

DIRECTORATE FOR SCIENCE EDUCATION
PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION
Cover Page

FOR CONSIDERATION BY NSF ORGANIZATIONAL UNIT
(Indicate the most specific unit known, i.e. program, division, etc.)

STUDENT SCIENCE TRAINING PROGRAM

IS THIS PROPOSAL BEING SUBMITTED ELSEWHERE IN
NSF OR TO ANOTHER FEDERAL AGENCY?
YES _____ NO X IF YES EXPLAIN ON ATTACHED
SHEET

PROGRAM ANNOUNCEMENT/SOLICITATION NO.:

SE 80-20

CLOSING DATE (IF ANY): August 22, 1980

NAME OF SUBMITTING ORGANIZATION TO WHICH AWARD SHOULD BE MADE (INCLUDE BRANCH/CAMPUS/OTHER COMPONENTS)

Hope College

HIGHEST DEGREE
OFFERED: B.A.

ADDRESS OF ORGANIZATION (INCLUDE ZIP CODE)

Holland, Michigan 49423

TITLE OF PROPOSED PROJECT

Computer Science Enrichment Program for High School Students

TOTAL REQUESTED FROM NSF \$:
(Round to nearest \$10)

\$26350

PERIOD OF PROJECT OPERATION:
STARTING DATE:

June 22

1981 to

ENDING DATE:

July 31

DIRECTORS NAME AND SOCIAL SECURITY NO. (SSN)* (Dr., Prof., Mr., Ms.)

Dr. Herbert L. Dershem

271-40-8660

PI/PD PHONE NO.

HOME: (616) 392-3828

OFFICE: (616) 392-5111 Ext. 3002

PI/PD DEPARTMENT

Computer Science

PI/PD ORGANIZATION

Hope College

A. Major Disciplinary Code (s): ZZ

B. Field of Science and Engineering: 31 COMPSCIENG

Year of Most Recent SST Award (if applicable) NA

Type of Project: (X) Course Work () Includes Research (%) Research

NO. OF WEEKS	SUMMER		AMT. REQUESTED	PROJECT PERIOD	ACADEMIC YEAR		AMT. REQUESTED
	NO. OF PARTICIPANTS				NO. OF MONTHS	NO. OF PARTICIPANTS	
1981 <u>6</u>	<u>40</u>		<u>\$26350</u>	19 <u>81</u> to	<u>40</u>		

Number of Boarders 40 Commuters _____ Total 40

Target Audience(s) () Students from Schools in Which Science Instruction is Above Average

(X) Students with Limited Science Education Opportunities () Minorities

() Women () Physically Handicapped () Junior High Age (X) Senior High

*Submission of social security numbers is voluntary and will not affect the organization's eligibility for an award. However, they are an integral part of the NSF information system and assist in processing the proposal. SSN solicited under NSF Act of 1950, as amended.

PRINCIPAL INVESTIGATOR/
PROJECT DIRECTOR

NAME (Dr., Prof., Mr., Ms.)

Dr. Herbert L. Dershem

AUTHORIZED ORGANIZATIONAL REP.

NAME (Dr., Prof., Mr., Ms.)

Dr. F. Sheldon Wettack

OTHER ENDORSEMENT
(optional)

NAME (Dr., Prof., Mr., Ms.)

SIGNATURE

Herbert L. Dershem

SIGNATURE

F. Sheldon Wettack

SIGNATURE

TITLE

Associate Professor

TITLE

Dean for the Natural
and Social Sciences

TITLE

DATE

August 8, 1980

DATE

August 8, 1980

DATE

NARRATIVE

TABLE OF CONTENTS

I. Major Objectives of the Project	1
II. Project Description	3
1. Core study class	3
2. Elective study class	3
3. Individual Projects.	3
4. General Session.	4
5. Daily Schedule	6
III. Staff	7
1. Staff Positions.	7
2. Qualifications of Staff Personnel.	7
IV. Selection of Participants	11
V. Facilities.	12

NARRATIVE

I. Major Objectives of the Project

This project will seek to accomplish four major objectives. These are summarized below:

1. Enrich the computing experience of talented high school students by exposing them to different techniques and applications of computer science.
2. Introduce participants to a disciplined approach to computer program design, implementation, and testing.
3. Expand the participants' view of computer science by exposing them to a variety of types of computers and programming languages.
4. Inform the participants about various career opportunities in the computer field.

The availability of the microcomputer has greatly increased the number of high school students who are exposed to computing. Many of these students develop a strong interest in computer science as a field of study and as a potential career. Often, these students quickly surpass their teachers in computing knowledge, and lack the challenge of an expanding horizon of ideas. The first objective is to challenge these students by presenting to them new computing techniques and applications that will give them both an expanded set of tools and new ideas of applications for these tools.

A problem currently observed by computer science instructors at the college level is that talented students who have done substantial computing work in high school, have frequently accumulated many bad habits in program design, implementation, and testing. This occurs because there is little or no direction given in this area by high school faculty. The second objective of this project would be to develop a disciplined approach to programming through instruction in top-down design and structured programming techniques and through enforcing their practice in individual student projects.

Most high school students have only used one or two different computers, usually microcomputers, and know how to program in just one language, usually BASIC. The third objective is to expose the participants to a number of different types of computers including minicomputers and a large time-sharing system, and to teach them additional programming languages. This will be done in the context of the idea that certain machines and languages are more appropriate for a given application and there is no one machine or language which is best in all circumstances.

The presence of microcomputers in the high school has served to increase the awareness of computing as a career option among high school students. The final objective of this project is to increase the participants' understanding of career possibilities in the computer field and of the preparation required so that they can better plan their future education.

II. Project Description

The 40 participants will be involved in four activities during this project. These activities are described below.

1. Core study class

This is a class which will meet for one hour each day and which all students will attend. The topic of this class will change after three weeks. During the first three weeks the topic will be structured programming and design. This will emphasize the disciplined approach to computer programming. During the last three weeks the topic will be computer organization and assembly language programming. This class will emphasize the general organization of a computer at the register and machine instruction level.

2. Elective study class

Two elective study classes will be offered each day. Each participant will choose one of these classes in which to enroll. During the first three weeks the offerings will be FORTRAN programming and PASCAL programming. Data structures and computer graphics will be the topics available in the last three weeks.

3. Individual Projects

Each participant will be required to design and implement an extensive program system as his or her individual project. This part of the project will be especially adaptive to the backgrounds of the students, presenting challenges appropriate to their background. It will also give the participants a degree of independence and responsibility. The goals for the individual projects will be determined by the participants in consultation with the project director, the faculty research supervisor, and the student assistants. Each participant will have one-half hour each day appointed for meeting with a student assistant to discuss progress and problems with the project. The student assistant will

refer the participants for consultation with project faculty as needed. The meeting times of participants with student assistants will be scheduled during project periods and the elective period when the participant is not in class.

4. General Session

One hour each day will be a general session attended by all participants. This session will, during the first four weeks, deal with special topics in computer science not otherwise covered in the scheduled courses. During the last two weeks, the participants will present the results of their projects during this time period. A tentative schedule for this session is as follows:

Week 1. How to use the available computer systems.

A presentation of the details of using the available systems including job control language, editing facilities and utilities.

Week 2. Careers in Computer Science

People who are working in computer careers will discuss such options as business data processing, scientific computing, systems programming, and computer engineering. Emphasis will be placed on activities carried out in a given job and the educational preparation necessary.

Week 3. Applications of Computers

Participants will see, by example, many of the unique ways a computer is used. Actual software will be demonstrated and the participants will have an opportunity to gain hands-on experience with this software. Applications included will be simulation, data base management, computer art, artificial intelligence, and word processing.

Week 4. Impact of Computers

During this week the general session will deal with the impact of the computer on our society. Topics will include computer ethics, computer crime, computer impact on finance, computer impact on privacy, and the role of computers in the future world. Approximately half of each one-

hour general session will be devoted to a lecture on a topic with the participants discussing that topic in small groups during the remaining half-hour.

Weeks 5 & 6. Reports on Student Projects

Each participant will be given an opportunity to present a brief report on his or her individual project.

A tentative daily schedule is given on the next page.

SCHEDULE OF DAILY ACTIVITIES

TIME	ACTIVITY	TOPIC SCHEDULED					
		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
8:30 - 9:30	Core Study Class	Structured Programming and Design		Computer Organization and Assembly Language Programming			
9:30 - 10:30	Elective Study Class 1	FORTRAN Programming		Computer Graphics			
10:30 - 11:30	Individual Project						
11:30 - 1:00	Lunch						
1:00 - 2:00	Individual Project						
2:00 - 3:00	Elective Study Class 2	PASCAL Programming		Data Structures			
3:00 - 4:00	General Session	How to use Computers	Ca-reers	Appli-cations	Impact	Reports on Projects	
4:00 - 5:00	Individual Project						

III. Staff

1. Staff Positions

The following are the staff positions for this project with their corresponding duties and responsibilities:

Project Director. This person will organize the program, oversee all arrangements, schedule all sessions, select participants and staff, and be responsible for all necessary expenditures and reports. In addition, he will teach the core study classes and supervise the projects of 20 of the participants with help of two student assistants.

Individual Project Supervisor. This person will supervise the projects of 20 of the participants with the help of two student assistants.

Course Instructors. These people will teach the four elective courses.

Student Assistants. There will be four student assistants who are junior or senior Hope College Computer Science majors. Each will directly supervise the projects of 10 participants in cooperation with either the Project Director or the Individual Project Supervisor. These assistants will also have supervisory responsibilities in the residence halls. Their housing expenses will be a Hope College contribution.

2. Qualification of Staff Personnel.

The Project Director will be Professor Herbert Dershem. He received his Ph.D. in Computer Science at Purdue University in 1969. Since that time he has been on the faculty at Hope College where he is presently Associate Professor of Mathematics and Computer Science and Chairman of the Department of Computer Science. He is the author of eighteen papers, one laboratory manual (Computer Exercises for Elementary Statistics), and two modules for introductory Computer Science which will be published by UMAP. Recent papers authored by Professor Dershem which are pertinent to this project are:

"A Computer Workshop for Elementary and Secondary Teachers", with J. Whittle, Proceedings of the 1980 National Educational Computing Conference.

"Computers in Teaching, 1979 State of the Art Report of Instructional Computing: Mathematics and Statistics," with D. Smith, CONDUIT, 1980.

"Using Computer Games to Challenge Elementary School Students," with J. Whittle, The Computing Teacher, April/May, 1980.

"Tower of Hanoi," Recreational Computing, Nov/Dec, 1979.

"Recursive Programming in BASIC," Personal Computing, April, 1979.

"Introducing Elementary School Children to the Computer," with J. Whittle, Calculators and Computers, Sept/Oct, 1978.

"Factor Game," Personal Computing, June, 1978.

In addition to his eleven years of experience teaching a wide variety of undergraduate courses, Professor Dershem has worked with students, teachers, and administrators at both the elementary and secondary level in the use of computers. He has, with Professor Whittle, taught four workshops for teachers in the classroom use of computers, conducted short courses for high school students in computer programming, and assisted local school districts in using the computer to challenge gifted students. He has supervised independent study and research projects in Computer Science for 27 undergraduates in the past five years.

Professor Dershem has just completed a project funded by the Local Course Improvement Program of the National Science Foundation for developing and implementing a modular introductory course in Computer Science.

The remainder of the staff cannot be specified at this time as their availability is dependent upon other pending projects. The Individual Project Director and the Course Instructors will be chosen from among the following qualified Hope College faculty members:

John Whittle

Education: M.A. in Mathematics, Western Kentucky University, 1963.

Position: Assistant Professor of Mathematics and Computer Science, Hope College.

Pertinent Experience: Professor Whittle has co-authored three articles with Professor Dershem, He has conducted workshops for elementary and secondary teachers, short courses for elementary and secondary students, and pre-service courses for teachers in the use of computers. He has taught beginning and upper-level courses in Computer Science and supervised many undergraduate computer projects.

Elliot Tanis

Education: Ph.D. in Mathematics, University of Iowa, 1963.

Position: Professor of Mathematics and Chairman of the Department, Hope College.

Pertinent Experience: Dr. Tanis has authored two articles dealing with computer graphics and art, eight articles on computer simulations for probability and statistics, and a manual for a computer-based statistics laboratory. He has given several lectures on computer graphics and computer simulations to high school students and he taught a short course for upper elementary students on the use of microcomputers. He has supervised many undergraduate research projects.

John Watson

Education: M.B.A. in Computer Science, New York University, 1961.

Position: Director of the Computer Center and Lecturer in Computer Science, Hope College.

Pertinent Experience: Mr. Watson has taught Computer Science at both the graduate and undergraduate level. He has also conducted classes introducing computers to high school and junior high students and to high school and junior high teachers. He has written papers on use of computer terminals for college and high school teachers and time-sharing software for student use.

Jeff Boes

Education: M.S. in Computer Science, University of Pittsburgh, 1979.

Position: Instructor of Computer Science, Hope College.

Pertinent Experience: Experience teaching Computer Science courses at all levels.

John Vander Beek

Education: Ph.D. in Mathematics, Oregon State University, 1970.

Position: Visiting Professor of Mathematics, Hope College.

Pertinent Experience: Participant in several NSF sponsored programs on computing. Experience teaching beginning computer science courses at the undergraduate level and giving lectures at the high school level.

IV. Selection of Participants

This project is intended for high school students who are gifted and who have had some exposure to computers. The following criteria will be used in the selection of participants:

1. A high school grade point average of 3.0 or higher is required.
2. Experience in programming a computer is required.
3. Preference will be given to those students who are juniors in the academic year preceding the project, although qualified sophomores will also be considered.
4. A nomination letter must be submitted by a high school teacher. This letter should address the student's interest and ability in Computer Science and motivation toward a computer career.
5. A proposal must be submitted by the student for the individual project he or she would like to carry out during the project.
6. Special consideration will be given to students with high interest and ability whose schools have limited computer and/or faculty resources for meeting the needs of the students.

Nationwide publicity of this program will be obtained both through the distribution of the announcement by the National Science Foundation and by submitting announcements to national publications such as Creative Computing. In addition, Hope College has extensive mailing lists of high schools from various campus activities. These lists cover all of Michigan as well as parts of seven other states. A brochure will be mailed to the schools on these lists.

V. Facilities

The full campus facilities of the college will be available to the participants of this project. This will include accommodations in a dormitory, meals in the dining hall, and recreation at campus facilities. It is anticipated that some participants will attend on a commuting basis, and will hence, not require full use of campus facilities.

Likewise, the full campus computer facilities will be available to the students. This includes a microcomputer laboratory consisting of ten Radio Shack TRS-80 disk-based systems, an Ohio Scientific Challenger II, a Tektronics 4051 graphics minicomputer, and the Honeywell Sigma 6 time-sharing computer with CP-V operating system. By the time this project is conducted it is anticipated that several additional microcomputers will be available including an Apple II, and there is a possibility that the college will have a larger time-sharing system replacing the Sigma 6. Participants who own or have access to a microcomputer will be encouraged to bring it with them where possible.

BUDGET EXPLANATIONS

- A. Project director's salary is based on a nine-month salary of \$24,900, figured as 2/9 of this salary.
- B. Undergraduate assistants' salaries are based on \$4.00/hour, 50 hours/week for the duration of the project. The 50 hour/week estimate is minimal since these assistants will work with participants in the evenings and serve as residence advisors.
- C. Fringe benefits are TIAA/CREF retirement contributions by the College and are based on 7.5% of faculty salaries of \$8600.
- E. This item will include all storage media, paper, and other computer related supplies. It was computed at \$7.50 per participant.
- F. Travel cost is computed as \$250 round-trip air fare from Grand Rapids to Washington plus \$100 for room, board, and surface transportation for attendance of project directors' meeting.
- H. Printing expenses for a brochure and other publicity materials are included here.
- I. The computer charges are based on an estimate of 20 minutes terminal connect time per student per day at current charge rates of the Hope College Computer Center.
- J. This is based on an estimate of five outside guest speakers for the general session with an honorarium of \$30 for each.
- K. This is based on NSF contribution of \$25 per student per week for room and board. Actual rates for 1980 are about \$73 per week. Assuming this rate will be \$80 per week in 1981, that would represent an average student of contribution of \$55 per week for room and board.
- L. One hundred dollars under office supplies, communications, etc. is to cover postage expenses for publicity materials and for communication with participants after their selection.

SUMMARY PROPOSAL BUDGET

ORGANIZATION AND ADDRESS					FOR NSF USE ONLY				
Hope College Holland, Michigan 49423 PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR Herbert L. Dershem					PROPOSAL NO.				
					DURATION (MONTHS)				
					PROPOSED	REVISED			
A. SENIOR PERSONNEL (LIST BY NAME; SHOW NUMBERS OF PEOPLE IN BRACKETS; SALARY AMOUNTS MAY BE LISTED ON SEPARATE SCHEDULE) GPM 205.1b					NSF FUNDED MAN MONTHS	FUNDS REQUESTED BY PROPOSER	FUNDS GRANTED BY NSF (IF DIFFERENT)		
					CAL.	ACAD.	SUMR.		
	1. P.I./P.D.	Herbert L. Dershem					2	\$ 5500	\$
	2. CO P.I./P.D.							\$	\$
	3. CO P.I./P.D.							\$	\$
	4. CO P.I./P.D.							\$	\$
	5. CO P.I./P.D.							\$	\$
11115	6. (1)	SUBTOTALS A1 - A5					2	\$ 5500	\$
FACULTY AND OTHER SENIOR ASSOCIATES (ATTACH EXTRA SHEET IF NECESSARY)									
	7.	Individual Project Supervisor					.75	\$ 1500	\$
	8.	Course Instructor					.2	\$ 400	\$
	9.	Course Instructor					.2	\$ 400	\$
	10.	Course Instructor					.2	\$ 400	\$
	11.	Course Instructor					.2	\$ 400	\$
11117	12. (5)	SUBTOTALS A7 - A11					1.55	\$ 3100	\$
B. OTHER PERSONNEL (LIST NUMBERS IN BRACKETS)									
11141	1. ()	POSTDOCTORAL ASSOCIATES						\$	\$
11149	2. ()	OTHER PROFESSIONALS						\$	\$
11150	3. ()	GRADUATE STUDENTS						\$	\$
11152	4. (4)	UNDERGRADUATE STUDENTS						\$ 4800	\$
11182	5. ()	SECRETARIAL - CLERICAL						\$	\$
11183	6. ()	TECHNICAL, SHOP, OTHER						\$	\$
	TOTAL SALARIES AND WAGES (A+B)							\$ 13400	\$
11200	C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							\$ 645	\$
	TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A+B+C)							\$ 14045	\$
D. EQUIPMENT (LIST ITEMS AND DOLLAR AMOUNTS FOR EACH ITEM) (NOT ALLOWED IN SST)									
23181	TOTAL EQUIPMENT							\$	\$
E. MATERIALS AND SUPPLIES									
Tapes, Disks, and Computer Supplies									
32630								\$ 300	\$
F. DOMESTIC TRAVEL									
42111								\$ 350	\$
G. FOREIGN TRAVEL (LIST DESTINATION AND AMOUNT FOR EACH TRIP; GPM 731) (NOT ALLOWED IN SST)									
42112								\$	\$

SUMMARY PROPOSAL BUDGET

PROPOSAL NO.

52500	H. PUBLICATION COSTS/PAGE CHARGES	\$	100	\$
62315	I. COMPUTER (ADPE) SERVICES	\$	500	\$
	J. CONSULTANT SERVICES (IDENTIFY CONSULTANTS BY NAME AND AMOUNT; GPM 516)			
		\$	150	\$
	K. PARTICIPANT SUPPORT COSTS, IF ALLOWED BY PROGRAM GUIDE (ITEMIZE) GPM 518			
	1. STIPENDS	\$		
	2. TRAVEL	\$		
	3. SUBSISTENCE	\$	6000	
	4. OTHER - SPECIFY	\$		
	5. TOTAL PARTICIPANT COSTS (K1 + K2 + K3 + K4)	\$	6000	\$
	L. ALL OTHER DIRECT COSTS (List items and dollar amounts. Details of subcontracts, including work statements and budget, should be explained in full in proposal.)			
	1. FIELD EXPENSES	\$		
	2. OFFICE SUPPLIES, COMMUNICATIONS, ETC.	\$	100	
	3. INSURANCE, HEALTH SERVICE, ETC.	\$		
65001	TOTAL OTHER DIRECT COSTS	\$	21545	\$
	M. TOTAL DIRECT COSTS (A THROUGH L)	\$		\$
	N. INDIRECT COSTS (Specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs included in on/off campus bases in remarks.)			
	55.9% of salaries and wages			
74100	TOTAL INDIRECT COSTS	\$	4807	\$
	O. TOTAL DIRECT AND INDIRECT COSTS (M + N)	\$	26352	\$
74500	P. LESS RESIDUAL FUNDS (If for further support of current project; GPM 252 and 253)	\$		\$
75000	Q. AMOUNT OF THIS REQUEST (O MINUS P)	\$	26352	\$

REMARKS

NOTE: SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPM 233). THIS IS REVISION NO.

SIGNATURE OF PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR	DATE OF SIGNATURE	TYPED OR PRINTED NAME AND TITLE
SIGNATURE OF AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	DATE OF SIGNATURE	TYPED OR PRINTED NAME AND TITLE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION			PROGRAM OFFICER APPROVAL	
Date Checked	Date of Rate Sheet	Signature		

Grant Number	Amend No.	Institution	Organization	Fund Acct.	Program	Object
Proposal Number		Dur.	Chg.	Award Date	Proposed Amount	Propd. Dur.

BUDGET SUMMARY For Program Cost Analysis

Requested From NSF

- A. PARTICIPANT SUPPORT
(Board and Room only; residential projects)
40 Participants for 6 weeks
- \$ 25 /wk./student
Commutation (Public Transportation and
Lunch; commuting projects only)
 X X
No. Commuters Avg. Daily Allowance No. Days
- Total Participant Support
- B. Salaries and Wages
Director (Administrative \$ 3000 ; Instruction \$ 2500)
Total staff (Not including Secretary)
- C. Total for all other Operating Costs
(Including Indirect Costs Requested)
- D. Total for all Costs
- E. Sum of Budgets I and II
- F. Total Requested (Round to nearest \$10)
- G. Total Cost per Student-Week: \$ 109.80
 $\left(\frac{\text{Line F}}{\text{No. Students} \times \text{Weeks}} \right)$

Summer: Budget I	Academic Year: Budget II
\$ 6000	\$
\$ 0	\$
\$ 5500	\$
\$ 14045	\$
\$ 6307	\$
\$ 26352	\$
\$ 26352	\$
\$ 26350	\$
\$ 109.80	\$

ABSTRACT

This six-week summer project provides an enrichment experience in computer science for forty high school juniors. Through a combination of course work and problem-oriented studies, the participants will learn the disciplined approach to project and program design, gain experience on a variety of computer systems and languages, and be exposed to information pertinent to planning computer careers.

Each participant will complete four three-week courses from among six offerings. These will include topics such as structured programming and design, computer organization, assembly language programming, FORTRAN programming, PASCAL programming, data structures, and computer graphics. In addition, participants will attend a general session each day in which special topics will be discussed. This will include one week each devoted to use of available computers, computer careers, computer applications, and the impact of computers.

Each participant will also complete one or more extensive programming projects on an individual basis under the direction of the participating Hope College faculty and undergraduate assistants.

PUBLICITY ANNOUNCEMENT

Hope College, Holland; 49423; Computer Science; 6 weeks, June 22 - July 31; 40 students, 11th grade. Computer programming experience required. Dr. Herbert L. Dershem Department of Computer Science (616-392-5111).

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

January 26, 1981

Directorate for Science Education
Division of Scientific Personnel Improvement

Herbert L. Dershem
Computer Science
Hope College
Holland, MI 49423

Proposal:SPI 80-24373

Dear Professor Dershem:

We regret to inform you that the National Science Foundation is unable to support your proposal for a Student Science Training Project.

The Foundation bases its decisions primarily on the scientific and educational merit of each proposal, judged in relation to other proposals reviewed concurrently. In this regard, we rely heavily on advice from members of the academic community. Frequently, among proposals judged to be of substantial but less than highest merit, other factors such as geographic and subject matter balance are also considered.

To provide information on the basis for the Foundation's decision, verbatim copies of the academic review materials and the staff's "Proposal Recommendation Form," together with an explanation of the review and scoring, will be sent to you at the above address within the next few weeks. Please understand that individual reviewer comments do not reflect a Foundation policy or position, and that our decision is based on the overall weight of the review.

In the hope that your interest in this type of activity continues, we will see that you receive a copy of next year's program guide as soon as it becomes available. However, please bear in mind that a future revised proposal is in no way assured success. The outcome of each review process always reflects the judgment of the individuals involved and the nature of the proposals in the competition at that time.

Although the Foundation is unable to support this proposal, we thank you for submitting it, and assure you that we shall be pleased to consider future proposals which you may wish to submit.

Sincerely yours,



Lewis A. Gist
Division Director

copy to: F. Sheldon Wettack
Authorizing Officer