

TREES AND WATER: MAINSTREAMING ENVIRONMENT IN THE GRADUATE POLICY ANALYSIS CURRICULUM

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Abstract

In tightly-woven graduate policy programs, the curriculum unfortunately does not leave much space for teachers and the now-broader range of concerned students to explore and develop an appreciation and the skills required for the practice of environmental policy. In this paper, we describe and evaluate the design of a project embedded within a core policy analysis course which allows a broader student audience to engage with environmental policy without a corresponding cost in terms of reducing curricular space for general policy analysis skills. We think that a win-win arrangement is attainable: a fairly intense immersion in key environment policy themes, made possible by the very nature of environment which renders it a more accessible and familiar policy area to students than most others; and a correspondingly more vivid, realistic and integrated treatment of general policy analysis themes—about debates over facts and values, rights and responsibilities, focus and feasibility—than through the normal more generalized course design.

1. Searching for a win-win design: more policy analysis theory *and* more environment content

The advent of climate change as an increasingly likely potential calamity has propelled environmental policy into the mainstream of core global policy concerns. There is now a more broadly shared interest in environmental policy, for in the absence of feasible technical solutions climate change requires us to reflect on basic questions of production and consumption. In recognizing the more systemic roots of climate change issues, which require natural and social scientists, engineers, economists, and philosophers, amongst others, to work together, a trans-disciplinary space for inquiry and action has emerged. The outcomes of these debates, as well as the processes they will use and the fora in which they will be conducted, concern us fundamentally as policy scientists, in both our positive and normative analyses and engagements. We are required to understand emerging trends, and we are also required to train future actors in these arenas.

Unfortunately, in tightly-woven graduate policy programs, the curriculum does not leave much space for teachers and the now-broader range of concerned students to explore and develop an appreciation and the skills required for the practice of environmental policy. Students are expected to develop knowledge of and basic skills in general themes about policy processes and trends, and later to specialize in one or at most two focal areas of policy interest, which only in a minority of cases include environmental policy. This

reduces the opportunity to impart environmentally-relevant policy knowledge to a larger audience. Our own institute used to provide an end-of-program six-week full-time ‘synthesizing exercise’ for Masters students, to expose them more intensively to the interface of theory and reality, but this was displaced eventually due to the need for purposes of academic accreditation to use that space to ensure appropriate depth in all students’ dissertation work.

In this paper, we describe and evaluate the design of a project embedded within a core policy analysis course which allows a broader student audience to engage with environmental policy without a corresponding cost in terms of reducing curricular space for general policy analysis skills. We think that a win-win arrangement is attainable: a fairly intense immersion in key environment policy themes, made possible by the very nature of environment which renders it a more accessible and familiar policy area to students than most others; and a correspondingly more vivid, realistic and integrated treatment of general policy analysis themes—about debates over facts and values, rights and responsibilities, focus and feasibility—than through the normal more generalized course design. The first half of the paper describes in detail the considerations behind the course design, including the large-scale environmental policy analysis project, in comparison to our previous approach. The second half then presents our experiences with the redesigned course, in terms of course management and dynamics, and levels of student achievement and fulfilment of learning objectives.

2. An Environmental Policy Analysis Project as an ongoing strand within a course on Policy Analysis

Course objectives and structure

Our course, *Policy Analysis and Design*, is the second-semester core course in a Public Policy and Management (PPM) specialization within the Institute of Social Studies’ Master of Arts in Development Studies curriculum.¹ Its stated objectives are to make students “more thoughtful, effective, and equitable participants in policy analysis, especially in prospective prescriptive analysis (the making of choices about action),” through imparting teaching in (a) the understanding of policy theories, concepts, tools and techniques, (b) skills in their use and (c) awareness of value aspects in policy analysis. It builds upon a first semester course, *Policy Processes in Context*, in which students are introduced to the history of the field of public policy analysis, its main concepts and diverse perspectives through which the field is approached and constructed. Students who have not taken the latter course may register for *Policy Analysis and Design* subject to the instructor’s permission. These students take a two-session remedial tutorial on some classic introductory readings on public policy.

Policy Analysis and Design is a standard-length course, which in our system represents about 35 hours of classroom teaching and tutorial time and a target of about 200 hours of

¹ The International Institute of Social Studies in The Hague is a graduate school founded in 1952, oriented to an international clientele drawn relatively proportionately from around the world (www.iss.nl). It is now part of Erasmus University Rotterdam. Most of our students enter with between two and fifteen years of work experience.

student input in all, spread over 12 weeks, for an average student to obtain an average mark. This figure of 200 hours includes also the time for reading and project and exam preparation. In terms of content, the course is divided into three blocks.

The first block, *Standard Analytic Approaches*, deals with policy analysis from economics and systems analysis perspectives. The topics are representative of different important strands in policy analysis and public management: the ‘logical framework approach’ (known also under the labels of objectives-oriented management and results-based management), which follows systems analysis approaches, usually within a top-down management perspective; cost-benefit analysis, which represents and slightly adjusts market-based economic thinking; cost-effectiveness analysis, which is at the intersection of the two previously mentioned strands; and multi-criteria analysis, which here represents a move towards a more debate-oriented, participatory approach and brings in a wider range of value criteria. We cover the principles underlying these methods, their rationales and contributions, and their limitations and potential biases (Gasper 2006).

The second block, *Policy and Policymaking as Political Argumentation*, addresses the use of language and arguments in policy making, including the typical elements of policy arguments and systems of arguments, and how to construct, test and present them more effectively (Fischer and Forester, 1993; Apthorpe and Gasper, 1996; Dunn, 2008). It helps students to probe the meaning of key terms used (such as ‘efficiency’ and ‘effectiveness’; Gasper, 2004, Ch.3) and how to critically investigate, evaluate and construct a policy argument. It gives particular attention to drawing out and reflecting on the assumptions about values (including values about outcomes and values about processes, and how value conflicts are handled), and the assumptions about policy instruments.

The third block, *Exploratory Approaches in Policy Design and Assessment*, looks at some further skills of general relevance in policy analysis, notably: (a) how to analyze and assess a policy position as not only a system of arguments but also as involving the use of particular mental frameworks, images, and packages of assumptions, which typically reflect the worldview of particular ‘interpretive communities’; and (b) how to contribute to build alternative frameworks, arguments, options and scenarios, and to understand and participate in inter-, not only intra-, community deliberations. So the block includes attention to both exploratory cognitive techniques and the social processes of discussion and decision-making which can contribute to group (re-)formation and re-thinking (White, 1990). To develop these skills, students are introduced to themes of ‘framing’ and ‘re-framing’, and more generally to how to try to generate new arguments, options and scenarios, rather than automatically and without adequate thought adopt standard assumptions and perspectives. Approaches covered in this block include SWOT analysis, appreciative inquiry (Cooperrider & Avital, 2004; Avital et al. 2008), human-rights based approaches in policy analysis (e.g., Gready & Ensor, 2005), creative thinking and ‘Parallel Thinking’ (including the ‘Six Hats’ technique; e.g., de Bono 1995; Dudgeon 2001), and scenarios thinking (e.g., special issue of *Development*, 47(4), December 2004;).

Our traditional teaching methods

Earlier versions of this course always included group-based case study and workshop exercises in which students were provided with one or a few relatively short readings on each of a series of policy issues, ranging from privatization policy to national parks protection to policy on permitting or promoting casino gambling, which they were required to analyze and present to the class. The objective was for students to explore policy processes in terms of the range of stakeholders involved and their political views, the technical and financial constraints on potential solutions, and the limits of comprehensive rational planning and policymaking. These exercises would increase in intensity through the course, and each exercise would cover a completely different policy issue.

As activity-based learning exercises, these case studies and workshops supported several of our course's learning objectives aimed at building core intellectual skills: (a) the skill to find, integrate and analyze facts while exercising good judgment in the process, (b) the skill to work collaboratively, (c) the skill to reason, debate and defend positions, and (d) the skill to respond to problems given incomplete information and uncertainty.

However, none of these four objectives was fully realized, due to the limited scope of each of the exercises. The achievement of the first objective, related to skills-development in finding, integrating and analyzing facts, was limited due to the exercise being restricted to the analysis of only a few given texts. Time constraints did not permit us to assign students tasks that would require them to do independent research and incorporate their findings into their analyses. The third skill was realized also only to a limited extent because although there was a space typically of about 10 minutes after the student presentations to discuss and critique their material, this space was used more for feedback rather than for students to actively debate and defend their positions and conclusions. Further, given the limited number of texts involved as the basis for the presentation, students did not engage much with issues of incomplete information and uncertainty. Instead, a boundary was effectively drawn around the given material, and incomplete information and uncertainty was relegated to *ceteris paribus* status.

Moreover, given that students felt no ownership over the texts on which the exercise was based also meant that they did not engage fully with the content.

With regard to the second objective, although the students were divided into groups and required to prepare the presentation as a team, the limited scope and the fact that only a group grade was awarded (or that some exercises were purely for learning purposes, not also for assessment) meant that some students could free ride without much resistance from the other students, whose main aim was to get through the exercise as quickly and as well as possible. This limited the effective collaboration and team work to the conscientious students. The benefits of "forcing" effective participation from potential free-riders in a group were perceived by the more conscientious students as much less than the costs of confronting them.

Our redesigned methods for teaching and learning – 1. the environmental policy course project

Keeping in mind these limitations we redesigned this core course in 2009 by introducing a student-directed policy analysis project (PAP) to run throughout the term. Two topics were selected, and each student was assigned to a group to work on one of the topics. The intention was to replace the discrete and limited case study and workshop activities with a comprehensive activity which would run over the course of the semester. This activity would present the students with a broadly-defined policy issue and require them to generate the arguments needed and information required to support their argued responses.

We expected 25 to 30 students to enroll in the course and decided that four groups would be the maximum that we could reasonably accommodate into the course schedule, given the need for intensive tutoring and feedback. Eventually, 32 students enrolled and we made four groups of eight, with two groups per topic. Initially, we feared that this could give unwieldy groups, but in the end this was not a problem.

When we began brainstorming about potential policy issues which could serve as the topics for these exercises, we were concerned whether students would be able to make reasonably detailed policy analyses for a topic to which they had not previously been exposed in anything more than a superficial manner. Surely it would require a substantial investment of time to develop an understanding of the literature that underpins any important and complex policy issue? Given what we expected our students to deliver (which we describe later), we concluded that the issues selected would have to be in some sense popular, that is, issues to which students would naturally and repeatedly have been exposed over a considerable period. This would reduce the need for us to spend time familiarizing the students with the basic issues and importance of the topic. We were also concerned whether some students would resent having to invest a considerable amount of time focusing on a policy problem, e.g., housing, social security, or privatization, which was outside their main and immediate academic and professional interests.

We decided that environmental issues satisfy the criteria of popularity and prior general exposure. First, environmental issues have long figured prominently and in detail in general news coverage, which means that the students enter the course with a basic familiarity with the intellectual terrain. Second, nearly all students seem to have a natural affinity for the issues, inasmuch as the theme is broad enough to include a wide variety of intellectual and analytical approaches, ranging through the natural sciences to the social sciences and indeed the humanities. Finally, these are themes which are in the general community interest domain and whose decision dynamics are not restricted to narrowly-defined epistemic communities. This means that a variety of policymaking approaches are relevant in their study.

We chose two topics within the broad field of environmental and resource issues, in order to expose students to not just one topic, while at the same time allowing a degree of competition and critical feedback between paired teams. For each topic two of the student

groups were assigned. The first theme, which we will call “Trees”, asked students to develop advice for policymakers on balancing forest protection and economic growth. The students were given the following scenario: They are in a mid-sized developing country with a substantial forest endowment. (The students were told that this could be any country of their choice, but that they needed to focus on generic policy issues rather than on country specific facts and figures. In the end, one of the groups chose Peru and one chose Nepal, which we found to be apt.) Thus far the governments of their countries have pursued an environmental policy that prioritized economic growth over forest protection. The national environment policy is now being debated in the legislature and the wider polity, and the concerned policymakers want independent analyses of the fundamental trade-offs involved and the short and long-term consequences of prioritizing forest protection over economic growth. One of the groups of students was told to argue for better protection and the other was instructed to argue for accelerated economic growth.

The second theme, which we call “Water”, asked students to advise the government in a large city in a developing country on how to meet its population’s need for water and sanitation services, and also reduce environmental pollution through the construction of wastewater treatment facilities. The scenario they were provided was as follows: The chief executive of the state needs a large amount of financing to increase the capacity of the state water agency (SWA) to extend water and sewerage service to the growing population of the city but the government is fiscally constrained and multilateral aid agencies have stated that they are unwilling to provide funding unless the chief executive agrees to a privatization program. As with the previous groups, the Water groups were able to choose any city but they both settled on thinking in terms of a generic developing country city as the basis for their project.

Our redesigned methods for teaching and learning – II: the sequence of activities

Over the course of the semester, the students were required to prepare a Policy Analysis Report. The target length of the report was between 50 and 80 pages and it consisted of three parts, corresponding to the three blocks of the course. These three parts were built up through three assignments, each due at the end of the corresponding block. Each assignment required, for each group, a 30-minute classroom presentation to accompany a draft written report. After a week to incorporate feedback received during their presentation, the completed written report was due, to obtain more detailed feedback from the instructors (rather than to obtain a grade).

The first assignment covered the methods introduced in Block I and required students to prepare an analysis of the problem situation using the logical framework approach: thus including a stakeholder analysis, problem-tree analysis, alternatives analysis, and tentative solution-tree(s) analysis; and a set of criteria with which the policy alternatives could be evaluated using a multi-criteria decision approach. Our teaching objectives were to enable students to undertake comprehensive analyses of policy problems, using tools such as Problem Trees, to determine, classify and analyze the various interest groups through stakeholder analysis, and to create a policy evaluation framework using multi-

criteria analysis. The unstated objective was for students to realize how complex policy problems and solutions become as we probe them in greater depth.

In order to accelerate the process of problem analysis, one of the instructors and the teaching assistant had prepared a bibliography of about sixty relevant articles for each of the two themes. Endnote files including the articles' abstracts were provided to the students and they were instructed to divide the articles amongst the group and to first scan them for content and relevance. This stage was, as we had expected, the most stressful for the groups as they had to quickly absorb the material and develop their initial problem trees. There was an initial shock when the volume of references was first presented to the groups as each member felt s/he had to read each article, but this dissipated after it was explained that dividing the readings amongst themselves would result in an individual load of less than ten articles each.

The second assignment was due at the end of Block II and it required students to prepare two types of policy argument structure, for each of at least two policy positions. One structure is an adjusted version of the well-known Toulmin format for describing argument structure (Toulmin 1958), which is applied to policy arguments in for example William Dunn's standard textbook (1981, 2008) and by many other authors. The format has several attractions: it encourages digging out underlying assumptions and identification of possible counterarguments and qualifications. Toulmin's own diagrammatic format is however very prone to misuse by non-expert users, and a tabular format prepared by R.V. George proves more workable and reliable (Gasper and George, 1998). Diagram 1 shows that format applied repeatedly, to describe a whole set of arguments that have interconnections. This layout, whether with one or multiple rows, is called a synthesis table (Gasper, 2000).

Diagram 1: Synthesis table for presenting the structure of an argued position

<i>I Claim [this conclusion],</i>	<i>given this Data (empirical facts)</i>	<i>and this Principle (or principles = theoretical and/or value statements);</i>	<i>Unless (/except when) one or more of these counter-arguments applies</i>
Conclusion 1	Data 1.1, (1.2, ...)	Principle 1.1, (1.2, ...)	Rebuttal 1.1, (1.2, 1.3, ...)
Conclusion 2	Data 2.1, (2.2, ...)	Principle 2.1, (2.2, ...) (e.g. including Conclusion 1)	Rebuttal 2.1, (2.2, 2.3, ...)
.....
Destination conclusion	Data D.1, (D.2, ...) (e.g., including Conclusion C from a previous row)	Principle D.1, (D.2, ...) (e.g., including Conclusions A, B from earlier rows)	Rebuttal D.1, (D.2, D.3, ...)

The Toulmin-George format applies to any argument or system of arguments. It gives no policy specifics to guide people's thoughts, and its role instead is to guide people to think in a context-specific way about the case concerned. It is complemented by the second format, which is entirely constituted of policy specifics.

The other format derives from Ralph Hambrick's identification of the types of proposition that he found in a large set of U.S. policy documents (Hambrick 1974). Gasper (1996) arranged these ten or so types into a series of three stages that show the imputable structure of a typical policy argument.

- Its first stage contains the cause-effect story contained in a policy proposal. 'Causal propositions' present the central line of proposed connections; 'grounding propositions' concern the intellectual background for the causal propositions; and 'instrumental propositions' connect this central proposed line(s) of change in society to specific actions using policy instruments that can—it is claimed—initiate and complement the change. The result is an if-then proposition concerning the predicted effects from a specified set of policy actions.
- The second stage contains 'normative propositions' that proffer the normative justification for such a policy initiative, in terms of the quality of both the processes and the outputs. It attempts to convert the if-then proposition to a means-ends proposition in which both the means and the ends have been validated as sufficiently justified.
- The third stage involves testing the means-ends proposition in a variety of ways; 'constraints propositions' consider the availability of the required resources and approvals, of many types; 'time-place propositions' deal with whether the case-specifics support or subvert the general story or rationale which has been proffered to motivate the policy initiative; 'external impact propositions' concern the unintended effects, notably on other groups, both desirable and undesirable; and 'comparative propositions' concern the relative attractiveness of this policy proposal compared to alternative possible actions.

Used as a design tool, not merely as a tool to describe an existing position, the stage of tests will typically identify gaps and weaknesses that require at least modification of the set of instrumental propositions, to try to include measures that cope with the actual constraints, substantially reduce the undesirable external impacts and maximise the desirable and reinforcing external impacts, and overall try to increase the coherence of the proposal.

These two complementary formats provide both 'Trees' and 'Water' in argumentation, figuratively speaking. The Hambrick format provides a policy-relevant structure that helps focus students' thoughts, and the Toulmin-George format then nourishes this structure by directing attention to counterarguments and giving more space for the specifics of the situation and the disputes in question. And conversely, the Toulmin-George format is often used by students to in effect establish the core 'causal proposition' that they will then take up in a narrative format, that grounds the proposition both positively and normatively, elaborates it by identifying accessible feasible policy instruments that can activate that proposed causal chain, and tests it in diverse ways, through the successive stages of the Hambrick format.

The draft final assignment was due on the last day of class. In this exercise students were required to present their final policy analysis and their proposals. The Trees groups presented first, for 30 minutes each, and then the two Trees groups sat across from each other and each group asked three questions, challenging the other group on its analysis

and policy recommendations. After the groups finished challenging each other, they fielded questions from the rest of the class and from the lecturers. The Water groups presented next and followed the same format. At the end of the exercise, the Trees groups voted for the most convincing Water group presentation and vice-versa.

In earlier years, the group exercises would account for 15 percent of the students' final grade. Given the scale and intensity of the project work in the new course design, the PAP accounted for 50 percent of the students' final grade, including 35 percent for an individually attributable contribution and 15 percent for the overall group performance. (Students also write a closed-book examination on the theories and approaches covered in the course, for the other 50 percent of the grade.) We required students to divide the written submissions between them and clearly identify which students took responsibility for which sections. This helped to control for free-riding and to mobilise high input leading to deeper learning.

3. Student Performance

In this section, we explore how the students performed in each of the three assignments, and the problems that students faced and how these were dealt with. We also present our observations of group dynamics. Besides what was reported to us by the students, we have drawn on the observations of the course teaching assistant, who was available on a 50% basis and was regularly called on by groups and individuals for guidance and feedback. We will later link these observations on group dynamics and on performance to the learning objectives defined for the course as well as to the objective of developing knowledge about environmental issues.

3.1. Process and Dynamics

We found that much of our feedback and comments to students during the stages of workshop preparation and evaluation was similar to that which we have traditionally provided to them on essays, on issues regarding clarity of problem definition, writing style, and analysis. However we expected that this year we could encounter significant new tensions and group dynamics related to the course project.

Some tensions did surface at various stages of the exercise. First, on the whole the students found the first assignment to be the most stressful. This resulted primarily from being unfamiliar yet with the contours of the policy issue, unclear about what the lecturers were looking for, and uncertain about how to divide tasks and work in a group. Second, during the initial stages, a few students tended to dominate and set the direction of the groups' argumentation structures, not always in a sensible direction. This was corrected through tutorial sessions in which the instructors encouraged each student to contribute to the discussions. There was some element of free-riding, but all indications point to it being considerably reduced in comparison to the group work exercises in previous years. Although we did note an imbalance in the output of individual students, it appeared that some students dominated the process because of their enthusiasm and initiative rather than because of deliberate free riding by others. Every student

contributed substantially, both in at least some stages of the public discussions in tutorials and workshops and in their ‘signed’ individual written contributions. However, whether the aggregate balance for the course as a whole shifted away from free riding and towards universal contribution is yet unclear, given the elimination of the individual essay in order to make space for the intensified project work. Third, we left the student groups to themselves progressively specify additional context parameters, beyond those given at the outset, if and when it was felt necessary to do so. They were welcome to consult with us, but we wanted them to feel co-owners of the exercise and to think about what types of information they needed. The co-responsibility for defining the exercise brought some tensions, but these faded.

Besides tensions there was impressive involvement. Sometimes students got carried away in the role playing and claimed to have done certain kinds of analysis when clearly they had not. For example, in discussing multi-criteria analysis, one of the Water groups claimed that they “organized a focus group discussion where key local government officials (decision-makers) were asked to give their opinions about the importance of each of the above criteria.” Exaggerated claims without any supporting evidence was another problem that surfaced repeatedly. Partly we attribute this to the competitive angle, and partly to poor argumentative skills or maturity; but it was also a sign of enthusiasm.

Overall, we drew the following possible lessons. For the students, we advised them to treat the intra-group tensions as part of experiential learning and as food for thought about policy processes, to complement the cognitive stress in the course that policy analysis comprises both cognitive processes and social processes (White 1990). We also suggested that they might, for example, use ‘parallel thinking’ to structure group deliberate processes more: collecting points of a particular type all at the same time from all group members (e.g., what are the advantages of doing X), then separately collecting points of the next type (e.g., what are the disadvantages of doing X), and so on, rather than the typical intra-group contestation in which one member’s comment in favour of X immediately elicits another member’s criticism of that view, leading to personalized position-taking.

For ourselves, lessons include that we should probably have specified countries (or a small set of countries out of which student groups could choose) that the groups should relate to. Time was wasted as groups lacked parameters and different members pulled in different directions. Similarly in need of some further structuring is the allocation of work between individuals within groups, to ensure not too dramatically unequal loads and to ease the subsequent identification and grading of individual contributions. Underspecification of the assignment can exacerbate the collective action problem and generate an attribution problem too.

3.2. Performance in the Assignments

In doing the first assignment, all the groups confronted similar difficulties. The logical structure of problem trees was understood by most students but the drawing of the problem trees themselves raised several challenges.

- First, students often confused cause and effect and this meant that they provided an incorrect hierarchical presentation of the problems.
- Second, students found it difficult to deal with sets of problems which were interconnected and which reinforced each other. In other words, they had difficulty in representing problems which were circular. One of the groups reported that they used mind map software in order to overcome the limitations of the vertical logic structure imposed by Problem Trees. This helped them trace and represent problems which have more of a feedback character than a simpler unidirectional cause-effect character.
- Third, the sheer volume of discrete problems appeared to overwhelm them in terms of finding a way to represent them in a problem tree format. Students resolved this dilemma by dividing the problems into different “families” and tackling each family of problems separately.

We did not expect this part of the assignment to be simple. It required students to become conversant with the techniques of drawing problem trees and associated forms of systemic representations as well as to understand the policy issues intimately.

The stakeholder analysis exercise presented fewer challenges, most mistakes being committed when students tended to agglomerate discrete and distinct interests under overly-broad headings such as “government” or “private sector”, failing to recognize the diversity of impacts and interests found within these broad segments.

The exercise to develop the multi-criteria analysis did not present significant problems. The assignment had stated that students were required to develop a set of criteria by which their and other policy proposals could be evaluated, with a set of weights attached to these criteria which were supposed to reflect a ranking of priorities which would be acceptable to a broad group of stakeholders. The purpose in developing these criteria was to assist in dealing with the trade-offs amongst competing and simultaneously desirable outcomes which are inherent in complex policy proposals. With encouragement from the instructors, students displayed some creativity in coming up with these weights. They had been cautioned that the setting up of relative weights as one of the more subjective elements of multi-criteria analysis was prone to abuse and manipulation, and so they needed to have a good and plausible argument to support their assignments of weights. Two groups choose to survey what they termed as an “expert population” (culled from the student and faculty population at our institute) and based their weights on the results of these surveys while a fourth group found a journal article and used the weights assigned therein. Groups were warned in addition that criteria should not be applied mechanically. There might well be minimum necessary levels of achievement on some criteria, which every acceptable option must fulfil regardless of how well it does in terms of the other criteria. This could be particularly pertinent in relation to access to drinking water and assurance of eco-system stability.

In the second assignment, we noted that the water groups, who had worked on a task where various public sector reform packages are widely available and disseminated in the literature, showed less creative thought than we desired, and this persisted through to the final policy proposals. Students presented pre-packaged solutions. To counterbalance this and to stretch their minds, we required that the water groups explore in detail the cases both for *and* against *more* than one option. For example, one group prepared such argument analyses for each of three different responses to the urban water and sanitation case: privatization, a public-private partnership (involving a concession for a fixed period), and a management contract in which public ownership and strategic control would be combined with private sector management and operational control.

Typically the weaker groups used the Toulmin-George format to give a concise overview, and the Hambrick format to provide an in-depth examination. But while the Hambrick format ensures that students undertake a number of relevant tests, it is not adequate for full testing. A proposal could survive all the Hambrick tests and yet be an illogical or otherwise inadequate proposal on other grounds. The Toulmin-George format, by creating space for testing of every assumed warrant and every piece of proposed data, and for querying the proposed conclusion on other grounds too—namely in terms of what the arguments have omitted rather than what they have included—can allow a more rigorous examination. This is how the stronger groups used it: to investigate deeper after having sketched a relatively comprehensive design within the Hambrick format.

The third exercise required students to integrate the first two exercises—problem analysis and analysis of competing policy arguments—to develop their own policy recommendations. As mentioned in the previous section, the students were required to make a presentation of the broad outlines of their policy proposals and to defend it against the other group in front of their peers. A final report was due at the end of the semester, shortly after the final examinations. This report consisted of an updated version (after receiving feedback during the workshop discussions and in addition later from the instructors) of the written submissions of the first two reports which had to be consolidated together with the reasoned final policy proposals and an overall summary.

The three sections of a report were often linked in a somewhat disjointed manner though, perhaps due to time limitations. This is not surprising, given the stage of the overall study program. Most of our students cannot yet have detailed sectoral knowledge (here, on environment) or theme knowledge (e.g. on different models of public sector reform and privatization) if they have not already taken courses on them.

However, we found that the final reports incorporated a fairly sophisticated understanding of policy issues, including how different components of the issues are interlinked and, often, how desired policy objectives are mutually incompatible, therefore requiring trade-offs, compromises, and design of tailor-made packages that contain multiple complementary measures. For example, in the water groups, one group supplemented its advocacy of a management contract system by identification of supplementary projects whereby access for poorer people would be promoted; and the other group picked up and advocated the less standard public-public partnership model,

in a variant with echoes of David Ellerman's model of learning from local successes and South-South cross-fertilization (Ellerman 2004, 2005), which we discuss during the course. Further, the latter group assessed their two policy options – public-public partnership, versus a combination of build-operate-transfer for new infrastructure and operation-and-maintenance-contract for existing infrastructure – in terms of not only a multi-criteria set of desiderata but also a SWOT analysis to think outside conventional expectations. This proved decisive for their deliberations, leading to adoption of the option which faced fewer risks and provided more opportunities. Both deforestation-oriented groups showed an innovative flexible approach, leading out of the analysis of multiple root problems and multiple major objectives, on to specification of a broad-ranging set of proposals. For example the group that was tasked to advocate a deforest-for-growth trajectory at the same time worked out a series of compensatory activities.

4. Achievement of Learning Objectives

Reflecting on two pedagogical models in a recent article in the *Journal of Policy Analysis and Management*, O'Hare (2008) advocated strongly for what he called Theory C (for "coaching") Pedagogy on the basis of it being more closely matched to what students will do in the workplace. He points out further advantages of Theory C teaching such as obtaining more participation and less passivity from students, and building more capacity for independent and creative thinking, and interpersonal skills in them.

In addition to these, we find there are several advantages to the PAP in terms of achieving policy-specific learning objectives, both in general policy analysis skills and in environmental issues analysis. We obtained these additional benefits by making a more-or-less equal marriage of Theory C Pedagogy, represented by the PAP with Theory T (or traditional lecture format) Pedagogy, which formed the basis of the lectures. We summarize these below:

First, the PAP helped students to develop a deeper understanding of the techniques of policy analysis as well as of the substantive policy issues which they tackled. The exercises required extensive student effort in synthesizing material and generating arguments and presentations and was, as mentioned earlier, a time consuming process. There is little doubt that were the students to spend more time in reading and reviewing material rather than preparing presentations and reports they would have been able to access a larger volume of relevant literature. However, the trade-off in terms of more long-term learning and skills, versus more short-term knowledge acquisition, appears to be worth it. Having to make policy arguments themselves forced students to develop a deeper understanding of processes, inter-linkages, and underlying logic than would have a greater emphasis on absorption of factual material and relatively passive ingestion of other people's viewpoints.

The value of student generated material in the learning process is well known. A paper by Goberts & Clement (1999) explicitly tested this hypothesis, comparing the learning effects of student generated information and arguments vis-à-vis summarizing of texts. In their study, students were given a text to read and divided into two groups: one group was

asked to draw diagrams explaining the concepts in the reading while another group was required to write a summary of these concepts. The researchers found that while the students who drew the diagrams were able to convey less information than those who summarized the reading, they outperformed the other students in tests measuring descriptive and causal and understanding of the reading.

Second, we found that the project facilitated skills development in reasoning, debating and defending positions.

- Controversy encourages students to review known facts, identify additional information required to solve a problem and make a case, and continue the search to find and critically examine new information.
- Requiring use of structured formats, including to show argumentation structure, to present and debate competing positions, promoted active student learning, produced a more realistic view about the issues, especially about the limitations of any particular argument, and introduced political and social dimensions and their interactions with more abstracted argumentation.
- Moreover, we find that one great advantage of the debate format in developing these abovementioned skills is that critique from student peers is more likely to elicit rebuttals and active argumentation and learning, in comparison to gloomily-accepted instructor criticism. The utility of debate and controversy as a learning tool is supported by Ballantyne & Bain (1995) and Schweizer & Kelly (2005) who found that confronting students with alternative viewpoints and evidence challenges and enhances their conceptions of environmental issues. These researchers found that as a result of such teaching methods, students are able to formulate their own positions more clearly, better understand the viewpoints of others, and become aware of the inadequacies and inconsistencies in their conceptions.

With respect to the specific formats for policy argumentation analysis, we find that they contribute to sensitivity and creativity in addition to logical design and assessment. Gold et al. (2002) report similarly from their teaching experience how requiring attention to warrants—the posited principles that connect a move made from some empirical data to a proposed conclusion—has multiple functions. It helps students to see ‘how an argument is connected to the wider social context and [to show] the traditions and social practices that sustain the credibility of the argument’ (Gold et al., 2002: 375); to reflect on why they have ‘drawn on a particular discourse or social language’, and to question ‘three topics: current organizational practice (e.g., Why do I/we/[they] do things this way?); identity and life history (e.g., Why am I like this?); and relationship to “experts” and others in authority (e.g., Why do I consider this person to be correct?)’ (2002: 379). This critique of both argumentation and tradition is ‘principally achieved through a careful examination of the warrant’ (p. 383). In some cases it leads students on to a reflection on the sources of authority. Gold et al. found more of their students now ‘attending to the perspectives of others and looking to find areas of mutual agreement as a way of taking things forward’ (p. 383).

Our experience is similar. We would add that the role of the ‘Unless’ column in the Toulmin-George table and of the ‘Tests’ stage in the Hambrick format is as important as

the obligation to clarify positive and normative warrants. Obliging systematic attention to finding and assessing objections and qualifications for every proposed item of data and every proposed warrant—as well as objections against a proposal that may apply even if every piece of data and every warrant in its support is valid—builds students’ habits of care, precision and judgement, and their ability to construct new and alternative policy proposals that grow out of some of the objections. The Toulmin-George and Hambrick formats are extremely useful also in teaching outside of a large course project; they serve most of these roles even via small exercises. But deepened reflection on warrants, and in particular on sources of authority and purposes, becomes more widespread amongst students through the more intense and difficult experience of a large project. For example, while typically students engage in exercises about the various policy analysis techniques as a way of acquiring and showing a technical facility, in the extended environmental policy project all the groups gradually came to internalise and take more seriously human rights principles in relation to access to water and environmental security; in other words, they began to start using these principles not only as occasional rhetorical signals but in order to guide important choices in analytic focus and in design and assessment of options.

Third, through the PAPs, we were thus also able to better address the issue of value judgments. This issue has several aspects. One is that value judgments are implicit in many policy contexts even though policy analyses often present themselves as value-neutral. In the PAP exercises, we encouraged students to explicitly address the issue through the use of the Hambrick format. In the format’s extended version (Gasper, 1996) the second stage in dissecting the logic of a policy proposal articulates its significant value assumptions. Further, since value judgements are judgements, not mere opinions or intuitions, both policy argumentation formats—the Toulmin-George synthesis table too—helped students to deepen their sense of the *processes* and criteria of judgement that lead to a value *judgement*. Next, while Corney (1998) found that in the teaching of environmental issues the teachers must make value judgments, we felt it would be counterproductive to intrude strongly into the process of value formation, and did not take an explicit stance here ourselves. We instead presented a series of relevant, but possibly conflicting, major values and value perspectives – human rights, economic growth, notions of equity, principles of sustainability, etc.—without establishing a set of pre-defined values, and constructed the exercise as a policy debate which encouraged, and often even required, students to explore and propound diametrically opposed viewpoints. The PAP format thus required the instructors to remain value-neutral but at the same time be available and engaged in order to provide concrete suggestions regarding the logical content of each set of arguments and to push students to consider more carefully the character and range of the values which they had used explicitly or implicitly. For example, we asked students to reflect on the value assumptions built into economic cost-benefit analyses (e.g., Etzioni, 1995; Hoksbergen, 1986; Shue, 2006), on the alternative values represented in human rights based approaches, and on the values contained within different processes of discussion, according to their degrees and forms of public participation.

Fourthly, the format was useful in developing skills related to policy analysis and policymaking under conditions of complexity, uncertainty and ambiguity, which are characteristic of global environmental policy issues such as climate change. Instead of blushing over controversy and ambiguity, we used them constructively by engaging the students with them. The approach we adopted requires students to delay the gratification of instant solutions to pressing policy problems, and exchange it for the pleasures (and frustrations) of a more profound exposure to the technical complexities of an issue, the various stakeholders involved in them, and the debated and diverse possible roles of science and politics and of the interactions among them (Verweij and Thompson 2006).

By actively courting complexity and controversy, we confronted students with classic ethical dilemmas, such as: Should protecting the forests be prioritized over improving livelihoods? Who sets the values? Who are the legitimate actors? In the Trees case, by issuing the challenge of presenting a local issue embedded in a cross-border environmental issue, we were able to include discussions about issues of global justice and address the apparent paradoxes that permeate the issues, such as the observation that the worst environmental degradations exist in the poorest communities. In doing so, we feel we succeeded in tying environmental issues to other agendas and taught students how better to engage in the contemporary debates.

One of the main reasons proffered for why coaching-type teaching is not more widespread is that it requires a considerable time commitment on the part of the instructors and we can confirm this claim. The PAP was an intensive project. The time commitment was also relatively high from the instructors' side, requiring more initial preparation and ongoing support time than did the group exercises in previous years. In addition to the literature survey presented to the groups, the instructors held a tutorial session, approximately one hour each, in each block with each of the groups individually. In these sessions students would bounce initial ideas off the instructors and receive feedback. In addition, the teaching assistant provided several hours of support weekly and both instructors provided some additional informal tutorial time. But, the time commitment for the students was high too. Students reported sometimes being overwhelmed and, during the early stages, sometimes having to divert their attention from other courses.

An alternative to the PAP would have been the use of a more detailed case-study. This would have reduced time commitments on the part of both the instructors and the students. The advantage of not using the case method though was that students were provided an opportunity to design their own scenarios, styles of argumentation, research and marshalling of information, etc.

5. Conclusions

Population growth, industrialization, increasing prosperity and persistent poverty are all stressing our environmental systems and the natural resources upon which we depend for sustenance. In our course we focused on two stressed resources with very different characteristics, especially in use, that are critical to sustainable development and

planetary resilience. Questions about “trees” and “water” remain no longer domains of specialization, but are fast becoming mainstream global problems with potentially far-reaching consequences. Managing these policy questions require integrative skills and the ability to make decisions while being cognizant of values, claims and priorities, all in a system characterized by incomplete and conflicting knowledge and information. Stimulating and developing knowledge about environmental issues in a range of students broader than those that come under the generic term “environmentalists” has thus become an important challenge confronting graduate public policy and management programs. We offer one technique to address this need.

We have described use of a large scale policy analysis project, in a central rather than peripheral role in a Masters program core course on policy analysis. The project runs as a major activity throughout the course, and incorporates students’ individual assignments other than the end-of-course examination.

There are many pitfalls in running such a project, and in retrospect we see important ways to streamline the activity while fulfilling the same learning objectives. In our enthusiasm to capture as far as possible the reality of a policy investigation, we left students with many open choices which they gradually formulated and negotiated but through a large investment of time in group discussions. Many students reported diversion away both from other courses and from preparing for this course’s examination. Some streamlining of the project is needed to keep it consistent with the time slot available, since it is part of one course run at the same time as students take one or usually two others rather than as a self-contained short course.

We would need also to establish a better balance between group work and individual work, to ensure some report sections with only one author, and to assign sections or approve an allocation of sections which ensures a required minimum load and maximum load per person. The most popular type of assignment that we traditionally used – writing a structured policy options paper on a topic selected by the student but requiring approval by the instructor – no doubt guaranteed fewer free-riders.

We also need to improve assessment methods. Lipsey (2008) points out that coaching-type pedagogy has an apparent uncertainty of outcome because testing for student achievement cannot be specified in the same way as tests and problem sets examine student achievement in traditional teaching formats. One could make the argument that this is more reflective of real-world situations where individuals’ ‘assessments’ are strongly conditioned by the performance of their group, but is it valid to extend this to the academic sphere? We can confirm some of the concerns expressed by Lipsey. Our new design, with students assessed for their individual contribution to a group report, very likely makes individual failures rarer. Further, the quality of the highest work done in pure individual essay format was higher than that done in group format. On the other hand, the quality of work by the poorer participants was clearly pulled up, and they and the middle students are intensively exposed to the work of their most able colleagues. Conversely, the most talented students gain from the more intensive exposure to the

inputs and often considerable experience and insight of less academically talented fellow group members.

At the same time, there seem to be some significant learning gains. By its nature, policy studies is an integrative field which requires students and practitioners to develop a breadth of mind and understanding, awareness and appreciation of ideas and ways of thinking in other fields. Policy studies require persons trained in one discipline to have the ability to synthesize and apply the insights of related fields, to think expansively, drawing on more than just narrow disciplinary knowledge to solve problems. They put a premium on research, critical thinking, information processing, sense making and judgment skills. The PAP, complemented by traditional classroom lectures facilitated a deeper immersion in the practice of the techniques of policy analysis which, in turn, helped develop the desired policy analysis skills. We found students progressed in terms of sensibility and creativity as well as being more systematic in their thinking, maturity and more independence in their reasoning, in the end turning less to the instructors to “tell” them what the right answer is.

Diagram 2: PMI table of restructured Policy Analysis course incorporating PAP

<i>Plus</i>	<i>Minus</i>	<i>Interesting</i>
1. Promotes analytic reasoning and debate skills. 2. Promotes independent thinking. 3. Promotes collaborative work skills. 4. Promotes research skills.	1. Requires increased time commitments for instructors and students. 2. Increased time commitments and teamwork requirements sometimes create stressful situations for students. 3. Creates difficulties in individual performance assessment. 4. Allows some free-riding.	1. Allows fairly in-depth exposure to environmental issues within a core graduate policy curriculum course. 2. Simulates real-world work environment in terms of time pressures, working in teams and satisficing. 3. Motivates self-directed learning as an attitude and as a skill. 4. Explicitly addresses value issues. 5 Balances theory with coaching, promotes linkages between the two strands.

We exposed students to a substantial depth in environmental issues but we did not attempt to impart encyclopedic knowledge about the field, which is, like many others, simply too large, too sprawling and too complex for non-professionals to quickly grasp. Instead we focused on developing skills in the broader analytic and argumentative techniques in policy analysis that will enable students to develop the competencies to contribute more ‘thoughtfully, effectively and equitably’ in policy processes. We tried to minimize the foregone benefits of not imparting encyclopedic knowledge by stressing that students develop search skills, which, in an internet age, will allow them to rapidly

access and evaluate relevant information. (For example in the course this year, the two recent UNDP Human Development Reports on water and on climate change could serve as invaluable introductory surveys.) In doing so, we taught process more than content. For a core course in a Public Policy and Management specialization, this approach served us fairly well in developing the core skills described in part 2 of this paper. We found too that with this balance there was no resentment amongst students over our choice for exposure to environmental policy issues throughout the twelve weeks of the course.

In concluding, we think that on the whole we got for most students a better pay-off in terms of broad learning about generic themes in policy analysis, by having sustained group work into specific policy topics, than we have traditionally obtained by concentrating on the generic themes at greater depth and having a series of far less integrated workshops and then a separate purely individual assignment. However, the PAP could benefit in terms of streamlining to reduce instructor as well as student time commitment, fine-tuning of the assessment aspect, and including towards the end of the course a reflective component in which students and the instructors can contemplate on the exercise that was conducted in order to generate as well as consolidate a deeper appreciation of how the different aspects of the PAP are integrated and how they can be applied in future professional contexts.

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