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TEACHING NOTE

Interdisciplinary Teaching in Law and Environmental Science: Jurisprudence and Environment

LEE GODDEN & PAT DALE[*]

I INTRODUCTION

Griffith University introduced an integrated Law and Environmental Science degree in 1992. Students who successfully complete the five-year course receive both a Bachelor of Law and a Bachelor of Science degree. The first graduates entered the work force in 1997. With burgeoning regulation of the environment these graduates will help fill a growing demand for legally qualified environmental scientists or scientifically qualified lawyers. The first years of the degrees of the course are devoted to studying the two discipline areas, with integration across disciplines wherever possible. One example is that many of the core legal subjects set an integrated law and environmental science assignment that, for instance, might include the environmental and legal aspects of toxic torts. The theoretical and philosophical frameworks of law and environmental science are integrated in the fourth year subject, Jurisprudential Theories of Law and the Environment. This subject, together with a final year integrated research project, represents a culmination of the interdisciplinary study across the two degrees. The subject is a novel one, being the first of its kind in Australia, and is the focus of this article. We outline the aims of the subject, its approach, content, teaching and assessment methods, summarise innovative student achievements, and provide illustrative feedback from students.

AIMS

The general aims of the subject are to provide an interdisciplinary framework for the study of Law and Environmental Science. The approach combines both theoretical issues and substantive Law and Science. Currently, the subject dovetails with a first semester jurisprudence subject. In the first few years of offering the general jurisprudence section was not separated from the integrated law/science component. Instead, the subject commenced with a ten week jurisprudential section and then the integrated focus continued thereafter across two semesters. Under the new structure, the first-semester subject, (and the former 10-week component) applies a theoretical and analytical perspective from a range of jurisprudential schools of thought. Ultimately, it examines how law is relevant to human experience.[1] This focus is common to all integration areas, not only the Law/Environmental Science integration.[2] In addition, Environmental Science students are already familiar with the basics of the philosophy of science which is taught in earlier years in the context of hypothesis testing and experimental design in various Environmental Science subjects. The second semester subject is developed and implemented by academics from each of the disciplinary integration areas. What follows is an account of the way the Law-Environmental Science integration is developed.

APPROACH TO INTEGRATION OF LAW AND ENVIRONMENTAL SCIENCE

The principal aim of this subject is to develop a conceptual framework to assist the evolution of an integrated approach to the study of Law and Environmental Science. As such the approach pursues a theoretical understanding of central issues concerning the environment that arise in Science, in Law and also as a result of the interaction between the two areas. On completing the subject, students should have an understanding of how and why the legal process regulates, or fails to regulate, the complex interaction between human behaviour and the biophysical/social milieu.

Objectives of the subject are to:

(a) examine the relevance of law to human experience in the context of the "environment";

(b) explore the extent to which theories can provide an explanatory basis for understanding issues that arise in relation to law and the environment;
(c) discuss limitations of the theories and propose alternative bases of explanation;
(d) examine the appropriateness of substantive law and legal reasoning to environmental issues; and
(e) consider whether the legal framework is sufficiently flexible to provide just outcomes in environmental disputes.

The specific themes of the subject were developed in association with a "core" common part of the jurisprudence subject. Key concepts and issues from a jurisprudential perspective, such as rights, ethics, justice, individual and community interests, sanctions and punishment, and their application to environmental issues, are covered. In addition, various approaches to interpretation and the construction of meaning from a disciplinary standpoint are discussed. An example here is the section which considers the interaction of legal and scientific procedures and methodologies for establishing "truth". As a further example, the section on "interpreting the environment" resonates with the discussion of postmodern interpretations of legal texts from the core jurisprudence section but adapts these approaches to an environmental planning context.

The subject is not designed to be a comprehensive environmental law subject, although various aspects of environmental law, both legislation and case law, are highlighted. Students are encouraged throughout to "bring across" information from subjects taught in both degrees and to examine it from an interdisciplinary perspective.

The content for weekly topics was designed to illustrate various jurisprudential issues, or to provide a point of departure to consider vexed ethical or moral dilemmas confronting persons who practise in the fields of law and environmental science. For example, the content dealing with biodiversity protection illustrates issues about the "value" that law ascribes to the natural world. The discussion hinges around the relationship between law and morality in terms of legal norms prescribing how people "should" act when confronted with rapidly diminishing natural species. A further theme considered in relation to this substantive content is whether the emergence of biodiversity protection laws, incorporating

concepts such as the precautionary principle, constitutes a form of natural law. A discussion of natural law as a point of comparison with positivist law, reinforces the analysis conducted in the common jurisprudential section, while providing a uniquely environmental "twist" to the theme.

CONTENT

To provide a succinct summary of the content, the subject overview is shown in Figure 1 and the content is summarised in Table 1. Figure 1 shows the integration of legal "theory"[3] into environmental issues such as policy development. In effect, the development of theoretical constructs about law, environmental science and their inter-action presides, and permeates the other topics and environmental issues. All of this affects the practical issues and ultimately the "grass roots" where policy decisions are put into effect and environmental and legal outcomes occur.

FIGURE 1
A qualitative model of the relationships between subject components.

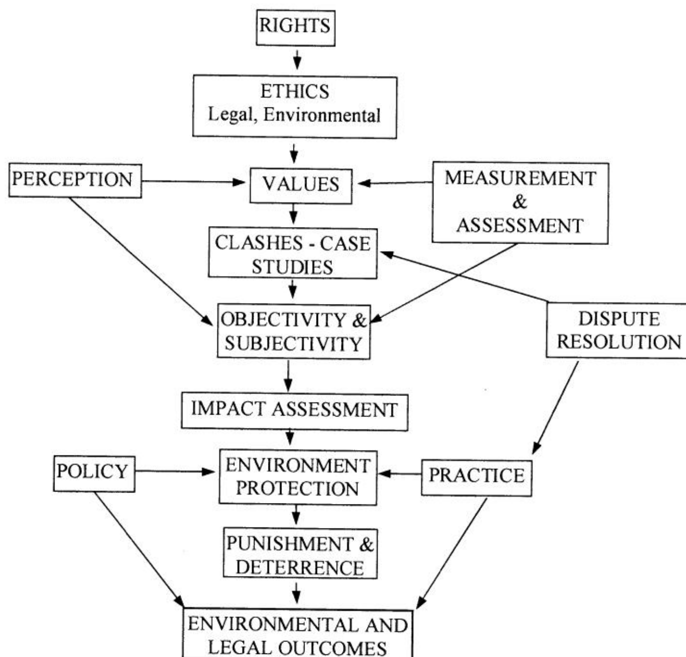

TABLE 1
Topics and Content of Jurisprudential Theories of Law and Environment: integration in the second part of the subject

Topic	Content
Property Rights and the Environment	• Continues the concept of rights from the first part of the subject, translating them into in an environmental framework. • Examines the role of rights, (especially property rights) in terms of their limitations for protecting the environment • Examines the traditional rights based adversarial mode of the common law as a factor in the perceived ineffectiveness of common law to deal with environmental issues.
The Individual, the Community and "Environmental Rights"	Examines the balance between the rights of the individual, the pubic interest and the needs of the environment by examining: • the role of individual interactions (Hohfeldian analysis) • whether the environment can be imbued with legally enforceable rights ensuring its continued existence and protection • western legal system concept of the individual and the "other" (here the environment).
Environmental Ethics/Professional Ethics	• Develops ideas about human responsibilities and the entities to which they are owed. • Explores the potential contribution that Law and Environmental Science can make to the field, in particular Environmental Ethics. • Discusses ethical dilemmas for people trained in both law and environmental science.
Valuing the Environment	The theme of "values" discusses: • utilitarian arguments advocating a use value for the environment • philosophical positions which contend that the environment has intrinsic value.
Case Studies – The Clash of Instrumental vs Intrinsic Environmental Value	Examines and discusses, in the context of specific examples: • the conflict of instrumental and intrinsic values in the "real world" (case study) • potential links between the notion of "natural law" and advocacy of intrinsic value • some of the guiding principles of ecologically sustainable development, which are being incorporated into current legislation, and how these view environmental values.
Environment, Sustainability and	Considers the problem of achieving a just balance between the often conflicting demands of

Topic	Content
Justice	environmental conservation and development, given the “rights” of the interested parties. Cases studies are used to focus discussion (eg, World Heritage issues)
Scientific Methodology for Interpreting and Assessing the Environment	• Intersection of scientific methodology with the legal process: • the manner in which “facts” and “evidence” are derived and interpreted through the disciplinary processes of both environmental science and law. • the fact/law distinction and its applicability in the context of environmental disputes. • how law relies on science to provide “evidence” in a range of environmental issues. • the role of the expert witness from the perspective of factual data and its scientific proof and the standards of proof developed in Law.
Environmental Perception	Explores and examines: • the role of beliefs, attitudes and values in shaping the human response to the environment, and its reflection in legislation – how do we “interpret” meaning in the environment. • the extent to which western modes of thought have determined a particular interpretation of the environment.
Integration: Objectivity/ Subjectivity	How Law and Science conceive of objectivity by considering concepts such as the reasonable person test and the scientific method. Questions addressed include: • What are their implications when applied to environmental problems? • Do they provide adequate guidelines for human interaction with the environment? • Can we determine what is reasonable behaviour in the face of uncertainty?
Environmental Impact Assessment: Approaches and Theoretical basis	Focus on Government and environmental regulation. Environmental impact statements are central to the Government’s decision making process. Examines the problems and limitations associated with the Environmental Impact Statement process as an exemplar of conceptions of “risk”, reviewing relevant legislation.
New Approaches to Environmental Protection: From Policy to Practice	Examines recent Queensland policy and statutory initiatives which seek to reform procedures, such as the Integrated Planning Act 1997 (Qld). Critique focuses on whether the proposed reforms

Topic	Content
	ensure greater environmental protection and at the same time allow for an expedition of decision making processes? Practical exercises include drafting and inputs to recent draft legislation or policy documents as available.
Courts Versus Other Means of Dispute Resolution.	The growing trend is to reconcile environmental differences through processes other than the adversarial court system. Dispute resolution is a less adversarial approach to environmental problems. Discussion focuses on case studies which utilise alternatives to the courts.
Punishment and Deterrence	What happens to the environmental offender? We introduce a theoretical framework for punishment, deterrence and rehabilitation and discuss pragmatic solutions and ethics. We refer to basic concepts of culture (values, beliefs and norms, of which norms are the behavioural outcome). We consider how such concepts apply to environmental offenders, and how penalties may reflect the values held by a society and also how these have changed, and are changing.
Review and Synthesis: a Conceptual Framework	A conceptual model is developed to synthesise and analyse the theoretical framework. A general qualitative "model" is developed (Figure 1) to provide an interdisciplinary framework for the study of law and environment. The "model" is presented as one of a possible range of conceptual frameworks and students are encouraged to develop their own "model" to aid in understanding the application of jurisprudential theories to the environment.

TEACHING METHODS

The subject is taught by two hours allocated to lectures and a student-lead seminar each week. In the first two years, the student numbers were around 8–10 but this number has increased in succeeding years to a steady state of approximately 15–20 students. The lecture format is informal. The normal process is for one teacher from the two faculties involved to give an overview "lecture" while the other "interferes", stimulating discussion amongst all participants. With a small and motivated class this

format is an effective way to achieve the subject objectives and provides students with opportunities to develop their advocacy skills. From the teaching perspective we are fortunate in having two different academic perspectives (one lecturer from Law and the other from Environmental Science) yet both lecturers' first degrees were in Geography and each also has a Bachelor of Laws. The interaction between faculty is important in facilitating active student involvement in the lectures and recognising the need to communicate effectively across disciplines.

The second hour may include further informal lecturing or a guest lecture, but commonly uses more innovative and entertaining methods to convey understanding. Typically students are given a scenario and asked to develop a case from various perspectives, using both legal and environmental arguments. In other instances they are asked to critically examine environmental policy, draft legislation to give effect to policy, or comment on draft legislation culminating in providing a written response to the relevant government department. As well, practical "experiments" are conducted to investigate the group attitude to issues such as punishment or perception of environment. These are then compared in class to the results of published research on the same issues and discussed in the light of current theory.[4]

The seminar is student driven. At the start of semester a list of seminar topics is distributed. Each week's topic relates to the lecture theme for the week and is organised by students. Each student selects topics from a designated list and a small number of students present their work each week. How the students organise the topic for a particular seminar is for them to choose. Some split the topic, others may focus on contrasting examples. Occasionally innovative activities such as role-plays are arranged by the students involving the whole class, including the lecturers.

ASSESSMENT

The Law/Environmental Science integration part of the subject has three assessment items. These are based on class participation, seminar presentations, and a major assignment. The items test a range of skills and are designed to enhance the students' ability to analyse and present material in an interdisciplinary manner.

The seminar presentations are initially given on the basis of pre-

set topics related to the lecture component each week and which covers both law and environment. The major assignment may be based on a seminar topic or students may select a topic, subject to it being approved by one of the lecturers. One criterion for approval is that the topic involves both legal and environmental issues. It may, for example, focus on an area of law and discuss environmental implications or it may take an environmental issue and discuss the relevance of law and legal process to its resolution.

INNOVATIVE STUDENT ACHIEVEMENTS

Students surprise us with the degree of insight they show on difficult theoretical issues, both from the legal and environmental perspective. Topics covered in the major assignment have included: comparing indigenous peoples rights with respect to environmental management in Australia and overseas, a detailed examination of evidentiary processes in environmental disputes, a feminist critique of pollution legislation, an examination of changing attitudes to rural land use practices, and an examination of social contract theory and environmental justice. Some of the work is of publishable quality. Importantly, the assignments provide an introduction to independent research for the students who all have to conduct a major interdisciplinary research project in their final year of study.

In seminars, the work has ranged from an intensive analysis of case law on the application of the precautionary principle in environmental disputes as an example of the permeation of "risk" concepts in modern society, video presentations of world heritage management issues on the Barrier Reef, to a role play on negotiation for a toxic waste dump, to a philosophical discussion between two "trees" providing an analysis of Stone's classic argument – Should Trees Have Standing?

STUDENT FEEDBACK

It is essential to have student feedback to guide the future development of the subject, given its innovative concept, the breadth of topics covered and the interdisciplinary context. The subject is evaluated each time it is completed. Overall there has been a positive response to the subject and generally student evaluations indicate that students perceive that the subject achieves

most of its stated aims. Evaluations reveal that the most positive aspects of the subject are in making theory less intimidating and more interesting. A small selection of student comments follows:

> I have always baulked at the theoretical content of the course since first year – due to my own mental block! I found jurisprudence finally gave me the confidence to feel I was capable of forming my own ideas and reflecting on others. I think that this was mainly due to the use of examples and relating jurisprudence to substantive issues.

> Materials and subject were interesting and well structured.

In particular students found the student seminars useful, commenting that they are:

> A good way to look at issues in depth and see new ideas – of other students.

There have been no serious negative criticisms although one comment suggests possible improvement:

> I'd make it more relevant to practical issues – probably more theory but relate it back to stuff we've done in Law/ ENS(Environmental Science).

Making sure the examples are relevant to the "real world" issues which students will face when they graduate can accommodate this objective. But perhaps the most rewarding aspect is the *ad hoc* comments that arise in class discussion which reveal that students have been able to draw together the sometimes disparate strands to offer a new insight based upon their "environmental grounding" in two disciplines.

CRITICAL EVALUATION AND FUTURE DEVELOPMENTS

Given the positive response from students and the generally high standard of the students' assigned work there is no apparent need for major changes. However there is still some fine-tuning which is driven by experiences in the subject itself.

For instance, we propose to augment the essay with a document showing the "chain of research" pursued in developing one of the seminars (eg literature search, use of legal digests, Case Annotator, on-line data bases etc).[5] This would show the process by which information was sought – a factor of extreme importance when undertaking interdisciplinary study where there is a need to be very wide ranging in obtaining information from diverse sources beyond the standard case and statute laws. Moreover, the "chain of

research" illustrates a student's ability to effectively find research information and assists in preparing for a major interdisciplinary research project that is undertaken in the fifth year of the degree. It also gives recognition to the work that goes into researching for the essay and would help avoid the temptation for students to include what is not particularly relevant just to demonstrate that they have been diligent in their studies. In some complex areas competent research may yield a lot of material (much of which is not very relevant) or a very little. Indeed the impetus for this development was from one of the students who attached such a "chain" to her seminar report, mainly because she wished to show the paucity of material available on her subject, despite having carried out an extensive and "appropriate" search.

Further, as changes occur in current issues it will be necessary to modify the content to ensure that it remains relevant and incorporates topical issues. One such issue is the relationship between the rights of indigenous people and policies for environmental protection. Timeliness is particularly important when students make submissions on draft policy documents or evaluate environmental policies in areas of current concern such as coastal management.

CONCLUSIONS

In summary, in considering the subject as a whole, there is perhaps a need for more collaborative work between the teachers in the subject to increase the consistency of emphasis between the core jurisprudence section and the later integrated section. It remains challenging to bring together the very complex and fundamental questions about how law operates in society, and how it can be made meaningful to human experience in the late twentieth century using an interdisciplinary perspective. It is a perspective that considers law in the light of particular experiences – the interaction of humans and the environment and, moreover of law as itself part of that environment.

It is acknowledged that tensions exist between examining issues from a predominantly jurisprudential or law perspective when some critical environmental science issues have no direct equivalent expression in jurisprudential traditions. Further, and perhaps surprisingly, any difficulties in providing a holistic integrated

framework for understanding arise not so much from a substantive content basis but from the need to coalesce the two very different methodological approaches from the disciplines of law and science. To the extent that disciplinary methodology imposes a way of ordering knowledge and "seeing" the world, then it has been very instructive to have to work together to accommodate these approaches in a single subject. The "accommodation" of the two disciplinary bases more often than not comes from the students themselves, who having been trained in both disciplines are able to make the necessary links.

By its very nature, any consideration of the environment ranges over a diversity of issues, interests and concerns. It would seem then, that this requires a broad understanding as a prerequisite to working as a professional in this field. Further, it is often noted that the resolution of environmental problems needs to be approached from various standpoints, not least, the disciplines of law and science. Such issues need not just an understanding of relevant substantive content but an appreciation of the values, ethics and methodologies that can be brought to bear upon such problems.[6] While many forms of "modern" knowledge tend toward specialisation, the scope of the environment seems to compel an interdisciplinary, comprehensive focus.[7] The subject, Jurisprudential Theories of Law and the Environment, in its aims, content and teaching methods represents a still formative attempt to equip students with this interdisciplinary and broad approach to environmental questions.

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1 The authors acknowledge the substantial work that was undertaken by Shaun McVeigh in developing the core jurisprudence element that comprises an introductory jurisprudential section prior to the students undertaking the specific interdisciplinary section.

2 Other disciplines involved in the integrated degree courses include: Public Policy, International Business, Media, Accountancy, and Modern Asian Languages.

3 We prefer to use the term "theory" rather than jurisprudence as many matters discussed in an interdisciplinary subject of this type range more broadly than traditional jurisprudential topics. It is acknowledged that "theory" also is open to a wide range of interpretations.

4 For example, students are asked to "map" their perception of the campus. These "cognitive" maps are compared with research on the cognition of space and its incorporation in environmental planning concepts.

5 Since writing the first draft of this paper the "chain of research" has been

included in the assessment, with great success.

6 G Morgan, The Dominion of Nature: Can Law Embody a New Attitude? (1993) 18 *Bulletin of the Australian Society of Legal Philosophy* 60.

7 For a discussion of the need for a broad approach to environmental problems see S Molesworth, The Integration of Environmental Imperatives into Decision Making, paper delivered at Courting the Environment: National Environmental Law Association Conference, Coolum Qld, 1996, Collected papers, 1.1 at 1.1.2.