The Legality of Marine Mining in the Antarctic Treaty Area

By Ana Pallesen
Supervisor: Neil Gilbert
GCAS Individual Project

A INTRODUCTION

Application of international law in Antarctica is so very complex and unworkable that the expert legal commentators assert with confidence that there are no real solutions in the law to provide. It is in this legal climate that this paper discusses the legal rights of different parties, should mining activity begin in the Antarctic. It will outline the legal rights and implications for the different parties who could be involved in mining activities in the future. In 1972 a member at the meeting of Antarctic Treaty Consultative Parties is reported to have said, 'This Treaty will last till a big mineral discovery is made – then it will be every man for himself.'[1]

The right to mine in Antarctica is intricately tied to international law. As the different states in Antarctica have differing and disputed status under international law, the legality of mining becomes complicated. The "frozen" claims, while practicable in terms of running a harmonious system, leaves a lot to be desired for legal clarity, as the legal status of the maritime area is subject to a multitude of different interpretations. The over lapping claims of Argentina, Chile and United Kingdom, and the unclaimed area of Marie Byrd Land Only adds to the difficulty of applying the typical international rules to the Antarctic.

The seven Antarctic claimant states are party to UNCLOS. The United States helped draft the Convention, but has not signed it. The US has not made a claim in Antarctica, however, and in the event of the claims being tried, the US could feasibly attempt claim the entire continent, as could Russia. The rights of these parties will be discussed in a later section. The rights and duties surrounding the mining of the deep seabed will also be discussed in later paragraphs, but the question of whether the law of the sea zoning is applicable in Antarctica must first be canvassed.

B MINING

The potential for hydrocarbons in the Antarctic is the resource interest driving the creation of this paper. In 1972 the UN Conference on the Human Environment declared that humankind was having a devastating impact on the environment. It also announced that the world may be running out of easily accessible non-renewable resources. The Organisation of

[1] Keith Suter, *Antarctica: Private Property or Public Heritage?* (1991, Pluto Press Australia, New South Wales) 47.

Petroleum Exporting Companies was formed in the 1960s to safeguard oil prices. In 1973 OPEC increased the price of oil. This led to much political unrest and international conflict involving the Middle East such as Iran and Iraq, Israel and Western nations such as the United States and the United Kingdom. The United Kingdom found oil reserves in the North Sea and became largely independent from the Middle East oil reserves by 1980. In 1983 the world leaders declared that non-renewable resources were not running out as fast as was previously feared.

There is no substantive proof available, but it is likely Antarctica has vast natural resources. Two hundred million years ago in the Mezoic age, the fossil fuels that are exploited today were forming. At this time Antarctica was part of Gondwanaland and these resources can thus be expected in Antarctica as they are extracted from the super-continents' other components, today's Australia, Africa and South America.

There are huge logistical barriers which make mining in the Antarctic very unlikely for some time, especially on and very close to the continent itself. There is currently no proof of sufficiently large and accessible deposits in the Antarctic. Evidence of hydrocarbons in the continental shelf of the Ross Dependency was found by the US research ship *Glomar Challenger* in 1973. It is more practical to extract minerals offshore because on the continent the immense ice sheet covering 98 per cent of the land is one mile think on average and moves seaward at a rate of one metre per day, making drilling unfeasible.[2] The oceanic mining is also dangerous and logistically difficult. The icebergs that slough off Antarctica are much bigger and the waters much deeper than in the Arctic where some mining activity is undertaken.[3]

[2] Liesbeth Peeters, Square Peg, Round Hole: Jurisdiction Over Minerals Mining Offshore Antarctica, MqJICEL (2004) Vol 1, 218.
[3] Barbara Mitchell, 'Undermining Antarctica', *Technology Review*, Boston, February 1988, 54.

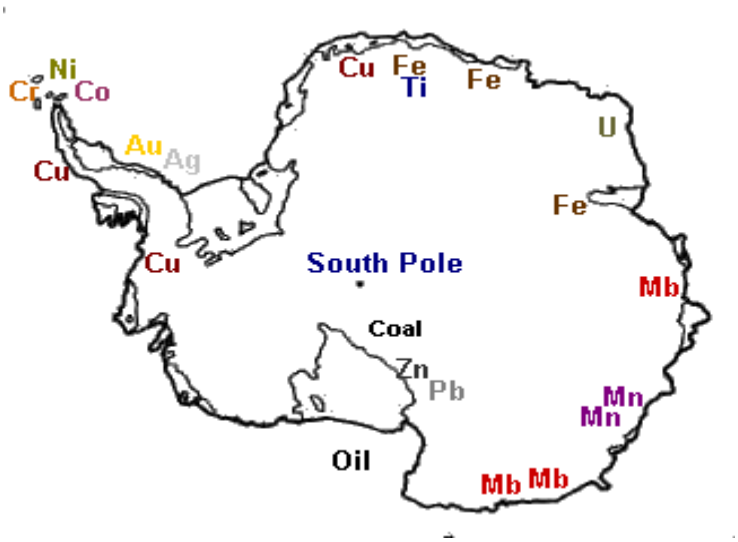

Figure 1: Potential Mineral Resources in the Antarctic

The ban imposed by the Antarctic Treaty also creates deterrence, as mining corporations do not want to run into the legal complications.[4] 'No corporation would even contemplate an investment of millions of pounds knowing that its work was resting on a legal quagmire.'[5]

C THE ANTARCTIC TREATY SYSTEM

1 Instruments

i Antarctic Treaty Background

International interest in Antarctica's economic potential began in the 1970s. The Antarctic Treaty entered into force in 1961. It did not cover mineral resource protection or exploitation, mainly because the interests of the claimants and non-claimants were irreconcilable.[6] The Treaty Parties foresaw that unregulated mining could cause serious environmental damage. They were all adamant that a cautious approach much be implemented for mineral extraction proposals. They wanted to put measures in place as interest first arose, on the basis that it would be easier to get consensus on regulation prior to discovery of minerals.[7]

Despite the international cooperation, territorial claim dormancy, and goodwill which characterises international relations in Antarctica, even in times of intense international discord,

[4] Suter, above n 1, 49.
[5] Suter, above n 1, 51.
[6] Peeters, above n 2, 219.
[7] Mining Issues in New Zealand, Antarctica New Zealand Information Sheet www.antarcticanz.govt.nz/downloads/information/infosheets/mining.pdf

the legal predicament means there is potential for conflict in Antarctica. Avoidance of conflict is one of the main principles encoded in the Antarctic Treaty. The tangled legal issues are due to the unique condition of territorial claims in Antarctica, which in turn are due to the utter uniqueness of the region.

Seven states have made claims, none of which are recognized by the rest of the International community. Two major presences on the continent, United States and Russia, have not made any claim, three claims overlap, and one segment is not claimed.

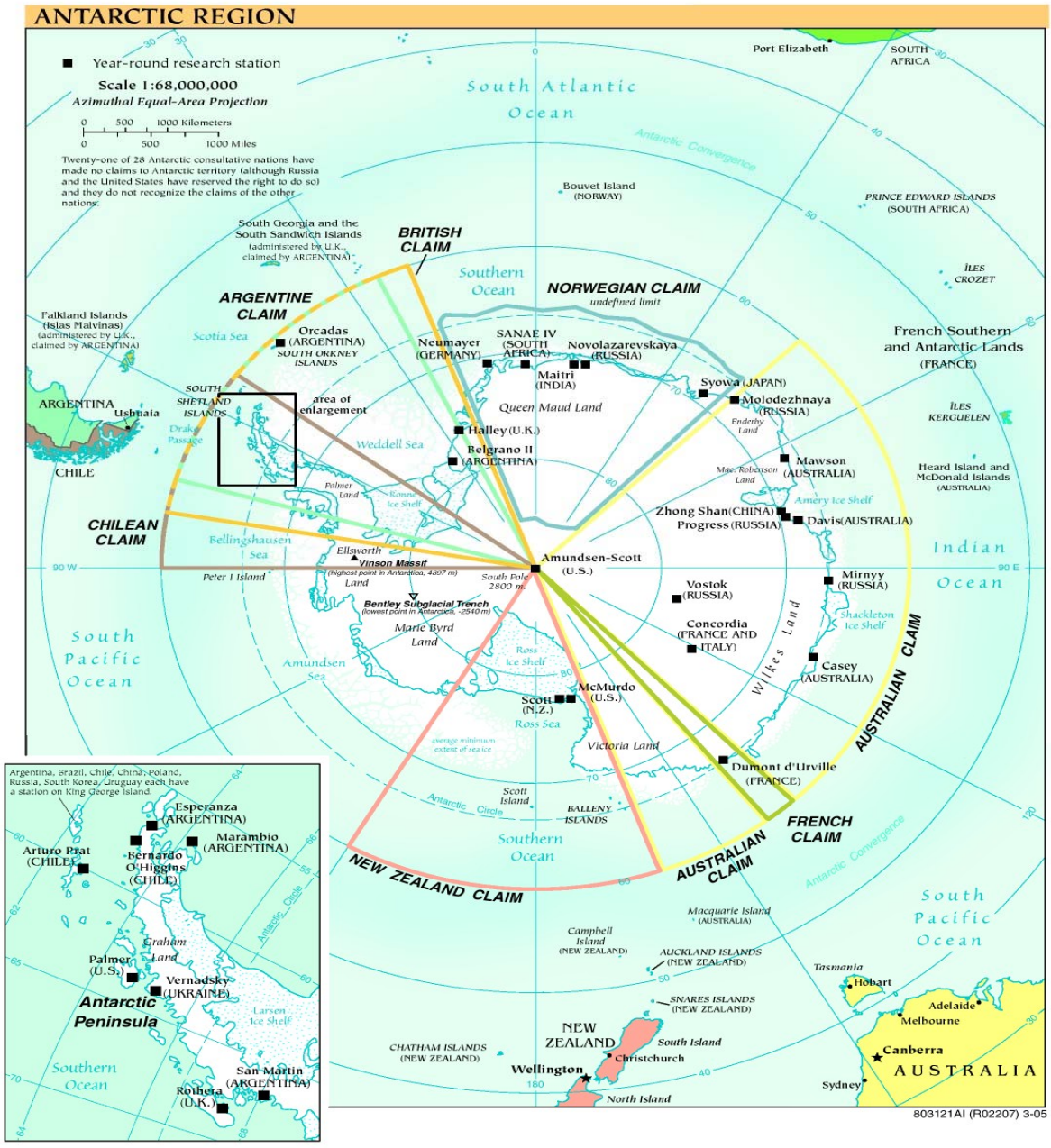

Figure 2: Territorial Claim Segments in Antarctica

The legality of mining activity in the Antarctic marine environment centers closely around the international law governing the oceans. Depending on whether a claimant or non-claimant State is arguing, interpretation of the law for the marine area may be very different. Claimant States contend that the oceans are subject to territorial, sovereign rights, while non-claimant states argue that all of the area south of 60°S simply has high seas status, subject to none of the coastal state zones, rights and restrictions. Complex multilateral regimes are successfully negotiated however, for example resource regimes such as the Environmental Protocol in 1991 and the Seal Convention 1972, Convention for the Conservation of Antarctic Marine Living Resources 1980 (CCAMLR), and the failed Convention on the Regulation of Antarctic Mineral Resources Activities 1988 (CRAMRA). These skirt around the sovereignty issues, and treat the entire Treaty Area as one management area. These delicate balances are found throughout Antarctic law. [8]

The Fridtjof Nansen Foundation

In 1973 the Fridtjof Nansen Foundation held a meeting to analyse the problems around mining in the Antarctic Treaty Area. The Foundation canvassed the three major schools of thought on the legality of mining. Firstly, commercial exploration was in breach of the Treaty unless it was amended or new a regime was added. Secondly, as the Treaty neither expressly allowed or disallowed mining, actors needed Consultative members' consent to be in compliance with the Treaty's aims and objectives. The third approach was that as there was no prohibition in the treaty text, mining activity was not in breach if actions were within the bounds of the Treaty. Supporters of this view maintained that commercial activity was pursuing a peaceful purpose.[9]

The potential for disharmony is created both in the assertion that mining is not possible under the Treaty at all, and in the assertion that unilateral freedom of mining is allowed. The avoidance of disharmony was the fundamental principle in drafting of the Antarctic Treaty and is stated in the preamble. Thus to act on either assertion is potentially in breach of the Treaty. Mining is not mentioned in the Treaty but to say this means mining can never be conducted

[8] Davor Vidas, The Antarctic Continental Shelf Beyond 200 Miles in Protecting the Polar Marine Environment: Law and Policy Reform for Pollution Prevention David Vidas (ed) (Cambridge University Press) p266.
[9] Francisco Orrego Vicuna, *Antarctic Mineral Exploitation: The Emerging Legal Framework*, (1988, Cambridge University Press, Cambridge), 42.

denies the Treaty's capacity to be dynamic. Vicuna continuously emphasises that the Treaty's foundation is cooperation between States.[10] Co-operation of interested states to build a strict mining regime appears to be the answer to achieving the harmonious international relations the Treaty drafters and current parties are supremely anxious to maintain.

The Antarctic Treaty may fall within the category of a framework convention. These are treaties wherein fundamental objectives and mechanisms are laid out, and the legal intricacies are left to be developed by negotiations and actions of the members. Given the Antarctic Treaty's characteristic capacity to adapt, there is a strong argument that fits this category. Thus, building a regime to accommodate and regulate mining is legally plausible. However, attempts to gain member state consensus are currently abandoned, as seen in the collapse of CRAMRA, and similarly in the United States reasons for not signing the Law of the Sea Convention.

ii Convention on the Regulation of Antarctic Mineral Resource Activity 1988 (CRAMRA)

CRAMRA was negotiated with the intent that it would become one of the instruments in the Antarctic Treaty System. Article 25 of the Protocol to the Antarctic Treaty required the development of a regime on the commencement of mining activity. CRAMRA was drafted between 1981 and 1988 by the Antarctic Treaty Consultative Parties. It was adopted in 1988. It did not receive the mandatory consensus, as Australia and France declined to sign the convention in 1989. CRAMRA was drafted with a view to ensuring environmental protection on the development of mining activity. It had radically strict environmental protections and management processes.[11] Australia and France asserted that the controls were not adequate and that mining needed to be prohibited outright, reiterating their commitment to Antarctica being solely a nature reserve used and utilised for science.

CRAMRA would have implemented revolutionary environmental protection restrictions, and it required consensus before any mining activity could be undertaken. It included inspection,

[10] Vicuna, above n 9, 43.
[11] Mining Issues in New Zealand, Antarctica New Zealand Information Sheet www.antarcticanz.govt.nz/downloads/information/infosheets/mining.pdf Antarctica New Zealand, p 1.

monitoring, reporting, compulsory settlement of disputes, access to courts, and suspension of disputes causing unacceptable damage to the environment. It included the seabed and subsoil of adjacent offshore areas to Antarctica and the sub-Antarctic Islands below 60°S. It did not attempt to regulate the seabed beyond Antarctica's geographically delineated continental shelf (Article 5). The agreement negotiated and obtained consensus on a number of very controversial issues, and managed to produced regulations and environmental standards even though they encroached upon states' autonomy, and gave rights to a CRAMRA Authority Body.[12] If mining began in the absence of this convention, no legal framework would be in place. This would is contrary to Article 25 of the Environmental Protocol.

iii The Environmental Protocol to the Antarctic Treaty 1991 (The Madrid Protocol)

This environmental agreement primarily imposes duties on interested States. The drafting discussions that took place for CRAMRA drafting discussions were the first steps in the creation of the Environmental Protocol on Environmental Protection to the Antarctic Treaty 1991.[13] It was a comprehensive code for almost every kind of human activity and has been described as "the greening of Antarctic policy."[14] Article 7 imposes a ban on all mineral activities except for approved scientific research.

The Protocol puts a 50 year ban without review on mining (Article 25). It utilises the precautionary principle, reflecting the Treaty members' concern for the devastating effects future exploitation could wreck on the delicate environment. This provision requires the opposite conduct from that allowed by high seas freedoms and the Common Heritage status of the Deep Seabed. It imposes blanket prohibitions where the high seas rules grant rights to undertake activity. Scientific research is allowed by Antarctic Treaty members within the ATS Area without consent. If the research is related to drilling or mineral exploitation, or threatened the environment, the research freedoms will begin to encroach on the ban and precautions of the Environmental Protocol.[15]

[12] Christopher Joyner, Antarctica and the Law of the Sea (1992, Martinus Nijhoff Publishers, Dordrect) 163.
[13] Antarctica New Zealand, above n 11, p 1.
[14] Peeters, above n 2, 217.
[15] Joyner, above n 12, p121.

2 Claimants' Right to Claim Antarctica Under International Law

Even if Antarctica was ever deemed eligible for sovereign ownership there still needs to be international recognition of the claim. The major legal criterion that can not be met is the presence of a permanent population. Also, the Antarctic Treaty System means that no one can act independently in the role of coastal soveriegn. Instead the unique circumstances are perfect for the creation of certain umbrella rules, such as environmental protection, or the failed CRAMRA provisions. The sub-Antarctic islands' soveriegn claims are recognized by the international community. It is not clear that this automatically gives them Exclusive Economic Zone and Continental Shelf rights.[16] This will become very important should significant mineral resources be discovered within these areas.[17]

One line of argument on Antarctica's communal territory is that given that its freezing temperatures makes it uninhabitable, it cannot be claimed on the grounds of occupation but can only be exploited, and therefore ought to be open to all states to exploit. The counter argument is that Antarctica can theoretically be under state sovereignty as it can be acquired in ways other than traditional occupation and similar criteria. This is the theory that prevailed in international law. [18] The claims have not been resolved however, and the law is still not clear.[19]

Antarctica is far from fulfilling the criteria of statehood, which means it is denied offshore territorial limits which means high seas freedoms apply. Antarctica is not a continent with many coastal states, and neither is it a condominium, that is, a country governed by two or more different countries with joint responsibility. Therefore the international community does not recognise the right of interested parties to benefit from jurisdictional oceanic zoning.

4 Claimants Rights Regarding the High Seas and the Deep Seabed

[16] Christopher Joyner, Antarctica and the Law of the Sea (1992, Martinus Nijhoff Publishers, Dordrect) 89.
[17] Joyner, above n 16, p 89.
[18] Vicuna, above n 9, p 7.
[19] Vicuna, above n 9, p 8.

The area south of 60°S Antarctic Treaty area has vast areas of high seas. The Treaty Parties cannot limit anyone else's rights on these High Seas and this is reiterated in Article VI AT. The Treaty Parties have also chosen not to place limits on each others rights on the high seas.

The vagueness found in the Antarctic Treaty causes the uncertainty over the law in the Antarctic Oceans, and no doubt the legal complexity and conflicting state interests are the reason why the loose drafting is there. Where the high seas begin and end both vertically and horizontally is the crux of the controversy. Article VI sets the Antarctic Treaty System Area boundary at 60°S, including all ice shelves. However, it does not define what is actually encompassed by 'the high seas'. In addition to this, the deep seabed, or "the Area" is a new consideration in international law, with unclear boundaries, international legal rights and restrictions. These factors are vitally important, because a State's right to engage in mining activities in the ocean floor depends entirely on the legal status of the seabed.

The deep seabed and the associated Common Heritage of Mankind principle did not exist when the Antarctic Treaty was drafted in 1959. The reiteration of the High Seas rights in Article VI may include the deep seabed as an area generally 'beyond national jurisdiction.' The counter argument is that as the jurisdiction of the ISA and the CHM principle are not customary international law, due to opposition from the United States, the deep seabed is not automatically included in high seas freedoms, which are reaffirmed by Article VI of the Antarctic Treaty, and exist as customary international law.

The region is believed to be rich in coal, cobalt, gold, iron, manganese, nickel, platinum, silver, tin, and uranium. The resources that raise the most interest are the potential oil and gas fields within the continental shelf. US Government report estimated that the Weddell Sea alone could contain as much as 45 billion barrels of oil and 115 trillion cubic feet of natural gas.[20] Antarctica's shelf might be considered legally analogous to the shelf area beyond 200 nautical miles. Under UNCLOS, the exploiting state would thus be liable for payments and contributions to the Authority.[21] The abyssal plains surrounding Antarctica are potentially rich in manganese nodule deposits. Under Part IV of UNCLOS these areas are the 'common heritage of mankind'

[20] Christopher Joyner, Antarctica and Law of the Sea: New Resources vs. Legal Dilemmas (1982 IEEE Washington D.C.) 1212.
[21] Joyner above n 20, 1212.

and come under the International Seabed Authority's jurisdiction. This will be discussed below. The Antarctic claimant states do not claim rights over the high seas, but they may claim rights over the seabed, especially if it proves to be within their economic interests.[22] This is contrary to Part IV of UNCLOS.

Article VI of the Antarctic Treaty reiterates the high seas rights. Given that the international community does not recognise the state claims, this Article may serve to weaken the argument that marine areas may be subject to the claimant's states' jurisdiction. Even if the seabed around Antarctica is deemed to be high seas, and thus not under any sovereign restrictions, under the Geneva Convention on the High Seas, and likewise under customary international law, mining is not a high seas right. Mining could remain prohibited while high seas freedoms of *inter alias* navigation and over flight are not affected.

The Antarctic Treaty System texts are ambiguous and vague around points of law that are salient for the determining the legality of mining. Article VI of the Antarctic Treaty says the Treaty cannot prejudice or affect States' rights under high seas international law. Neither the Treaty nor the Protocol contain any definition of which parts of the Antarctic Treaty area are the high seas. This ambiguity is the basis of potential disputes over mining rights in Antarctic waters. This is the interface whereat the Antarctic Treaty system and the United Nations Convention on the Law of the Seas (UNCLOS) begin to interact. The Madrid Protocol 1991, and its Annex IV on protection from marine pollution, do not mention the LOS Convention, which regulates all ocean space, despite many consultative parties of the Antarctic Treaty being signatories of UNCLOS.

C THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1982 (UNCLOS)

Some commentators have questioned whether UNCLOS can be applied in Antarctica. Others maintain that the Antarctic Treaty cannot apply to the surrounding seabed. Joyner writes that UNCLOS has contemporary relevance for all ocean space. The Antarctic Treaty regime's legal status is accepted by the international community. It makes the members joint administrators of activities on and around the continent, they manage and protect the area for the

[22] Joyner, above n 20, 1213.

good of all mankind. On the face of it, the UN Convention aims to include all the world's oceans. The preamble states that UNCLOS deals with all issues covering the entire ocean space. However, the unique geographical and political environmental in Antarctica makes application of the Convention so difficult that there are strong arguments for the Antarctic being separate from the general LOS provisions.

In the 1980s the attention of the international community was drawn to the possibility that Antarctica contained vast hydrocarbon deposits on the continental shelf. Leading Antarctic legal commentator Chris Joyner was writing at the time the UNCLOS provisions were being drafted, and CRAMRA discussions were beginning. The UNCLOS drafters did not have Antarctic area at the forefront of their minds while drafting this law, as they were focusing on more typical areas in which more states had interests. 'if the [UNCLOS Draft Convention] goes into force it would produce some intriguing and perhaps even entangling legal ramifications for governments interested in the [Antarctic] region.'[23]

UNCLOS potentially includes the polar regions in its ambit expressly in several articles. Article 234 of the Convention specifically protects ice-covered areas from pollution from vessels. This must have been intended specifically for the polar oceans. The provision was negotiated between member States with interests in the Arctic. Some commentators argue that this specific inclusion of polar ocean illustrates the all-inclusive global character of the Convention.[24] However, this provision is nick-named 'the Arctic Article' and was not drafted with the Antarctic in mind.[25] This special mention of the polar environment in relation to pollution may also be an indication that these 'ice covered' areas are not intended to be included elsewhere in the agreement, as gaining consensus on issues in the region are left in the too-hard basket as they delve into jurisdictional complexities that UNCLOS is anxious to avoid.

[23] Joyner, above n 20, p 1211.
[24] M. H. Nordquist (editor in chief) with S. Rosenne and A. Yankov (eds.) *United Nations Convention on the Law of the Sea, 1982, A commentary*, Vol IV (Dordrecht: Martinus Nijhoff, 1991), p39.
[25] Budislav Vukas, The LOS Convention and the Polar Marine Environment in Implementing the Environmental Protocol Regime for the Antarctic, Davor Vidas (ed) (Kluwer Academic Publishers) p 37.

At the 1975 UN General Assembly, the President Hamilton Shirley Amerasinge declared that the status of Antarctica was not linked to the UNCLOS Conference issues.[26] This was not to exclude Antarctica's oceans from the ambit of UNCLOS, but it would not decide on where the different zone boundaries lay, or if they legally existed at all. The special rights given to coastal states around the Arctic in Article 234 are not easily transposed into the Antarctic as the sovereignty of the Coastal States in the Antarctic is not recognised by the rest of the world. The Artic is technically high seas surrounded by clear coastal state territories, the Antarctic is technically unclear state territories surrounded by the high seas. The unclear sovereignty issues are what the UNCLOS Conference refuses to become involve in.

The leading Antarctic legal commentators name Articles 194 and 197 as evidence of UNCLOS intention to bind activity in the Antarctic. Article 194(5) is about the environmental protection and preservation of rare or fragile ecosystems. As this undoubtedly describes Antarctic ecosystems it imposes a direct duty to protect Antarctic oceans from pollution.[27] Article 197 imposes duties on States to co-operate globally and regionally. Despite the ambiguities over the word 'region', it is undisputed that Antarctica is a region, thus imposing a duty to directly, or by means of an 'appropriate regional organization', coordinate activities relating to navigation, pollution, and exploitation and conservation of endangered living resources. This may be seen as already achieved. The states which co-operate very successfully within the Antarctic Treaty System may be the 'appropriate regional organisation', and thus appear authorised by the UNCLOS text to coordinate activities. The system possibly thus prevails as *lex specialis*.

Lex Specialis And *Lex Generalis*

As UNCLOS does not clearly describe its interaction with other international agreements and norms, many legal rules for deciding the prevalence of Treaties are difficult to apply. Article 237(1) stipulates that specific obligations under special agreements relating to the protection of the marine environment, made by states previously or in the future, are not prejudiced by the provisions in Part XII of UNCLOS. This is known as a *lex specialis*. This means that UNCLOS is acting as an overarching framework agreement, *lex generalis*, and there are agreements with

[26] Amerasinghe, *30th General Assembly Official Records*, 2380th meeting, 1975, Para 36.
[27] Vukas, above n 25, p 42.

smaller scopes relating to specific areas or concerns. Usually this would mean that the *lex specialis* Treaty would prevail.

Article 197 requires all future international rules to be consistent with the Convention, and Article 237(2) requires specific obligations under special conventions to be consistent with the general principles and objectives of the Convention. These seem to be a contradiction of the Article 237(1) *lex specialis*, which says the Convention does not prejudice special agreements on environmental protection. The importance of this point of law is that the Environmental Protocol to the Antarctic Treaty 1991 is, by some interpretations, inconsistent with the Convention in its mining ban, because the Convention allows exploration.

The relationship between the Antarctic Treaty and UNCLOS is complicated. The positions are potentially incompatible. Classifying the Madrid Protocol as *lex specialis* gives it prevalence over UNCLOS in the Antarctic Treaty Area, given its specific Antarctic focus. However, this argument is criticized as being too simplistic, and the policy-based counter argument is that if this rule is applied in this situation, it would mean it could be used in many others also, and the line should be drawn well before this situation.[28]

Special 'regional' customary international law for the Antarctic area among the Antarctic Treaty Consultative Parties is not unreasonable.[29] UNCLOS provisions were drafted on the assumption that coastal states activities, powers, rights and obligations will be in operation. Because there are no internationally recognised coastal states in Antarctica, the international law must be applied *mutatis mutandis*, that is, with modification to suit the unique set of facts. A logical and practicable solution would be that activities on the sea bed off the coast of Antarctica should be decided by a set of rules made by all the interested states under joint obligations as a de facto coastal state.[30] In attempting to create CRAMRA the ATCP are acting legally like a state would within its EEZ, effectively creating an EEZ around Antarctica with joint regulations and regulatory bodies and similar soveriegn functions. The importance of co-operation is reiterated by Vicuna who asserted that active co-operation is needed if mining activities are

[28] Sahurie, above n p 375.
[29] Joyner, above n 12, p126.
[30] Vukas above n 25, p 51.

going to commence, not passive.[31] Thus there is a need for the Consultative Parties to work together to make an active regime to regulate or enforce prohibitions on mining.

1 The Antarctic Treaty and UNCLOS: The Madrid Protocol's Ambit

The question that now arises is whether the Madrid Protocol includes the deep seabed in its ambit. Article 7 of the Protocol bans mining, but the Protocol does not give specific boundaries for the ban. The seabed within the 60°S Antarctic Treaty Area may be subject to the Law of the Sea Convention, which permits mineral development.[32] This is because the deep seabed is recent area of interest in international law, and the international community does not yet have solidified legal rules relating to it. The seabed does not automatically get treated the same as the water column above it.

2 The Land verses Sea Distinction

CRAMRA and the Protocol appear to be drafted with the terrestrial areas of Antarctica at the forefront of the drafters' minds. However, both instruments do provide for the inclusion of the oceans within their ambits, thus the distinction is not market enough to argue that the drafters could not have intended the marine areas to be included. In CRAMRA Article 5, under 'Area of Application', the agreement expressly includes 'in the seabed and subsoil of adjacent offshore areas up to the deep seabed.' As the existence of a marine space that is not legally "deep seabed", given the absence of legal Exclusive Economic Zone and Continental Shelf Zones, CRAMRA's attempt to cover the marine environment may be obsolete. The legal status of the adjacent offshore areas is discussed below. Article (1)15 of CRAMRA also expressly includes marine damage in its environmental considerations. Article 2 is about protection 'the Antarctic environment and dependent associated ecosystems.' This impliedly includes the oceans, as there is nothing else but marine environment outside what is inherently terrestrial Antarctica, so the concept of 'associated ecosystems' would be redundant if it did not intend to cover the Antarctic oceans.

[31] Vicuna, above n 9, p 23.
[32] F Francioni, 'Introduction: A Decade of Development in Antarctica Law' in F Francioni and T Scovanzzi (eds), *International Law for Antarctica* (1996) 3.

Other instruments within the Antarctic Treaty System appear to safeguard the environment with emphasis on the terrestrial environment. The most important example of this is the Environmental Protocol, which contains the ban on mining. Practical implementation of this instrument by Treaty members is generally critcised focusing almost exclusively on the terrestrial environment, as it has seldom been utilised for protecting the marine environment unconnected to associated land protections. However, the Protocol provisions, like CRAMRA, expressly aim to protected Antarctic and the associated ecosystems, which must include the marine environment, especially the adjacent waters within 60°S.

The "Ecosystem Approach" revolutionized by the Madrid Protocol imposes a protection based approach on resource management. The mandate is to protect the Antarctic environment *and dependent and associated ecosystems*. This must mean the surrounding ocean areas, as they are intricately associated, if not definitively part of, the Antarctic environment. This is a clear argument in support of the inclusion of the deep seabed in the Madrid Protocol's mandate.[33]

If it could be concluded that Antarctic Treaty System did intend to include offshore areas in its mining ban, the interaction with UNCLOS begins. The legal web around the world's oceans is set out legally in a 'freedom-commons-sovereignty trichotomy.' [34] This refers to the freedom of the high seas, the deep seabed as common heritage, and sovereignty over land and certain coastal zones. Antarctica's atypical political and legal environment mean it cannot be neatly caught in the trichotomy framework.

UNCLOS pollution standards

Due to the absence of sovereign coastal states in Antarctica, the standard measures for enforcement of pollution are jeopardized. Drastic and specific rules would be required to overhaul the current system. These two main measures are enforcement by port states (Article

[33] Peeters, above n 2, 222.
[34] Sahurie, above n 4, 483.

218) and enforcement by coastal states (Article 220), both dependent on territorial soveriegn rights. 'Only the least efficient solution of enforcement by flag states (Article 217) – remains uncontroversial.'[35] However, it is difficult to ensure the states the ships are flagged to are responsibly monitoring their ships in the Antarctic.

3 The Continental Shelf: Legal Complexities

The continental margin is estimated to consist of one fifth of the ocean floor, but has disproportionately high commercial value in the resources it contains. The continental margin sediments contain minerals. The most important mineral resources to be exploited from continental margins are oil and gas reserves. 'Geologically rapid, pressurized sedimentation along margins, combined with high geothermal activity, source rock strata, and reservoir rock formation to create hydrocarbon deposits are sufficiently available in offshore regions.'[36] The presence of such reserves in Antarctica is not yet scientifically proven but geological, sedimentological and geomorphological studies suggests that it is highly likely. [37]

The continental shelf is defined in Article 76 of UNCLOS as the seabed and subsoil. Thus the airspace and waters above the sea floor are not included and the attached high seas freedoms of navigation and over flight are not affected.[38] The high seas rights only encompasses the water column, the seabed is not considered to be part of the state's sovereign territory.[39]

The continental shelf lies between the territorial sea and the deep seabed. It is highly contentious whether Antarctica should have a continental shelf in terms of the legal rights afforded. In the hypothetical and extraordinary event of the claimant states succeeding in their claims, Article IV of the Antarctic Treaty which "freezes" the claims would need to be amended or removed. In this event, non claimant states would argue that the right to adjacent waters is not

[35] Vukas above n 25, p 56.
[36] Joyner, above n, p111.
[37] Joyner, above n 12, p112
[38] Peeters, above n 2 , p 225.
[39] Joyner, above n 12, p121.

inherent with sovereignty over land. They would maintain that because no offshore jurisdiction claim was established by any state at the time the Antarctic Treaty came into force, making claims for adjacent waters is in breach of the Article IV prohibition on the creation or enlargement of the claims. UNCLOS appears to prevent claimants from claiming continental shelves under Article 121(3) which states that rocks which cannot sustain human habitation or economic life of their own shall have no EEZ or continental shelf. It is unlikely this was drafted with the Antarctic in mind however, and may not *mutatis mutandus* may be the more logical application of international law.

Claimant nations would argue that claiming adjacent waters is inherent in their existing sovereignty rights and is not creating new, or enlarging existing, claims.[40] This would give the state the right to exclusively explore and exploit resources found there under Article 77 of UNCLOS, and the area would be protected from international global commons freedoms as the sovereign state could impose restrictions. This is principally an argument about continental shelf claims, and claimant states asserting that the 200 nautical miles which legally represent their continental shelf are inherent in their territorial claims.

The Truman Declaration in 1945 was the US unilaterally proclaiming the right to exploit the continental shelf zone beyond their territorial zones. This was quickly followed by other coastal states, and was customary international law by the early 1950s and certainly by the time the 1959 Treaty froze the Antarctic territorial claims. 1969 *North Sea Continental Shelf Cases* judgment the ICJ declares that the Convention on the Continental Shelf have solidified into CIL and thus bound non-members of the Convention. Disputes over the outward boundary of the continental shelf rights led to the First UN Conference on the LOS in Geneva 1958. Thus customary and treaty law suggest that, should the claims ever be resolved, there is a high probability that the continental shelf will be included inherently.

It is a task beyond the limits of this paper to ascertain whether the claimant states have a strong argument in claiming the continental shelves off their claimant sectors, however, there are some legal rules which would be used to decide on rights of ownership. Article 77(3) of UNCLOS states that the rights to the continental shelf do not depend on occupation or an express proclamation. Article IV of the Antarctic Treaty prohibits new claims and enlargements, but also

[40] Peeters, above n 2, p 222.

protects existing claims, and the continental shelf, under UNCLOS Article 77 is treated as a prolongation of the landmass. This is codification of the customary international law made in the 1940s and 1950s. It is likely that the continental shelf would be treated as an inherent right of the sovereign state, and Peeters foresees a breakdown of the Antarctic Treaty system if these rights are not afforded, 'to place the shelf under international control as a commons …could result in unilateral actions [by claimant States], thus endangering the valuable achievements of the ATS'.[41]

Continental shelves are recognised as inherent, but in the 'classical 'Law of the Sea-concepts' nothing prevents the ISA from having authority over the seabed up to the shores in the unclaimed sector'[42]

4 The Commission on the Limits of the Continental Shelf

While mostly States are content to let sleeping dogs lie on most ownership issues in the Antarctic, there is a sense of urgency on this matter of the legality of the Antarctic continental shelf because of an approaching deadline under UNCLOS. The Commission on the Limits of the Continental Shelf was set up under Annex II to the LOS Convention has a provision for submission of scientific evidence to back up claims "where a coastal State intends to establish the outer limits of its continental shelf beyond 200 nautical miles." Annex II imposes a dead line of 10 years after ratification. Antarctic claimants dealt with this in different ways, trying to reconcile their obligations under the Antarctic Treaty not to extend their claims, with asserting their rights under UNCLOS to explore and exploit a larger marine area.[43]

When applied to the unique Antarctic circumstances the law becomes a tangle of rules which again were not developed with Antarctic conditions in mind. These are the UNCLOS time constraints, the dormant Antarctic claims, the obligation not to extend the claims, and the rest of the world's refusal to recognise the legitimacy of the claims. The clashing of the two treaties resulted in international outcry at the Antarctic Treaty Consultative Meetings. This was in response to Australia, which was the first Antarctic claimant to approach this ten year deadline. The Australian government made a public announcement that it would be funding the defining of

[41] Peeters, above n 2, p 225.
[42] Peeters, above n 2, 227.
[43] Vidas, above n 15, p 266.

the limits of the shelf within the Australian's segment of claim. In 2004 the information was submitted to the Continental Shelf Commission as conditional, with a diplomatic note accompanying the submission asking the Commission not to examine the Antarctic scientific content. Eight nations were provoked to respond, the United States declared it was a breach of the 'the harmony and continuing peaceful cooperation, security and stability of the Antarctic Area.'[44] New Zealand dealt with the same issue presenting their report to the Commission excluding scientific evidence on their Antarctic claim, but reserving the right to make a claim in the future.

UNCLOS deliberately refrained from dealing with the effect of the unique natural features on the legal boundary delimitation, in order to side step the issues of sovereignty which are raised, for example, over the miles of permanent ice shelf skirting the coastline.[45] Nandan and Rosenne emphasize that the LOS Commission 'is not to be involved in any matters regarding the determination … of a coastal State's continental shelf where there is a dispute with another State over that limit.'[46] The Convention cannot be used to strengthen claims of the existence of territorial zones and rights. The Commission's Rules do provide for a postponement of delimitation where areas are under dispute.

5 The International Seabed Authority

As previously mentioned, the deep seabed, or 'the Area', is a new focus in international law. Law concerning it is included in UNCLOS, but it was subject to much controversy. Much of this arises from Article 136 which gives the Area and its resources the status of the "common heritage of mankind." This is reiterated by Article 140(1) which require activities to be carried out for the benefit of mankind as a whole, with particular consideration to developing states. The mining regime in the Protocol conflicts with the Deep Seabed mining provisions in Part XI of UNCLOS in the Antarctic Treaty Area. The Protocol imposes a complete ban, UNCLOS allows activity if it is environmentally aware and the benefits are equitably shared. UNCLOS III sets up the International Seabed Authority (ISA), which licenses and regulates mineral resource activity.

[44] Ruth Davis, Commentaries: Enforcing Australian Law in Antarctica: The HIS Legislation, Melbourne Journal of International Law, 2007, Vol 8, p11.
[45] Vidas, above n 15, p 269.
[46] Nandan and Rosenne, *A Commentary*, p1,017.

The role of the ISA potentially clashes with the Antarctic Treaty System role as regulators of activity in the Antarctic. Under Article 137(2) the minerals recovered from the Area may only be alienated in accordance with this part and the rules, regulations and procedures of the Authority. The ISA is to be responsible for equitable sharing of financial and other benefits, under Article 140(2), and for the protection of the marine environment, 'the Authority shall adopt appropriate rules for the prevention, reduction and control of pollution and other hazards to the marine environment' under Article 145. Furthermore, Article 137(3) provides that no State or natural or juridical person shall claim, acquire or exercise rights with respect to the minerals recovered for the Area, except in accordance with this Part. This effectively puts all powers into the hands of the ISA.

As discussed above, given the very shaky status of the sovereignty claims, Antarctica cannot be said to have continental shelf rights. Thus the shelf circling the continent is treated by the law as deep seabed. There is currently no regime for the deep seabed beyond national jurisdiction. The US and most developed states categorise mineral activity on the deep sea bed as a high seas freedom, as *res communis.* Developing states argue that the resources in the deep seabed should be treated consistently with the two UN resolutions which declare that the deep seabed is the Common Heritage of Mankind and calls for a moratorium on exploitation of the resources. It alternatively treats the Area as *res communis* and thus under the regulations of the International Seabed Authority. The developing states say that prior to 1970 there was no international law on the deep seabed and that it is still developing, and thus must take the UN's approach into account.[47] However, while the majority of UNCLOS is recognised by the international community, the law for the deep seabed is not, and the Common Heritage of Mankind is also not accepted as a legally binding principle by most developed nations.

Under the UNCLOS 1982 regime Antarctic shelf and sea floor minerals would be run by the International Seabed Authority. The Antarctic claimant members would have no sovereignty rights and the Antarctic Treaty members would have no duties or rights to protect, govern, enforce, regulate or benefit. The Common Heritage of Mankind concept means that no commercial profit or private gain could be taken from the area, as it must benefit the whole of mankind. A less stringent interpretation of the common heritage concept is that private benefit

[47] Joyner, above n 12, p127.

could be derived, but that a levy would be paid to an international body to ensure equitable distribution of the resource.[48]

The Secretary General of the International Seabed Authority (ISA) explained in his statement to the United Nations in December 2007 that the 1982 Convention and the International Seabed Authority was set up in anticipation of seabed mining, despite the subsequent twenty five year absence of seabed mining development since the signing. 'At this moment, the day when commercial mining of seabed resources becomes a reality is closer than at any time in the past 25 years.'[49] The current international environment has high demands for those minerals that are found abundantly in the seabed, owing largely to China, India and Brazil's considerable new economic growth. The private sector has target dates for exploration and exploitation and is active in its anticipation of beginning mining activities from the deep seabed. The forefront of the planning is focused on the Western Pacific.[50]

Nandan does not view the unforeseen time lapse as a negative. The ISA says the luxury of time is attributable to the greater scientific understanding of the deep seabed, the international understanding and cooperation based on free market principles, development of a legal regime, which, importantly, emphasises the use of the precautionary approach and imposes rigorous environmental standards.

Nandan explains that the environmental protections are focused on responses to environmental degradation, after the damage is done, usually due to over-exploitation of resources and the resulting destruction of surrounding ecosystems. The need to set aside areas to preserve flora and fauna is entrenched in UNCLOS, 162(2)(x) gives the council of the Authority the power to 'disapprove areas for exploitation where substantial evidence indicates the risk of serious harm to the marine environment.' Under UNCLOS Part III states are obliged to take measures under UNCLOS III to consider their impacts on the marine environment. While this is a reflection of the environmental movement which has been gathering momentum through the second half of the 20th century, the Convention's approach to environmental protection not as strict as the protection put in place by the Antarctic Treaty Consultative Members to preserve

[48] Joyner, above n 12, p128.
[49] Satya N. Nandan, Secretary-General of the International Seabed Authority, Statemetn at Oceans and the Law of the Sea, 62nd session of the General Assembly of the United Nations, 10 December 2007, New York, p 2.
[50] Nanden, above n 49, 2.

the delicate and pristine environmental of Antarctica. The current ban on mining found in the Protocol is illustrative of this, as were the radically stringent regulations and precautions found in CRAMRA.

6 The Common Heritage of Mankind

Since the 1970s the concept of Common Heritage of Mankind has generated a lot of discussion. It is still unclear what the legal status of the concept is.[51] Areas of Common Heritage of Mankind (CHM) can not be owned by anybody, whether national, corporate, public or private, but are managed by everybody. No sovereign jurisdictional rights would exist and no state sovereign enforcement body would operate. Governments would be expected the aid in the management on behalf of all mankind, without national agendas. Economic benefits would be shared internationally, and, unless benefiting all mankind, commercial benefit or private gain would be inappropriate. It is an area for peaceful purposes. A CHM regime would ensure this. Scientific research is to be carried out freely for the benefit of mankind not for individual governments, so long as it does not harm the area physically or ecologically.

CHM is neither *res nullius*, unowned property open to sovereign claims, nor *res communis*, property that cannot be owned and is thus open to the exploitation by anybody. CHM is non-proprietary, and a legal right would be created to give access to, and use of, space, not ownership of it. An international administrative agency would be responsible for developing, regulating and enforcing activity in the region. This allows the application of the cooperative de facto state made up of the Antarctic Treaty Parties to fulfill this role. This kind of management is wholly unique, in that noone would hold legal title, or have sovereign rights.

Joyner says article CHM that the interests of all mankind are greater than the sum of all States' national interests. Heritage suggests the importance of intergenerational equity,[52]

[51] Joyner, above n 12, 91.
[52] Joyner, Chris, Legal Implication of the Common Heritage of Mankind, *The International and Comparative Law Quarterly*, Vol 35:1 (Jan 1986) p 199.

In legal terms, the concept of "common heritage" would require that serious scrutiny be given to every activity in the area in order to prevent resource waste and to preclude environmental abuse. To fail in the protection, conservation, preservation and prudential management of the region and its resources would breach the trust and legal obligation implicit in responsibly supervising the earth's heritage for mankind in the future.'

These are the kind of considerations that are given weight in the Antarctic Treaty System. The CHM concept is applicable to the area, although the Treaty Systems requires stronger ecological protections even than this emerging norm requires. CHM has been given limited theoretical consideration in Antarctica. Part XI UNCLOS encodes CHM for the deep seabed as discussed above. The ISA is the embodiment of the international entity that regulates and mines the deep sea bed (Articles 156 – 185).[53]

Article XI(1) of the Moon Treaty 1984 states that 'the moon and its natural resources are the CHM'. It prohibits ownership, appropriation or sovereignty claim and says the resources are to be equitably distributed, and that exploration would need an international regime. I suggest that the Antarctic Treaty System, already accustomed to cooperating, is the perfect intergovernmental entity to undertake such a task in Antarctica. Joyner writes that the essence of CHM cogently expressed in Article VI(1),[54] "the exploration of the moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or good scientific development."

In the 1980s the application of CHM to Antarctica was discussed. Malaysia was a strong advocate for CHM status applying in the region. In the 27th United Nations General Assembly session in 1982 the Prime Minister of Malaysia, Mohammed Mahathir, said regarding Antarctica that 'those uninhabited lands belong to the international community. The countries claiming them must give them up so that either the United Nations administer these lands or the present occupants act as trustees for the nations of the world.[55]

However, while there have been several decades full of discussions and academic writing on the concept of CHM, and "the Moon Treaty" and 1982 UNCLOS have incorporated the phrase into their texts, the concept is not an undisputed principle of customary international law.

[53] Joyner, above n 52, p 196.
[54] Joyner above n 52 p 197.
[55] UN Doc. A/37/PV, pp 17 – 18 (29 Sept 1982).

Three limbs must first be satisfied for a concept to gain this status. Firstly, it must be very distinct and well defined. Secondly, the actions of the international community must reflect their acceptance of the concept, through State practice and *opinio juris,* which is belief that they are legally bound. Thirdly, State conduct must be clear enough and sufficiently broad-based to prove wide-spread acceptance of a new principle of law. CHM has failed to be treated as a legal principle in State practice, and Joyner cannot see its solidification occurring in the foreseeable future. 'It is merely a philosophical notion with the potential to emerge and crystallize as a legal norm.'[56]

D Non-members of UNCLOS: Rights and Restrictions Under Customary International Law

A number of important maritime states are not bound by the LOS Convention, including three Consultative Parties to the Antarctic Treaty. These are Ecuador, Peru and Denmark. The United States was heavily involved in the drafting on UNCLOS, but did not become a signatory. The rights of a third party to UNCLOS in the event of mining activity in the Antarctic is a complex and hazy legal quagmire, raising issues of customary law, controversial emerging principles, and imperfect enforcement regimes.

The extent to which a non-member state can be held responsible for its actions which would be a breach of the Treaty they are not a party to, depends on the existence of customary international law which may bind them. Treaty law not only codifies existing customary international law, but it is now used as evidence of emerging customary international law. The norm requires very broad acceptance by the international community, and must 'include States whose interests are specially affected.'[57] Thus an influential coastal state must recognise the existence of a customary international law rule before it can be really considered such, even if every other smaller coastal national believes it to be binding.

These rules can be applied to UNCLOS to explore the possibility of its provisions being customary international law. The norm creating character of much of the UNCLOS, and the confirmation of the norm in many other treaties, and at the 1972 Conference on the Human

[56] Joyner, above n 52, p 199.
[57] *Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*, judgment, ICL Reports 1982, p 43, para 74.

Environment and the 1992 UN Conference on Environment and Development (UNCED) has places these provisions fairly solidly in the realm of customary international law and not treaty law alone. For the purposes of this paper, a states' obligation to preserve and protect the marine environment is the relevant norm in question. This is a recurring theme, emphasised in Principle 2 of the 1992 Rio Declaration on Environment and Development. The Rio Conference was part of a wave of understanding in the second half of the twentieth century that humankind are having an unsustainable and devastating effect on the planet. Thus, under this international environmental law principle, States have the right to exploit the resources within their jurisdiction. This is subject to an obligation to pass national laws on environmental protection and not to damage the environment of other States of to areas beyond the limits of nautical jurisdiction.

E CONCLUSION

The complex interplay between the international treaties, the international bodies and the international law principles leaves this paper at its close almost as far from possessing real answers as it was at its commencement. The delicate balance maintained by the Antarctic Treaty Consultative Parties allows a degree of co-operation and de facto sovereignty that is unprecedented elsewhere in the world. In the event of lucrative minerals being discovered, all interested parties will canvass their arguments along the complex and conflicting lines that are discussed above. The failure of CRAMRA is potentially only temporary. That regime, or a similar one, is required in law by the Antarctic Treaty under the Protocol, or alternately the ISA could potentially step in and override the Antarctic Treaty System under the authority of UNCLOS. The difficulties of the commencement of mining activities by third parties to UNCLOS and the Antarctic Treaty promises further tensions. Without the mammoth development of a regime with the binding strength of customary international law, the peaceful and pristine character of the Antarctic may be placed under considerable pressure.

Appendix 1:

INFORMATION PAPER TO THE ANTARCTIC TREATY CONSULTATIVE PARTIES

AIM: to arm the ATCM with a brief summary of the legal rights of interested parties should mining activity commence in the Antarctic marine area.

UNCLOS and Antarctic Treaty member non-claimant States

The Antarctic Treaty members will want to retain some rights over the sea floor in order to regulate mining, for their own economic interests, for the preservation of harmonious international relations, and for the protection of the natural environment. The international community recognises the Antarctic Treaty System and the legitimacy of it regulatory and protective role in the region.

There is contention over whether the Article 7 mining ban extends into the marine environment, however the inclusive wording in the Environmental Protocol suggests that ATCPs have a least a role in protecting the marine environment from damage caused by mining activity. They also have a duty to construct a regime, such as CRAMRA to regulate any mining activity. They would claim they had a right to form a co-operative 'joint EEZ'.

The Antarctic Treaty imposes the duty to preserve the high seas freedoms (Article VI). Legal issues around the deep seabed developed after the drafting of the Treaty. However, as the Antarctic is a global commons, the deep seabed may be treated as high seas I that it is 'beyond areas of national jurisdiction.' The ATCPs would benefit from gaining authority from the ISA to be care takers for the region in its capacity as the common heritage of man kind.

These states are likely to retain the right to protect the Antarctic environment, and potentially the ATS may be given *lex specialis* status so that it can function within UNCLOS according to its own specific Antarctic provisions. It is unlikely they will gain any legal economic benefits, as the area is either free for all, under the high seas regime, or common heritage of mankind, under the deep seabed regime, in which case benefits would be equitably distributed to all mankind, in the form of levies.

UNCLOS and Antarctic Treaty member claimant States

All of the Antarctic claimant states are members of UNCLOS. Claimant states are going to want to safeguard their interests in the adjacent marine environment, especially in the event of mineral discovery in the sea floor. The status of this area is controversial as the international community does not recognise the territorial claim. Claimant states were given special inclusion in the management of their claims under the CRAMRA regime, and if a similar regime was resurrected in the future under Article 25 of the Protocol they may have the rights to regulate such activity, for example, to protect the environment. The main contention is whether the coastal waters have continental shelf status. While UNCLOS and customary international treat the continental shelf right as inherent in territorial rights, the doubtful status of the terrestrial claims mean claimant states are unlikely to derive continental shelf rights from the adjacent seabed. It is likely it will have high seas freedoms status come under the mandate of the International Seabed Authority.

UNCLOS member, non-Antarctic Treaty member States

UNCLOS members who are not signatories of the Antarctic Treaty will deny the possibility of any law of the sea zoning regimes being present in the Antarctic Treaty area. They will assert its status as a global commons. They are subject to environmental obligations with relation to mining in the Antarctic. They must prevent or take measures to improve pollution, they must not destroy delicate marine ecosystems. As signatories to UNCLOS they adhere to the legal principle that the seabed in the common heritage of mankind, and must therefore comply with the regulations put in place by the ISA. The ISA could potentially impose a complete ban on mining in the Southern Ocean, which would have a wider reaching effect than the Antarctic Environmental Protocol ban. There is considerable political pressure even on non-member states to abide by the Environmental

standards of the Antarctic Treaty. The legally binding UNCLOS standards are not as rigorous however.

Non-Antarctic Treaty member, Non-UNCLOS member States

This category of international players will oppose the claimant states right to derive extra economic or management benefits from their "frozen" claims. They are bound only by those points of law that are customary international law. Thus, the common heritage of mankind principle does not apply, as the United States refused to sign UNCLOS partially because of this provision. Thus, the Antarctic is effectively a global commons, with no obligation to ensure equitable distribution to all mankind. The duty to protect the environment is customary law, however, and this consideration is the only deterrence from such a player mining in any art of the marine area in the Antarctic. It is a vague rule however, which does not require active measure to be taken, and without adequate enforcement mechanisms. It is arguable that mining is not a high seas freedom.

Non-claimant, Non-UNCLOS member States

A pertinent example of a State in this category is the influential coastal state and Antarctic Treaty member, the United States. Their rights and obligations are similar to those above, although they are legally bound by the strict environmental standards, and the duty to remain co-operative and peaceful within the Antarctic Treaty Area. The vagueness of the Antarctic Treaty text however may allow mining activity, especially is a state could establish that the seabed was not included in the Madrid Protocol ban, given that CRAMRA expressly stated it did not cover the deep seabed, and the Madrid Protocol focuses mainly on terrestrial protection in practical application.

References

Amerasinghe, 30th General Assembly Official Records, 2380th meeting, 1975.

Buck, S J, The Glbal Commons: An Introduction (1998 Island Press, Washington DC).

Continental Shelf (Tunisia/Libyan Arab Jamahiriya) judgment, ICL Reports 1982.

Davis, Ruth, Commentaries: Enforcing Australian Law in Antarctica: The HIS Legislation, Melbourne Journal of International Law, 2007, Vol 8.

Final Report of the Forth Special Antarctic Meeting on Antarctic Mineral Resources, Antarctic Treaty, adopted at Wellington, 2 June 1988.

Francioni, F, 'Introduction: A Decade of Development in Antarctica Law' in F Francioni and T Scovanzzi (eds), *International Law for Antarctica* (1996).

Hansom, J.D. and Gordon J.E *Antarctic Environments and Resources; A Geographical Perspective* (1998 Addison Wesley Longman Ltd, United Kingdom).

Herber, B, The Common Heritage Principle: Antarctica and the Developing Nations, *American Journal of Economics and Sociology*, 1991 Vol 50:4, pp 391 – 406.

Homan, Anna, Maritime Zones in Antarctica, Australia and New Zealand Maritime Law Journal, V 20, 2006 p 1 – 9.

Joyner, Christopher C, Antarctica and Law of the Sea: New Resources vs. Legal Dilemmas (1982 IEEE Washington D.C.) 1211 – 1216.

Joyner, Christopher, Legal Implications of the Concept of the Common Heritage of Mankind, International and Comparative Law Quarterly V l35.

Mining Issues in New Zealand, Antarctica New Zealand Information Sheet www.antarcticanz.govt.nz/downloads/information/infosheets/mining.pdf

Nandan, Satya N., Secretary-General of the International Seabed Authority, Statement at Oceans and the Law of the Sea, 62nd session of the General Assembly of the United Nations, 10 December 2007, New York.

Nordquist, M H, (editor in chief) with S. Rosenne and A. Yankov (eds.) *United Nations Convention on the Law of the Sea, 1982, A commentary*, Vol IV (Dordrecht: Martinus Nijhoff, 1991).

Peeters, Liesbeth, Square Peg, Round Hole: Jurisdiction Over Minerals Mining Offshore Antarctica, MqJICEL (2004) Vol 1, 217-232.

Rothwell, Donald, and Tim Stephens, Dispute Resolution and the Law of the Sea Reconciling the Interaction between the LOS Convention and Other Environmental Instruments, Donald Rothwell and Alex Oude Elferink (eds) Oceans Management in the 21st Century: Institutional Frameworks and Responses, p 209 – 231.

Suter, Keith, *Antarctica: Private Property or Public Heritage?* (1991, Pluto Press Australia, New South Wales).

UN Doc. A/37/PV, pp 17 – 18 (29 Sept 1982).

Vidas, Davor, The Antarctic Continental Shelf Beyond 200 Miles in Protecting the Polar Marine Environment: Law and Policy Reform for Pollution Prevention David Vidas (ed) (Cambridge University Press).

Vukas, Budislav, The LOS Convention and the Polar Marine Environment in Implementing the Environmental Protocol Regime for the Antarctic, Davor Vidas (ed) (Kluwer Academic Publishers).