Tourism in Antarctica: a numbers game

ANTA 601

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January 2011

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Abstract

Call after call has been made over many years for more international regulation - in many different flavours - to limit the number of Antarctic tourists. The authors remain unconvinced by this approach. This report describes the weaknesses of the Antarctic Treaty System (ATS) and the challenges it will face as the number of tourists visiting Antarctica increases. It is shown that regulation of tourism operators under the ATS, as proposed in literature, is legally ambiguous and is unlikely to be enacted and/or enforced. The most likely evolution of regulation in this area is no regulation at all. An alternative evolutionary model of regulation is examined, where the tourism industry itself develops policies and procedures which maintain an authentic Antarctic tourist experience, based on a healthy Antarctic environment, the two being interdependent. The authors have adopted the term “emergent regulation’’ to describe a situation where regulatory and enforcement systems arise spontaneously to meet operators’ needs (and thus their customers’ demands) and to preserve their long term economic interests.

Introduction

This report considers the question of limiting the number and impact of tourists visiting Antarctica. It specifically attempts to address:

1. whether some forms of tourism should be constrained before they are too big for the ATS to control,
2. the factors that need to be considered to regulate tourism numbers,
3. how to regulate the number of tourists visiting Antarctica, and
4. what we might expect of regulation developed in the current and future political and economic environment.

The first three harmless sounding questions are in fact fizzing with contradictions and assumptions that require careful defusing before any attempt can be made to tackle part four. For example if the answer to question one is negative, the others do not even arise. And if any component of any question is based on a faulty assumption, incomplete knowledge, or imperfect logic, then this will obviously affect the regulatory outcomes.

By systematically dismantling the assumptions in this set of questions, we arrive at a potential solution that we hope will inform the debate on Antarctic tourism from a new point of view. The literature dealing with this debate is simply vast - and extraordinarily repetitive. Call after call has been made over many years for more regulation - in many different flavours - to limit tourism. We remain unconvinced by this approach.

At the heart of this report is the question of what limiting tourism is designed to achieve. Regardless of how it is arranged, we consider the effect of both lesser and greater numbers of tourists visiting Antarctica.

An important consideration is the cultural, aesthetic and environmental values that inform the decision to restrict visitor numbers. The original ATS members broadly share traditional Western values and the existence of their permanent bases carries weight at Antarctic Treaty Consultative Meetings (ATCM). These values can be expected to differ from those of newer ATS member states. Even more pronounced differences are likely with non-members of the ATS who may wish to establish tourist facilities and who may think of ideas such as *wilderness* or *environmental protection* in ways that long-standing Antarctic participants find unfamiliar and threatening.

In considering these issues it is important to keep in mind that Antarctic tourism is not a new phenomenon. As early as 4 November 1910 an advertisement was placed on the front page of the Christchurch *Press* newspaper offering a trip from Lyttelton to Antarctica to anyone with sufficient money, while Apsley Cherry-Gerrard famously paid £1000 to be a member of Scott's 1910 *Terra Nova* expedition[1], a gift which enabled Scott to overlook both Cherry-Gerrard's chronic myopia and his lack of experience. The amount he paid is equivalent today to almost one million New Zealand dollars[2].

Defining the obvious

> *"we must know what we're talking about before we can talk about anything else regarding that thing" - Socrates as quoted by Plato, Phaedrus (c237 BC)*

Tourist

The United Nations World Tourism Organization defines tourism as:

The activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes[3].

This extremely broad definition was devised to capture a wide range of activities that extend far beyond traditional holiday-making. It would include travel for the purposes of business, conventions, conferences, job exchanges, sabbaticals, temporary employment, internships, scientific field work, study, training, indeed, as the definition indicates any purpose at all. For the purposes of this review however, we will define tourist more narrowly and so exclude those

[1] Cherry-Gerrard, A, 1922

[2] Average nominal earnings increased from 0.686 in 1910 to 276.38 in 2009, where normalized for 1987=100 (Officer, 2010). Therefore earnings of £1,000 in 1910 are equivalent to earnings of £403,000 in 2009. Using the average exchange rates from March to September 2009 of GB£1 to NZ$2.43 (Global Environment Facility, 2010), the equivalent money in 2009 would be NZ$979,290.

[3] UNWTO, 2005

participating in science programmes, political visitors and support staff working on national bases.

It is our belief however that any system that does not, at a strategic level, subject all Antarctic visitors to the same legal and environmental treatment, is unlikely to work. We will return to the importance of treating all visitors alike later when we consider the possible decline in the dominance that scientists have hitherto enjoyed in setting the ground-rules in Antarctica. Scientists' values and tourists' values will naturally differ and to date it is the scientists' values that have contributed to the regulatory framework. Political issues have, since 1959 been defused by using science as the continent's currency, so it is hardly surprising that their values have taken precedence.

The specific appeal of an Antarctic tourism experience has also been analysed, as part of the more general investigation into what motivates tourists overall. Motivations are numerous, diverse and complex. They overlap and may well be paradoxical. Escape, an authentic experience, a change from routine, marking new territory, physical activity, photography, experiencing new cultures languages and cuisines, contributing something to an environmental belief and social interaction may all play a part. Some of these cannot apply to an Antarctic experience, but most certainly do. It should be noted that the countless studies of tourism motivation that exist are usually conducted with the intention of exploiting them commercially with ever greater precision.

Constraint

In order to consider constraining some forms of tourism "before they are too big for the ATS to control" we need to consider a number of further questions:

- Why should particular forms of tourism be singled out for constraint?
- Which ones should these be?
- Would form be based on mode of transport?
- Would the constraint simply be numerical? Or based on some other factor?
- Would the constraint be motivated only by a fear of seeing the ATS tested to breaking point? Or for some other policy or strategic reason?

Constraints on an activity that a society as a whole finds undesirable are normally given effect through legislation, suitably enforced and with suitable sanctions for infringement. Sovereign governments employ policy analysts to develop policy and judicial officials to monitor and penalise those who infringe. The peculiar weakness of the Antarctic Treaty System to do any of this is discussed in detail below. Constraints that are based on sound policy and strategic thinking are normally accepted: we tolerate a driving speed limit because we know it is sound policy (driving more slowly is safer) and we know that it is part of an overarching government road safety strategy (which might cover such things as road building, vehicle safety and driver education).

Constraints that lack strategic and policy purpose, or worse, which appear to serve the interests of a particular constituency, are problematic and the fundamental question here then is to define the strategic purpose and the policy goals that constraining tourist numbers would serve. Purposes that a restriction on activity could serve include such things as avoiding conflict, environmental preservation, ensuring longer-term returns on an investment or other longer term goals.

Whenever imposing constraints, it must be realized that there will always be unforeseeable consequences that are, by their nature, unforeseeable. While thorough understanding of the situation and a sound, science-based discussion can prevent or minimize the undesirable impacts, in reality the process of enacting regulations is messy and political, relying on emotional reasoning and influence. It therefore can be more important that the regulation includes mechanisms to respond to emergent effects. An example of changing regulation in response to unforeseen consequences is the current restrictions on the use of DDT (Dichloro-diphenyl-trichloroethane), used to control insect-borne diseases. DDT has been sprayed widely by many governments to reduce public diseases, and it was mandatory to "dust" all U.S. Marines in the Korean War[4], however fears of its long term effects on the environment lead to bans in most countries and the natural and economic systems have slowly recovered. However the consequences of ceasing to use DDT are significant, with estimates that 20 million children have died of malaria due to the ban[5] and 100,000 people per year die of Dengue fever[6], and it has now been re-introduced in many places. The constraints in this case have thus changed from compulsory use to a blanket ban to various forms of "responsible use". A system of constraints should not be seen as permanent, nor as a perfect solution.

The third term that needs careful scrutiny is *impact* and to this we will devote an entire section.

Impacts

Tourist visitors to Antarctica are regularly categorized by the form of transport they use to get there. Other categorizations such as the amount of money they spent to get there, their nationality, their ability or commitment to advocate for Antarctic issues on returning home, and most important of all the environmental impact their visit had, would be equally valid categorization options[7].

The International Association of Antarctic Tour Operators (IAATO) summarises tourist visitor numbers to Antarctica, by season and by mode of transport. This is shown in the following table[8].

[4] Smith, 2007
[5] Finkel, 2007
[6] Davis, 2009
[7] www.iaato.org
[8] IAATO, 2010

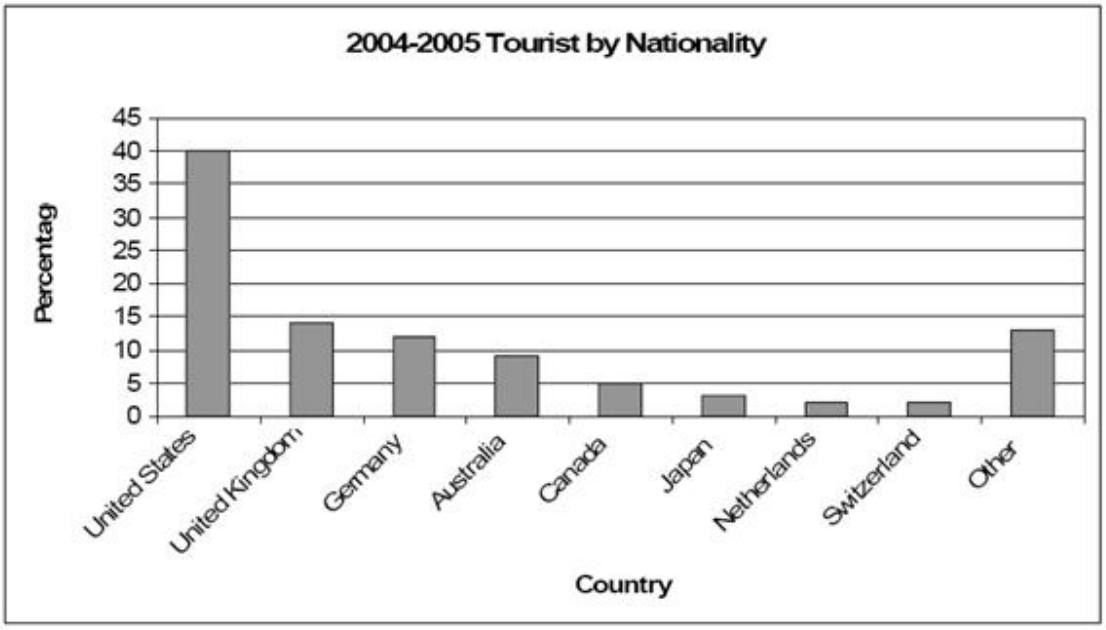
Year	# of Operators or Charterers	# of Ships & Yachts	# of Voyages	# of Passengers Making Landings	# of Cruise Only Passengers
1992-93	10	12	59	6,704	
1993-94	9	11	65	7,957	
1994-95	9	14	93	8,098	
1995-96	10	15	113	9,212	
1996-97	11	13	104	7,322	
1997-98	12	13**	92*	9,473	
1998-99	15	15**	116	9,857	
1999-00	17	21**	154	13,687	936
2000-01	15**	32**	131*	12,109	0
2001-02	19**	37**	117*	11,429	2,029
2002-03	26**	47**	136*	13,263	2,424
2003-04	31**	51**	180*	19,369	4,949
2004-05	35**	52**	207*	22,297	5,027
2005-06	47**	44**	249*	25,167	4,632
2006-07	42**	47**	268*	28,622	6,930
2007-08	48*	55*	308*	32,637	13,015
2008-09	44*	53*	290*	26,921	10,652
2009-10	44*	51*	239*	21,622	15,026

* Does not include non-member operated yachts (sailing and motor).

** Includes Member and non-member yachts (sailing and motor) where the information was available.

Numbers are therefore certainly rising, but they remain tiny. Visitors to Spain typically range between 6 million and 13 million per month[9].

IAATO did calculate visitor numbers by nationality for the 2004/5 season:



It has been calculated by Bauer[10] that human activity in the Antarctic affects 0.005% of the continent's area (705 km2 of 14,000,000 km2) and 0.25% of its ice-free area (705 km2 of 284,000 km2). The same author asserts that tourism activities have had no significant impact on Antarctic wildlife.

Positive impacts

An intangible benefit of tourism, and the reason that it exists, is the personal experience of the tourists who value these experiences more than the money they are prepared to pay for them. Also intangible is the effect of past tourists impact on the perceptions and debate, effectively acting as ambassadors for Antarctica. There are also, of course, some very tangible benefits to tourism.

[9] www.ine.es viewed 11 January 2011
[10] Bauer, 2001

Economic

The economic benefits to the host cities of Antarctic activities are not insignificant. Estimates of the impact on the economy of Christchurch are in the order of $150 million[11], mostly from the national programs of the United States and New Zealand.

The Antarctic tourism industry is estimated to be worth $120 million to the economy of Ushuaia in Argentina, representing a significant fraction of the local economy and creating thousands of local jobs[12].

Co-operation between tourism and science

The activities of tourism and science in the past have often been complementary. For example, in 2008 Quark Expeditions came to the aid of ships loaded with supplies and fuel destined for US science program at McMurdo Station and the New Zealand science program at Scott Base. At the time the contracted ice breaker assigned to break a channel though the sea ice had experienced mechanical engine failure and the two icebreakers of the US navy where in dry dock. Quark assigned a cruise ship ice breaker to open a channel into the sound so that supplies and fuel could be delivered.

This incident followed US programme coming to the aid of Quark Expeditions by transporting a sick passenger, in urgent need of medical attention, to the nearest surgically capable hospital. The US sent two Twin Otters aircraft, on contract from a Canadian company, to collect the passenger and doctor at Cape Adare and to bring them, via Terra Nova Station and McMurdo Station for their transport by plane to Christchurch. As well as breaking the channel to McMurdo Station, it was also witnessed that multiple barrels of fuel were transferred from the cruise ship to the Italian Terra Nova base, most likely out of gratitude for their assistance.[13]

Biological impacts

The *Aliens in Antarctica* project found that the commonest vector for unintended dispersal of the propagules of alien species was not tourists but field scientists and tourist support personnel[14] while another study[15] found numerous viable propagules being regularly transported to Antarctica to support scientific activity at the New Zealand, American and Italian national bases in the Ross Sea area.

Two of the most serious biosecurity infringements in Antarctica have been at national bases: at the British station at Rothera[16] and the Polish station at Arctowski[17] while the five proven introductions of alien species are all in the vicinity of scientific research stations. Personal comments from participants in tourist activity on the Antarctic Peninsula indicate that tourism

[11] Saunders, 2007
[12] McDonnell, 2007
[13] Laird, 2011
[14] ATCM, 2007, www.ats.aq
[15] Fortune, 2006
[16] Hughes, 2009
[17] Osyczka, 2010

operators take their environmental obligations very seriously by providing passengers with information and by enforcing rules strictly.

We infer that tourists as such have a negligible impact on the Antarctic environment compared with national bases. A likely explanation is that tourists, especially first time tourists which most are, are likely to be conscientious observers of environmental guidelines while base staff, although perfectly familiar with such guidelines, are at risk of becoming complacent and inconsistent in their application.

If tourism's impact is so tiny while scientific stations' impacts are so large (and permanent and therefore by definition cumulative), it seems reasonable to ask why so much energy and literary endeavour has been put into constraining tourism rather than into constraining existing and new stations? While tourism activity is flexible and can be quickly adjusted to meet new conditions, or indeed easily abandoned altogether, national bases are permanent, irreversible intrusions.

It is highly likely that demand for Antarctic tourism will grow. This includes the traditional Antarctic tourism markets such as North America, Europe and Australia. This is as a result of growing affluence, aging populations and increasing awareness of Antarctica as a tourist destination. Economic developments and growing affluence in other parts of the world may create new markets for Antarctic experiences such as China and India. At the same time the World Tourism Organization has projected growth in all global tourism market segments important for the Antarctic tourism industry, including nature-based tourism, adventure tourism and cruise tourism[18].

A final paradox when considering the impact of tourism in Antarctica is that breaking down tourist activity into smaller ships with fewer passengers per ship may in fact increase environmental impact. Larger ships, and particularly of course those that are too large to offer continental landings at all, have an even more modest environmental impact, yet satisfy a larger number of tourists. The same number of visitors spread across a greater number of vessels small enough to offer landings, will have a much greater local impact per visitor. Whether large-ship visitors have had anything like an authentic Antarctic experience is debatable, but their visit has without question been low impact. Over flights are one step removed again: an even less authentic experience and an even lower environmental impact.

Comparable situations

There are many other sites where visitor numbers exceed or threaten to exceed the capacity of the site to accommodate them and to provide the experience the visitors have gone there to have. Famous sites that fit this description include Stonehenge in the United Kingdom, Milford Sound in New Zealand, Yosemite Valley in the United States and Macchu Pichu in Peru.

[18] Bastmeijer, 2008

However all of these lie within sovereign states with mechanisms in place to develop policy, and more significantly to enforce it.

An example would be the New Zealand Department of Conservation's 447 page Management Plan for the Fiordland National Park which is a sophisticated and complex plan for managing a park that includes some areas which are essentially never visited and others which are over-visited . The Department of Conservation (DOC) is appointed to administer and manage the park within the National Park Act 1980 and Park Bylaws. The act stipulates that people can be restricted to park areas as necessary for the preservation of natural plants and animals[19]. The department can thus restrict numbers on a case-by-case basis, and has discretion as to how allocations of visitor permits are determined and distributed. By-laws put in place control various activities in the park give the authority to DOC to act against persons who commit an offence, by way of monetary penalties. Ultimately, while DOC is able to issue fines for breaches of law, it is not able to force collection. Where a party fails to meet its obligations to pay the fines issued, it falls to the New Zealand police and the judiciary to enforce the requirement to pay, which may result in criminal charges should the non-payment warrant this course of action.

However in the end Antarctica's unique legal position makes comparisons with other heavily visited areas of doubtful value. The Antarctic tourism industry's peculiar characteristics have been usefully summarised as:

- the lack of a comprehensive framework for controlling and managing Antarctic tourism,
- problems with the enforcement of existing rules and guidelines,
- jurisdictional problems (flag-state jurisdiction) raised by tourism,
- the hortatory but non-building nature of many tourist guidelines,
- inconsistencies with respect to national enactment of Treaty provisions, and
- a lack of data on the impacts of tourism activity[20].

Instruments and mechanisms

The Antarctic Treaty System

The Antarctic Treaty was signed in 1959 and provides Antarctica's core administrative mechanism. It was set up as a response to conflicts among sovereign states claiming territory in Antarctica and at a time when it became apparent that there was potential for militarization in Antarctica between the two superpowers, the United States and the Soviet Union who both had sizable interests there. Initially the aims of the Antarctic Treaty were to demilitarize Antarctica, promote freedom of scientific research and encourage international co-operation. Subsequently, in order to accommodate various needs and changing international

[19] Department of Conservation, 2007
[20] Haase, 2006

circumstances, a mechanism has gradually evolved focusing on comprehensive environmental protection[21].

The Antarctic Treaty includes within it a number of related agreements which together are called the Antarctic Treaty system.

The other agreements which make up the system are:

- the Protocol on Environmental Protection to the Antarctic Treaty (Madrid, 1991)
- the Convention for the Conservation of Antarctic Seals (CCAS, London, 1972)
- the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR, Canberra, 1980)[22]

Although CCAS and CCAMLR are independent agreements, they both contain provisions that commit their Parties to fundamental parts of the Antarctic Treaty such as Article IV which sets out the legal status of territorial claims. The Environment Protocol is open to accession only by Antarctic Treaty Parties[23].

The majority of the ATCM guidelines and regulations for tourists and expedition organizers can be found in the Environmental Protocol and Tourism Guidelines attached to Recommendation XVIII-1 (1994). The ATCM establishes guidelines for tourist expeditions and also provides for tourist expeditions to submit reports on their visits. The ATCM also issue specific guidelines for the sites most visited by tourists, which includes practical advice for tour operators on the appropriate conduct for any particular site taking into account their environment[24].

Currently effective control over tourist and non-governmental expeditions to the Antarctic has not been established. It has been suggested that this stems from the Antarctic Treaty Consultative Parties' hortatory approach and its limited ability to apply sanctions. When tourism issues extend beyond the scope of the Protocol, for example when dealing with issues such as liability, insurance, jurisdiction, third party activities, and enforcement, a vacuum of space in regulation is observed. There is a continuing failure to resolve the matter[25].

There is no agreed approach between the Consultative Parties as to the exercise of jurisdiction over tourism. However there has been progress with regard to providing guidelines for tour operators and tourists since Recommendation XVIII-1 was adopted in 1994. Nevertheless because of the non-mandatory nature and the unique political and jurisdictional basis, there are significant difficulties in achieving effective regulation. As a result, the administrative capacity of

[21] Lee, 2005
[22] www.ats.aq
[23] Lee, 2005
[24] Ibid at 18
[25] Ibid at 17

the Antarctic Treaty System with regard to tourism management continues to be seriously challenged[26].

Enforcement

Currently the enforcement regime of the Antarctic Treaty is considered weak, as it lacks punitive measures in cases of infringement. For example, in the Protocol, the Environmental Protection Committee has been criticized as lacking real authority to enforce compliance. It has been suggested that this weakness in the ATS is due to the lack of clear jurisdictional authority. After all who is in charge and responsible in Antarctica, when the guidelines and rules are broken? For laws to be successful in achieving their intended objectives a clearly defined enforcement mechanism must be established; it must be able to do what it is intended to do and have the requisite legal power to actually enforce sanctions. It is the same with respect to the Antarctic Treaty System. In CCAMLR and the Protocol, the mechanism of sanction is that of 'observation and inspection' with no uniform ability to sanction worldwide for breaches found resulting from any observations and inspections[27].
It seems essential that a solution on this matter is reached. A robust liability regime for infringements needs to be introduced to the Antarctic Treaty System. Liability regimes have been discussed and talked about for nearly twenty years at Antarctic Treaty meetings. And to date there has been no agreement on how and when this should take place, or in fact what sanctions might be applied[28].

Port-state regulation

There are five ports of departure for Antarctic cruises, namely Cape Town in South Africa, Hobart in Australia, Christchurch in New Zealand, Punta Arenas in Chile and Ushuaia in Argentina. Due to the Antarctic Peninsula's proximity, 90% of passengers on cruises to the Antarctic (who in turn make up 93% of tourists to the Antarctic) pass through the city of Ushuaia[29]. This is driven both by the financial incentive to tour operators, who would otherwise need to pass on fuel, food and staff costs to their passengers. It is in the interests of tourists to acquire their Antarctic experience at the lowest cost, both in terms of time and money.

Because of this transport bottle-neck, it has been proposed that the governments of port cities (the so-called Port States) could enact appropriate laws that would successfully regulate Antarctic Tourism. This would bypass the lengthy process of gaining consensus amongst all parties to the ATS[30].

The United Nations Convention of the Law of the Sea (UNCLOS)[31] gives every nation rights and obligations with regards to vessel registration and freedom of passage both over the high seas

[26] Ibid at 17
[27] Ibid at 17
[28] Ibid at 17
[29] Monowitz, 2007
[30] Ibid at 29
[31] http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm

and through individual nations' coastal waters. Some of these responsibilities are detailed in International Conventions developed and amended by the International Maritime Organization (IMO). These include:

- International Convention for the Safety of Life at Sea (SOLAS).
- International Convention for the Prevention of Pollution from Ships (MARPOL).
- International Convention on Load Lines.
- International Convention on the Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

There are also numerous technical Codes and Resolutions associated with these Conventions[32].

The administration offering vessel registration is referred to as the "flag state" and it holds the responsibilities and obligations imposed by the International Conventions for ships entitled to fly its flag as the signatory to the International Convention. The various international conventions and UNCLOS also grant legal powers to countries to which ships travel. This is to ensure that those ships do not pose an unreasonable threat to the safety of the ship, its crew or the marine environment whilst in their waters. The country in whose waters a ship travels is known as the "port state"[33]. The international conventions allow the port state to exercise a limit of control over ships in their waters. This mechanism of verifying that ships are compliant whilst in their waters is known as "port state control" (PSC). PSC has gained prominence in the shipping industry. This has come about by continuing breaches of obligations by the responsible party and the need to prosecute ships committing offences in ports or coastal state maritime zones. This is a potential way of regulating the behaviour of ships in and around Antarctica[34].

However it comes with obvious drawbacks, as ships could pick and choose their ports and could simply change ports that are considered less rigorous in applying laws, or have laws that are of a lower standard than other ports[35,36].

While the political nature of law-making remains, the requirement for reaching consensus at an international level is reduced. The concentration of operators in Ushuaia suggests that Argentina could act unilaterally to impose regulations and monitoring that would effectively apply to a significant majority of the industry.

However it comes with obvious drawbacks, as ships could pick and choose their ports and could simply change ports that are considered less rigorous in applying laws, or have laws that are of a lower standard than other ports , . At a minimum it would require Argentina and Chile to align their regulations, and preferably all five port states. This takes us back into a regime of

[32] Ibid at 26
[33] http://www.fao.org/fishery/psm/en, Food and Agriculture organization of the United Nations
[34] Ibid at 28
[35] Ibid at 28
[36] Ibid at 29

international treaties and agreements, however the reduced number of participants significantly increases the likelihood of consensus and common enforcement.

Forces acting to undermine the multi-nation political consensus and enforcement include

- Economic benefits accusing to port cities are significant, and can dominate the economy of the port cities. This may create political pressure through the representatives of that area. It may also encourage local officials to turn a blind eye to some activities.
- Increased tourist activity between a country and Antarctica may be seen a justification to support that country's sovereignty claims, and that anything that could limit that activity may be rejected on strategic geo-political grounds.
- Operators should be expected to shop around for the best deal, and to lobby for their own interests, taking advantage of these pressures.

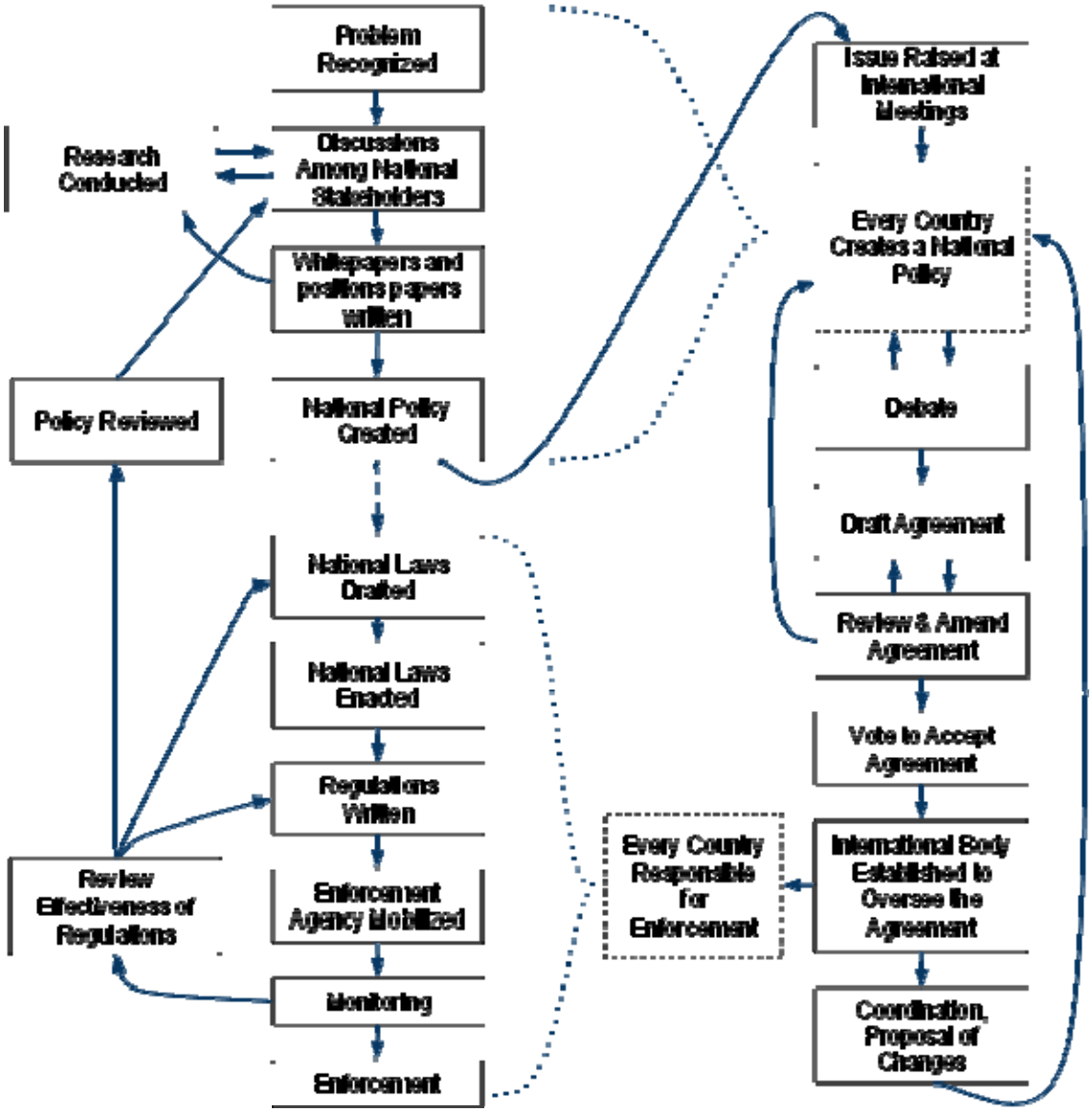
Even if successful, the inevitable loopholes and inconsistencies of the application of national law to Antarctica and the high seas can be exploited to avoid complying with regulations. Flying to Antarctica would also make it easier to avoid regulations, as aircraft can more easily depart from different countries. This activity would be nothing new, as there are already jet charter flights operated from Punta Arenas to Union Glacier and previous to Patriot Hills, both inland from the Antarctic Peninsular (Antarctic Logistics & Expeditions, 2010). It is also important to note that port-state regulation would have very little application to any permanent land-based tourist facilities.

Enacting and enforcing regulations

Before making recommendations as to the nature and content of desirable regulatory mechanisms, it is important to consider the means and process by which such mechanisms can be brought into effect, and similarly the means and process by which the requisite powers of enforcement are to be realized. As the enactment of any recommendations is entirely dependent on these means and processes, it should be considered that the value of any recommendations that are provided without such a discussion is highly questionable. Unfortunately this point has been overlooked by most authors.

Regulation

Enactment of regulatory mechanisms in the Antarctic region has a long history through the Antarctic Treaty System. The process of enacting regulations through the ATS is summarized in the following diagram. This process is similar for most international agreements.



Effective international regulation requires reaching a consensus amongst all nations. This is usually a complex diplomatic task that can take decades to achieve.

Every internationally negotiated treaty is different and has its own distinct characteristics. Reaching agreement in the first place is difficult; submitting agreements to national governments for ratification is difficult, with competing interests working to obtain the best arrangements for their own purposes. From CCAMLR meetings being controlled by fishing companies, to lobby groups campaigning against restrictions on carbon emissions, to Government's balancing all the programs they are trying to fund and enact, the difficulty of reaching an international agreement on anything should not be underestimated.

The Montreal Protocol controlling the use of CFCs is a rare example of an agreement that was quickly enacted, but in this case there were simple, relatively cheap and acceptable alternatives readily at hand.

Multi-lateral agreements on bigger issues such managing debt, or relieving poverty, or controlling disease are altogether more challenging.

Non-government Regulation

It is worth considering some forms of regulation that do not derive from government statute. These include:

- Contracts with landholders and between interest groups - though these may ultimately be enforced by the threat of physical violence (police and military) from a nation state.
- The statements and actions of non-government entities that are prepared to use violence and force, or are able to compel others to use violence and force on their behalf. It should be noted that these entities may resemble governments in many ways, and while they may not initially participate in international legal regimes it is not uncommon that, should they persist for many years, they become governments *de facto*, if not *de jure*.
- Industry codes of conduct, for which compliance is typically non-mandatory
- Societal norms, mores and taboos

There are a number of examples of emergent regulation in early colonial societies, where the rule of law emerged from within communities themselves at the earliest stages of their development. The gold rush in the American West provides many good examples where competition for relatively scarce resources (i.e. the gold) led to emergent regulation. In these cases it was recognized to be economically advantageous for the miners to commit time and money to developing and enforcing a set of rules that protected their diggings and wealth from interlopers and robbers. Interestingly, where the gold was sufficiently plentiful, regulations failed to develop because taking time away from digging for the gold was too high a price to pay.[37]

When the expansion of the government functions of the United States of America eventually reached these communities the local regulations were not suplanted, but rather adopted to become local laws withing the union.[38]

Enforcement

While regulation has a mostly successful history, albeit on a long time scale, unfortunately the same cannot be said for enforcement.

Enforcement boils down to combinations of:

[37] Kanazawa, 2005
[38] Ibid.

:

- physical violence, or a credible threat of physical harm or forced restraint;
- economic violence, or a credible threat of financial harm
- social violence, or a credible threat to social standing and personal relationships.

Typical enforcement of international government regulation is through national regulation, backed by the monopoly of a government on physical violence through its police and military.

Enforcement requires monitoring which in Antarctica is particularly difficult as fishing regulators will testify. Areas are vast, access is difficult, and weather is unpredictable. The rewards of illegal fishing have repeatedly been worth the low risk of being caught.

In some circumstances, the law can be enforced through the flag state. The issue is that various states will issue a flag for a fee with no real interest in how that ship's operator carries out its activities. These are called *flags of convenience* [39]and the reason for the use of a flag of convenience is that when a ship's operator is sanctioned it is the home nation's law that applies. Unscrupulous operators will obviously prefer to fly the flag of a nation less likely to enforce penalties against them. For this reason most cruise ships fly flags of countries other than the USA, most commonly those of developing nations, as the American system is seen to have the highest standards and to be more ready to apply harsh sanctions, either economic or criminal, for breaches of the Antarctic Treaty.

When a breach of the CCAMLR convention occurs, it is the flag state's responsibility to take any legal action and to apply any consequent sanctions. In the case of the Convention for the Conservation of Antarctic Seals it is apparent it provides for flag-state jurisdiction as the only grounds for enforcement[40].

Nevertheless, in today's international setting, it is difficult to envisage a wholly effective regime enforced only by a state's jurisdiction over vessels sailing under its flag. The best example of this is an operator who operates in Antarctic waters but uses a ship which flies a flag of a state which is not an Antarctic Treaty member. In this case, should the operator carry out questionable activities, the non-member state, which provided the flag of convenience, is not obliged to enforce the Antarctic Treaty System. Further any effort by a member state to enforce sanctions against an operator working under a non-member flag would undoubtedly be highly problematic. If such a scenario were to occur it would most likely be a first world country trying to involve itself in the affairs of a third world nation.

This confusion would be further compounded as most businesses which carry out tourism in Antarctica are based in first world nations. So the question then arises of whether any action is taken in the country where the operator has its headquarters, or in the country providing the flag becomes "Who carries out the sanctions? It is hard to imagine, say, the USA standing back and watching while an American company, which used Panamanian ships, broke the Antarctic

[39] Wright, 2008
[40] Ibid at 30

Treaty, simply because the Panamanians held jurisdiction over the ship through a flag of convenience[41]. This issue is not limited to Antarctic cruise ships, indeed is even more problematic in the area of fishing. Under the CCAMLR convention the fishing of the Patagonian toothfish is controlled, and a register of ships involved in illegal fishing is maintained. In 2001 ships flying flags from Belize, Indonesia, Panama, St Vincent and the Grenadines were identified as being involved in the toothfish trade. None of these countries has ratified CCAMLR, so cannot be sanctioned for being involved in the activity. All that can be done is to provide the flag state with the information that the ship has been involved in those actions and leave it to that state to decide whether or not it will deal with the ships' operators. But even ships operating out of CCAMLR contracting countries have been found to be involved in toothfish fishing and trading. This non-compliance by member states makes it even harder to approach non-member states in regards to their own ships' activities[42].

Finally there is the issue of re-flagging. Re-flagging occurs when a ship, which previously flew a member state flag, has moved its registration to a non-member country. Ostensibly this is done for innocent reasons but in reality it is done most often in an attempt to avoid sanctions resulting from their involvement in activities which would be contrary to international law obligations that the original flag state were bound to adhere to. This aggravates the difficulties in enforcing the CCAMLR convention, solely using flag-states jurisdiction[43].

Non-government enforcement

It is useful to consider types of enforcement that do not rely on the threat of physical violence by a branch of a national government.

Firstly we shall consider the use and threat of physical violence by non-government actors. This could take the form of an entity that uses violence in a similar way to that which we are accustomed to seeing from national government. In a similar manner to a police or defence force, who have an effective monopoly on the use of force in western countries, we have seen the use of contract security forces in Iraq and Afghanistan, even by the worlds largest and most powerful governments.

It is theoretically possible that a non-governmental organization could use violence, and the threat of violence, to enforce regulations regarding Antarctic tourism, be that regulation documented or undocumented, be that regulation approved, formally or informally, by a national government or not, be that regulation to the benefit or detriment of the tourist experience, the business interest, the environment or the politician. Such an organization could choose to carry out the enforcement with its own people, or to contract such "services" to a security contractor.

[41] Lee, 2005

[42] Ibid

[43] Wright, 2008

There are examples of contracting violence in the western world, such as hiring private security firms to enforce property rights and restrict access. While domestic security firms operate under the laws of the state in which they are situated, they are often able to enforce regulations that go beyond those of the state, or that the enforcement branch of the government is unable or unwilling to enforce.

There are examples of violent enforcement being privately contracted in failed states, such as Iraq and Afghanistan, where the state is not able to enforce laws and contractors and their customers can thus effectively define the regulations themselves.

And there are examples of non-government organizations developing an enforcement strategy such as the direct action undertaken by Greenpeace or the Sea Shepherd Conservation Society. While this can be mostly described as economic violence, there is nonetheless a credible threat of physical harm to the crew of the whaling ships. While the Sea Shepherd Conservation Society operates from facilities within state borders, and is in fact registered in the USA, it operates internationally and often benefits from the inconsistencies of national and international laws. It is worth noting that the actions of the Sea Shepherd Conservation Society may in fact be enforcing regulations or policies of national governments that are unable to enforce them themselves, due to the constraints of international politics and the international treaty system.

Finally there are examples of social violence where pressure is applied to achieve a particular goal. The Sea Shepherd Conservation Society does this as well, raising awareness of Japanese hunting and consumption of whales; however the success varies depending on the cultural context of its target. In fact the Japanese people have often expressed support for their whaling organizations as a result of the publicity campaign by Sea Shepherd. This highlights one of the risks of using this enforcement mechanism beyond a local group.

Discussion

The complexities of the Antarctic situation: judicial, political and physical, mean that a system of imposed regulations to manage the impacts of tourist, via tourist numbers or otherwise, is feasible though extremely unlikely. Specifically it will require:

- universal political consensus and the political will to implement regulation,
- granting of legal jurisdiction to a single, internationally recognized body, and
- an armed international enforcement agency.

This solution appears in the literature in the form of a limited world government in Antarctica . Such an administration of Antarctic affairs would comprise a single authority with one legal system and one justice system. The International Court of Justice and/or other mandated tribunals would be vested with the requisite powers to impose criminal and civil sanctions. Any offences, whether environmental or individual, could be brought before these judicial bodies.

While inheriting the systems and regulations of the Antarctic Treaty System, such a system would not be consensual, and states would be required to recognize its effective sovereignty over the Antarctic. This would allow legislation to be passed swiftly, responding to the current issues in a timely manner with real and powerful sanctions, and would remove problems with inconsistent compliance amongst nations .

Antarctic tourism is currently small, with most activity in Ushuaia only generating $120 million [44]and not likely to become "too big" for an international body to control. However, the issues surrounding Antarctica may be "too contentious" to achieve the required consensus for regulation, let alone enforcement.

Given an ongoing legal limbo and regulatory vacuum, we have explored a system of self-regulation that is likely to emerge, based ultimately on tourism operators' self interest and market forces. We characterize this as emergent regulation, where regulation emerges from within the sectoral interest group which it is designed to control, rather than being imposed from without. It is, after all, in the best interests of tourism operators to provide tourists with the product they want and not to risk that product's destruction. Furthermore it has been suggested that tourism operators involved in the decision making process are more likely to be committed to the outcome of that process.

The nature of emergent regulation, and the balance it strikes in managing positive and negative impacts, will reflect the cultural values of the customers (tourists), and respond to these values if they should change. It is implicit that the largely scientific values of the original ATS countries are likely to be supplanted by tourists' values from new cultures and countries. There is no "intrinsic right" that ATS members have to exclude the opinions of others, and due to the complexities of the ATS there is no way for any exclusion to be enforced.

Self-regulation will rely on social and cultural values for enforcement. While there is a growing body of work on the attitudes of Western countries towards Antarctica, it should be realized that the growing wealth in Asia, and the fact that Asia makes up 60% of the world's population, will result in greater numbers of tourists from that region bringing with them their social values and that these can differ substantially from those of Westerners.

Considering the economic requirements for emergent regulation, we have noted that emergent regulation will only come into being when it is in the economic interest of the affected parties[45]. Antarctic tourism is definitely not a gold rush, and the "product" that is being sold is definitely in danger of being degraded, affecting the incomes of the operators.

Similar to the situation that evolved in the American West, it is likely that the regulations that emerge in Antarctica will later be adopted by any regulatory body that replaces the initial industry association. This could be an international organization such as the ATS, that would likely absorb the regulations and enforcement mechanisms that have developed. Alternatively

[44] McDonnell, 2007
[45] Kanazawa, 2005

the industry association itself may evolve into an officially recognized body with rights over Antarctic territory. Either way, the arrangement is likely to begin to have the attributes of a nation state.

Conclusion

To adopt effective regulation and enforcement mechanisms to manage Antarctic tourism, the Antarctic Treaty System requires universal political consensus, granting of legal jurisdiction and an armed international enforcement agency. This is unlikely to occur.

Port-state regulation has a higher likelihood of being implemented, however the inevitable loopholes and inconsistencies of the application of national law to Antarctica and the high seas can be exploited to avoid complying with regulations

In the absence of any other effective regulation, we can expect to see self-regulation emerge from within the sectoral interest group, and the adoption of increasingly aggressive means of enforcement. The regulations adopted will reflect the values of the customers, in this case the tourists. In the long run the regulations thus implemented will likely be adopted by any international or national government that manages to establish jurisdiction.

Bibliography

Books

Bauer, 2001, Tourism in the Antarctic: opportunities, constraints, and future prospects, Hayworth Press, USA

Charles Richard Smith (Ed.), *U.S. Marines in the Korean War*, United States Marine Corps, History and Museums Division, Washington D.C., 2007

Cherry-Gerrard, A, (1922) - *Worst Journey in the world*, Constable, 1922

Department of Conservation, Fiordland National Park Management Plan, June, 2007.

Fortune, A, 2006*, Biosecurity at the Extreme: Pathways and Vectors Between New Zealand and Scott Base, Antarctica*. Christchurch: University of Canterbury, unpublished Master of Forestry thesis.

Hughes, K, et al. 2009. *Accidental transfer of non-native soil organisms into Antarctica on construction vehicles*. Biological invasions 12 (4), 875-891.

Hughes, K & Convey P, 2010, *The protection of Antarctic terrestrial ecosystems from inter- and intra-continental transfer of non-indigenous species by human activities: a review of current systems and practices* Global Environmental Change 20 (2010) 96–112.

Lawrence H. Officer, "Five Ways to Compute the Relative Value of a UK Pound Amount, 1830 to Present," Measuring Worth, 2010.

Journal articles

Aish, A. 2002,*Tourism and Stakeholder involvement of Tourism Operators in the Management of the Marine Parks and Special Reserves of the Seychelles'* Shoals of Capricorn Programme Field Report 1998 - 2001: Marine Science, Training and Education in the Western Indian Ocean, RGS/IBG.

Bastmeijer, K., Lamers, M. and Harcha, J. (2008), *Permanent Land-based Facilities for Tourism in Antarctica: The Need for Regulation. Review of European Community & International Environmental Law*, 17: 84–99. doi: 10.1111/j.1467-9388.2008.00585.x)

Ho-Sam Bang, 2009,*Port State Jurisdiction and Article 218 of the UN Convention on the Law of Sea Journal of Maritime Law and Commerce*. Cincinnati:Apr 2009. Vol. 40, Iss. 2, p. 291-313 (23 pp.)
http://ec.europa.eu/environment/air/transport/pdf/MBI%20Lot%202%20Annexes.pdf.

Campling, P, Van Den Bossche,et al 2010. *Market-based instruments for reducing air pollution - assessment of policy options to reduce air pollution from shipping*, Final Report for the European Commission's DG Environment, June 2010. http://ec.europa.eu/environment/air/transport/pdf/MBI%20Lot%202%20Annexes.pdf accessed Jan 8th 2011.

Fortune, A., *Biosecurity at the Extreme: Pathways and Vectors Between New Zealand and Scott Base, Antarctica*. Christchurch: University of Canterbury, unpublished Master of Forestry thesis.

Global Environment Facility R.5/Inf.15/Rev.1, *Average Exchange Rates: March 2009 – September 2009 And Inflation Rates Of GEF Donors*, February 12, 2010.

Hughes, K, et al. 2009. *Accidental transfer of non-native soil organisms into Antarctica on construction vehicles*. Biological invasions 12 (4), 875-891.

Kanazawa, Mark T. *The Extralegal Origins of First Possession: Water Law during the California Gold Rush*, Department of Economics Working Paper, Carleton College, 2005

Lee, M, 2005, *A Case for World Government of the Antarctic*, 9 GONZ. J. INT'L L. 73,available at http://www.across-borders.com

Lamers, M., Haase, D and Amelung, B.2009, Self-*regulation of tourism in Antarctica*: Exploring the conditions for success and failure". Journal of Sustainable Tourism, Vol. 17(4) (pp. 411-430) http://www.cwsl.edu/content/journals/Wright.pdf

McDonnell, Patrick J. *Argentina's Ushuaia rides eco-tourism wave*, Los Angeles Times, May 10, 2007

Monowitz, D, 2007, *The Treaty System, Continuing Challenges, Environmental Policy and Law*, 37/6 IOS Press

Mohd Peter Davis, *With DDT Spraying, Malaysia Can Show the World How to Control Dengue,* 21st Century Science & Technology, summer 2009, pp53-50

Osyczka, P. (2010). *Alien lichens unintentionally transported to the "Arctowski" station* Polar Biology 33(8), 1067-1073.

Saunders C., Dalziel., Hayes P., 2007 The Contribution of Antarctic related activities to the Canterbury and New Zealand Economies.

Wright, 2008, *Southern Exposure: managing sustainable cruise ship tourism in Antarctica*, http://www.cwsl.edu/content/journals/Wright.pdf

Websites

All documents relating to the Antarctic Treaty System can be found on the website www.ats.aq accessed over two weeks of January 2011.

Antarctic Logistics & Expeditions, “ALE opens new runway and camp”, http://www.antarctic-logistics.com

(ATCM (2007) IPY Aliens in Antarctica, information paper 49. Delhi: XXXth Antarctic Treaty Consultative Meeting.)

IAATO Overview of Antarctic Tourism: 2009-10 Season and Preliminary Estimates for 2010-11 and Beyond, presented to ATCM as IP 113

United Nations World Tourism Organization http://unwto.org/en accessed January 2011

Personal communications

Interview with Dr Malcolm Laird, senior Fellow, Department of Geological Sciences, University of Canterbury and cruise ship lecturer, 21 January 2011.