IAC-08-E. 13

JURISDICTION AND APPLICABLE LAW IN CASES OF DAMAGE FROM SPACE IN EUROPE – THE ADVENT OF THE MOST SUITABLE CHOICE – ROME II

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ABSTRACT

Liability for space activities is a much discussed subject and the advent of commercial space operations has only added to its importance. Articles VI and VII Outer Space Treaty, together with Articles II and III Liability Convention, remain the main entry level for state liability for damage arising from the private space activities. Few space-faring nations have introduced national space statutes that include a down-flow of their international obligations. The European Union (EU) Regulation on the law applicable to non-contractual obligations could harbour developments for liability law in the context of damage resulting from space operations. Space activities were not the main focus of the Regulation but may well turn out to be an interesting spin-off. The Regulation prescribes general rules that will determine the applicable law in damage scenarios, where more than one legal system applies. It is important for trans-national tort cases and does not limit the systems of applicable law to those of the EU Member States only. This paper focuses on the common rules applicable in damage actions based on torts or other non-contractual obligations from the perspective of their applicability to damage caused by space activities. After assessment of the relevant international and national law norms the value of the EU Regulation will be addressed.

INTRODUCTION

Space activities can by nature lead to cross-border damage: this may not be confined to one location alone. Whilst every effort is employed in space operations to minimise risk, incidents leading to damage cannot be discounted. Cross-border damage can lead to competing jurisdictions and alternative rules of applicable law. Damage in orbit has its own particularities: it may manifest itself only after a considerable lapse of time. Space debris in LEO is a case in point here. Satellites can suffer damage long after an in-orbit collision or debris-producing incident.[1]

While the Liability Convention[2] contains clear rules of international liability for damage caused by space objects, either to the earth or to other space objects or persons in outer space, the current increase in satellite-related services could lead to an increase in third party claims arising at national level. Satellite navigation and

[1] "Anti-satellite test generates dangerous space debris" *New Scientist Space*, 20th January 2007, available at http://space.newscientist.com/article.ns?id=dn10999 &print=true (last accessed 6th August 2008). *See* also K. U. Hoerl/ R. Jehn, C. Sarocco, LEO Constellations- Quo Vadis After End-of -Mission, in H. Saway-Lacoste (ed), *Proceedings of the 3rd European Conference on Space Debris*, Noordwijk, ESA Publications Division (2001).

[2] Convention on International Liability for Damage Caused by Space Objects (1971) 961 *U.N.T.S.* 187.

tracking systems are examples of satellite services where issues of manufacturer's or product liability could arise. While the international regime focuses on the role of the launching state,[3] national space legislation is generally designed to allow the state to recoup damages arising under its external liability for activities of its commercial space operators.[4] No particular liability model or regime has been elaborated for liability at a national level for commercial space-related activities.[5] National licensing rules, national space statutes, regulatory procedures, agency rules, and state practice all exist, but no systematic legislative treatment or prototype has yet been deployed as an interface between international state to state and private commercial liability for space related activities.

As a result, there is potential for third party space-related damage claims that can lead to substantive (and procedural) options within the law of tort /delict. More than one jurisdiction may be called upon by private parties to determine such disputes. Not only can this open the floodgates to potentially competing forums: there may also be questions about the law applicable to the issue of liability itself, particularly if there are factors linking the damage to another jurisdiction. Although the system of private international law provides a choice between rules that apply in cases involving conflicts between different legal systems, it can still add a dimension of unpredictability to the outcome of individual liability cases.

[3] Arts. II-III Liability Convention.

[4] E.g. in the provisions of the US, Canadian and Russian legislation. For the latest provisions of the French 2008 law, see below, at 3-4.

[5] *See* Michael Gerhard, Weltraumgesetzgebung (Köln, 2002) at 202, Annex: proposed model for national space law.

I. INTERNATIONAL LAW ON LIABILITY

While Article XI Liability Convention employs its own diplomatic regime for damage claims, coupled with a one year limitation from the date of damage or determination of the launching state, the enforcement of commercial liability claims at national level may lead to application of foreign law. Although the Hague Conference in Private International Law has gone a long way towards unifying private international law rules,[6] differences between legal systems regarding the classification and interpretation of legal obligations persist. As a discipline, private international law is criticised for being over-complex.[7] Courts must first identify or qualify the legal issue before them – as a tort, contract or other claim – and can only then establish the link between the type of claim (*sic*) and the rules of liability to be applied.

In cases involving space damage, concurrent issues of international and national liability cannot be excluded. Under international space law, the launching state remains liable towards the state that has suffered damage or loss to its property and/or nationals. In principle, state to state responsibility precludes any rights accruing to the private or individual party affected. The International Law Commission's Articles on Responsibility of States[8] reflect the grounds

[6] The Hague Conference on Private International Law that was first convened in 1893 and operates in the field of unification of private international law, *see* www.hcch.net/index_en.php (last accessed 08.08.2008).

[7] EC Commission, Proposal for a Regulation on the Law Applicable to Non-Contractual Obligations ("Rome II") of 22.7.2003, COM (2003) 427 final, Explanatory Memorandum, at 2 ff.

[8] The International Law Commission's Articles on the Responsibility of States for Internationally Wrongful Acts (hereinafter ILC Articles of Responsibility of States) were adopted by the UN GA in 2001 and constitute binding customary law on this issue. They are accessible at

for State liability for wrongful acts. Where private parties are involved, the basis of their claim will generally be independent of a state's international liability and rather founded on the national law regarding commercial relationships and legal duties between contractors and/or operators. This is also the case, for example, where manufacturer or product liability issues are raised, and also in cases of negligence. Equally, there are other situations of international state liability where claims by nationals are specifically excluded, thus opening up their access to courts at national level.[9]

Up until now, the development of space litigation in tort between private parties has been shielded through the practice of state licensing or regulation of commercial operations, compulsory launch insurance and a corresponding widespread use of cross-waivers of liability in launch service agreements that operate within the traditional concept of international liability of the launching state.[10] Some jurisdictions offer their commercial operators state immunity from suit, thereby precluding development of collateral space related litigation.[11] Next section describes why and how the provisions of the Liability Convention have to be incorporated into national legal systems.

II. LIABILITY CONVENTION AND NATIONAL LAW

National space laws may be formulated to allow state indemnification through compulsory commercial launch insurance that, in some cases, extends to bearing surplus risk beyond the compulsory insurance ceiling.[12] The international liability regime does not, however, appear to preclude private party litigation relating to commercial space activities at national level. Nor does it restrict those parties outside the ambit of the Liability Convention.[13] Public international law does recognise individuals as partial subjects of international law, in so far as they can derive rights and obligations from the state's international obligations.[14] Depending on the nature of the obligation, positive rights can be exercised in either of two ways in tort liability: in a claim against the state or against other private persons. On the one hand, states have obligations to respect international law, by accepting their international liability; on the other, they have obligations to ensure enforcement of such norms by transposing them into national legislation. The Liability Convention falls squarely into this category. Despite this view that states are under a duty to pass national space legislation imposing the same liability rules on the private sector

www.un.org/law/ilc/index.htm (last accessed 08.08.2008).

[9] Under Art. VII (a) and (b) Liability Convention, nationals and foreigners are excluded from the Convention's ambit, *see* I.H.Ph. Diedericks-Verschoor/ V. Kopal, *Introduction to Space Law*, 3rd ed. (the Hague, 2008) at 13.

[10] C. Kohlhase, P. Makiol in K.H. Böckstiegel (ed.) *Project 2001*, (Cologne, 2002), 78-79.

[11] For details of the Commercial Space Act of 1998 and the US Commercial Space Launch Amendments Act 2004, *see* P. Dempsey, United States Space law: Commercial Space Launches and Facilities, in: *IISL/IAF Proceedings of the 49th Colloquium on the Law of Outer Space* (2006), American Institute of Aeronautics and Astronautics; R. Hancock, Provisions of the Commercial Space Launch Act (CSLA), *Space Policy* 21 (2005) 227-229.

[12] Art. 13 French *Loi relative aux Operations Spatiales,* JO n 129 of 04/06/2008.

[13] Public international law contains positive and negative obligations in individual tort actions. The former requires effective support such as enabling provisions for reparation for the injured party, the latter extend to preventing the effective enforcement of such claims by reasons of jurisdictional immunity. Art 33 (2) of the Articles on State Responsibility expressly excludes individual tort claims from its ambit.

[14] This applies in particular to human rights law, *see* D. Shelton, *Remedies in Human Rights*, 2nd ed, (2005) 50 ff.

as those under the Liability Convention,[15] not all states have done so. Of those which have, several states formally refer to their own rules of civil law as regulating liability for space-related damage.[16] Beyond this however, and particularly in relation to commercial interests, the question arises as to which national rules of tort or delict become applicable in any one case that extends to more than one jurisdiction.[17]

National courts faced with commercial space liability issues may rely on any one of the following three possible sources of law to apply. In the *first* case, the national tort rules may be either the national civil law tort rules or, if there is a national space statute reflecting the liability provisions of the Liability Convention, then the provisions of that statute. In the *second* case, depending on the state's position under the monist or dualist theories, the provisions of the Liability Convention may be directly applicable or indirectly, via the transposition statute. In the *final* case, the rules of private international law may refer them to another country's rules of tort. Its substantive content may be independent of the provisions of absolute or fault-related liability under Article II and Article III Liability Convention.

[15] This is written into Art. VI Treaty on Principles governing the Activities of States in the Exploration and Use of Outer Space - Outer Space Treaty (1967) 610 *U.N.T.S.* 205.

[16] Art. 39 of *Law of Russian Federation on Space Activity* 1993, amended 2006; Art. 25 Ordinance of Supreme Soviet of Ukraine *on Space Activity* 1996. Art. 14 French *Loi relative aux Operations Spatiales*, n. 18 above, makes recourse dependent on extent of indemnification that has taken place through insurance or guarantee.

[17] This paper deals only with the law applicable to non-contractual obligations. Equal considerations apply to private international law aspects of contractual obligations. The EU has already passed equivalent conflicts legislation in Regulation 593/2008 of 17 June 2008 on the law applicable to contractual obligations (Rome I), *OJ L* 177/6 of 04.7.2008.

Irrespective of the choice, the Liability Convention does not apply to the exclusion of other legal rules. The rules of civil law (e.g. manufacturer's liability), product liability, environmental conventions and other general rules of law may be applied, either by analogy or in conjunction with the Liability Convention itself. The Liability Convention merely ensures external liability of the state. Its transposition does no more than create a right of recourse against the private space operator.[18]

III. DIFFERENCES IN APPROACHES TO REGULATING RESPONSIBILITY AND LIABILITY FOR SPACE DAMAGE ON NATIONAL LEVEL

EU Regulation on the law applicable to non-contractual obligations[19] contains one important exception in the context of liability for space activities. Article 1(1) Regulation excludes liability for acts that fall within the exercise of state authority or *acta iure imperii*. In the pre-Cold War era, state participation in space activities was certainly viewed as exclusively falling within *acta iure imperii*. Fifteen years on, however, the increase of private participation in space activities has been given official international recognition.[20] States activities in space do not take place by reason of state interest alone. Their participation may be on a commercial level

[18] On this point, *see* R.J. Lee, Liability Arising from Article VI of the Outer Space Treaty: States, Domestic Law and Private Operators, in: *IISL/IAF Proceedings of the 48th Colloquium on the Law of Outer Space* (2005) American Institute of Aeronautics and Astronautics.

[19] EU Regulation 864/ 2007/EC of 11.07.2007, *OJ L* 199/40 2007 of 31.7.2007. According to Art. 32 the Regulation enters into force on 11th January 2009. Also referred to as Rome II. Hereinafter Regulation.

[20] *See* UN GA Resolution 62/101 Recommendations on enhancing the practice of States and intergovernmental organisations in registering space objects, A/RES/62/101 of 10 January 2008; R. Skaar (ed.), *Commercialisation of Space and Its Evolution* (European Space Policy Institute, 2007), at 5.

and thus constitute *acta iure gestiones*.[21] Article 1 excludes application of the provisions of the Regulation where damage occurs in pursuit of *exclusively* state activities. The Liability Convention and, in particular, the claims procedure it establishes in Article IX would then make state to state liability rules applicable. The remaining question of internal (national) liability, or recourse by the state against the private commercial level, alongside the immediate issue of liability of providers of space services under private law, could arguably fall within *acta iure gestionis*. This distinction remains at least debatable, the dividing lines at best grey.

This is the crux of the demands that space law and liability law in particular, currently face. State liability, government liability and corporate (enterprise) liability are all based on a liability model which provides a limitation of liability (of the individual or legal person) in return for the assumption of liability by the external organ or actor, be it the state, the administrative authority or the company itself towards third parties. Among the most recent national space laws passed in Europe, particularly the French and Belgian laws, the individual commercial space operator is liable[22] on the same basis as those provided by the Liability Convention – i.e. absolute liability for damage on earth and air, but fault-based liability for damage occurring anywhere else. According to the French law, liability ceases when the conditions contained in the operations licence expire or, at the latest, one year thereafter.

Several points are of interest here. *Firstly*, that the state accepts its continued liability for commercial operators' liability on an international level after expiry of the one year limitation.[23] *Secondly*, Article 14 French Law foresees that the state can take recourse against an operator for any surplus over and above what has been indemnified under either insurance or guarantee. *Thirdly*, there will be no recourse against the private operator in the case of spatial operations carried out purely in interest of the state.[24]

It is debatable whether the imposition of commercial liability on space operators under French law leads to the exemption from the Regulation's ambit because of the *acta iure imperii* exception. Interpretation of its wording would not seem to support this line of argument. If the situation is compared to that in United States of America, where commercial space contracts and ventures are deemed by statute to fall under the broader umbrella of government contracts in order to benefit from government immunity, there could be a lack of consistency between states as to what constitutes – at least in space law terms – *acta iure imperii*.[25] Although this choice falls to each individual state on its own, there is much to be said for a coherent approach at EU level as to which conventions should be excluded from the ambit of the Regulation.[26]

IV. APPLICABLE LAW AND JURISDICTION: BRUSSELS I AND ROME II

Private international law prescribes two rules for determining the law applicable to

[21] This can lead to a lifting or restriction of state immunity. There are different patterns between jurisdictions as to how the doctrine is viewed and applied, so that no consistent pattern can be detected. There is, however, a recognisable trend towards restricting immunity, see I. Brownlie, *Principles of Public International Law*, 6th ed. (2003), at 323-332; in relation to Europe, see the European Convention on State Immunity, 11 *ILM* (1972) 470.

[22] cf. Article 13 French *Loi sur les Operations Spatiales*, n. 18 above.

[23] The period runs from the moment when the licensing conditions should have been met.

[24] Art. 14, *Loi relative aux Operations Spatiales*, id, last para.

[25] *See* e.g. US *Commercial Space Act*.

[26] Art 28(1) Regulation.

an action in damages: *lex loci commissi* denotes the law of the place where the act or event took place or was committed; *lex loci damni* denotes the place where the loss is sustained.[27] These notions may, but need not, point to the same result. There are variations in their interpretation and impact between States and this holds true for the EU Member States. In recent years, there has been a tendency for courts to pronounce in favour of the law of the country where the damage is sustained, with less attention being paid to the place where the harmful act occurred.[28] In such situations, there is a conflict between at least two differing systems of law. Defendants can generally be sued – at the claimant's choice – before courts of either jurisdiction.[29]

The Regulation was introduced as part of EU programme towards establishing an area of freedom, justice and security,[30] with a view to providing a base for harmonising and simplifying the private international conflict rules that apply in cases of non-contractual obligations arising out of a tort/delict within the EU.[31] Interestingly, the new EU rules have been hailed as the ultimate reform model that could and should re-inspire and re-structure complex tort jurisdictions with complicated conflicts rules, such as those in the USA.[32] The Regulation applies automatically in the event of tort or damage litigation within Europe. It is designed as legislation limiting the number of potentially applicable laws in any given conflict case "to improve the predictability of the outcome of litigation" in the Member States.[33] Its greatest success is in restricting and laying down the law that applies in cases of torts with a private international element. This bears well for all commercial and also space-related damage actions.

In order to limit the choices and options arising by virtue of the *lex loci delicit commissi* and *lex loci damni*, the Regulation has refined the complex rules of applicable law in tort or delict actions for European Member States. In so doing, it has clarified the rules applicable in cases relating to non-contractual damage within the EU.[34] A degree of complementarity has been built in between the Regulation and the original 1968 Brussels Convention (now Brussels I Regulation) on jurisdiction and recognition and enforcement of judgements in civil and commercial matters.[35] Brussels I Regulation provides various grounds of general and special jurisdiction, ranging from the defender's domicile under Article 2(1), to jurisdiction in matters of tort or delict under Article 5(3), to the place where the harmful event occurred or may occur. While Brussels I restricts the possibility of parallel actions before various jurisdictions through resort to defences such as *lis alibi pendens* and *forum non conveniens*, it radically reduces chances of forum shopping, at least in relation to

[27] P. North, J.J. Fawcett, *Cheshire and North's Private International Law*, 13th ed. (1999) ch. 20.
[28] Explanatory Memorandum to Proposal for Regulation, n. 7 above.
[29] ECJ, Case 21/76 Mines de Potasse d'Alsace [1976] *ECR* 1735; Case C-68/93 Fiona Sheville et al. v Press Alliance SA [1995] *ECR* I-415.
[30] Art. 65(b) EC Treaty.
[31] *See* Regulation; the Rome Convention on the Law Applicable to Contractual Obligations, 80/ 934/ EEC, *OJ L* 266 of 9.10.1980 has been reformulated as Regulation 593/ 2007 of June 17 2008 on law applicable to contractual obligations, *OJ L* 177/6 of 4.7.2008. This Regulation comes into force on 17th December 2009. The Convention, however, remains in force in relation to Denmark and the UK, although there is a provision allowing the UK to opt in.
[32] *S. Symeonidis*, Rome II and Tort Conflicts: A Missed Opportunity, 56 *Am. J. Comp. L.* 173 (2008); P.J.Kozyris, Rome II: Tort Conflicts on the Right Track! A Postscript to Symeonidis 'Missed Opportunity', 56 *Am. J. Comp. L.* 471 (2008).
[33] Recital 6 Regulation.
[34] With the exception of Denmark, *see* Art. 1(4) Regulation.
[35] Regulation 44/2001 of 22 December 2000, *OJ L* 12/1 of 16.1.2001. Hereinafter Brussels I Regulation.

jurisdiction of European courts in "intra-Community" situations and, to a certain extent, those involving an extra-community element.[36] After rationalising jurisdiction within Brussels I Regulation, the next logical step for the European legislator was to rationalise the rules applicable within the EU to claims arising out of contractual and thereafter non-contractual obligations, or tort.

Article 3 Regulation has universal application. It specifies that any law relevant by virtue of its provisions will be applied, whether or not it is a law of a Member State. This, too, reflects the international relevance of space-related damage. The main thrust of the Regulation is to be found in Article 4. This specifies that the law applicable to any tort/delict "shall be the law of the country in which the damage occurs, irrespective of the country in which the event giving rise to the damage occurred and irrespective of the country or countries in which the indirect consequences of that event occur."

With this rule, the EU has opted for a pragmatic solution or choice in favour of the *lex loci damni,* to the exclusion of *lex loci commissi.* This approach has been followed to allow predictability and foreseeability in the outcome for commercial operators within the EU. Under Article 4(2) the rule alters to allow the law of the country of claimant and defendant to apply where they both share the same country of residence. This, too, is a pragmatic restriction of the variety of options that exist within and around the *lex loci commissi.*

There is however, one important exception to the principle of *lex loci commissi.* In exceptional circumstances, Article 4(3) permits application of another system of law, where there is a manifestly closer connection to another country "based in particular on a pre-existing relationship between the parties, such as a contract" to allow this country's law to then be applied. Thereby the Regulation fulfils one of the main functions of private international law – linking a dispute to the rules of the best suited jurisdiction.

V. SPECIAL PROVISIONS FOR CERTAIN TORTS/DELICTS: PRODUCT LIABILITY AND ENVIRONMENTAL DAMAGE

Article 5 Regulation contains special provisions in relation to product liability.[37] In this case, the law of the place where the person damaged has his/her habitual residence applies,[38] with variations relating to the law in which the product was acquired[39] or to the law of the country in which the damage occurred if the product was put on sale there.[40] Here, too, there is a separate provision allowing for an alternative law to be applied if it is more manifestly connected with the country, other than that where the person had his/her residence.

In relation to environmental damage, Article 4 Regulation provides a general rule whereby the law of the country where the damage occurs and not where the damage arises is to apply. There is a second option allowing for the law of the country where the event leading to the damage took place to be applied.[41]

These provisions are all particularly relevant in the context of liability for damage arising from satellite services, given the potential

[36] Brussels I Regulation.

[37] Some EU Member States (Finland, France, Luxembourg, Netherlands, Spain, Slovenia) are already party to the 1973 Hague Convention on the law applicable to product liability, *see* Commission Explanatory Memorandum n.7 above, at 14.

[38] Article 5(1)(a) Regulation.

[39] Article 5(1)(b) Regulation.

[40] Article 5(1)(c) Regulation.

[41] Article 7 Regulation. *See also* ECJ Case 21/76 Mines de Potasse d'Alsace; Case C-68/93 Fiona Sheville et al. v Press Alliance SA, n. 24 above.

for a wide geographic range of damage resulting from loss of signal or disfunction.

VI. APPLICABLE LAW IN CONTEXT OF LIABILITY FOR GALILEO

The law applicable to actions in tort or delict has immediate implications for the development of the European navigation satellite system GALILEO. Despite the Commission's estimates that the risk factor attached to GALILEO is minimal, the risk of damage inherent in all space activities cannot be overlooked. Liability may arise from a variety of grounds, notably strict rules of product liability, services liability, manufacturer's liability, alongside institutional liability at EU level. Besides this, there is an inherent and permanent risk of debris damage to satellites.

Foreseeable damage ranges from delay in delivering services and economic loss, through to and including personal injury and loss of life. In view of the predicted geographical coverage of GALILEO and the complexities of cross-border claims in tort, the introduction of a special liability regime appears advisable, despite the existence of the Regulation, if complex conflicts of law are to be avoided. As with all product-driven damages claims, the decision to create a special liability regime has to be set against the complexities of multiple tort litigation on a world wide scale, alongside the variety of jurisdictions where damage could take place. States beyond the EU dealing with tort claims will still have their national rules of private international law choice between the *lex loci commissi* or *lex loci damni* approach, unless the Regulation applies through *renvoi.*[42]
The EU itself has made no formal provisions for a product or services liability regime to regulate GALIILEO related damage. On the institutional side, Article 17 Regulation 1321/2004 on the establishment of structures for the management of the European satellite radio-navigation programmes[43] contains within provisions parallel to the primary rules under Article 288(1) and (2) EC Treaty on the contractual and extra contractual liability of the EU institutions. These provisions are, however, targeted at damage resulting from acts and decisions of the GALILEO supervisor authority (GSA) within its role as an administrative or licensing body. Administrative liability implicates failure to maintain high standards by those taking administrative decisions.

Work is, however, underway on presenting a possible EU-wide liability regime.[44] UNIDROIT has presented a Draft Proposal for a Regulation on Civil Liability late in 2007 that could provide the impetus or basis for the introduction of a liability regime governing GALILEO. The current version of its Draft Regulation foresees a strict liability regime for Europe, limited to damage arising within the EU.[45] If agreement is reached on this text for GALILEO, its provisions could become the prototype for a liability regime, insofar as the issue falls to be decided as damage occurring within Europe under Article 4(1) Draft Regulation. For damage occurring in non-EU member states, its provisions would then become applicable in foreign jurisdictions by virtue of *renvoi,* failing which, the *lex loci damni* becomes applicable. (wording in this sentence is not very clear)

[42] See the thought-provoking exchange between S. Symeonidis and Kozyris on the respective advantages and disadvantages of modern EU and USA private international law approaches, n.36 above.

[43] Regulation of of 12 July 2004, *OJ L* 246/1 of 20.07.2004, at 1-9. Programmes are EGNOS and GALILEO.

[44] This was launched on the initiative of the Italian government.

[45] Unidroit 2007 – C.D. (8620, March 2007).

OUTLOOK

The foregoing serves as a short appreciation of the impact of the Regulation. Its provisions come into effect as from January 11 2009. The list of international conventions excluded from its ambit was to be notified to the Commission by July 2008, but this list is not yet publicly available.[46] It should provide greater insight as to how a state regards conflicts between other liability conventions and modern commercial space activities and damage caused by them – whether as *acta iure imperii* or as *acta iure gestionis*. Clarification by states here is in itself important for continued development of space activities within the international legal regime.

Liability for damage from space activities is destined to attract greater attention with further development of commercial satellite applications. These will increase the risk interface and the potential for litigation, be it on issues of product liability, environmental law or beyond. It remains to be seen whether the Liability Convention, as *lex specialis*, can inspire continued development of a national private space liability regime that extends beyond the rights of recourse by the state against commercial operators. The Liability Convention does not contain *erga omnes* obligations so that effective enforcement of damage claims at national level is important.[47] The combination of tort-based rules of product, environmental and services liability could well give rise to interesting developments in the (future) law of liability for commercial space operations. A coherent response could optimise the operative conditions for the commercial sector and contribute to the increasing development of the law relating to private parties within what is now the third millennium of public international law.

[46] At the time of writing, August 2008.

[47] A. Fischer-Lescano, Subjektivierung völkerrechtlicher Sekundarregeln, *Archiv des Völkerrechts* 45 (2007) 299 ff.; D. Shelton, n. 20 above, *id.*.