

Chapter XXIV

State Responsibility and Civil Reparation for Environmental Damage

Professor Leslie C. Green*

Before attempting to discuss issues relating to the protection of, or damage to the environment, it is necessary to have some idea of what is meant by that term. In its simplest, but widest form, the environment includes everything that relates to

the conditions or influences under which any person or thing lives or is developed; that is to say, the sum total of influences which modify and determine the development of life.¹

This means that protection of the environment extends to every natural form, be it the atmosphere or the agricultural, water or animal ambience on which man depends for his healthy existence, free of any form of pollution that will have a deleterious effect on his enjoyment of life. Perhaps the best expression of this concept in a legal document is found in the Peruvian Constitution of 1978,² recognizing the right of everyone

to live in a healthy environment, ecologically balanced and adequate for the development of life and the preservation of the countryside and nature.

While there is a tendency in modern writings on international law to assume that the protection of the ecology and the environment have only recently become of significance, and this is particularly true in relation to the law of armed conflict, it is interesting to note that those responsible for compiling the Old Testament were conscious of these issues and sought to deal with them when instructing the Israelites as to the method of conducting their warfare. Thus, when the Israelites were informed by God that He would drive the Canaanites from the land so they would inherit it, He said:

I will not drive them out before thee in one year, lest the land become desolate, and the beasts of the field multiply against thee.³

This concern for the preservation of the land is repeated in Deuteronomy⁴ in relation to the utter destruction of heathen tribes among the inhabitants of Canaan:

When thou shalt besiege a city a long time in making war against it to take it, thou shalt not destroy the trees thereof by wielding an axe against them; for thou mayest eat of them, but thou shalt not cut them down; for is the field man, that it should be besieged of thee? Only the trees that thou knowest are not trees for food, them thou mayest destroy and cut down, that thou mayest build bulwarks against the city that makest war with thee, until it fall.

Military necessity, therefore, would justify the destruction of vegetation not essential to man's survival. In fact:

Josephus elaborates that this included not setting fire to their land or destroying beasts of labor. Maimonides flatly states that the destruction of fruit trees for the mere purpose of afflicting the civilian population is prohibited and, finally, we have the broad interpretation of Rabbi Ishmael that 'not only are fruit trees but, by argument, from minor to major, stores of fruit itself may not be destroyed'.⁵

Allowing for developments in terminology and ideology, the principles here laid down foretell almost precisely the terms of the Principles of the Stockholm Declaration:⁶

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. . . . The natural resources of the earth including the air, water, land, flora and fauna and especially representative samples of natural ecosystems must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate. The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.

It goes on:⁷

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction. States shall co-operate to *develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.*

Perhaps even closer to the Biblical approach is the 1982 World Charter for Nature proclaimed by the General Assembly of the United Nations:⁸

Mankind is a part of nature and life depends on the uninterrupted functioning of natural systems which ensure the supply of energy and nutrients . . . living in harmony with nature gives man the best opportunities for the development of his creativity, and for rest and recreation. . . . Every form of life is unique, warranting respect regardless of its worth to man, and, to accord other organisms such

418 Protection of the Environment During Armed Conflict

recognition, man must be guided by a moral code of conduct. Man can alter nature and exhaust natural resources by his action or its consequences and, therefore, must fully recognize the urgency of maintaining the stability and quality of nature and of conserving natural resources.

While the Stockholm Declaration lacks legal force, the Third Restatement of the Foreign Relations Law of the United States⁹ postulates:

S.601 (1) A State is obligated to take such measures as may be necessary, to the extent practicable under the circumstances, to ensure that activities within its jurisdiction or control (a) conform to generally accepted international rules and standards for the prevention, reduction, and control of injury to the environment of another State or of areas beyond the limits of national jurisdiction; and (b) are conducted so as not to cause significant injury to the environment of another State or of areas beyond the limits of national jurisdiction. (2) *A State is responsible to all other States* (a) for any violation of its obligations under Subsection (1)(a), and (b) for any significant injury, resulting from such violation, *to the environment of areas beyond the limits of national jurisdiction*. (3) A State is responsible for any significant injury, resulting from a violation of its obligations under Subsection (1), to the environment of another State or to its property, or to persons or property within that State's territory or under its jurisdiction or control.

S.602. (1) A State responsible to another State for violation of S.601 is subject to general interstate remedies to prevent, reduce, or terminate the activity threatening or causing the violation, and to pay reparation for injury caused. . . .

Accepting these sections as fully declaratory of established law—and this is perhaps arguable—it is to be noted that there is no indication of any personal responsibility nor of any suggestion that an international crime has been committed, nor is any guidance given as to how the International Court, for example, would assess the compensation due to a claimant State in respect of damage caused to the environment “beyond the limits of national jurisdiction.” There is no way that it can be claimed that this ‘legal obligation’ stems, for example, from the 1967 Treaty on the Use of Outer Space,¹⁰ Article 9 of which expressly refers to damage to the environment, enjoining States when indulging in any form of space activity to avoid “adverse changes in the environment of the Earth,” but is silent as to how liability for such damage may arise or be dealt with. Perhaps this is not surprising in view of the fact that the ‘environment of the earth’ outside any State’s jurisdiction is *res communis*. The whole issue of what might be described as damage to the ‘global commons’ has been well expressed in a recent work:¹¹

. . . [T]he problem of harm to the global commons, such as the space environment itself, presents particular legal problems. First, harm to the environment *per se* is a developing legal concept and meets resistance in application. . . . The difficulties are exacerbated where it cannot be established with certainty that harm to the global commons would result in identifiable harm to human beings. Second, the threshold of harm impacting the global commons cannot easily be measured with sufficient

precision to enable a liability regime to be established. Finally, the effects are dispersed and there are multiple contributors, making attribution of harm, extremely difficult.

. . . [W]hen the damage caused is to the environment of a place outside territorial jurisdiction such as the high seas and deep seabed, international air space, outer space and Antarctica, no State may be able to present a claim on behalf of all humanity, which is the true victim of environmental damage. UNCLOS¹² provides a solution in this situation for the deep sea bed. Article 145 confers on the Authority the duty to assure protection of the ocean environment in regard to activities taking place in the Zone. This would seem to encompass the ability to present claims of State responsibility for violations of the treaty, the more so as Article 139 declares that a State party or an international organization is responsible for damages resulting from a breach of the obligations imposed on it by the Convention. It may also be claimed that norms protecting the global commons constitute obligations *erga omnes* which may be enforced by any State.

Outside of conferred representation of the general interests of humanity, responsibility for damage caused to the *res communis* or common heritage of humanity can only be engaged in an indirect manner, in the case where conventional rules protect a given sector. Under general rules of international law, each State that is a contracting party to a treaty has the right to supervise application of the treaty by other contracting parties. Thus, one contracting party to the treaty can make a claim in this respect, whether or not the claimant State directly suffered damage. One example would be the dumping of wastes in the ocean in violation of international obligations. *However, it is not clear that a State that intervenes to uphold the treaty can demand damages when it has not suffered any direct injury but instead represents the common interest. Its intervention may be limited to a protest or declaration of noncompliance.*

An excellent example of the concept of 'global commons' may be seen in the 1991 Protocol on Environmental Protection to the Antarctic Treaty.¹³ Antarctica is designated 'a natural reserve, devoted to peace and science.' Article 3 is devoted to 'environmental principles' and provides that:

2(b) activities in the Antarctic Treaty area shall be planned and conducted so as to avoid (i) adverse effects on climate or weather patterns; (ii) significant adverse effects on air or water quality; (iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments; (iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora; (v) further jeopardy to endangered or threatened species or populations of such species; or (vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance . . .

Article 16 imposes upon parties an obligation to elaborate rules and procedure concerning liability for damage, while Articles 18 to 20 provide for settlement of disputes by consultation, the World Court or the Arbitral Tribunal envisaged in a schedule to the Protocol.

420 Protection of the Environment During Armed Conflict

Whatever may have been the position at the time of the Israelite wars, it was not until the adoption of Additional Protocol I in 1977 that any attempt was made to provide a legal obligation to recognize during conflict the needs of the environment in the wide sense that has been elaborated here. In the Protocol we find a clear ban on using starvation as a weapon directed against the civilian population, as well as provisions forbidding destruction or removal of, or attacks against,

objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock . . . [unless] used by an adverse Party as sustenance solely for the members of its armed forces; or . . . in direct support of military action . . .¹⁴

So as not to carry the parallel too far, it should here be mentioned that the injunctions of the Old Testament were only subject to divine punishment, whereas by reason of the Additional Protocol I such activities are likely to be treated as war crimes.

While it was not until 1977 that means and methods of warfare directed against the ecology and environment became matters of treaty concern, it should not be forgotten that long before the Twentieth Century, national military codes were already prohibiting activities directed against materials essential to the sustenance of the ecosystem¹⁵ and included provisions for the punishment of those ignoring such injunctions. Thus, as early as 1564, Maximilian II, Holy Roman Emperor, reflecting the needs of an agricultural community, decreed that:

none shall thief any plough or mill or baking oven . . . whether it be from friend or foe, . . . nor shall he willingly cause . . . grain or flour to leak away or to spoil or to come to any harm, on pain of corporal punishment.¹⁶

Similarly, in 1690 it was laid down that:

he who would dare in foreign countries to set ablaze or demolish . . . baking ovens or to despoil . . . ploughs or farm implements in a township or hamlet shall be punished as a bloody villain.¹⁷

Likewise, during the Seven Years War, Frederick the Great informed his forces that:

on pain of death or severe punishment, particular care shall be taken to avoid any damage to wooded areas, homes, fields and gardens, fruit, fruit trees, barns and all property belonging to the estate owners and farmers.¹⁸

These military codes were directed at the members of the particular monarch's forces and made no reference to any liability on the part of a commander who may have issued an order requiring such action.

Apart from codes of this type, no instrument relating to armed conflict purported to deal with the protection of the ecology or environment or materials relating thereto. Moreover, there was no provision in the conventional law of peace nor any clearly established customary rule that could be considered as relevant, although it was generally recognized that, in accordance with the basic principle of Roman law to which most European systems owed their origin, *sic utere tuo ut alienum non laedas*¹⁹. This principle, though not quoted as such, was applied in the international arbitration between the United States and Canada in the *Trail Smelter* arbitration,²⁰ the only international decision yet rendered which may be considered as having dealt with environmental issues. While damage to the environment as such was not referred to, the Tribunal held Canada liable for the resultant material damage produced in the State of Washington by pollution engendered by the discharge of sulphur dioxide into the atmosphere resulting from the activities of the smelter in Canada:

. . . under the principles of international law, . . . no State has the right to use or permit the use of its territory in such a manner as to cause injury [in this case] by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.

Although there is a tendency to regard *Trail Smelter* as being the trail-blazer in international environmental law issues, its precedential value is extremely limited, partly because of the acknowledgement by Canada of liability for any proven damage, and partly in view of the provision in the *compromis* that

. . . the Tribunal shall apply the law and practice followed in dealing with cognate questions in the United States as well as international law and practice, and shall give consideration to the desire of the high contracting parties to reach a solution just to all parties concerned, thus opening the door to equitable considerations and introducing, in addition to legal considerations, concepts that were both political and economic. In fact, it has been said²¹ that in the light of the unique political and historical circumstances surrounding the dispute, and the manoeuvring that both the Canadian and U.S. governments went through during the fourteen years leading up to the Tribunal's [final] decision in 1942, one might conclude . . . that the resolution of these types of disputes as simply a matter of power politics between governments more interested in meeting short-term political goals than in discovering long-term solutions to environmental problems. Either way, *Trail Smelter* dwindles into insignificance, an object of little more than historical interest." However, "[t]here is still a significant legal dimension. . . . *Trail Smelter* . . . remain[s] a landmark, although its usefulness is not so much as a 'case,' but as a 'case study,' providing a framework for the analysis of interstate disputes with environmental dimensions."²²

Since the Tribunal's award there has been no international decision relating to environmental issues, although had the World Court had an opportunity to deal

with some of the substantive problems raised by Australia and New Zealand in connection with French nuclear tests in the Pacific,²³ as was to some extent sought by both Australia and New Zealand in their applications to the Court, there might well have been authoritative judicial comment on environmental protection, for it was alleged that the French tests violated the rights of all members of the international community including the complainant State, so that no future nuclear tests should be undertaken that would give rise to radioactive fall-out, and that the tests would also violate the rights of all members of the international community to the preservation from unjustified artificial radioactive contamination of the terrestrial, maritime and aerial environment and, in particular, of the environment of the region in which the tests were being conducted.²⁴ Instead, the primary issues became irrelevant as soon as France announced that it had abandoned its proposal to hold any further tests. Prior to this, the dispute was affected by jurisdictional considerations and the Court appears to have been happy in not having been called upon to decide any environmental issue or any question relating to the legality of the tests as such,²⁵ adopting the comment it had made in 1973 concerning the jurisdictional issues arising from the *Fisheries Jurisdiction* cases between the United Kingdom and Germany against Iceland:

The issue being thus limited, the Court will avoid not only all expressions of opinion on matters of substance, but also any pronouncement which might prejudice or appear to prejudice any eventual decision on the merits.²⁶

Any further likelihood of the Court considering possible environmental issues became impossible once the Court decided that the French decision not to hold tests above ground meant that the protests by Australia and New Zealand had no further object.

It is possible that the World Court will in fact be able to rule on the environmental issues arising from the use of nuclear weaponry when it delivers the advisory opinion requested by the World Health Organization on the *Legality of the Use by a State of Nuclear Weapons in Armed Conflict*,²⁷ or perhaps in the attempt by New Zealand in 1995 to secure a further decision from the Court enjoining France from holding further nuclear tests in the Pacific because of the threat to the environment. This is perhaps more important than might otherwise be the case in view of the fact that Additional Protocol I, while banning environmental damage in conflict, does not *expressis verbis* deal in any way with nuclear warfare, even though the General Assembly adopted in 1961 a Declaration on the Prohibition of the Use of Nuclear and Thermo-Nuclear Weapons stating dogmatically that:

the use of nuclear and thermo-nuclear weapons is contrary to the spirit, letter and aims of the United Nations and, as such, a direct violation of the Charter of the United

Nations . . . [and] is a war directed not against an enemy or enemies alone but also against mankind in general, since the peoples of the world not involved in such a war will be subjected to all the evils generated by the use of such weapons. Any State using such nuclear and thermo-nuclear weapons is to be considered as violating the Charter of the United Nations, as acting contrary to the laws of humanity and as committing a crime against mankind and civilization. . . .²⁸

The only nuclear power to vote in favor of this Declaration was the Soviet Union, with the other nuclear powers opposing. Similarly, the 1972 Resolution on Non-Use of Force in International Relations and Permanent Prohibition of the Use of Nuclear Weapons²⁹ fared no better. By the time of the adoption of Additional Protocol I, it had become clear that the nuclear powers, including the Soviet Union, were not prepared to consider any attempt to regulate or condemn the use of the nuclear weapon, and even the International Committee of the Red Cross (ICRC) recognized that since the issue was already under discussion as a matter of disarmament, it had excluded any reference to this weapon and its effects, environmental and other, from its drafts of the Protocol.³⁰ In view of this, it is apposite to mention the Japanese Note of 20 February 1958 presented to the United States Government in regard to the latter's nuclear tests, although even here there is no suggestion that the testing State would incur any liability for damage to the environment:

In view of this menace posed by nuclear tests to mankind . . . the Japanese Government would like to make clear its view that in the event the United States Government conducts nuclear tests in defiance of the request of the Japanese Government, the United States Government has the responsibility of compensating for economic losses that may be caused by the establishment of a danger zone and for all losses and damages that may be inflicted upon Japan and the Japanese people as a result of the nuclear tests. The Japanese Government wishes to reserve the right to demand complete compensation for such losses and damages.³¹

The silence of the Additional Protocol I does not mean that international law, both of peace and of armed conflict, has completely ignored the subject of the environment and its protection. On the basis of the *sic utere* rule, as expounded in *Trail Smelter*, it is clear that if the environment of one State is adversely affected by activities in another, the former will be liable for any damage caused thereby and will be required to pay compensation and to take steps to ensure that the cause of such damage is dealt with so as to remove the possibility of further damage in the future. When assessing losses resulting from environmental damage, care must be taken not to assume that all apparent damage is in fact so caused. Thus, the arbitrators were careful to award damages only in respect of losses to, for example, trees that could clearly be shown to have resulted from sulphur fumigation, and the approach of the Tribunal to damage alleged to have been caused to livestock is of major significance since so many other causes of injury, natural or accidental,

424 Protection of the Environment During Armed Conflict

might have been responsible, and what is true of livestock is equally true of human beings. This problem of remoteness is equally significant in both peacetime and armed conflict.

In so far as the law of armed conflict is concerned, it must be recognized that, at least regardless of intentional or incidental damage to the fauna and flora, already recognized in *Trail Smelter*, damage to the environment became inevitable with the introduction of heavy and especially atomic and nuclear weaponry. It cannot be denied that the discharge of high explosives in their various forms and the abandonment of heavy matériel necessarily have a deleterious effect upon the environment. At no time, however, has it been suggested that those responsible for the discharge or abandonment of such weaponry incurred any sort of international liability.

Even when the Tokyo District Court was faced in 1963 with assessing the legality of the dropping of atomic bombs on Hiroshima and Nagasaki³² it did not concern itself with any adverse effects on the environment. While the Court considered that the bombs were comparable to the use of poison and poisonous gases and their

dropping . . . may be regarded as contrary to the fundamental principle of the law of war which prohibits the causing of unnecessary suffering,³³

it went on to make a point which is extremely relevant in any estimate of responsibility for the use of any weapon which has a diffused effect and is, in normal circumstances, unlikely to have been launched on the personal responsibility of any individual member of the forces. In this case, however, it is well-known that Truman, then President of the United States, personally made the decision to use this weapon.³⁴ However, according to the traditional view, which is to be found in Article 3 of 1907 Hague Convention No. IV:³⁵

A belligerent party which violates the Regulations [annexed to the Convention] shall, if the case demands, be liable to pay compensation. It shall be responsible for all acts committed by persons forming part of its armed forces.

Applying this principle, which may now have been changed by virtue of later developments in the law, the Tokyo court held:

Since it is not disputed that the act of atomic bombing on Hiroshima and Nagasaki was a regular act of hostilities performed by an aircraft of the United States Army Air Force, and that Japan suffered damage from this bombing, it goes without saying that Japan has a claim for damages against the United States in international law. In such a case, however, responsibility cannot be imputed to the person who gave the order for the act, as an individual. Thus, in international law damages cannot be claimed against President Truman of the United States of America who ordered the atomic bombing, as it is a principle of international law that the State must be held

directly responsible for an act of a person done in his capacity as a State organ, and that person is not held responsible as an individual.³⁶

If such bombing had been found by the Court to have constituted a war crime, it would appear that the judgment completely disregarded the law of criminal liability in armed conflict as it existed at that time, and which was already available in the *Yamashita*³⁷ and *Meyer*³⁸ decisions, both of which sustained not only the personal liability of the actor, but also that of the commander who gave the order or failed to prevent the commission of the illegal act.

While there have been various efforts in the law of peace to deal with such areas as Antarctica, specific portions of the air or the oceans, such as pollution or overfishing, it is only in the area of armed conflict law that any real attempt has been made to protect the environment as such, as distinct from authorising limited action against an offender or providing a means of securing compensation for damage in a neighboring State resulting from activity affecting the environment. Prior to the adoption of such law, however, there was a series of General Assembly Resolutions and Conventions concerning the use of outer space, but these related to damage to objects rather than to outer space or the environment itself. Thus, the Convention on International Liability for Damage caused by Space Objects expressly states that

the term 'damage' means loss of life, personal injury or other impairment of health; or loss or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations . . . a launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to aircraft in flight.³⁹

Clearly, the Convention imposes no liability for any damage done to the environment by the space object, even as a result of its disintegration in space, and is fully in line with established practice imposing liability only in respect of direct damage to an individual or an object, as may be seen in the settlement reached between Canada and the Soviet Union resulting from the breakup of Soviet satellite *Cosmos 954* over northern Canada in 1978.⁴⁰ Moreover, the liability provisions of this Convention suggest, again in accordance with traditional legal principles—*non injuria sine damnum*—that mere breach of treaty without proof of actual damage suffered to a State's interests,⁴¹ even though there might be extraterrestrial damage, is not a ground for action.

It is interesting in this connection to note that the World Court, when outlining in the *Barcelona Traction Case* obligations operative *erga omnes*, did not make any reference to the environment, nor did it indicate how such obligations are to be enforced:

. . . an essential distinction should be drawn between the obligation of a State towards the international community as a whole, and those arising vis-à-vis another

426 Protection of the Environment During Armed Conflict

State. . . . By their very nature the former are the concern of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*. Such obligations derive, for example, in contemporary international law, from the outlawing of acts of aggression, and of genocide, as also from the principles and rules concerning the basic rights of the human person, including protection from slavery and racial discrimination.⁴²

It should further be noted that while strict liability is imposed under the Convention, there remains to the offending State the mitigating factor that if the experiment or act causing the environmental damage produced benefits which outweighed the damage caused, as might be the case when one State indulges in cloud seeding to produce rain over its territory depriving a neighbor from similar benefits, such risk-creating activity would not be illegal, but even so the State responsible for the damage would not be excused from the payment of compensation to those suffering the damage.⁴³ Again, in seeking to impose liability, the issue of directness and causality is of significance, particularly as in the case of Chernobyl, for example, some of the damage alleged might have ensued some hundreds of miles from the origin of the damage to the environment, or may, in fact, not be experienced for many years after the act. This is particularly true when it is claimed that persons have suffered physical deterioration or injury as a result of pollution having been released into the atmosphere—an allegation that may be made long after an armed conflict has ended, with the claim that military personnel have suffered injury because of the technology employed during that conflict, as has been the case with many of the military personnel who served in the Gulf war against Iraq and are now claiming to be the victims of post-conflict syndrome. Equally problematic may be the actual source of the pollution and of the ensuing damage. More than one source may be involved and more than one State may be the originator. Thus, the 1979 Geneva Convention on Long-Range Transboundary Air Pollution provides:

. . . long-term transboundary air pollution means air pollution whose physical origin is situated wholly or in part within the area under the jurisdiction of one State and which has adverse effects in the area under the jurisdiction of another State at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources.⁴⁴

Just as modern industrial activities and normal living conditions are pollution-productive, so modern military activities, whether in actual conflict or during training, are likely to produce conditions which cause immediate or even long-term adverse effects upon the environment. In so far as the former are concerned, it is usually within the power of the State to issue regulations directed to the diminution or prevention of such pollution. Where military activities are concerned, such regulation may not be so straightforward or feasible, especially as, in many cases, the elements producing pollution and other environmental

damage are almost inherent in themselves, such as arises with the discharge of explosive material, the emission of corrosive matter, even on an experimental basis, the abandonment of matériel, or the loss of a nuclear-powered vessel.

It is in connection with the law of armed conflict that we first find black-letter law indicating that obligations with regard to the environment are enforceable in the sense that breach thereof involves liability. Moreover, unlike the provisions in the Hague Regulations of 1907,⁴⁵ which provided for monetary compensation by the State for any breaches of the law of war, some of the new law introduces both direct and criminal liability. The first such instrument is the 1977 ENMOD Convention. In its Preamble and first two Articles, the Convention states that the parties:⁴⁶

. . . Realizing that the use of environmental modification techniques for peaceful purposes could improve the interrelationship of man and nature and contribute to the preservation and improvement of the environment for the benefit of present and future generations,

Recognizing, however, that military or any other hostile use of such techniques could have effects extremely harmful to human welfare,

Desiring to prohibit effectively military or any other hostile use of environmental modification techniques in order to eliminate the dangers to mankind from such use, and affirming their willingness to work towards the achievement of this objective

[Art. 1] . . . [undertake] not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party. . . .

[Art. II] . . . [T]he term 'environmental modification techniques' refers to any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the earth, including its biota,⁴⁷ lithosphere,⁴⁸ hydrosphere⁴⁹ and atmosphere,⁵⁰ or of outer space.

The ENMOD Convention preserves the right to use environmental modification techniques for peaceful purposes and contains no provision with regard to enforcement other than to impose an obligation upon parties to take the necessary measures to prevent breach of the Convention anywhere under their jurisdiction or control. Moreover, as has been indicated, the Convention does not protect the environment outside the jurisdiction of any State and is limited to damage caused to any State Party. This means that the Convention makes no contribution to the problems already mentioned with regard to action on behalf of the 'human commons'.

428 Protection of the Environment During Armed Conflict

More important from the point of view of developing enforceable law is Additional Protocol I to the 1949 Geneva Conventions.⁵¹ Article 35 (3), includes the prohibition:

... to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.

and Article 55, concerned solely with 'Protection of the natural environment' provides:

1. Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.
2. Attacks against the natural environment by way of reprisals are prohibited.

It should be noted that whereas the ENMOD Convention indicates that the extent of the prohibited damage is expressed in the alternative, Additional Protocol I is expressed cumulatively. It may be suggested that this is really not surprising in view of the fact that the ENMOD Convention is in practice little more than hortatory, while Additional Protocol I is compulsive and, since there is specific prohibition of means and methods having such effect, breaches of its prohibitions may amount to war crimes, even though breach of neither Article 35 or 55 is included in the list of grave breaches enunciated in Article 85 of the Protocol. However, Article 85 does not mention ordinary breaches of the customary law of war and provides that

without prejudice to the application of the Conventions and of this Protocol, grave breaches of these instruments shall be regarded as war crimes,

indicating that the reference to grave breaches in no way interferes with or abrogates the traditional concept of offenses against the laws and customs of war, and the two Articles of the Protocol clearly constitute protection of the environment as part of that law.

Unlike traditional war crimes, offenses against Article 35 or 55 would not be committed by the ordinary man in the field. As with any decision to have recourse to nuclear weapons, the prohibitions seem

primarily directed to high level policy decision makers and would affect such unconventional means of warfare as the massive use of herbicides or chemical agents which could produce widespread, long-term and severe damage to the natural environment.⁵²

If the Japanese decision in the *Shimoda Case*⁵³ correctly states the law, it would mean that any politician or military superior deciding to resort to means or methods causing 'widespread, long-term and severe' damage to the environment would be exempt from liability, although it would leave open the possibility of proceeding for damages against the State on behalf of which such individual was acting. However, the situation has now been altered to some extent with the adoption of Additional Protocol I, which has now clearly established that a commander may be criminally liable for his failure to prevent and suppress breaches of the law,⁵⁴ even though there is no clear provision indicating that a commander who issues an illegal order shall be equally criminally liable with the subordinate carrying out the order. It follows, however, that if he is criminally liable for failing to prevent or suppress the commission of such a breach, he must be equally liable if he orders an act which would involve the commission of a breach, and it will not be open to such commander, as it may be to the subordinate, to plead superior orders by way of mitigation.

Article 86 of Additional Protocol I also imposes a duty upon:

High Contracting Parties and the Parties to the conflict [to] repress grave breaches, and take measures necessary to suppress all other breaches, of the Conventions or of the Protocol which result from failure to act when under a duty to do so.

While offenses against the environment do not constitute grave breaches, they do, as has been indicated, amount to war crimes. However, there is as yet no procedure whereby a State as such may be prosecuted for any criminal act, even though it might satisfy public opinion and moral sensibilities to 'indict' a State in such circumstances. True, it is possible, as happened at Nuremberg and Tokyo, to proceed against rulers and responsible ministers, but, as to the State itself, the situation remains as it always has been with regard to claims that a State is responsible for any breach of an international obligation. That is to say, the sole effective remedy against the State in its corporate capacity is by seeking compensation.

To secure such compensation may well be impossible. In present-day international law, proceedings against a State are only possible with the consent of that State. True, the law-breaking State may have made a declaration under Article 36—the 'Optional Clause'—of the Statute of the International Court of Justice,⁵⁵ enabling a State to lodge a claim alleging it has suffered damage because of the former's acts against the environment. However, it cannot be ignored that the processes of judicial settlement are intended for peacetime issues, and it would be open to the defendant State to plead, on the basis of the *rebus sic stantibus* doctrine, that its acceptance of jurisdiction does not extend to issues arising out of armed conflict. While Article 62 of the Vienna Convention on the Law of Treaties,⁵⁶ seeks to limit the operation of this doctrine, it does not appear to inhibit

430 Protection of the Environment During Armed Conflict

a plea of the kind here indicated. On the other hand, the Court might find it possible to reject such a plea on the basis of paragraph 2 of that Article:

A fundamental change of circumstances may not be invoked as a ground for terminating or withdrawing from a treaty [-and the mutual declarations under Article 36 of the Statute constitute a treaty]:

. . . (b) if the fundamental change is the result of a breach by the party invoking it either of an obligation under the treaty or of any other international obligation owed to any other party to the treaty,

and resort to armed conflict, unless by way of self-defense or authorized by the Security Council, constitutes a breach of the Charter of the United Nations, while the damage done to the environment would constitute a breach of Additional Protocol I or—if as the International Law Commission appears to believe—of *jus cogens*.

The comments made with regard to the application of Additional Protocol I provisions concerning the environment apply equally to Protocol III of the 1980 Conventional Weapons Convention pertaining to incendiary weapons.⁵⁷ Incendiaries inevitably cause fire and release noxious materials likely to damage the environment, and certainly destroy fauna and flora with which they come into contact and which do not constitute military objectives, a fact which is embodied in Article 2, paragraph 4 of Protocol III:

It is prohibited to make forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives.

While a belligerent might contend that the incendiaries were not directed against such flora, the plea could be rejected on the basis of reasonable foreseeability. Once again, the use of such weaponry is almost certainly going to be resorted to only as the result of a policy decision at the highest level. This raises the same problem of enforceability as has already been noted. While personal liability might, if identification is feasible, lie against the particular military or political individual issuing the order to resort to such weapons, the State making use of them could only be liable in civil damages as the result of the terms of a peace treaty or a resolution of the Security Council or of diplomatic negotiations or a judicial decision.

This procedure would, in the absence of some binding Security Council decision introducing some other method of reparation, have been the only way in which any compensation could have been recovered after the Gulf (Iraq-Coalition) war from Iraq as a result of the destruction of oil wells and other activities causing damage to the environment as such, or to such States as Kuwait or the United Arab

Emirates. There are sufficient arguably legitimate reasons for the Iraqi authorities to have resorted to these methods⁵⁸ to ensure that no claim could be lodged on the basis that these activities might have amounted to environmental war crimes, if such there be.

The International Law Commission (I.L.C.) of the United Nations has been concerned with the problem of State responsibility and has considered the extent to which such liability arises if there is damage to the environment. In 1977, it adopted Draft Articles on State Responsibility.⁵⁹ Having declared that “every wrongful act of a State entails the international responsibility of the State”, for which international responsibility is incurred, it defines an

internationally wrongful act of a State [as] conduct consisting of an action or omission . . . attributable to the State under international law, and . . . constitut[ing] a breach of an international obligation of the State.

It goes on to say, adopting a view akin to that of the Japanese court in the *Shimoda Case*,⁶⁰

conduct of any State organ having that status under the internal law of that State shall be considered as an act of the State concerned under international law, provided that organ was acting in that capacity in the case in question.

However, it goes further in introducing, perhaps for the first time, a provision creating the criminal liability of the State. Article 19 stipulates:

(2) An internationally wrongful act which results from the breach by a State of an international obligation so essential for the protection of fundamental interests of the international community that its breach is recognized as a crime by that community as a whole, constitutes an international crime.

(3) Subject to paragraph (2), and on the basis of the rules of international law in force, an international crime may result, *inter alia*, from . . .

. . . (d) a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas.

(4) Any internationally wrongful act which is not an international crime in accordance with paragraph (2) constitutes an international delict

and is of course to be dealt with as is any other international delict whether resulting from a breach of customary or treaty law. This means that a State injured as a result of such “massive pollution” would have to proceed by way of diplomatic negotiation or judicial process. While the I.L.C. Draft speaks of the “safeguarding and preservation of the human environment,” it contains no suggestion that a right to bring anything in the nature of an *actio communitatis* has been created, so

432 Protection of the Environment During Armed Conflict

that the elevation of such injury to the level of a breach of international law does not alter the traditional legal processes in any way. Moreover, despite the views expressed in the Draft, there is some doubt whether even the “massive pollution” here envisaged does in fact amount to “a serious breach of an international obligation of essential importance” under international law as it now exists.

It hardly needs pointing out that this affirmation of State responsibility does not in any way affect the potential personal liability of the State organ concerned if the act involving State responsibility amounts to an infringement of international criminal law, and this is true whether it occurs in time of peace or during armed conflict. This means that while the State, as such, might be liable in damages, the organ responsible for authorizing the act resulting in damage to the environment of the type described would be the entity against which criminal proceedings might be brought. The fact that the Draft only refers to pollution of the atmosphere or of the seas does not mean that other types of environmental damage, such as destruction of fauna or flora, would not equally result in criminal liability as is the case under Protocol III and was alleged to have occurred during and after the Gulf war.

A further development with regard to individual responsibility for damage to the environment is to be found in the I.L.C.’s Draft Articles on the Draft Code of Crimes against the Peace and Security of Mankind.⁶¹ Article 1 states dogmatically that “the crimes [under international law] defined in this Code constitute crimes against the peace and security of mankind”, and by Article 26

an individual who wilfully causes or orders the causing of widespread, long-term and severe damage to the natural environment [undefined] shall, on conviction thereof, be sentenced [to] . . .

This Draft Code is directed against the individual and makes no reference to any liability falling upon the State, an organ of which has ordered this criminal act. Since the offense is against the “peace and security of mankind” it is unlikely to have been committed on the personal initiative of a single private individual, but will be the result of State policy. The Code does not purport to overturn or displace anything in the Draft on State Responsibility, so that the State, the government or leader of which is responsible for ordering such damage, may still find itself held liable for the payment of damages to a State the interests of which have been injured by the offense against the environment.

Although the International Law Commission might consider acts harmful to the environment as constituting international crimes, even if committed in peacetime, this does not seem to be the view of States, nor do the declarations the latter make regarding environmental protection suggest that they regard this as amounting to *jus cogens*. This is especially significant since the Commission in its draft on State responsibility indicated that “massive pollution of the seas” would

constitute an international crime. In 1991, the United Nations adopted the Convention on Environmental Impact Assessment in a Transboundary Context.⁶² “Environmental impact assessment” was defined as “a national procedure for evaluating the likely impact of a proposed activity on the environment,” and “transboundary impact” is

any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the jurisdiction of another Party.⁶³

While the parties are obligated to take appropriate and effective measures “to prevent, reduce and control significant adverse transboundary environmental impact” from any activities they propose to undertake taking due account of the assessment in their final decision as to the activity, the Convention does not make any new contribution to the method of ensuring compliance with its provisions, nor does it advance in any way the means of providing remedies. It simply states in Article 15 that the solution of disputes shall be sought by negotiation or such other process that is acceptable to the parties, who may declare in advance their willingness to use the World Court or the arbitration procedure set out in the Convention. Once again, the sole method of assessing liability lies in direct or third party processes with the possibility of an injunction with or without accompanying compensation. Similarly, the International Convention on Oil Pollution Preparedness drawn up by the International Maritime Organization,⁶⁴ specifically concerned with pollution of the marine environment, goes no further than providing for international co-operation. Again, should any State be responsible for disregarding its obligations under the Convention, only the traditional means of securing reparation for breach of treaty ensues. Perhaps more significant is the fact that both these Conventions permit parties to withdraw or denounce—hardly indicative of the recognition of anything in the nature of *jus cogens*.

Finally, reference might be made to the Rio Conference of 1992 devoted to the environment and development.⁶⁵ The Declaration on Environment and Development⁶⁶ is clearly based on a variety of political issues considered relevant to development including poverty, the rights of developing States, as well as the participation of women, while

the creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve a sustainable development and ensure a better future for all.

The Declaration does, however, postulate a series of Principles, the most important of which are

1. Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

434 Protection of the Environment During Armed Conflict

2. States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

3. The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

4. In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

...

7. States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledged the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

...

10. Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. . . . Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

11. States shall enact effective environmental legislation. . . .

12. . . . Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

From the point of view of international law concerning the environment, perhaps the most important Principle is 13:

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding

*liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.*⁶⁷

The Declaration is not a binding legal document and is merely hortatory in nature. While it would appear to support the view that international environmental law is not yet *jus cogens*, the Rio Conference did draw up certain conventions towards giving effect to the statement of principles and the development of international environmental law. In the Convention on Biological Diversity,⁶⁸ “biological diversity” is defined in Article 2 as

the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

The parties express their concern that “biological diversity is being significantly reduced by certain human activities,” while declaring in the Preamble that they are

conscious of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components. . . . [and] also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere, . . . [affirm] that the conservation of biological diversity is a common concern of mankind. . . . Noting that, ultimately, the conservation and sustainable use of biological diversity will strengthen friendly relations among States and contribute to peace for humankind, [and] desiring to *enhance and complement existing international arrangements* for the conservation of biological diversity and sustainable use of its components, and determined to conserve and sustainably use biological diversity for the benefit of present and future generations, have agreed as follows . . .⁶⁹

Despite its highflown language, the Convention is, to a great extent, merely declaratory of existing law, as expounded in the *Trail Smelter* arbitration. Thus, Article 3 entitled ‘Principle’ provides that:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

For the rest, the Convention enjoins States to take steps to develop strategies and programs, including educational, which conform to the aims of the Convention, and to participate to the greatest extent possible in international cooperative measures to this end. Finally, it introduces the traditional processes for coping with disputes. At the same time, again inviting the argument that environmental protection is not yet *jus cogens*, it recognizes the right of withdrawal.

436 Protection of the Environment During Armed Conflict

A further Convention on Climate Change was adopted at Rio.⁷⁰ Like the other document, this too reflects current international concepts of political correctness criticizing developed countries, and acknowledges

that change in the Earth's climate and its adverse effects are a common concern of humankind, [and is] concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems of humankind.

Article 1 provides that, for the purpose of the Convention,

'Adverse effects of climate change' means changes in the physical environment or biota⁷¹ resulting from climate change which have significant effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

'Climate change' means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

'Climate system' means the totality of the atmosphere, hydrosphere, biosphere and geosphere⁷² and their interactions.

The first Principle embodied in Article 3 of the Convention requires the parties to

protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed countries should take the lead in combating climate change and the adverse effects thereof.

The Convention provides for international consultation and cooperation and for the same type of dispute settlement as is to be found elsewhere. Again, as if to emphasise that the provisions relating to climate change do not constitute *jus cogens*, parties are given the right to withdraw.

While these specific Conventions make no reference to times of armed conflict, it may be presumed that the injunctions contained therein are of general application. It must, however, be recognized that during conflict, environmental damage will almost certainly arise from the abandonment of war matériel, the discharge of explosive matter, the use or destruction of nuclear-powered equipment or vessels, as well as the destruction of oilwells or tankers. Moreover, during armed conflict the specific environmental conventions as well as the customary law is extended by the provisions of the Convention on the Prohibition

of Military or Any Other Hostile Use of Environmental Techniques⁷³ and of Additional Protocol I.⁷⁴

The extent to which these documents, or the two International Law Commission Drafts, introduce criminal liability, they will be effective only as regards individuals, regardless of any official position they may hold in their State. In so far as the liability of the State itself is concerned, whether this is described as civil or criminal, the position is as it always has been. Any State which has suffered injury as a result of the acts occurring during armed conflict or otherwise will only be able to secure an injunction calling upon the offending State to cease and desist, accompanied by the payment of compensation, which may perhaps be described as a penalty. There remains, of course, nothing to prevent the Security Council from condemning a State which has been responsible for environmental damage to pay compensation or be subjected to sanctions, if it were decided in accordance with the views of the International Law Commission that such damage to the environment amounted to a crime against the peace and security of mankind. Presumably, this power would extend to damage caused to the environment as such, regardless of whether any particular State has also suffered injury.

Notes

- *C.M., LL.B., LL.D., F.R.S.C., University Professor Emeritus, Honorary Professor of Law, University of Alberta.
1. OXFORD ENGLISH DICTIONARY.
 2. Peruvian Constitution of 1978, Art.123; Kiss, *Concept and Possible Implications of the Right to Environment*, in MAHONEY & MAHONEY, *HUMAN RIGHTS IN THE TWENTY-FIRST CENTURY: A GLOBAL CHALLENGE* (1993), at 551-554.
 3. Exodus 23:29.
 4. Deuteronomy 20:19, 20:20.
 5. Roberts, *Judaic Sources and Views on the Laws of War*, 37 Nav. L. Rev. 221, 231 (1988).
 6. United Nations Declaration on the Human Environment, Stockholm, 1972, 11 I.L.M. 1416, 1417 (1972).
 7. *Id* at 1420. (Emphasis added).
 8. 1982 World Charter for Nature, G.A. Res. 37/77, Annex, Preamble, 22 I.L.M. 455 (1982).
 9. THIRD RESTATEMENT OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES, Sec. 601-602 (1987). (Emphasis added).
 10. Treaty on Principles Governing Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 1967, Art. 9, 610 U.N.T.S. 10.
 11. KISS & SHELTON, *INTERNATIONAL ENVIRONMENTAL LAW* (1991) at 339-40. (Emphasis added).
 12. 1982 United Nations Convention on the Law of the Sea, *reprinted in* 21 I.L.M. 1261 (1982).
 13. 1991 Protocol on Environmental Protection of the Antarctic Treaty, 30 I.L.M. 1455.
 14. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), *reprinted in*, 16 I.L.M. 1391 (1977), Art. 54, paras. 2 & 3.
 15. "The interacting system of a biological community and its nonliving environmental surroundings," STOLOFF, *ENVIRONMENTAL LAW DICTIONARY* (1993).
 16. Artikel auf Teutsche Landsknechte, *quoted in* CORPUS JURIS MILITARIS KRIEGSRECHT UND ARTIKELS BRIEFJE, (Schukzen ed. 1693).
 17. Churfürstlich Brandenburgisches Kriegsrecht, *quoted in id.*
 18. Kriegsvölkerrecht - Lietfäden für den Unterricht (The International Law of Warfare, Instructional Guidelines) Part 7, para.3 (German Forces Publication ZDv 15/10, 1961).
 19. "Use your own property in such a manner as not to injure that of another," BLACKSTONE, *COMMENTARIES ON THE LAWS OF ENGLAND*, Vol. 3, 10th ed. 1787, at 217.
 20. 1938/1941, 3 U.N., Reports of Int'l Arb. Awards 1905, 1938 resp., at 1965.

438 Protection of the Environment During Armed Conflict

21. Mickelson, *Rereading Trail Smelter*, 31 Can. Y.B. Int'l Law (1993) 219, 230.
22. *Id.*, 232.
23. *Nuclear Tests Cases, Preliminary Objection* [1973] I.C.J. 99, 102; 135, 139.
24. *Nuclear Tests Cases* [1974] I.C.J. 253, 457.
25. *Id.*, at 253, 257; 457, 461.
26. [1973] I.C.J. 3, 7; 49, 54.
27. [1993] I.C.J. 467; [1995] 3.
28. U.N.G.A. Res. 1653(XVI), *reprinted in THE LAWS OF ARMED CONFLICTS* (Schindler & Toman eds. 1988) at 129.
29. U.N.G.A. Res. 2936 (XXVII), *id.*, at 159.
30. See BOTHE, PARTSCH & SOLF, *NEW RULES FOR VICTIMS OF ARMED CONFLICTS* (1982) at 188-191; *see also*, Green, *Nuclear Weapons and the Law of Armed Conflict*, 17 Denver J. Int'l L. & Pol., 1, 24-6 (1988).
31. 4 WHITEMAN, *DIGEST OF INTERNATIONAL LAW*, 586.
32. *Ryuichi Shimoda v. The State*, 32 I.L.R. 626.
33. *Id.*, at 634.
34. *See* interview with Daniel Snowman, 16 July 1963, "I never lost a wink of sleep over Hiroshima," *reported in The Times* (London), 31 July 1995.
35. 1907 Hague Convention No. IV, *Respecting the Laws and Customs of War on Land (with Annexed Regulations)*, 18 Oct. 1907, *reprinted in Schindler & Toman, supra* n. 28 at 63, 71.
36. *Id.*, at p. 635.
37. *In re Yamashita* (1945), 13 Ann. Dig. 255.
38. Reported as *Abbaye Ardenne Case* (1945), 4 Law Reports of Trials of War Criminals 97 (the relevant extract from the unpublished text of the Judge Advocate's summing-up will be found in GREEN, *ESSAYS ON THE MODERN LAW OF WAR* (1985), ch. XIII, 'Canada's Role in the Development of the Law of Armed Conflict', at 269-71.
39. Convention on the International Liability for Damages Caused by Space Objects (1972), 24 U.S.T. 2389; T.I.A.S. 7762; 961 U.N.T.S. 187.
40. Canadian Secretary of State for External Affairs, ltr no. FLA-268 of 23 Jan. 1979, *reprinted in* 18 I.L.M. 899 (1979).
41. *See, e.g., South West Africa Cases (Second Phase)* 1966 I.C.J. 4.
42. *Case concerning the Barcelona Traction, Light and Power Co. Ltd. (Belgium v. Spain)* [1970] I.C.J. 3, 33.
43. *See, e.g., Kiss & Shelton, supra* n. 11 at 350-51.
44. Art. 1(b), Convention on Long-Range Transboundary Air Pollution, 1979, T.I.A.S. 1054-1; 18 I.L.M. 1442, (1979).
45. *See* n. 35, *supra*.
46. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1977, 31 U.S.T. 333, T.I.A.S. 9614; Schindler & Toman, *supra* n. 28 at 163.
47. All of the living material in a given area.
48. The crust of the earth.
49. The water on or surrounding the surface of the globe.
50. The whole mass of air surrounding the earth.
51. *Supra*, n. 14.
52. BOTHE, PARTSCH & SOLF, *supra* n. 30 at 348.
53. *Shimada Case, supra* n. 32.
54. *Supra* n. 14, Arts. 86 & 87.
55. Statute of the International Court of Justice annexed to the Charter of the United Nations, (1945), T.S. 993; 3 Bevans 1153.
56. Vienna Convention on the Law of Treaties, 1969, 1155 U.N.T.S. 66; 7 I.L.M. 679 (1969).
57. Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), 1980 Convention on Prohibition or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, 27 Oct 1980, 19 I.L.M. 1523; Schindler & Tolman, *supra* n. 28 at 190.
58. *See e.g., Green, The Environment and the Law of Conventional Warfare*, 29 Can. Y.B. Int'l Law 222 (1991), at 231-5.
59. Report of the International Law Commission on the Work of its Twenty Ninth Session, *reprinted in* 16 I.L.M. 1249 (1977) at 1251.
60. *Supra* n. 32.
61. Report of the International Law Commission on the Work of its Forty-Third Session, *reprinted in* 30 I.L.M. 1563 (1991) at 1584.
62. 30 I.L.M. 800 (1991).
63. *Id.*, Art. 1(vi) and 1(viii), respectively.

64. International Convention on Oil Pollution Preparedness Response and Co-operation, 1990 *reprinted in*, 30 I.L.M. 733 (1990).
65. United Nations Conference on Environment and Development, Rio de Janeiro, June 3-4, 1992. *See* 31 I.L.M. 814 (1992).
66. *Id.*, Declaration on Environment and Development, June 14 1992, at 876.
67. Emphasis added.
68. 31 I.L.M. 822 (1992).
69. *Id.*, at 822-823. (Emphasis added)
70. United Nations Framework Convention on Climate Change, 1992, *reprinted in* 31 I.L.M. 849 (1992).
71. All of the living material in a given area; often refers to vegetation.
72. This term appears in the American Geological Institute's *Glossary of Geology*, 1972, as synonymous with lithosphere, defined as "the solid portion of the earth as compared with the hydrosphere and atmosphere."
73. *Supra*, n. 46.
74. *Supra*, n. 14.