"Working Syllabus" January 7, 2011

ENVR 630: Civilization and Environment
Winter 2011

A New Narrative of the Human Condition in a Quest for a

Celebratory Human Presence on a Flourishing Earth

Three Gorges Dam, China

Qori Kalis Glacier, Peru

Hurricane Katrina, Gulf of Mexico

Time and place: Mondays 4:05-6:55, Burnside 308

Faculty

Professor Peter G. Brown
McGill School of the Environment, Departments of Geography, and Natural Resource Sciences
Address: 413 Burnside Hall
e-mail: peter.g.brown@mcgill.ca

Professor Mark Goldberg
Department of Medicine
Address: Division of Clinical Epidemiology, MUHC, Ross 4.29
Tel: (514) 934-1934, ext. 36917
e-mail: mark.goldberg@mcgill.ca

Professor Nicolas Kosoy
McGill School of Environment and Department of Natural Resource Sciences
Address; Macdonald Stewart Building, MS2-079 Macdonald Campus, McGill University
e-mail: nicolas.kosoy@mcgill.ca

Professor Robert Nadeau
Department of English and Environmental Science and Public Policy
George Mason University
e-mail: robnadeau@verizon.net

Rationale

Human activity is overwhelming and degrading natural systems both locally and globally at an accelerating rate. These activities have dramatically negative implications for the future of most forms of life, including humans. Major ecosystem collapses are not only likely, some are probably already and irreversibly underway. Yet our responses at the personal and institutional level remain largely fragmented and ineffective, if they exist at all. We lack a coherent way to conceptualize the issues and to evaluate the success and/or failure of responses to environmental problems. And our institutions and the ethical bases on which they operate, are directly at odds with our ability to conserve and sustain the essential elements of the biosphere. But there is much that can be done on all levels from the personal to the international to change direction, curb environmental degradation, and create a flourishing earth. Our aim in ENVR 610 and 630 is to explore how this can be accomplished.

The courses can be thought of as one course divided into two parts and students who take 610 are encouraged to take 630. These courses are designed for people interested in environmental philosophy and policy as well as those who may be planning careers of practice--in business, public policy, environmental sciences and policy, international development, engineering, law, forestry, medicine, plant or animal agriculture, dietetics

and nutrition, genetic or bio-systems engineering, and the like. These courses provide for the critical consideration of a number of conceptual frameworks that we customarily use, implicitly or explicitly, in thinking about the relationship of humans, other species, and more generally the environment. The practical consequences of these frameworks are considered. The aims of the courses are therefore to enrich our ability to think about the moral and conceptual dimensions of the role as citizens of planet earth and to provide a means for developing policies at various scales to alleviate, mitigate, and possibly reverse environmental degradation.

The preceding course: ENVR 610

In ENVR 610, we described some of the major environmental problems currently facing humanity; with climate chaos as the most obvious and immediately menacing threat. We focused on two factors that have contributed to this unfolding tragedy. One of them is the role of economics in confounding the problem and legitimating inaction; and the carbon economy itself as the foundation for a mass consumption society. The other was the steep rise in the human population in the 20th century.

We also introduced the notion of collapse of human societies. This word refers to a wide spectrum of disruptions to society and may lead to devolvement of urban societies. In *After Collapse. The Regeneration of Complex Societies* Glenn Schwartz refers to collapse as a *"fragmentation of states into smaller political entities; partial abandonment or complete desertion of urban centers, along with the loss or depletion of their centralizing functions; the breakdown of regional economic systems; and the failure of civilizational ideologies*". Other definitions are also possible. Various forms of collapse are a distinct possibility in the near future, and will likely derive from breakdowns of ecosystems and other planetary systems, climate change, and an inability or unwillingness to modify the energy sources that power human societies. While collapses have occurred in circumscribed societies, collapse in the future could well occur on a global scale. The road that we are taking now may well lead to an abysmal end. We also describe various ethical frameworks, especially as espoused by modern economic thought, and critique these and show how they are leading to collapse.

ENVR 630

The main purpose of ENVR 630 is to describe and define a new and different picture of humanity's place in the world that is both consistent and coherent with the physical and biological functioning of the various planetary systems that make life possible. It is our conviction that many of the scientific discoveries of the last two hundred years offer fresh perspectives on the human self, ethics, economics, measurement and governance that, if widely understood, could lead to an enduring human presence on Earth by accounting for limited resources as well as various planetary boundaries that allow the Earth to support life as we know it. This new way of living for humankind would thus respect and protect all forms of life and ecosystems.

Learning Objectives

We assume that students are familiar with the major environmental problems facing the planet. For those who require a refresher, we suggest reading before the term James Gustave Speth's *Red Sky at Morning* (Yale University Press, 2004*)* or an equivalent account. In addition, lecture notes from ENV 610 are available on the web page and the student who has not taken 610 should review these.

By the end of the course, students will be able:

(1) to understand that environmental policy will necessarily fail to protect life's prospects because it is embedded in narratives that are not informed by a scientific understandings of the world and the human person;
(2) to describe and appreciate what an alternative worldview would be like when it is connected to the major scientific discoveries of the 19th and 20th centuries;
(3) to grasp the implications of this worldview for how we view the human person, what we know, our ethical obligations, economics, and governance;
(4) to describe and appreciate how to measure the success of society in reaching its ethical objectives;
(5) to be able to articulate in *writing*, and provide appropriate arguments for the rethinking the nature of person, ethics, economics, measurement and governance. (NB: this objective forms the basis for the term paper);
(6) to *speak* thoroughly and convincingly on how and society needs to be restructured to enable an enduring human presence on a flourishing Earth; and
(7) *to deepen, articulate, and show the consequences of a sense of personal responsibility for life's prospects.*

Grading and Participation

The last two weeks will be dedicated to student presentations. Discussions during regular classes will be geared around the readings for the class and the presentations by one or more instructor.

Students will be evaluated on the basis of the quality and quantity of their overall class participation (10%), a 3 to 4 page prospectus on their term paper due at the first class meeting in March (20%), presentations based on term papers (20%), and the 20-25 page fully documented paper (50%) on issues raised by the course. Students should meet individually with at least two Professors no later than February 7th to begin defining the topic for the presentation and the paper.

Materials: Course materials will include books and materials available on-line.

The following books will be used in this course and are available at the Paragraphe Bookstore, corner of McGill College and Sherbrooke, and they should be either purchased or borrowed. Not all of these books will be assigned in their entirety. (Though not assigned Gus Speth's *Red Sky at Morning* is an excellent overview of the

decline of Earth's life support systems, and should be read by those not well informed on these matters.)

- Thomas Berry, *The Great Work* (New York: Bell Tower, 1999)
- Peter G. Brown, Geoffrey Garver, et al. *Right Relationship. Building a Whole Earth Economy*. Berrett-Koehler Publishers, San Francisco. (If this book is not available at Paragraphe, Peter B. has additional copies that he will sell at cost.)
- Herman Daly, *Beyond Growth,* (Boston: Beacon Press, 1997)
- Herman Daly and Josh Farley: *Ecological Economics: Second Edition, Principles and Applications* (Washington, DC: Island Press, 2010)
- Annie Dillard. *Pilgrim at Tinker Creek* (New York: Harper Perennial, 1998)
- Aldo Leopold, *A Sand County Almanac* (Oxford University Press, 1968)
- Robert Nadeau, *The Wealth of Nature* (New York: Columbia University Press, 2003) Relevant selections from the work are available online: www.scientificamerican.com/author.cfm?id=1495; www.earth.org/article/ neoclassical economic theory; Google books Robert Nadeau
- William Ophuls, *Requiem for Modern Politics* (Boulder, Colorado: Westview Press, 1997)

Course outline:

I. Re-envisioning Our Relationship with Life and the World

Class 1. The New Story of the Universe. PGB

The need for a new framing narrative based on the current scientific understanding of cosmic and biological evolution, systems and chaos theory, neuroscience, and many other disciplines. Discoveries made during the second scientific revolution challenged and effectively undermined assumptions in Western culture that derived from both Greek, and Judeo/XTN, and enlightenment sources. The need for a new understanding of the human self; ethics; economies and economics; measures of progress; governance. In short, this course will focus on a re-envisioned and re-invigorated relationship with life and the world.

Readings:

Berry, *The Great Work*
Eric J. Chaisson, "Non-equilibrium Thermodynamics in an Energy Rich Universe" (Available of the class web page, under Materials (on the left-hand side of the web page) and then under Readings\Chaisson\Non equilibrium.pdf.)
Eric D. Schneider and James J. Kay, "Order from Disorder: The Thermodynamics of Complexity in Biology" (Webpage:Readings\Ecosystems\Schneider and Kay Order from Disorder.doc)

Class 2. The New Story in Biology. RN

In the 1940s, a revolution in the biological sciences began that is comparable to the revolution in physics that began during the 1920s with the development of relativistic quantum field theory. The so-called new biology revealed that life is a self-organizing and self-perpetuating nonlinear system in which new or novel organisms spontaneously emerge. In this system, a complex network of evolved feedback loops between organisms maintain conditions suitable for life and accounts for the stability of ecosystems and their ability to recover from the damage occasioned by human activities. Research in this discipline has also shown that everything in the system of life is connected with everything else and human and environmental systems are embedded in and interactive with one another on the local, regional and global level. Equally important, this research clearly suggests that human life and consciousness are emergent from the system of life at a very high level of complexity and any sense we may have of being distinct or separate from biological reality is an illusion fostered by a lack of understanding of the actually character of this reality.

Readings:

Robert Nadeau, The Environmental Endgame: Chapter 1; available online at "Google Books Robert Nadeau"
Robert Nadeau, The Rebirth of the Sacred: Chapter 4 (distributed online)

Class 3. The New Story in Neuroscience. RN

Over the past three decades, new computer-based imaging systems have allowed neuroscientists to study the areas of the human brain which are active when conscious subjects are engaged in a variety of cognitive tasks. The results of this research have not only demonstrated that the stark division between mind and world formalized by Descartes does not exist. They have also challenged and effectively undermined traditional assumptions about the role played by formal logic, emotions, memory, and preconscious or unconscious processes in human thought and behavior. This research has also shown that language processing is staggeringly complex and involves a myriad number of brain regions and neuronal processes in the recently evolved neocortex and in previously evolved lower brain regions such as the cerebellum, the midbrain and the brain stem.

More recent research in neuroscience has also disclosed the neuronal processes associated with moral behavior and decision making. For example, research on the mirror neuron system has shown that this system allows us to feel the emotions and grasp the intent of an action or behavior by others in the absence of higher level cognitive processes associated with conscious reflective behavior. And this research also explains why we are capable of feeling empathy, sympathy and compassion in our interactions with others in the absence of conscious reflective behavior. Equally important, neuroscientists recently discovered that the neuronal system that is active when we engage in spontaneous moral behavior operates on a preconscious level is not the same as the neuronal system that is active when we make conscious decisions about whether to engage in moral behavior. This research provides a basis for understanding

why people who would not hesitate to rescue a child from a burning building may not be willing to make a financial contribution that could help to save the lives of thousands of starving children in a drought plagued region in Africa.

Reading:

Robert Nadeau, Rebirth of the Sacred: Chapter Two (distributed online)

Class 4. A New Story in Ethics. PB

How the facts from classes 1-3 change our understanding of the self, the nature of ethics, economics, law, and politics. The implications of this perspective for cherished ideas such as: justice, rights, property, progress, tolerance, efficiency, and liberty. The ethical implications of the end of "cheap" energy; and the ethical implications of how it is/was obtained and used will also be considered.

Reading:

Peter G. Brown, "Ethics for the Great Transition." To be supplied
Leopold's *Sand County Almanac* should be read by this week of the class.

II. The New Story of Economics.

These five classes will present the following fundamentals of ecological economics: 1) The idea that the economy is nested in nature and the idea of scale imply that there are limits to the material growth of the economy, and the economy has already reached or exceeded the maximum sustainable scale or is seriously threatening the resilience of natural systems: 2) Conceptualizing the economy in metabolic terms and understanding humans as a species comparable to other species, running the risk of overexploiting their ecological niche. The enormous growth of the number of humans and the increasing exosomatic energy and materials use threatens the resilience of life-support systems for humans as well as for many other species which are being cornered into pockets. 3) Humans can try to manage ecosystems to their own advantage, but we are facing basic ignorance – not only uncertainty – in our understanding of nature and of the interactions between humans and their environment. 4) The ethical underpinnings of ecological economics including, but not limited to, the moral dimensions of ideas like scale, distribution and efficiency. And 5) How we assess the outcomes of an embedded economics with ethically based measurement systems.

Class 5. Foundations of Ecological Economics NK/RN.

This class aims at presenting the human economy as an open system inside the framework of a closed system in the thermodynamic sense (Daly, 1977). The human economy exchanges matter and energy with the larger system of the earth, whereas the earth does not exchange matter with the surrounding universe. The earth receives solar energy from outside and emits heat, and this energy flow keeps up the processes of the

system. As the human economy is embedded in nature, it may be described in terms of biological, physical and chemical processes, i.e. in terms of "societal metabolism", constrained by source and sink limits. Because of human population growth and because of economic growth, the scale of the economy and the pressures on the natural environment are leading major declines in Earth's life support systems.

Herman Daly and Josh Farley: *Ecological Economics: Second Edition, Principles and Applications* (Washington, DC: Island Press, 2010)-Selected chapters to be supplied-NK

Robert Nadeau, "Neoclassical Economic Theory,: available online at www.eoearth.org/article/neoclassical economic theory

Robert Nadeau, The Environmental Endgame: Chapter Seven (distributed online)

Class 6: A New Embedded Micro Economics NK This Section of the course aims at analyzing how a new economics should look like if alternative rationalities are considered as relevant as Homo economicus to defining humankind. It is in this line of thought that the course will revisit theories of values with the aim of proposing a new valuation framework that allows for plural values to be fully expressed in the decision-making process. This will be done firstly by presenting current theories of value and their problematic? Then, the course will make use of Institutional economics to frame the issue of decision-making in our society and we will contrast cost-benefit analysis with multicriteria analysis. This section will go on presenting the characteristics of an alternative economy based on concepts such as resilience and redundancy instead of efficiency.

Houlding, B and F. Coolen. 2011. Adaptive utility and trial aversion. Journal of statistical planning and inference 141: 734-747

Johannessen, J.A. and B. Olsen. 2010. The future of value creation and innovations: Aspects of a theory of value creation and innovation in a global knowledge economy. International Journal of Information Management 30: 502–511

Peach, T. 2008. A note of dissent on the 'index number' interpretation of Adam Smith's 'real measure'.Cambridge Journal of Economics 32, 821–826

Walls et al. 2011. An epistemological view of consumer experiences. International Journal of Hospitality Management 30: 10-21

Class 7: A New Embedded Macro Economics. NK At the macroeconomic level, this course will challenge the usefulness and validity of standard macroeconomic indicators oriented to growth compared to social metabolism indicators. In order to do so, this section of the course will present the methods and most relevant findings of energy and material flow accounting. This section of the course will analyze Jevons Paradox in the

light of social metabolism and therefore place the crucial question, are our societies dematerializing? Driving forces of international trade will be also re-assessed in the light of concepts such as ecological dumping, thermodynamic theft and cost shifting.

Giljum, S. and Eisenmenger, N. 2004. North-South Trade and the Distribution of Environmental Goods and Burdens: A Biophysical Perspective. Journal of Environment & Development, 13(1):73-100
Gomiero et al. 2010. Biofuels: Efficiency, Ethics, and Limits to Human Appropriation of Ecosystem Services. J Agric Environ Ethics 23:403–434

Krausmann et al. 2009. Growth in global materials use, GDP and population during the 20th century . Ecological economics 68(10): 2696-2705.

Class 8: A New Embedded Ethics for Micro and Macro Economics. PB

The developing field of ecological economics has, for the most part, taken over the value theory of the Neo-classical school it seeks to replace. We will be concerned with the construction of new ways (and the rediscovery of old ways) to think about the role of values in how we provision ourselves. In developing these ideas we will be concerned with five questions: 1) what is the foundation of such a theory; 2) what is its structure; 3) what are its principles; 4) how we think about the virtues of such a system; and 5) what are its guiding metaphors, analogies, and ethos?

Readings:

Brown and Garver, *Right Relationship* (Selections)
Dillard's *Pilgrim at Tinker Creek* should be read by this week.

Class 9: Assessing the Outcomes of an Embedded Economic System. MG

This class is focused on six topics. 1) The purpose of measuring (considerations of context, scope, scale and dimension); 2) criteria for judging what indicators should be measured; 3) the measurement process and issues of interpretation: validity/bias, precision/reliability, issues with complex indicators that group disparate indices (considerations of commensurability); 4) making assessments: analyses of trends, and comparisons with benchmarks or standards; 5) considerations of the interacting systems so that the paths leading to the indicator can be identified and targeted; and 6) specific measurements: planetary boundaries, HANPP, population.

Readings:

To be supplied.

III. A New Story in Governance.

Class 10: Is There Life After Political Liberalism? PB

How should society be governed? Can the liberal states such as characterizes Western Europe and North America survive the collapse of its metaphysical assumptions and the end of cheap energy? Is there a need to move away from interest group liberalism and past deliberative democracy? What effect does the new narrative(s) we have considered have on fundamental legal ideas like rights, property, justice, tolerance and liberty? How does rising resource scarcity affect the ability of current regimes to survive? Can they adapt or must they die? Is the role of money in liberal democracies their Achilles heel? Do the kinds of political organizations likely to emerge require radically revised child rearing practices? What can we learn from movements such as "transition towns"?

Reading:

Ophuls, *Requiem for Modern Politics* (Selections)

Class 11: The Nation State as a Metaphysical Anachronism. RN/PB

The construct of the sovereign nation-state emerged in Europe from the eleventh to the sixteenth century in a process that transferred metaphysical assumptions about the God given powers of absolute monarchs to the states governed by these monarchs. During the centuries that followed, these assumptions remained essentially unchanged in spite of the more secular language used to describe this construct. This explains why the present system of international government, the United Nations, is premised on the construct of the sovereign nation-state and why the only source of political power in this government is the sovereign nation state. During the multi-year process of developing and implementing international agreements that could resolve environmental problems, the representatives of countries involved in this process consistently invoke the principle of state sovereignty in an effort to protect and enhance vested economic interests. The unfortunate result is that scientifically viable economic solutions for environmental problems do not survive the negotiating process and many agreements that have been implemented under the auspices of the United Nations have allowed for increases in the scope and scale of economic activities that caused these problems. The case will be made in this section of the course that the resolution of the environmental crisis will require a complete rethink of international governance; the powers of nation states, and the establishment of novel institutions. At the same any system must be based on communities of a size that nurture and support our "tribal" nature.

Readings:

Brown and Garver, *Right Relationship* (Selections)
Robert Nadeau, Rebirth of the Sacred: Chapter Five (distributed online)

Classes 12/13—student presentations.

Notes on term papers

1) An example of an excellent term paper is by Colleen Eidt, *"The Future of Global Security"*, which was written for ENV 610, Fall semester 2009. This will be found on your DVD under DVD\Readings\Land\Colleen Eidt-The Future of Global Food Security- Written for ENVR 610 FALL 2009.pdf
2) We would classify "good" scientific writing (or for that manner, any analytic piece) as one that is grammatically precise, tells a story that is easy to follow, is imaginative, concise and not repetitive), is as unbiased as possible, and is logically cohesive. Headings and visual devices (tables, graphs) can often help alot.
3) We are expecting essays of about 25-30 pages, maximum (1.5 line spacing, 12-point font, 1" margins), excluding front page, summary/abstract, bibliography/citations, and footnotes/end-notes. We expect a summary/abstract of no more than 300 words. (This does not have to be the same one as you provided for your presentation.) You can use any format that you like for structuring the paper, as long as it is clear. Please choose one style for footnotes and references (e.g., Chicago, MLA); we do not care which one you use.
4) We expect that the paper will comprise a statement of the problem or issue that you are addressing, relevant background material, analysis of the problem, discussion, and conclusions.
5) It is not a necessary that you use the IPAT(E) paradigm as part of your analysis; use the glove that fits. However, the paper must be about the environment and it must have a policy component.
6) **All** statements of fact must be referenced. We are not expecting full reviews of the literature but we also do not expect complete reliance on secondary sources.
7) Please use sufficient headings and sub-headings to make the paper comprehensible. Consider using the heading facility in your word processor for structuring your paper. Use of this facility will greatly enhance structure and will automatically place headings and sub-headings in your text in the correct places.
8) We do not expect run-on paragraphs or sub-sections that comprise more than one logical development.
9) Consider the use of tables and figures rather than describing data in the text.
10) Ensure that all sentences follow each other logically; avoid non-sequitors.
11) Do not make conclusions before stating the facts. Arguments need to be developed in a logical way and you need to find appropriate ways of introducing a subject without stating your conclusion in advance. Readers prefer to make their own conclusions as they read; the perception will be that you are attempting to bias the reader or you have a specific agenda. However, this does not apply when stating a thesis at the beginning of an essay.
12) Try to use the active voice instead of the passive one. See the description in the file: \DVD\On evaluating essays \Active and Passive Verbs.pdf .
13) It is all too common these days in professional publications and elsewhere to invent terminology by using phrases where nouns modify nouns. This is extremely poor form and you must be very careful to reduce this as much as possible. For example, "oil sand development" should be written as "the

development of the oil sands" and "nutrient delivery to water bodies" should be written as "delivery of nutrients to bodies of water". You may find this difficult to achieve (it has become inherent in many of us), but the end result will be a far better essay grammatically; the drawback is that it takes more words to express the same idea.

14) In addition, verbs are often attached to inanimate objects. For example, you will often see something like: "This paper focuses....", "This paper argues...", etc...: PAPERS CANNOT FOCUS, ONLY PEOPLE AND OTHER LIVING THINGS CAN. An alternative (active voice) is: "In this paper, I will focus on....".
15) Lists that start with a colon (":") should be delimited by semi-colons (";" and not commas (",").
16) "1980's" is written as "1980s", etc...
17) Check your spelling and use the Canadian language facility in your word processor.
18) Do not use contractions: e.g., "can't" is written as "can not".
19) Do not use acronyms!!! We do not want to see papers made up of alphabet soup.
20) Numbers less than 10 should be written out in full; if you use a number to start a sentence, it must be written out.
21) Avoid placing additional information in appendices.
22) All statements of fact must be referenced by reliable sources.
23) When using figures and other graphics from other sources, they must be numbered and captions provided so that the essential elements of the figure are described.
24) We will receive papers by email only and will read them and provide comments directly in your papers, electronically, and will return them to you by email. We will independently read your paper, provide comments electronically, and will assign a grade (A, B, C, etc...). We will not give you our individual ratings but your final grade on the paper will be based on our combined evaluation. You should read carefully the following file on your DVD that contains elements used in evaluations: \DVD\On evaluating essays\RUBRIC.pdf.
25) Papers are to be submitted to us by email. A date will be provided in class (usually around December 15).
26) PLEASE SEND AS A TEXT DOCUMENT (E.G., WORD FORMAT) AND NOT A PDF

Notes on presentations in class

The goal is to present your paper (which you should be developing but do not have to have written) to the class. So, you need to be able to discuss your thesis and what you know in a concise and clear manner. It means, therefore, that you have done enough work on it to make a cogent presentation.

1) Please provide us with a title and an abstract. These will be distributed in class and placed on the website.
2) The presentations will be no more than 10 minutes + 10 minutes discussion.

3) You can use whatever audiovisual aids you wish, including none, blackboard, etc... If you want to use Powerpoint, you need to bring provide it on a memory stick or email it to us beforehand.
4) You should practise your talk in advance, especially keeping to the 10 minute limit.
5) Approximate rule of thumb: one slide per minute
6) Restrict what you present; the listener can only absorb a few concepts in 10 minutes
7) Try to keep your slides as simple as possible; do not have multiple graphic images and text on the same slide
8) Ensure that you explain what is on the slide
9) Keep the number of words on a slide to a minimum
10) Do not use any acronyms.
11) The main issue with using colour maps (and other complex slides), especially ones that have multiple colours and legends (especially in small fonts!), is that it is difficult for the audience to appreciate in a very short time span the meaning and nuances of the slide. It would be easier to present maps that are simpler; perhaps, having a set of slides in which colours are overlaid would assist the audience, though this may be difficult. This is especially true for maps that are taken off of the internet, where the reader has as much time as necessary to comprehend the maps. Borrowing media that are designed for one purpose and using it in another may not work.
12) There will be three sessions at the end of the semester. First come first served.
13) In each session, we will hand out a prize for the "best" presentation. You will decide this (not us) by ranking the presentations according to interest of the subject matter, objectives, clarity, etc... The ranking system is simple: suppose we have six presentations, you will assign a "1" to the best presentation, a "2" to the second best, etc... We will than add up the scores for each presenter across the class (excluding those who are presenting, so that would be 11 students in this example) and the one with the smallest total score is the winner. We will decide ties by flipping a coin. As well, you can provide written comments anonymously to the presenters.
14) The last session may be held at Peter's farm. We will discuss this with you. The constraint is that EVERYONE must be available.

Criteria for peer-review ranking:

Presentations will be ranked by your classmates. Points to consider in judging a presentation:

1) is the objective/thesis stated clearly?
2) is the context of the problem presented clearly?
3) is the analysis/synthesis cogent?
4) were too few or too many ideas covered by the presentation?
5) are the conclusions consistent with the analysis?
6) was the presentation done in the allotted time?
7) For those using visual aids:
   were the slides too crowded?

were there too many/too few slides?
were you able to read the slides and follow the monologue?

See the files for information on producing presentations: \DVD\On oral presentations\American Scientist 2006 Frankel.pdf and SCIENCE AND ART.pdf

Academic Integrity
McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/integrity/ for more information).

Right to submit in English or French written work that is to be graded
In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.