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CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

LSC Use Only
Number _____
Action _____
Date _____

UWUCC Use Only
Number _____
Action _____
Date _____

I. TITLE/AUTHOR OF CHANGE

COURSE/PROGRAM TITLE GE 101 Introduction to Geography: Human Environment
DEPARTMENT Geography and Regional Planning Interaction
CONTACT PERSON Robert B. Begg

II. THIS COURSE IS BEING PROPOSED FOR:

- _____ Course Approval Only
- x _____ Course Approval and Liberal Studies Approval
- _____ Liberal Studies Approval only (course previously has been approved by the University Senate)

III. APPROVALS

<u>[Signature]</u> Department Curriculum Committee	<u>[Signature]</u> Department Chairperson
_____ College Curriculum Committee	_____ College Dean*
_____ Director of Liberal Studies (where applicable)	_____ Provost (where applicable)

*College Dean must consult with Provost before approving curriculum changes. Approval by College Dean indicates that the proposed change is consistent with long range planning documents, that all requests for resources made as part of the proposal can be met, and that the proposal has the support of the university administration.

IV. TIMETABLE

Date Submitted to LSC _____	Semester/Year to be implemented <u>Fall 89</u>	Date to be published in Catalog <u>Spring 89</u>
Date Submitted to UWUCC _____		

LIBERAL STUDIES COURSE APPROVAL FORM

About this form: Use this form only if you wish to have a course included for Liberal Studies credit. The form is intended to assist you in developing your course to meet the university's Criteria for Liberal Studies, and to arrange your proposal in a standard order for consideration by the LSC and the UWUCC. If you have questions, contact the Liberal Studies Office, 353 Sutton Hall; telephone, 357-5715.

Do not use this form for technical, professional, or pre-professional courses or for remedial courses, none of which is eligible for Liberal Studies. **Do not** use this form for sections of the synthesis course or for writing-intensive sections; different forms will be available for those.

PART I. BASIC INFORMATION

A. For which category(ies) are you proposing the course? Check all that apply.

LEARNING SKILLS

- ☐ First English Composition Course
- ☐ Second English Composition Course
- ☐ Mathematics

KNOWLEDGE AREAS

- ☐ Humanities: History
- ☐ Humanities: Philosophy/Religious Studies
- ☐ Humanities: Literature
- ☐ Fine Arts
- ☐ Natural Sciences: Laboratory Course
- ☐ Natural Sciences: Non-laboratory Course
- ☒ Social Sciences
- ☐ Health and Wellness
- ☐ Non-Western Cultures
- ☐ Liberal Studies Elective

B. Are you requesting regular or provisional approval for this course?

- ☒ Regular ☐ Provisional (limitations apply, see instructions)

C. During the transition from General Education to Liberal Studies, should this course be listed as an approved substitute for a current General Education course, thus allowing it to meet any remaining General Education needs? ☒ yes ☐ no

If so, which General Education course(s)? GE 101

PART II. WHICH LIBERAL STUDIES GOALS WILL YOUR COURSE MEET? Check all that apply and attach an explanation.

All Liberal Studies courses must contribute to at least one of these goals; most will meet more than one. As you check them off, please indicate whether you consider them to be primary or secondary goals of the course. [For example, a history course might assume "historical consciousness" and "acquiring a body of knowledge" as its primary goals, but it might also enhance inquiry skills or literacy or library skills.] Keep in mind that no single course is expected to shoulder all by itself the responsibility for meeting these goals; our work is supported and enhanced by that of our colleagues teaching other courses.

	Primary	Secondary
A. Intellectual Skills and Modes of Thinking:		
1. Inquiry, abstract logical thinking, critical analysis, synthesis, decision making, and other aspects of the critical process.	<u> X </u>	<u> </u>
2. Literacy--writing, reading, speaking, listening	<u> </u>	<u> </u>
3. Understanding numerical data	<u> </u>	<u> </u>
4. Historical consciousness	<u> </u>	<u> X </u>
5. Scientific inquiry	<u> </u>	<u> X </u>
6. Values (ethical mode of thinking or application of ethical perception)	<u> X </u>	<u> </u>
7. Aesthetic mode of thinking	<u> </u>	<u> </u>
B. Acquiring a Body of Knowledge or Understanding Essential to an Educated Person	<u> X </u>	<u> </u>
C. Understanding the Physical Nature of Human Beings	<u> </u>	<u> </u>
D. Certain Collateral Skills:		
1. Use of the library	<u> </u>	<u> </u>
2. Use of computing technology	<u> </u>	<u> </u>
See attached.		

GE 101 Introduction to Geography: Human Environment Interaction
Liberal Studies Form--2

Part II

- A.1. It is virtually impossible to study the complex human/environment system without requiring a student to analyze, synthesize, and make decisions regarding the nature of the most fundamental human relationship. Our impact on the environment and its impact on us, in turn, finally require the student to make critical judgments.
- A.4. The relationship of humans to the environment is not static. Much of the story of the development of human-environment interaction is an historical process. This course develops that relationship stressing, in part, the historical dimensions of development and or relationship to the earth.
- A.5. Since much of this course deals with observations on changes in the physical environment, the scientific method is a key to comprehension. A number of concepts are present not as facts, but as scientific hypotheses. Evidence is examined from the recent literature emulating the process of scientific inquiry.
- 6. The kinds of critical thinking required in this course go beyond the strictly cognitive. Decisions regarding the control of population, the control of resources, and the exploitation of the material environment require ethical judgments as well as critical thought.
- B. One of the fundamental themes of geography, human-environment interaction is an area of inquiry that is fundamental for an educated person. In the next generation decisions will be made at the local, national, and international level where an understanding of the themes taught in this course will be essential in making informed judgments.

PART III. DOES YOUR COURSE MEET THE GENERAL CRITERIA FOR LIBERAL STUDIES? Please attach answers to these questions.

- A. If this is a multiple-section, multiple-instructor course, there should be a basic equivalency (though not necessarily uniformity) among the sections in such things as objectives, content, assignments, and evaluation. Note: this should not be interpreted to mean that all professors must make the same assignments or teach the same way; departments are encouraged to develop their courses to allow the flexibility which contributes to imaginative, committed teaching and capitalizes on the strengths of individual faculty.

What are the strategies that your department will use to assure that basic equivalency exists? Examples might be the establishment of departmental guidelines, assignment of responsibility to a coordinating committee, exchange and discussion of individual instructor syllabi, periodic meetings among instructors, etc.

See Attached

- B. Liberal Studies courses must include the perspectives and contributions of ethnic and racial minorities and of women wherever appropriate to the subject matter. **If your attached syllabus does not make explicit that the course meets this criterion, please append an explanation of how it will.**

See Attached

- C. Liberal Studies courses must require the reading and use by students of at least one, but preferably more, substantial works of fiction or nonfiction (as distinguished from textbooks, anthologies, workbooks, or manuals). **Your attached syllabus must make explicit that the course meets this criterion.**

[The only exception is for courses whose primary purpose is the development of higher level quantitative skills; such courses are encouraged to include such reading, but are not expected to do so at the expense of other course objectives. **If you are exercising this exception, please justify here.**]

See Attached

- D. If this is an introductory course intended for a general student audience, it should be designed to reflect the reality that it may well be the only formal college instruction these students will have in that discipline, instead of being designed as the first course in a major sequence. That is, it should introduce the discipline to students rather than introduce students into the discipline. **If this is such an introductory course, how is it different from what is provided for beginning majors?**

See Attached

Introduction to Geography
Social Science Requirement
Liberal Studies Form--3

Part III. DOES YOUR COURSE MEET THE GENERAL CRITERIA FOR LIBERAL STUDIES. Please attach answers to these questions.

- A. Those teaching the course will exchange syllabi and will meet at least once a semester to discuss the course and its fulfillment of the liberal Studies criteria and to recommend to each other or the department any necessary changes.
- B. See Syllabus.
- C. As indicated in the attached syllabus, the course relies heavily on outside readings from journals, books, and magazines. The readings are both academic and popular, but are designed to accomplish the objective of allowing students to see geography in the world around them.
- D. This is an introductory course. It differs from introductory courses provided for beginning majors in two ways. First, beginning courses for majors introduce students to the discipline. They use an inventory approach to expand the students awareness of the major topics, themes, and methods of geography. Each topic is treated in depth. This course, on the other hand, introduces the student to the manner in which the discipline is used in major world issues.
- E. The course is designed in such a way that general topics/ issues are the focus of discussion for each lecture. Geographical thinking is then applied to an analysis of these issues. Because our approach is based on applied knowledge, we feel confident that these skills will be carried on after the completion of students' formal education.

Part IV. DOES YOUR COURSE MEET THE CRITERIA FOR THE CURRICULUM CATEGORY IN WHICH IT IS TO BE LISTED?

See syllabus.

E. The Liberal Studies Criteria indicate six ways in which all courses should contribute to students' abilities. To **which of the six will your course contribute?** Check all that apply and attach an explanation.

- ☐ 1. Confront the major ethical issues which pertain to the subject matter; realize that although "suspended judgment" is a necessity of intellectual inquiry, one cannot live forever in suspension; and make ethical choices and take responsibility for them.
- ☐ 2. Define and analyze problems, frame questions, evaluate available solutions, and make choices
- ☐ 3. Communicate knowledge and exchange ideas by various forms of expression, in most cases writing and speaking.
- ☐ 4. Recognize creativity and engage in creative thinking.
- ☒ 5. Continue learning even after the completion of their formal education.
- ☒ 6. Recognize relationships between what is being studied and current issues, thoughts, institutions, and/or events.

PART IV. DOES YOUR COURSE MEET THE CRITERIA FOR THE CURRICULUM CATEGORY IN WHICH IT IS TO BE LISTED?

Each curriculum category has its own set of specific criteria in addition to those generally applicable. The LSC provides copies of these criteria arranged in a convenient, check-list format which you can mark off appropriately and include with your proposal. **The attached syllabus should indicate how your course meets each criterion you check. If it does not do so explicitly, please attach an explanation.**

CHECK LIST -- SOCIAL SCIENCES

Knowledge Area Criteria which the course must meet:

- ☒ Treat concepts, themes, and events in sufficient depth to enable students to appreciate the complexity, history, and current implications of what is being studied; and not be merely cursory coverages of lists of topics.
- ☒ Suggest the major intellectual questions/problems which interest practitioners of a discipline and explore critically the important theories and principles presented by the discipline.
- ☒ Allow students to understand and apply the methods of inquiry and vocabulary commonly used in the discipline.
- ☒ Encourage students to use and enhance, wherever possible, the composition and mathematics skills built in the Skill Areas of Liberal Studies.

Social Science criteria which the course must meet:

- ☒ Explore the critical thinking and analytical skills employed by the discipline to offer meaningful explanations of social and individual behavior.
- ☒ Acquaint students with the various approaches, perspectives, and methodologies used to examine the intellectual questions and problems of the discipline(s).
- ☒ Include, where appropriate, discussion of other cultures and subcultures, including minorities, and the roles of women.

Additional Social Science criteria which the course should meet:

- ☒ Illustrate how a discipline shares common theories and methods with other disciplines in the social sciences.
- ☒ Promote an understanding of individuals, groups, and their physical and social environment by exploring and analyzing concepts developed in the discipline(s).

University-Wide Course Analysis Questionnaire

A.

A1. This is a liberal education knowledge area course, not designed for majors. This introduces discipline to non-majors not non-majors to the discipline.

A2. Yes. See attached overview.

A3. This is a traditional offering.

A4. Yes. See attached overview.

A5. No.

A6. This course may not be taken for variable credit.

A7. Yes. List examples.

A8. No.

B.

B1. Single instructor.

B2. No.

B3. Many of the topics discussed are common to the social sciences, but in this course the topics are examined from a geographic perspective.

B4. Yes.

C.

C1. All resources except space are currently available and adequate. Sections of this course are anticipated to be quite large. We need better access to large auditoriums.

C2. No.

C3. There will be several sections taught each semester.

C4. Between two and four.

C5. See above (C1 and C4).

C6. No.

C7. No.

Course Analysis Questionnaire

Section A

A2 This course is part of an attempt to bring the introductory course offerings of the geography curriculum into conformance with the clearest and most recent thinking concerning the teaching of geography. It is part of a revision for purposes of the liberal studies offerings that effects three submissions. GE 101 Introductory Geography: Man and Environment has been renamed and substantially rewritten. It will be supplemented with two new course offerings (GE 103 Human Geography and GE 104 Geography of the Non-Western World).

To help the committee understand these changes we present a synopsis of some recent changes in geography as a discipline and a brief recapping of the evolution of GE 101.

Three Traditions in Geography

Even introductory textbooks now refer to the three themes or traditions in geography (DeBlij and Muller, 1986; Jackson, 1985). While space and the representation of space are unifying concepts in geography, geographers have historically approached these ideas in three very different ways.

The oldest and most secure tradition in geography is that of the physical geographer. Grounded firmly in the study of surface processes the physical geographer attempts to relate the physical world of soil, water, and weather to human culture and activity. This conception of geography is at the core of the GE 101: Man and Environment course that has been taught at IUP for more than 15 years.

The second tradition in geography is that of regional geography. Until the "quantitative revolution" hit geography in the 1950s physical and regional geography were the principal components of most departments. Regional geography originally focused on the attributes of the physical environment in a particular place and attempted to isolate their impact on cultural development. These original efforts have been greatly expanded and the influence of space on the economy, movement, and trade are part of the sub-discipline of regional science or regional studies today. While the regional approach to understanding geography was disparaged through much of the sixties and seventies, it is now being touted as instrumental to introducing students to the discipline (Abler, 1987, Presidential Address). It is integrative and place specific and is the most appropriate introduction for some students. This approach is reflected in our old GE 102 Geography of U.S. and Canada and the newly proposed GE 104 Geography of the Non-Western World.

Together these two approaches to introductory geography, the environmental and regional, make up 26.3 percent and 20.6 percent

respectively of total introductory course enrollment in U.S. geography departments (AAG, 1987). Adding GE 104 Geography of the Non-Western World is well within the framework of the American collegiate academic tradition. It is an appropriate social science knowledge area course and also satisfies the non-western culture course requirement. These two courses do not fully exhaust the introductory content of geography.

With the advent of high-speed computers and a series of conceptual breakthroughs during the 1950s, geographers began to investigate spatial phenomenon about which generalities can be made that are not location specific. These include: market area delineation, travel behavior, shopping behavior, freight movement, the formation of settlements, the hierarchy of towns and cities, the delineation of political space, spatial autocorrelation, diffusion, and migration. In the past twenty years, important advances have been made in what is referred to as human or systematic geography. These theories have been adopted and adapted by other social scientists. They form an important and separable part of modern geography. Our proposed course, GE 102 Human Geography, approaches geography in the context of what has been called quantitative or systematic geography. Schwendeman's (1987) lists human geography as making up 14.3 percent of the enrollment in all U.S. introductory courses, third in rank behind environmental and regional offerings.

This separation of GE 101 into three distinct introductory courses is not unique to IUP. DeBlij, Harm, and Muller (1988) in a discussion of the ideal content of an undergraduate program in geography begin with:

"An undergraduate curriculum contains all or several of the following courses (titles may vary):

1. Introduction to Physical Geography . . .
2. Introduction to Physical Geography . . .
3. Introduction to Human Geography . . .
4. World Regional Geography . . .

These beginning courses are followed by more specialized courses, including both substantive and methodological ones . . ." (p. 617).

In dividing the course as we are, the geography department not only comes into line with mainstream thinking, but recognizes a tacit division in our course offering that has existed for several years.

A4 The Evolution of GE 101: Man and Environment

The original intent of GE 101 as it stands was to serve as

an overview of human/environment relations in the physical geography tradition. While it has served that purpose for some teachers, it is fair to say that the course as originally designed no longer exists. Different teachers coming from different graduate schools which have emphasized different traditions have taught the course in three distinct ways (see above). This is not surprising. The content of GE 101 as it exists is too ambitious. Faculty have chosen to concentrate on that part of the discipline with which they were most familiar or which they considered most essential.

One group has been teaching largely physical geography. A review of the course syllabi of these professors show considerable overlap with the content of GE 241 Physical Geography. While this approach to introductory geography is the most common in the United States (see above), we have decided to substantially rewrite GE 101 to emphasize human/environment relationships and relegate pure physical geography to the 200 level for our majors. This is intended to avoid potential conflict with earth science introductory courses while retaining the crucial environmental emphasis that many scholars still believe is the bulwark of geography (Stoddart, 1987).

A second group of faculty have been teaching world regional geography. This is reflected in textbook selection and syllabi. Since this is an established tradition in geography and should be recognized as such, we will now teach GE 104 Geography of the Non-Western World. This introductory course could be appropriate for business majors. It provides a good overview of world resources and the cultural adaptations to their use in the developing world.

A third group of faculty have been teaching systematic or human geography. The textbooks they taught from often had "human" in the title and syllabi reflect a more quantitative and systematic approach. We wish to formalize this offering as GE 103 Human Geography. This kind of offering should appeal to more quantitative students and students in the social sciences other than geography.

Thus, while neither of the two new social science knowledge area courses has formally existed in the past, faculty have offered them. These proposals are an effort to make the diversity of our discipline and our faculties expertise available to the liberal education student at an introductory level.

NOTES REFERENCES

- Abler, R. "What Shall We Say? To Whom Shall We Speak?"
Annals Association of American Geographers 77, Vol. 4,
Dec. 1987.
- DeBlij, H. and Muller, P. Human Geography: Culture, Society,
and Space. New York, John Wiley & Sons, Inc. 1985.
- DeBlij, H. and Muller, P. Geography: Regions and Concepts. New
York, John Wiley & Sons, Inc. 1985.
- Jackson, W.A.D. The Shaping of Our World: A Human and Cultural
Geography. New York, John Wiley & Sons, Inc. 1985.
- Schwendeman's Directory of College Geography of the United
States. Richmond, Kentucky. The Geographical Studies and
Research Center. 1987.
- Stoddart, D.R. On Geography and its History. Oxford, UK, Basil
Blackwell, Inc. 1986.

GE 101 Introduction to Geography: Human Environment Interaction

Catalog Description: Introduction to Geography, 3 sh, no prerequisites. This course is designed to introduce students to the nature of geography, its intellectual challenges and unifying themes. It examines five general topics--population, agriculture, urbanization, geologic processes, and water resources. Throughout, case studies are utilized to demonstrate the application of geographic thought.

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Course Objectives: The objectives of the course are:

1. To increase student awareness and appreciation of the manner in which geographers approach current world issues.
2. To inform students of the principles and basic concepts of human geography.
3. To generate an interest in the discipline of geography that will foster a desire for further, indepth study.

Required Text: The Earth: a Physical and Human Geography, H.J. DeBlij. Published by John Wiley and Sons, 1987.

Non-textbook Required Reading: McPhee, John, The Pine Barrens, or Coming Into The Country,

Evaluation: Students' performance will be evaluated based on three in-class exams and two take-home exercises.

Exams - the three exams will comprise about 75 percent of your final grade, and will be of equal difficulty. Exams consist of a mixture of multiple choice, true-false, short answer, and essay questions. Exams will test the understanding and application of the lecture and reading material. Each exam is worth 100 points.

Take-Home Exercises - there will be two assignments to be done outside of class that are designed to illustrate some simple geographic concepts. These exercises will be worth 25 percent of your overall grade.

Grades will be based on the following scale:

90-100	= A
80- 89	= B
70- 79	= C
60- 69	= D
Below	= F

Course Outline:

1. Introduction; The Discipline of Geography.

The fundamental themes of geography.

GENERAL TOPIC: Population as an Agent of Environmental Change.

2. Regional Comparisons of Population (Developed and Lesser Developed Areas)

Spatial dynamics of fertility, mortality, and migration patterns. Ethnic and sexual variations in space. Definition of population rates and measures.

READ: Human Wants and Misused Lands, Erik Eckholm. Natural History, June 1982.

3. Social and Economic Consequences of Rapid Population Growth on Major World Regions

History of world population growth. Geographic variation in the causes of the "population explosion." Impact of rapid population growth on: 1) environment and natural resources, 2) demographic structure (dependency ratio), and 3) economy.

READ: State of the Earth, Lester Brown, et.al., Natural History, April 1985.

4. Responses to Rapid Population Growth: The Malthusian Thesis and the Demographic Transition Model.

Geographic significance of the Malthusian thesis and Demographic Transition model. China's "one child" policy. Sex differences in policy application: Indira Ghandi's India. Population control as a real issue.

GENERAL TOPIC: A Spatial-temporal Approach to Understanding Agriculture as an Agent of Environmental Change.

5. Living in Harmony with the Environment: The Spatial Organization of Hunting and gathering Societies.

Regional Case Study: The Kung Bushmen of the Kalahari. Examination of the way in which this simplest form of society adjusts its spatial organization to environmental conditions. Gender difference in spatial organizations.

6. Changing the Environment to Increase the Flow of Energy to Humans: The Spatial Organization of Swidden Agriculture.

Regional Case Study: Brazil--The spatial organization of the Swidden system practiced by Amerindians.

7. Impact of Humans on the Tropical Rain Forest Ecosystems.

Regional Case Study: Zaire--eographic expansion of Swidden agriculture in the rain forests. Large-scale developments in the rain forests: logging, cattle ranching, commercial agriculture. Impact of rain forest destruction on physical geography--climate, soils, and genetic resources. Deforestation and race: genocide?

8. Human Impact on a Dryland Ecosystem

Regional Case Study: Desertification and climate change in Africa's Sahel. The concept of "carrying capacity." The impact of overpopulation of humans and animals in specific geographic settings.

9. Subsistence Agricultural Systems.

The spatial organization of subsistence agriculture. Sexual roles and activity space.

Regional Case Study: India.

10. Geography of the Green Revolution: Promises and Problems. Spatial Diffusion of green revolution technology.

Regional Case Study; Punjab State, India. Benefits of the green revolution to developing nations. Monocultures and the erosion of genetic diversity.

READ: The Green Revolution, Robert Huke, Journal of Geography, November/December, 1985.

11. Agribusiness and Environmental Problems in the More Developed Countries

Regional Case Study: United States. The nature of "agribusiness." problems of water use, chemical pollution, and soil erosion.

12. Ecological Impact of Irrigation Systems

Regional Case Study: The Aswan High Dam of Egypt. Problems associated with the construction of the Aswan High Dam.

GENERAL TOPIC: The Impact of Urbanization on the Physical Environment.

13. The Spatial Organization of Cities.

Distribution of land uses within urban areas. Growth and spread of U.S. cities. The geography of suburbia and the "urban village." The ghetto: space and social control.

READ: Colossal Cities of the future, Edward Cornish, The futurist, September/october 1986.

14. Urban Impact on Climate.

Urban-rural variations in temperature. The "urban heat island." Pollution sources and types. Temperature inversions.

16. The Geography of Acid Rain.

Causes of acid rain. Location of acid rain in North America and Europe. Spatial diffusion of acid rain. Impact on aquatic and forest ecosystems. Proposed solutions to the problem--a comparison of U.S. and Canadian policy.

READ: The Acid Rain Whodunit, Kenneth A. Rahn and Douglas H. Lowenthal, Natural History, July 1986.

17. Coastal urban Developments and the Problem of Shoreline Erosion.

A geographic analysis of the recent "boom" in beachfront development.

READ: America Washing Away, Susan Gilbert, Science Digest, August 1986.

18. The Geographic Distribution of The Earth's Landmasses and Oceans and the Theory of Plate Tectonics.

19. The Global Earthquake Hazard.

Earthquake zones and plate boundaries. Spatial development along active faults: California.

20. Volcanic Hazards.

The global distribution of volcanoes. Volcanic hazards in the Western United States: Mt. St. Helens case study. Volcanic soils and agricultural productivity: Hawaii and Indonesia.

21. Geography of Energy Resources: Production and Consumption.

Location of energy resources and availability. Energy alternatives: solar, geothermal, wind, biological, nuclear. Geographic patterns of energy transportation and consumption.

22. The Global Greenhouses Effect.

Spatial variations in the carbon dioxide and climate problem. Causes and consequences of global atmospheric warming.

READ: Earth Atmosphere in More Danger Than First Thought, Donald Rheem, The Christian Science Monitor, June 12, 1986.

GENERAL TOPIC: Water Resources.

23. The Spatial Distribution of Water Resources. The Hydrologic Cycle and the Water Budget. Water Pollution. Karst landscapes. Location of U.S. aquifers. Pollution and depletion of groundwater resources.

Point and non-point sources of water pollution. Eutrophication. Waste water treatment.

READ: Water and Man, Grigori Voropayev, The UNESCO Courier, January 1985.

READ: Groundwater: Buried Treasure, Frank Forrester, American Forests, August 1984.

24. A geographic analysis of Water Problems in the United States.
Planning for future water use. The California water plan.

25. The Fate of the Earth.

The Gaia hypothesis.

READ: GAIA, James Lovelock.