. Steel sold back the mill to the Serbian state in 2012 for a symbolic 1 dollar. Hence, Steel production worldwide has become a highly competitive market in which national champions can no longer compete with global champions. Yet despite the Steel production's lack of profitability on the world market, the Chinese Hesteel Group purchased the mill in 2016 for 46 million euros. A second major investment took place more recently, when the Zijin Mining Group purchased the mining and smelting complex in Bor in 2018. The industrial complex of Bor produces copper and gold. Especially, copper exports to China are significant and amounted to 1.71 billion dollars in 2024; total exports from Serbia to China represented a value of 1.95 billion dollars, which in turn was 5.9% of Serbia's total exports (Figure 2) (Trading Economics, 2025).

These two projects tell us that the Serbian elite has been willing to jeopardize public health and safety, the environment and the rule of law in order to make these projects possible (Vuksanović et al., 2022). The Serbian decision to invite China to invest in these projects should be interpreted in the light of the changed geopolitical orientation of the Serbian government in 2012, as well as the geopolitical self-image of the Serbian elite.

A rough history of Serbian post-2000 politics divides the period into two parts. Between 2000 and 2012, the Democratic Party (DS) was always the main coalition partner in any government. This party had a pro-European identity and its leaders always first looked to Europe, before engaging in international politics. The aim of DS-led governments was European integration; however, the governments were dependent on coalition partners that always included spoilers. In 2012, the power balance shifted, and the Serbian Progressive Party (SNS) became the dominant force with Aleksandar Vucic at the helm. Vucic has dominated Serbian politics since 2012 and has *de facto* ended the purely EU-focused approach, but instead welcomes investments from China and the Middle East.

For Serbia, China is still a small trading partner compared to the European Union (European Council, 2024). Nonetheless, investments have swelled (Development Agency of Serbia [RAS], 2025) and turned the economic importance of China from irrelevance to significance. However, the role of China in Serbian media and the eyes of Serbian political discourse has increased disproportionately. As Uvalić (2025) puts it: 'political discourse [in the Western Balkans] often

romanticizes ties with 'traditional allies' like Russia and China as a viable alternative to EU membership'.

The reason that Uvalić (2025) calls China, somewhat ironically, a traditional ally is based on an ambiguity. Serbia was a republic in the Socialist Federal Republic of Yugoslavia (SFRJ), which had linkages both with the Communist states and the capitalist world. Ideologically, Yugoslav socialism distanced itself from Soviet ideology; however, it also remained detached from Western capitalism. During the 1999 NATO bombing campaign in Serbia, the Chinese embassy in Belgrade was hit. The Chinese had already covered the conflict in line with anti-NATO narratives and were now even more furious about the bombing campaign (Zhou, 2022).

When Xi visited Belgrade in May 2024, he did so at the 25th anniversary of the NATO bombing of the Chinese Embassy (Henley, 2024). China has invested all over the Western Balkans in recent years, with the notable exception of Kosovo. Krstinovska and Vuksanovic (2023: 10) state the following reasons: "China does not recognize Kosovo's independence, considers Serbia its main partner in the wider region of Eastern Europe, and there is strong pro-American sentiment amongst Kosovo Albanians." The bombing of the Chinese embassy turned China into a Serbian ally over the contested statehood of Kosovo.

The lack of investments in Kosovo's mining and raw material industries is significant because the Trepcja mining complex in the North of Kosovo holds the largest lead, zinc and silver reserves in Europe (Placucci, 2024). Since the collapse of SFRJ, the ownership of the mines is contested between Serbia and Kosovo as well as European stakes (International Crisis Group, 1999; Stuart, 2002). The EU maintains that the mining complex and smelting plant should be part of Brussels-led dialogue, and since this dialogue is in a stalemate, activities at the mine are stagnant at a low level of production on both Serbian and Kosovo sides of the *de facto* border in Northern Kosovo (Begisholli, 2019). Given the NATO forces controlling the North of Kosovo, it is unlikely that Chinese investments will be welcomed even in the Serbian majority North of Kosovo, despite Serbia's willingness to work with China. It is unable to guarantee the same level of flexibility in terms of environmental, social and rule of law policies that it has provided Chinese firms in undisputed Serbian territories.

How do we need to consider these geopolitical interests in the Serbia-China relationship? As Babić and Dixon (2022) argue, since roughly 2016, Chinese investment in Europe has been treated with suspicion. Babić and Dixon (2022: 112) state: "New and comprehensive protectionist policies are gaining ground and are a symptom of this broader trend of

a “securitization” of Chinese economic presence in the EU.” Especially, since the renewed trade war between China and the United States, Chinese investments in Western Europe are interpreted as a security threat. It comes, therefore, as no surprise that when President Xi visited Europe in May 2024, Belgrade was an important stop next to France and Hungary (Henley, 2024). Hence, Belgrade encouraged Chinese investments despite the changed EU perspective.

The securitization of EU discourse is also present in the way the EU approaches investments in Serbia. Pavlicevic (2019: 456) argues that in reaction to Chinese investments, “the EU has since moved to re-assert its centrality in the Balkans by strengthening its structural power through a combination of institutional, policy, regulative and financial means.” Pavlicevic (2019) names the Berlin process as an example, which includes an annual meeting with heads of state and several lower-level thematic meetings throughout the year to foster cooperation between the Western Balkan six, being Serbia, Kosovo, Bosnia and Herzegovina, Montenegro, North Macedonia and Albania, and the EU.

The Berlin process was initiated by Germany in 2014 and shows Germany’s commitment to economic development in the region. In July 2024, then German chancellor Scholz visited Belgrade together with a vice-president of the EU, Maros Sefcovic, to sign a deal to mine lithium in Serbia (Bundesregierung.de, 2024). The multinational corporation Rio Tinto would take care of the mining operation that would benefit the German electric car industry. The EU and Germany, of course, emphasized the importance of a European Green Deal and avoided questions on geopolitical motivations; however, it is hard to see the deal in isolation from Chinese operations in Serbia and the Western Balkans.

Ironically, considering the green ambition of the EU, lithium mining poses a high risk of polluting the Jadar valley. Despite the claims of the German chancellor, it is incredibly naïve to assume that environmental regulations will be followed in the high-level corruption of the Serbian state. As Bieber (2024) states: “Scholz’s visit and the agreement ignore the protests, the election fraud, and state capture.” The mining interest of Rio Tinto already led to massive protests in 2021, and the government stopped the project despite cracking down on the protestors. In 2024, the project was revived, and, in the meantime, Rio Tinto kept buying land in the Jadar Valley (Dragojlo, 2023).

The current wave of protest that followed the collapse of a canopy of the railway station of Novi Sad that killed 16 people is emblematic of the disdain of the Serbian ruling elite for its own people and the corruption it permits itself to engage in.

The railway station had been renovated as part of the China-CEEC cooperation framework and was a symbol of Serbia-China development projects, however, it is also emblematic of the nontransparent deals that are made as part of this cooperation (Vladislavljev, 2025). The protesters demand accountability for the faulty construction of the canopy, however, the Serbian government denies responsibility and fails to provide information about the construction’s underlying documentation. In response, a popular uprising has been continuing for months now.

This tells us that geopolitical contestation is turning Serbia into a popular space for capitalist raw material exploitation. Both Chinese and Western companies recognize the opportunity to exploit the willingness of the Serbian ruling elite to compromise environmental, social and rule of law policies, as shown by the expansionism of the Zijin group’s copper mine, as well as Rio Tinto’s aggressive tactics to attain a lithium mine. These projects are met with mass public outrage but are pushed through by the Serbian ruling elite. Both projects are massively damaging to the environment without a realistic expectation that the Serbian state will maintain standards.

Rogers (2022: 352) argues that the literature on the roots of illiberalism in Central and Eastern Europe (CEE) has tendentially “overlooked how inflows of Chinese state-owned capital influence[s] illiberal capitalist development.” We agree that it plays a role, particularly in creating this space in which geoeconomic competition takes place. Beeson (2018) uses the term “geoeconomics” to describe the Chinese approach to expansion in the 2010s and 2020s. On the one hand, there is a clear process of ‘socialization’ into the (neo)liberal structures of the global economy. As De Graaff (2020) argues, Western political and policy elites with strong corporate affiliations are integrated into the Chinese financial infrastructure used to expand Chinese state-owned capital in the world economy. The modus operandi of Chinese capital is only marginally different from Western capital.

In line with the myth of ‘debt trap diplomacy’ as argued by Bautigam (2019), Serbia is not disproportionately indebted through its engagement with Chinese capital. Ruge and Shopov (2021) compare the indebtedness of Montenegro and Serbia to conclude that the problematic indebtedness of Montenegro is only partly due to its dealings with China, but primarily a consequence of poor economic decision-making, and that Serbia is in a considerably better position overall. Furthermore, Ruge and Shopov (2021) represent the Western European sentiments that Babić and Dixon (2022) identified: that Chinese investment in Europe needs to be met with an aggressive EU policy to reassert its geoeconomic interests.

The marginal difference is in the way that capitalist exploitation of natural resources is justified. The EU discourse pushes for public procurement and environmental norms as part of its EU enlargement agenda (Ruge & Shopov, 2021). Yet Serbia in particular positions itself outside these norms, to consciously benefit from Chinese as well as EU and, to a lesser extent, Middle Eastern investors. A highly corrupt ruling elite reaps the benefits from this position, while the Serbian people pay a hefty price in terms of health, rule of law and social standards. This pattern of terrestrial resource extraction, where Serbia serves as a permissive gateway for Chinese strategic interests, now extends beyond Earth, laying the groundwork for collaboration in space exploration and off-Earth resource initiatives.

### 3.3 Resource Utilization Off-Earth: Collaborative Lunar Missions

Extending Serbia's collaboration with China into space reflects its ambition to modernize national defense capabilities and participate in high-profile scientific initiatives. What is notable in that regard, are the deepening defense ties established through Serbia's acquisition and deployment of the Chinese-made FK-3 air defense system. It was in January 2025 that Serbia had integrated and operationalized the FK-3 medium-range surface-to-air missile system, which marked for them a significant step in modernizing its military (Grzanna, 2025; Saballa, 2025; Stojanovic, 2022). The fact that Serbian officials have presented this acquisition as part of their long-term strategy to enhance national defense and military self-reliance has led to concerns among the U.S. and the European Union. They worry how such defense cooperation with China could complicate Serbia's EU accession process, as well as that it may draw the country (unwillingly) into geopolitical rivalry between China and the West (Grzanna, 2025; Saballa, 2025).

New in the advancement of Serbo-Chinese cooperation is the engagement in space technology and lunar exploration. Initiated in June 2020, when the two countries signed a Memorandum of Understanding (MoU) on peaceful collaboration in space research, they have started to focus on satellite systems for agriculture, telecommunications, environmental monitoring, and geolocation (SpaceWatch Global, 2020). Their agreement reflects Serbia's strategic interest going beyond just technological development, environmental monitoring, and improved national infrastructure, meaning, through international cooperation in science by which it becomes possible to include the Serbian flag on future joint space missions, as the website of the State Council of the People's Republic of China mentions (2020).

Another significant step in outer space Serbo-Chinese cooperation is Serbia's formal entry into the ILRS program in May 2024. During Xi Jinping's state visit to Belgrade, Serbia signed an MoU with China's National Space Administration, by which Serbia is now part of the China- and Russia-led project aimed at establishing a permanent lunar research facility (Jones, 2024; National AI Platform, 2024). Officially started in 2021, the ILRS aims to build a lunar base near the Moon's south pole by the early 2030s, for which it will launch preparatory missions, including Chang'e-7 and Chang'e-8, that have vital roles to fulfill in, among other things, resource assessment, site selection, and technology validation (Wu, 2023; Zheng et al., 2008). Given that Serbia's domestic space capabilities remain limited, the ILRS participation offers Serbia opportunities for scientific research and technology transfer, in particular satellite technology, geospatial science, and materials research, as well as bringing Serbia greater international visibility (Božić-Miljković, 2021). Moreover, by joining the ILRS and acquiring advanced Chinese military systems, Serbia enhances its technological base while navigating complexities as a small actor in the new multipolar world order.

The advantages for Serbia lead, in return, to another opportunity for China to have even more influence on European territory, where it can develop national scientific and technological objectives (Dimitrijević, 2020; Gledić, 2020). This China-dependent deepening of Serbia's defense and space-enabledness is yet another manifestation of Beijing's foreign policy, which also uses space diplomacy to strengthen its (geo)political influence through strategic partnerships (Wu, 2023). In that sense, the ILRS could be considered as a geopolitical counterweight to the U.S.-led Artemis Accords that similarly use international lunar exploration and governance to claim lunar territory (Jakhu & Pelton, 2017), creating a reflection of the multipolar world on the Moon.

Particularly relevant for this paper is the resource utilization agenda of the ILRS that cannot be understood outside the broader context of global power competition and emerging patterns of exploitative space expansionism undertaken by both Global Western and Global Eastern powers (Deudney, 2020; Rothe & Collins, 2025; Tabas, 2024), as the discussion in section 4 of this paper will delve into. One of China's ambitions includes the prospect of accessing and eventually exploiting key lunar resources, in particular water ice at the Moon's south pole, as well as rare-earth elements, titanium, and the helium-3 isotope, which, according to some, enables future nuclear fusion energy production (Anand et al., 2012).

'[Chinese moonbase extracting minerals]'s perfectly plausible from the technical point of view, absolutely plausible from the finance point of view because they [China] have great buying power, so I think, yes, there's nothing at all to stop them doing

that probably within something like 10 years' (Prof Ouyang Ziyuan, Chief Scientist of China's Lunar Exploration Project in Shukman, 2012 – online source).

Given the potential of helium-3 to function as an energy source for lunar rocket launches of Moon-to-Mars missions (Sanders & Kleinhenz, 2024), lunar mineral mining for Chinese Moon-to-Mars missions could be considered of great Chinese interest as well. In fact, it has been only recently that China wants to build a nuclear plant on the Moon together with Russia to power its ILRS, aims to land astronauts on the Moon by 2030, and intends to construct a permanent, crewed lunar base by 2035, all done to rival NASA's Artemis program. This China-Russia cooperation is heavily strengthened by tensions with the West (Baptista, 2025).

Either way, in securing access to lunar resources, the ILRS is not merely a scientific endeavor for China but a strategic necessity that is tied to national prestige, technological self-sufficiency, and long-term energy security (Tabas, 2024). Meaning, space resource exploitation by China, and by any technologically advanced global power for that matter, represents a logical off-Earth extension of China's BRI, in which regional infrastructure development is done under geopolitical influence that carves out de facto control over resource-rich regions in Europe and of the Moon under the guise of peaceful scientific cooperation.

Serbia's participation in ILRS must therefore be considered within this context of resource-driven space expansionism cloaked as outer space exploration and Serbian space-enabledness, where scientific collaboration seems to rather serve a diplomatic tool and a means of integrating smaller states into an evolving Chinese-led space order in competition with a Russian, and especially with a European and U.S. one. So, while Serbia may benefit from technological cooperation and increased global visibility, its alignment with China in space also exposes it to the risks inherent in an increasingly fragmented, competitive, and legally ambiguous extraterrestrial environment.

#### 4 Discussion: The Cosmic Ouroboros

The Moon is no longer seen solely as a scientific frontier but as a strategic financial asset in the intensifying race for space-based resources, technological dominance, and political influence beyond Earth (Eski, 2023; Lampkin & McClanahan, 2024; Lampkin & White, 2023; Rothe & Collins, 2025; van Heemstra, 2023), despite the 1967 Outer Space Treaty prohibiting national appropriation of celestial bodies. Like the U.S., EU, Russia, and other global powers, China participates

in and reinforces geopolitics behind space expansionism by using moral narratives that justify technologically-driven astrocolonialism (Tabas, 2024). Under the guise of planetary salvation, and next to the Western space industry narratives on "for all humankind" that cloak its space expansionism, China too frames its expansionism within Confucian-inflected ideals of harmony and *tianxia*, saying it wants a world under unified, peaceful order, but actively reproduces imperial logics and power asymmetries.

Whether capitalist West or socialist East, techno-futurist endeavors risk instrumentalizing morality to justify the export of terrestrial injustices into space, creating two connected spaces of exploitation:

– On-Earth expansionism in Serbia: China's strategic (economic) foothold in European resource extraction through Chinese mining companies that operate and plan major expansions in Serbia's copper and gold mining sector

– Off-Earth expansionism on the Moon: China exploiting weak international law (on outer space) and extraterrestrial natural resources (lunar isotopes), while maintaining a strong foothold as colonizer of lunar territory/outer space.

Therefore, in geopolitical as well as in astropolitical terms, Serbia's deepening entanglement over the decades with China represents what might be described, borrowing from astrological metaphor, as a double whammy of resource dependency: two reinforcing processes that amplify vulnerability and asymmetry regionally, internationally and extraterrestrially. In astrology (not astronomy!), a "double whammy" entails the simultaneous convergence of two negative forces or influences, producing an outcome that is more intense or harmful than either would be alone. Applied here, Serbia's terrestrial and extraterrestrial entanglements magnify its exposure to external control and undermine its strategic autonomy.

This dual frontier of terrestrial and extraterrestrial resource exploitation highlights that 21st-century space expansionism does not represent a clean break from historical colonial patterns but rather their extension into space. By aligning with China's space and economic strategies, Serbia simultaneously benefits from scientific cooperation and participates in a system that perpetuates global power asymmetries. Put differently (and beneath narratives of inclusion of Serbia), competitive, often exploitative geopolitical realities persist, where the strategic acquisition of resources (either in Serbian soil or on the lunar surface) eventually serves national interests of global powers, such as China, rather than of global equity.

Serbia's role in this dynamic depicts how terrestrial geopolitics and astropolitics are interconnected. It involves the same asymmetries and resource grabs, as well as imperial logics that shaped Earth's politics before and during colonialism, and are now being replicated on the Moon, Mars, and beyond. Meaning, it is terrestrial colonialist expansionism that shapes and is reflected in space expansionism (Rothe & Collins, 2025). In return, we then argue, space expansionism may reinforce and accelerate terrestrial expansionism, creating a destructive interplanetary-exploitation feedback loop where off-Earth endeavors justify and amplify resource competition and geopolitical dominance back on Earth.

To illustrate, and even though this is not publicly confirmed, the mineral deal between Ukraine and the U.S. (Saul, 2025) could have benefited the needs of Elon Musk's companies for critical resources, especially lithium and graphite that are essential for electric vehicle batteries and space exploration technologies (Anand et al., 2023; Kumar et al., 2021). Tesla and SpaceX, as some of the largest corporate consumers of these minerals, act as aggressive new green colonialist harvesters in what has been called eco-imperialism (Beiser, 2024; Chaudary, 2025; Feffer, 2023; Lehuedé & Valdivia, 2025; Tran Nguyen, 2024). Whereas the deal may have appeared to support Ukraine's post-conflict economy (if it is still Ukraine at all at that point), it also mirrors Musk's vision of Mars colonization (Eski, 2025c) that echoes the controversial ambitions of Wernher von Braun, a former Nazi rocket scientist turned American space pioneer (Eski, 2025d). Meaning, whether it is the mineral deal between the US and Ukraine or the Serbo-Chinese on Earth mineral deals and off-lunar cooperation, they form clear examples of reciprocal influence and intertwining between Earth's eco-imperialist resource politics and space expansionism. Put differently, terrestrial resource acquisition feeds (into) its extraterrestrial counterpart and vice versa.

It is within this on- and off-Earth expansionist feedback loop, where smaller states such as Serbia that are typically not space-enabled nations, find themselves sidelined while drawn into (astro)colonialist collaborations; collaborations that appear to offer opportunities but ultimately expose (them to) great-power agendas, amplifying rather than mitigating their structural vulnerabilities.

Viewed through the critical space criminological lens, then (see section 2), we can see how the geopolitics and astropolitics at work in Serbo-Chinese relations, both on Earth and in space, are interconnected through a transtemporal feedback loop. Transtemporal here refers to how such a loop, as a (potentially infinite) cycle, is driven by colonial logics rooted in historical terrestrial conquest, propelling future

space colonization efforts that, in turn, reshape and intensify current resource extraction on Earth. We then would like to space criminologically imagine that dynamic as the ancient symbol of ouroboros, which is a snake biting its own tail, taken to the cosmic level. As a continuous, cyclical exploitation of resources linking Earth and space, ouroboros embodies a new form of intertwined colonialism in which geopolitics and astropolitics act as mutual extensions and amplifications of each other across (inter)planetary scales, in a transtemporal manner. In fact, this dynamic has become a cosmic ouroboros that slowly but steadily constricts the Earth and Moon by draining their natural resources in a process that accelerates both terrestrial and extraterrestrial extraction. Spanning past, present, and future, this self-perpetuating interplanetary cycle of extractivist colonialism demands further critical space criminological inquiry. Such an inquiry should focus on specific regions to better understand and challenge its implications.

## 5 Conclusion and Paving the Way for Balkan Space Criminology

This paper argued that the deepening Serbo-Chinese partnership in lunar missions is not just a standalone scientific collaboration but part of broader geopolitical and economic strategies. Their "iron friendship, is built on a terrestrial foundation of Chinese investments in Serbian infrastructure (via the Belt and Road Initiative) and defense systems, turning Serbia into a key foothold for China in Europe. This partnership, although offering opportunities for Serbia, brings about harms, as seen in the environmental and community impacts of Chinese-owned copper and gold mining operations. Viewed through a critical space criminological lens, there is a dynamic to be seen in which space activities do not operate separately from Earth-bound conflicts but are rather an extension and amplification of one another. It became clear that China's pursuit of lunar resources through the ILRS is an extraterrestrial extension of its resource-driven foreign policy, which mirrors the exploitative patterns seen on Earth, *in casu*, in Serbia, through which China strives to become a geopolitical counterweight to the U.S.-led Artemis Accords, also by integrating smaller nations by economic force into a Chinese-led space order under the guise of "space diplomacy." In conclusion, this pattern reveals a "cosmic ouroboros," as said, a self-perpetuating cycle where terrestrial injustices like colonialism, corruption, and resource exploitation are not transcended in space; they instead replicate and amplify one another, transtemporally.

Following the theoretical discovery of the cosmic ouroboros, the analysis of Serbo-Chinese cooperation in

lunar missions shows that the development of a Balkan space criminology may serve as a way to study these dynamics in the future and in other cases/regions. Balkan space criminology is, therefore, almost by definition, a partisan criminology (Tombs & Whyte, 2003), able to provide normative-political critique regarding similar cases in the Balkan region (that could be) taking place in this new space age.

It can do so by learning from First Nations' claims to be involved in space governance. First Nations scholars draw on the history of Indigenous struggles for self-determination and protection of land from colonial exploitation to argue for inclusion in space governance (United Nations, 2007) and claim to focus on fairness, cultural preservation, and environmental protection, aiming to avoid repeating colonial practices in space. They also point out that current space law, especially the Outer Space Treaty, was created by states that carried out colonialism, and that more inclusive approaches are needed.

When taking such a First Nation approach into account, and although the Balkan experience is different, historically, the Balkans too have been at the crossroads of colonialism and imperialism, often caught between powerful states and subject to outside control (Detrez, 2002). This has happened under both Western (U.S./Northwest Europe) and Eastern (Russia/China) influence (Rrustemi et al., 2021), and similar patterns could occur in space politics, as the above case evidences. This asks for a Balkan claim to outer space, not necessarily requiring the building of rockets, but rather developing a legal and intellectual perspective that questions dominant space narratives of outside (malevolent) forces present in the region. This way, Balkan, often smaller, states that may not be as technologically advanced could also play an active role in shaping space law and ethics.

This is where Balkan criminology could provide a starting point, as it addresses the lack of focus on the region in European criminology, defining the Balkans as a unique region with shared historical, political, and cultural traits (Kalac et al., 2014; Sokanovic, 2015; Vujičić & Bezić, 2016). It is the "regional" of the Balkans that supposedly influences causes, manifestations and harms related to organized crime, corruption, and state capture in post-conflict societies (Arsovska, 2019; Lemstra, 2020). Balkan criminology has a relevant set of specific perspectives and tools to advance in and for its "own" space criminology, especially because it sheds light on how crime and policing are also in the context of foreign influence and historical legacies (Ivanović & Zakić, 2023). Because Balkan criminology studies crime and control as deeply connected to political and geopolitical processes, once applied to space, it could focus on a few specific topics. First, in

studying neocolonial resource extraction, comparison can be made between how the Balkans' natural resources have been exploited and how extraterrestrial resources might be exploited via Balkan states. Second, analyzing astropolitical corruption ought to consider the region's history of links between political elites and illicit economies in order to understand corruption risks in space industries like mining and satellites. And third, by scrutinizing asymmetrical security and justice, the fairness of space justice can be critically addressed, also by showing how legal systems often serve powerful actors. These and many more topics demand a Balkan space criminology that could challenge dominant powers and bring lessons from the Balkans' geopolitical history into debates about a fairer and more inclusive future in space.

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## **Na Luno in nazaj: kritična vesoljska kriminološka perspektiva srbsko-kitajskega sodelovanja pri lunarnih misijah**

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V prispevku preučujemo sodelovanje med Kitajsko in Srbijo pri lunarnih misijah skozi kritično vesoljsko kriminološko perspektivo. Kitajske ambicije po stalni prisotnosti v Evropi, ki jih dokazuje njen nadzor nad ključnimi prometnimi vozlišči, kot sta pristanišči Pirej in Hamburg, so se okrepile s sodelovanjem s Srbijo. Ta odnos temelji na strateškem partnerstvu in sodelovanju v mednarodnih forumih, ki ga podpirajo (geo)politične vezi kot tudi vojaško sodelovanje s Srbijo z namestitvijo sistema zračne obrambe FK-3. Poleg tega se je Srbija pridružila programu Mednarodne lunarne raziskovalne postaje, ki širi srbsko-kitajske vezi v vesolje. Na podlagi nastajajočega področja vesoljske kriminologije predlagamo uporabo kritične vesoljske kriminologije za raziskovanje, kako se zemeljski geopolitični in gospodarski boji v srbsko-kitajskih odnosih širijo in krepijo tudi v vesolju. V prispevku analiziramo, kako so lahko kitajska zemeljska dejanja, kot so njene naložbe v rudarjenje mineralov v Srbiji, vzporedna z njenimi ambicijami v vesolju, kar kaže na to, da so te kozmične ambicije povezane z zemeljskimi konflikti. Namigujejo, kako bi se lahko dinamika moči in neokolonialna logika reproducirali in razširili na novo mejo. Na koncu na podlagi analize izpostavimo, da bi lahko ta globalna in kozmična dinamika vplivala na regionalne izzive na Balkanu v širšem smislu, iz česar bi lahko izhajala balkanska vesoljska kriminologija.

**Ključne besede:** vesoljska kriminologija, balkanska kriminologija, srbsko-kitajska geopolitika, moč

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