

Science for Nicaragua Newsletter

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Jail may delay Nicaragua assignment

by Phyllis Palmer

Joel Feigenbaum, a professor of mathematics at Cape Cod Community College, was planning to teach in the SfN program this fall. But on January 16, 1987, he was unexpectedly sentenced to two months in prison for an act of civil disobedience. He is now fighting to avoid having to serve this sentence, which has placed his teaching position in jeopardy.

On May 17, 1986, approximately 300 demonstrators gathered peacefully outside Otis/Camp Edwards National Guard Base, on Cape Cod, to protest the dumping and burning of toxic wastes on the base, which has been linked to high cancer rates in surrounding communities. Protesters also called attention to the base's role in training Army Green Berets, known to be working with Nicaraguan Contras and troops from El Salvador.

The gathering included an act of non-violent civil disobedience, in which 32 demonstrators sat in the road and blocked the entrance to the base. They were arrested and offered a dismissal of charges upon payment of a \$50 fine. In a continued effort to bring the issues before the public, 21 of those arrested decided against paying the fine, opting instead to bring the case to trial. Nine months later, Barnstable County Superior Court overruled the desire of the 21 defendants to be tried together: Joel was tried alone and found guilty of disorderly conduct. On January 16, Judge Richard P. Kelleher sentenced him to two months' incarceration, while dropping charges against the remaining defendants.

Why was Joel singled out? When District Attorney Michael O'Keefe claimed that Joel was "one of the key organizers," he could not have been referring to the May 17 rally, in whose

preparation Joel played only a minor role. But Joel has for years been one of the best-known organizers on Cape Cod, using his training in statistics to refute claims about cancer and toxic waste made by government scientists, researching Green Beret training at Otis/Camp Edwards, and leading the successful campaign to persuade Massachusetts Governor Michael Dukakis to prohibit the state's National Guard from training in Honduras.

In pleading his case, Joel made use of the so-called "necessity defense"—the argument that the illegal action was necessary in order to prevent a greater harm. It is an interesting coincidence that two other current SfN candidates—sociologist Gil McCann and social scientist Jennifer Strickler—were among 26 Vermont residents whose 1984 acquittal on trespassing charges marked the first successful use of this defense in civil disobedience cases related to Central America. In that case, 44 protesters, including the 26 who used the necessity defense, had sat in for three days at the office of U.S. Senator Robert Stafford in Winooski, Vermont, in an attempt to convince the Senator to stop voting for military aid to Central America. (Later that same week, Stafford voted against Contra aid for the first time.) The jury, convinced that a regional war in Central America is indeed a greater harm than the illegal sit-in, found the 26 defendants not guilty after a single hour's deliberation.

Joel's defense turned on the argument that the pollution at Otis/Camp Edwards and current U.S. policy in Central America pose a threat to the health and safety of his family and other residents. Testifying on his behalf were such expert witnesses as David Ozonoff, chief of the environmental health section of the Boston University School of Public Health; Martin Diskin, a Latin America specialist and Professor of Anthropology at MIT; Howard Zinn, Professor of Political Science at Boston University and an expert on civil disobedience; and David MacMichael, former CIA intelligence officer in Central America. D.A. O'Keefe agreed that the issue of elevated cancer rates as a focus of the demonstration satisfied on of the conditions of the necessity defense: that there must be a clear and imminent danger to the individual that is redressed because of the action. O'Keefe and Judge Kelleher denied, however, that the U.S. presence in Central America is such a danger, refusing to accept the Vermont precedent.

The severity of Joel's sentence may be judged by comparing it to others issued by the Barnstable County Superior Court that same week. These include: a convicted child molester, sentence suspended; vehicular homicide, 20 days in prison; and six cases of drunken driving, of which only one received a prison sentence—two months, the same as Joel's sentence.

Joel is appealing his case, an undertaking that will be emotionally draining, time consuming, and very costly. Legal fees and purchase of the transcript of his trial are estimated to run to \$7,000-\$10,000. A committee of Joel's supporters encourages concerned scientists and others to:

- * Write Governor Dukakis urging a pardon for Dr. Joel Feigenbaum. In May petitions bearing the names of more than 3000 individuals requesting a pardon were delivered to Dukakis. Letters will greatly reinforce this effort.

- * Write to your newspaper; encourage coverage of Joel's case.

- * Send a donation to help cover legal fees. Checks can be made out to Upper Cape Concerned Citizens and sent to 8 Pin Oak Drive, E. Sandwich, MA 02537.

For more information about Joel's trial and an update, call (617)-524-9858 or (617)-888-5774.

Benjamin Linder — 1959-1987

Benjamin Linder, a 27-year old engineer from Oregon, was killed by *contras* along with two Nicaraguan civilians on April 28. Linder, a volunteer with NICAT (Nicaragua Appropriate Technology Project, based in Seattle), was supervising a hydroelectric project in Jinotega province. He was the first U.S. citizen, and the ninth international volunteer, to die in the U.S.-sponsored *contra* war, which has taken more than 16,000 Nicaraguan lives.

Several sources have reported that the *contras* had marked Linder and other internationalists for execution. Whether or not these reports can be verified, there is no doubt that the *contras* viewed his project as a natural target. The Nicaraguan revolution grew from an impulse on the part of ordinary people to take the material and political conditions of their lives into their own hands. It is precisely this impulse that the *contras* and their U.S. backers are determined to destroy. *Contra* attacks have destroyed dozens of clinics, schools, and daycare centers. The nine internationalists murdered thus far by the *contras* include two doctors, one nurse, three engineers, an agronomist, a water technician, and a communications specialist.

Science for Nicaragua shares the sorrow of Ben Linder's family and numerous friends. In the wake of his death, we pledge to intensify our efforts to help Nicaragua build a new society, and to bear in mind that our work can be destroyed from one day to the next, as long as our country pursues its war against Nicaragua.

(Contributions for the completion of Linder's project may be sent to: Ben Linder Memorial Fund, Portland CASC, P.O.B. 6443, Portland, OR 97228. A full report on the work of NICAT will appear in the next issue of the SfN Newsletter.)

The "Basic Mathematics" Course: a Study

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UNAN-Managua

We continue our report, begun in our last issue, on the "First meeting of mathematics teachers in higher education," which took place last January in Managua. In this issue we reprint part of a study of the opinions of mathematics professors about the course in "basic mathematics." We have translated the Nicaraguan word "carrera" by the term "department," although strictly speaking "carrera" applies to the degree program rather than to the administrative unit which offers the program.

The commission charged with this study prepared a series of questions, which were discussed with mathematics professors at the various campuses [C.E.S.: Centers of Higher Education] in Managua. We include the questions below along with the most common responses.

1. *Do you think department curricula should include courses in basic mathematics?*

The response was unanimous in the affirmative. Ideally, students should arrive at the university with the knowledge necessary for university courses, but at present the fact is that for a long time the entering student will arrive with a poor background in mathematics. This makes a course in basic mathematics necessary in the first semester.

2. *Should the course in basic mathematics be included in the curriculum of every department?*

Some professors believe that as a matter of general culture, this course should be included in every degree program, especially in view of its importance for the comprehension of the modern world. Nevertheless, some professors, especially in the UCA, assured us that they would not be able to find professors sufficiently well prepared to teach this course in every department.

3. *If there is a course in basic mathematics in every department, do you think the syllabi should all be the same?*

The most frequent response to this question was no. The same syllabus could be used by all the science departments, but other syllabi could be used in humanities departments, which probably only include a course in Statistics as the sole university course in mathematics. Some topics in trigonometry, progressions, etc. could be left out of this course, which would have a different number of class hours per week.

4. *What do you think have been the principal flaws in the basic mathematics courses?*

The most frequent response was: the lack of time to develop the course well. When the syllabi were designed it was thought that students had already seen the material, and that consequently it was only a matter of reviewing or reinforcing what they knew. Every day shows more and more how wrong this idea is. Trigonometry and solid geometry are completely new to the student. Knowledge of arithmetic, algebra, and geometry are very poor and often mistaken. We have to begin by teaching the student to reason mathematically.

All this takes much longer than the time provided by the syllabus.

5. *How should a program in basic mathematics be designed?*

A program in basic mathematics should be designed so that the professor works slowly, putting in place the basis for the courses to follow. Any mistakes made at this level will be multiplied in subsequent courses.

We have to recognize that we have already had problems with mathematics courses for many years, and that it is precisely in this course that we have to begin to correct our errors.

In science programs the course should meet at least ten hours per week, and there should be no other mathematics course at the same time, since this would only add to the student's confusion. The course should include topics in arithmetic, algebra, geometry, and trigonometry. Logic and set theory should be taught throughout the course and not as separate and independent units. The course should be practical rather than theoretical; specifically, many word problems should be solved, since there are not well understood by students. Finally, the professors should have extensive teaching experience and, if possible, the number of students per class should not exceed 20.

6. *Can all the material of basic mathematics be covered in one semester?*

For many departments, one course of basic mathematics will suffice, but this may not be the case in other departments. For the latter, the course "Topics in Mathematics," from the second semester of the program in mathematics, will serve to cover the missing material. This last course will be designed according to the needs of each department.

One final comment from the committee, following conversations with mathematics professors at the different C.E.S.: The committee has come to the conclusion that, in general, professors hold the opinion that many of the failures of students in science departments are due to their starting out with poor mathematics backgrounds. It is indeed certain that this background is a function of high school teaching, but the fact is that the consequences are borne by the university, and only the university has the capacity to break the cycle. Even if we have to lower slightly the level of advanced courses, we must spend the time necessary to prepare students well in the basics. Only in this way can we hope to improve results.

New Journal Donations

Our first issue's report on our program of donations to Nicaraguan libraries has brought us generous offers of collections of journals and books from around the country. Most exciting was the donation by *Dirk Struik*, Professor Emeritus of Mathematics at MIT, of a nearly complete collection of *Mathematical Reviews* for the years 1954-1977. Of course, Nicaraguan universities do not have sufficient hard currency to subscribe to *Mathematical Reviews*, nor to any other journal of abstracts for that matter.

There are some gaps in the Struik collection. If you or anyone you know of is willing to part with back issues of *Mathematical Reviews*, please contact the Cambridge office of SfNP (address on back).

Our Journals Subcommittee should soon be receiving collections of journals in the following areas: electrical engineering, computer science, statistics, and cell biology. SfN is also helping Dr. Leonard Friedman, a psychiatrist from Wellesley, MA, to ship an enormous collection of psychiatric books and journals to MINSAL, Nicaragua's Ministry of Health. Meanwhile, the SfN chapter in Berkeley is looking for suppliers of low-cost Spanish-language textbooks.

SfN welcomes further donations of books and journals. Generally speaking, the Nicaraguans are not interested in one-of-a-kind review copies of elementary textbooks in English; but they desperately need upper level textbooks and monographs in English, as well as Spanish-language books at all levels. If you have nothing to donate but are interested in helping build Nicaragua's science libraries, SfN is accepting donations to pay for shipping costs to Nicaragua. Checks made out to Science Resource Center are tax-deductible.

Finally, we are eagerly looking for volunteers in the

Washington, D.C. area to help us with the delivery of books and journals. It is much easier to send books and journals from Washington than from any other part of the country. Please contact us as soon as possible if you have time to contribute to this project.

Boston Committee Seeks Volunteers !

The Science for Nicaragua program is now running smoothly. By the time you receive this newsletter, we will have four instructors in Managua. Another 6-8 applications are being considered by CNES (Nicaragua's National Council of Higher Education) for the semester beginning this July. Our Berkeley office, which has taken over responsibility for processing applications, expects to hear from CNES shortly. What's left for the Boston Committee to do?

The answer is...more than ever! We have barely begun to carry out our mission of serving as a link, an alternative channel of communication between scientists in the U.S. and Nicaragua. Our event "Science Under Siege" at MIT, combined with former SfN instructor Donna Perdue's tour of Massachusetts (see below), informed about 100 people about the state of science and higher education in Nicaragua. The Science for Nicaragua Newsletter now reaches about 1000 people every two months. Together with the newly-formed Boston chapter of FACHRES-CA (FACulty for Human Rights in El Salvador and Central America), SfN is exploring the possibility of organizing a major conference on higher education in Central America, to take place next year.

But this is still not enough. Our audience is still overwhelmingly concentrated in New England, in the Northeast, and around Berkeley. We believe that working together with our Nicaraguan colleagues to develop higher education is one of the best ways for us, as students and professors, to promote peace between our two countries. With a few more volunteers we could begin a systematic search for sympathetic faculty and students at the thousands of colleges and universities where we have no contacts.

The Boston Committee of SfN meets every other Tuesday at the Science for the People office, 897 Mass. Ave, Cambridge. Call (617) 547-0370 for information about our next meeting.

Science Under Siege

On April 14, between 60 and 75 people turned out in Cambridge for Science for Nicaragua's first public event. Entitled "Science Under Siege," the program focused on the problems of science and development in societies undergoing revolution. Anne Hibner Koblitz, Assistant Professor of History at Wellesley and co-founder of the Kovalevskaya Fund, spoke about "Women in Science in Vietnam and Nicaragua." Her talk included a report on the Kovalevskaya Fund's January conference on Women in Science in Hanoi, and described the planning for the

upcoming conference on the same theme in Managua (see *SfN Newsletter*, Vol. 1, No. 1). Donna Perdue, a Cornell University graduate student in plant physiology and former SfN instructor at UCA (*Universidad Centro Americana*), described her experiences teaching in Nicaragua, and spoke at length about Nicaraguan research in biological and agricultural science. Finally, Dick Levins, Professor at Harvard University's School of Public Health, longtime SfN activist, and one of the founders of the New World Agriculture Group (NWAG), talked about his work with NWAG on problems of "Ecological Agriculture in Cuba."

Donna's appearance in Cambridge was the highlight of a three-day tour of Massachusetts. Donna also addressed audiences of SfN and TecNICA supporters at Worcester Polytechnic Institute in Worcester, and at the Amherst campus of the University of Massachusetts.

Biologists Wanted for U.S./Nicaragua Literature Search

Donna Perdue reports that her former colleagues at UCA are eager to receive photocopies of current journal articles in their areas of research. Science for Nicaragua would like to establish a program to make this possible. We are looking for scientists in the U.S. to volunteer to "sponsor" colleagues or laboratories in Nicaragua. The Nicaraguans will request recent articles on specific topics; the U.S. sponsor will then search the literature and send articles to SfN, which will forward them to Nicaragua.

Scientists working for MIDINRA and IRENA (Nicaragua's Agriculture Ministry and Institute of Natural Resources), as well as university scientists, are interested in access to research materials. Donna has expressed her willingness to coordinate such a program in the areas of plant biology and ecology, as a first step toward a more comprehensive program. Interested scientists should write Science for Nicaragua (literature search project), Science for the People, 897 Main St., Cambridge, MA 02139.

UNI Seeks English Teacher

The UNI (Universidad Nacional de Ingeniería) in Managua is looking for a native English speaker with experience in teaching English as a second language to help organize their English department. Candidates should be familiar with scientific and technical reading and writing; fluency in Spanish is a must. Experience in organizing and/or administering ESL programs would be helpful.

Candidates should be prepared to stay in Managua at least one academic year. Work begins in March 1988 and continues through December. Instructors are responsible for airfare between the U.S. and Nicaragua; salary depends on the time commitment to UNI. Applications should be sent to: Science for Nicaragua, 1627 Euclid St., Berkeley, CA 94709.

Science for Nicaragua needs your help! Please send this form, together with your tax-deductible contribution made out to the Science Resource Center, 897 Main St. Cambridge, MA 02139. Thank you for your support.

- \$25 (covers textbooks and supplies for one instructor)
- \$50 (covers housing for one instructor for one month)
- \$150 (covers one month's salary for one instructor)
- \$_____ (other support for the Science for Nicaragua project)

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Educational Technology in Nicaragua

by Dr. Víctor E. López-Tosado

(Victor López-Tosado, a founding member of SfN, traveled to Nicaragua this January in behalf of SfN and also in order to prepare a report for the New England Biolabs Foundation on Nicaragua's use of educational technology. The following paragraphs are slightly edited excerpts from that report.)

The use of educational technology as a means to assist in the teaching-learning process in Nicaraguan institutions of higher education is in its infancy. Availability of audio-visual (A-V) equipment in the institutions visited ranged from minimal to non-existent. The use that professors make of the scarce equipment also varies from one school to the next. Of the three universities in Managua, UNAN-Managua is the best equipped, UNI the least.

UNI (National Engineering University): The availability of A-V equipment and its use at UNI is minimal. UNI does not have an A-V department to develop media to assist professors in their teaching; nor does the university have a library of films (16 mm or video) with titles in the academic areas taught there. According to Maritza Corea, Director of the teaching and methodology division at UNI, A-V equipment available is limited to one slide projector, one dark projector and eight overhead projectors. Transparencies for the overhead projectors are made out of discarded X-ray film from a nearby hospital. Overhead projectors are probably the most used equipment, being especially popular with foreign professors. Because many of them are not completely fluent in Spanish, their use is very helpful, among other things, to help reduce the "tension" and effort required during classroom presentations.

UCA (Universidad Centro Americana): Three programs at UCA make significant use of A-V instruction: the School of Ecology, communications-journalism, and the programs in teaching and learning of languages. However, the use of A-V equipment (photography, film, videos, ...) is mostly for the training of journalists in different fields, although there is no program for the training of television journalists.

UNAN-Managua (National Autonomous University of Nicaragua): In 1983, the university started planning and development of a Department of Educational Media: "We started from zero," said Abel Garache, head of UNAN's office of international relations. The objective of the new department at UNAN, according to Garache, is to "provide the different schools

at the university with advice on how to use media in the classroom." The technical know-how in each stage of the department's development has been the product of international cooperation programs with Nicaragua.

For the initial planning and development of the media center at UNAN, the school received assistance from specialists from W. Germany and Cuba. The major tasks during those initial years were: providing faculty with basic training in the use of available A-V equipment in teaching; training in the development and use of their own materials; and a needs assessment relative to the planned establishment of the Dept. of Educational Media. This effort culminated in 1986 with the publishing of the "*Ante Proyecto para la Creación del Departamento de Medios de Enseñanza*" (Preliminary plan for the creation of a media department).

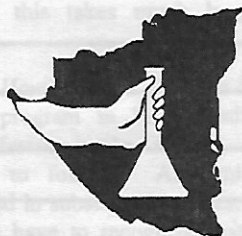
One year after the UNAN-Managua plan was developed, some advances can be seen. First the Media Department has its own modest office, and a full-time director, Otilia Cortez. The Media Department office also doubles as storage room for A-V equipment and production laboratory for some materials. New equipment has been acquired, mostly donations from W. Germany and the Netherlands; a few pieces came from the Soviet Union and from organizations in the United States. Some old equipment has been reconditioned, although most of the existing U.S.-made equipment—I believe the models are no longer under production—remains useless because of the need for replacement parts. A fully-equipped photo laboratory is in operation under the supervision of the Biology Department of the College of Natural Sciences. Through a Libyan donation, an auditorium was built next to the library and equipped with a television monitor and a videocassette player-recorder. Many classrooms have been reconditioned (e.g., installation of projection screens, drapes, and electrical wiring, etc.) for use with A-V equipment. At present, a French-trained educational technology specialist from Venezuela is providing assistance in further developing the Educational Media Department.

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This issue was produced by Michael Harris and Leslie Fraser.

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