Third Common Property Conference of the
International Association for the Study of Common Property
Washington DC,17-20 September, 1992

Theme: Inequality and the Commons

Wildlife in the Ocean Commons: Whales and Other Beasts*

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[Delivery : Friday, 18 September, am]

ABSTRACT

The seas outside recognised territorial waters exemplify the general concept of "the commons" in international and global context. Especially over the past fifty years many efforts have been made to mitigate the so-called 'tragedy of the commons' in this vast region, through specific international agreements, general evolution of maritime law, assumptions of extended powers by coastal states and in other ways. Scientific paradigms have been recruited to the political, economic and social debates, including especially the idea of indefinitely sustainable use of living marine resources and the possibility of maximising such use without risking the future productivity of those resources.

A complex of major conflicts has arisen, within and between nations. This includes conflict between different users, conflict between different types and purposes of resource use, conflict between users of the resource in question and users of other, biologically inter-acting, resources, and inter-generational conflict. The search continues for ways of deflating, if not resolving, such conflicts, principally by attempting to legislate against inequity.

Efforts to conserve and restore whale resources illustrate in one example almost all aspects of this complex. These efforts and some of their results will be reviewed. Many of the results and some current approaches to management are applicable to other marine living resources and even to some corresponding terrestrial resources. Other

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results and approaches may not be directly transferable because of the recognised 'special' status of whales and dolphins, biologically, culturally and in international law. But they are nevertheless of interest in their own right, and exercise the minds of more, and more diverse, people and organizations world-wide than do other international resource management problems.

One important contributor to current conflicts is uncertainty about the biological nature of the resources and its consequences for management to meet specified objectives; such uncertainty is by no means confined to the whales. How uncertainties may properly be taken into account in managerial regimes has been insufficiently studied, especially with respect to inter-generational equity . While better results could be obtained than in the past, using scientific method, ethical considerations cannot in principle be eliminated, though they can be clarified. This assertion will be discussed in general and in specific relation to controversies about whales and whaling, and current discussions of such concepts as "sustainable development" and "the precautionary principle".

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INTRODUCTION

The ocean, and especially its living resources, is quintessentially a global commons. Traditionally, only in small bays and in some narrow strips in a few regions of the world have state or other recognised authorities granted the equivalent of property rights to individuals or particular collectivities. Recently, such authorities have begun to exert jurisdiction over resources in wider areas – the 200-nautical mile Exclusive Economic Zones (EEZ) – and in some cases to allocate some exclusive rights to utilization of those resources (usually of fixed-term) to legal persons. However, many of these living resources - probably most of the mobile animals among them - "straddle" two or more EEZs and also overlap the boundary between an EEZ and the waters beyond that: the High Seas.

The management of so-called 'straddling stocks' has, since the conclusion of the third United Nations Conference on the Law of the Sea in 1982, attracted increasing attention, especially with respect to the nature of jurisdiction over fishing operations on the High Seas. Formally, individual states control ships flying their flags. In practice there are four problems: such operations are difficult to monitor; states which provide flags of convenience may have little or no interest in trying to monitor them; some vessels operate under flags of countries which do not at present have universally recognised status as "states", e.g. Taiwan; and fleets flying different flags may compete with each other for the resources in the same off-shore area, either to the detriment of the biological productive capacity of the resources, or of the economic benefits which they expect to gain, or both.

Generally different states are interested in the same types of use of a resource on the High Seas, but they can have different interests in the same resource, which may give an additional dimension to possible conflict. One such difference is in the time dimension: a coastal state, with supposedly a longer term interest, may wish resources off-shore but adjacent to, and possibly straddling, its EEZ to be left relatively intact as a reserve for the

future, while a more distant state, with supposedly shorter-term interest, will demand freedom for more intensive exploitation immediately. In other cases large-scale industrial operations for commercial purposes may conflict with smaller-scale exploitation or even subsistence use. A third example may be in conflict between tourism, with interest in the living resource, and fishing, coral mining, whaling or sealing, for example, with interest in the dead animals.

Conflicts occur at other levels: between commercial operations and scientific research, between research that involves killing the animals and that which does not, between fishing and other uses of the High Seas, such as maritime transport. A special class of conflict is that between those interested in one resource species or type and those who are more interested in a species or type that its feeds on or that feeds on it, or that competes biologically with it.

Another class of marine living resource is the Highly Migratory Species; a legal term meaning that the species is listed in an Annex to the UNCLoS convention. This class includes the tunas, and the whales and dolphins, most but not all of which are thought to be "highly migratory" in the original biological sense. Only some straddling stocks are of (legal) Highly Migratory Species, but many of those that are not are of biologically migratory species, such as cod and herring. Probably all (legal) Highly Migratory stocks are also straddling stocks. Even the Southern Hemisphere whales that feed in the High Seas surrounding Antarctica (which has no EEZ or even recognised Territorial Seas) and migrate through and breed in the warmer High Seas, probably enter or pass through several national EEZs in the process. Thus the Highly Migratory Species can illustrate a very wide range of conflicts.

This is especially true of the great whales. Firstly, they have long natural lives and relatively very slow rates of population growth; just how slow is controversial but undoubtedly slower than most other commonly exploited living resources, although some fishes, such as some of the sharks and rays, as well as turtles, may have comparably slow population growth rates. This means that conflict between human generations is potentially enhanced. Furthermore, since the growth rates are typically less than the prevailing discount rate, present commercial users have no intrinsic interest in sustainable use of them and hence in their conservation, even when competition between those users is modulated by externally imposed regulations. So all commercial whaling, until now, is better characterised as "mining" than as the sustainable use of a renewable resource.[1]

Secondly, the whales, as well as the dolphins, have always, everywhere, held a fascination for humans. This may be partly connected with their awesome size and/or aspects of their behaviour which is so obviously qualitatively different from that of other marine animals , but has nothing to do with their economic values as sources of commodities. This fascination has been greatly enhanced by scientific discoveries in the past three decades or so, and has led to the rapid expansion of a new kind of so-called

"benign" economic use of these resources: whale watching.

UNCLoS and UNCED

General objectives, procedures and arrangements for management of marine living resources are embedded in several places in the UNCLoS. However, they do not yet carry the full force of international law because UNCLoS has not yet received sufficient ratifications to enter into force. But the status of these provisions has changed with the acceptance, by consensus of participating states, of the Document entitled "Agenda 21" which emerged this year from the Rio Conference on Environment and Development (UNCED). The title of chapter 17 of that document is a mouthful: "Protection of the Oceans, All Kinds of Seas, including Enclosed and Semi-enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of Their Living Resources". It includes two parts: "Sustainable use and conservation of marine living resources of the high seas" and "Sustainable use and conservation of marine living resources under national jurisdiction", which contain identical wording, lifted from the UNCLoS, defining management objectives, which I need to quote rather fully:

"States commit themselves to the conservation and sustainable use of marine living resources [under national jurisdiction/on the high seas]. To this end it is necessary to: (a) Develop and increase the potential of marine living resources to meet human nutritional needs, as well as social, economic and development goals; (b) Maintain and restore populations of marine species at levels that can produce the maximum sustainable yield as qualified by relevant environmental and economic factors, taking into consideration relationships among species".

States also committed themselves, among other things, to: (e) Protect and restore endangered marine species; and (f) Preserve habitats and other ecologically sensitive areas".

In both sub-sections a special provision is defined, again from the UNCLoS, that "Nothing. (in the definitions of objectives)...restricts the right of a State or the competence of an international organization, as appropriate, to prohibit, limit or regulate the exploitation of marine mammals ..more strictly... States shall cooperate with a view to the conservation of marine mammals and, in the case of cetaceans [which, we have seen, are nearly all, legally, Highly Migratory Species] shall work through the appropriate international organiations for their conservation, management and study."

States are especially enjoined to "give full effect to these [and other] provisions with regard to Highly Migratory Species and in other ways "address the issues of straddling stocks and highly migratory species in implementing the relevant provisions of UNCLoS. A process has been launched, starting with an informal Technical Consultation on High Seas

Fishing convened by FAO in Rome and just ended this week, and which will finish with a full-fledged U.N. conference towards the end of 1993. The purpose of this process is to "promote effective implementation of the provisions of the UNCLoS on straddling fish stocks and highly migratory fish stocks".

In this last formulation the word "fish" has appeared for the first and only time. I am not sure if that was deliberate, to exclude whales and other "highly migratory" cetaceans. Two facts suggest that it was. Firstly, ~~none of~~ the documents submitted to or emerging from the FAO Technical Conference ~~refer~~ pay scant attention to whales. Secondly, the UNCED went somewhat beyond UNCLoS in defining what is "an appropriate international organization as far as the whales are concerned. During the UNCLoS negotiations it had been tacitly assumed that there was one such organization: the International Whaling Commission (IWC). But in Rio the "States recognise(d)...the responsibility of the IWC for the conservation and management of whale stocks and the regulation of whaling pursuant to the 1946 International Convention for the Regulation of Whaling". This recognition appears, in identical language, in both sections of Agenda 21 - pertaining to resources of the high seas and to resources under national jurisdiction, ~~and~~ despite determined efforts by, particularly, the delegation of Iceland to exclude or at least weaken it.

NAMMCO

On the initiative of Iceland, with support from Norway (and, apparently the tacit support of the Department of Fisheries and Oceans in Canada), a new organization has recently been created, the North Atlantic Marine Mammals Commission (NAMMCO), with participation also of the fisheries authorities of Greenland and Faroes, which both now have a degree of independence from the Kingdom of Denmark. This was intended to legitimise some whaling outside the IWC, for reasons I shall later make clear. But it has already run into trouble at its first formal meeting in Torshavn, Faroes, earlier this month. Iceland and Norway want NAMMCO to regulate the commercial catching of minke whales in the region, but Faroes - which is well-known for its hunting of pilot whales - and Greenland - which engages in "aboriginal subsistence" hunting of minke and some large species under IWC regulation - insist that unless and until it collapses the IWC is the proper forum, as UNCED declared, for the regulation of the catching of these larger species, whether for commercial or subsistence purposes. The debate will continue at the next meeting of NAMMCO, in January 1993, at its chosen headquarters, Tromsoe, Norway.

At the Torshavn meeting Gudmundur Eriksson, representing Iceland, and who was the spokesman for Iceland in the IWC until that country withdrew from the IWC in May this year, fired off another glancing shot at the IWC, and the UNCLoS/UNCED provisions regarding highly migratory species in general and whales in particular. He is quoted as saying: "We do not understand why countries which are as far as 5,000km from here should decide what we should do in our own economic zones." [2]

SCOPE OF IWC COMPETENCE

The question "what is a 'whale'?" , and therefore - in UNCLoS/UNCED terminology - for what species is the IWC an appropriate management and conservation body, has never been resolved. Certainly the hunting of all species of baleen (whalebone) whales - blue, pygmy blue, fin, bowhead, right, gray, humpback, sei, Bryde's, minke - as well as the sperm, 'killer' (orca, the largest dolphin) and North Atlantic bottlenose whales is within IWC's uncontested competence. Most countries consider that the pilot whales and the other bottlenose whales (the Baird's Beaked whale of the North Pacific, hunted by Japan and as large as a minke, and the Southern bottlenose) are also within IWC competence, but without consensus on this point hunting of these has never been regulated internationally. Others, such as the beluga (white whale) and narwhal, as well as the dolphins other than orca, are more controversial.[3,4]

MISCONCEPTIONS ABOUT WHALING AND THE IWC

I shall now concentrate on what the IWC has been doing, within its accepted sphere of competence, with particular reference to the specific theme of this conference: inequality. But first I must clarify a number of current and rather widespread misconceptions. This is necessary because they cloud the core issues of debate, and also because to a considerable extent they have been generated and sustained deliberately, for short-term political ends. The disinformation campaigns of a few administrations (notably those of Norway and Iceland) supported -unfortunately - by a few poorly informed academics have been partially documented. Those parts relate mainly to misinforming the public of those countries, and - when they are accessible and receptive - foreign journalists, about what happens within the IWC.[5] Here, however, I would focus on myths and 'factoids' [6] with concern the question of equity.

The first of these is that most of the governments (whose majority in the IWC membership has until now prevailed in maintaining the moratorium on all commercial whaling that has been in effect for the past five years) are "anti-whaling" in principle, and that their intention is to make the moratorium permanent. Since the IWC is a treaty for the regulation of whaling, not of 'non-whaling', so it is said, such a permanent moratorium would be unconstitutional. It would, therefore ~~offer an excellent excuse for~~ the few countries that wish to resume commercial whaling immediately an excellent excuse to leave the IWC - even if they really wished to do so for <u>other</u> (unstated) reasons - declaring the "inappropriateness" of the IWC under international law as they walked out.

The truth is that whatever their basic policies, and in some instances the feeling of large portions of their populations, the non-whaling governments have behaved correctly in the IWC. This year they adopted rules for setting annual catch limits (with dissent only - and significantly - from Norway), but subject to reasonable conditions: that standards for the provision of data should be agreed, that an effective international system for monitoring all resumed operations be established, and that efforts be made to make whale hunting less

inhumane.

A second factoid is that many, if not a majority, of governments in IWC oppose whaling on "animal rights" grounds. Again, there is no evidence whatever that this is so, and indeed it would, considering the cool, when not strongly antagonistic, position of most governments with respect to "animal rights" issues, be extremely strange if there were any truth in it. A subsidiary version of this, strongly promulgated in Japan - even by government officials - where racist undertones can be insinuated - is that "western" meat eaters are seeking to curtail the dietary preferences of the people of whaling countries, that whaling is no less inhumane than killing domestic cattle, that Europeans and North Americans abhore the eating of whales as they do of, for example, dogs; etc., etc. It should not be necessary to tell an audience of this nature that such considerations play no part whatsoever in the positions of IWC member countries.[7,8]

Another myth - and the last I will mention here - which is directly pertinent to discussion of questions of equity in the management of whaling, is that there is a style of whaling, called "small-type whaling" by the IWC, which is "small-scale", more "traditional", over a longer period of time, than other, larger types/scales of whaling, somewhat akin to subsistence whaling, which cannot be considered strictly as "commercial", and which therefore should not be subject to the present moratorium. This has not been accepted by the IWC because it is not true. "Small-type whaling", a term taken from Japanese administrative regulations dating from before the Second World War, is simply the killing of specified "small whales" (minke, orca pilot whales, bottlenose whales) by harpoons fired from cannon on boats. The scale of such operations can be small or large in terms of the number of operating vessels. The vessels used are small in comparison with catchers used until recently to take larger species. Their size is based on economic and technical considerations - in the North Atlantic, as practiced by Norwegian whalers, and in parts of the Northwest pacific, as practiced in Hokkaido, the vessels are technologically sophisticated and have oceanic range, freezing facilities and so on.[9] "Small-type whaling", as conducted by Norway, Iceland and Japan (but not, we are told, as conducted by Greenlanders) is unquestionably "commercial whaling", and it was accepted as such by those whaling nations themselves from 1975, when the IWC began to regulate minke whaling, until the mid-1980s, when the moratorium had been adopted (in 1982) but was not yet legally in force (1986).

This year the embryo of a new factoid was conceived. It could perhaps become fully fledged with "a life of its own", even be added to the prevailing myths (see Endnote 6). I would like to try to abort it. The parent of this is Arne Kalland, a Norwegian worker at the Nordic Institute of Asian Studies, in Copenhagen. Kalland has claimed that the IWC discriminates against subsistence whalers, prevents them from turning into commercial whalers, denies them access to world markets, and that the IWC's rules "..give the anti-

whalers a way to control ethnic minorities and keep them in a position of dependency." Kalland's paper is so full of arrant and pernicious nonsense that it deserves a demolition excercise, which I hope at least to begin before the present conference.[10]

CATEGORIES OF WHALING

The IWC recognises three distinct types of whaling, to which different international rules are applied. They are: commercial, aboriginal subsistence, and scientific. These derive from the 1946 convention. A fourth category, Small-type whaling is defined as a type of whaling for certain species, and the data submission requirements are less stringent than they are for other types of whaling, but the regulatory regime applied to such operations is identical either to that for other types of commercial whaling or to that for other types of aboriginal subsistence whaling.

To be categorised as for ~~considered as~~ subsistence (ASW) whaling operations have to be primarily for purposes of human consumption as food, and the products not to enter into commerce. What is regarded as "commerce" is rather leniently interpreted. It includes international trade, and is supposed to include movements outside the locality of capture. What exactly is "local" and what "international has been a subject of some controversy. Whale meat from Greenland, produced under ASW rules, was for some time being exported to mainland Denmark; it was argued that this was "local" movement because it was not "international", being within one legal country, and furthermore that it was being sold only to Greenlanders who happened to be studying in Denmark or visiting for other purposes, and could not do without their whale meat. When it was pointed out that this meat was on the menu of expensive restaurants in Copenhagen, for anyone who could afford it, there was a hasty agreement that in future such meat would not be moved out of Greenland.

One might ask why the word "aboriginal" is associated with " subsistence" in IWC-speak? The answer has a history. The provision that whales of "protected species" (at the time the gray and right whales, including the bowhead) could be taken for subsistence by or on behalf of aboriginal peoples, was inserted in the text of the convention at the behest of the Soviet Government. The argument, which must have seemed reasonable enough at the time, was that the right whales had been so devastated by commercial whalers, starting in the nineteenth century, that the native people of Northeastern Siberia, who used to depend on them for food, needed to have an alternative source, which could be the gray whale. As gray whales are notoriously difficult and dangerous to catch by "traditional" methods, the Soviet government would use a normal large-type catcher boat to catch them for, and deliver them to, the local people. The concession was granted in the text of the Convention.

Much later it was noticed that large production centres for fur-bearing mammals existed near the landing place. When suspicions were voiced that perhaps the whales were being used to feed the fur-bearers the response was that only the inedible parts were so used. Only since the recent upheavals in Russia has it been more or less freely admitted that all the products had always been fed to the fur-bearers, and that the local people did

not like gray whale meat anyway. The negotiators had been conned but their intentions seemed to have been good, certainly not oppressive.

In subsequent applications of rules governing aboriginal subsistence whaling (the present rules were adopted in 1982, the year the commercial moratorium decision was taken) the word "aboriginal" has been retained but not interpreted literally. Thus "aboriginal subsistence whaling" is permitted in St Vincent and Grenadines by persons who are certainly not "aboriginals"; what matters to the IWC is the "subsistence" element of the term. By ignoring this, Kalland was able to take hold of and shake the wrong end of the stick throughout a half of his paper!

Scientific whaling is the catching of whales under "special permits" as provided in Article 8 of the 1946 convention. The only restraints on this now are that the intention of a state to issue a permit must be made known to the Commission, and through the Commission to its Scientific Committee, for review and comment before any such permit is issued; and a requirement to report scientific results to the Commission. The Commission may adopt resolutions asking the country concerned to modify its plans, take fewer whales, refrain from issuing the permit, at least for a time, and so on, but such resolutions are taken by a simple majority only and are not binding.

The special permit provision was intended to allow the occasional capture of a whale or a few whales of a protected species or outside any catch limit or other restrictions, such as the restrictions on catching calves and lactating females (females accopanied by calves). It has been abused many times, and not only, or first, by the three countries that now or recently have taken large catches under permits - Norway, Iceland and Japan. What must have seemed at the time to be a reasonable requirement was that whales taken should be "processed" and the proceeds dealt with by the issuing government appropriately. This has practically always been interpreted as meaning "disposed of commercially". That this is not a trivial issue is illustrated by the fact that the meat from the 300 or so minke whales killed in the Antarctic by Japan in the 1991/92 season, under special permits, fetched $20,000,000 at first sale. Japanese authorities say that the proceeds do not cover more than about half the costs of the "research" expeditions, but that is hard to believe, given present inflated prices, caused in part by scarcity of the product.[11]

MANAGEMENT OBJECTIVES

Commercial whaling is, for the IWC, any whaling which is neither scientific nor for aboriginal subsistence. The present principles for regulating catches by commercial whaling were established by a resolution adopted in 1974 and incorporated in operational form in 1975, coming into effect in the 1976 whaling season. These are, in summary:

- catch limits are set annually by species on a stock by stock basis;
- catch limits are zero for greatly depleted stocks;
- for stocks considered to be below their potential maximum sustainable yield levels, but not greatly depleted, catches must be such that stocks are permitted to begin to recover to "optimal" levels;

- safety factors to make some allowance for uncertainty are applied to all such limits;
- the more depleted is the stock the more quickly it must be permitted to recover;
- catches from stocks that are not depleted and may be above their presumed optimal levels will nevertheless be limited to the levels permitted for stocks thought to be at optimal levels.

It has been shown, by computer simulation, that ~~stocks~~ regulation by the procedure adopted in 1975, called "the New Management Procedure" (NMP) would cause stocks to be brought to extinction, in the long run, with high probability, even with perfect knowledge. The situation was much worse with the inevitable imperfection of scientific knowledge. But one particular implementation always carried the seed of disaster, as far as the stocks were concerned; this was a Norwegian invention. It was a provision that if the state of the stock was not known, but more or less constant catches had been taken from it for an extended period, and it had shown no obvious decline in that period, then catching should continue at the same level. In addition, for such stocks catch quotas were not set year by year, but as "blocks" covering several years, commonly six.

Minke, fin and sei whaling was "regulated" under this ~~crazy~~ dangerous scheme for nearly a decade. The Scientific Committee interpreted this special rule as meaning that if a statistically significant decline in stock could not be verified, action would be taken as if it was not declining. The data usually displayed lack of significance. But this was mainly because the statistical analyses had little statistical power. Furthermore, Prof D.G.Chapman, of the University of Washington, Seattle, showed that by the time any observed decline could be judged to be statistically significant, a decade or more would have passed, during which the real decline would have accelerated. It was realisation of this fatal weakness in the NMP that helped trigger the vote in favour of a moratorium in 1982.

Despite the evident and now proven flaws in the NMP for commercial whaling, an almost identical set of rules for subsistence whaling was adopted hastily in 1982, without benefit of scientific advice. It differed only in one substantive respect from the NMP: subsistence whalers would be permitted to kill whales from greatly depleted stocks, provided their very existence did not thereby become endangered, and provided these catches were sufficiently small to allow the depleted stock to increase. Thus one "protection level" was established for commercial whaling (on advice of the Scientific Committee this was set at 54% of the original unexploited stock level) while another, lower "protection level" was set for subsistence whaling. This latter, described as "a certain level" in the Schedule of the 1946 Convention, has never been determined by the Scientific

Committee for any species or stock; that is simply not scientifically possible. Instead, subjective judgements have been made about whether or not any particular stock might be above or below such a danger level. Equally, the Committee has never been able to determine what level of subsistence catch would permit stock recovery, so that catch limits have been set rather on "demonstration of subsistence need" than on more objective criteria.

The Commission's intention was good - not to interrupt subsistence operations except under critical conditions where extermination of the stock was likely - which would be a permanent disaster for the subsistence whalers as well as for the whales. But the implementation of that intention was ham-handed, to say the least. It did not, however, impose any special restraints on any subsistence whalers - aboriginals or not - "going commercial", as Kalland wrongly asserts. But any subsistence whalers turning over to commercial whaling would have to abide by the rules governing commercial whaling.

A REVISED MANAGEMENT SCHEME (RMS)

During the period of the moratorium the Commission has been working on revised rules for commercial ~~whaling~~ catching of baleen whales. These have essentially the same objectives as the NMP, but the approach by the scientists is quite different. Instead of trying to determine in advance what is the maximum sustainable yield of any stock, and where is the stock level in relation to the level which should permit that yield - which calls for knowledge which it is now thought does not exist and may never exist - an extremely wide range of possibilities is assumed that would encompass the uncertainties of knowledge. The approach was suggested by Australian scientist William de la Mare, in a seminal paper published by the IWC in 1985. By computer simulation of a wide range of theoretical possibilites a test-bed is provided for rules, called catch limit algorithms, which would lead to the desired state of (a) high cumulative (total) catches over a period of time, chosen as 100 years; (b) a relative high stock level at the end of that time, whatever was the starting level (decided by the Commission, chosing from three options provided by the scientists, to be 72% of the unexploited stock size; and (c) a vanishingly small probability of accidental extermination of any stock, and a low probability that any stock will be accidentally brought below a "protection" threshold, which has been retained at 54% of the unexploited stock size.

By a competitive process, among five groups of scientists, one algorithm has been selected - that devised by Justin Cooke, a British biologist now living in Germany, and usually representing the World Conservation Union (IUCN) in the Scientific Committee. Because Cooke's algorithm, as did the other four, takes biological uncertainty explicitly into

account, the initial catch limits are relatively small - reasonable, but not excessive, caution is built into them. The simulations that led to Cooke's algorithm, like the others, were based not on bigger and better population models, calling for more and more data, but rather on extremely simple models, calling for fewer data than under the NMP. But, essentially, a different kind of data: specifically estimates of stock size, from research sightings, which are properly planned and totally independent of data from whaling operations. The only other kind of data needed are historical catch data.[12]

During the testing of the proposed algorithms it became clear that an unresolved problem could prevent any of them working properly in the real world. This was the difficulty of knowing how many biologically separate populations of a species might be in a region, such as the North Atlantic or Southern Ocean, and how much and how fast they mixed. To meet this difficulty very complex simulation trials were made, with a wide range of hypotheses about such divisions and mixing, and three possible ways of handling the data were devised, all of which would avoid, to a greater or lesser degree, and in most circumstances, the accidental depletion (or extermination, of course) of any sub-populations. A combination of such so-called "multi-stock rules" has now been adopted in principle by the IWC. However, an inevitable consequence of taking this type of uncertainty into account is that initial catch limits are even more conservative, and they have to be allocated to operations by quite small areas - probably 10° longitudinal slices in the Southern Ocean, and up to about twenty-five subdivisions of the North Atlantic.

This is perhaps the clue to the real reason that Norway has announced that it will make its own decisions about the level of commercial whaling it will permit from 1993, under its objection both to the moratorium decision and to the protected status given by the Commission in 1985 to minke whales in the Northeast Atlantic, and also why Iceland has left the IWC. The new rules will give smaller catch limits than those governments have been rather rashly promising their impatient whalers in recent years.

A RMS for other species and for ASW ?

The new rules do establish, if they work as hoped, that future human generations should "inherit" restored stocks of baleen whale resources, as required by the 1946 convention, and that they do so while providing for the highest possible cumulative catches over an extended period. Thus a better balance between the interests of future generations and of present generations of commercial whalers should be assured. At its meeting in 1993 the IWC Scientific Committee begins the process of development of a corresponding set of rules

to govern subsistence whaling. So far it has not received explicit policy guidance from the Commission itself, and until it does will presumably work on the assumption that the undeclared principle - of minimal interruption of subsistence operations - that lay behind the 1982 rules, will be retained.

I foresee some new complications in this. For example, the present subsistence catching of minke whales by Greenlanders in the Davis Strait takes place from what under the old rules was designated on geographical grounds as a "protection stock", ie closed to commercial whaling. In fact no scientists believe that the whales in this "stock" area" really constitute a biologically independent population. New rules will have to make similar assumptions regarding the range of uncertainty about stock sub-divisions, boundaries and movements, as has been done for the new commercial rules - the Revised Management Scheme (RMS). How this will be achieved, while maintaining continuity of any subsistence whaling, is not yet clear.

Allocation problems in areas where both subsistence and commercial whaling was permitted before the moratorium, or two different commercial operations, were, in the North Atlantic, simplified by the extensions of national jurisdictions in the 1980s, and the withdrawal of Norwegian whalers from the waters of Greenland and Iceland, and also Jan Meyen. Potential clashes with the Soviet Union were avoided by the declaration of the Soviet EEZ in the eastern Barents Sea. However, Greenlandic whalers are now being permitted to kill some whales, for subsistence, in what had come to be regarded as the Icelandic baileywick - the Central stock area east of Greenland. No doubt political adjustments will be made in future, under any new rules, if Iceland decides to resume whaling and rejoins the IWC.

The UNCLoS/UNCED principles prescribe that consideration be given to "relationships among species". In the realm of whaling this can mean two different things. One pertains to a theory that when one species of whale is depleted in an area, one or more other species, which eat the same type of food, will increase to take up the "space" previously occupied by the first - usually larger - species and impede its recovery. This theory has led to the rather transparent demand by whalers that they be permitted to deplete minke whales so that they do not impede the recovery of the nearly extinct blue whale in the southern hemisphere. Despite several attempts, and quite plausible arguments, no clear demonstration has been made that such a process occurs in nature, or even that it is biologically very likely. Other species than whales eat the krill that blue and minke whales feed on, and it is unlikely, in evolutionary theory, that the two whale species are

really so thoroughly in competition. But in any case the new catch limit algorithm has been tested under circumstances in which the food resource is assumed to change greatly over time, and the rules are "robust" to such changes, that is they still perform well in accordance with the specified criteria. So even if there is competition between whale species, it should be satisfactory to regulate any catching of either or both of them quite independently.

The second kind of "relationships among species" that may be considered is that between the whales and the organisms they feed on, if the latter are considered by humans to be an exploitable resource. The hypothesis that such relationships are significant in quantitative terms has been increasingly put forward as "reason" for "culling" whales [Similar arguments are being made with respect to seals and other marine predators, of course]. Hysteria about this matter, generated for the purpose of speeding up the resumption of commercial whaling, at high catch level, has recently reached the point at which the Norwegian government has publicly declared minke whales to be "the rats of the sea" which should, it is implied, be exterminated! Although this type of hypothesis might seem quite plausible to non-scientists, there is no evidence at all that killing more whales will increase commercial fish catches or solve any other fisheries problems, many of which arise from the mis-management of the fisheries themselves. If, in future, it were agreed that this type of "relationship among species" must be taken into account in overall regulations, then there would need to be a further development of international regulatory institutions; until then cries that the IWC is "incompetent" because it is not empowered to regulate the fisheries of species on which some whales feed, are entirely premature.

A potentially serious conflict may arise soon in areas where some nations (or some sectors of the population) want to kill whales for profit, and others want to conduct whale tourism, also for profit. For example, minke whales are a subject of "whale watching" in Scotland, and those whales probably belong to the same biological population that Norwegian whalers are killing. It is known that the existence of hunting operations alters the behaviour of whales in the hunted population. In addition the optimal size of a "watched" population may be higher than that of a hunted population. No ways of resolving such conflicts have yet been seriously considered. Suggestions that "whale watching" may be considered as a form of "whaling" and thus within IWC competence, have not been pursued.[13] Nor has the idea that non-whaling nations might claim a share of a a catch quota and then not take it.[14]

Similar considerations apply to different kinds of research on whales. Studies of individuals and families of whales, by identification and repeated observation of surface markings, or DNA samples from biopsy - or even from naturally shed skin - are increasingly common ,concerning more species in more localities. Such research is subject to interference by lethal research, under scientific permits, on the same population, as well as by commercial whaling. No solutions to such conflict have yet been offered - apart from the simplistic one of retaining the moratorium!

IMPLEMENTATION OF A RMP

When the new commercial rules were agreed in principle at the 1992 meeting a number of conditions were made. One of these was that "arrangements [would be made] to ensure that total catches over time are within the limits set under the RMS". This was aimed at preventing the continued abuse of the special permits. Although the Commission has no power to veto or limit the number of permits issued, it could, it is thought, deduct the number of whales caught under permit from future catch limits. Determination that some such "delayed restraint" must be imposed was triggered, I think, by a declaration from Norway that if any commercial catch limit was less than the number it wished to kill for "science" then the permitted catch would be "topped-up" as needed.

Many countries abstained on the vote at the 1992 meeting in Glasgow on the new commercial rules. They did so for mixed reasons. Some did not like the supplementary conditions specified in the resolution, such as for "a fully effective inspection and observation scheme." Others did not think the results of the latest simulation trials had been properly examined (In fact they had not been examined at all by the Scientific Committee, which received them a few minutes before its meeting ended). Yet others have continuing doubts about the safety of the new rules. They have experienced before the confidence of their scientists in their ability to give reliable advice - especially in 1975 when the Scientific Committee declared without any dissent that it was confident that scientific knowledge was adequate for proper implementation of the NMP. This lack of complete confidence in proposals for management "based on scientific findings" (as required by Article v.2.(b) of the 1946 convention) played a part in the sympathy felt by many delegations for a French proposal that the Southern Ocean southward of 40°S latitude, be declared as a whale sanctuary under Article V.1.(b). Several arguments were made in its favour, including some scientific ones. But perhaps the strongest is the feeling that in good management one "does not put all one's eggs in one basket", that a fall-back provision is needed just in case the scientists are, once again, very wrong.[15]

Another reason for hesitation is that experience has shown that even when clear rules exist for setting catch limits, and Scientific Committee provides appropriate advice on this matter, the prescribed rules are often not actually put into effect. The required three-fourths majorities may not be obtained on votes, or the states concerned may register subsequent objections. While the right of states to object to binding decisions under the convention cannot be abrogated, many countries wish to be assured, through appropriate wording in the formal adoption of the RMS, that catch limits prescribed by the new algorithm will in fact normally be honoured.[16]

CONCLUSION

Thus, one major old problem might be resolved, in theory at least - but perhaps at the cost of some countries going whaling on their own: that is the problem of inter-generational equity - long-term conservation and cautious use, incorporating implicitly a "precautionary principle". The approach that has been taken to this is, I think, applicable to other renewable resources, such as fish stocks and some terrestrial wildlife. But little has changed with respect to other types of conflict, some of those are increasing and new ones are appearing. Beyond all that there is a growing perception among large numbers of people, in many lands, that commercial whaling should become a thing of the past, not because of some general concept of "animal rights", nor even because its methods are cruel[17], but because whales have been shown, by biological research to be very special animals, thus reinforcing the image of awe and magic they have carried to coastal-living human for thousands of years before "modern whaling" was invented, in Norway, in the nineteenth century. Whether such a perception should be acted upon, globally, is a question for the discipline of ethics, not of management science or biology. But so, too, is the decision, now a consensus, that conservation is necessary for inter-generational equity, and even perhaps for its own sake. The debate will continue.

Endnotes

1. See, for example, "Bioeconomic Modelling and Fisheries Management" by Colin W. Clark, John Wiley and Sons, 1985, and several papers by the same author. And my own paper, "Mining the Minke", issued 1986 by the International League for the Protection of Cetaceans.

2. This is a remarkable position from a representative of one of the rather few countries that have ratified the UNCLoS, a treaty to the provisions of which no selective reservations can be made.

3. This argument turns on the omission of the 'contested' species from a Table of Nomenclature annexed to the Final Act of the 1946 negotiating conference. No independent international lawyer has agreed with the Danish position that any species not in that multi-lingual table is not a 'whale', but this legal fiction has been seized upon by other states that do not wish the IWC to regulate their hunting of these species, even if they are highly migratory in both legal and biological senses. The particular case for including at least the pilot whales and the other bottlenose whales in IWC's competence, if not other highly migratory cetaceans, rests mainly on the inclusion of these species in a definition of "small-type whaling" which is incorporated in the Schedule to the 1946 Convention; the Schedule is an integral part of the Convention. Several states consider that it was not the intention of the negotiators to exclude any cetaceans from the term 'whale', whether or not they have since been designated as highly migratory. In this connection, is is important to understand that the 1946 convention applies to "all waters in which whales occur", thus including both territorial seas and internal waters.

4.Whether NAMMCO could ever be recognised as an "appropriate" regional body for regulation of capture of these other species in the North Atlantic seems doubtful. It is clear in UNCLoS that all states coastal to a region have a right to membership of any acceptable regional regulatory body, regardless of whether they are actually fishing in the region. (All states that are fishing on the high seas of that region also have that right). Thus all the non-whaling range nations of the North Atlantic - including those coastal to the tropical and sub-tropical breeding grounds of some species - would have the right to join an "appropriate" organization. But the statute of NAMMCO seeks to abridge that right: other states than the founders may only join by consent of the existing members. And, of course, two of

the founding members are also not (yet) 'states'.

5. This is made relatively easy by the fact that IWC proceedings are not fully open. See "The Management of Whaling. With an Appendix on Economies with the Truth", published by IFAW,Crowborough, England, 1992 [The speaker is the senior author of this booklet]

6. 'Factoids' are the fruits of 'economies with the truth' (see the Appendix to 5, above). They have been defined as "inaccurate statements (usually by 'authorities') that are grasped by the media until they have a life of their own"

7. One scientist, who surely knows better (Dr D.S.Butterworth, an "invited participant" in several meetings of the IWC Scientific Committee, and unofficial adviser to the delegations of two whaling countries) has taken the conspiracy theory much further. In an article in the respected scientific weekly, *Nature*, entitled "Science and Sentimentality" (Vol 357:532, 1992) Butterworth claimed that many scientists associated with a number of governments are merely the dupes of their governments which have secret "animal rights" agendas, and that they fulfil this role by "moving goalposts", "obfuscating" and generally behaving unethically. Butterworth's article appeared during the IWC Scientific Committee meeting this year, and his assertions were negated by the decisions the Commission actually took a week later. My detailed answer to Butterworth has been published: "The Debate on Whaling", *Nature*353:9, 1992, 3 September. A member of the Norwegian delegation, Dr Torre Schweder, made similar assertions in a paper to the Committee, alleging that many scientists from non-whaling countries were cheating by "injecting extraneous (and spurious) uncertainties" into the Committee's considerations of a new algorithm for determining commercial catch limits.

8. A related myth has been most succinctly expressed by Professor Milton Freeman, describing himself as an economist, in a recent (3 July) letter to the London *Independent*: "...whaling appears to offer a less environmentally damaging , higher quality source of meat than any meat-producing system yet devised." Granted that pretty well all forms of food production can from one point of view or another be considered to be in some way "environmentally damaging" , I find it difficult to understand on what basis a comparative economic assessment of the kind Freeman asserts can reasonably be made, and especially considering the history of whaling so far. The claim that whale meat is of "higher quality" than all other types of flesh consumed by humans is too absurd to be worthy of

further comment.

9. When the Norwegian Ministries of Fisheries and of Foreign Affairs tried to claim that Norwegian "small-type" whaling was not really commercial, the claim was greeted with hilarity by Norwegian economists and other commentators. Even some of the whalers - one of whom describes himself as the millionaire of the Golden Harpoon! - were not too happy about it because they did not, for their own reasons, want to be identified as "subsistence" operators, comparable with the Inuit subsistence whalers of Alaska. The Government dropped the idea hastily.

The Japanese authorities were cleverer. They convened a working group of, mainly, anthropologists and sociologists, under the leadership of Professor Freeman, members of which visited the whaling ports and duly reported, as intended, that yes, Japanese minke/bottlenose whaling was indeed not really "commercial", but of long tradition, essential to local economies and cultures, full of religious content, and so on ["Small-Type Coastal Whaling in Japan. Report of an International Workshop" by M.M.R.Freeman *et al*, published 1988 by the Boreal Institute for Northern Studies, University of Alberta (of which Freeman was a Senior Research Scholar), with the Japan Social Sciences Association of Canada and the Fund to Promote International Educational Exchange]. However, the Freeman group findings were soon challenged, with good humour, by independent Japanese academics. ["An Investigation of Small-type Whaling in Japan. The past, present and future of Ayukawa", by published 1989 by the Elsa Nature Conservancy, Tsukuba, Japan; and " A Report on an Example of Japan's Small-Scale Coastal Whaling. The Past, Present and Future of Whaling in Abashiri", by Eiji Fujiwara, published 1991 by the Institute of Science and Culture, Tokyo.] Abashiri is a city (pop. 43,000) in Hokkaido, one of the whaling - or ex-whaling - bases visited by the Freeman Workshop members. Fugiwara's careful summary conclusion is: "Even the locals [in Abashiri] have but a very weak sense that [coastal whaling] is a cultural tradition which should be preserved, and there is also little basis to contend that the process by which this whaling came into existence and then disappeared is a cultural tradition. That being the case, it would not seem that whaling constitutes an economic, cultural or traditional foundation that affects the existence of Abashiri City or the every day life of its citizens." It is further concluded that the residual whaling operations are an undesirable and unnecessary source of pollution, affecting inshore fisheries, and the sooner they are completely closed down the better. This accords with other reports about other whaling towns, on Honshu - Ayukawa, Taiji and Wadaura. There, tourism is an important industry, and the whale

processing facilities onshore annoy fastidious visitors, to the detriment of the local economy.

Perhaps a final blow to the thesis of the Freeman Report, which relies heavily on assertions about how old is the minke whaling tradition in these towns, was given by Keiji Nasu, a member of the Japanese delegation to the IWC Scientific Committee, and a government employee. In his report to the 1991 meeting ["Catches of minke whales during the ancient whaling era in Japan, with a note on pre-World War II catches by modern whaling" Reports of IWC, 42:429-31, 1992] he notes that the Freeman Workshop cited a book, *Genkaino Kujira-Tori*, published by the Saga Prefectural Museum in 1980, as the evidence for the prosperity of minke whaling in the early 1930s at Ogawajima. He writes "I have been unable to find reference to this fishery in that book." After interviewing many elderly people in the town, and searching local records there and elsewhere, he concluded "It seems clear that minke whaling did not begin as a full-scale enterprise until after World War II. Clearly, the statement in [the Freeman Report] needs to be re-evaluated." Government claims that small-type whaling was not really commercial, and had a very long history, have since sunk without trace. Official demands for immediate and arbitrary catch quotas, made now it seems with little real enthusiasm, rest entirely on what is said to be the current economic difficulties of the few remaining whalers. They have been encouraged to increase their catches of bottlenose (Baird's beaked) whales, not regulated by IWC and therefore not subject to the moratorium, and are currently complaining that, since each such whale is worth more than $50,000 to them, they should be permitted to go out and kill even more of them!

10. "Aboriginal Subsistence Whaling: A Concept in the Service of Imperialism", by A. Kalland. Published 1992 in a booklet "Bigger than Whales" by High North Alliance, Reine i Lofoten, Norway. This organization, established by Georg Blichfeldt, who describes himself as a journalist, provides a strident lobby for the immediate reumption of unregulated whaling. Its membership and sources of funds are not public knowledge, but its representatives are known for their harrassment tactics with respect to members of delegations from non-whaling states at IWC meetings, and elsewhere.

11. From being a source of cheap animal protein for a Japan short of food immediately after World War II, when large-scale whaling was resumed under the authority and with the encouragement of the US Occupation Forces, baleen whale meat has now become a luxury

item. Fujiwara, in the paper cited in note 9 above, seemed to have some doubts about the importance of cheap whale meat even then, when it was reportedly given to schools and hospitals. He wrote that he had expected to find the item included in the diet of prisoners in the penitentiary which he visited in Abashiri, but could not find it in the prison records.

12. More details will be found in "Guide to Review of the Management of Whaling", by Sidney Holt and Nina Young. Second edition published 1991 by the Center for Marine Conservation, Washington DC.

13. This proposal was made by Sir Peter Scott, by analogy with one of his other interests, bird watching, commonly called "birding".

14. The IWC is not empowered to allocate "shares" of a quota among two or more "users"; in fact it is specifically prohibitted from doing so. Shares have traditionally been negotiated, when necessary, by negotiation among the intending exploiters. Such negotiations are not, of course, conducted on a basis of equity among the negotiators, and political and economic forces of a more general nature are always imposed.

15. I, and some other scientists, have some specific scientific reservations about the adequacy of the the tests of robustness to which the catch limit algorithm has been subject, beyond the general feeling that experience shows that scientists can always be in error and that we should always guard against that possibility.

16. The repeated failures to implement the NMP are documented in "Implementation of a revised Management Procedure for Commercial Whaling", by Sidney Holt and carole carlson. Published by IFAW, 1991.

17. The IWC has, by precedent, established its authority - not explicitly laid down in the convention, to regulate the kinds of whaling methods with respect to their lack of humaneness - including by banning certain ~~such~~ methods outright. This is documented in "Commercial Whaling Humane?", published by IFAW in 1991.