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HUMAN SPACEFLIGHT: U.S. NATIONAL LEGISLATIONS AND REGULATIONS AS SPACE SHERPAS PAVING THE PATH

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Purpose: *in the 'New Space Age' of the 21st century, there is a hybridization of space activities in which new objects and subjects of law are created outside the classical UN outer space institutions. This paper exposes this phenomenon through the study of the 'space sherpas', i.e., the U.S. national space legislations and regulations that are paving the path to a new stage in commercial human spaceflight activities. In addition, the investigation holds that UNISPACE IV, to be celebrated in 2027, is an excellent opportunity to address this topic, although it was not considered in 'Action 56' of the Pact for the Future, released by UNGA79.* ***Research methods:*** *study of specialized bibliography, international and national legislations and regulations, observation methods and analysis of human spaceflight information.* ***Results:*** *participation of the private sector as owner and operator of space missions is essential for the growth of a thriving space industry in the U.S. and all over the world. Without having previously established a boundary between airspace and outer space, successful missions such as Polaris Dawn, led by 'private astronaut' Jared Isaacman, who accomplished the first private spacewalk, prove that commercial development of outer space does not depend exclusively on that historic and still unresolved debate. If an international interpretation of these commercial space activities is not built by means of an international instrument, the trend will be for each country to establish its own terms and definitions regarding human spaceflight and having the 'space sherpas' as a model.* ***Discussion:*** *what is a 'private astronaut'? Do they seek 'the benefit of all mankind' as established in Article I of the 1967 Outer Space Treaty? Are they 'envoys of mankind' as Article V OST says? Is the functionalist approach winning the upper hand over the spatialist standpoint?*

Key words: *Delimitation of Outer Space; Human Spaceflight; Orbital Spaceflight; Polaris Dawn Mission; Private Astronaut; Space Law; Suborbital Spaceflight.*

"Private spaceflight also gives rise to a new set of issues, so far outside the context of those treaties - and even of space law as a whole"
Frans G. von der Dunk

Problem statement and its relevance. In the space industry of the 21st century there is a hybridization of subjects and objects of law. An example of this is that after the discontinuation of the Space Shuttle in 2011, the National Aeronautics and Space Administration (NASA) tendered and entered contracts with private companies SpaceX and Boeing in 2014, for 2.6 and 4.2 billion dollars [1], respectively, to perform commercial spaceflights to and from the International Space Station (ISS).

The aim was to shorten what was called 'The Gap' [2, p. 662] or the time it took the United States (U.S.) to return to provide this type of services. The group that coined the term 'The Gap' and had the mission to analyze human spaceflight options after the time NASA had planned to retire the Space Shuttle was 'The Review of United States Human Space Flight Plans Committee', better known as the HSF Committee.

In that sense, the better option was "to require NASA to rely on private commercial providers. The recertification of the Shuttle would require large increases in or reallocations of NASA's budget and could potentially lead to the same inefficiencies that have plagued NASA throughout its history" [3, p. 664].

This openness for the private sector to carry on commercial spaceflight in the U.S. made companies become operators and owners of the systems they develop [4, p. 418]. And NASA, from its once main role as the hegemonic protagonist of space activities, has been put in the place of 'client' of these companies that send astronauts to and from the ISS.

A clear example of these improvements is that in the early morning of September 12th, 2024, the 'private astronaut' Jared Isaacman, founder of Draken International and Shift4 Payments, and principal sponsor of the Polaris Dawn mission, became the first human to perform a privately funded spacewalk. Crew members in the mission were Sarah Gillis, Scott Poteet and Anna Menon [5].

"Back at home we all have a lot of work to do, but form here, Earth sure looks like a perfect world" [6], said Jared Isaacman when he did the Extravehicular Activity (EVA) at 700 kilometers of altitude. The complete mission reached 1,400 kilometers from the Earth's surface.

As part of Intravehicular Activity (IVA) and tests, "Mission Specialist Sarah Gillis played the first violin in space, sending back a message of unity and hope named Harmony of Resilience, a global music moment supported by composer John Williams and professional and youth musicians around the world" [7].

The Polaris Dawn mission was launched in the early morning of September 10th, 2024, from the Kennedy Space Center aboard the Falcon 9 reusable rocket of the private company SpaceX. After almost five days in orbit, the capsule carrying the crew entered the atmosphere and splashed down in the Gulf of Mexico, near Dry Tortugas, Florida, U.S., and was successfully protected by its heat shield.

This milestone is the result of a sustained development of public-private space partnerships in the U.S. over the years. The Polaris Dawn mission is the first of three private space missions and is not part of NASA's Commercial Crew Program, which aims at "safe, reliable, and cost-effective human transportation to and from the International Space Station from the United States" [8].

Polaris Dawn mission inaugurated a new stage since the first spacewalk performed by Alexei Leonov on March 18th, 1965, which was fully funded by the USSR government and was the prelude to both the 1967 Outer Space Treaty (OST) and the arrival of humankind to the Moon on July 20th, 1969. One could think of the Polaris Dawn mission of 2024 as a steppingstone before humankind sets foot on Mars.

As a confirmation of these winds of change in the 'New Space Age' of the 21st century, Donald J. Trump, recently elected for the second time President of the U.S. for the period 2025 - 2029, nominated, precisely, the 'private astronaut' Jared Isaacman as the new NASA administrator [9].

With all these facts, a few legal questions arise. Is the term ‘private astronaut’ included in any U.S. law or any international instrument? Does the International Space Law regime cover these new subjects and objects of law? Are these ‘private astronauts’, ‘government astronauts’ or ‘space flight participants’ ‘envoys of mankind’ as Article V of the 1967 OST says?

Given this scenario of new legal relationships, consisting not only of contracts between State-State or State-Company, but directly between Company-Company, Space Law re-emerges with the need to establish an international and common interpretation for the new terms and definitions regarding human spaceflight activities.

But what does a ‘sherpa’ have to do with all this analysis? According to the Cambridge Dictionary, ‘sherpa’ means “a member of a Himalayan people who are skilled mountain climbers and who are often employed to help visiting climbers” [10].

The term ‘space sherpas’ will be used in this paper as an analogy to the current U.S. national space legislations and regulations such as the National Aeronautics and Space Act of 1958 and its amendments, the Commercial Space Launch Act of 1984 and the Commercial Space Launch Act Amendments of 1988, the Commercial Space Launch Amendments Act of 2004, the U.S. Commercial Space Launch Competitiveness Act of 2015, the Federal Aviation Administration (FAA) Reauthorization Act of 2018 and the FAA Reauthorization Act of 2024, as first steps of a more complex human spaceflight legislation and regulation.

These ‘space sherpas’ paving the path at the foot of the space mountain are being closely observed and analyzed by scholars, space professionals and consultants from different parts of the world and will most likely be used as a model in the future by other countries.

Analysis of recent research and publications. An orbital spaceflight can perform at least one orbit in outer space and can reach, e.g., an altitude of about 400 kilometers (or more) from the Earth’s surface. Performing an orbit means that the spacecraft, once it has reached the desired altitude, must travel at 28,000 kilometers per hour, not vertically but to one of its sides to ‘stay in orbit’ and not leave its new trajectory, now circumterrestrial. At the mentioned speed and altitude, a complete orbit to Earth takes approximately 90 minutes.

Currently, Elon Musk’s SpaceX, with the partially reusable orbital cargo spacecraft Dragon 2, and Boeing, with the reusable orbital cargo spacecraft CST-100 Starliner, are providers of this type of human spaceflight to the ISS. ‘Soyuz’, Roscosmos’ non-reusable orbital cargo spacecraft, also provides this service.

On the other hand, suborbital spaceflight is characterized by not making an orbit around the Earth. It is a seesaw. That is, the rocket is launched, the engine travels at approximately 300 kilometers per hour, burns up after 2 or 3 minutes, reaches a certain point, usually between 80 and 100 kilometers high, and then descends.

If suborbital flights are manned, the people on board experience approximately 3 minutes of weightlessness before returning to the earth’s surface. It is worth mentioning that suborbital flights can also cross the 100 km altitude line, widely known as the ‘Von Kármán Line’, and thus even ‘reach’ outer space, so this fact does not differentiate them from orbital flights.

Takeoff can be vertical, normally applied for missions that need to mobilize heavier payloads and crew, as in the case of the suborbital flight service provided by Jeff Bezos’ private company Blue Origin, or horizontal flights, as is done by Richard Branson’s private company Virgin Galactic.

The most important difference is that orbital flights ‘maintain’ a complete orbit around the Earth and suborbital flights, although they can also reach outer space if the mission requires it, do not maintain a complete orbit.

Human spaceflight, specifically ‘commercial spaceflight’, brings back a historical and still unresolved debate: the boundary between airspace and outer space. Is its solution necessary for the development of commercial space activities?

The functionalist approach believes “that all one has to do is to regulate space activities. According to them, one need not, or even should not, try to define where outer space begins, as is advocated by the so-called ‘spatialists’ who believe that the boundary question between national airspace and outer space should be settled as a matter of priority” [11, p. 676].

To Prof. Dr. Bin Cheng: "It is essential that the question of boundary between airspace and outer space should be clearly defined by a treaty, as well as the position of space objects which, either by design or by accident, find themselves in or in transit through foreign airspace" [12, p. 678].

Moreover, "the absence of international regulation permits States to authorize unilateral delimitation of the frontier between airspace and outer space through domestic legislation" [13, p. 47].

But from the other hand, qualified space law doctrine states: "The international space treaties, as augmented by national space legislation, regulation and governance still essentially sufficed to properly contain private space activities" [14, p. 146].

From another standpoint, equally qualified doctrine says: "the existing rules of space law, which rely solely on State responsibility and liability, are not entirely appropriate for an industry that will principally be undertaken as a private commercial venture. A new Treaty may be required to establish a system of liability that attaches to those private operators conducting space tourism activities. This new regime must also address third party liability. This will also necessitate the development of an adequate space tourism insurance market" [15, p. 1605].

However, it would seem correct for the development of private commercial spaceflight activities that an international delimitation between the space realm and airspace be established. But in countries such as the U.S. the delimitation of outer space has been "consistently refused even to have the subject discussed" [16, p. 676]. Thus, the success of the Polaris Dawn mission led by Jared Isaacman on September 12th, 2024, strengthens the functionalist approach historically held by the U.S. in international forums such as UNCOPUOS.

The purpose of this paper is to expose the phenomenon of hybridization of commercial space activities in the 'New Space Age' of the 21st century, in which new objects and subjects of law are created outside the classical UN outer space institutions through the study of the 'space sherpas', i.e., the U.S. national space legislations and regulations regarding human spaceflight which are paving the path to a new stage in this matter.

Also, the paper asks whether there is a need for creating an international instrument regarding human spaceflight or if every country will begin to apply their own terms and definitions in their domestic legislations and regulations.

In addition, the investigation holds that UNISPACE IV, to be celebrated in 2027, is an excellent opportunity to address 'human spaceflight' as a topic, although it was not considered in 'Action 56' of the Pact for the Future, released by the 79th United Nations General Assembly (UNGA79) in September 2024.

Summary of the main research material.

I. National and International Space Law

1. Human Spaceflight: U.S. National Space Legislations and Regulations

"The only State that has so far taken substantive steps to address private spaceflight, including private suborbital spaceflight and space tourism, is the United States" [17, p. 187].

One of the first steps of the U.S. on governmental space activities was the enaction of the National Aeronautics and Space Act of 1958 and its amendments. But under the administration of President Ronald Reagan, the Commercial Space Launch Act of 1984 brought the private sector into space launches, and among its purposes there was "to promote economic growth and entrepreneurial activity through utilization of the space environment for peaceful purposes" [18]. This legislation was centered on unmanned private launches as the Commercial Space Launch Amendments Act of 1988.

Years later the private manned commercial spaceflight was introduced by the Commercial Space Launch Amendments Act of 2004. In its Sec. 2, paragraph 15 of 'Findings and Purposes', established: "the regulatory standards governing human space flight must evolve as the industry matures so that regulations neither stifle technology development nor expose crew or spaceflight participants to avoidable risks as the public comes to expect greater safety for crew and space flight participants from the industry" [19].

The same Sec. 2, paragraph 17 of 'Definitions' created a new actor in space activities: the 'spaceflight participant'. By this Act, this term means "an

individual, who is not crew, carried within a launch vehicle or reentry vehicle" [20].

In the 'Commercial Human Spaceflight' section, it says: "the space flight participant has provided written informed consent to participate in the launch and reentry and written certification of compliance" [21].

In the 'Safety Regulations' paragraph it says: "Beginning 8 years after the date of enactment of the Commercial Space Launch Amendments Act of 2004, the Secretary may propose regulations under this subsection" [22].

In summary, "Congress granted the Secretary of Transportation authority to oversee the safety of the emerging commercial human space flight industry but limited the Federal Aviation Administration's (FAA) rulemaking authority" [23]. In other words, "under federal law, the FAA is prohibited from regulating the safety of individuals on board" [24].

"FAA safety regulations include requirements for flight crew qualifications and training so that the operation of the vehicle will not harm the public. This includes training for normal, emergency and abort situations and demonstrating the ability to withstand the stresses of space flight. In addition, pilots, remote operators and crew with a safety-critical role must meet all relevant FAA certifications" [25].

So, when it comes to private commercial spaceflight, currently in the U.S. there is a 'learning period', also known as 'moratorium', that has been renewed over the years, absent death, serious injury, or close call. The FAA Reauthorization Act of 2024 gave it an expiration date until January 1st, 2025 [25], but now the FAA informs that the 'learning period' has a new expiration date until January 1st, 2028 [26].

These amendment regulations were born because of the first space tourists, such as Dennis Tito in 2001 or Mark Shuttleworth in 2002, who started to participate in these private spaceflights as they were able to pay out of pocket large costs to be transported to and from the ISS. In other words, a new market was created.

As mentioned, subsequent amendments, such as the Commercial Space Launch Amendments Act of 2004 or the U.S. Commercial Space Launch Competitiveness Act of 2015, conceived the need to regulate private commercial spaceflight and even started to create terms and definitions where the International Space Treaties left the field open to the practice and need of States in the exploration and use of outer space, as long as their general legal principles are followed.

These domestic legislations gave life to the terms 'space flight participant', 'suborbital rocket', 'suborbital trajectory', 'government astronaut' and even with the FAA Reauthorization Act of 2018 there is a definition for 'spaceport' [27]. All in search of good steps for building a thriving space industry, with a focus on the private sector.

For the Commercial Space Launch Amendments Act of 2004, 'suborbital rocket' means "a vehicle, rocket-propelled in whole or in part, intended for flight on a suborbital trajectory, and the thrust of which is greater than its lift for the majority of the rocket-powered portion of its ascent" [28].

Then it defines "suborbital trajectory" as "the intentional flight path of a launch vehicle, reentry vehicle, or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the Earth" [29].

The U.S. Commercial Space Launch Competitiveness Act of 2015 introduced 'government astronaut' as a new term, which means:

"An individual who is designated by the National Aeronautics and Space Administration" and "is carried within a launch vehicle or reentry vehicle in the course of his or her employment, which may include performance of activities directly relating to the launch, reentry, or other operation of the launch vehicle or reentry vehicle" [30].

And "is either an employee of the United States Government, including the uniformed services, engaged in the performance of a federal function under authority of law or an Executive act; or an international partner astronaut" [31].

Here is where the hybridization of objects and subjects of law occurs. Now a 'government astronaut', who works for NASA, or the public sector, does his job in a spacecraft, such as Dragon 2, which belongs to SpaceX, a private space company.

By means of the mentioned legislation, international 'partner astronaut' is "an individual designated under Article 11 of the International Space Station Intergovernmental Agreement, by a partner to

that agreement other than the United States, as qualified to serve as an International Space Station crew member" [32].

Also, a definition of 'private astronaut' is established in Appendix A of NASA Interim Directive (NID) 8901.144 regarding "Private Astronaut and Sub-Orbital Spaceflight Participant Medical Procedural Requirements", which effective date is August 21st, 2024, and expires on August 21st, 2025:

"An individual who is sponsored to fly by a commercial entity and who is not employed by a Government entity. Private Astronauts can be either crew or spaceflight participants of the commercial entity, as defined by the FAA" [33].

Also, there is a Memorandum of Understanding (MoU) signed between NASA and the FAA on January 4th, 2021, regarding 'Achievement on Mutual Goals in Commercial Space Activities'.

The areas for work, cooperation and collaboration in this MoU are 'Launch and Reentry Industry Framework', 'Medical', 'Safety', 'Suborbital Spaceflight' and 'Individual Preparation for Human Spaceflight'.

The 'Launch and Reentry Industry Framework' area refers to "Advance the interests of those supporting private astronaut missions by collaborating to ensure consistency between NASA contract or agreement requirements and FAA statutes and regulations" [34].

2. Human Spaceflight: The Corpus Iuris Spatialis

Art. V of the 1967 Outer Space Treaty grants 'astronauts' the status of 'envoys of mankind' and provides for their safe and prompt return to the State of Registry of their space vehicle.

This connects immediately with Art. VIII and the 'jurisdiction and control' retained by the State of Registry and the 'quasi-territoriality' [35, p. 271] applied over the space object and all personnel on it. This includes EVA tests.

Article VI OST provides that States Parties shall be internationally responsible for their national activities in outer space, the Moon and other celestial bodies. In these activities non-governmental organizations, i.e. the private sector, are included and must be authorized and constantly supervised by the appropriate State, but the responsibility remains with the State.

Then, summing up the analysis of Article VI OST with Article VII OST, as a block, it emerges that it is the 'Launching State' in its four categories which bear liability.

The 1968 Rescue Agreement mentions the word 'astronaut' in its title and in its Preamble, but in the rest of the articles it refers to 'personnel of a spacecraft' and does not provide further specifications or definitions.

As a general principle, the 1972 Liability Convention applies absolute liability, because of the ultra-high risk of space activities, when the damage of a space object is caused on earth or to aircraft in flight. On the other hand, when damage is caused to other space objects, fault liability applies. And there is no limit established for the compensation due.

However, with private commercial space activities, such as the Polaris Dawn mission, and with new definitions created by the 'space sherpas', i.e., the U.S. national space legislations and regulations, the following questions arise:

Are these 'government astronauts', 'spaceflight participants' and 'private astronauts' 'envoys of mankind' as Article V of the 1967 OST says? Do these subjects of law seek 'the benefit of all mankind' as established in Article I OST? Do they fit into the legal principles and terms of the rest of Corpus Iuris Spatialis?

It seems that the term 'private astronaut', although not yet defined in any national space legislation or international space instruments, but as studied, only defined in a NID, fits within the definition of 'personnel of a spacecraft' mentioned in the 1967 OST, the 1968 Rescue Agreement, the 1975 Registration Convention and the 1979 Moon Agreement (for those States that are part of it).

Article 10 of the 1979 Moon Agreement has an interesting provision; it says that State Parties shall regard any person on the Moon as an 'astronaut' within the meaning of article V OST and as part of the 'personnel of a spacecraft' within the meaning of the 1975 Rescue Agreement. This is an interesting thing to have into account, maybe its scope can be amplified and included in a future international regulation of huma spaceflight activities.

By the other hand, although it is not an international treaty, the Artemis Accords in Section 6 of Emergency Assistance, establish: "The Signatories

commit to taking all reasonable efforts to render necessary assistance to personnel in outer space who are in distress, and acknowledge their obligations under the Rescue and Return Agreement" [36].

3. UNISPACE IV

A good opportunity to debate terms and definitions regarding human spaceflight within UNCOPUOS will be the Fourth United Nations Conference on the Peaceful Exploration of Outer Space (UNISPACE IV) in 2027 [37].

The idea of realizing this conference has been promoted in the 'Action 56' of the recent 'Pact for the Future'. The resolution was A/RES/79/1 and released on September 22nd, 2024, by UNGA79.

The document contains the 'Pact for the Future' and two annexes: 1) The 'Global Digital Compact' and 2) The 'Declaration on Future Generations'. All of them were an outcome of the Summit of the Future, held in New York between the 20th – 21st (Action Days) and the 22nd – 23rd (Summit) of September 2024.

But there were only three issues that were pointed out in 'Action 56' of the 'Pact for the Future' regarding the creation of 'new frameworks' within UNCOPUOS: 'space traffic', 'space debris' and 'space resources' [38].

There were no frameworks proposed for commercial human spaceflight. The only phrase that could be attributed to a possible debate is in 'Action 56' (b): "Invite the engagement of relevant private sector, civil society and other relevant stakeholders, where appropriate and applicable, to contribute to intergovernmental processes related to the increased safety and sustainability of outer space" [39].

Perhaps UNISPACE IV is an opportunity for Space Law to regain predictability.

Conclusions. The 'space sherpas', i.e., the U.S. national space legislations and regulations, built step by step since 1958, in the 21st Century, are paving the path to a completely new stage in the commercial human spaceflight topic.

The decision to generate new legal terms and definitions regarding human spaceflight is not coming from the classical UN institutions, but from the thrust of entrepreneurs and the U.S national space policy. And without having previously established a boundary between airspace and outer space, the 'space sherpas' have managed to legislate and regulate things that the space treaties did not mention and, at the same time, brought the private sector into the game.

The first part of the Polaris Dawn mission, led by 'private astronaut' Jared Isaacman, and successfully completed on September 2024, strengthens the classical 'functionalist' approach historically held by the U.S. in international forums such as UNCOPUOS and everything indicates that the trend to create domestic space legislations and regulations establishing their own terms and definitions regarding human spaceflight will increase among spacefaring nations.

In the U.S. the Secretary of Transportation has authority to oversee the safety of the emerging commercial human spaceflight industry and the Congress limited the FAA rulemaking authority regarding the safety of the crews on board. So, currently there is a 'learning period', also known as 'moratorium', absent death, serious injury, or close call.

Although these 'space sherpas', i.e., the U.S. national space legislations and regulations, could be considered 'light' because they lack elements to preserve and guarantee the health and safety of these new subjects of law and although these 'private astronauts' and 'spaceflight participants' have to sign a 'confirmed consent' in which they know the risks to their physical integrity and even their lives, commercial human spaceflight is an ultra-risky activity, and the U.S. 'learning period' or 'moratorium' is at a certain point are tolerable if the main purpose is to develop soon more complex regulations when the activity becomes more consolidated.

Up to date, there is no definition of the term 'private astronaut' in any national legislation or international instrument. As studied, only the NID 8901.144 contains a written definition but unless there is an extension it will expire on August 21st, 2025.

Although the Pact for the Future expressed in its 'Action 56': "We are living through an age of increased access to and activities in outer space", the only three issues that were encouraged by this document to establish new frameworks through

UNCOPUOS were ‘space traffic’, ‘space debris’ and ‘space resources’. But ‘human spaceflight’ did not appear as a clear topic.

So, there is an opportunity to discuss ‘human spaceflight’, or more specifically ‘commercial human spaceflight’, at UNISPACE IV in 2027, a great chance for the historical ‘communis opinio generalis’ of Space Law to regain its predictability in this matter.

Perhaps the logic of ‘universal consensus’ for the creation of international instruments from within UNCOPUOS to regulate new commercial space activities included in private commercial spaceflight and even integrate the private sector in the international decisions is, for now, far away from becoming a reality. But given this new scenario of new legal relationships, Space Law re-emerges with the task of establishing an international and common interpretation for new terms and definitions regarding ‘commercial human spaceflight’. And that will become noticeable and a need when many countries and private companies are engaged in this space industry.

The question is whether this legal system oriented on States responsibility and liability, thought in a ‘glorious’ but past era, when space missions were exclusively carried out by the public sector, would be the fairest legal system in the 21st century, a new time in which missions such as Polaris Dawn encourage the growth of private commercial spaceflight and opens the door to new subjects and objects of law still undefined in the legal international instruments. For these reasons it is necessary to rethink, rebuild and even create new international space treaties for when private companies like SpaceX and Blue Origin multiply in the world.

So, if you pay a ‘space sherpa’ to take you to the top of the space mountain: Would you be willing to do what it takes to reach it?

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27. See FAA Reauthorization Act of 2018, Sec. 599D, Spaceports. URL: https://www.congress.gov/bill/115th-congress/house-bill/4/text.

28. See Commercial Space Launch Act, 2004, Sec. 2, Amendments, (b) Definitions. URL: https://www.congress.gov/bill/108th-congress/house-bill/5382/text.

29. Ibidem.

30. See U.S. Commercial Space Launch Competitiveness Act of 2015, Sec. 112, (c) Definition of Government Astronaut. URL: https://www. congress.gov/bill/114th-congress/house-bill/2262/text.

31. Ibidem.

32. Ibidem.

33. See for details Appendix A of NASA Interim Directive (NID) 8901.144 regarding "Private Astronaut and Sub-Orbital Spaceflight Participant Medical Procedural Requirements". URL: https://nodis3.gsfc.nasa.gov/OPD_Docs/NID_8901_144_.pdf.

34. See for details Memorandum of Understanding (MoU) signed between NASA and the FAA on January 4th, 2021, regarding Achievement on Mutual Goals in Commercial Space Activities. URL: https://www.faa.gov/sites/faa.gov/files/space/legislation_regulation_guidance/FAA_MOU_signed_by_NASA_and_FAA.pdf.

35. See for details Cheng, The 1967 Space Treaty, in *Studies in International Space Law*, Clarendon Press Oxford, University of Oxford, UK, 1997, pp. 271.

36. See The Artemis Accords, Section 6 Emergency Assistance. URL: https://www.nasa.gov/wp-content/uploads/2022/11/Artemis-Accords-signed-13Oct2020.pdf.

37. See UNGA A/RES/79/1, *The Pact for the Future, Global Digital Compact and Declaration on Future Generations*, September 2024. URL: https://documents.un.org/doc/undoc/gen/n24/272/22/pdf/n2427222.pdf.

38. Ibidem.

39. Ibidem.

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ПОЛЬОТИ ЛЮДИНИ В КОСМОС: НАЦІОНАЛЬНЕ ЗАКОНОДАВСТВО ТА НОРМАТИВНІ АКТИ США ЯК КОСМІЧНІ ШЕРПИ, ЩО ПРОКЛАДАЮТЬ ШЛЯХ

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Мета: *у «нову космічну еру» 21-го століття відбувається гібридизація космічної діяльності, у якій нові об'єкти та суб'єкти права створюються поза класичними космічними установами ООН. Дана стаття розкриває це явище через дослідження «космічних шерп», тобто національного космічного законодавства та нормативних актів США, які прокладають шлях до нового етапу в комерційній діяльності людини в космосі. Крім того, згідно з дослідженням, ЮНІСПЕЙС IV 2027 року є чудовою нагодою для вирішення цієї теми, хоча це не було розглянуто в «Дії 56» Пакту про майбутнє, оприлюдненому ГА ООН79.* ***Методи дослідження:*** *вивчення спеціалізованої бібліографії, міжнародного та національного законодавства та нормативних актів, методи спостереження та аналіз інформації про політ людини в космос.* ***Результати:*** *участь приватного сектора як власника та оператора космічних місій є важливою для розвитку процвітаючої космічної галузі в США та в усьому світі. Не встановивши раніше кордону між повітряним і космічним простором, успішні місії, такі як Polaris Dawn під керівництвом «приватного астронавта» Джареда Ісаакмана, який здійснив перший приватний вихід у відкритий космос, доводять, що комерційне освоєння космічного простору не залежить виключно від цієї історичної події та дебати все ще тривають. Якщо міжнародне тлумачення цієї комерційної космічної діяльності не буде побудовано за допомогою міжнародного інструменту, кожна країна матиме тенденцію встановлювати власні терміни та визначення щодо польоту людини в космос і використовувати «космічних шерпів» як модель.* ***Обговорення:*** *що таке «приватний космонавт»? Чи прагнуть вони «вигоди всього людства», як зазначено в статті I Договору про космос 1967 року? Чи вони «посланці людства», як сказано в статті V OST? Чи функціоналістичний підхід бере гору над просторовою точкою зору?*

Ключові слова: *делімітація космічного простору; політ людини в космос; орбітальний космічний політ; місія Polaris Dawn; рядовий космонавт; космічне право; суборбітальний космічний політ.*

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