LIFE ON EARTH PROGRAM HISTORY

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The main portion of this history was written by Linda Kahan. The entire faculty of the program was in general agreement with the thoughts expressed below, however, so in general "I" can be read "We" throughout the document. Where there were differences of opinion they have been added and identified by author. In those cases "I" means "Me".

LINDA KAHAN

PROGRAM HISTORY

Annotated list of significant activities:

Field trips:

These fell into two categories(with some overlap): All-program trips where everyone was expected to attend, and optional trips. We started the quarter with two all program field trips which were intended to introduce students to the program content and build program esprit--one to the OMSI field station at Camp Hancock, Oregon and Eastern Washington, and the other to San Juan Island. Faculty planned the trip content and arranged for facilities, other logistics(car pools, food) were left to students to plan.

The trips in many ways were successful in introducing students to the core material. They collected fossils, toured several geological provinces of Washington and observed a number of large scale geological phenomena, collected a variety of living invertebrates from a number of habitats, got an introduction to laboratory observations of living animals and began to keep their field notebooks, laboratory notebook and journals.

Although I felt the field trips were generally "successful" in accomplishing their goals(which were not too stringent), especially in the light of the Causality retreat last year which was supposed to accomplish similar goals, but was almost universally acknowledged as boring, demoralizing and a waste of time, there were some problems. Many students felt lost or confused during the field trips--were unsure of what they were supposed to be accomplishing and/or wanted to read more to fill in background to better understand the work, but did not have the time in the field. While I don't think it would have been a good idea to have postponed the field trips until later in the quarter, we could have done some other things to help alleviate the students discomfort:

1. We could have sent them a reading assignment in Cascadia(geology of the northwest)at home--or given it to them immediately when they came--they would have had time to read it before we left.
2. We could have explained our purposes more clearly. During the Friday Harbor sessions the group was split into two parts. When the first lab group complained of confusion I belatedly gave them a little talk on what they were supposed to be doing. I started the second group with the same talk: what there was to do and what we expected them to accomplish(less then they thought). There was much less complaining from the second group, although some students were still having difficulty seeing relationships between these activities and components of the program content in December, after we had been on campus 5 weeks.

Another problem with the Friday Harbor trip was the difficulty Chet had at the county camp. While students at the labs had dormitories, kitchens, and showers, students at the camp had one giant army tent(for about thirty students). When it rained,students at the lab could cope because they could dry off. Students at the camp just stayed wet and miserable--and they became more involved with staying dry than with learning geology. Furthermore, the geology was complex and, except for Sucia Island, not very interesting(few fossils)--not worth five full days. Thirty students was a heavy load for Chet to handle by himself.

Were we to do this again, I would suggest taking half the group to the labs--which provided excellent facilities and unique collecting(use of the R/v Hydah)--leaving the other group to do day field trips based out of the Olympia area. We thought switching groups from the geology to the biology sections would be easier if both were based in the same place, but the disadvantages of the geological picture on San Juan Island far outweighed this advantage. Further, I would try to avoid camping in rainy Washington as opposed to using a facility with shelters, no matter how rustic(e.g. Camp Hancock). While pup tents can be rented from CAB they are bulky to transport, and the big tent is not only bulky, but provides pretty inhuman living conditions, at best.

It was, unfortunately, necessary to split the group into two parts for the Friday Harbor trip. The labs would only accept 30 students. Group cohesion between students and among the faculty was weakened. Coordination of subject matter was lost, setting a poor precedent. The quality of the experience at the lab probably justified the split and I would choose to repeat the trip if given the choice, but there were some drawbacks. It might also be pointed out that a program of 100 students could not have taken advantage of this opportunity without splitting in three--probably not a workable plan.

In my opinion, the student-run logistics of these field trips were abominable. They seemed almost completely unable to get organized into food groups, plan meals, secure equipment, form car pools, etc.(although somehow all this did get done in the end). It was, for example, impossible to find out the car pool arrangements the day before the trips. The situation did

not improve by Spring. I would favor collection of a sizeable field trip deposit from students, and the appointment of committees to plan meals and buy and arrange for the cooking of the food for the group en masse over the arrangement we used, even if it meant that all the whims of students with peculiar dietary habits could not be satisfied. A totally individualistic approach, another alternative, would not be practicable because of limitations on trunk space, cooking facilities, etc. The idea of using this arrangement--just turning over this section of the planning--with a group of 100 students is appalling.

Furthermore, taking twelve separate cars is ridiculous--and we only had 60 people. To take a group of 100 would require 20 cars. Caravan touring is expensive, time consuming and very dangerous. Only a few students can have contact with the faculty while the caravan is on the road, which deprives most of the group of the opportunity for running commentary on features of interest, which would really have been useful to us. The school should have a bus or financial access to a bus for such trips. Furthermore, field trips are essential components of all curricula in earth and life sciences in the long run, and to the extent that students have to foot the bills for transportation as they have in this program, science programs will discriminate against the financially pressed student.

In addition to the all-program field trips there were several optional field trips offered first and second quarter. These were characterized by extremely poor student participation--usually half a dozen students or less--and the same half dozen on all the trips. Insofar as I feel that field experience should have been a very important component of this program, I am bothered by this. We let ourselves get caught in the "learn at your own pace" rhetoric and, in my opinion, let the students cheat themselves. If we were to do the program again, I would not want to let this happen again. If requiring attendance at field trips was too authoritarian, then some flexibility--go on 4 out of 6--might be granted.

The Grand Canyon river float field trip was highly satisfactory, met all my expectations, was the highlight of the year. Most students studied without being pushed by the faculty--they learned from each other. Rapport was excellent, morale was generally high. Nearly everyone "got their money's worth" financially and educationally.

We did not handle the alternative group, formed so that students would not be required to take the expensive Grand Canyon trip, very well. Originally we had a vague idea that they would go on a land trip in Arizona, but on serious consideration it was obvious that that would cost nearly as much as floating the river. We then opened the door to students suggestions. The students, as with the logistics planning mentioned above, seemed unable to "get it together" to plan anything until the last week of the quarter. We had originally thought we would put one faculty member with this group, or arrange for a graduate student to go, but we decided against the former and made no effort on the latter, partly because of the lack of planning, so this group was put on its own.

To our surprise, the group did accomplish some of its goals and gave a satisfactory report upon completion of the trip. But they would have done better had they had a faculty member along, and had they had better planning and preparation before they went. I think what happened is that we used the rhetoric of "student participation in program planning" and let the students go through the motions, but what was lacking was motivation, meeting their own needs. The faculty said, "you will have a field trip," but the goals of the trip were never well specified (as they were for the Grand Canyon, which made sense in terms of the program content) and so the students had a hard time putting the trip together.

Pete had some contrary thoughts on the Spring field trips:

> For the future, some criticisms of the Grand Canyon trip and its Oregon coast alternative should be considered. First, splitting the group between two alternatives was a disadvantage. This affected group cohesion and more importantly prohibited real interdisciplinary coordination of the experience. For the Oregon coast group it was a mistake that Pete(a marine biologist) did not join them rather than going to the Grand Canyon. But it may also be said that the Grand Canyon trip did not ideally serve the interdisciplinary theme of Life On Earth. The content of trip was mostly hard-rock geology with exposure to some marine fossils. The LOE theme deals with life now as well as in the past and was to emphasize marine environments. A trip along the Oregon coast to see present marine habitats and geological sites representing past marine habitats would have been more appropriate and less expensive. Another criticism has to do with timing. The Grand Canyon trip was to have served as a climax for LOE. Because of scheduling problems that became apparent last autumn(for example the two faculty work weeks that since have been abandoned)we had to arrange the trip for the early rather than later in the spring quarter. As a result the remainder of the year was anti-climatic and the development of small group projects as planned for the conclusion of on-campus activity was disrupted. An Oregon coast trip following the completion of on-campus projects would have been a more fitting conclusion for LOE.

Core Curriculum, Lectures, Laboratories

The core content in invertebrate zoology, marine ecology and geology was presented in lectures-four one hour lectures(they often ran over, however) per week. There were regular zoology labs with a minimum expected number of dissections and slide observations. The lab was open; a mimeographed hand-out was prepared each week with a list of the work.

Lab work was discussed at a weekly discussion session, otherwise students often worked without faculty help in the lab. Laboratory studies in geology were offered as optional weekly workshops. Occasional field trips supplemented all three parts of the core.

From my Journal:

> "Something is clearly wrong with the way we are proceeding. We have truly recreated the flaws of the old system complete: Hours of lectures on end dealing with unrelated topics. Bad, boring lectures at that. And even though the content load is no heavier than 3 or 4 courses(Historical geology with lab, Invertebrate zoology with lab, oceanography lectures and seminar), students feel burdened and pushed and can't keep up. And the faculty, while only offering the equivalent of one course, is paradoxically pushed to the wall, and not learning anything new from the others, besides..."

> "We insisted this year on having all threads of the program going at once, simultaneously, to avoid the situation of last year(where the content came in blocks, by discipline). But the parallel track arrangement has the disadvantage of fragmentation of student time and total engagement of faculty time so that the faculty can't benefit from each other."

> "Better would have been to run 2 or 3 day concentrated "workshops", each the responsibility of a single faculty member. All students would have to go to all of the workshops which should be able to take care of the core. Faculty members could go to each other's workshops as students. In addition, each faculty member would run an interest group in his area and a seminar(maybe using the same books as second quarter, but meeting every other week). The advantage of this system over either of the other two would be that students could continue to work in depth in their area of special interest, while learning the other areas, which could be presented coherently and not in "competition" with each other. It would probably be more work to prepare a three day program--but one would only have to do it once every three weeks."

By saying that our lectures were boring, unrelated and too long, I do not mean to imply that lecturing was a bad idea with respect to this program content. Indeed, I stopped lecturing midquarter in response to student complaints, and held question and answer sessions instead. Not only were these harder on me because adequate preparation depended on my outguessing students, but the students themselves decided the question and answer sessions were not as informative or useful(in organizing the generalities for them) as lectures, and requested that I return to lecturing. In the proposed system lectures might be longer, or better, the workshop might have several in the three day period. What was bad here was <u>parallel tracks</u> of lectures unrelated to each other in content.

The new plan would also help solve the major student complaint about the labs--the faculty was not available often enough. During a workshop faculty could be present all the time without having conflicting obligations.

Pete came up with a different alternative plan, based on a somewhat different idea of an ideal coordinated studies program: In retrospect I would propose the following approach to "Life On Earth" for another time. It is most important that the theme be given utmost prominence in the design and day-to-day activities of the program, for this to be a coordinated studies program in its fullest meaning. The particular disciplines of the faculty must be subordinated to the theme rather than the opposite condition. This will mean strong interaction between faculty in faculty seminars and planning sessions. One way to accomplish this, contrasting with the present LOE but still developing the basic background through a core content, would be to focus on one subject area at a time for one or two-week periods. The burden of leadership would fall on the faculty whose background relates most strongly to that subject. The other faculty would provide support as the subject is interdisciplinary and at least as "co-learners" with the students. The lectures, seminars, films, reading, etc. should all relate to the particular subject. An appropriate focus for the week or two-week-long topics would be on particular environments. For example, one period could concentrate on coral reefs. With the present faculty and with willingness to blend experience, a coordinated mixture of teaching modes could be offered with contributions about coral animals and other reef organisms from Linda, about the formation and geological history of coral reefs by Chet and about environmental factors and the interrelationships of organisms by Pete.

Other units could focus on rocky intertidal shores, submarine continental shelves, estuaries, etc. Still other units could focus specifically on evolution, mineralogy and stratigraphy, oceanography, etc. In devising the core content, the temptation to offer comprehensive coverage of conventional subjects--for example invertebrate zoology, oceanography, historical geology--should be avoided if that tendency obscures the maintheme of the program.

The core activities should be truly part-time. Time should be alloted for individual or small groups to work on projects right from the beginning of the program. The first projects could be strictly literature reviews, but laboratory and field work should be encouraged soon. Each student might engage in a succession of short projects or continue the entire year on one comprehensive project idea, for example on the flora, fauna and ontogeny of salt marsh habitats. The rationale for the projects, then, is to encourage individual initiative and to provide more immediate application of core content throughout the year.

Seminars

We had only one book seminar first quarter, but regular weekly seminars through most of second quarter. Not having seminars was a bad idea for two reasons: students expected them and missed them, and felt that not having them was "unEvergreen", and, since we chose to introduce the unifying thematic materials on evolution in seminars, we missed a good opportunity to tie together the rest of the content. If I were to do

the program over I would start book seminars on Evolution right away, and spread them out more through the year,thus leaving time for a bit more flexibility on how long each seminar group spent on each book.

The seminar book list for the year was excellent with the exception of Evolution, which is a text and unsuited for discussion. We wound up having question and answer sessions on Evolution instead of seminars, and might have introduced this material in a different way and used the seminar time for other reading. A desirable addition to the booklist would have been a book of creation myths of other cultures to compare to Genesis.

Fall quarter seminars were writing workshops using the Peter Elbow method on writings which students shared from their journals. Our students did not seem to like this approach, were unwilling to put effort into giving it an extended trial, and ultimately the method was abandoned. While students did sometimes seem to enjoy sharing their journals, there was a strong feeling that the seminars should be based on books and be book discussions. The considerable dissatisfaction with many features of the program at this time also contributed to the lack of success at this enterprise. It should be noted that Pete feels this format had more success with the students in his seminars, so perhaps the complaints and non-cooperation in my seminars were idiosyncratic to those groups or my leadership.

When book seminars were held second quarter, students wrote short papers on their reading to bring to read and discuss in seminar. Although not everyone brought a paper to every seminar, acceptance of this approach was noticeably better, and some students worked hard on these papers. The papers were entered into student journals, which we hoped would set a tone for the rest of the entries. Quality of discussions varied from excellent to poor depending on the books, visitors, the weather, and the sunspot cycle.

Because of the format adopted for writing exercise, students received little or no grammatical or stylistic criticism of their writing. Later, when they wrote long "investigative reports" and project research papers, many displayed severe writing problems which were commented upon for the first time as the papers were sent back for re-writes. At this time, and on occasion earlier in the quarter, students expressed a felt need to get such criticism. While I am quite sure that if we had inflicted this on everyone from the beginning, it would have been received with resentment, it should have been available to students from the beginning. We should, perhaps, have set up a voluntary writing workshop with the expressed purpose of providing writing criticism for those who wanted it, identified those who needed it, and encouraged them to participate.

Chet adds:

Most of the seminars were fairly loose and free-flowing but a few dragged.

After one such lapse Chet held the weekly seminar in his home which seemed to add a welcome change and participation was quite good. Several students suggested that we meet in a different place each week(homes, dorms, cafeteria, the beach, etc.), a recommendation that never materialized. In retrospect, the suggestion may have had considerable merit. To some extent, the seminar groups failed to develop into real social-intellectual body in which free and honest discussion flowed easily. To the extent that we didn't really rise above the classroom atmosphere, exchange was somewhat stifled. I'd attempt to modify this with future groups in some way, perhaps by encouraging that "social" dimension.

Workshops and Local Field Trips

Optional geology workshops, seminars and local field trips were generally useful, but they served relatively few students and suffered conflicts of scheduling and limitations of space and equipment. Because they were optional, student participation varied from week to week which made it difficult to utilize knowledge and experience from prior workshops or to have a good continuum of three or four workshops. The four workshops on topographic and geologic maps illustrate this point. Chet got many people in the workshop on geologic maps that had not attended the topographic sessions which were prerequisite to a reasonable comprehension of geologic maps. The same might be said of the sedimentary rock labs attended by students that had missed the mineralogy and igneous rock workshops--they had little feeling for the source of the materials comprising the sedimentary rocks and couldn't tell quartz from feldspar.

In fairness, however, it should be emphasized that some students attended all(or most) workshops and benefited markedly. Were Chet to offer another series of workshops, he would recommend that the options be limited. Students would be requested to subscribe to a series of workshops with the understanding that their content is related. Late comers and curiosity seekers would be discouraged.

Local field trips generally well attended and were blessed with good weather. Most trips were attended by the same handful of students with a few sight-seers to fill out the ranks. Those that attended regularly learned a great deal, others had a pleasant and(apparently) worthwhile experience. Most trips had the specific objective of collecting fossils which best served the program theme. In the future, however, Chet would recommend that the experience be varied with some attention to field study of glacial deposits, faults, igneous terraine and other aspects of geology. The broader perspective gained would be well worth the additional time and energy.

SOME THINGS THAT WENT WELL:

Field trips to Camp Hancock, Friday Harbor, Grand Canyon and the Oregon Coast; investigative reports; study question writing; and the seminar booklist--all discussed elsewhere. Also:

Lab Discussions:

As a part of the regular laboratory work students were given a choice of several simple experiments with live animals. The results of these experiments were discussed at large group meetings(the whole program-60+ students). One student volunteer reported his results, and others who had done the same experiment added to the report. Everyone asked questions.

Despite the size of the group this activity went extremely well. Students soon overcame their shyness and were eager to report their results. The discussion was lively, usually involved about half the group, and proceeded independently of faculty intervention. Students became interested in doing the experiments and the quality of work was high. After we stopped having this kind of activity because of program changes winter quarter, students showed lasting effects of the exercise by doing similar exercises on their own.

Physiology Interest Group:

This group was organized in the following manner: Everyone read a chapter a week in an elementary text which gave an overview of the topic. In addition, each of the ten students read a journal article or two on a specific problem with the field. Weekly group meetings started with questions and answers on the text chapter which generally took about half an hour. The rest of the session(generally about two more hours) was occupied with oral summaries of the articles by the students who had read them. At first each student gave a report each week. Later, when this proved to take too long, only half the students reported in any given session.

The task of reading the articles and preparing and giving the reports was extremely difficult for these students. Most of them had never read a journal article before, and most of them had totally inadequate backgrounds in physiology. But the response to the group was universally enthusiastic. Students derived great satisfaction from mastering the content of the articles. I was pleased because relatively slow students succeeded, in some cases(because they really worked at it) did better than brighter students, and because all students showed marked improvement over the quarter, learned the skill of reading this type of material and became familiar with its use in the pursuit of scientific questions.

Final projects:

After returning from the Grand Canyon students spent the rest of the quarter working individually in small groups on projects. Projects were initiated before the spring break but not started until after our return from Arizona.

Although most of the students needed a large amount of faculty help in finding a project topic and the majority of the projects were faculty suggested, some students developed project ideas entirely independently. On the whole, planning for the projects was poor. The time we alotted conflicted with the end quarter rush to finish other work, and planning was sacrifieed .

Despite the poor planning, the projects went extremely well. Students worked enthusiastically and hard. Group formed cohesive teams. Some students achieved a high degree of independence from faculty assistance. Quality of the work done was very good on the whole. The projects were presented as oral reports to the group during final festival week, and this session went very well--students were fairly articulate in their reports, and the audience asked questions and seemed to stay interested through the five hours of reports. In addition to giving oral reports, students wrote scientific papers on the results of their studies.

While certain aspects of the projects-time allowed, planning, quality of writing--could have been improved, the projects met our expectations in providing a meaningful way to end the quarter. The projects provided a highly satisfactory experience for students because in doing them they found that they had learned more than they thought, and they could apply what they learned to the solution of problems.

EVALUATION

In line with program policy that there was a common core content for the program which all students should learn, students were evaluated on a number of written documents in addition to seminar participation. They kept laboratory and field notebooks which were turned in periodically. Fall quarter a six-essay-question open book "butterfly" (examination) was given, in part because we did not get around to discussing how students were to be evaluated until it was too late to do much else.

Many students and two faculty members were very unhappy about the examination--felt it was "unEvergreen". To placate those with strong feelings, students were given the option of writing a substitute which would serve the same function-enable the faculty to evaluate their mastery of subject matter. Only one student elected this option. Other dissenters did neither and received no credit. While students seemed to agree afterwards that it hadn't been so bad after all, and that they had learned from writing the exam, the bad feelings engendered in both students and faculty over the whole incident were very detrimental to program morale.

Winter quarter, feeling we were still obligated to evaluate assimilation of content, we tried another approach, this time more successful. We offered the students the option of having a similar exam at the end of the quarter(and a week to do it in) or of writing six essays during the quarter chosen from eight questions suitable for such an exam. The essays would be due in two batches to prevent students from letting them all accumulate until the end of the quarter. Students chose the dispersed option, and, while they grumbled about the work load as they wrote the three questions which they saved until just before each due date, morale was much better and students generally seemed to think that the exercises were beneficial in helping them understand and integrate program content. I think the quality of the questions was better this quarter also, as they were all discussed by the whole faculty team before they were given to the students(not the case with the exam).

Winter quarter students also undertook to write an "investigative report" based on a laboratory, field or library investigation. One of the program goals was for students to learn how to write a scientific paper. Originally we had discussed two short projects followed by short scientific papers, but, it became obvious that students would not have time to do two papers. Feeling that some opportunity to obtain and make use of feedback in writing such papers, a first effort for almost all, we explained our reasoning and suggested to the student group that if they were willing to re-write a single paper they would only have to do one. They accepted this suggestion willingly and later, for the most part, did not complain when papers were returned thoroughly red-pencilled for extensive revision. Papers wre noticeably improved the second time around, and this proved to be a good solution to the problem.

FACULTY SEMINARS

One of the factors contributing to program difficulties this year was the inadequacy in number and quality of our faculty seminars, particularly first quarter.

First quarter we had fewer than four seminars and only one of these was even scheduled as a book discussion seminar. We had an irregular schedule and we sacrificed faculty seminars to other activities and important personal considerations. In retrospect this was not a good decision. The program suffered greatly from fragmentation the first quarter--the geology and zoology contents were not related to each other by the faculty(because no one knew what the others were planning to do in "their" time) and students were unable to make the connections. We should have been going over our lecture material with each other the week before the lectures were given. Somehow the faculty should have been a week ahead of the students. I still don't have any good ideas of how this could be accomplished, but it would have made a tremendous difference. Perhaps if the program were given again, covering the same material, we would not need to devote so much time to our own preparation and would find ourselves able to get the work done a week in advance.

Second quarter, recognizing how unsatisfactory first quarter had been, we tried to set aside one full day every week for faculty seminar. From the first, the time was eroded by the demands of other program activities so that we wound up cutting the time to a maximum of five hours. We used the time to discuss important procedural issues such as having exams or not, and routine business and bookkeeping but, because the team had difficulties finding mutual agreement, these items took all the available time at the expense of discussion of content.

Third quarter we had only one faculty seminar and it was merely a business meeting.

We also spent virtually no time helping each other to be better teachers

by discussing our teaching performances. In part this was because we largely operated separately in our own area of expertise(e.g. Chet offered geology workshop and field trips, Linda led the lab discussions, Pete offered ecology field trips) and for various reasons could/did not attend the offerings of the others. In part, however, it was because as a faculty group we were so often at odds that we tended to avoid stressful situations, this one included.

We did have a mutual evaluation session before the end of second quarter, however. We wrote about ourselves and each other in private and then shared these writings at the meeting, self evaluations first. Much to everyone's surprise, I think, the session was both friendly and productive. We were able to share, with some frankness, insights about ourselves and each other. And it was refreshing to find that we were in close agreement about almost everything.

COVENANT

This program had a covenant which Linda Kahan wrote and the faculty accepted and agreed by consensus that students and faculty would have to sign. It was given to the students and discussed at a group meeting during the first week of school. Many students objected for a variety of reasons: They felt responsible without the covenant, they felt insulted by the seeming implication that they didn't want to work, they objected to faculty holding veto power, they didn't believe in signing anything. It was pointed out that even if they didn't sign they would be held to these conditions. And the point was that they should be willing to accept them if they expected to earn credit.

In the midst of the discussion two faculty members expressed the idea that they didn't think students should have to sign either. This led to a public argument between the faculty in which the students took sides. Many students eventually signed, but the issue was never really resolved.

The effects of the discussion/argument were very detrimental to student and faculty morale. Students felt we didn't work well together as a team. Faculty were cast in stereotyped roles which affected their future relations with students. Faculty distrusted each other. The effects lasted through the year.

Faculty still do not agree on the desirability of a covenant. Linda still thinks it is a good idea and feels it would have been better to insist that students sign it or leave the program, even at the expense of losing some. In fact, most of the objectors left anyhow at the end of fall quarter. Pete and Chet feel differently.

The following morals might be drawn:

1. Public quarrels by the faculty in front of students are very bad.

2. Before you act on something by consensus, be sure you all first agree what consensus means.
3. Before you decide anything as important as this e.g. issues of requirements, goals, etc. be sure you have thoroughly discussed them. Avoiding or slighting the discussion of toughy subjects creates more problems than it solves.

ON BEING AN ADVANCED PROGRAM

Life On Earth was originally designed and billed as an advanced program. In particular, it was deemed appropriate for an advanced program to deal with a limited number of subjects in depth, as opposed to attempting a superficial overview of many areas. Invertebrate zoology was chosen as the single biological subject matter, in part because the majority of living and fossil organisms are invertebrates, but also in part because it was an area of faculty expertise. The program was entirely faculty planned, again, because of the nature of the content, and the ground we felt we had to cover to enable advanced independent project work at the end of the quarter. This may not be *a priori* bad, but in the context of this program and its design it was a source of trouble.

Although we designed the program for advanced students, we ended up admitting many students who wanted/needed basic studies. In particular they were looking for a broad scope exploratory inquiry into biology. We frequently heard complaints such as, "If this program is called Life On Earth, why do we have to spend so much time on the invertebrates? Why aren't we doing botany/vertebrate zoology/ecology or whatever? Explaining why didn't help. Starting with an explicit program description didn't help. The program design just wasn't appropriate for these students.

Having all these discontented students in the program caused both students and faculty a great deal of grief. Blinded by the hidden assumption that the students registered in the program were the ones for whom the program was designed, we at first only responded with explanations, which provided no solution to the problem. At the end of the fall quarter, however, the problem was dealt with more successfully in two ways: students who were unwilling to devote the majority of their time to the core dropped the program, and a series of optional interest groups in specific areas of interest such as vertebrate zoology were organized for the following quarter. Having the interest groups allowed students to explore subjects of special interest and satisfied student demands for a role in program planning, without sacrificing the integrity of the faculty planned content.

In the absence of adequate mechanisms to match students and programs, gross mismatching such as we experienced is likely to be continuing source of trouble for large programs where all students cannot be thoroughly screened by faculty beforehand. My personal opinion is that it is better to encourage students with glaringly different goals/expectations to drop, than to water down a program to try to meet all needs (which

is probably impossible anyhow). Although we wound up with a much reduced group by spring quarter(39/65 original enrollment), students were working hard, happily, and well, and generally reported considerable satisfaction with their accomplishments and the program at the end of the quarter.