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PROGRAM HISTORY
TOWARD HUMANE TECHNOSPHERES
1974-75

Richard Alexander

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Written for RULE Grant
by: Richard Alexander

PREAMBLE:

I will attempt to keep this history brief and to the point.

Several questions will concern us, beyond the recounting of "what happened."

- 1) Was the program "advanced"?
- 2) Who were the students, and to what degree were their "needs" met?
- 3) Did the program meet faculty expectations?
- 4) What was learned about the design of such a program?
- 5) What was learned that might apply to other programs?

These questions do not, of course, exhaust the concerns of this report. But they are the major concerns of the report, and at its conclusion I will append a set of brief answers. So the reader only concerned about those questions might conveniently skip to the appendices.

It perhaps also needs to be admitted that this history necessarily reflects the biases of its author. I will make every effort to present facts accurately, where there are facts obtainable. But the selection of incidents, the right given to various factors, the perspective -- in short the whole tenor of this history -- are all mine and do not necessarily reflect the feelings of my two colleagues.

HISTORY:

Towards Humane Technospheres began as a long-standing desire on the part of Rob Knapp. Beyond the obvious concern to offer a program that would deal with the manifest problems of the effects of modern technology on our social life, and the possibilities of new or modified technologies that might be more humane, Rob was also concerned to "de-mystify" technology. He feels many of us stand in such awe of complex technologies and of the mammoth bureaucracies which serve them that we are incapacitated when we come up against them. "Demystification" involves making the basic scientific and technological principles involved accessible to the non-specialist, and also introducing basic strategies for coping with technology.

The early faculty of the program was quite different from its eventual faculty; at one point Tom Rainey (Historian) and Stan Klyn (Engineer and Artist) were to be involved. By the time of the initial program description, Klyn had

withdrawn and been replaced (tentatively) with Bob Filmer (Engineer). The earliest program description printed here reflects the concerns of this group.

As twentieth-century Americans, we are far too familiar with our problems: racial and class injustice, sexism, pollution, the dangers of global war and local crime. Technological "progress" seems only to have aggravated these problems. This program will not, however, be morbidly preoccupied with the depressing details. We intend to move forward, to concentrate on establishing the theory and practice that will allow us to live more humanely.

We strongly believe that humane living requires a satisfactory "technosphere". We invented the word "technosphere" to emphasize how broad a view we want to take. A technosphere consists of human beings, their personal and group relations, and the non-human devices they use and are used by. The human aspect - emotions, skills, politics, and so forth - is absolutely essential. So is the non-human aspect - mechanical, electrical, or whatever. Both must be studied together since building a humane life will require satisfactory solutions for the complicated interactions between them. A good example is contemporary transportation. What it is like to work on an assembly line, to depend on cars for social contact and shopping, to rely on trucks to get a farmer's produce to market, what the dominant economic position of the auto industry is - all these things must be considered along with fuel economy, crash-resistant bumpers, and other technical matters. It is senseless and misleading to think about cars without people, and it is just as false to talk about present-day Americans without cars. Both are part of a whole universe of psychological, political, economic, and technical activity - a technosphere.

Study Areas. Humane life cannot survive unless its technosphere satisfies the constraints imposed by physical and human nature. And it cannot be established unless the personal, institutional, and technical obstacles posed by our present technospheres are overcome. We intend to study the constraints and obstacles and to experiment on a small, manageable scale with alternative technospheres.

We will work in four general areas:

- (1) Strengthening our sense of what "humane" means for individuals and groups. We will be particularly concerned with questions of power and powerlessness, since they are fundamental to the problems of working people, women, and minority groups. We are hoping for the strongest possible enrollment from these groups.
- (2) Understanding how technospheres affect individuals emotionally, physiologically, politically, and otherwise. In this study, as in the first, we will use introspection, reading, seminar discussion, and simulation.

- (3) Studying institutions: We will be interested in such questions as "Where and how are corporate decisions made?" "Are there any real advantages to centralized administration?" "How can individuals control their own lives?" Readings and lectures on American politics and economic theory and on specific case histories will be the base of our discussions.
- (4) Demystifying technical devices. Not understanding such devices is a major source of our present anxieties. We intend to fight this by studying basic principles of mechanics and computing. The experimentation with alternatives will reinforce this learning with practical experience.

Experimenting. One important way of unifying the four study areas will be our experimentation with alternative technospheres. We intend both to design and actually operate the experiments. To return to transportation for an example, the program might design and operate a transport system to get the program's own students and faculty to and from the college. This project would require imaginative design, group decision-making, budgeting, application of technical knowledge, and adhering to work schedules.

Students. The task is difficult. We can make progress only if participants are seriously committed to it. Formal background is less important than willingness to work hard, but you should be prepared to read and discuss abstract, theoretical books on the level of Marcuse's One Dimensional Man, to work on the experiments, to think about your feelings and reactions, and to learn some basic science. We are not expecting any previous scientific background.

Participants may well come into the program with a strong background in some, but not all of the study areas. We want to take advantage of such strengths through workshops and student teaching. To a limited extent, the program faculty may be able to sponsor Individual Contracts for further work on specific areas.

We also expect a lively debate between those who want to find viable small-scale technospheres for living outside the mainstream of American life and those who think it is impossible to escape the mainstream and who are working to humanize technospheres on the community or national scale. The constructive tension between these views should lead to more realistic appraisal of problems and more creative solutions than either group would find on its own.

IMPORTANT NOTE: At the time of printing the Supplement, we have not chosen specific case study topics or book lists. The examples used in this description are examples only. We will do or read similar things, but not necessarily exactly these. If you are interested in discussing the program further, you should contact:

Rob Knapp (Coordinator) at 866-6723.

We will be delighted to talk, argue, and consult with you.

Equivalencies:

Students enrolling in this program can expect to do work in the following subject matter areas: Social Science, Natural Science (Basic & Applied), Humanities (Literature), Political Science, Economics, Mechanics, Computing.

This description tries to indicate that the program will be "tough" and "hard-working," though not necessarily advanced, and to appeal to minority students and (to some degree) to women. It had been considerably modified since its first draft to reflect the major concerns of Bob Filmer -- the possibilities of viable communities outside "the mainstream," and the exploration of small-scale, "alternative" technologies. Filmer was also (after a number of bad contract experiences) concerned to attract students who wanted to work seriously and hard on technological problems, and to repel those whose over-riding concern was "alternate life-styles". As he put it, "No more yoga."

Richard Alexander (Literature, etc.) entered the program early in the spring quarter (1974) when he learned that Tom Rainey had withdrawn. It was his initial contention that the program, as described, simply assumed that everyone knew what "humane" meant, whereas the ethical questions involved in the effects and uses of technology were just those which were the most difficult and controversial questions to be asked. He was, like Knapp, generally more concerned with "large-scale" issues than was Filmer thinking that the vast majority of Americans will find themselves necessarily in the mainstream and enmeshed with gigantic technologies. He was, like Filmer, interested in problems of "community." All three wanted the program to be as rigorous as possible, and to avoid its catering to navel-gazing. (To some degree, "rigor" is thus defined negatively, as something which is not navel-gazing -- as opposed to defining it positively, as precision and depth in regard to specified subjects and problems.)

A considerable effort was made to do the initial planning with interested students. Throughout spring quarter regular meetings were held with the three faculty and whichever prospective students were available. At this point, no discussions took place without student "input," and much of the discussion consisted of probing students to determine their concerns and interests. It cannot be said that this effort was particularly fruitful. The one student who made serious contributions was Sarah Gunning, who argued for heavy inclusion of women's materials (for instance, Shulamith Firestone's The Dialectic of Sex), and for the requirement that every student in the program intern in an industrial job somewhere as part of the program. But Ms. Gunning did not at last join the program, and her major contribution therefore was to inspire Knapp to explore the relevant literature on women and industry, and thereby to discover Janeway's Man's World, Woman's Place. Nothing much else was learned from this long process, and indeed the discussions tended to ramble endlessly around in the prejudices and feelings of whoever were present, starting nowhere in particular and eventuating only in frustration.

By the time of the spring Advising Fair, the general intentions of the program had taken shape (all easily inferred from the foregoing remarks) but

nothing of the format of the program was clear. At this point, we were describing the program as a "work" program, and as one which would be intellectually demanding, but definitely not as an advanced program. Many of the students who approached us were worried that the level of science demanded would be too advanced for them, and they were all reassured that only the most basic science would be required of anyone, and that would be supplied within the program. A similar assurance was offered for other similar worries by students. Moreover, while we tried to attract "upper level" students, and to encourage students who already had some sort of expertise (scientific or otherwise) we made no serious effort to discourage lower division students. No screening, beyond encouragement or discouragement given students in brief interviews, was done. We relied entirely on the program description and our personal presentations to encourage the students to self-select themselves. In a few cases students who seemed primarily devoted to self-exploration were actively discouraged.

We took this tack not only because it seemed natural to us, and because the students who approached us seemed to require it, but also because we had begun to suspect that the program might be seriously underenrolled and that therefore we would need to attract as many as we could of the genuinely interested students.

In the event, the enrollment of the program was remarkably heterogeneous as regards level and expertise. In the total enrollment in the program (counting every student who was ever enrolled) 14 were Freshmen, 20 Sophomores, 17 Juniors, and 9 Seniors. When one adds however that four of the Seniors and three of the Juniors shortly dropped out of the program, the enrollment becomes quite unbalanced in the direction of the lower division. Only 14 of all of these students had any background in Science at the college level. As the listing of all the students in the appendix reveals, these students came from a great variety of backgrounds, and were motivated by a great variety of interests.

I do not recall that this information ever played much part in our planning. We did make a certain attempt to explore the records in the Registrar's Office, but my remembrance is that the only information we used from that was that the students seemed on the whole to be well-motivated as students and successful learners, which notion encouraged us in our desire to be fairly rigorous (but still rather vaguely so I suppose we meant that, on the whole, we could safely hand them "the real thing" to study. We did not seem to mean that we would design in-depth and demanding courses of study.) We seem to have assumed all along that we could count on no particular expertise from the group of students, so that any topic we wanted to cover had to be dealt with on an elementary level, at least initially.

At midsummer, the faculty team resumed serious planning. Students were not excluded from these meetings, but there were very few around and no attempt was made to attract them. Even so, a few students did join us from time to time. The faculty meetings went remarkably well, and rapidly, against some of our expectations. The frustrating meetings of the spring, and a general expectation that we would conflict with each other (an expectation rather widely shared on campus) had led the three of us to expect

to have some trouble working together. But we worked very well together then, and indeed throughout the year. Certainly the pressure of time, and the absence of students (who seemed always confused, and to whom we all three automatically deferred), and our mutual delight to discover that we indeed could work quite amicably, all contributed to this positive outset.

Among our first agreements was that we would calculatedly exploit any differences among ourselves, both as to style and to content. As it turned out, there were too few real differences in anything but style, and so we seldom had any chance publicly to exploit our differences. This agreement had, however, three major immediate effects. It released us from our worry about possible conflicts, so that we approached each other and our meetings with direct good feelings, and with an easy mutual respect for each others' knowledge and capacity. Agreeing to disagree also entailed the agreement to exploit our several expertises, and not to inhibit each other in the interest of some overarching program aim; we all felt obliged to make our own peculiar contribution to the program, and to honor -- indeed demand -- the contributions of our colleagues. (This should be seen in distinction from a tendency in some other Evergreen programs for the expertise of some of the faculty to remain hidden and unexploited, for some faculty even to be inhibited by the program design.) And these two agreements led to the further determination, once we had determined just what we would offer the students, to allow the faculty with the most expertise in an area a free hand in designing the work for that segment.

I do not want to imply that we had no serious disagreements during the "fine tuning" phase. Indeed, our debates were long and heated. But they were always amicable, always governed by a desire to reach a true consensus about whatever question was at hand, and a genuine willingness to honor each other's contributions and hesitations. The details of these debates are of no particular interest, nor is it to the point to determine who was responsible for what decision. The team reached a genuine consensus. (In the face of this consensus, and our very positive feelings about each other, we felt no compulsion whatsoever to draft a "covenant." Indeed, the matter never came up.)

We debated at length whether the students should do an "internship" of some sort, or a "project." We rejected rather quickly the notion that we should specify any particular kind of internship (for instance, Ms. Gunning's assemble line proposal); we spent much more time debating whether there should be any limitations placed on the range of legitimate projects, and wound up with the rather malleable standard that any odd proposals had to be justified to us as somehow related to the issues of "a humane technosphere." We agreed, after some debate, on a three-month period to be devoted wholly to the project. This resulted in our program's peculiar time division, which violated radically the three quarter pattern now established at Evergreen: October through January -- the "academic" portion; February through April -- the "project" portion; May and June -- a program wrap-up.

We were concerned that our students learn some technological skills and some basic science. However, it was obvious from even a cursory glance at

the transcripts of the students that there was no one skill that all of the students would need. Moreover, we easily generated a lengthy list of skills all of which we thought would be relevant. We also debated whether all of the "skills" should be technological or not: for instance, since Economics would be an important part of the program, would learning some basic economics constitute a skill? Did reading and writing constitute a skill? Did the intensive exploration of the thought of Lewis Mumford constitute a skill? Our eventual solution looks good on paper, but turned out fairly unsatisfactory. We required each student to enroll in two "skills workshops" or the equivalent, one to be a "hands-on" skill of some sort which the student had not already mastered, one to be a "hands-off" intellectual skill (read Economics, or Mumford) which the student had not already mastered. We would offer some of the workshops ourselves (for instance Basic Science, Wood Construction), others would be available on campus as modules or as standard offerings by some campus agency (Economics, Chemistry, Computers), others we arranged privately to be offered by qualified individuals (Internal combustion engines, electronics), still others the students might arrange for themselves.

Alexander planned to offer a "hands-off" intellectual skills workshop, and his first impulse was one in which the assembled works of some prominent intellectual, whose work was at least in part dedicated to a critique of technology, would be studied as a whole: for instance, Paul Goodman, or Bucky Fuller, or Lewis Mumford, or Bertrand de Jouvenal... But, not knowing which such thinker the students might be most interested in (of course, the students knew none of them, and so couldn't choose in any case), not knowing how many, if any students would be interested, acceding to the general rush for "hands-on skills" and for basic science -- he put off making firm plans and the result was that nothing happened at all.

We were also concerned that students come to grips somehow with a "technosphere" as a whole -- that is with a fairly discrete technology (or technological industry) and all its social and political ramifications, and the web of dependency surrounding it. This was all very hard for us to explain to ourselves, much less to others. Hence, our dependence upon that ugly neologism "technosphere." But, we thought, if we design the activity well enough, then the concept will emerge of itself. (And to a large degree, that did happen.) After much debate we selected four industries -- wood, transportation, energy, computers. We selected these four because the resources were close to us and thus available for direct study, because they were all clearly relevant to the Pacific Northwest, because these four seem to cover the general variety of technologies and industries which we wished to discuss. We called these "case studies" and gave each one month for research and presentation. We decided to allow each student to self-select one of these case studies, and to give the four groups thus formed full responsibility for researching the subject area and designing a presentation for the whole program. In short, we determined to turn this over to the students entirely.

Meanwhile, each of us faculty would design "academic" segments, ranging in length from one week to three, to cover the broad intellectual discipline areas we felt were required for the study of any "technosphere" whatsoever. There was relatively little debate about what these disciplines should be -- philosophy, design, the sociology of work, cross-cultural perspectives, systems

analysis, economics. There was some debate about the amount of time to be spent on each one and the order in which they should occur. There was no debate at all about who should take responsibility for the design of each segment. Alexander designed Philosophy and Cross-cultural perspectives; Knapp designed the Work segment. We left the economics for later, on the grounds that none of us was well-enough trained, and that it would be good to give the students an opportunity to help design that segment.

We also left the conclusion of the program much in the air, except that we felt (vaguely) that it should involve the presentation of each student's three-month project, that it should somehow wrap up the year, that it should be concerned with Futures.

With all that behind us, we sent to students a detailed description of the program:

Here is a brief description of the state of organization of Toward Humane Technospheres as of August 22. We haven't got all the details worked out, but as you'll see a good deal has become defined. The result is a program that will keep us all very busy, but should be fruitful and exhilarating.

We are planning to approach the subject matter in four ways, first through core material, aimed at bringing forward the important issues and problems that will arise in all the specific situations we study. This is material that we'll ask everyone to work on. We will begin by discussing what "humane" means, and then move on to stress the areas of design, crosscultural comparison, work, systems, economic effects, politics, and futures. We'll have a lot of reading, plus lectures and book seminars. In addition, everyone (including us) will keep a journal on ideas, impressions, and specifics on technology, individuals, and society -- everyone will write at least five pages per week, and we'll exchange journals weekly and write responses to other people's thoughts.

Second--case studies: We've picked four areas -- wood, transport, energy and computers -- which seem to contain all the most important general technospherical problems. We've composed a list of questions we'd like to apply to each case study and to every other specific situation we run across. These are questions on which we should each try to work out a personal position, because the answers influence where we'll focus our efforts in humanizing technological society. Here's the list:

1. What important moral questions are raised by a given field's products or practices?

For example, does activity in a given field strengthen or weaken family life? Increase or decrease individual freedom? Support or undermine social structures people rely

on? And are these tendencies desirable or not?

What alternative products or practices would help resolve these moral questions satisfactorily?

2. What assumptions about human nature and potential are embodied in a given field's activities?
3. What design constraints would alternatives have to satisfy in a given field? To what extent are these constraints historical, psychological, economic, moral, political, physical (thermodynamic, material, infrastructure, environment, resource)? Are they absolute or elastic?
4. In what ways do women face a significantly different environment from men? What about minority people? The aged? Working class people? Children? Institutionalized people?
5. What are the advantages and disadvantages of small-scale organization in a given field? Large scale? At which sizes does a given advantage or disadvantage appear?

By "small-scale", we mean both homesteads and small cooperatives, and decentralized business and bureaucracy.

6. Would alternative working arrangements improve the work environment in a field? Should such alternatives be adopted, or would there be undesirable effects elsewhere?
7. What are the economic realities and implications of present or proposed arrangements?
8. How does technological activity in a given field affect political processes, and vice versa?
9. How have different cultures resolved all these questions? How is it that the same technical development has such different results in different cultures, and that the same human problems lead to differing technologies?
10. Finally, what can one say about the total situation in a given technosphere? What is the total picture or Gestalt? What is the holistic view?

This is a fuzzy question, and one of our tasks is to work out ways of seeing what it means.

It seems to us that a good way of handling the case studies is to hand over these questions to a student team of about 15 and let the team answer them through talks, debates, guests, slide shows, etc., which it would prepare and the whole program would attend. This will demand intensive work and organization, and should provide a really deep view of how each case area works. Each student would work on one such

team during the year; it will probably take two busy weeks to prepare and two weeks to present the material.

The third approach to technospheres will be through study groups. We'll ask each student to acquire two new skills -- one hands-on technological skill (e.g. internal combustion engine mechanics, welding, wood construction, drafting) and one intellectual skill directly relevant to the program (e.g. computer programming, statistics, the concepts and methods of a thinker like Jacques Ellul or Lewis Mumford; basic science would fit here, too). We are organizing some of these -- at the moment we're fairly sure of having internal combustion, wood construction, programming, and basic science. But students who want to pursue other directly relevant skills should definitely try to find ways of doing so and should consult with us so that we can help work out the details. The typical study group will meet for two or three hours one afternoon a week, and each student will do two of them.

The last component is the project, in which groups or individuals choose a relevant topic or activity that is important to them and make real progress in working with it or understanding it. This might be developing and operating a device (wind changer or fly-wheel vehicle), organizing a system (registration procedure for the college), holding an internship with a state agency or technological business, or something else. We want to encourage experiments that test alternatives that might humanize our technospheres, or that test some of the assumptions or components of such an alternative. The main criteria are that project proposals be relevant to the program, have some way of sharing the results, and look as though they can be achieved, so the range of possible projects is very wide. We will try to help generate project ideas through a colloquium series and through program-wide discussion of possibilities. We're planning to devote the last half of the winter and the first half of the spring quarter entirely to projects. During this time, many students will be off-campus and there will be no whole-program activities. The projects will keep us plenty busy. We will reassemble in early May for a final period of studying futures and sharing and assessing projects.

Fall Quarter Book List

Humane:

Functional Prerequisites of a Society - Aberle, et. al.
Wisdom of Confucius - Confucius
Ethics One/Politics One - Aristotle
Reason in History - Hegel
Leviathan - Hobbes
Individualism Old and New - Dewey

Design:

Design for the Real World - Papanek
either - Design Methods - Jones
or - Intro. to Engineering and Engineering Design - Krick

Crosscultures:

Chrysanthamum and Sword - Benedict
Japanese Society - Ishida
The Central Eskimo - Boas
Eskimos Without Igloos - Graburn

Work:

Man's World, Woman's Place - Janeway
Work and Community in the West - Shorter
Working - Terkel

Basic Science:

The New Science of Strong Materials - Gordon
Energy From Nature to Man - Reynolds

Toward Humane Technocircus, Part Two

WELCOME BACK!

Generally, the goals for each of us for the next six weeks are to absorb and understand material on systems and on economics, come to conclusions about the most important and promising areas of action formulate a project that will achieve definite results in each individual's chosen area of action, given the inevitable limitations bring the skill workshops to a successful conclusion evaluate the first half-year by writing evaluations of self, faculty, program, and enjoy all these things.

To get this all done will ask a lot of all of us, students and faculty. We need to focus our attention and think carefully and put in time. Whether anything happens depends on whether we make it happen.

Specifics

1. One week on the systems approach. There will be several guest speakers and lab demonstrations, and some reading:

C. West Churchman, The Systems Approach

Dennis and Donella Meadows et al., The Limits to Growth

Scientific American reprints, "Feedback" and "Origins of Feedback Control"

2. FIELD TRIP to Boeing 747 Assembly Plant in Everett.

THURSDAY all day starting at the circle at 8 AM.

3. Four weeks on topics in economics, organized around the discussions of the last week of fall quarter. We have tried to fit as much as possible into a short time, as well as giving a chance to dig into topics of particular interest. We will have readings:

Robert Heilbroner, The Making of Economic Society

Mancur Olson, ed., The No-Growth Society

William Domhoff, Who Rules America?

guest question-and-answer period on Heilbroner and basic economics
guest lectures on the current recession, income redistribution, technology and the corporate state

explication seminar on "Should the Poor Buy No Growth?", article in The No-Growth Society

choice of writing a paper (to read in seminar) } on one of the
or organizing a debate } question areas
on next page and

Question areas:

1. What is the relationship between high technology and the corporate state? Does one necessitate the other?
2. What preconceptions about human nature do economic systems contain? How are they fulfilled? How can negative economic impacts on the social environment be assessed and minimized?
3. Are small-scale organization and production viable economic alternatives?
4. What degree of economic isolationism would be possible or desirable for the U.S.?
5. Is a no-growth economy possible for the U.S.? What are the necessary and the desirable relationships between the economic system and the physical environment?

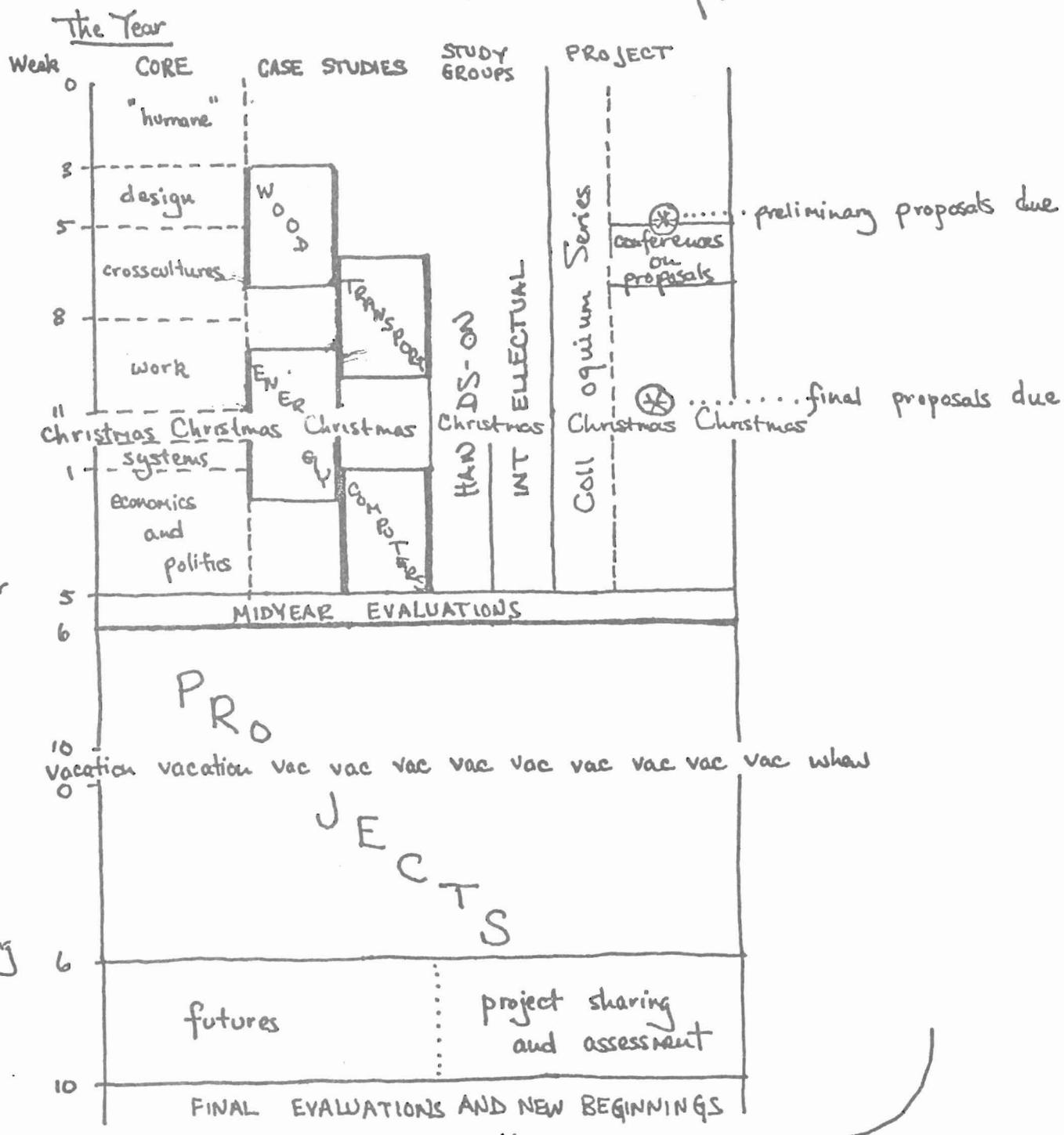
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To some extent, these will be touched on in the lectures, readings and discussions. We will try to give active bibliographic assistance to people interested in areas (e.g. scale) which have been unavoidably slighted in our selection of material. Members of the Computers case study do not have to write a paper or debate. We'll organize meetings of others to see if there is interest in a debate and to coordinate use of resources.

↔ Schedule as of now ↔

mon.	tues.	weds.	thurs.	fri.	read
systems lecture and demonstrations (Bob) LH4	films (Bob) guest lecture LH4	biofeedback lecture and demonstration (Dave Peterson) LH4	BOEING trip	discuss homework problems (Bob) guest lecture LH4	Churchman Meadows reprints
Sems A and B formulate questions guest Q-and-A session	Energy case study Q-and-A (Bob, Richard, Rob)	guest lecture and Q-and-A	sem A begin explication sem B sem	Energy case study discussion	Heilbroner (by Mon) Johnson article (by Tues)
Energy case study	sem B explication ↓	sem A explication A ↓	guest lecture and discussion	sem A finish explication sem B sem	
recession lecture	sem A Domhoff sem B Domhoff	sem B papers ↓	sem A papers ↓	Computer case study	Domhoff
Computer case study	sem B papers ↓	sem A papers ↓	debate	Computer case study discussion	

Humane Technospheres



At this point I am sorely tempted to launch into detailed histories of each element of the program. Perhaps that might be of some interest to someone, but I am not sure to whom, or to what purpose. And so, conscious to all the raggedy ends I am going to be leaving, I suppose it wisest to attempt merely to make some trenchant generalizations and to back them up a bit. The following material is arranged in no particular order, just in the order they occur to me.

I. THE MONTH-LONG CASE STUDIES:

In spite of initial panic, and continuing frustrations, most of the students came away from their case studies thinking that it had been a very good, very fruitful experience. To be sure, most of the learning was done by the students working up a case study, not by their audience in the presentation, but that is almost something to be assumed.

The faculty fell quickly into the habit of leaving the students quite alone to work up the case study. We arranged with the Reference Desk in the Library for a good deal of support. We managed to obtain a small room in the library proper where students could meet, discuss, store materials. We met (first all of us, then just one of us by turn) with each group at the beginning, to offer what support, advice, comfort we could. But ultimately we left each group to its own devices.

The first group -- the Wood Cast Study -- had the most trouble, and made the most mistakes. Of course. Everyone else learned from their mistakes, and things steadily improved. One important lesson came from the Wood Cast Study's reliance on guest speakers. It turned out that these guests were uniformly unsatisfactory, for they each brought their own reservations, ineptitudes, etc., and were all of them interested in points our students were not concerned with and not interested in points our students were concerned with. The students quickly came to the conclusion that while they should interview outside resources in their research, that they the students could themselves do much better jobs of presenting their findings. They also discovered the enormous utility of dividing the research labor, and of agreeing fairly soon on a set of general questions for their study and a general format for presentation. For many of the students, the case study experience was their first taste of sustained and serious group research. (In some cases, it was the first taste of any research whatsoever.) As a result they often learned a great deal about group dynamics, and about the need for plans, for structure, for closure. (These lessons were learned by the faculty as well, but in other contexts.) But it is, let us admit, difficult to be quite sure about any of this. One has to count on memories of remarks these students made at the time, and on statements made in student self-evaluations.

It is also, and for many of the same reasons, difficult to be sure what any one student, or any group of students, learned about the substance of their case studies. There were no papers written, no tests given, no extensive notes taken on the performances in the presentations. (Knapp: I have notes of the individual presentations. Notes of that kind may be a neglected basis for evaluation here.) My hunch is that the majority of the students (say 2/3) learned a great deal: details of technologies involved,

the structures of the industries, the inter-relations of technologies and working conditions, the size and spread and ramifications of such large industry networks. This was most obvious in the Transportation and the Energy case studies. But we have very little hard evidence of any of this to point at. A typical Evergreen failing. And was the study of the industry "rigorous?" Well, I suppose it was very extensive for the participants in each case study. Each group started out naive; by the end of the month each group was able to discuss issues within their case-study area with a considerable degree of sophistication, at least for undergraduates. Perhaps they could have learned more of substance through selected texts, lectures, tests. But then they would have lost that group experience. And, as I said earlier, the students, despite initial panic, generally felt that the case studies were the most successful of our efforts.

II. SKILLS WORKSHOPS:

Results here ranged from generally satisfactory to abyssmal. Part of the difficulty lay in the circumstance that students working on a case study would almost always devote full energy to their case-study research and correspondingly slight their skills workshop. Given the necessity to parcel out time to three activities at once -- the case-study, the "academic" activities of the program, the skills workshops -- the skills workshops always got short shrift. Then too some of the workshops were very poorly conducted -- in particular the internal combustion workshop, which never really got off the ground. Workshops conducted by our own faculty (Basic science by Knapp; Wood construction by Filmer; Writing by Alexander) worked much better, largely because of faculty concern and faculty drive. Evergreen modules taken as a substitute for workshop apparently proved uniformly thin and vaguely unsatisfying.

By their nature -- by plan -- each workshop was basic. These were to be workshops in skills the students did not then have. And so it cannot be imagined that the work was very advanced, by any criterion. (A small group in the Basic Science Workshop broke off to do somewhat more advanced work.)

Nevertheless there were a fair number of students (half, I would estimate) who learned a great deal from their workshops. I know this only from hearsay and second-hand report about all but the one workshop I myself conducted, that is the Writing workshop. In that Writing workshop the six students who were most faithful markedly improved their writing skills, and because they were all writing about topics which had come up in their individual work during the year, all six of these students thereby came to far more precise, rigorous, and sophisticated understandings of their chosen subjects than they would have otherwise. And at least two of these students were working on topics -- in social and economic history -- which would be considered advanced by anyone's standards.

In short, in spite of obvious difficulties, the workshops idea seems to have been a fairly sound one, though the workshops themselves did not feel

so successful to the students as the case-studies had. The impulse was a sound one. Perhaps they could have been organized better. Certainly it seems fair to say that whenever the workshops were clearly successful, that success depended in large part on direct program faculty involvement.

III. THE "ACADEMIC" SECTIONS

Here we all suffered from the necessity to cover a lot of material very fast, and from the fact that for any one subject a majority of the students were raw novices while some few of the students had sufficient experience in the subject that the segment proved far too elementary. In every case we had carry-over problems: what the students had "learned" in one segment they tended to drop when they moved to the next. For instance, very few of the students applied what they had learned in the Philosophy segment to the design issues they were asked to face in the following Design segment. The Work segment tended to fly right past people, and was very seldom brought to bear in the following Cross-Cultural segment.

The faculty came, slowly, to see that we needed to design-in carry-over, that we needed to insist, with almost painful redundancy, on the relations between previously taught ideas and the present subject of study. We came to see that it was vitally important to design clear tasks -- both intellectual tasks and practical tasks -- as the heart of each such segment. We came to see that it was necessary to bring such tasks to closure, to completion. For instance, the Design work was just beginning to be interesting when it was dropped, and none of the Design work was ever really completed. It was left hanging in the air, while we all shifted our attention to what appeared the wholly unrelated topic of work and working conditions.

But, in spite of our initial puzzlement, dissatisfaction, and frustration, as it turned out there was eventually considerable carry-over -- depending always, of course, on the individual student. Already, in the economics section, for instance, we could see the students beginning in at least a tentative fashion to use previous materials in their attempts to come to grips with economics. This was particularly evident in a student-designed, student-researched, student-presented panel on competing economics systems and the social and cultural assumptions which underlay each system. These students (building on their experiences in the case studies) not only found it quite natural and relatively easy to go about designing such a presentation quite on their own, but they also were able (building on what they had learned in Philosophy, in Design, in Work, in Cross-Cultural comparisons) to ask highly sophisticated questions about the Chinese system, the Mexican system, and so on, and also to offer very interesting speculations about answers to their questions. Indeed, the students found this so easy and natural that they hardly remarked about it at all; the faculty were overjoyed and impressed. As another instance, by the end of the year most of the students found themselves going back over their notes and materials from the first of the year, now comprehending them with some ease and recognizing, often with surprise, how much of this material they had been quite unconsciously using.

Again, it is unfortunately necessary to depend upon such subjective "evidence" to judge how much the students learned. We gave no tests. We

seldom demanded extended writing, and then only of specific students. We don't know. Again, a typical Evergreen bind.

I doubt that it is useful to go into the details of each of the academic segments. Our subjective judgments would lead us to say that the least successful segments were Systems and Design (both suffered from a shortage of time, and somewhat inept design). The most successful seems to have been the Cross-Cultural work. In order to explain that, I would have to engage in lengthy discussions which would probably be of little use here.

IV. ECONOMICS:

As mentioned much earlier, the three faculty postponed design of an Economics section. We wanted the students to be involved. We none of us felt sufficiently qualified to do it alone or as a group of three. We needed to know what from this vast field the students wanted to learn. And we had run out of time. And so, before Christmas, we spent several long sessions with the students planning the Economics section. (Knapp: This planning section was one of our accidental successes.)

Nothing much would be gained by detailing our strategy in conducting these sessions. It is important to note, however, that the faculty did not stay in the background; we very actively engaged in the design process. We offered suggestions as to topics. We (more importantly) offered suggestions as to process, proposing among other things debates, panel discussion, and task-oriented seminars. We actively solicited suggestions from the students, and worked hard to get those suggestions clarified. Most importantly, we listened carefully and then took upon ourselves the task of devising an overall design which would include most if not all of the subjects and methods that the students had requested. We imposed nothing that the students had rejected, or had not requested.

The resulting month of study of economics involved some use of standard readings (Heilbroner, for instance), some lectures (guest lectures and lectures by program faculty), some papers and student presentations (in part described above), and a wholly new (for us) departure in seminar design.

The seminars had been, by general consensus, the weakest element in the program so far. Even those students who had been in fairly "good" seminars expressed disgruntlement with them. Most people agreed we should have seminars, but not the sort we had been having. What had we been having? Put crudely, we had been asking the students to do some common reading, attend some common lectures and presentations, and meet two or three times a week to discuss. The students had been assigned to seminars in a rather random fashion, the only criteria being sex and age balance, and (in a few cases) making sure that a student well-known to one of the faculty was not placed in that faculty member's seminar. The result had been groups of students with no particular commonality, and no particular reason for discussing anything. The usual seminar rambled along from topic to topic, never getting very far with anything, and was often dominated by whoever among the students was most articulate or most aggressive. Some seminars worked better than

others, but there was no great success in any case. The Design section, because it had imposed tasks on each group, did produce some good seminar work, but there had been no carry-over from that.

The Economics seminars differed from the previous model in two important respects. 1) The students were asked what sort of seminar they wanted to be in. In tabulating the answers each student wrote for us, we discovered that the groupings divided largely on the basis of the degree of tough research and discussion demanded. So, we had seminars which wanted to do a lot of research and have heavy discussions, and seminars which wanted relatively little pressure to research or to discuss. There was also some preference for faculty members expressed, and wherever possible this was honored. And whenever a student mentioned other students that they did not want to work with, that was honored too. As a result, the new seminar groups were far more congenial, and far more ready to work up to each other's expectations. All this would have been impossible, of course, before the second quarter.

2) The seminars were organized around a task in explication. Since the students had requested a study of "Growth and the No-Growth Economy," we had adopted a collection of essays on the topic. We (the faculty) chose one of these essays -- on Income Redistribution and the No-Growth economy proposals. We chose it because it raised crucial issues and referred back to ideas from other articles in the collection, and referred out to concepts and major figures in Economics not thoroughly covered in the collection. We then identified crucial sections in the article. Each member of each seminar was allowed to pick two of these short sections from this article to research and to explicate and criticize in seminar. The task of the whole seminar was: first to reach a firm understanding of the article at hand, and second to arrive at a fair consensus about the value of the ideas expressed in the article -- whether they were soundly argued or not, whether they indicated real flaws in no-growth proposals or not, whether they indicated sound approaches to the problems of income redistribution.

The students were already reasonably comfortable with library research. Many of them did extensive, careful, and critical research. The seminar discussions never dragged, and were never simply dominated by the most vocal member. And so on, and so on. In short, this little experiment worked very nicely. If every seminar was not brilliant, the general level of discussion was much improved. In some cases the seminars were very good indeed.

So much was happening during the Economics section that it is hard to know what to mention and what to pass over. What I have chosen to say, I have chosen on the basis of its interest to someone who was not in the program and might want to learn something about program management. Details of our actual learning are perhaps interesting only to us.

It appeared to us that the Economics section offered the most substantial piece of learning of the program. The students were tying things together for the first time. Our tactic of enlisting student aid in the design paid off (perhaps it would not have had we tried it earlier in the year). The change in seminar structure was very successful.

V. JOURNALS:

Little needs to be said about the Journal Writing attempt. It was our effort to make sure some sort of writing was done in the program, and to incorporate this writing easily and naturally into the seminars. Knapp was particularly supportive of the Journal idea; Alexander and Filmer had strong reservations, largely inchoate. The mechanics of the effort were a straight copy of the "Cadwallader" Journal method, which is so well known that I doubt it needs detailing here. Some students wrote fairly faithfully in their journals, most did not, some never did. So far as I can tell, the major cause for this failure was faculty lassitude and indifference -- on the part of Alexander and Filmer. Alexander in particular was so unenthusiastic that he could never remember even to remind his students that they were to bring their journals in to be exchanged, much less get around to reading any of them himself. He did read a few of those kept by the few of his students who had conscientiously and all on their own kept up journals, but this was during evaluation periods only, and so really violated the spirit of the journal effort.

In any case, in the presence of such obvious faculty indifference, most of the students (except those in Knapp's seminars), pressed for time by all their other work, and dubious themselves of the value of journal writing, failed to make anything but the most offhand pass at keeping a journal. As with so many experiments here at Evergreen, it is faculty enthusiasm or faculty indifference which really is the sine qua non. (Knapp's underlining.)

VI. INDIVIDUAL PROJECTS:

Each student was required to propose an extensive project of some sort, connected somehow to the general ideas of the program, and to pursue this project full-time during the three month period from the end of January through the beginning month of spring quarter. The faculty stressed the importance of these projects throughout the fall quarter, and regularly demanded that students report on their progress in devising such projects and preparing for them. This initial goading -- demanding early statements of the project topic, demanding early progress reports, discussions of the future project during fall evaluations -- was undoubtedly necessary, for otherwise the students, or at least the majority of them, would have postponed thinking about the projects as long as possible and thus guaranteed that the project would not be very successful. Even with all this goading, a few students waited until the last minute.

We had anticipated a much larger number of internships than were eventually undertaken. We have no explanation for the very small number of internships. Many of the projects were group projects.

The project topics were quite various. A representative list includes:

A Historical/Economic Study of German Society in the 19th century and in the post-World War II period, particularly comparing East and West Germany.

Internship with the Community Mental Health Center of Olympia
Study of Food Markets in Olympia
Heptaclor Pesticides
Solid Waste Disposal Systems
Construction of a 12 ft. Windcharger
Geothermal Energy
Redesign of a Dorm Room to better equip it for an occupant in a wheelchair
Architectural Psychology
Computer Graphics
Alternative approaches to occupant involvement in public housing
Nutrition and Food Technology
Schizophrenia
Internships with Headstart, Latchkey, and Day Care Centers
Aquaculture
TESC's Architecture and Design
Broadcast Studio design at KAOS
Pegasus

Needless to say, this quality of the projects varied as much as the topics did. The "level" of the projects also varied -- some being quite advanced, others being quite elementary and introductory. This was both expectable and, I think, "a good thing." After all, as has been noted at some length before, the membership of this program was heterogeneous, both as to academic level attained by the students and also as to expressed interests. It thus seemed appropriate to allow each student to work for some extended time on a personally appropriate topic and not to worry overmuch about whether the project was "advanced" or not.

On the whole, the projects worked well. The expectable happened, of course -- lazy and indifferent students did lazy and indifferent work, shuck-and-jivers shucked and jived, serious and industrious students did serious and industrious work. A decent number of the projects -- perhaps one fourth of the whole -- were extremely good, highly creditable efforts, and provided important learning experiences. Discussion beyond these generalities would require detailed discussions of particular projects, and that seems inappropriate here.

VII. FINAL QUARTER:

It had been our intention to allow the students a very large say in the organization of the final quarter. This, unlike the Economics section, turned out to be something of a mistake. The students were too scattered and their attentions too drawn away for them to do any sort of concerted planning. The final quarter thus emerged as a sort of hodge-podge: many reports of the results of individual projects; some student designed one-shot workshops on various topics; viewing and discussing videotapes of a symposium on the Control of Human Behavior; reading some Paul Goodman and Buckminster Fuller, lectures, and some writing about these two; a retreat...

This makes it sound as if the quarter simply dribbled away. For some of the students, it did. For the majority of students, however -- and these the most faithful of our students -- this period, incoherently organized as it was, turned out to be a real summing-up period. Since there seems to be nothing here that really could be recommended to the planners of future programs, I think I will drop the topic, concluding simply with the comment that this period felt really quite comfortable and natural while it was happening, and was by no means a loss of any sort.

VIII. FACULTY SEMINARS:

We had terrific faculty seminars. Why? Well, we used no particular techniques and attempted nothing unusual, so there seems nothing much to recommend, and some puzzlement as to how to explain it. Here is a pass at explanation. 1) We trusted each other intellectually. 2) During the first half of the program, we had the most serious reason for holding a seminar: at least one of us was always in the dark about the material to be covered, and so it was necessary always to have a thorough discussion of the material at hand before we went into seminars with it, and/or to insure that the design of the next academic offering was going to be sound. Since we trusted each other thoroughly, enjoyed thorough discussion, and all recognized the necessities of the task at hand, we dove into the work with a ready will.

During the "project period" we had some difficulty organizing seminars, because we lacked that immediate task at hand. Once it was decided, however, that the program would read Goodman and Fuller, we had several very good seminars on the Goodman and Fuller materials. The last months' faculty seminars tended to turn into business meetings strictly. We did not mind this very much.

CONCLUSIONS:

"Was the program advanced?"

No, the program was not advanced, but some few of the students in it did advanced work. This was necessarily so, given the academic experience of our students, and given our own initial impulse to demand that students study in areas that they had not previously studied. As a result, all the "academic" sections of the program and all the "skills workshops" were necessarily introductory. In those areas where an individual student could concentrate effort --

the case studies, the individual projects -- some advanced work was done by some of the students who had the background, and/or the native intelligence and drive for it. Nevertheless, and in spite of some ambiguity on this score in the catalog copy and in the general reputation of the program, one would have to say that the program operated at an intermediate level. That is, the work was what could be expected of sophomores and juniors in unfamiliar territory.

The whole question opens up deep ambiguities in our thinking about curriculum at Evergreen. Just what do we mean by "basic" or "advanced" programs? My own standards are something like this (I will not apologize for the vagueness of these standards): a "basic" program presumes no particular background, and attempts to supply basic skills and basic information needed in order to do any further work in college, both any work at all (for instance, literacy skills) and further work in specific areas (basic chemistry, or general cultural history, depending on the substance of the program); an "advanced" program presumes some sort of previous preparation for doing this work, and operates at least a large part of the time at a level of sophistication and with a thoroughness characteristic of serious, knowledgeable undergraduate work. But these standards are not only vague, they are by no means agreed upon at Evergreen.

By these standards, Technospheres would seem to fall somewhere in the middle. For, as I have often said, we made no presumptions of prior experience and we dealt with all topics at an introductory level, but we did not make any particular effort to prepare students for further work, except perhaps in the sense of (through the Case Studies and the seminars in Economics) preparing students for library research. On the other hand, much of the work in the Case Studies and a good number of the individual projects operated at an advanced level, and by the end of the quarter those students who were among the most industrious and dedicated were dealing with the materials of the program in a quite sophisticated undergraduate fashion.

"To what degree were student 'needs' met?"

Well, the answer to this question has to come from the student self-evaluations, unless someone can specify some student needs which need to be addressed. For instance, one might specify that literacy improvement was a "student need" regardless of how the students felt about it, and then wonder how well the program improved student literacy. (For a handful of students, it seriously advanced their literacy.) But in the absence of such specific questions, I can only direct attention to the self-evaluations. On the whole, these evaluations show individual students being satisfied on this point. They also evidence a quite surprising degree of individuation in the student experience. If one of the standards for meeting student need could be that each individual student have an experience fairly well tailored to individual interests and desires -- then the program seems to have been quite remarkably successful. The causes seem obvious enough, and are to be found in the great range of choice open to each student, the large degree of student responsibility granted, and the heavy proportion of work undertaken at the individual student's request.

"Did the program meet faculty expectations?"

I don't think so, but I am not quite sure. For myself, I would say it was half-way successful. Many of the things I would have liked to have happen -- serious debate of the positions of thinkers like Goodman, Fuller, Skinner, etc. -- did not happen to any appreciable extent. Also, I would have liked each student to have emerged from the program with a more acute sense of the organization of the American industrial society and the ways in which this organization impinges on individual lives, and the ways in which individuals can work within the society to alleviate the more pressing difficulties. All this got mentioned, but I don't have the impression that many students emerged with very clear ideas on this topic. On the other hand, I value students pursuing their own courses carefully, and that often happened, and I value students at least beginning to grasp the complexity of the world situations, and that also began to happen.

Knapp comments: Half way successful. I agree. We didn't get what we wanted, but some very good things occurred, nevertheless. I hoped for a joint effort of unraveling the strands of human intention and natural law that give our technological society its particular character, but the students as a group were not academically mature enough for this ambiguous sort of work. Nor were the faculty sure enough about proper directions to compensate. I hoped for significant improvement in students' technical sophistication, and despite individual bright spots, this in general did not occur.

On the other hand students that stayed in the program matured remarkably during the year, and it was our strange diet of conceptual schemes, case studies and individual responsibility for projects that did it. I learned several important lessons for myself about teaching, such as the importance of clear tasks and of closure in seminars, and one way of usefully combining faculty and students to do academic planning (our half-accidental success with the economics segment). I finished with the feeling that we were successful enough not to be embarrassed by our mistakes, but that a second try in the same area should be considered a failure unless it were considerably improved over "Technospheres."

Filmer comments: I thoroughly enjoyed the serious dedication of most of the students. For once I experienced some fast, intense seminars, but found that I wanted more of them and was disappointed when all of them did not measure up to the exciting ones. I hoped for more interest in technology and the acquisition of technical and scientific skills on the part of the students. I became acutely aware of the value of repeating a program because no amount of planning can make up for the realizations gained from experience. I was pleased with the solid academic content of the program and the coherence. Faculty seminars were intense, thrilling and fun. Richard and Rob were a pleasure to work with.

"What was learned about the design of such a program?"

Overall design? Well, nothing much, I suspect. At least I have no strong sense that our overall design was anything anyone would want to duplicate, so that anyone who tries this again perhaps should start clean. But certain

pieces did work well -- the case studies, the economics seminars, the projects -- and the reader should check out the appropriate sections in the foregoing material.

Did we have too much going on at one time, as many students complained? I don't know. Certainly the workshops suffered. But perhaps they were simply poorly designed. Certainly those which our own faculty ran were, on the whole, quite successful. So... only offer workshops which the faculty itself run???

This feels very inconclusive to me. That is because it is inconclusive.

FINAL PROGRAM DESCRIPTION

Toward Humane Technospheres is a year-long coordinated studies program concentrating on the interrelation of technology and society, and the resulting problems for humane existence. The program's work centered on an attempt to define "humane" carefully, and on an examination of the role of technology in expanding or contracting the possibilities for humanness. Activities include reading, seminar discussions, classes in technical skills, group research presentations, and the planning and execution of a ten-week independent project. All students in the program have been exposed to reading, lectures, and seminar discussions in the following areas:

Philosophy (Ethics and Metaphysics): Hobbes, Leviathan; Aristotle, Ethics and Politics (excerpts); Hegel, Reason in History; Dewey, Individualism Old and New; Confucius, Wisdom of Confucius. The philosophies chosen represented the major competing world views. Lectures covered the historical and intellectual background of these writers. Seminars applied the broad philosophical principles to modern-day situations, and to the issue of defining "humane."

Design Methods: Papanek, Design for the Real World; Jones, Design Methods; Krick, Introduction to Engineering and Engineering Design. Students worked on a series of design problems (paper structure, cafeteria traffic flow, invention of a sport), using various methods outlined in the readings.

Comparative Cultures: Aberle, et al, "The Functional Prerequisites of Society"; Benedict, The Chrysanthemum and the Sword, and "Synergy"; Ishida, Japanese Society; Cole, Japanese Blue Collar; Boas, The Central Eskimo; Graburn, Eskimos Without Igloos. Lectures discussed the background of Japanese, and Eskimo culture, and went on to related aspects of American culture, probing the function and impact of technology, exploring the "humanness" of each culture.

Sociology of Work: Terkel, Working; Janeway, Man's World, Woman's Place; Shorter, Work and Community in the West. Lectures covered American theories of work organization. Seminars worked on the ethics of work organization and the possibility for improvement.

Systems: Churchman, The Systems Approach; Meadows et al., The Limits to Growth. Lectures illustrated the engineering and management use of system ideas.

Economics: Heilbroner, The Evolution of Economic Society; Olson, The No-Growth Society; Domhoff, Who Rules America? Lectures discussed basic concepts of economics -- the price mechanism, government money policy, and so forth. Seminars concentrated on income distribution in a possible no-growth economy.

Students have been expected to learn two new technical skills chosen from among a series of classes that we organized.

APPENDIX. The following chart tabulates information on all students enrolled in Humane Technospheres. Information is taken from their files in the Registrar's office, and from their evaluations. In some cases, as should be obvious, some of the information is missing or unavailable.

NAME	QTRS. ENRLD	YRS. COLL	TRANS FER?	ACAD BCKGND	PREVIOUS TESC PROGRAM	SUBSEQUENT TESC PROGRAM	THOUGHT A SUCCESS	PROGRAM INTEREST	WHAT WANTED	WHAT GOT?
Adair, Mary	FWS	3	Tr.	Sci/ Hum	Form/Function Physics	?	?	?	?	?
Arfin, Emily	WS	2	Tr.	Sci/ Math		Lv. Absence	?	?	?	?
Bender, Jon	FWS	1	EV	?	?	?	?	?	?	?
Bennett, John	FWS	2	EV	Sci	Matter & Motion	?	?	?	?	?
Blincow, Dan	FWS	4	EV	Hum Life	Portals	Mushrooms of Pac. NW	?	?	?	?
Blumberg, Gail	FWS	3	EV	Art	Dance Con: "Movement Study"	Deferred	?	?	?	?
Boyce, Kurth	FWS	2	Tr.	Biol Agric		Marine Bio	Yes	Altern Agric/Land Tenure	Support dev. phil of small scale agric	More than he bargained for
Brokaw, William	FW	1				Dropped out	-	-	-	-
Brown, Eldon	FWS	1	Vet			Invention & Discovery	-	-	-	-
Brown, Keith	S	1	Tr.	Drama		Con/Filmer	?	?	?	?

NAME	QTRS. ENRLD	YRS. COLL	TRANS FER?	ACAD BCKGND	PREVIOUS TESC PROGRAM	SUBSEQUENT TESC PROGRAM	THOUGHT A SUCCESS	PROGRAM INTEREST	WHAT WANTED	WHAT GOT?
Burnell, John	FWS	1		Math Sci		Foundations of Nat. Sci.	No	?	?	?
Butchart, Byron	FWS	2	EV	So.Sci Design		Invention & Discovery	Yes	Architecture, Skills useful Psychological aspects of Architectural framework for architecture	Skills useful to arch/ethical framework for architecture	Yes
Cleveland, James	FWS	3	Tr.	Psych		-	-	-	-	-
Clouse, Mark	W	2	EV	Bus.		Deferred	No	?	?	?
Corcoran, Max	FWS	1		Psych		Self-ex- ploration	Yes/No	Self- exploration	Find a center	No
Core, Margaret	FWS	2	Tr.	Bio		-	Yes	-	-	-
Daly, Andrew	FWS	4	EV	So.Sci		Graduated	-	-	-	-
Davison, Eric	F	4	Tr.	History		Foundations of Nat. Sci.	-	-	-	-
Dye, Cathy	FWS	3	EV	Nat Sci	Matter & Motion	Theoretical Physics	Yes	Sciences Energy Women's Issues	?	-
Fellows, Rob	FWS	1	-	-	-	Deferred	Yes/No	Community	?	?
Frisbee, Philip	F	2	EV	Human	Democ/ Tyranny	Left school to do art				

NAME	QTRS. ENRLD	YRS. COLL	TRANS FER?	ACAD BCKGND	PREVIOUS TESC PROGRAM	SUBSEQUENT TESC PROGRAM	THOUGHT A SUCCESS	PROGRAM INTEREST	WHAT WANTED	WHAT GOT?
Gookin, Kathleen	FWS	1	-	-	-	Humanistic Psych	Yes	Soc.Sci/ Psycho- therapy	Wanted to get a broader per- spective	Yes
Green, Lawrence	F	2	EV	Hum	Democ/Tyranny Parapsychology	Con/Aldridge	-	-	-	-
Harbour, Rob	F	4	Tr.	-	-	Marine Hist & Crafts	-	-	-	-
Harrison, Rich	FWS	3	Tr.	Hum	-	Con/KAOS Sta. Mgr.	-	-	-	-
Haviland, Kathy	F	2	EV	So.Sci	Indiv in Contemp Soc	Humanistic Psych	-	-	-	-
Johnson, Lonnie	FW	1	-	-	-	-	-	-	-	-
Kaplan, Paul	FWS	3	EV	Hum	Democ/Tyranny	Deferred	-	-	-	-
Lang, James	FW	3	Tr.	So.Sci	-	Amer. Rev.	-	-	-	-
Lee, Dennis	FWS?	1	-	-	-	Harmony in Universe	-	-	-	-
Lorenz, Jill	F	2	EV	Dance	-	-	-	-	-	-
Lyons, John	FWS	1	Tr.	-	-	Marine Bio	Yes(?)	mussel culture	Hard to tell	Quietly seems to have got a lot: much ex- tra reading & browsing

NAME	Q. ED	YRS . COLL	TRANS FER?	ACAD BCKGND	PREVIOUS TESC PROGRAM	SU TE PR
Mann, Du	F	3	Tr.	Bio/ Chem	-	Eco
Marsden,	I	2	Tr.	Hum		Co Se
Marshallid	I	1	-	-	-	An
Mathews,r	I	3	Tr.	So.Sci	-	Ed
May, Tha	I	3	EV	So.Sci	Power & Personal Vulnerability	Et Pc
Momany, l	I	2	EV	So.Sci	Portals	Cc
Nilsen,	I	3	EV	Bio/ So.Sci	Matter of Survival	Cc
O'Callaghan	I	2	EV	Educ	Learning About Learning	Si Tl Cc
Petersone	I	3	Tr.	Text/ Design	-	W
Phillipley		3	EV	Hum	Democracy & Tyranny	

NAME	QTRS ENRLD	YRS COLL	TRANS FER?	ACAD BCKGND	PREVIOUS TESC PROGRAM	SUBSEQUENT TESC PROGRAM	THOUGHT A SUCCESS	PROGRAM INTEREST	WHAT WANTED	WHAT GOT?
Porter, Laura	FSW	2	EV	Sci	Energy Studies	Environ/ Perception/ Design	Yes	Community	-	-
Pruitt, Merrilee	F	3	EV	Hum	Learning About Learning/ Women in Literature	Deferred				
Quinn, Scott	FW	4	EV	Hum	Words, Sounds, Image Writing/Con	Graduated				
Rader, Daniel	FWS	1	EV	Nat SocSci Hum	Nat & Soc Sci Paradigms in Con/ Huxley, Crisis Zamiatin, Orwell	Yes	Philosophy, History, Political Sci, Energy	-	-	-
Rolph, Sarah	FWS	2	EV	Hum	Democracy & Tyranny	Politics of Health Care	Yes	Taking stock	-	Yes
Rust, Steve	FWS	1	-	Math/ Physics	-	Foundations of Nat.Sci.	Yes	Solid Waste	-	Yes
Samuelson, Donald	FWS	-	-	-	-	-	Yes	Anthropology	-	-
Schneider, Leslie	FWS	2	EV	Hum	Portals	Shape of Things to Come	Yes/No	Nutrition	Learn something solid	Yes
Schuler, Doug	FWS	3	Tr.	Art	-	-	-	Alternative Life Style	-	-

NAME	QTRS ENRLD	YRS COL]
Swaim, Doug	FW	4
Thompson, Stephen	F	1
VanMaro, Barbara	FWS	3
Vincent Ruby	FWS	2
Waits, lenneth	FWS	2
Walford Chris	FWS	3
Waterma, William	W	4
Wolf, Mrsha	F	4
Wolfhagen, Carl	FWS	2
Woods, Brian	F	2
Zucker, Clifford	F	4