



THE CENTER FOR INTERACTIVE MANAGEMENT

THORNTON HALL

UNIVERSITY OF VIRGINIA

CHARLOTTESVILLE, VIRGINIA 22901

September 2, 1982



MEMORANDUM

To: Mr. J. E. Gibson
Commonwealth Professor and Dean
Thornton Hall

From: John N. Warfield

Subject: Professional Activities Report and
CIM Research Plans.

Recently you requested verbally that I provide you with some material showing CIM activity and plans.

I hope you will forgive me for choosing to provide part of this in the form of the annual Professional Activities Report with Descriptive and Normative Scenario.

To this I have appended a piece called CIM RESEARCH PLANS.

I am sure that I have left out some significant ideas. However I expect to get organized in 1983.

Enclosures

September, 1982
PROFESSIONAL ACTIVITIES REPORT

John N. Warfield

DESCRIPTIVE NARRATIVE

(Professional Activities for the year from
Sept. 1, 1981 to August 31, 1982)

1.0 General Overview.

The period covered by this report was not a normal academic year. I was returning from a leave of absence with a school of business, department of management, and a summer of consulting for industry. Moreover, I was returning to a new responsibility--that of initiating a new Center, the Center for Interactive Management (CIM), in a space that had not yet been renovated.

Development of the Center as a functional space got under way in October of 1981. It was to be a slow, steady process of renovation, furnishing, and equipping. This process went on for a period of about 6 months, culminating around April 1 with a facility that could be used at nearly its planned level of efficiency.

A secretary was hired effective April 1, and it became possible to start to function with a semblance of normality at that time.

Since that time, a considerable amount of effort has been put into making this Center understood, making it useful, striving to make it known to a variety of organizations, and working with various clients or potential clients.

While waiting for the Center to become operational, various traditional academic functions were carried out which will be described in this report. Also I will attempt to convey herein some of the details of what has gone on in CIM during the period from around February 15 to the end of August. February 15 marked the arrival of chairs and tables, which allowed some meetings to be held in the situation room.

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Throughout the period there was some sponsored research going on, as a carryover from work begun before CIM was started.

2.0 Teaching.

No teaching was done in the fall semester. However some preparation was made for teaching ENGR 250, Introduction to Engineering Design, to be taught to Rodman Scholars. During the spring semester this course was offered as planned.

In spite of a very conscientious teacher, it appeared that the course that was offered the previous year was unsatisfactory to everyone, students, the teacher, and the Rodman Committee. Therefore it was necessary to rethink the whole course. Also it was necessary to collect material for the course, since no suitable textbook was in existence. This should not be surprising, since the teaching of design to second-year engineering students is a very unusual idea, which many engineering faculty might consider to be impossible.

It is believed that the course, as offered, was a substantial improvement over what had been offered before. Considerable assistance was obtained from other faculty, who helped to make this course better.

3.0 Research. I was employed 50% on research for one semester during this period. The sponsor was the U. S. Forest Service, and the purpose of the research was to investigate the potential applicability of situation rooms and the options field/options profile method of design to the following area: design of decision support systems for state divisions of forestry. This work also involved some meetings with Virginia Division of Forestry (VDF) personnel. There is every indication that we would have obtained a sizeable contract to develop a decision support system for VDF, except for federal budget cuts occurring late in the fiscal year which have decimated state forestry operations in Virginia as well as in other states. In spite of this, it is anticipated that additional research funding from the U. S. Forest Service will be obtained, but not to assist state agencies. Instead the new funding will be to assist national agencies, and will be considerably smaller initially than had been expected, due to federal budget cuts.

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A considerable amount of time was spent trying to cultivate potential new sponsors for research. The details of this will be reported separately in an Appendix titled CIM Research Plans.

4.0 Workshops, Seminars, Meetings.

Sept., 1981. Made a two-day trip to Louisville, to visit the University of Louisville, in my role as President-Elect of the Society for General Systems Research. This was to familiarize me with the duties of the Presidency, as well as the Business Office facilities and personnel.

Made a presentation at COMSAT on the results of an R&D study conducted during the summer of 1981 as a consultant on R&D management within COMSAT.

Made a presentation (Sept. 23) at the Mount Vernon Motel to U. S. Forest Service and Virginia Division of Forestry Personnel on decision support systems for state forestry operations.

Oct., 1981. Presented a paper in a panel discussion at the ORSA/TIMS meeting in Houston, Texas on the subject of Interpretive Structural Modeling and applications. The session organizer and chairman was Professor Klein of the School of Business, Temple University.

Nov., 1981 Spent a week in Riyadh, Saudi Arabia, attending a meeting to discuss an approach to comprehensive planning for science and technology in Saudi Arabia. Produced a report on this meeting with recommendations for how to proceed.

Jan., 1982 Spent one week in Washington, D. C. attending the annual meeting of the Society for General Systems Research, filling duties of President-Elect, and also chairing a session that I organized on the subject of "Systems Methodology Applied to Government". This session included papers by Carl Moore of Kent State, Bob McDonald of the U. S. Forest Service, and Huey Johnson, the Secretary of Resources for the State of California.

Presented an afternoon lecture in Washington, D. C., in a short course on "Anticipating the Future", on the subject of Interpretive Structural Modeling.

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March, 1982. Gave some private instruction to Dr. Larry Edwards of the National Science Foundation on Consensus Methodologies. This included having him participate as a facilitator of a CIM workshop to develop and structure goals for the Rodman Scholars Program. This was to give him experience which he might later use in developing new programs with Saudi Arabia in which we might participate. His position is program manager for the Saudi Arabian programs in NSF. (He has recently left to go to Saudi Arabia for one year, while on leave from NSF. We will stay in touch with him, in hopes that we can work up a contract for CIM.)

Spent a week in Riyadh, Saudi Arabia, discussing the possible use of consensus methodologies in their comprehensive planning for science and technology. Noted that they have the ISM programs operational at their computer center.

April, 1982 . Attended an international meeting at the GMD in Bonn, Germany, on the subject of "Model Realism". The GMD is West Germany's computer science research center. This meeting was sponsored by the International Federation for Systems Research (the SGSR, the Dutch group, and the Austrian group). While there I gave a paper in response to a paper prepared by some faculty in the School of Business at the University of Maryland.

Gave a 3-day short course on Consensus Methodologies to a small group of scientists and management consultants at the GMD, sponsored by the Carl Cranz Gesellschaft. The latter is a major continuing education organization in Germany, specializing in high technology and new management concepts. (I have been invited to repeat this workshop in June, 1983).

May, 1982. Spent two weeks in Brazil at the University of São Paulo and the IBM Science Center in Brasilia. Participated in a 3-day workshop, gave a 2-day seminar, and took part in additional meetings at the University, and then gave a seminar talk at IBM in Brasilia. I discussed IBM software at length with an expert IBM programmer, who intends to expand the capability of ISM software significantly. We hope to get this software when it is finished.

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June, 1982

I attended 2 two-day meetings in Washington, to assist in developing a comprehensive plan for science and technology (CPST) for Saudi Arabia. This work is consulting paid for through the National Science Foundation.

We conducted a meeting in CIM for Mr. Ray Hunt of UVA aimed at helping Mr. Ralph Allen develop a plan for Health, Security, and Safety at UVA.

July, 1982

I planned and conducted a 2-day workshop in CIM, sponsored by NSF, on Consensus Methodologies. The participants were all involved in the CPST program for Saudi Arabia.

August, 1982

I attended a 2-day meeting in Washington, connected with the CPST.

I attended a 2-day meeting at CIM related to Forest Service Planning.

5.0 Publications.

John N. Warfield, "Interpretive Structural Modeling", Chapter 5 in the book GROUP PLANNING AND PROBLEM-SOLVING METHODS IN ENGINEERING edited by Shirley A. Olsen, John Wiley & Sons. This chapter appears on pages 155-201 inclusive. It presents the ISM theory and applications without involving matrix theory, which should open this theory to a larger audience of scholars. Also it describes approximately 50 applications.

John N. Warfield, "Criteria for Choosing Research Topics", an editorial in the Bulletin of the Society for General Systems Research, Spring/Summer issue, 1982.

6. Editorial Responsibility.

The International Federation for Systems Research (headquartered in Austria) agreed with Pergamon Press to institute a new international journal called SYSTEMS RESEARCH. I was asked to be the founding editor, and I accepted this assignment, conditioned upon Pergamon Press providing \$2,500 to support a secretary, each year for the duration of my editorship.

The agreement was finally signed in August, 1982, and I began to work with Pergamon to provide the necessary impetus to get this journal moving.

7. Committees.

While I have not served on any formal committees at UVA, I have been asked to do a number of fairly significant tasks by the Dean's Office. Since these tasks are not given formal names or assignment status, it is difficult to say precisely their nature.

8. Consulting.

National Science Foundation--related to Comprehensive Planning for Science and Technology in Saudi Arabia--approximately 25 days during the academic year and 25 days during the summer.

University of São Paulo, Brazil (Future Studies Group)--approximately 10 days.

9. Presidency, Society for General Systems Research.

My principal responsibility is to serve as general chairman of the 1983 Annual Meeting to be held in Detroit, Michigan, the week of May 23-27. This year I have planned the meeting theme and concept, and I have appointed chairpersons for the plenary sessions, the paper sessions, the proceedings, and the joint session with AAAS.

I have retained direct responsibility for the morning symposia, and have been seeking individuals to organize and chair these symposia. Each symposium is supposed to describe in some depth a major world problem, so as to try to get some of the systems types to understand that work is needed on these problems. So far we have tentative agreements from people to handle sessions on these topics:

- International Stability
- Destruction of Rain Forests
- Overpopulation
- Inadequacy of Leadership
- Social Traps
- World Economy

and I am seeking four other topics.

The general theme of the meeting is to be the potential connection between systems education and major world problems.

As part of my duties in this job, I have to take part once or twice a month in a telephone conference call that lasts one to two hours. We run through the whole agenda, and this avoids travel and excessive correspondence.

While in Brazil I contacted several people to try to get them to consider establishing a Brazil chapter of the Society. Professor Robert Koo agreed to try to do this.

10. Miscellaneous Public Service.

For at least eight years, I have been receiving many unsolicited queries about ISM and other research results. Sometimes these are simply requests for reprints. At other times, researchers want assistance in getting ISM software. Sometimes they even ask me to send them copies of other people's related research!

This year I got NSF to pay for the cost of a fairly extensive telephone survey to see who has ISM software, what type it is, and what kind of machine it runs on. Also I have assisted the University of Northern Iowa in setting up an arrangement to lease software to any and all interested users.

I was requested by Dr. Wedde of GMD in Bonn to try to help them get software so Margot Eul, a graduate student in the School of Business at the University of Cologne could proceed with her long-delayed dissertation--delayed because her professor was too busy running an institute away from the University to help her get it. I spent some time trying to get various other universities whose software is superior to ours to send them a tape or cards. Finally I sent a tape to them, and had to repeat this when the first one was defective. Eventually they were able to get two versions operational, one at the University of Cologne, and one at the GMD near Bonn. We are following this development now to try to get their assistance in improving the software. They have the resources to do it.

We also have been keeping track of the software at SANCST in Saudi Arabia, which is now operational. There are at least a dozen universities in the states that now have some version of the software, including Old Dominion and William and Mary in Virginia. Also the National Science Foundation now has an operating version on their Honeywell machine.

Eventually we hope to have back-up arrangements with some of these other institutions, so when our computer isn't working we can use their machinery.

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We have also answered numerous short queries from potential clients or users, most of which will not benefit us directly. The problem is in knowing which is which. For example, we have had contacts from Minnesota, Colorado, California, Mexico, and elsewhere. We get requests from the Iron Curtain countries for free copies of my 1976 book, which is not available for example in Rumania because of a shortage of foreign exchange.

We get occasional queries from libraries about citations, dates of publication, etc., and try to answer all of these. IBM makes our work known to occasional visitors who request information.

As we provide this information, we develop a mailing list that we will use to try to attract people to attend our short course offerings as they develop.

Upon the recommendation of a professor at the Darden School, Robert Waller of the University of Northern Iowa has been asked to write an article on ISM for the Harvard Business Review, largely based on his consulting work with the Miller Brewing Company, and I have been asked by Waller to comment on his article.

11. Visitors from Other Universities and Research Institutes.

We had during 1981-82 two requests from people to spend part of their time with CIM during the 1982-83 academic year, while they were on their sabbaticals. These were from Prof. Carl Moore of Kent State University and Prof. Janes of the City University of London. We have made arrangements for both of these people to spend time with the Center, Moore for about two months and Janes for about 5 months. We are still trying to find office space for them.

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NORMATIVE NARRATIVE

(Contemplated professional activities for the period Sept. 1, 1982 to Aug. 31, 1983).

1. Teaching.

I expect to teach the Rodman Design Course in the Spring, 1983.

2. Research.

See the Appendix titled CIM Research Plans.

3. Meetings.

We have plans to conduct three short courses as CIM activities in the fall of 1982, and probably additional ones in 1983.

The first short-course will be a one-day course in Alexandria, Virginia, called INTRODUCTION TO CONSENSUS METHODOLOGIES AND APPLICATIONS. The date is November 8.

The second short course will be at the request of the U. S. Forest Service, and it is planned for December 7-10, inclusive, to be held in CIM.

The third short course is still in the planning stages, and it might be combined with the second one or held separately. It would be tailored to needs of the Office of the Chief of the U. S. Forest Service.

In 1983, we hope to offer two one-week short courses in CIM, one on Consensus Methodologies, and the other on Facilitator Training.

Probably I will conduct a 3-day workshop on Consensus Methodologies in June, 1983, in Heidelberg or Munich, Germany.

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4.0 Publications.

- A. I expect to have a first draft of a text for the Rodman Design Course in time for the spring class.
- B. I have contributed to the new Pergamon Press Encyclopedia, and expect that contribution to be published in 1983.
- C. I will probably do several editorials for the new journal Systems Research and the Bulletin of the Society for General Systems Research.

5.0 Committees.

I expect to be involved in assisting Mr. J. E. Gibson, the Dean of SEAS, in connection with long-range planning for the School.

Also I will probably be involved in planning for CAD/CAM in the School.

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CIM RESEARCH PLANS

1. Fall, 1981 to April 1, 1982. I begin with background information. During the subject period, Dr. Christakis continued to run a research program for the U. S. Forest Service which mainly related to assisting the Virginia Division of Forestry develop a public-participation planning scheme that could be used to get public input (as required by law) into planning for state and private forestry. This was a very successful project that has attracted significant national attention. For verification, one may contact the office of the Chief of the Forest Service in Washington, D. C., and talk with Mr. Vance, or one may contact the Virginia Division of Forestry and talk to the State Forester, Mr. Wally Custard. Or one may contact the Atlanta Regional Office of the U. S. Forest Service and talk with Mr. Bob McDonald, the federal project monitor.

2. April 1, 1982 to August 31, 1982. In effect, CIM began its operations as an organization on April 1, 1982. Since that time, we have written a few proposals, but mostly have been cultivating a variety of potential sponsors. Our general expectation is that we will do a significant number of small projects, and that we will try to be doing two large projects as a pattern of effort. Also we hope to offer a significant number of short courses.

During the subject period, we proposed a project to Arlington, Virginia, which was at first accepted and then declined due to collapse of the foundation support that Arlington County's Board had been promised.

We proposed cooperatively with the Institute of Government on a HUD project, and that too was declined. However the Institute of Government is trying to sell the proposal to other organizations.

We proposed a workshop to NSF which was accepted, with a 2-day workshop bringing in \$1,457.

We have had several discussions with the U. S. Marine Corps, both here at CIM and at the Naval Annex (near the Pentagon). We believe that these discussions are proceeding well, but we still have to reach some definition on what will be proposed, to whom, for what amount, and for what duration.

77 We have informally proposed several possible activities to the Saudi Arabian National Center for Science and Technology (SANCST) and hope that some of these will bear fruit. The Saudis are not much impressed with formal proposals, and we are simply using every opportunity to promote a possible significant project. If this transpires, it is likely to proceed from start to conclusion of negotiations in two or three weeks at a time selected by the Saudis.

We have also been active in trying to explain what we have to offer to the University. During the subject period we have initiated a project with Mr. Ray Hunt, and hope that this project will be the first of many that we will do outside SEAS that involve parts of UVA. This project appears to be temporarily dormant, awaiting the arrival of Mr. Haas, under whose aegis the results are likely to be used.

We have carried out a number of short-term tasks for SEAS, including a goals exercise for the Rodman Program requested by Mr. Simmons, and various activities requested by Mr. Gibson. Also we have proposed to work with the CAD/CAM Committee to assist them in designing a CAD/CAM Center. We have assisted Mr. Gibson in reviewing his videotapes on the auto industry, in reviewing the requests of his Industrial Advisory Board and conducting a priority exercise on their recommendations, in assessing the status of long-range planning in SEAS, as and in reviewing his pioneering proposal for a productivity institute in the State of Virginia.

We spent considerable time working with the Division of Forestry in Virginia to develop a concept for a decision support system, wherein we expected to get support, but federal budget cuts have made this idea useless for the time being.

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During this period, Mr. Christakis conducted a very successful workshop in a consulting role (summer, 1982) for the National Marine Fisheries Service in La Jolla, California. In this workshop he was able to take them from a state of essentially no planning to one where they developed a good understanding of how to do planning, and began to implement the methods.

In order to follow up on this, Warfield and Christakis visited the Department of Commerce in Washington, to try to get them interested in a broader planning-related sponsored project for CIM. We were told, in effect, that there is a strong likelihood we will be asked to assist them, but this will have to await the next fiscal year and the addition of planning staff.

The value of the work done for the National Marine Fisheries Service can be verified by contacting David J. Mackett, Program Planning Officer, at the Southwest Fisheries Center, La Jolla, California.

Basically, Mr. Christakis went into a situation that was characterized by no effective planning, hostility to the concept, and a history of laissez-faire use of public funds, and converted it into a mobilized and functional operation. The skills she showed in this work in dealing with science-based organizations were truly outstanding.

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We cooperated with Mr. Gil Devey (formerly of NSF) who was visited Egypt and Saudi Arabia to try to market some projects in management training, and contacted us as potential participants. In Egypt we lost out to the State Department which provides A. I. D. consultants at \$200 per day. The Saudis are still keeping their own counsel on their plans for training. We do know that they intend to begin their strategic planning as of the beginning of 1983, and it seems likely that if they want training their needs will surface around that time.

As part of our cultivation of the Saudis, we put Dr. Yamani, Deputy Director of SANCST in touch with Walter Bogan, a former sponsor. At the present both of them are intensely interested in the role of science museums in getting people aware of science and technology as careers (especially youth). They plan to meet in Toronto. By continuing to act as a broker for the Saudis we hope to build enough good will that we can eventually get a major project with them.

In the meantime, much of the material I have prepared for the Saudis in a consulting role with NSF (through SRI International as contractor, but assisting JWK International in Annandale, Va., which is itself a Saudi contractor). We have also cultivated JWK International as a possible source of subcontracts.

We have been requested by the Department of Agriculture, Graduate School operation, to offer seminars on our methods at their location and to assist them in possibly planning a DEMOSOPHIA room. So far we have resisted these overtures, since we feel that the disbenefits would outweigh the benefits. However there are some potential benefits, and we might eventually consider going this route.

Also Christakis and Wood have assisted their sponsor the U. S. Forest service to replicate the DEMOSOPHIA facility in Atlanta, and have trained forestry personnel to the extent where they are now capable of doing the same kind of work that CIM does. Recently Bob McDonald conducted a workshop in Minnesota for the Department of Natural Resources with help from Bill Wood.

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While it may appear that it is self-defeating to transfer our technology to others, the fact is that there is a mammoth potential market out there, much of which does not want to be perpetually dependent on others, and would find a history of successful technology transfer both relatively unique and very appealing to make the Center credible and distinguishable from a typical "Beltway Bandit" firm. In such firms there is a great desire to latch onto a sponsor and keep him prisoner indefinitely, as described in the "First Generation Design Methods" by Shirley Olsen in the book referenced earlier.

Thus it is a part of our marketing strategy to transfer the technology that we use at a reasonable pace. Over the long run, this is the way to build a reputation and a good volume of clients.

3. September 1, 1982 to August 31, 1983.

During this period, we expect to get a renewal (around Sept. 30, 1982) of the U. S. Forest Service contract, in the amount of about \$40,000, this time to work with national forest planners. This is a small contract, but it represents all the funds available at the end of the fiscal year. We hope that there will be additional funding in the next fiscal year for research from this source. We already are virtually assured of funding for two short courses to be offered on the UVA grounds.

We will continue to cultivate the Marine Corps, with three different possibilities in mind, any one of which could be financially significant and interesting. Our experience has been so far that we get a good hearing, but the Corps is not very well organized and we have to work around their disorganization to continue to discuss possibilities.

We hope to complete a proposal for the National Science Foundation having to do with innovation in industry-university relations that would tie in with Mr. Gibson's innovative proposal to Virginia for an institute on industrial productivity.

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We plan to continue to cultivate Saudi Arabia as a potential source of significant support.

We expect to contact the Department of Commerce in November or December to follow up on Christakis' very successful work in San Diego, and try to evolve a working relationship through a CIM contract with the Department of Commerce.

We also hope to develop, in the steady-state, a situation where about half of our work is done for different parts of UVA, at least until the kind of services we have to offer are no longer needed. The University is under a variety of pressures to improve its planning. If the University does decide to go participative, and to be more open and frank in its various discussions and deliberations, so that controversial matters that require major decisions can be aired without causing undue paranoia and fear of repercussions or of being swamped by the issues, then CIM can assist. If, however, issues continue to be treated superficially or in barely subcutaneous ways, CIM will be threatened with loss of credibility if it takes part in such treatments. We must walk a tightrope as we proceed in this delicate area, but we are determined to work locally if the clients will permit it and will adjust to the spirit of our services.

In terms of improvement within CIM, we need rather urgently to get additional software. It is ironic that we have about the worst ISM software being used anywhere. Moreover, we need to develop new interactive software to assist in top-down design and in making major decisions auditable. We have all the theory. All we need is to do the work to get the software written, or alternatively to get the software given to us, e.g., by IBM do Brasil. If we are successful in this latter route, we will have to wait until they have finished with the writing. Their writing will probably include automatic configuring of the structures as well as the capacity for automatic printing of structures. Such additions would add major utility to CIM.

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The most urgent single software requirement is to get software that will produce a more readable and humanistic display on our television monitor. The present display is off-center, the printing is too tightly packed and hard to read for sustained periods. The good news is that we know how to correct it. The bad news is that it will take a fair amount of good programming. We hope that our new graduate assistant will be able to do this programming for us.

One of our happiest experiences has been with the truly excellent assistance that we have had in CIM from David Keever, who has done a lot of problem-solving related to CIM itself. Bill Wood has also been helpful in this area, but Bill's major contributions have been in the forestry research area, where he has developed a fine working relationship with personnel at the Virginia Division of Forestry.

We have also been extremely fortunate to have the services of Lois Gibson as secretary.

We do plan to begin to edit the new journal Systems Research in the near future and will cover part of Lois's salary through this collaboration with Pergamon Press.

We also hope to perform a certain amount of work with SEAS at both School and Departmental levels. However we will not be aggressive in marketing this work, but rather will seek opportunities where success probabilities look high. The academic market is the most difficult one to serve.

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We hope to take advantage of the two sabbatical visitors, both of whom are interested in building their own programs, to get some help from them as we assist them in their own areas of interest.

We expect to see Mr. Bill Wood choose a dissertation topic this year, and hope that he will be successful in completing his academic program by the end of summer, 1983. If possible we will try to make his dissertation topic synergistic with some of the issues that are of great interest to SEAS. Discussions are underway to focus his interests and plans.