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Dr. Frans von der Dunk*

As Space Law Comes to Nebraska, Space Comes Down to Earth

Honorable President of the University of Nebraska–Lincoln, Dr. James Milliken;

Honorable Dean of the College of Law, Professor Steven Willborn, *in absentia*;

Honorable Keynote Speaker, Mr. Clayton Anderson;

Dear Colleagues at the College of Law;

Dear Friends, some of you having come from quite far;

Distinguished Guests, Ladies, and Gentlemen;

Lieve Maartje, Sam, Max, and Daan;

(I promise, this will be the only Dutch spoken tonight!)

It is a great honor and an equally great pleasure for me to stand here today and address you by way of an inaugural lecture, embedded in this conference on formalism and informalism in space law that we are currently hosting at the University of Nebraska College of Law.

I must admit, when I first raised the subject of giving such an inaugural lecture, it took a little while before it dawned upon me that this is not altogether a self-evident part of taking up the position of a full professor here in the United States. I come from a Dutch, even European tradition, where by contrast that is the case. But that is one of the many things one learns when one starts to move and work in a country and educational culture different from one's own; many of one's own presumptions that one took for granted do not necessarily *need* to be taken for granted. And that is a good thing even in academia—or perhaps *especially* in academia.

In any case, the Dean did not blink an eye when I put the question forward—he had repeatedly informed me with his usual twinkle in the eye that he found all my questions strange so I guess he had gotten used to it—and courteously agreed with what now had turned effectively into a request rather than a duty. He also left me complete freedom of speech as to what to address and how to address it—an

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academic freedom that cannot be praised loudly enough these days and which I do find in ample quantity here in Lincoln. To return the favor, I would like to explain first what and how, in Europe or at least in the Netherlands, an inaugural lecture is supposed to look like—since, for want of more specific guidance, that is the path I intend to follow today.

An inaugural lecture then is perceived essentially as a public lecture where a newly-appointed professor sets out, for everyone to hear, his or her general ideas on, and programmatic approach to, the field that he or she is going to tackle in teaching and research—in my case, all in the context of the LL.M. Program in Space and Telecommunications Law. What are perceived to be the key issues, in which direction is the academic discipline going, and what can we do about it? This also has the happy side-result of revealing one's hobbyhorses to the audience.

It should be a lecture for the general public. In other words, it should address the wider issue in a manner understandable by an interested and generally educated, but non-specialist, audience and should not go into any technical depth. No footnotes, no endnotes, and at most one or two Latin phrases. Not so much a “tour de force,” but a “tour de horizon.” Finally, one may insert some personal remarks, words of thanks, and such, as well as crack an odd joke.

I do not necessarily claim to do exactly all that (let alone do it in the right order) but a public lecture it will be. As my father once said, “Every good public lecture consists of three parts.” First, the speaker should speak of things that everyone already knows. That way, the audience will feel comfortable that it is not ignorant after all and actually quite well-educated. Second, the speaker should speak of things that the audience does not know but can easily understand and relate to. Thus, they will go home with a satisfied feeling that it was not a total waste of time and that they indeed learned something new. And finally, the speaker should speak of things both unknown to the audience *and* totally incomprehensible—*that* way, they will go home *also* with a feeling of awe for the genius of the speaker.

So if you do not understand parts of what I am going to say, you now know how to put a handle on that.

(That was the odd joke, I guess.)

My lecture is entitled, as you can see, “*As Space Law Comes to Nebraska, Space Comes Down to Earth*,” for in preparing for it I came across a few interesting coincidences.

First, I found out that “Nebraska” comes from an old Chiwere word for “flat water.” “Flat water,” to me, suggests large, open, empty spaces, horizons without bounds—a window on eternity perhaps. The Missouria, Otoe, and Ioway peoples obviously had better things to do than concern themselves with outer space in our modern sense of the

word, but I am convinced that if today they would have to consider using a word for it, they might use "Nebraska" as coming closest.

Second, I realized Lincoln Municipal Airport is a major emergency landing fallback option for the U.S. Space Shuttle. Lincoln may not have direct air connections with any other destination than a handful of cities in this particular part of the United States, but it does have a direct connection with outer space.

And third, though—hopefully, in a sense—it may still take a long time before the Space Shuttle will actually land in Lincoln, whether by accident or not, at the same time space *law* is coming to Nebraska with the establishment of the LL.M. Program in Space and Telecommunications Law, *space* is coming down to earth, too.

Do not worry; I am not Chicken Little's brother. But "space," as an area for humans to be active in, in a metaphorical sense is coming down to earth, and that results in many important consequences for "space law," for what it is, how it should be studied, and how it should be further developed.

The red thread in my talk, then, is that in the history of space we are currently living through a very fundamental paradigm-change that has fundamental consequences for the way in which this strange discipline called "space law" will have to be taught and researched. At the very least, it will be the way in which I will approach my teaching assignments in the context of the new LL.M. Program at UNL.

In summary, outer space traditionally was the domain of activities either of a scientific or of a military/strategic nature, including the element of political prestige as a consequence of the Cold War between the two then-superpowers, the Soviet Union and the United States. The impact of Sputnik was first and foremost a strategic one, resulting in the prestige-driven race for the Moon. Astronauts were usually both highly qualified engineers and either the "crème-de-la-crème" of air force pilots or the "crème-de-la-crème" of scientists—by the way, far more frequently the former rather than the latter. Of the twelve men the United States has put on the Moon, exactly one was a scientist by education—and he had to put up a tremendous bureaucratic fight to prevent his place on the very last Apollo mission to the Moon from being taken by a more traditional pilot-astronaut.

With the exception of a niche area where satellites were used for more mundane telecommunication purposes—a niche that slowly started growing from the late '60s onwards—there was no revenue whatsoever to be found in space and space activities, which in addition proved tremendously costly and risky at the same time. Only states could be interested in investing money for the sake of the public good in space and space activities for science or military reasons, and only they could afford it.

As a matter of fact, so costly and risky were space activities that apart from the superpowers, few states were able (or willing) to bear such costs and risks on their own. Most states either piggybacked on the broad shoulders of the space powers or pooled their financial and technological resources in unique intergovernmental organizations like INTELSAT, INMARSAT, and the European Space Agency (ESA).

This traditional situation was reflected almost one-on-one in the legal arena. In all possible senses of the word, states were both the *makers* and the *breakers* of international space law.

With regard to *making* international space law, this is not so surprising since, in a sense, space law is but an exotic branch of general public international law. The core of traditional space law, often referred to as the "*corpus juris spatialis*," is comprised of the Resolutions and space treaties drafted in the course of the '60s, '70s, and the first half of the '80s. Even if this occurred in the bosom of the United Nations, it was states that drafted, then to a large extent agreed, to the texts of these Resolutions and treaties. Then, each state in their sovereignty decided to vote for or against them, respectively ratify, or abstain from ratifying them. Nothing new there.

With regard to *breaking* international space law, it was on this mirror-side that space law stood out in particular. The rights and obligations that were codified or developed were almost exclusively directly addressed at states. Obviously, the interests and activities largely dealt with by such rights and obligations *were* very typical for states. As indicated, scientific and strategic purposes were key here—although in the latter case the focus was formulated in a more positive manner, by means of the key concept of "peaceful purposes."

In particular, the Outer Space Treaty dealt prominently with such military and scientific concerns. The use of space for peaceful purposes figures very prominently throughout the treaty, and a prominent effort was made to minimize the risk of nuclear war using space. The freedom for exploration and use—probably the most fundamental principle applicable to outer space, enshrined in Article I—certainly was, for a major part, inspired by a desire to protect the interests in *scientific* exploration.

Or from another angle, the definition of "damage" as the basis for liability claims under the Liability Convention was only concerned with physical damage—not harm such as interference with operations and loss of revenues that, commercially speaking, could be at least as important.

But also outside that core body of international space law, most of the relevant treaties and treaty-like arrangements that saw the light of day were equally drafted with a similar focus on military issues—the Nuclear Test Ban Treaties and the ABM Treaty—or on scientific issues—the International Space Station was developed primarily as a

low-orbiting laboratory for applied science whereas the ESA Convention established a European Space Agency to make European cooperation in research and development for space activities more effective and efficient.

At best, there was a secondary place in this legal context for inter-governmental organizations such as those mentioned above, in view of their unique role in space. However, those entities were also unequivocally public in nature; expressly only *intergovernmental* organizations were referred to in this context.

Private companies were mentioned nowhere as such. In fact, the phrase "non-governmental entities," coming closest to such mentioning, was included exactly once in the 1967 Outer Space Treaty—the most fundamental document of all space law. No doubt the consequence of the strong political antipathy of the Soviet Union towards anything "private," the relevant clause resulted in full and complete responsibility on the international level of the relevant state or states for any relevant activities of private entities, including notably commercial ones.

As long as there was no interest from private corners in going into outer space, this was not much of a problem. That was the case even in the United States—not only one of the two superpowers in space, but also the most market-economy and economic-competition oriented of all countries at the time. Private enterprise knew better than to go into space itself—which is when the treaties start to become directly applicable—and preferred subcontracts for building hardware and developing software for NASA, the Department of Defense, and other governmental agencies. And in spite of its more practical, proto-commercial potential, telecommunications using satellites was a matter of national monopoly created by the government. Comsat, the corporation running that monopoly, was itself established by federal legislation—the 1962 Comsat Act.

So outer space was the domain of public actors—essentially states—and actually a relatively limited number of them, which were moreover either rich, Western market-economies, or politically driven members of the communist block. Consequently, space law was traditionally conceived to consist only of that limited subset of public international law-rules. That is, however, where the paradigm-change comes in.

Several underlying developments could be seen to converge here. The last three envisaged Apollo missions were cancelled for lack of political and public support in the United States; the race for the Moon was over and there was no immediate, obvious next target in sight to race for against the Soviet Union. More generally, the geopolitical climate was changing; with the Cold War thawing once more, both space powers were more interested in cooperating in the context

of the Apollo-Soyuz project than in another race. So, traditional space lost much of its political attraction and, consequently, much of its funding.

Also, the early '70s saw the rise of the Third World to pre-eminence. The most pressing problem of the planet no longer was perceived to be the risk of outbreak of a nuclear war between two ideologically opposed blocks, but to solve hunger, disease, and poverty for the majority of mankind. Soon, that change would also start to effect the human space endeavor. The resulting need to justify the costs of going into space other than by means of military, prestige, or scientific motives stimulated, even called for, an increasing focus on the practical benefits space could bring to mankind and its worries down on earth in the relatively small group of nations active in space—let alone outside that group, such as with developing nations, who were just starting to get interested.

Finally, crucial technical and operational advances occurred in satellite communications—the one sector of space focused from the very start on non-military and non-scientific, down-to-earth applications. These developments made sure that the nascent possibilities inherent in satellite communications to develop into a practically oriented and commercial key sector of economies became fully apparent *and* were given much more of a free rein as the geopolitical situation was changing.

The consequent paradigm-change resulted in two new sets of actors entering the scene: private enterprise and states traditionally considered to belong to the “have-nots” of the Third World.

To start with the second development, some of the major developing countries started to realize that space, after all, *was* there for all mankind. They realized that “space” did not necessarily equate to a toy only rich nations could afford and could offer advantages also in areas other than those of political prestige, military might, and scientific sensations.

India, in particular, is worth referring to in this context. In the course of the '80s, it started a comprehensive space program on the basis of a well-considered approach focusing on some of its real needs, targeting its satellite communication activities to service *inter alia* tele-health and tele-education, and its remote sensing activities to a balanced development of its agricultural, mineral, and industrial potential. Also, Indonesia realized that a satellite communication system could solely overcome the problems of connecting the hundreds of islands it was composed of. Other leading countries throughout the Third World underwent the same change of attitude: Brazil, Argentina, Nigeria, and of course China—although in that latter case the “old,” traditional focus on political/prestige and military issues still seems dominant.

Meanwhile, the belief that space activities, if rationally undertaken and using whatever international cooperation mechanisms are available, can be of major assistance in solving typical needs of developing countries, has spread also to smaller developing nations. Today we see more Latin-American countries, Morocco, Algeria, Vietnam, Thailand, Malaysia, and others joining the club of space-faring nations next to such *sui generis* cases as South Korea and Taiwan.

Since this part of the changing scenery still concerns states, the effect on the paradigm-change in space activities is not as large as the entry of private actors into outer space. Nevertheless, since these countries come from totally different backgrounds compared to the traditional space-faring nations, they also caused a broadening of space law in terms of substance. This included introducing such novelties as a remote sensing system run by two nations from rather different parts of the globe and with completely different legal systems and cultures—China and Brazil—and a “bi-national company” in the context of Ukrainian-Brazilian cooperation in space. Obviously, such new concepts may start to influence other areas of space law as well and, consequently, should at the very least be flagged in high-level space law courses such as ours.

As to the real entry of private enterprise into outer space, it not surprisingly started with satellite communications. In the course of the ‘70s and ‘80s, telecommunications had rapidly become big business, and indeed satellite communications as a rather special subset thereof was following suit. Private companies such as PanAmSat, Orion, and the European SES started to launch and operate their own satellites for profit in the mid-‘80s. By necessity, the major intergovernmental organizations—INTELSAT, INMARSAT, and in Europe EUTELSAT—were forced to privatize in order to remain feasible propositions. This has been a long and sometimes slightly painful process, which in some respects has not been fully concluded yet.

New developments also occurred in the launch sector, even though the number of private players remained very limited—Lockheed Martin, Boeing, McDonnell Douglas, and Arianespace (that was about it)—and they had to fight some state competitors in addition. Nevertheless, by the mid-‘80s something akin to an international market for commercial launch services was arising. Even the commercialization of remote sensing and earth observation seemed to lie around the corner in the ‘80s, with companies such as Eosat and SpotImage being established to go and market those beautiful satellite pictures.

The process of privatization moreover continues to spread to this day, and we recently have seen even more fundamental steps being taken in this regard. (Though I am strongly tempted to do so, I will not paraphrase Neil Armstrong’s famous words here yet another time.). The visits of five wealthy individuals to the International

Space Station so far, as well as the plans of Virgin Galactic following the conquest of the X-Prize by Scaled Composites to offer suborbital tourist flights, heralds the entry of man into outer space on a purely private basis—on vehicles privately manufactured, operated by private companies, and marketed to private persons, with no clearly visible public goal or aim in sight.

Overall, the core of the paradigm-change affecting mankind's activities in outer space can be summarized as follows: *the development of new applications with a "down-to-earth," practical orientation—that is, distinct from the politico-military or scientific orientation hitherto ruling the human space endeavor—in turn involving a shift in the categories of participants.*

This entrance of a number of new sets of players—not just states, including more and more developing countries and more or less public intergovernmental organizations, but hybrid or simply private entities, often of an international character, as well—did not fail to exercise a major influence also in the way space law developed and how space law should be envisaged in the first place.

Many space lawyers still tend to consider space law to consist of the good old UN treaties and Resolutions, plus another treaty here and a bit of international customary law there. Today, however, such an approach no longer does justice to what is happening in space or, more precisely, *with* space. While no doubt a core framework of international space law is still to be found in the abovementioned set of rules, forgetting about all the legal developments from a broader perspective relevant or even crucial for space risks may make the space lawyer profession increasingly irrelevant. (That is something we do not want, do we?).

More to the point, of course, is that such an approach may risk that very core of space law to become irrelevant, and that is something we really should not want. It would mean losing a core set of international rules that has so far been rather successful in helping to keep outer space free from the use of force (although it has been used to support the use of force on earth) and to keep it open and usable for peaceful uses by all mankind (although the ongoing generation of space debris poses an increasing threat thereto).

Both teaching and research have an important role to play here, as otherwise students and interested audiences will only be offered part of the legal picture, which is not good for either of them and, hence, at the end of the day, not for the education and research institutions either.

"Space law," in short, should no longer be viewed as a somewhat isolated set of international space treaties and other instruments, plus a bit of domestic implementation activity. It should no longer be defined as "all legal instruments exclusively dedicated to outer space."

Its increasing down-to-earth importance—from communications to meteorology, from navigation to, yes, tourism—calls for space law to be studied and taught from a broader perspective. As a consequence of the changing paradigm and the need to balance, in particular, the interests of private enterprise with those of the public at large, space law should rather now be seen as *the collection of principles, norms, and rules relevant for at least one particular branch of space activity, regardless of which particular source they stem from.*

That approach requires a new interaction with a number of many other disciplines as these have started to interfere, sometimes rather fundamentally, with space activities. This new interaction certainly poses challenges to the traditional “space lawyer,” who should become at least aware of such other disciplines and regimes, but equally certainly poses some very interesting opportunities. In any case, there seems little choice if we want to try and maintain the beneficial effects of an international regime, no matter how rudimentary, for space activities—including those of private commercial companies as much as those of developing countries—and teach the subject in a manner relevant for those later taking up the baton of that task.

Let me give you one major example to start with: the broader legal environment for telecommunications, including satellite communications, which was changing profoundly as satellite communications was becoming commercial. In the context of the General Agreement on Trade in Services (GATS), as institutionalized by the establishment of the World Trade Organization (WTO), a specific push for privatizing and liberalizing the telecom environment and separating the regulatory and operational functions of the incumbent public operators involved resulted in a 1997 Agreement on Telecommunications Services. This opened up roughly 90% of the world telecom markets (in terms of monetary value) also, in principle, to cross-border provision of commercial satellite services.

More or less contemporaneously, the European Union the Satellite Directive of 1994 started to apply, for the first time, the fundamental principles pertaining to free and fair competition—the hallmark of much EC law throughout history—to the specific field of satellite communications. A number of further Directives, Decisions, and Regulations would follow in later years, and the process is far from finished yet. Part of the problems causing such delays results from the need to *both* integrate satellite communications in the wider sector of telecommunications *and* take due account of its special character.

The above developments took place with respect to one sector of space activities: that of satellite communications. I will shortly come back with some more examples from other sectors, but starting with satellite communications was of course not accidental, as it repre-

sented the first, and still constitutes the foremost, space activity with substantive practical and, hence, commercial potential.

At the same time, this precisely shows the specific characteristics of the changing paradigm from the overall perspective of space activities—the increasing orientation on practical, “down-to-earth” applications and the increasing level of fundamental private participation took place in a rather special context, often involving just one sector and, at the same time, were far from exclusively space oriented. Space turned out to constitute an almost accidental element, rather than the core element in the activity concerned; if and where copper-wire cable would offer better practical and commercial services, satellites could readily become discarded.

As a consequence, the whole space endeavor has now become subject to centrifugal forces. Tellingly, for example, within the European Commission, market-oriented newcomer to space that it is, there is no single Directorate-General or even Directorate dealing with space activities as such. Satellite communications fall within the remit of DG Telecom, satellite remote sensing within that of DG Research, satellite navigation within DG Transport, and Energy and launching is essentially a matter for the political departments within the Commission.

And equally in the United States, separate sets of national laws exist dealing with (commercial) launch services, satellite communication services, and satellite remote sensing. From that perspective, the 1998 Commercial Space Act, which has a bearing on those sectors as well as on commercial aspects of space science, space station activities, and satellite navigation, may be viewed as a first effort to bring the whole commercialization and privatization development under one overarching regime at least to some extent—and at the national U.S. level only.

Still, clearly at the first level the legal answer to the problems resulting from these developments lies in the concept of “national space law.” If states are held internationally responsible and/or liable for what amounts to private space activities, they had better make sure that they establish some legal control over such activities, including for example a licensing regime and an obligation to reimburse the government for any international liability claims which the latter may be forced to pay as a consequence of the licensee’s activities.

And indeed, over the last two decades a number of states have established national space laws doing precisely that, and the number is continuously rising. In my count, which is taking a slightly narrow definition of a national space law, we are currently at twelve-and-a-half. (In case you wonder about the half, that is Hong Kong, which is currently no longer its own country but part of China.).

More profoundly, however, it goes without saying that with government budgets being ever more subject to restraints, the increasing "practicalization," commercialization, and privatization of space activities will be indispensable for the future human space endeavor in many respects. This is not to say that private enterprise should be given complete freedom in outer space anymore than it has been offered on earth. Legitimate interests of private enterprise should always (continue to) be balanced with such public interests that concern peaceful uses, public order, economic and social development, safety and security—including military security—and protection of the fragile ecology of spaceship Earth.

Still, also the legal rules and regimes that are important for such a private operator, even if they may only tangentially or implicitly touch upon space, should now be taken on board to make sure education and research on space law gain, rather than lose, in relevance.

For a private operator interested in satellite communications, the rules on frequency assignment, asset-based securities for financing purposes, and market access are just as important (if not more important) than the consequences of the 1972 Liability Convention even if directly made applicable to him by means of a domestic law. And indeed, within the satellite communications sector, for a number of years the ITU has thus provided a major element of the legal framework for satellite communication operators. More recently, the more trade and market access-oriented legal regime of the WTO can be added to the list. This is just as far as the international aspects are concerned; of course, national regimes in such areas exist in abundance. Not all of that, however, has been properly tuned to space communications; there is a lot of work to be done there.

Take the example of satellite financing and the recent developments in the context of the UNIDROIT international organization for the harmonization of private international law towards a Protocol for Space Assets that would effectively apply the 2001 Capetown Convention on securities in highly mobile, capital-intensive assets to the space sector.

How is a bank going to exercise its security rights on a satellite which is almost 36,000 kilometers away in outer space, beyond anyone's reach, when the lender defaults on the loan? Can repossession actually make the bank—or, in view of state responsibility in space also for private activities, its home state—liable under international space law if the repossessed satellite starts to conduct erroneous maneuvers? Bankers may be very knowledgeable and decent people; however, they are usually not known for their technical proficiency and have certainly not been trained to operate or even protect satellites.

Since the beginning of the efforts to develop an international system helpful for potential satellite financiers, serious consultation took place between UNCOPUOS, its member states, and UNIDROIT and its member states, as well as other stakeholders, to ensure that the public international regime, dealing with such issues as the registration of space objects and liability for their activities, and the international private law regime to be developed with respect to the registration of international security interests in space assets would be aligned as much as necessary.

This means, to me at least, that that part of the UNIDROIT efforts should be considered part of space law—and taught and researched as such.

I promised you to deal with some areas other than satellite communications where an increased focus on practical applications, commercialization, and privatization have developed and are still developing. To that extent, obviously the changing paradigms will impact the relevant legal parameters also for those areas.

One of these sectors where commercialization and privatization will go full throttle might well be satellite timing, positioning, and navigation, certainly with a view to Europe. Galileo, with a distinct commercial touch, and possibly in the end a private concessionaire operating the system, will thereby bring a whole set of new legal issues into play and, consequently, new legal concepts and solutions to take care of them.

Space-based navigation, as soon as leaving the realm of free and government-provided services such as under the Galileo approach, requires a multitude of sector-specific legal regimes to be studied—basically of all the sectors where Galileo is to be provided—in order to be able to bring the benefits envisaged. What, for instance, is the relevance of liability under the Liability Convention in this respect, when the damage we would really be concerned about would not be that of a navigation *satellite* crashing into the ground, but of its navigation *signals* sending an *aircraft* into the ground, or a ship into the dockside, or a car into a river?

Already today, the satellite remote sensing sector, though peculiar from a commercial perspective and certainly not subject to the normal laws and forces of the market, has shown to have some commercially interesting applications, especially if very high resolution data get to be combined with satellite positioning. These activities moreover are increasing in importance and thus bring specific new legal issues to the fore. With such very high resolutions, people started to become worried about privacy issues; and private companies, eyeing the nascent commercial potential, became focused on how to secure major investments through, for example, intellectual property rights on the data to be generated.

Therefore, especially from an investment perspective, space-based remote sensing needs a proper regime to provide for copyright protection of space-generated data and databases. Equally, inventions on board of space stations need patent protection. Now, such intellectual property rights have developed for more than a century on the international level—preceded by centuries of domestic legislative developments. Space, however, throws some new elements into the mix. How does a copyright requirement of “creativity” work vis-à-vis satellite pictures, when there is just an automatic camera clicking away in space every few seconds? How does the territoriality-concept for patenting an invention work in the void of outer space, where even legally speaking there is no territory?

The launching sector, although subject to a number of distinctly non-commercial parameters, security-wise as much as in terms of industrial policy, has already experienced some measure of commercialization and privatization and will be likely to do so much more in the near future. This will be the inevitable consequence of the great adventure of what is called, for want of a better word, “space tourism,” where the plans of Virgin Galactic as of today have attracted thousands of serious prospective customers and tens of millions of dollars already in down payments. Unless a few fatal accidents early in the process stifle the industry in its infancy, we might be looking towards a revolution in the price of access to space—so far usually the most prohibitive factor for private actors to be active there.

But this in turn raises other issues: are these private players sufficiently tied into the existing, rudimentary legal regime? For the time being, Virgin Galactic, a U.K. company, is allowed under U.S. federal legislation to offer suborbital tourist flights to an altitude of some 120 kilometers (basically sophisticated bungee jumps) if passengers have signed a document testifying that they are aware that they are flying on a vehicle essentially using uncertified technology and consequently waiving any liability. Will that, however, hold in a national court, especially if negligence or gross negligence on the part of the operator would be at stake?

Furthermore, *any* launch activities have to take dual use-legislation on the national level, such as the U.S. International Trade in Arms Regulations, and international arrangements, such as the Missile Technology Control Regime and the Wassenaar Arrangement, fundamentally into account. Almost any launcher could relatively easily be turned into a missile with a military target; “swords into ploughshares” works both ways here.

So the issue of national law becomes relevant once more, and this time not only national law exclusively or predominantly focused on space, but all national legislation and regulation somehow relevant for at least one kind of space activity, regardless of whether some mea-

sure of international harmonization has then been imposed or de facto resulted. Of necessity, in view of the international aspects and global impact of space activities and space law, any relevant national law needs to be principally developed from an international point of departure. Detailed implementation and refinement cannot be achieved comprehensively at the international level for a variety of reasons—this is something only national legislation is likely to effectuate.

What happens to a right of a person charged with a criminal offense to immediately see his lawyer if he happens to be in the space station and the next shuttle home will arrive only two months from now? He might even have to be locked permanently in the shower in order to prevent him from causing further havoc, rather than be allowed a phone call with his lawyer.

How is tax law applied to an activity in outer space? In the absence of federal legislation on this in the United States or even the willingness to establish a clear-cut boundary between air space and outer space, the state of New Mexico defined space as “any location beyond altitudes of sixty thousand feet above the earth’s mean sea level” in the Gross Receipts and Compensating Tax Act and proceeds to not apply its tax jurisdiction above that altitude. The legislature in Virginia, by contrast, primarily for reasons of liability arrangements, has been discussing whether to establish its jurisdiction for the purpose up to sixty-two-and-a-half miles, considerably more than sixty thousand feet of course—but can Virginia really claim more vertical space than New Mexico?

So, in order to allow for a continuing proper development of the legal framework applicable to space activities in space law teaching and research programs, attention should be paid to such sector-wise and practically oriented, basically non-space legal regimes, often principally of a national character and then overarched by some measure of international coordination. Of course, even in the United States, a high-level space law program should take into consideration mainly international overarching regimes, such as those of the International Telecommunication Union, the World Trade Organization, the World Intellectual Property Rights Organization, and the United Nations, as it will not be feasible to deal with national regimes more than in passing and as they relate to those international legal problems.

On the other hand, merely taking them into consideration occasionally is not even sufficient as such. Any actor in the field, but in particular private ones not employing large bureaucracies, would prefer to be faced with at least a coherent set of rights and obligations, rather than with a simple list of various regimes applicable to his particular field of activity without even so much as a “do-it-yourself kit” on making sense of how these regimes interact and where one might take precedence over the other.

Therefore, wherever feasible and necessary, in addition, care should be taken that the increasing application of a plurality of legal regimes to one and the same set of activities does not obscure, obstruct, or negate what is and should remain the traditional core of space law, as it has so far been instrumental in preserving the peace in outer space and allowing increasing numbers of states and people to benefit from relevant opportunities offered by it.

Yes, space is coming down to earth, and space law has to come with it—preferably landing here in Lincoln, Nebraska, of course—and in coming down to earth, space activities will have to be treated more in conjunction with their applications.

In sum, space has started to host, or better put, play a fundamental role in all sorts of human activities: military, scientific, administrative, crime fighting and anti-terrorism, commercial, and humanitarian—and thus in regulating the behavior of all sorts of humans to go with them. Tourists have flown into outer space as much as cremated human remains; we may soon see advertisers trying to hang giant billboards up there and miners going for mineral resources, but also criminals and (some think) soon even proper colonists. And wherever man goes, the taxman soon follows.

Thus, space is now truly becoming the fourth—and presumably last—realm for mankind to venture into, after the landmasses, the oceans, and the airspaces of this world. To take an example from quarters quite relevant here and now: recently the US military has started to seriously consider establishing a fourth branch of the armed forces—next to the army, the navy, and the air force, a space force should be created.

For space law to “follow” space activities and also come down to earth, its study, research, and education programs should *ideally* encompass the relevant elements of regimes such as telecommunications law, economic and trade law, tax law, intellectual property rights law, for Europe, certainly European Community law, financing, and securities-related law, criminal law, human rights law, and so on—or at least, on a more realistic level, encompass the main concepts, principles, and approaches thereof.

This has the added benefit of soon having reasons to discuss matters of legal substance with at least some of my colleagues, as opposed to American football, the weather, and deep-frozen meals. Though, unfortunately, I cannot invite them into space, I can at least occasionally invite them into space law. Also, in that sense, space law is coming down to earth.

Having, thus, at the same time come towards the end of my lecture in terms of academic food for thought, it is now time for the lighter desert—a few closing remarks of a more personal nature. I know that in thanking people by name I run the risk of omitting some who would

more than deserve to be mentioned. The classic lawyer's reaction of course would be to issue a disclaimer—so here we go: nothing in the following should be interpreted in the sense that not being referred to means no thanks would be due. I hope you're still with me

In any case, there are a few people that I would like to thank especially. To start with, I am thinking here of my father and mother, without whom I would obviously not have been here today at all and who will view with great interest the video being made—even as they are not very much “into outer space” in any substantive sense of the word.

Continuing for a minute with the group of the absentees today, I am very grateful to Professor Peter Kooijmans, who acted as my first academic father when I started my proper legal education back at the University of Leiden twenty years ago and to Professor Or Wasenbergh and the Faculty of Law there, who in the first years of building up the Institute in Leiden allowed me the same level of freedom to do what I thought best that I have now rediscovered here in Nebraska.

Then, I am very thankful for the support I received from the various members of the Staff of the College of Law at UNL who have been instrumental in taking care of me also when I was back in the Netherlands. This holds true especially for Kerry Acker, Assistant to the Dean, and Bambi King, Secretary. And then there are Jessica Schaefer, Executive Director of our program, and Sarah Gloden, Associate Dean, who took care that only the lesser-embarrassing of the available pictures of myself were spread all over the place in their efforts to advertise our new Nebraska program.

Also, I am thinking of my new colleagues who have made me feel at ease very quickly and already have invited me for wonderful dinners at their homes. Once we have a private house in an operational state here—and my wife and I are working on it!—we will certainly try to reciprocate!

Then, I would like to express my gratitude specifically to UNL President James Milliken, who had the foresight to kick-off the process to start here, in the middle of the United States, the first LL.M. Program in Space and Telecommunications Law in the United States, dominant in both space and telecommunications, as well as the first of such kind in the English language worldwide. Right from the start, this indicated to me that the University of Nebraska was serious in internationalizing its academic program, outreach, and impact; there are few disciplines as international by nature, even from a U.S. perspective, as space law.

With reference to the telecom industry and USSTRATCOM as backers of this effort following from their practical interests in developing high-level knowledge capabilities in space and telecommunications law—without of course interfering with any academic aspects

thereof—it also makes clear that space law has come down indeed in Nebraska. The space law part of the program is intended to build on this heritage and maintain relevant academic working relationships with all sorts of other fields of law, further building a truly exciting program. With the backing of such a University President, that should be a relatively easy task.

Secondly, I greatly regret the absence of Steven Willborn, Dean of the College of Law, as I would like to express my sincere thanks to him, too. Luckily, he told me with his usual twinkle not to minimize my praise for him merely for reasons of his being absent, so I will comply with great pleasure.

When I met him for the first time, a little over a year ago at the previous space and telecommunications law conference that was held in Lincoln, more or less the first thing he said when he heard I came from the Netherlands was "I know how to make *real* good cheese." You can imagine how that impressed me; when the Dean of a College of Law in the Midwest of the U.S. is proud most of all of his cheese when facing a Dutchman, I figured this would be a fantastic place for working—people must be smiling all day here, saying "cheese" all the time. And it has turned out to be a fantastic place for working indeed.

Later I learned that almost every other colleague at the College of Law had at some point in time been confronted by such a cheese claim from the Dean—and later still, I also learned that everyone has yet to actually *taste* some of that cheese. As I said, Dean Willborn has often confided to me that I always asked him the strangest and most impossible questions, but this one's easy: can I get to taste that cheese one day? (By the way, this lecture will also appear in print so he'll be able to take notice of it.).

Seriously, Steven, I am very grateful for all you did to make this happen. The drive, vision, and speed with which major decisions were taken to get the program off the ground; the receptivity to all but my craziest ideas rapidly convinced me that the College of Law was serious about its intentions to reap all the benefits space law could offer and would not allow them to be obscured or obstructed by bureaucracy. That, Steven, was a great feeling! You immediately made me, as well as my wife, feel at home, not only academically speaking but also personally speaking. I look forward to your continued friendship, and do not consider going to another University again!

Thirdly, I owe a great amount of gratitude to my closest colleague and friend, Matt Schaefer. Matt, of course I still recall last year's conference and I am sure, so do you. You had a tough time already in organizing it, as the first foray of the UNL's College of Law into the alien territory of outer space and the very first step towards establishing the LL.M. Program in Space and Telecommunications Law.

And then, of all days, the day before the conference the most terrible snowstorm in decades struck down upon Nebraska, seriously interfering with the journeys of many of your key speakers from farther away and almost preventing them from joining. You kept on apologizing and putting up a brave face and persevered in your efforts to make the best of it in view of this *force majeure*.

Now that I have my contract in place and my inaugural is nearly finished, however, I can finally let you in on something. Perhaps, it was not all accidental. Perhaps, I wanted the pie here all for myself and took care to fly in a day ahead of the others to steal their thunder—and then happily watched all storms rip loose. Perhaps, some weather satellites are not just there for *monitoring* the weather. Anyway, before I give away a military secret—I had the welcoming reception almost to myself, and here I am now. No regrets, so I will not apologize!

Seriously, Matt, I enormously value your friendship. The number of participants for the first year, far better than the number aimed for, is a testimony to your dedication and success in doing so. If the Space Shuttle has not yet set its sights on Lincoln, space law has already made an awesome landing in Nebraska, and no doubt that is largely thanks to your preparatory work. I look forward to many more years of working with you—including visiting conferences abroad, if not exactly in India if I understood you correctly . . .

And finally, of course, I would like to express my heartfelt thanks to my wife Maartje and my kids Sam, Max, and Daan, whom I am fortunate enough to have with me today. When I first—carefully—broached the University of Nebraska offer to Maartje, I expected a big question mark—“Why, of all places, Nebraska?” Instead, I received a lot of enthusiasm and support even though the ultimate arrangement with me being here roughly three months per year most heavily weighs upon her and my boys, and I am intensely grateful for that.

The answer to the question “Why Nebraska?” by the way is, “Nebraska has a lot of space.” And I am very happy to note, it now has a lot of space law too!

Thank you very much for your kind attention!