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THE EXPANSION OF PRIVATE ACTIVITY IN SPACE AND ITS IMPACT ON THE
DEVELOPMENT OF THE INTERNATIONAL LAW OF OUTER SPACE

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Private companies are playing an ever-larger role in the use of outer space and their presence in space will continue to expand in the coming years. For example, increased private activity in space will likely be encouraged by the new U.S. space policy proposed by the Obama administration which would require the U.S. government to rely on private companies for the delivery of crew, cargo, and satellites into space. This paper examines the effect that this increased private activity will have on the future development of the international law of outer space. One question that emerges from increased private activity in space is whether (and to what extent) existing space law applies to private activity. For example, whether the existing duty to rescue and return spacecraft applies to such activities. A second question that presents itself is what effect private activities will have on the shape of future space law treaties under the Vienna Convention's doctrine of taking into account state action in the interpretation of treaties. A third question concerns the effect of private activities on the evolution of customary international law. Ultimately, this paper considers the proper roles of treaty law, soft law and domestic regulations in the regulation of private space activity.

**I. INTRODUCTION: A NEW ERA OF
INCREASED PRIVATE SPACE ACTIVITY**

In recent years there has been a remarkable increase in activity in the private space industry as well as new government initiatives that suggest that the world is embarking on a new era that will see private actors displacing governments in certain areas of space use. Perhaps most notably we have witnessed the emergence of the suborbital human spaceflight companies, such as Virgin Galactic, Blue Origin, Rocketplane, and ExcaliburAlmaz that plan in the coming years to fly private passengers into suborbital space and beyond as they bring about the advent of private human spaceflight. SpaceX, the innovative company founded by Elon Musk, has had extraordinary success in developing an alternative low-cost orbital delivery system. After successfully proving its rocket technology, SpaceX was awarded a contract by NASA to deliver cargo to the international space station (and perhaps eventually crew) to the International Space Station in the coming years.

This growing activity in the field of private space activity is likely to receive additional stimulus by President Barack Obama's proposed U.S. Space Policy which would provide additional support for private industry by requiring NASA to rely on private service providers to an extent unknown heretofore. In

short, President Obama has proposed to eliminate the Ares launch vehicle and Orion space capsule that was part of the Constellation program which was to return U.S. astronauts to the Moon. President Obama believed that the Constellation program was underfunded and unlikely to succeed as currently designed. The proposal called for the redirection of funds to the private space industry by allocating \$6 billion for NASA to engage private companies to provide the services that will be needed by the U.S. government to deliver satellites, cargo and people into space.

The Obama Administration's proposal was met with sharp resistance from some stakeholders in the space program (particularly from those NASA facilities and the surrounding communities that are currently involved in the development of the Constellation program). While some of this opposition arises from a fear of funding loss (and job loss), the opposition also stems from the reasonable concern that private industry may not be able to deliver the services required by the U.S. space agency. These differing viewpoints charge the ongoing debate that has been held in both the Senate in the House of Representatives regarding the future funding of NASA. The Senate was the first to respond to President Obama's proposal by significantly reducing the funding of private industry to the point where rather than providing \$6 billion to private industry over five years, only \$1.3 billion would be provided over the

next three years – although the full \$6 billion would over a longer term be made available to NASA to engage private companies.

The House of Representatives was not so accepting of President Obama's proposal. The House bill made far deeper cuts to the \$6 billion by allowing the funding to the extent of only \$750 million over five years for the so-called "commercial crew initiative." The House bill would also continue the development of the Ares-1 crew launch vehicle and calls for the development of a heavy lift launch vehicle by the end of 2016. The Senate and House bills will now have to be reconciled before the new U.S. policy comes into effect. In the meantime, strong proponents of this increased support of private industry have emerged. For example, six Nobel laureates have recently signed a letter supporting President Obama's original proposal.

Although the entrepreneurial companies that have recently emerged in the field of private space with their new business models and new technologies would make it appear that private industry is appearing for the first time in the use of outer space, this is far from the case. Private companies have long been active in placing private payloads into orbit and in assisting governments in achieving their goals in the use of outer space. The U.S. government in particular has a long history in supporting the development of the private space industry. This policy is encapsulated in the Commercial Space Launch Act of 1984 which requires the United States government to engage private industry to the extent that a private company can provide launch services required by NASA to achieve its goals (and only when such services are not available or other of National Security concerns are at stake is now set permitted to use services provided solely by the government). So the existence of private space companies and government support for the private industry is nothing new. However, the emergence of SpaceX and the new space tourism companies have broken new ground in the space industry by challenging established space companies with respect to efficient payload delivery and human which has before now been solely the province of government space agencies. So it appears that we are moving into a new era of private activity as entrepreneurs are promising to achieve things that only government space agencies have been able to do.

II. THE PROBLEM

So now the question presents itself. If we are embarking on a new era of increased private space activity, how will this new expansion of private activity affect the international law of outer space? This paper attempts to answer this question by taking up four issues that are raised in the course of this inquiry. First, to what extent do the existing space treaties apply to the private activity that we will be seen in the coming years? Are the treaties drafted in a manner that address the concerns of private space? Should we amend the treaties in order to address these issues? Second, what is the effect of private space activity on the future interpretation of the treaties? International treaties are to be interpreted, in part, in accordance with state practice. As private activity in space expands, states will act in reaction to or in connection with this private activity and these actions may affect the interpretation of the treaties. Third, to what extent will private activities in outer space affect the development of customary international law? Fourth, and finally, this paper addresses the question of what the appropriate or likely shape of the regulation of space activities will take as we move into an era of greater private activity. In other words, will additional treaties be drafted to address private concerns or will softer law be used to regulate the activity in outer space, such as model laws or guidelines to be adopted by domestic jurisdictions? Perhaps international law will fall by the wayside altogether as individual countries regulate private space activity as we have seen in the Human Space Flight Regulations enacted in the United States.

III. THE APPLICATION OF EXISTING TREATIES TO PRIVATE ACTIVITY

With regard to the first issue of whether existing space treaties apply to private activity, the question does not allow for a yes or no answer. Perhaps the simplest response is that the existing space treaties are placed under a certain degree of stress in the face of private activity. The meanings of some provisions in the existing treaties were not drafted with a sufficient clarity to enable a confident application of the treaties to private activity. Other provisions of existing treaties seem to more clearly indicate that they would apply to private activity – however, the legal regime that they put into place is not necessarily the ideal regime for the current needs of the private space industry.

It is undeniable that the current space treaties contemplated their application, at least to some extent, to private activity. This is perhaps most clearly stated in Article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the “Outer Space Treaty”) which requires states to supervise the space activities of its nationals whether such activity is carried out by governmental or non-governmental activities – which must encompass commercial space activity. In many cases the current treaties are broadly drafted in a manner that that would easily enable their application to private activities. For example, the Convention on Registration of Objects Launched into Outer Space (the “Registration Treaty”) requires the registration by a state of any space object launched from its territory (and any objects whose launch is “procured” by the state) – which would include objects launched by commercial parties. In fact, state practice has confirmed this broad interpretation of the treaty (including privately owned objects) since states have for many years registered commercial objects that were launched from its territory.

The Convention on International Liability for Damage Caused by Space Objects (the “Liability Convention”) also provides an example where the terms of the treaty are drafted in a sufficiently broad manner to make a state liable not only for damage caused by government space objects, but for any space object put into space by the launching state. Similarly, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the “Rescue and Return Agreement”) contains broadly drafted language that would require a state to return a space object to the launching state, even if that space object is commercial in nature – and this interpretation of this treaty has been confirmed by state practice.

The application of the existing space treaties to commercial activity is not always so clear. One example is found in the Rescue and Return Agreement which requires states to rescue the “personnel” of spacecraft. Whether this duty would apply to the rescue of private passengers has only recently become a pressing topic of discussion. The new suborbital space companies may wish to take advantage of an interpretation that requires states to the rescue their passengers. However this is one instance of where the language of the existing treaties comes under stress for it is not clear whether the term

“personnel” encompasses private space flight participants.

Another issue that arises with respect to the existing space treaties is whether certain aspects of the current regime are favorable to either the emerging space industry or states that are party to the treaties. For example, under the Liability Convention a state is liable for any damage caused by any space objects launched from that state (or whose launch was procured by that state), including any private space objects. This may in fact be a benefit for private space companies since liability is shifted to the state – although national space laws typically impose insurance requirements or otherwise shift the liability (at least to some extent) back to the private space operator. As space activity in the private sector continues to grow, states may question whether it is in their best interest to bear the liability incurred by a private actor.

Similarly, the prohibition on the assertion of sovereignty over the Moon or any celestial body in Article II of the Outer Space Treaty is an obstacle to the development of private space industry. The prohibition of the assertion of sovereignty means that private property rights cannot be created. This inability to create and protect a property right way will prevent private industry from establishing bases on the Moon or celestial bodies – and will prevent companies from engaging in mining activities either on the Moon or on asteroids.

In light of the deficiencies in the existing treaty system, the next question is what should be done about it. Should the existing treaties be revised in order to clarify that they apply to private activities? Should a new treaty be drafted addressing the concerns of the private industry? This question will be postponed until the end of the paper after contemplating other issues that will be relevant in determining how we should move forward with the regulation of private activity in space.

IV. STATE ACTION RELATING TO PRIVATE ACTIVITY AND THE INTERPRETATION OF THE SPACE TREATIES

Another issue that will affect the future development of international law as private activity expands in space is how private activity will affect the future interpretation of the existing space treaties. As private companies provide more space services, states will be required to react in various situations to these private activities. As states take actions in response to

these private activities they will (we expect) be doing so in a good faith effort to comply with existing space treaties, and these actions will be taken into account when interpreting the treaties and the future under Article 31 of the Vienna Convention on the Law of Treaties. The meaning of the existing space treaties will likely come into question with respect to their application to private activities. For example are states required to rescue private spaceflight purchase a prince if they are in distress? There may very well be an opportunity to see states being faced by this question in the event that there is an anomaly in the suborbital space tourism industry. And if a country does rescue tourists under the belief that is required under the Rescue and Return Agreement to rescue passengers, then this state action could be pointed to in subsequent years as evidence that the treaty ought to be interpreted in this manner.

Likewise, when we do see the first instances of private companies establishing a moon base or landing an unmanned mining vehicle on an asteroid, the manner in which states respond to these actions may guide subsequent interpretation of the space treaties, such as the interpretation of those provisions related to whether private parties have the freedom to exploit the natural resources of an asteroid.

V. THE EFFECT OF PRIVATE ACTIVITY ON THE DEVELOPMENT OF CUSTOMARY INTERNATIONAL LAW

Closely related to the issue of state action in connection with private activity having an effect on treaty interpretation is the issue of whether state action in connection private activity will affect the development of *customary international law*. Customary international law emerges from the widespread repeated action of states over time. However, customary international law may evolve much more quickly than is typically the case in times of great technological advancement. In perhaps the starkest example of this accelerated creation of customary international law, Professor Bin Cheng argued that the 1962 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space became instantaneous customary international law due to the great leap in technology that had been made upon the launch of Sputnik and the subsequent entries into space. In a similar way, it may be argued that the technological advancement with respect to new payload delivery systems and human spaceflight technology will enable the

rapid development of customary international law in connection with this new private activity. Some issues that may arise include the consent required by states for fly-over by a private suborbital space vehicle. Unless a new treaty is drafted to address this issue and the other practical issues that will arise as the suborbital space industry begins to engage in point-to-point delivery of cargo and passengers, we only be able to rely on the emergence a customary international law as it arises from the actions of state states as they react to this new industry.

Although an argument can be made that certain areas of customary international law will emerge more rapidly due to rapid technological advancement, it may also be argued that the development of customary international law will slow in an era of increased private activity because states will be engaging in less activity. Since customary international law arises from state action, a reduction of state action should result in a slowing of the growth of customary international law.

For example, to the extent that the customary international law is forming with respect to the mitigation of space debris, as governments reduce their space activity and private industries increase their activity there will be less state activity on which to base the emergence of this very important area of customary international law. The private activity, even if companies voluntarily engage in highly responsible behavior with respect to mitigating debris, has no effect on the development of customary international law. Governments will still continue to be active in space, to be sure, whether for military purposes or otherwise, but on the whole we are likely to see a reduction in government activity, which may result in a slowing of the creation of these international norms.

Moreover, to the extent that customary international law does arise with respect to the mitigation of orbital debris, it would only apply to state actors and not to private space companies. However, there is a possibility that a customary international law requiring states to regulate their nationals with respect to debris mitigation could arise. Such customary international law could then reach private activity, although it would do so only through the domestic legislation of the state that is subject to the customary international law requiring such legislation.

VI. THE FUTURE SHAPE OF THE LAW OF OUTER SPACE

The final issue addressed by this paper is how space law will develop in the coming years. This paper has discussed how expanded private activity places a strain on the existing space treaties, how private activity will affect the future interpretation of these treaties through the mechanism of state action, and how expanded private activity will affect the formation of customary international law. Keeping in mind these dynamics, the question now becomes what path should be pursued by states or the international community in order to develop the legal regime that will regulate the new era of private space activity.

The various options for the regulations of private space activity are clear. We can amend the existing treaties, draft new treaties, rely on softer law (such as customary international law, model laws, or voluntary guidelines), or we can regulate space industry with a patchwork of domestic laws and regulations.

The concept of drafting or amending treaties typically holds the greatest appeal to international lawyers who dream of a unified and harmonized set of rules that can be enforced around the world. However there are few things more difficult in the legal world than drafting a treaty that is both effective (in the sense of providing the legal rules that form a strong and meaningful legal regime) while at the same time being accepted and ratified by states around the world. The last two attempts to draft multilateral space treaties have illustrated this difficulty. The 1979 Moon treaty has failed due to the unwillingness of major spacefaring countries to ratify the treaty. The UNIDROIT Space Assets Protocol to the Convention for International Interests in Mobil Equipment may face a similar fate. The Space Assets Protocol has been in development for 23 years now and is still not complete, although it is predicted that the protocol will be complete in 2011. Whether this protocol is then broadly ratified is another question.

Customary international law is another potential area of growth for space law. However, it is perhaps the least desirable path to pursue because of the length of time it takes for customary international law to develop and to clarify itself. Moreover customary international law is not amenable to regulating the many complicated issues that will arise with respect to the operation of private spaceflight.

The final option is to rely on domestic laws to regulate the private spaceflight industry. An example of this type of domestic regulation can be found in the Human Space Flight Requirements for Crew and Space Flight Participants that were enacted in the United States in 2006. The Federal Aviation Administration was able to draft regulations that address the concerns of both the government and the private space industry to allow for the reasonable regulation of this nascent industry. The spaceflight regulations can serve as a useful model for other countries as they develop their own spaceflight regulations.

The harmonization of domestic regulations can also be promoted by the development of guidelines, such as the debris mitigation guidelines that have been developed by the United Nations.

However, domestic regulation has its limitations as well. There are some things that cannot be resolved by domestic legislation. For example, disputes arising under international liability, the exploitation of celestial bodies, space traffic management, and other issues that are inherently international in their nature are not susceptible to solution provided by domestic regulation.

VII. CONCLUSION

Private companies are playing an ever-larger role in the use of outer space and their presence in space will continue to expand in the coming years. For example, increased private activity in space will likely be encouraged by the new U.S. space policy proposed by the Obama administration which would require the U.S. government to rely on private companies for the delivery of crew, cargo, and satellites into space.

This paper examines the effect that this increased private activity will have on the future development of the international law of outer space. One question that emerges from increased private activity in space is whether (and to what extent) existing space law applies to private activity. For example, whether the existing duty to rescue and return spacecraft applies to such activities. A second question that presents itself is what effect private activities will have on the shape of future space law treaties under the Vienna Convention's doctrine of taking into account state action in the interpretation of treaties. A third question concerns the effect of private activities on the evolution of customary international law. The ultimate question is what role treaty law, soft law and domestic regulations

should play in the regulation of private space activity. The answer is that a combination of these sources of law is likely to be the proper solution.



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