

Marine Scientific Research in the Southern Ocean
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I would like to begin by thanking the organisers for inviting me to speak this afternoon, it is a pleasure to be here. The title of my paper is “Marine Scientific Research in the Southern Ocean.” The sub-title of this conference is “The Balance Between Coastal States and International Rights”. Marine scientific research is designated a freedom of the high seas under Article 87 of UNCLOS and a number of provisions of this Convention confirm that all states have a right to conduct marine scientific research (Article 238, 256, 257) subject to the rights of other users and the provisions of UNCLOS itself. However, it was also recognised under this Convention that coastal states have a special interest in research activities taking place within waters under their jurisdiction. They clearly have an interest where that research relates to the resources (living and non-living) of their waters. They may well have security interests which may or may not be related to their marine resources. They also may have an interest in the protection of the marine environment. Principally as an environmental lawyer it is this interest of coastal states that is of particular interest to me. Now what immediately struck me when I looked at the sub-title of this conference is that this balance between coastal states and international rights is largely absent in connection with marine scientific research taking place within the Southern Ocean and yet state interests within the region are no different from any where else.

In this paper I intend to outline the regimes which currently operate to regulate scientific research within the Southern Ocean and indicate where the balance at the moment lies between researching states and other states within the region. I will then outline two imperfect options which re-adjust the balance away from researching states before concluding with some general remarks. This is a project which is in the very early stages of progress and therefore I would be most grateful for any constructive comments and suggestions.

1. Scientific Research in the Southern Ocean

The Southern Ocean is a region which is of particular importance for marine scientific research purposes. This importance of scientific research is in fact enshrined under Article II of the 1959 Antarctic Treaty. However, at times, Antarctic research has proven controversial.

3 Areas which have attracted attention for environmental or other reasons:

(a) Experiments using acoustic technologies or devices and the impact of noise on marine mammals, particularly cetaceans. In this category the use of seismic surveys has caused a certain amount of concern. Some of you may be aware of the ATOC experiment (or the Acoustic Thermometry of Ocean Climate experiment) which involved the transmission of 180 decibels into the deep sound channel in order to monitor climate change. This experiment took place off Heard Island in the Southern Ocean. Two SCAR reports have been produced on the use of acoustic devices in Antarctica and a number of reports and papers produced by interested organisations have been presented at recent Antarctic Treaty Consultative Meetings. Germany has gone so far as to restrict the use of seismic surveys by its nationals in the Antarctic Treaty Areas.

(b) Iron fertilisation – connected to climate change. Based on the idea that if greater quantities of carbon dioxide could be drawn down into the deep ocean by enhancing phytoplankton levels then this might operate to mitigate climate change. The Southern Ocean contains relatively low concentrations of phytoplankton which means CO₂ draw down in this region is lower than in other regions. It was suggested in the late 1980s that one mechanism of increasing phytoplankton concentrations would be to add iron dust to the water. A number of experiments have been carried out to date, mostly in the Ross Sea Area. The science behind this experiment is very uncertain and there are concerns that creating artificial plankton blooms may have detrimental effects on the fragile food chain in the Southern Ocean.

(c) The third problem I would like to highlight relates to so-called bioprospecting. This takes us into the realms of applied science. Antarctica is particularly attractive to bioprospectors – the lack of information on the region provides an opportunity to discover and develop novel organisms and Antarctica's extremes have led to the evolution of unique characteristics for survival. And these characteristics may well have important medical and or commercial application. However, the lack of ownership of the samples and uncertainty relating to property rights and commercial exploitation have meant that bioprospecting has been relatively limited thus far. Nevertheless in a paper jointly presented by UK and Norway at the 2003 ATCM it was noted that there were (at the time) 62 European patents and some 300 US patents which rely on Antarctic biodiversity. This is an issue which has been the subject of a number of discussion papers presented to the ATCM and a workshop but is not fully addressed by the Antarctic Treaty. Whilst most of the concerns relate to ownership of and rights relating to the resources in question, the environmental impacts of bioprospecting, particularly where a species is itself harvested, should not be overlooked.

2. Regulating Scientific Research in the Southern Ocean – Two Regimes and their Application

So, what potential controls are on these research projects (and indeed all research projects) in the Southern Ocean. Well, there are two regimes of potential application. First, the 1982 United Nations Convention on the Law of the Sea (in particular Parts XII and XIII). Second the 1959 Antarctic Treaty and its associated instruments (which I shall collectively refer to as the Antarctic Treaty System).

The first question to ask is whether these two regimes apply to research undertaken in the Southern Ocean. Whilst it may seem somewhat surprising today, in the past the application of both regimes to this area has been disputed.

UNCLOS

UNCLOS does not specifically refer to the Southern Ocean and the Antarctic Area. Article 234 of UNCLOS which deals with ice-covered areas, though of clear application to the Arctic Ocean is unlikely to be of any application to the Southern Ocean. In fact, the whole topic of Antarctica was assiduously avoided during the UNCLOS negotiations on account of its uncertain political status. Nevertheless, there is I think no doubt that UNCLOS in general applies to the Southern ocean. The preamble refers to the desire to establish a legal order for the seas and oceans generally. The application of its provisions under Parts XII and XIII to the Southern Ocean are unlikely to cause any real practical difficulties and, for the most part, are consistent with the aims and objectives of the Antarctic Treaty System. Part XI of UNCLOS which establishes the regime for the deep sea bed is definitely more problematic when applied to the Antarctic and potentially conflicts with the ban on minerals exploitation as introduced by the 1991 Environmental Protocol. However, this issue is beyond the confines of this paper and indeed extends beyond the parameters of this conference.

ATS

So, what about the Antarctic Treaty System – are these instruments of application to research undertaken in the Antarctic marine environment. Again, this is an issue which has been the subject of a certain amount of historical debate. Article VI of the 1959 AT stipulates that “[t]he provisions of the present Treaty shall apply to the area south of 60° South Latitude, including all ice shelves, but nothing in the present Treaty shall prejudice or

in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area.” It has been argued that this provision excludes the application of the AT to the seas. The AT is therefore of only terrestrial application but this includes the ice shelves. However, as has been pointed out by commentators such as Auburn, there would be no need to safeguard the freedom of the high seas if the Treaty itself did not apply to the marine environment in the first place. Practice arguably supports the interpretation that the AT is of maritime application. For example, the prohibition on nuclear waste disposal under Article V of the AT has been interpreted as applying to the sea as well as to the terrestrial environment.

Nevertheless, it has been (I think quite convincingly) argued that the provisions of the Antarctic Treaty were and indeed are of no application to activities which could be categorised as an exercise in the freedom of the high seas. It is therefore, appropriate to ask whether marine scientific research is a freedom of the seas. In 1959 when the Antarctic Treaty was concluded the answer was not entirely clear. The 1958 Geneva Convention on the High Seas listed 4 freedoms (navigation, fishing, laying submarine cables and pipelines and overflight). Arguably, scientific research was not considered a freedom of the seas and as such, was subject to control under the Antarctic Treaty. Probably the most important controls in 1959 related to the sharing and dissemination of research data and results under Article III of the AT as well as participation within the international inspection scheme under Article VII.

On the other hand, it has been maintained that the listed freedoms do not represent an exhaustive list, and unless an activity is actually prohibited, it should be regarded a freedom of the seas. Consequently, it might be argued that marine scientific research in fact, fell outside of ATS control. Of course marine scientific research was officially designated as a freedom of the seas under Article 87 of UNCLOS.

In subsequent instruments the ATCPs agreed as between themselves to restrict their exercise of high seas freedoms within the ATA, particularly in relation to the exploitation of biological resources. An early restriction occurred in 1964 with the conclusion of the Agreed Measures, then again in 1972 with the conclusion of the Convention for the Conservation of Antarctic Seals and in 1980 with the adoption of the Convention on the Conservation of Antarctic Marine Living Resources. CCAMLR is particularly interesting as its scope of application is in fact broader than the Antarctic Treaty. It in fact applies up to the Antarctic convergence and thus to the entire Antarctic ecosystem.

The 1988 Convention on the Regulation of Antarctic Minerals Resource Activities (CRAMRA) was also designed to be of application to the marine environment. Under Article 5 its area of application is defined as including the seabed and subsoil of offshore areas up to the deep seabed (5(2)). For the purpose of CRAMRA this geographic area essentially constitutes the continental shelf (5(3)).

Finally, the 1991 Environmental Protocol is also of application to the marine environment. The Protocol applies to the ATA (Article 1(b)) (as opposed to the whole of the Antarctic ecosystem) and it is stipulated that it neither amends nor modifies the AT (Article 4(1)) (therefore, arguably, the freedom of the high seas are preserved). Nevertheless, there is little doubt that its provisions are of application to the marine environment as they are to the terrestrial environment. There are for example express references to the marine environment in Article 3(2)(b) which identifies the factors and issues which should be considered when planning activities taking place within the ATA. Moreover, Annex IV is dedicated to the protection of the marine environment and focuses on the problem of vessel source pollution. Finally, Annex V which was adopted separately from the EP provides for the designation of areas which must be specially protected or specially managed in order to preserve their unique, vulnerable or representative features. Article 3 of Annex V expressly stipulates that marine areas may be designated as ASPAs or ASMAs.

3. Regulation of Research in the Southern Ocean Under UNCLOS

In the context of scientific research, with particular attention to the protection of the environment, it is Parts XII and XIII of UNCLOS which are of most relevance here. The freedom to carry out marine scientific research is not only provided for in the list of high seas freedoms under Article 87 of UNCLOS but is further confirmed by Article 238 of the Convention. Moreover, a number of its provisions in Part XIII seek to promote the facilitation of research (239), research co-operation (242, 243) as well as the publication and dissemination of knowledge resulting from marine research (244). However, the freedom to research is in no way absolute. It is subject to Part XIII of the Convention. Article 240 of Part XIII sets out a number of general principles for the conduct of scientific research:

- Must be exclusively peaceful
- Must be conducted with appropriate scientific methods and means compatible with UNCLOS.

- Must not unjustifiably interfere with other legitimate uses of the sea compatible with UNCLOS and shall be duly respected in the course of such uses.
- Must be conducted in compliance with all relevant regulations adopted in conformity with this Convention including those for the protection and preservation of the marine environment.

Therefore, where research is taking place in the Southern Ocean by states party to UNCLOS these principles will apply. Arguably, these principles are of application to states not party to UNCLOS by virtue of their now constituting customary international law. **Part XIII does not specify whether there are research activities which are not acceptable or how research must be conducted beyond outlining those very general principles in Article 240.**

Further details can be found in Part XII of UNCLOS which seeks to protect the marine environment. Arguably, researching states are under an obligation to refrain from polluting the marine environment (Articles 192, 193, 194). In particular, they must reduce and control the intentional or accidental introduction of alien species into the marine environment (Article 196). This obligation is particularly pertinent from the perspective of the Southern Ocean iron fertilisation experiments. Article 194(5) of course, provides for an obligation to take special measures necessary to protect and preserve rare and fragile ecosystems. Moreover, Part XII also introduces a number of procedural obligations in connection with monitoring the effects of polluting activities (204) and undertaking environmental impact assessments (206). It should be noted though, that the EIA requirement under Article 206 of UNCLOS only operates where a state has reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution or may cause significant and harmful changes to the marine environment. And even then an EIA is only necessary in so far as is practicable. I would have thought that this high threshold would probably have the effect of excluding most proposed experiments from the obligation to carry out an EIA.

Finally, it is worth noting that Part XI of UNCLOS deals with research taking place on or under the deep seabed (known as the Area). All research must be carried out for the benefit of mankind as a whole (140(1), 143(1)). There are additional provisions which seek to ensure environmental protection (under Article 145) and the obligations in connection with the publication and dissemination of research are re-enforced (143(3)(c)). The Area is defined as “the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.” It is therefore of potential application to

most of the seafloor in the Southern Ocean including the areas immediately adjacent to the Antarctic continent.

As we saw this morning, Part XIII of UNCLOS attempts to balance the rights of coastal states and researching states by operating a zonal approach to rights in connection with marine scientific research. The closer to the shore the greater the rights of the coastal state. Thus within the territorial sea, the coastal state has the exclusive right to authorise research activities (245). The coastal state's right within the EEZ to consent to research is similarly exclusive but subject to the presumption that in normal circumstances consent will be given where research is for peaceful purposes and will benefit mankind (246(2) & (3)). A coastal state may though refuse consent where the proposed research is likely to be of direct significance to the exploration and exploitation of natural resources whether living or non-living (246(5)(a)), is likely to involve drilling onto the continental shelf or the introduction of harmful substances into the environment or the use of explosives. Further exceptions apply where the research involves the construction of an artificial platform or other structure or where inaccurate information has been provided to the researching state or where the researching states still has outstanding obligations to the coastal state. Therefore, the focus of Article 246 is providing researching states with a right to conduct research within a coastal state's EEZ or on their continental shelf, except where that research relates to resources or is likely to impact negatively on the environment. Moreover, Part XIII of UNCLOS also gives the coastal state relatively extensive rights to participate in research being conducted in their EEZ or on their continental shelf and / or to be provided with data or an assessment of the data obtained (Article 249).

These rights are not wholly irrelevant in the Southern Ocean, but in contrast to all other areas they do have relatively minimal practical impact. Their relevance is potentially two fold.

Sovereign Seas

In the first place there are pockets of seas within the Southern Ocean which come within the sovereign jurisdiction of states. E.g. Heard & McDonald Islands (Australia), Kerguelen & Crozet Islands (France), Bouvetoya Island (Norway), Prince Edward Island (South Africa). And of course South Georgia and the South Shetland Islands (UK also claimed by Argentina & Chile). It is not disputed that sovereignty may be claimed over these islands and whilst sovereignty may be disputed in individual cases (such as South Georgia) there is in theory no difficulty in establishing jurisdiction over the EEZ and continental shelves of these areas. Thus where research takes

place within these zones the coastal state's permission must be sought and that coastal state has the right to impose conditions on the research carried out, refuse where it may impact on resource issues or is likely to prove harmful to the environment. Moreover, these states would also have the right to participate in such research if they so choose under UNCLOS. Of course, as I shall come on to, where these states are also party to the Antarctic Treaty and associated instruments there may well be subject to additional obligations. There is some evidence that relevant states are exercising their rights under UNCLOS in connection with waters under their jurisdiction within the Southern Ocean. The UK for example requires permission to be sought in connection with research carried out in waters adjacent to South Georgia and the South Shetland Islands.

Antarctic Continent

The second area where these rights are of potential relevance relates to the Antarctic continent itself. As I am sure you are all aware, seven states have made claims to Antarctica (Australia, New Zealand, France, Norway with claims by the UK, Chile and Argentina overlapping). There is also an unclaimed sector. Australia has in fact also claimed an EEZ. Article IV of the Antarctic Treaty "freezes," if you will excuse the well worn pun, claims made to the continent. No action taken since the entry into force of the 1959 Treaty can serve to deny or augment a sovereignty claim and no new claim or enlargement of an existing claim may be made. The status of a claim to an EEZ is therefore unclear. Such claims could be regarded as new claims and are therefore impermissible under the Treaty or merely an exercise in the updating of an existing claim.

Unsurprisingly it does not seem to be the practice for states to seek the permission of so-called coastal states in order to undertake research in the offshore area off the Antarctic continent, in contrast with the practice in seas where sovereignty is undisputed. Australia does require additional protection measures to be undertaken in the Australian Antarctic territories (which includes the EEZ off the continent of Antarctica). However, whilst technically the legislation applies to any person located within the Australian Antarctic territory, in practice these requirements are not imposed on foreign nationals. In practice all Australia expects is compliance with the 1991 Environmental Protocol requirements and co-operation with Australian research programmes. This is likely to prove no more than is already demanded by the Antarctic Treaty and Environmental Protocol.

Therefore, it is highly likely that the majority of the seas surrounding Antarctica are effectively high seas for marine scientific research purposes. Thus, whilst the general principles as established in Parts XII and XIII of UNCLOS will apply, the coastal states or the Antarctic Treaty Consultative

Parties more generally, have no right to refuse their consent even where the research may impact on resource exploitation or potentially will negatively impact on the environment.

4. Regional Regulation of Scientific Research in the Southern Ocean under the ATS

The conclusion of regional regimes for the protection of the marine environment is encouraged and supported by UNCLOS (Articles 194(1), 197). Moreover, Article 311 makes it clear that UNCLOS will not alter the rights and obligations of parties which arise from other agreements compatible with the Convention nor will it prevent parties from concluding agreements modifying relations between them provided that such agreements are not inconsistent with the objects and purposes of the Convention.

Arguably the provisions of the ATS as they relate to scientific research are not incompatible with UNCLOS. Of course, the ban on minerals activities (which does not apply to scientific research activities) under Article 7 of the EP is potentially inconsistent with Part XI of UNCLOS, but this issue (which has been the subject of considerable discussion in the literature) goes beyond the scope of this paper.

So how is scientific research regulated within the context of the Antarctic Treaty System. I mentioned at the outset that the promotion of peaceful scientific research is a fundamental aim of the 1959 Antarctic Treaty. The 1959 Treaty itself though provides for relatively minimal controls on research. In general, the obligations are limited to the exchange of information on research projects, exchange of personnel between projects and stations and the publication of scientific observations and results under Article III. Other obligations include the participation in the inspection schemes and the provision of advance notice in connection with all expeditions to and within Antarctica (Article VII(5)). This latter provision is of particular relevance to marine research.

However, the most important instrument to date in connection with the regulation of scientific research is of course the 1991 Environmental Protocol to the 1959 Antarctic Treaty. This instrument seeks to regulate all activities taking place within the Antarctic Treaty Area and in contrast to UNCLOS, regulation is very detailed. I don't intend to give you an in depth survey of the controls on research under this instrument but just want to highlight the scope of this regulation which can be divided into two broad categories of control. First, the requirement that all activities are planned so as to minimise any adverse effects on the environment. Second, that in

appropriate circumstances, relevant permits are obtained where, for example, interference with Antarctic wildlife is necessary or entry into a specially protected area is required.

Planning

In connection with planning, where activities are likely to have a minor or a transitory impact on the environment they must be subject to an initial environmental evaluation. Detailed requirements are outlined in Annex I to the Protocol and guidelines have been adopted by the ATCM and were in fact updated at this year's meeting in Stockholm. In brief, the activity must be described, direct and indirect impacts must be considered, and any gaps in relevant knowledge should be identified. Importantly and perhaps unusually (when compared to other locations) the assessment must extend to the impact which the expedition or the scientists themselves have or are likely to have on the environment in addition to the impact that the science itself is likely to have on the environment.

The terms "minor" and "transitory" are not defined in the EP and have been the subject of considerable debate. It is apparent that parties do, at times, differ in their EIA requirements in connection with similar activities. For example, a report issued by SCAR noted that not all states subject research involving acoustic emissions to environmental impact assessment. The list of initial evaluations would suggest that not all of the fertilisation experiments have been subject to assessment.

Where an activity is likely to have more than a minor or transitory impact, the activity must be subject to a comprehensive environmental evaluation under Article 8 and Annex I of the Protocol. In contrast to the initial environmental evaluation, the draft CEE must be publicly circulated (and may be commented upon) and sent to the Committee on Environmental Protection (established under the Environmental Protocol) for consideration as appropriate (Annex I, Article 3(4)). No final decision to proceed with the proposed activity may be taken unless there has been an opportunity for consideration of the draft CEE by the ATCM on the advice of the CEP (Annex I, Article 3(5)). However, the decision to proceed must not be delayed for longer than 15 months from the date of the circulation of the draft CEE.

The final CEE must include or summarise comments received on the draft CEE. The final CEE, any decisions relating thereto, and any evaluation of the significance of the predicted impacts of the activity must be circulated to all parties at least 60 days before the commencement of the proposed activity (Annex I, Article 3(6)). Any decision to proceed must be based on the CEE as well as other relevant considerations (Annex I, Article 4). The

Antarctic Treaty Consultative Meeting however, does not appear to have a final veto on activities taking place within the ATA.

Between 1988 & end of 2003 there were 354 IEEs carried out. The first IEE which related to scientific research carried out in the marine environment took place in 1998. The relevant ATCP was NZ and it related to iron and phytoplankton growth in the Southern Ocean. There have been a total of 19 IEEs which assess the impact of marine scientific research on the Southern Ocean. They have included an assessment of benthic communities and the marine geology of the Pacific Continental margin, tectonic sedimentary investigations and seal biology. No CEEs have been carried out in respect of marine scientific research to date.

Permits

Having planned an expedition and indeed carried out an EIA where one is appropriate, it may be necessary for an expedition to obtain a permit under Annex II of the EP where for example, they are wishing to take or interfere with native flora and fauna. Article 3(2)(a) of Annex II expressly provides for the issue of a permit for scientific study. Permits may also be obtained where the taking or interference with a species is an unavoidable consequence of scientific activities (Annex II, Article 3(2)(c)). Interestingly, from the perspective of marine scientific research, species warranting general protection under Annex II are actually confined to mammals (including cetaceans) and birds. The issue of permits must be limited in order to ensure that those taken can be normally replaced by natural reproduction in the following season and that the diversity of species and habitats is maintained (Annex II, Article 3(3)).

Where a species is specially protected a permit will not be issued unless the taking is for a compelling scientific purpose and will not jeopardise the survival or recovery of the species or local population and that non-lethal techniques are used where appropriate (Annex II, Article 3(5)). Where species are taken or interfered with, pain and suffering must be minimised as far as is practicable (Annex II, Article 3(6)). Further details on this issue are provided in the SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica. Finally, it is worth noting that Annex II also contains a prohibition on the introduction of non-native species into the Antarctic Treaty Area without a permit (Annex II, Article 4) which may be relevant to the context of iron fertilisation experimentation.

The second area where permits are relevant relates to areas which have been designated Antarctic Specially Protected Areas (ASPAs) or Antarctic Specially Managed Areas (ASMAs) under Annex V of the Environmental Protocol. Areas (which may include marine areas) may be so designated in

order to protect areas of outstanding environmental, scientific, historic, aesthetic or wilderness values. Notably, they may also be established in order to protect ongoing or planned scientific research. ASPAs may therefore be of relevance from two perspectives.

In the first place, their designation may prevent scientific research being carried out or subject it to more onerous conditions than those which apply more generally in Antarctica. Entry into an ASPA may only occur after a permit has been issued. However, a permit is likely to be issued where entry is connected to a compelling scientific purpose which cannot be served elsewhere and which will not jeopardise the natural ecological system in that area (Annex V, Article 7).

In the second place, an ASPA may actually be designated in order to protect research that is planned and on going. Thus within the ATA the protection of scientific research may essentially be given priority over all other activities.

There are 64 ASPAs currently so designated in the ATA. Only 4 of these ASPAs may be described as marine ASPAs or ASPAs with a substantial marine component. Interestingly, 3 of these 4 marine ASPAs have been designated because of their importance to on-going or potential marine scientific research.

- **(Not on map)** ASPA No. 160 Terra Nova Bay, Ross Sea – designation on the grounds that the region contains an important littoral area for well-established and long-term scientific investigations as well as for the fact that the region contains high diversity at both species and community levels and the region is particularly vulnerable to pollution, over-sampling and alien introductions.
- ASPA No. 152 Western Bransfield Strait off Low Island, South Shetland Islands (no map). This site apparently offers unique opportunities to study the composition, structure and dynamics of several accessible marine communities (adopted in Bonn, 1991).
- ASPA No. 146 South Bay, Doumer Island, Palmer Archipelago (map). Designated on the grounds that the site is the subject of a long-term study on marine ecology and to reduce the risk of accidental interference which might jeopardise those investigations (1987, expires December 2005).
- **(Not designated for scientific purposes)** The fourth marine ASPA is No. 153, Eastern Dallmann Bay off Brabant Island, Palmer Archipelago.

It is designated on the grounds of species diversity present and there is no mention of its importance for marine scientific purposes.

5. The Balance Sheet: International Rights and Environmental Protection

So, returning to the essential question – the balance of rights and environmental protection in the Southern Ocean. On the positive side – in the credit column if you like, states party to the 1991 Environmental Protocol must regulate research carried out by national expeditions within the Antarctic Treaty Area in order to comply with that instrument. This regulation must comprise sophisticated planning requirements and where necessary, relevant permits must be obtained. Where marine scientific research is likely to have more than a minor or transitory impact on the environment, the comprehensive evaluation must be circulated among the ATCPs, sent to the CEP and put before the ATCM.

These states will also have to comply with Parts XII and XIII of UNCLOS but it is likely that these provisions will add relatively little to the sophisticated and highly regulated ATS regional regime.

Less positively, or in the debit column if you like, these requirements apply only within the Antarctic Treaty Area and not to the whole of the Southern Ocean. Whilst the Protocol has as its aim the protection of the Antarctic environment and its dependant and associated ecosystems (Article II), its provisions are generally interpreted as applying to the ATA only. Moreover, it is unlikely that they could be imposed on those states not party to the Environmental Protocol. Although the Protocol allows the ATCM to draw the attention of any state not party to the EP to any activity undertaken by that state which affects the implementation of the objectives and principles of the EP, the ATCM is unable to prevent such activities taking place. Whilst such states will be subject to the principles provided for under Parts XII and XIII of UNCLOS, these are expressed (in contrast to the ATS requirements) at a very general level.

Moreover, the ATCM is unable to veto research projects proposed by parties to the EP although the various planning, permitting requirements must be complied with and the plans must be circulated and may be commented upon. Outside of areas where sovereignty is undisputed, coastal state jurisdiction is generally not recognised. The sea, right up to the Antarctic coast is therefore, effectively the high seas. This means that research which is potentially damaging to the environment, or research which impacts on the exploitation of marine biological resources may be

undertaken without obtaining the consent of interested states who of course have no right of participation in that research.

6. Re-defining the Balance

So how can the balance be re-defined in the Southern Ocean so as to address some of these difficulties. Well, there are two imperfect options:

- (1) First, The Antarctic Treaty Consultative Meeting (ATCM) could be given the power to veto research projects designed to take place within the Southern Ocean. The ATCM is already able to review and pass comment on all comprehensive environmental evaluations. Giving it the power of veto is arguably a perfectly logical next step to take. The ATCM could also be given the power to impose conditions on researching states in order to ensure that ATCPs can participate in research undertaken if they so choose and / or that the data and results are distributed to all ATCPs. In effect, the ATCPs or collectively the ATCM should be designated the coastal state for the purposes of the Southern Ocean or at least the ATA.

There are though some serious and obvious problems with this proposal. In the first place, whilst such a regime would be of application to parties to the EP, it is not clear that it would be of broader application. In other words, whilst this proposal solves the problem that the ATCM has no ultimate control over parties to the AT, it does not address the challenges presented by states not party to the ATS.

There are also some practical difficulties which would need to be resolved. In what parts of the ocean would the veto apply? Presumably it could only operate in the ATA and therefore not extend to the Southern Ocean more generally. However, the ATA extends considerably further than 200 N.M. out from the coastline (wherever that is measured from) in some areas off the continent of Antarctica. If the veto system applied to the whole of the ATA then it would in effect apply to areas of the ocean which are unequivocally high seas zones. Procedurally, how many ATCPs would need to vote no on a proposed project in order to effect the veto? If the vote were unanimous then presumably the party wishing to undertake the research could always veto the veto.

- (2) The second imperfect option approaches the problem from a rather different angle. The planning and permitting provisions of the EP are arguably some of the most stringent controls on marine scientific

research currently imposed on states. In some ways it could be suggested that they represent current best practice in this context. So why not adopt and apply these standards globally to marine scientific research wherever it takes place, perhaps in the form of a “Marine Science Research Code” adopted in the form of a protocol or agreement negotiated under the auspices of UNCLOS. Of course, the standards as applied to the Antarctic may not be necessarily applicable to all other parts of the oceans but there could be no reason why research standards could not be applied globally or differentially, with the most stringent being applied to the Southern Ocean.

Under this solution all states party to a Marine Science Research Code Protocol would be obliged to comply with its standards when operating in the Southern Ocean whether or not they are party to the Antarctic Treaty. Moreover, its scope could be defined so as to encompass the whole of the Southern Ocean and not just the ATA. Thus those states party to the AT would be effectively bound by EP standards when operating outside of the ATA.

The disadvantage of this option is that it provides no mechanism for ultimate control of research proposals taking place close to the shore of Antarctica.

7. Conclusions

I started this paper by outlining the state interests which need to be balanced in the context of scientific research – the need on the part of research states to maintain maximum freedom to undertake research and to utilise the results of that research accordingly. And the need on the part of coastal states to protect their resources and other interests and the need to protect the environment. This division of interests wherever research takes place is of course too simplistic. The coastal state will often have an interest in the results of research, particularly where the results provide a potential cure for cancer or other analogous diseases. Likewise, the researching state often has a strong interest in the protection of the environment. In the Antarctic though, the relationship between these interests is particularly complicated due to its uncertain political and territorial status. As research interest in the Southern Ocean (particularly within the context of bioprospecting) continues to grow, it is likely that the balance between all of these interests – research, resource ownership and environmental protection – will need to be further addressed.

I presented two potential imperfect options through which the balance between these rights might be re-adjusted. Although I presented them as alternatives, this is somewhat misleading as they actually address rather different interests. Option One which would give the ATCM a veto over what it considers to be inappropriate and / or dangerous research proposals submitted by parties to the Antarctic Treaty is focused on the balance between the right to research and the rights of the ATCPs in relation to the resources of the region. Of course, projects might be vetoed for environmental reasons but the sophistication of the Protocol requirements should filter out projects which present a grave risk to the environment. Option Two on the other hand – the global science code – is very much focused on environmental protection – it aims to ensure that all states comply with the standards of the ATS regardless of whether they are members of it. Such a Code though would not likely resolve problems connected to resource rights issues.

Reconciling all these interests to general, indeed global satisfaction will call for a sophisticated balancing act. The authors of any final solution will need to maintain equilibrium between a number of competing interests (much as a circus performer maintains equilibrium between a number of spinning plates) whilst at the same time, walking the sovereignty tightrope. And that, will be a balancing act indeed!