

FISHERIES EXPERTS UNVEILED: DIFFERENT TYPES AND WHEN TO USE THEM

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ABSTRACT

The use and management of fish supplies, fish stocks and those who work in fishing and related businesses needs to be governed by good policies and actions, based as far as possible on good research-based advice and other expert information. Fisheries policy makers and managers work in a milieu that is reasonably endowed with fisheries and related experts. Some researchers and other expert advisors such as lawyers work for and with the managers own agencies, others work in external agencies, such as universities and independent organizations like conservation groups, and even in different sectors or government portfolios. As a policy decision-maker, in government or industry, what is the choice of experts you can draw upon and how do you best make use of this choice? Based on personal experience, this presentation provides a rough guide to the different types of experts you are likely to come across and the types of settings in which each is best used, or not, using examples from some recent fisheries and aquaculture cases, including some controversial fisheries cases.

Keywords: policy advice, researchers, types of experts, fisheries management

INTRODUCTION

I have long held an interest in the research-policy interface. Through experience in Australia at the state and national level, I have been responsible for and have the process of providing scientific advice to government on fisheries, ballast water and other quarantine matters and development assistance, including international agricultural research. In regional and international organizations, I have also been part of the scientific advisory processes. I am a firm believer in the importance of policy research and research to inform policy.

On this Policy Day of IIFET 2006, I have great pleasure building on the excellent keynote address of Professor Schrank yesterday, in which he drew parallels between the work of fisheries scientists and management policy makers and that of macro-economists and national economic policy makers. His presentation showed the different approaches of institutions and individuals, and the challenges of the fisheries uncertainties.

The links between research and policy in fisheries have not been well studied, although policy-research links have received research attention in other sectors. Just last week, the Overseas Development Institute (ODI), a UK policy think-tank, released a Working Paper by Julius Court and Lin Cotterrell called: "What Political and Institutional Context Issues Matter for Bridging Research and Policy?" This paper reviewed the literature and drew on the results of 50 case studies. This review pointed out that research-policy linkages in developing countries were fairly well researched but that little has yet been done on the linkages in developing countries.

This useful study of research-policy links draws on political science, sociology, psychology, anthropology and economics. ODI's review showed that 5 key areas merit attention:

1. *Macro-political context* - here there are great differences among issues, between countries and between developing and developed countries;

2. The *specific policy context* being studied;
3. *Policy implementation process* - noting that implementation is often quite a different stage to policy formulation and may involve quite different parties;
4. The *stage of the policy process* - with special reference to decisive moments. Will expand on this later in the talk; and
5. The *way of thinking* of the policy makers.

My presentation today is a general analysis of how research in fisheries links to the policy and management. I will illustrate some key features of the links with current examples. My presentation tends to be driven from the supply side, i.e., from the perspective of the experts or researchers. I begin by giving you my functional classifications of how research is used and of fisheries experts, a guide to policy makers of where to find the experts and a description of their distinguishing features. I describe how policy makers are most likely to access each of the expert types, how the experts tend to obtain their information and how they communicate their results. I conclude with a guide to when best to use each type and when they are more likely to hinder than help. By taking this meta-view of the experts, I hope to be able to get the policy makers and experts to be more reflective and appreciative of their roles and positions.

While taking full responsibility for what is presented, I acknowledge gratefully fruitful discussions with 12 colleagues during preparations. Jesse Ausubel, Jim Baker, Sara Hickox, Ram Myers, Boris Worm, Hiro Hishashi, Mike Sinclair, Jim Wilen, Rebecca Metzner, John Ward Y. Matsuda, Julita Linjson. In endnotes, I also acknowledge points made in questions and comments in plenary immediately after the presentation and around the coffee breaks during the remainder of IIFET 2006.

TYPES OF EXPERTS AND TYPES OF RESEARCH:

I have decided to adopt essentially an institutional structure for classifying experts as individuals tend to sort themselves out according to the mission, culture, style of work and priority issues of the institute, or they choose to work as independent consultants. Those who are in transition between different types of organizations are often in tension with one of the organizations.

Research can be usefully classified into four types by use.ⁱ These are, research that:

1. *Produces basic knowledge* on which strategic and applied studies draw. For example, fish taxonomy, the fundamentals of biodiversity research, economic market theory, trophic dynamics of ponds, and the sociology of village systems.
2. *Identifies issues* and their implications. For example, scientific studies may assess the status of an exploited stock; social science research may reveal problems in the distribution of benefits from the catch; marine biology may reveal the shift in species composition of an important marine ecosystem; environmental research may reveal unacceptable pollution levels in waters used for aquaculture. A special mix of social conditions is required before the issue may be acted upon.
3. *Helps resolve conflict*. Should this fishery be managed as a single stock or as separate sub-stocks? What is the risk of stock collapse if catches are increased? How will limited entry affect coastal communities? Will larger mesh sizes protect the small fish?
4. *Produces new solutions and options*. Fisheries production has become more productive and efficient with the development of new gears, fishing grounds, vessels and post-harvest technologies. Fisheries social science introduced the concepts of limited entry and individual transferable quotas to developed world fisheries management. Aquaculture production is now

entering a period of technical development including new selectively bred strains of species, new hatchery and husbandry technologies and new feeds.

The types of fisheries experts I identify are:

1. *The Establishment scientists*
 - Where to find them: government research agencies, government fisheries departments, regional fisheries management organizations, FAO
 - Distinguishing features: Conservative, adhere to organizational rules, cautious pronouncements (recall some of the DFO examples Professor Schrank used yesterday), aware of implications for management
2. *The Independents* (These are a heterogeneous group, composed of sub-groups, such as the Iconoclasts and the Conservatives)
 - Where to find them: Universities, NGOs, side events at UN meetings
 - Distinguishing features: creative, usually use data in the custody of the Establishment groups
 - Conservatives: thoughtful and not very visible.
 - Iconoclasts: seeking paradigm shifts, prone to advocacy in preference to research. Group may include some social scientists
3. *The Economists* (Although this is a discipline type, my experience that the fundamental education and worldview of economists is such that they tend to operate in a similar manner regardless of organization home.)
 - Where to find them: government research agencies, universities, development banks, rarely NGOs
 - Distinguishing features: hold common world view on cause of fisheries problems, namely that overfishing is caused by the 'perverse incentive structure of insecure access rights'.
4. *The Technocrats/engineers*
 - Where to find them: university research agencies, universities, company research agencies
 - Distinguishing features: Aquaculture experts, gear technologists, lawyers, etc. Believe that there is a technical fix that will solve problems
5. *Consultants*
 - Where to find them: in consulting companies or as independent operators
 - Distinguishing features: expert and knowledgeable entrepreneurs with primary aim to maximize own benefit
6. *Expert witnesses in legal processes*ⁱⁱ
 - Where to find them: from among any of the above groups.
 - Distinguishing features: will be called on to use their espoused expert position to support the side of the legal case calling them

Box 1: Additional Suggestions in the Questions and Discussions

- *Fishing industry experts:*
 - What, Who: Suggested as an additional type by member of the audience. Additional commented made by Zina Dinesen.
 - Response: Agreed, this category should be definitely added. Such experts may be fishers, non-fisher experts as hired consultants or hired staff of the industry. Fishing industry experts are found in industry organizations and companies. Their expert advice is most valuable in providing a view of the resource and industry status, especially when codified in a policy relevant way, i.e., not necessarily the specific details of, say, a fisher's know-how but a generalized or iconic version of such know-how. From Zina Dinesen: agree and the way fishing expertise is used in the policy making process has to be taken in context, as indeed does any other form of expertise.
- *Consultants:*
 - What, Who: The consultants category needs to be more nuanced. Consulting companies and independent consultants also supply models, tools and methods to the expert processes; consulting companies can influence the directions of policy debates; many people work for NGOs, FAO, etc mainly through the consultancy mode (not on regular staff but may prefer to be if it were possible, or may be keeping flexible in work arrangements). Member of the audience.
 - Response: Agreed.
- *Political specialists:*
 - What, Who: Political specialists should be on the list to allow reform to achieve politically feasible solutions to fisheries challenges. Gert van Santen.
 - Response: Partly agreed. Agree on the essential and usually overlooked importance of the analysis of politically feasible solutions (van Santen 2006). Policy makers and those seeking to influence policy should undertake an analysis of politically feasible solutions. If necessary, they should enlist the expert help of political specialists from their own organizations, e.g., if in government agencies these will be the Establishment experts, or from among the Independent specialists or elsewhere, e.g., consultants.
- *Other Social Scientists:*
 - What, Who: Anthropologists, sociologists should be on the experts list; they are essential for policy formulation, are not used now but should be. Stella Williams.
 - Response: Partly agreed. Agree with the essential and always overlooked importance of the knowledge from the social sciences other than economics. Policy makers should seek out this expertise in their own agencies (the Establishment if in government agencies), from among the Independents, Consultants, etc.
- *Certification Body Expertise:*
 - What, Who: what sort of expertise would certification bodies use and what about expertise in certification itself?
 - Response: I lack experience in the certification process but my guess is that the certification bodies would require a wide range of expertise and fisheries-specific knowledge from stock assessment, socio-economic and environmental expertise to fishing expertise (gear, boats, etc). Certification expertise will likely become more widely available over the years, as more certifications are undertaken and experts move in and out of the actual certification bodies or are called on from their normal organisations to take a role in certification or its challenges. Perhaps the certification experts have some similarities to the 'Expert Witnesses'?

Now let us look at which research roles each of these expert types normally use - this diagram starts to reveal where issues will emerge among the experts and start to make a policy makers' role more complex.

A GUIDE TO USING THE EXPERTS

When do you, as a policy maker, need the experts? The answer should be considered against the different types of policy-making situations.

- a. *Routine policy making* - little research input needed to policy making, e.g. policy makers will already have a formula and simply need to update some incremental details.
- b. *Incremental* – occurs when policies are well established and need small changes. Make use of *ad hoc* processes and standing systems e.g. scientific advisory committees.
- c. *Fundamental and proactive policy changes* - e.g. government wants to implement a new fisheries act. This policy situation will need major expert inputs.
- d. *Emergent policy shift* – this situation also needs major expert inputs. It may be:
 - i. Crisis or new opportunity driven; or
 - ii. Driven by external policy advocacy, e.g., welfare issues over whaling.^{iv}

The fundamental and proactive policy changes (c) and (d), the emergent policy shift, require greatest the inputs and involvement of experts.

Here is a simple framework for assessing how to use each of the types of experts:

- How to access them (where you are most likely to find them)
- Their strengths or when do they help most?
- Their weaknesses or when do they hinder you?
- What communication channels do they prefer to use?
- Where do they get their data/information from? And how do they use it (media, web, etc)?

	Where to find them	Their Distinguishing features
The Establishment	Government research agencies, fisheries departments, FAO, RFMOs e.g. ICES	Cautious, conservative, play by institute rules
The Independents	Universities, NGOs, side events at UN meetings	<u>Iconoclasts</u> : creative, seeking paradigm shifts, advocacy driven <u>Conservatives</u> : creative, constructive, focused
The Economists	Government agencies, universities, development banks, NGOs (occasionally)	Hold common worldview on cause of fisheries problems
The Technocrats	Government labs, universities, corporate research	Aquaculturists, gear technicians, lawyers. Believe in engineering approaches

The Consultants	Consulting companies, independent operators	Use expertise to maximize own benefit
The Expert Witnesses	In any of the above groups	Called to provide credible support for either side of case according to own well known position

If we look at the types of scientific research being done in the main by each type (see the above 4 types), it becomes clearer where the different types of experts start to overlap in their work and where the probability of conflict among the experts starts to arise (note that in the following table, the depth of shading indicates the probability that the expert type uses their effort for this type of research).

	Create knowledge	Identify issues	Resolve conflicts	Create new options
The Establishment				
The Independents				
The Economists				
The Technocrats				
The Consultants				
The Expert Witnesses				



As can be seen from the above table and graphic, the type of scientific research which is a focus for the Establishment experts, the Independents and the Economists is that concerned with resolving conflicts. As my examples will illustrate later, the experts themselves can come into conflict over the issues in question, even when their advice may be fairly much in agreement.

	How to access them
Establishment	Maintain an ongoing relationship within your ministry/department; make sure you are well connected to their research priority setting
Independent	. Iconoclasts may seek you out . Conservatives should be reached and nurtured

Economist	Through your ministry/department, the university; you may need to pay for their work
Technocrat	Ditto
Consultant	Specify the task clearly, manage them well, pay them
Expert witness	Seek out the expert view you want, find the most credible expert available from any of the above types

	Where do they get their data & information?	Preferred and/or main means of communicating results
The Establishment	Generate and quality control the primary fisheries data; Use specialist research journals	Cautiously worded reports; specialist fisheries journals Wary of media with whom their links are carefully controlled by their institutes
The Independents	Use secondary data; produce derived products; may conduct own field programs, especially NGOs	Academic journals – specialist and general Media
The Economists	Generate own primary data	Specialist journals, house reports 1-1 briefing of policy makers
The Technocrats	Generate own data	Specialist journals, 1-1 briefing
The Consultants	Wherever available	1-1 briefing, reports
The Expert Witnesses	Own work and any relevant other source	Court stand

	When can they best help?	When are they most likely to hinder?
The Establishment	Setting TACs, etc in stable situation; reacts to major changes only after considering and on reaching consensus	When too slow to adapt results to new realities; when operating on the margins (Prof. Shrank's presentation, IIFET 2006)
The Independents	When you agree with their position e.g., IUU; when you need to make legal changes; when you have to move the status quo	During policy implementation phase;

The Economists	When a fundamental policy change or an emergent policy shift is required; <u>social</u> based economists relevant for policy implementation phase	When worldview is not appropriate to circumstances – use other social scientists?
The Technocrats	When engineering solutions is needed	When basic policy settings are lacking
The Consultants	When you don't have relevant in-house expertise	When they don't deliver; when they don't understand your needs
The Expert Witnesses	In a court case	When inconsistent or not sufficiently credible

THREE EXAMPLES OF THE EXPERTS IN ACTION

I would like to now illustrate some of the ideas presented through three real cases. These cases have been deliberately chosen to provide examples of the views of different types of experts clashing with each other, contexts where different types of experts work together and one where expert opinion does not seem to be adequately heeded. My three examples are (1) conservation of high seas fisheries, (2) Myers and Worm's paper on the depletion of predatory fisheries species and (3) fisheries assessment in Southeast Asia.

High Seas Fisheries:

A small number of experts and policy makers are grappling with finding a solution to the management of high seas fisheries. The lack of any rights, and therefore responsibilities, over high seas stocks, and the consequent 'open slather' that may ensue, is at the heart of solving the high seas management problems^v, yet, the Economists are nearly invisible. However, the Establishment and the Independents are generally not in conflict on management questions for the high seas. Five publications, and their authorships and sponsorships, illustrate this point.

- FAO's assessment of the status of highly migratory, straddling and other high seas fisheries resources^{vi} (Maguire, et al 2006): written by Establishment scientists and provides an authoritative account of the status of stocks. In apparent frustration at debates over other fisheries, however, the authors provided the following commentary towards the end of the report, Section 9.8 *Science, decision-making and public opinion*:

During the last decade, world fisheries have received increasing media attention carrying a largely negative image of the sector. Considering the poor state of many of the world resources and fisheries, the recurrent economic crises in the sector and the few but notorious stocks collapses, such a negative image is understandable in a global context of growing societal concern for the ecosystem. Because of the tendency of the media and advocates to dramatize the news and events, the public perception is probably worse than the reality. Regardless, public perceptions influence both politicians and the market. Moreover, a negative public image of some fisheries threatens all fisheries, even those which are conducted responsibly. Through the analyses it conducts and publishes and with the support of organized press coverage, the scientific community has actively participated to public awareness-raising, contributing to

the negative trend in public opinion. A growing number of scientists also contribute to advocacy, boosted by the increasing financial and media support from environmental NGOs, enhancing further the public awareness of problems. FAO, as the only global inter-governmental body for fisheries has informed fisheries development and management since the 1960s, ...

The scientific community and FAO have a duty of informing. Divergences between scientists in areas where uncertainty is high are unavoidable and healthy but they must be resolved for decision to proceed. There is growing concern about the real efficiency of peer reviewing in scientific journals, as well as about the connections of some journals with the private sector, the NGOs or the media and about the consequences on objectivity. There is also concern about the relative lack of formal “professionalization” of the function of fisheries expert which, contrary to the rule in medicine, law or engineering professions, are not governed by corporate forms and norms of governance that can assure the policy-makers and the public that the advice they hear comes from experts with certified competence and practical experience.

Ultimately, the public deserves to be able to distinguish members of the discipline giving neutral advice of quality, from those advocating for their client, their sponsors or their own values. Advocates have a societal role to play but the danger is in the confusion of the scientific and advocacy roles.

- UNEP and IUCN’s publication on biodiversity in deep waters and on the high seas:^{vii} This report, by Establishment (UNEP) and IUCN (largely Independent) experts is an example of agreement among expert groups.
- Parks magazine special issue on high seas marine protected areas:^{viii} Views chiefly from Independent experts.
- WWF and Traffic’s Analysis of Regional Fisheries Management Agencies from a conservation viewpoint.^{ix} This analysis, done from a conservation viewpoint, is constructive.
- Australian Department of Agriculture, Fisheries and Forestry, International Transport Workers Federation and WWF International on high seas fishing and flags of convenience.^x These partners would not normally co-sponsor studies except in fields where their views coincided, such as the subject of this publication.

Thus, this set of publications, and others that could be added, show a general sense of harmony over issues of high seas fisheries.

Myers and Worm vs the Establishment scientists

The 2003 publication on the worldwide depletion of predatory fish species (large predators as they became known in the press),^{xi} has become the cause of some quite acrimonious discussion among scientists. In my classification, the two authors would likely be classified as Independent experts. Most of the debate has come from Establishment scientists, although other Independents have also expressed opinion. Some key responses have been:

- Carl Walters - another Independent expert, who was concerned with the scientific validity of the spatial analyses.^{xii}

- A group of Establishment and Independent experts, led by John Sibert, John Hampton and Pierre Kleiber, who commented on the methods of analysis and the interpretation of some of the results and who established a website for sharing views. Various presentations, papers and commentary was posted on this site. The group expressed frustration at not being able to get *Nature*, which published the original Myers and Worm paper, to publish any of their criticism.
- Detailed analysis and commentary of the whole issue by Tom Polachek, an Establishment expert.^{xiii} In his *Marine Policy* paper, Polachek also said:

...it would be unfortunate if the debate sparked by Myers and Worm's paper about the effect of early longline catches distracted from the critical problem of developing and implementing effective management policies for these international tuna and billfish resources.

I would highlight the fact that the original paper was in *Nature*, a high profile general science journal that specifically seeks to publish studies that have bold global extrapolations, and hence which tends to attract those wishing to have a wide impact to a large, including non-specialist audience. The rebuttals, however, were either not published, e.g., placed on websites, or published in the specialist literature, such as *Marine Policy* and the *Canadian Journal of Fisheries and Aquatic Science*. As remarked, scientists wishing to comment on the *Nature* article could not get their contrary views published there. A word on the role of press is also of interest, as the original article received, and its main message continues to receive, considerable press attention. Polachek commented that the *Nature* press release on the paper went beyond the results of the work of the paper and the press release, of course, was not peer reviewed.

As a more general point on the role of the press in expert controversies, Sara Hickox commented that, frequently, the press sees a need to 'balance' the conflicting views equally when it reports both sides - as though there were always 50:50 views in a controversy, even when the issue may have a near complete consensus on one side or the other. This is very important, as many policy makers and the general public will get their information and spin on an issue via the media. To the best of my knowledge, the scientific controversy over the Myers & Worm paper did not get into the media.

A final point to make is that, in this particular controversy, the Establishment experts, who have been responsible for maintaining the basic data on which all sides performed their analyses, also presented valid critiques of how the Independents used the data.^{xiv}

Status of Asian Fisheries

This is a developing country fisheries case that illustrates some of the additional difficulties for fisheries experts - biologists, economists, and others in these countries. I will start the description with the end of the cooperative study by 8 Asian countries, funded by the Asian Development Bank and led by the WorldFish Center, which showed the '*alarming decline in coastal fisheries resources throughout the region*'.^{xv} Partly on the basis of this comprehensive work and all the preceding studies whose shoulders on which it stood, I asked the following question: Is fisheries science somehow to blame for the state of Asian fisheries?^{xvi}

Has fisheries science not been providing the right advice to the resource managers and users? My answer was 'no', followed by a caution, however, that fisheries science will have to change itself in the future if fisheries are to have a sustainable future.

Why is fisheries science not to blame?

For a start, the fisheries scientists have very sparse data with which to work, and even where these data are more comprehensive, such as in India, too few analyses have been done. The most important and unbiased information on the state of fisheries resources should come from fishery-independent surveys. These were particularly rare, given the costs of doing them. In addition, the collection of data by logbooks from commercial and small scale operators is not feasible in the same way as in the highly regulated and large scale industrial fisheries of Japan, Europe, the United States of America and Australia.

Next, the fisheries management institutions of the Asian countries are not yet set up to control the amount of fishing effort on the resources, but are rather set up to help develop the industry. Throughout the 1990s, as the realization grew that central management alone would not work, the countries began to experiment with decentralized management regimes and power sharing through co-management, with the Philippines and Bangladesh standing out as the leaders in beginning this experimentation. Fisheries rights regimes are not developed to cope with the increases in fishing. License control is loose in most countries and many fisheries still act like open access commons.

The countries still lack formal institutional mechanisms for seeking and providing clear scientific advice to the managers in the fisheries departments. Thus, scientific advice and information on the state of fisheries are given in an ad hoc fashion and may not be called for at all if they are likely to lead to difficult political situations. Non governmental environmental organizations and regional and international research agencies operating in Asia (e.g., SEAFDEC, WorldFish Center) have been more likely to be talking publicly about the state of the fisheries than the national research agencies which hold the available information. None of the data used in the 8 country-study^{xvii} were new. Yet, when discussed recently at the Asia Pacific Fisheries Commission meeting in Thailand in 2004, the report raised awareness as though the results were new. This suggests that the intermediate products, such as national reports, were not well enough known. Thus fisheries scientists and science agencies have been working in an institutional vacuum that lacks formal means for their research results to be communicated to fisheries management. The fishing industry in the region also seems to be working in a vacuum, as this recent article in a Malaysia newspaper shows!

Coupled to the lack of basic fisheries information and the lack of institutions to interface the scientific advice with the fisheries management needs has been the extraordinarily rapid pace of fisheries development. The threefold increase in the number of Asian fishers from 1970 to 2000 only tells part of the story of the growth of fishing because each of those fishers has been fishing with gear of increasing power – such as replacing hand hauling with electric winches, a great increase in trawling and trawler fishing power and boat engines that take fishers further, faster. Growing demand for fish has also placed enormous pressures on the fishers to fish harder and on the environment to sustain the fisheries resource.

Therefore, Asian fisheries experts often lack sufficient information on the fisheries resources, formally recognized conduits for providing scientific advice to fisheries managers, and are faced with very rapid economic development. They need to work with the policy makers to find a way to help make the future of fisheries better and more sustainable, or risk losing their reason for being.

To further illustrate the fact that the news on the present status of Asian fisheries is not well understood, here is an extract from **The Star** newspaper, Malaysia, from the Business section on Monday July 3, 2006.

A step forward for Oilcorp in fisheries by Jagdev Singh Sidhu and Shiling Woon

Moving from oil and gas to fishing may seem a step backward for some, but for Oilcorp Bhd, the latter seems to hold more promise than what many people believe....

"The ocean is big and there is fish everywhere. When we get into the second phase (of the fishing project), there is no limit as to how far we can grow," said Oilcorp managing director Sunny Ng H.T. told StarBiz last week.

"For deep-sea fishing, we don't need a year or two (for the project to take off). We can do it fast and we are moving fast already."

Although these three cases do not illustrate cross-disciplinary conflicts among the experts, I am aware that there are controversies between biologists, economists and other social scientists, e.g., (as Jim Wilen pointed out to me) when prominent biologists will not recognize publicly the perverse incentives/property rights core issues; and cases where economists disagree among themselves on some of the ways forward, e.g, input vs output controls, capacity reduction priority and processes. When experts fight each other across discipline boundaries, they create confusion that leaves policy makers without a framework for decisions. Economists expressed themselves wary of pronouncing what ought to be done and, rather, preferred to say what would happen if a particular policy were adopted.

CONCLUSIONS

My conclusion on this short review is that fisheries experts come in different types, based largely on their institution or discipline base. I have classified them into 6 types.

- The first is the Establishment type – if you are a policy maker, cultivate them and allow them to tell it like it really is.
- The second is the Independent - listen to them, calibrate their advice against that of the Establishment types and then make up your own mind on which way to go.
- The third type is the Economist - these are particularly useful when making major policy shifts and should be used more in fisheries.
- The fourth type is the Technocrat - when you know your policy direction, give them the resources to help create a better future.
- The fifth type is the Consultant - use them when and how you need them and manage them well.
- The sixth type is the Expert Witness - use them when you find yourself in the court.

For the fisheries experts in this room, I hope this rough guide may help you understand your own opportunities to make a difference. Fisheries management needs all the expert types. We have to respect the differences among types and the different types should respect each other - we are all specialist in something - and acknowledge the limits of our capabilities.

APPENDIX:

Additional Comments

1. Question from the floor: Does the first person going public get more attention in an issue?
 - Response: Often hard to say who was first; those who put out their work in a media-savvy way are those who usually get the greatest attention. Two examples: (1) in the case of Myers and Worm's work, similar results have been presented for years but not so widely publicized through the regional fisheries management organizations for tuna; (2) In 1994, WWF and other conservation groups gained global attention for the story on the world-wide overexploitation of fisheries, but this succeeded the 1992 FAO pronouncements on state of world fisheries on which their publicity was based.
5. Tabriz: Need to stress the importance of power relations in any expert advisory or other setting, plus the importance of understanding these relations (need for political science).
 - Response: Totally agree. This presentation did not address many dimensions of the sociology of the setting in which advice is given. A related matter that has also been omitted here is the question of the likely motivations of experts and policy makers. All these elements are critical to how the expert advisory process plays out
6. R. Arnason:
 - a. Among the experts, who really has the correct answer, the truth?
 - b. The problems with governments (and their policy makers) were not addressed in the talk - suggest say something like: "Assuming the system exists and works OK..."
 - i. Critics of governments: see Buchanan, Tulloch et al (US free marketers) - no controls on government, no invisible hand for government
 - ii. Vast differences between developing and developed country systems and capacities.
9. Gert van Santen: e-mail 8 August 2005: "Your analysis of the various players in the fisheries scene was spot-on, although your mild and benign assessment of their roles in development may have been too kind to some of them."

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ENDNOTES

ⁱ The four uses of research are described in Williams, Meryl J. 1996. *The transition in the contribution of living aquatic resources to food security*. International Food Policy Research Institute: Food Agriculture and the

Environment Discussion Paper No 13 (April 1996), 41pp. (An edited version of this paper also appeared in the special 10th Anniversary publication of the Asian Fisheries Society.)

ⁱⁱ I am indebted to Jim Baker for suggesting this group.

ⁱⁱⁱ The structure is based on that of Court and Cotterrell 2006, and my own experiences.

^{iv} Jim Baker made the comment that, in some management situations, confrontational experts, e.g., in NGOs, can be very important to take an issue important, even via the courts. When laws need to be changed, for example, policy makers may not take the extra step to do so when surrounded by consensus biased groups. Confrontation, even of a legal kind, creates the space and stimulus to make the change.

^v Williams, Meryl J. 2005. Are High Seas and International Marine Fisheries the Ultimate Sustainable Management Challenge? *Journal of International Affairs*, Fall/Winter 2005, vol. 59, no. 1, 221-234.

^{vi} Maguire, Jean-Jacques, Michael Sissenwine, Jorge Csirke, Richard Grainger and Serge Garcia 2006. The state of world highly migratory, straddling and other high seas fishery resources and associated species. FAO Technical Paper 295, Rome, 69 pp.

^{vii} UNEP (2006). Ecosystems and Biodiversity in Deep Waters and High Seas. UNEP Regional Seas Reports and Studies No. 178. UNEP/ IUCN, Switzerland 2006, 58 pp.

^{viii} World Commission on Protected Areas 2006. Parks. Volume 15 No. 3 High Seas Marine Protected Areas. IUCN, Switzerland, 70 pp.

^{ix} Willock, A. and Lack, M. (2006). Follow the leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and TRAFFIC International, 56 pp.

^x Gianni, M. and Simpson, W. (2005). The Changing Nature of High Seas Fishing: how flags of convenience provide cover for illegal, unreported and unregulated fishing. Australian Department of Agriculture, Fisheries and Forestry, International Transport Workers' Federation, and WWF International, 84 pp.

^{xi} Myers RA, Worm B. Rapid worldwide depletion of predatory fish communities. *Nature* 2003;423:280–3.

^{xii} Walters C. Folly and fantasy in the analysis of spatial catch rate data. *Canadian Journal of Fisheries and Aquatic Science* 2003;60:1433–6.

^{xiii} Polacheck, Tom 2006. Tuna longline catch rates in the Indian Ocean: Did industrial fishing result in a 90% rapid decline in the abundance of large predatory species? *Marine Policy* 30 (2006) 470–482.

^{xiv} Polachek 2006.

^{xv} Silvestre, G.T., L.R. Garces, I. Stobutzki, M. Ahmed, R.A.V. Santos, C.Z. Luna and W. Zhou. 2003b. South and South-East Asian coastal fisheries: Their status and directions for improved management: conference synopsis and recommendations, p. 1 - 40. In G. Silvestre, L. Garces, I. Stobutzki, M. Ahmed, R.A. Valmonte-Santos, C. Luna, L. Lachica-Aliño, P. Munro, V. Christensen and D. Pauly (eds.) *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*. WorldFish Center Conference Proceedings 67, 1 120 p.

^{xvi} Williams, Meryl J. 2004. How to Make a Difference: Fisheries Research for Impact in Asia. Keynote Address, 7th Asian Fisheries Forum, 30 November – 3 December, 2004, Penang, 19 pp.

^{xvii} Silvestre et al 2003.