

Testimony of Laura Montgomery
Ground Based Space Matters
Before the Senate Committee on Commerce, Science, and Transportation
Subcommittee on Space, Science and Competitiveness
Reopening the American Frontier: Exploring How the Outer Space Treaty Will
Impact American Commerce and Settlement in Space
May 23, 2017, Russell Senate Office Building

Chairman Cruz, Ranking Member Markey, Chairman Thune, Ranking Member Nelson, and Members of the Subcommittee, thank you for inviting me to participate in this important discussion and to address the role the Outer Space Treaty should play in the regulatory responsibilities of the United States. This country has the opportunity to interpret the Outer Space Treaty in two ways: as conducive to private activity or so that it creates barriers. A close reading of the text shows that the treaty actually allows a lighter regulatory hand than many claim, both in terms of the authorization and supervision requirements of Article VI and in terms of the harmful contamination provisions of Article IX.

As someone who hopes to see people beyond Low Earth Orbit again in my lifetime, and who hopes to see commercial space operations other than launches, reentries, and communications satellites, I respectfully recommend that the United States not regulate new, commercial space activities such as lunar habitats, mining, satellite servicing, or lunar beer brewing for the wrong reason: the belief that Article VI makes the United States regulate either any particular activity or all activities of U.S. citizens in outer space. Regulations already cost American industry, the economy, and the ultimate consumer upwards of four

trillion dollars, according to recent research from the Mercatus Center,¹ so we should think carefully before creating more drag on the space sector.

A misunderstanding of the Outer Space Treaty looms as possible regulatory drag because many, including agencies in the Executive Branch, claim Article VI of the treaty prohibits operations in outer space unless the government authorizes and supervises—which I’ll refer to as “oversees” or “regulates”—those activities. Although Article VI states that “[t]he activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty,” the U.S. Government should not interpret this as forbidding unauthorized, private space activity for three reasons. The treaty does not forbid private operators from operating in outer space. It does not say that either all or any particular activity must be authorized, leaving decisions regarding what activities require regulation to the member states. And, finally, Article VI is not, under U.S. law, self-executing, which means that it does not create an obligation or a prohibition on the private sector unless Congress says it does.

I will also address Article IX of the Outer Space Treaty and its admonition that States Parties to the treaty avoid harmful contamination of outer space and adverse changes in the environment of Earth. This provision does not, on its face, apply to private actors. It is thus not an obligation on the United States to impose this requirement on the private sector. Even if Congress were to decide that private activity has progressed to the point where contamination has become a concern, Congress would have a number of policy decisions to make, including whether current views on harmful contamination, which might

¹ Bentley Coffey, Patrick McLaughlin, and Pietro Peretto, “The Cumulative Cost of Regulations” (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2016).

keep space a scientific preserve, should stand in the way of human activity in outer space. Because the harmful contamination provision is neither applicable nor self-executing, the regulatory agencies should not attempt to enforce it until and unless Congress directs them to do so legislatively.

In order to put to bed the regulatory uncertainty arising out of any misunderstandings, Congress could take a number of different approaches. The most certain and long-lasting approach, however, and the one that would reduce the opportunities for confusion, misunderstanding, and regulatory overreach, would be for Congress to prohibit any regulatory agency from denying a U.S. entity the ability to operate in outer space on the basis of inapplicable or non-self-executing provisions of the Outer Space Treaty, including Articles VI and IX.

I. The Treaty Does Not Forbid Private Space Activity, but Leaves it to Each Country to Decide What Activities to Regulate and How to Regulate Them

Article VI of the Outer Space Treaty states:

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

The United States itself is in compliance with Article VI because the treaty leaves the decisions about how to comply with its rather ambiguous terms to each country. By its own terms, Article VI legally does not and cannot prohibit space operations by the commercial sector. Instead Article VI leaves it to each country to decide which particular

activities require regulation, how that regulation will be carried out, and with how much supervision. Accordingly, if Congress hasn't said that a certain activity, such as lunar harp playing, requires authorization and continuing supervision then lunar harp playing does not.

Article VI contains three relevant ambiguous terms that the drafters have left to the different countries to define as they see fit. The terms are "authorization," "continuing supervision," and "activities."

A. Authorization

Article VI says that a country must authorize its nationals' activities. Each country has its own processes and terminology for how it authorizes something. The United States alone authorizes regulated activities by certificate, certification, approval, license, registration, waiver, or exemption. In the United States, Congress determines the nature of the authorization.

B. Continuing supervision

The signatories to the treaty are supposed to require continuing supervision of their nationals. "Continuing supervision" is a matter of frequency. Some agencies conduct annual inspections. Others oversee regulated activities on a daily basis. Some only show up after an accident. The frequency may not be the same, but the supervision may still be called continuous. The nature of the supervision may differ from country to country but all, regardless of frequency, could comply with Article VI's call for continuing supervision.

C. Activities

Finally, and most importantly, the treaty leaves it to each country to decide what activities require supervision and authorization. The treaty does not say *all* activities require oversight. It does not say *which* particular activity requires oversight. Rather, it leaves to

each country's policy makers the decision as to where to draw the line. And draw lines they must, so as not to waste resources, unduly burden the industry, or cause confusion. For the United States, the entity that makes those determinations is the U.S. Congress, and the regulatory agencies should wait for Congress to act.

Article VI is structured so that a country need not expend resources regulating frivolous, mundane, or non-hazardous activities. Each country may itself decide what activities require authorization and supervision. Thus, if our decision makers haven't decided that a particular activity needs authorization, that activity does not. If Article VI truly meant that all activities had to be overseen, where would oversight stop? Life is full of activities, from brushing one's teeth to playing a musical instrument, which take place now without either federal authorization or continuing federal supervision. Just because those activities take place in outer space does not mean they should suddenly require oversight.

As a matter of past practice, Congress has always identified what activity it wanted regulated, and it has done so with the proper level of specificity that due process considerations of notice and transparency require. Congress required the Federal Communications Commission to license satellite transmissions. It required the Department of Transportation (DOT) to license the launch of launch vehicles. Later, it required DOT and the Federal Aviation Administration (FAA) to license the reentry of reentry vehicles as well. Congress also mandated that the seemingly benign activity of taking pictures of Earth—"remote sensing"—requires regulation, too. The point is, each time Congress determined that something required oversight, whether for reasons of safety, national security, or interference, it identified the activity in question, and it did so with sufficient clarity that persons of ordinary intelligence could tell what was forbidden and what was required.

As a matter of policy, Congress may determine that there are good reasons to expend government resources and taxpayer dollars on a particular activity. Hypothetically, Congress could say that robotic mining of rocks in space really far away does not require regulation because no one lives on that rock, it has no visitors, and no one will get hurt by it. Or, it could say that bringing all those platinum group minerals back to Earth at once will wreak havoc on the economy and then set up an agency to oversee pricing. Even if Congress ignored asteroid mining, it might forbid the reentry of anything large enough to make a crater the size of the Yucatan. There are a number of considerations that may lead to legislation and regulatory oversight. But they are not in Article VI.

Just as there are serious activities that someone may say require oversight, there are a host of other activities that don't. One hears no lamentations over the lack of authorization of space tourists. Yet space tourists exist now. Lunar habitats and space mining do not.

In short, Article VI leaves at least three decisions to each country that signed the Outer Space Treaty: What form should an authorization to take? How frequent must the continuing supervision be? And, what activities require any authorization at all? If Congress doesn't think playing the harp in space requires authorization, then it doesn't, the U.S. is still in compliance with Article VI, and the Executive Branch should not attempt to stop the "unauthorized" harpist.

II. Article VI is not Self-Executing

If a treaty promises, implicitly or explicitly, that the signatories shall enact legislation to implement the treaty, it necessarily requires additional action by another branch of the government than the Executive. In the United States, that other branch is the

U.S. Congress, and Article VI's call for supervision and authorization requires the kind of policy decisions that are made by our Congress.

As the Supreme Court noted in *Medellin v Texas* in 2008, "not all international law obligations automatically constitute binding federal law enforceable in United States courts." As far back as the early 19th century, in a case called *Neilson v Foster* in which the Court considered a treaty with language similar to that used in Article VI, the Supreme Court said that Congress had to first enact legislation before it could enforce the treaty because the text of the treaty required additional legislative action. With its space legislation, Congress has acted consistently with the Supreme Court's holdings. When Congress decides that an activity requires regulation, it will pass a law, and has done so for launch, reentry, remote sensing from space, and satellite communications.

Because Article VI is not self-executing and thus not enforceable federal law, until Congress acts, regulatory agencies should not treat Article VI as a barrier that applies to commercial actors or claim that it prohibits all or any particular private activity. Indeed, given the close textual analysis that the Supreme Court typically applies to treaties, Article VI's potential obligation on the government does not, even on its own terms, constitute a prohibition on the private sector.

III. Paths Forward

Purely as a legal matter, Article VI should not create a barrier to private activity. However, should there be concerns that this view is not shared by agencies of the Executive Branch, Congress has legislative options at its disposal.

A. Legislation Could Clarify that the Executive Branch May Not Prohibit a U.S. National from Conducting an Activity in Space Unless Congress Requires that Activity’s Authorization and Continuing Supervision

Legislation could clarify that regulatory agencies may not prohibit a U.S. national from conducting an activity in space unless Congress required federal oversight. This would not be legally necessary, strictly speaking, because this proposal merely reflects current law. However, since the issue of what Article VI means has created legal and regulatory uncertainty, Congress could lay that uncertainty to rest with a directive to regulatory agencies to abstain from using the lack of federal oversight of a particular activity as a reason to deny a payload review, a launch or reentry license, or authorization for satellite transmissions or remote sensing.

There are clear advantages to this path. It would, of course, create certainty, which is helpful to industry’s quest for innovation and investment. It would be long-lasting. Most importantly, this path would ensure that before Congress required federal oversight of another activity in space, it would first determine whether a real need existed for that oversight.

B. Let us Not Regulate Everyone for Everything Everywhere in Space

Congress should not require the authorization and supervision of “all” private activities in outer space by private U.S. nationals. The Supreme Court, in criminal and First Amendment cases, has stated that laws should be drafted so that persons of ordinary intelligence can tell what is forbidden and what is required. Should Congress decide to require regulation, it should avoid the proposals that would require federal oversight of “all space activities.” Language like that could entrap people engaged in perfectly benign

activities. They might reasonably believe that something they do all the time on Earth was not a “space activity” or “operation of a space object” subject to regulation. What is forbidden or required should be clear and the government must provide adequate notice of what has to be authorized.

Many activities in space shouldn't require regulation, just as many activities we engage in on the ground don't. Just as there are hazardous activities that may require oversight, there are a host of other activities that don't. People will engage in activities that might endanger themselves, their customers, or their neighbors, but they will also perform more ordinary acts. A musician may decide to play the harp on the Moon. The internet tells us that a student group plans a little lunar brewing of beer in the interests of science. Rather than enacting overly broad legislation that transfers all of its legislative powers to a regulatory agency, Congress could take the more measured and transparent approach of deciding which activities require oversight while acknowledging that not all of them do.

Indeed, without the clarity of identifying the activities that require oversight, such a transfer of legislative power would only prolong any regulatory uncertainty as industry faced the possibility of having to obtain permission for every little activity proposed. The impact of regulation on the private sector is real.

Typically, if an agency receives a very broad grant of authority the agency will eventually construe that authority to its maximum limits. Were Congress to require authorization and supervision of all activities by U.S. entities in outer space, the incentives on and responsibilities of regulators—such as making sure they don't miss anything, making sure they don't allow something dangerous to happen, and making sure they know what's going on—mean that the agencies will attempt to oversee more than just those activities that

are hazardous to others or pose national security concerns. After all, an agency can't figure out if these threats exist unless it finds out all—from the trivial to the hazardous—that an operator plans. Inquiries will be made.

The regulatory process balances a host of competing interests, including transparency, fairness, legal sufficiency, and safety. Unfortunately, these necessary considerations sacrifice efficiency and flexibility. As a society, we consider that sacrifice worth it when an activity jeopardizes other people. When an activity doesn't, we must ask if the constraints serve a useful purpose. If Congress were to decide, as it has in the past with respect to launch, reentry, remote sensing, and satellite communications, that another space activity required regulation, it should identify that activity specifically. Space bakeries, on account of the threats posed by their ovens, might require governmental oversight if there were other people nearby. Robotic mining of asteroids millions of miles from human habitation might not. Congress should not, however, interpret Article VI to require the regulation of everything.

C. The FAA's Payload Review: Opportunity or Threat?

Does the FAA's statutory payload review authority allow the FAA to provide a positive payload determination to an entity not otherwise supervised by the federal government? Yes, it does. This answer may not, however, be consistent with the view of everyone in the Executive Branch because of Article VI's call for authorization and supervision.

When conducting a payload review, the FAA must do so consistent with public health and safety, safety of property, national security, and foreign policy interests. Thus we see that the FAA's foreign policy authority allows the FAA to make its own determinations

on foreign policy. Its governing statute, the Commercial Space Launch Act, requires the FAA to consult with the State Department on a matter affecting foreign policy. The FAA has implemented this requirement² in its regulations to state that it consults with the Department of State on foreign policy issues for its payload reviews.

Under the better and more legally sound interpretation of its authority, the FAA could use its foreign policy powers to encourage, facilitate and promote the space industry. For example, were a prospective lunar harpist to seek a payload determination from the FAA, the FAA would engage in its normal practice of inter-agency consultation. The U.S. Department of State might raise concerns with respect to the fact that Congress has not passed legislation to regulate harp playing despite Article VI's proviso that all States Parties to the treaty authorize and continuously supervise the acts of their nationals in outer space. With its own foreign policy authority, independent of that of the State Department, the FAA could determine that because Article VI is not self-executing, until Congress acts, the U.S. has not determined that playing the harp constitutes the type of activity requiring oversight under the treaty. Having satisfied its consultation obligations, the FAA could then issue a favorable payload determination.

Conversely, relying on its foreign policy authority, the FAA could worry that other countries might raise issues about Article VI oversight of a lunar harpist and contemplate denying the harpist's requested payload determination. Such a determination would, as noted, run afoul of the fact that Congress has not determined that lunar harp playing is the kind of activity that requires federal oversight. The FAA must make any policy determinations in accordance with U.S. law, and a non-self-executing treaty is not, as noted

² The FAA could change its regulations so that it only consulted on isolated questions rather than for each payload given how 51 U.S.C. § 50918 phrases the requirement.

by the Supreme Court's *Medellin* opinion, binding federal law. To treat it as such would raise the question of whether the FAA was usurping Congress's legislative role.

Lunar harp playing is a vaguely ludicrous example of an activity that could take place extraterrestrially, but it makes the point that the Outer Space Treaty left the determinations of what requires authorization and continuing supervision to each signatory nation. If Congress hasn't decided that lunar harpists or miners require oversight for their respective activities, they don't and the regulatory agencies should not attempt to stop these activities. The treaty does not say which activities must be regulated, and in the United States that determination lies with Congress. For the FAA to say that it had the ability to make such determinations about a non-self-executing treaty would be to say that it, rather than the legislative branch, could make the legislative determination.

Accordingly, because of the FAA's foreign policy authority muddying the waters over the FAA's responsibilities, the FAA's payload review creates regulatory uncertainty for industry, and likely merits closer Congressional scrutiny and possible revision.

D. Most Provisions of the Outer Space Treaty only Apply to Governmental Activity in Space

The bulk of the Outer Space Treaty's requirements apply to "States Parties," and the United States should not interpret those provisions as applying to private actors. For example, Article IV says that "States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction,..." If Congress wanted to make sure that this prohibition applied to private parties, Congress might consider implementing legislation.

Another provision that calls out for Congressional clarification—as well as a multitude of policy determinations—is whether the harmful contaminations provisions (often referred to as the “planetary protection” provisions) of Article IX apply to commercial operations. Article IX states, in relevant part, that:

States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose.

Some, including regulatory agencies, claim that Article VI’s provision that States Parties to the treaty assure “that national activities are carried out in conformity with the provisions set forth in the present Treaty” means that commercial actors must abide today, even absent legislation, by each provision in the treaty, even the provisions that only apply to governments.

The first reason to question the applicability of the “planetary protection” provision is that the treaty itself limits this requirement, like many others, to “States Parties.” States Parties are governments. When the drafters of the treaty intended a particular provision to apply to non-governmental entities they said so. For example, Article IX contains another provision that does apply to non-governmental entities, namely, the requirement for a State Party to consult if it “or its nationals” might interfere with others in outer space.

Secondly, even if it applied, Article IX’s planetary protection provision is not self-executing. It requires the legislative branch to make numerous policy judgments, such as whether the goals of space science or space settlement should preempt one another or may

be pursued together. According to NASA's website,³ "planetary protection" is the term "given to the practice of protecting solar system bodies (*i.e.*, planets, moons, comets, and asteroids) from contamination by Earth life, and protecting Earth from possible life forms that may be returned from other solar system bodies." NASA is being a good steward with this approach, but the approach is not conducive to human settlement. If Congress were to legislate regarding Article IX's goal of avoiding harmful contamination, Congress should make it clear that human beings are not a contaminant. If Congress settled that question, anything with equivalent or less biological baggage than a human being should not be required to undergo the expensive sterilization protocols now employed for government missions.

We must keep in mind, however, that the United States did not agree to apply the harmful contamination provision to commercial operators. Accordingly, until Congress acts, we may hope that the new administration will not attempt to treat the harmful contamination provision as binding federal law for commercial operators. Just as in *Medellin* where a President could not unilaterally impose a treaty obligation on the states, regulatory agencies should not attempt to impose treaty obligations on the private sector without Congressional action. The United States could also take this opportunity to clarify its own interpretation of this provision as applying only to governmental operations in space, not to the operations of private actors.

Conclusion

In closing, I wish to say that Congress, in deciding whether to regulate a particular activity in space, should follow its usual decision-making process for deciding whether an

³ Office of Planetary Protection, <https://planetaryprotection.nasa.gov/overview> (last checked May 18, 2017).

activity requires regulation. Can the activity hurt other people? Could it have health effects? Are there national security concerns? Are there other, less burdensome solutions than federal regulation? Is it too soon to regulate? Congress has placed a moratorium on the regulation of human space flight for safety purposes. Does the same logic apply to lunar harpists? To lunar miners?

What the United States does not need to do is to regulate purely for the sake of regulation, which is what the misunderstandings over the role of Article VI in U.S. law may lead to. Nor, unless Congress sees domestic policy reasons for doing so, does the United States have an international obligation to impose the harmful contamination provisions on the private sector.

Thank you for the opportunity to testify before you today. I look forward to working with you on these issues in the future.