

Study of Two Experimental Educational Programs at M.I.T.

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M E M O R A N D U M

To: Hartley Rogers, Jr., Dan Kleitman

From: Malcolm Parlett

Subject: Study of USSP and ESG

Date: December 15th, 1971.

The study proposed in my memorandum to Dan Kleitman of June 16th, 1971 is now complete. I should like to make the following remarks to introduce the main report which is attached. This memorandum can be regarded as a Foreword to the report.

‘Illumination’ and ‘Evaluation’

I made it clear from the outset that I was not ‘evaluating’ the Special Programs, in the sense of ‘assigning value’. My aim was more modest: to study each program, in the words of the earlier memo, (part reproduced as Appendix A) ‘with a view to *describing them; exploring pedagogic issues they raise; distinguishing between their central and peripheral features; and detailing what participants and others regard as their advantages and disadvantages relative to the normal MIT program.*’

There are those, undoubtedly, who claim to be able to evaluate educational programs; to say, in some absolute and definitive sense, whether they have ‘worked’ or not. It is not so simple. Educational experiences and encounters are incredibly complicated, diverse, subtle, and full of paradox. Those that look good now may look bad later, and vice versa. Different individuals in the same system undergo a variety of learning events and rarely have identical views. Even the most apparently stable systems of instruction change over time and with different teachers.

Conventional evaluation techniques disregard or downplay complexities of this sort. Instead, they concentrate on measuring attainment, achievement motivation, attitude changes, and the like. The evaluator arrives with a full panoply of objective test batteries, personality inventories, structured questionnaires, and so on. Ideally he has ‘before’ and ‘after’ measurements and control groups. He claims to be able, on the basis of objective evidence, to measure the program’s or system’s effects. He tests the innovation in much the same way that an agricultural botanist monitors the effect of a new fertilizer.

There are evaluation studies by the score where this is the approach. Tests and questionnaires are administered from afar. Doubts about the validity and meaningfulness of the measures used are conveniently overlooked on account of their being quantitative. The requirements of statistics dictate the pattern of inquiry. It is an input-output model.

There is an alternative approach. The investigator proceeds not as an agricultural botanist but as a social anthropologist might. His concern is to describe and interpret the operations of the system or program under review. He examines the processes of teaching and learning which go on there; the mode of transmission of knowledge and the social psychological context or ‘learning milieu’ in which this occurs; how individuals respond to the system of teaching employed, and how it constrains or promotes various types of intellectual activity.

This approach, linked to a theoretical perspective which I call '*Learning Milieu Theory*'; and employing a distinctive methodology associated with the perspective, is the one used in the study reported here.

It is a type of research that can be regarded as, hopefully, 'illumination'. It is concerned *not* to make value judgments; *not* to say that one method of educating is right and another wrong; *not* to trespass into the area of making educational policy, an area that should be left for professional educators. On all these grounds it is not 'evaluation'.

The study, however, should be useful and down to earth: not an exercise in academic social science. It should articulate with the needs and questions of those who determine policy. It should present a recognizable reality to those engaged in or connected with the programs under review. It should sharpen discussion, disentangle complexities, isolate the significant from the trivial, raise the level of sophistication of debate.

The Investigation

The study was highly intensive, lasting from September 7, 1971 to October 19, 1971. It was a team effort, with 4 full time investigators and 2 part time. An office was established which served as headquarters for the research team. I was responsible, as Consultant, jointly to the Chancellor, Dr. Paul E. Gray; and to the Chairman of the Faculty in his role as Chairman of the Committee on Educational Policy, Professor Hartley Rogers, Jr. There was a coordinating sub-committee of the CEP with whose chairman (Professor Dan Kleitman) I was in close contact.

The investigation was planned and executed as a series of interdependent subsidiary studies. These are listed in Appendix B in note form. More detailed discussion of methods used is included in the main body of the text where appropriate. There is no long and separate discussion either of *Learning Milieu Theory* or of the associated methodology.

The report is divided into 17 Sections the title of each of which is in the form of a question, which I then try to answer as best as I can.

I emphasized, on accepting the assignment, that given the severe time constraints a comprehensive in depth study of all aspects of the programs was out of the question. It would also be impossible, I wrote, to check every statement and piece of evidence as carefully as I would like. This report should be seen as selective and tentative rather than comprehensive and definitive.

Concourse

My study's terms of reference included mention of Concourse, a third Special Program that began in September, 1971. We paid some, but not a great deal of attention to it during the six weeks of the study. There was too much to do within the limited time, and Concourse inevitably suffered.

But there were other reasons why it assumed a peripheral position in the work and why I have decided to leave it out of the discussion. Concourse, in many different ways, is dissimilar to both USSP and ESG, and moreover, intended to be so. To discuss it alongside the other two would inevitably link it with them. I think it should be considered entirely separately.

It started at a very different time; it does not aim to be 'free-style'; it was to some extent, piloted; the collaboration between the faculty is a principal factor in its design; it places its integrative and multi-disciplinary emphasis in the foreground.

Also, it was seen as significantly different from the other two programs by the entering freshmen: the views of those who joined one or other of the three Special Programs are summarized in Appendix F.

Finally, I regarded it as too early in the life of the program to give it the very intensive treatment the other two received.

At this early stage of the project, it might be worth examining whether 'an evaluative mechanism' might not be built into it. I have one suggestion. It is that a small group, of say 3 people, might be appointed to serve as Consultants to both Concourse and to the CEP, the choice of individuals being jointly decided by both parties.

Their task, as a Consultative Group, would be twofold. First, it would be to visit the program on a regular basis - perhaps once every two weeks; to talk with members of the faculty and with students about their experiences; to observe what goes on; to think about what they see and are told; and - if asked - to make suggestions, offer advice, and be available for discussing problems with. The Consultative Group would maintain a detachment at the same time as being knowledgeable 'insiders'.

Their second function would be to relate to the CEP, reporting in detail from time to time on the progress, activities, and experiences of the program. The Group could consist, perhaps, of one MIT faculty member; one faculty member from another institution, acknowledged to be an experienced and imaginative teacher; and one social scientist interested in teaching and learning. Getting the right people would clearly be most important.

My personal opinion is that had such Consultative Groups been attached to USSP and to ESG, they could have played a most significant part in the development of the programs. I described my idea at a Concourse Staff Meeting and there was interest in the proposal.

A Personal Statement

Throughout the report I try to keep my personal views and opinions in the background. This is not to say I have no opinions, nor that they do not influence my work. They are bound to, and I acknowledge this. But the researcher has deliberately to minimize their impact on his perceptions and judgment. Otherwise he is in trouble.

In this memorandum I am partially freed from this constraint. And I can make the following statements of personal opinion.

- (i) I consider that ESG and USSP have contributed in a highly significant way to a major change in attitude (for both faculty and students) toward what is possible at MIT.
- (ii) I think it would be an unfortunate state of affairs if it were taken for granted that Special Programs need to be studied, and that somehow the regular program does not need to be. It implies that one is 'deviant' and the other is 'normal'. The regular program, in my view, is in need of a very great deal of searching study.
- (iii) I believe that whatever is decided about these two particular programs, avenues of experimentation should continue to exist at MIT. New programs should be developed and enterprising and concerned faculty members should be supported if they wish to innovate. Difficult though it is to question educational assumptions in an effective and active way, it is precisely what MIT should continue to do. I consider it would be a disaster for MIT to cease to innovate and to experiment.

Having said all this makes it easier in the report that follows to be frank, searching, and detached. It is not written in the guarded, euphemistic style of committee minutes. The need to understand the detailed operations of educational systems has an importance and urgency that leaves no room for the bland, for the vacuous, or for the anodyne.

Acknowledgments

The research approach grew out of work at MIT in association with Dr. Benson Snyder and Dr. Merton Kahne. I was extremely fortunate professionally to have the opportunity of working with them for two years and to learn a few of their very many skills. My gratitude to them is enduring. My colleagues, Carolyn Miller and David Hamilton, in Edinburgh, are jointly responsible for the development of *Learning Milieu Theory*. Carolyn Miller accompanied me to MIT for the duration of the study and has played a central and crucial role from start to finish. My debt to her is considerable. I am also indebted to Professor Liam Hudson for his interest, his ready agreement that I should undertake the study, and his permission to be absent from the Centre for Research in the Educational Sciences at the beginning of the academic year.

Without the interest, cooperation, and information of those in the programs (or who were in them) the study would have been impossible in the form it took. I am glad to report we left as we arrived - on excellent terms. Dr. Judah Schwartz and Professor George Valley were helpful, encouraging, open - and very tolerant of the various demands I made. Nancy Wheatley and Edna Torgerson were also most helpful.

We were fortunate in our choice of research colleagues. Intensive interviewing of some 15 candidates in the first few days resulted in two graduate student assistants, Rich Gula and Ellen Ehrenfeld, who served as resident observers in USSP and ESG respectively. Their contribution was vital to the success of the study. So was that of Kenneth Schoman, Jr., Special Assistant to the Chancellor, who worked on the demographic and statistical studies before and during the study period. Greg Jackson was a useful part-time interviewer. Marti Pollock was a first rate secretary. Kathryn Lombardi acted as an attentive and highly efficient Administrative Assistant to the project.

I cannot list by name all those outside the programs with whom we talked, who provided information and comment. To do so could lead to identification of authorship of remarks quoted in the report. Without their considerable cooperation, particularly in finding time to be interviewed, the study would have suffered.

I am indebted to many, many others besides: Marty Horowitz and to Larry Bucciarelli and others at Concourse, for their help and encouragement; Oliver Fulton, Professor Martin Trow, and Carolyn Miller for their comments on a preliminary draft of the report; Professor Jerrold Zacharias for his general support; Emeritus Professor Kurt Lion whose room became our headquarters; Dr. Bennett Simon for several useful discussions; Charles Stannard, who sought possible graduate assistants on my behalf; Professor Claire Zimmerman of Wellesley College for a most encouraging discussion; R. A. Becher, Assistant Director of the Nuffield Foundation, who spent a day with us at MIT and was most insightful and helpful; Annette Anderson who made numerous arrangements beforehand, and calmed me down over the transatlantic phone; Janet Wake, Lynne Alexander, and Joyce Brown for excellent typing assistance in Edinburgh; my family for tolerating both my six-week absence in the USA and the usual privations during writing; Professor Ted Martin and Professor Dan Kleitman, who, with Chancellor Paul E. Gray, Dean Benson R. Snyder and Professor Ray Weiss were associated in the invitation to me to come to MIT to make the study; and to Professor Hartley Rogers Jr., Chairman of the CEP, and Chancellor Paul E. Gray, who were unfailingly supportive throughout the six week study.

There were many others and my apologies if I have not mentioned someone who feels they should have been listed. To all - there were very many - who contributed toward this study, I should like to express my many and most grateful thanks.

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Chapter 1

What Are USSP and ESG?

Remarkably little is generally known about these programs. We tried to locate an ESG Tutor in his department. We were told he was over “at one of those places with the initials.” The initials were often stated incorrectly (we have even heard USSR and ESP). What they stood for caused even more confusion. They were often lumped together (“they are a blur... they are not entities for me,” *MIT psychiatrist*).

1.1 The Background.

The Unified Science Study Program (USSP) and the Experimental Study Group (ESG) are either ‘experimental programs’ (*Catalog*) or ‘special academic programs’ (*Freshman Handbook*). They seek to provide an alternative to the regular freshman curriculum. Both differ, drastically and intentionally, from the usual MIT pattern: in conceptions of curriculum, of teaching, of learning; in the experiences they planned for freshmen; in their organization, procedures, and ways of relating with students. Both have sought to remedy what they, and many others outside the programs, perceive as basic deficiencies:

“The greatest failure... those who know the stuff but don’t do a damn thing with it” (*Jerrold Zacharias*).

“The usual system... it’s spoon feeding them pebbles... people crave attention and response and significant human interaction” (*Professor, Physics*).

“Continuous lecturing is a crude, insensitive, inhuman procedure” (*Department Head, Science*).

“The freshman year used to be very highly constrained, it chewed up freshmen, it was counter-productive” (*Senior Member of the Administration*).

“I worry that what freshmen learn is sort of artificial... education is divorced from reality, purified, sterilized” (*Dean of a Faculty*).

“The regular program - somehow or other they make you feel insignificant” (*Sophomore, ex-ESG*).

“The fear in the Commission was... that a student’s education is what he picks from courses/subjects given out by departmental entities... the faculty can satisfy themselves by saying education is passing on skills and can forget the really difficult educational questions... no one in the university has the responsibility to aid the student in getting into the world, to tackle broader issues” (*Former member of MIT Commission*).

“I am highly suspicious that the lecture/recitation approach is counter-productive to developing self-direction” (*Non-Academic Dean*).

“MIT is an easy place not to know anyone in four years” (*Junior, ex-USSP*).

These are well-worn themes. They are extracts from interviews in Fall 1971. Four years ago, when ESG and USSP were conceived, the traditional and conventional methods of teaching seemed far more entrenched and inviolable than they do now. Since September 1969, when the programs enrolled their first groups of freshmen, immense change has occurred generally at MIT.¹ The programs grew out of a reaction against the situation as it was then, not as it is now. Some have argued that the programs are no longer needed; others have remarked that the programs have themselves been agents of change, contributing significantly to the new climate. Still others would say that basic patterns of undergraduate teaching persist, despite all the innovation; and that the ‘well-worn themes,’ listed above, have still to be addressed.

1.2 Some Basic Information.²

(a) ESG and USSP are based on no one department or faculty. They are responsible to the Committee on Educational Policy (CEP) who sanctioned them as educational experiments. They are designed primarily for freshmen, though a considerable number of sophomores are also enrolled - usually on a more part-time basis. For freshmen, the programs seek to provide experiences in the subject areas customarily taken in the first year. Both programs, therefore, have a range of disciplinary affiliations, including humanities, represented among their staff. Each program aims to provide an adequate background for subsequent entry into the regular program.

(b) The faculties of the two programs are differently composed. That of ESG has a number of MIT Faculty members, drawn from various departments, who contribute roughly one half of their teaching time to their involvement in ESG. The Director, Professor George Valley, is full-time. A faculty member may seek to join ESG or may be invited to do so. As far as I know no faculty member has been pressured into joining ESG. In September 1971 the program listed 17 staff, six of whom were professors, one an instructor; the others were graduate teaching assistants, student tutors, administrative or student office assistants.

USSP staff are not drawn from the MIT faculty, with the occasional exception. Almost half of the 28 listed staff members in September 1971, are attached to the Education Research Center as Research Staff in the Division of Sponsored Research. Their involvement in USSP is generally full-time, though some are also working on curriculum development work that is associated with the program. The director of USSP is Dr. Judah Schwartz, Senior Research Scientist in the Physics Department; the Associate Director is Dr. John Vournakis. USSP forms one part of the Education Research Center whose director is Dr. Jerrold Zacharias. He was the driving force behind the founding of USSP; he is listed in the catalog as the MIT faculty member ultimately responsible for the program; and he is kept closely informed about the program by Dr. Schwartz. However, Dr. Zacharias rarely visits the program area, and executive and policy control resides intentionally and unambiguously with Dr. Schwartz.

¹A list of significant changes might include: Freshmen Pass-Fail; self-paced physics and math; Concentrated Study; Undergraduate Research Opportunities Program; Independent Activities Period; and more options in freshmen subjects. There are numerous other significant developments: Interphase Program; expansion of Course XIIB; The MIT Commission; co-ed dorms; MIT/Wellesley exchange; Rogers Task Force, etc.

²The descriptions of the Special Academic Programs (ESG, USSP, and Concourse) that appeared in the *1971 Freshman Handbook*, are reproduced as Appendix C. The reader unacquainted with the programs is advised to read these.

(c) Administratively speaking, USSP is divided, with matters such as payroll being handled at ERC level; matters relating to student affairs by the administrative assistant in USSP, working with the Director and Associate Director. The division of responsibility reflects the position of USSP - its boundaries are blurred within ERC. Thus, USSP uses central ERC facilities; it constitutes a major (if not the major) program within the Center; it illustrates and puts into practice the long term interest of ERC in educational reform.

ESG, by comparison, is administratively distinct, the details being handled by Professor Valley and Edna Torgerson, the program's administrative assistant. Unlike USSP its program area is enclosed and distinct, its facilities are its own.³

(d) USSP differs from ESG in that it has connections with several other colleges who send a number of students to enroll in USSP, though they maintain registration in their own college. The presence of 'external' students within USSP was not an MIT initiative, but an ERC one,⁴ representing a concern to 'proliferate' USSP-type programs in other colleges. Funds for these students come from external sources. ESG is solely for MIT students.

(e) After Residence/Orientation week (1971) enrollments in the programs were as follows:

USSP - Freshmen (MIT only) 24; Sophomores 18; special students 2.

ESG - Freshmen 12; Sophomores 25.

(These figures are subject to change.) The number of entering freshmen was significantly less than had been expected and hoped for. The subject is discussed at length in Section 13.

1.3

Only a limited number of points have been made in this first section, many of which will be common knowledge. Other points will emerge in the next; the two sections together are designed to set the stage.

³This is discussed at greater length in Section 6.

⁴Studying these students, and their particular experiences, was outside my brief, and was not actively pursued.

Chapter 2

What Were the Origins of These Programs, and What Did They Set Out to Do?

2.1

In this and the following sections, I trace the development of the programs from their early plans to their current state. They have never been static: they have evolved rapidly. I believe it is important to understand and document how, and why, they have developed in the ways they have.

“USSP and ESG were the brain childs of two individuals: pushed through by two astute academic politicians” (*Department Head*).

The ‘pushing through’ would make an interesting case study for the student of academic politics. I shall not discuss it here. Instead I concentrate on their statements and proposals - what they intended to do and why.

2.2 The ESG Proposal.

Produced by a group of faculty and students meeting throughout 1968-9, this was submitted to CEP in January 1969. It criticized the time constraints on teaching; the lack of opportunity for independent and self-paced work; the reliance on lectures and recitations; and the fact that students could work hard without understanding the direction of the syllabus or the relative importance of topics assigned. The group questioned the validity of exams; the rationale for separating teaching and counseling; and why there was no opportunity for those ‘whose maturity was in advance of their knowledge and calendar age’ to study ‘at their own speed and to concentrate on topics which interest them’.

Their goals were to redress these deficiencies: to set up a program in which a student could ‘learn how to educate himself, guiding himself by consultation with others’. Some other themes were as follows.

A. The Role of the Faculty Member.

‘The faculty will be informal, flexible, and involved. Faculty authority derives from experience, not the institution. Professors are “elder learners”.’

The faculty member ‘is expected to know how to find the answer... He is to show how to find the truth, rather than to preach a doctrine’. While the faculty member ‘is expected to be enthusiastic about his interests’ it is clear that actively communicating these interests to students was *not* part of the idea. The faculty members responds to the *student’s* interest, and begins from there: ‘If (a student) becomes interested in some topic, then we want to show him how to delineate his own ignorance about it. After interest has been awakened and ignorance recognized, we believe learning can proceed at a rapid rate’. ‘We shall endeavor to engage all freshmen as partners with us in the life of the intellect’.

B. Emphasis on Psychological, Social and Emotional Factors.

‘We recognize that maturing adolescents are strongly influenced by physical and emotional drives and that a meaningful education must take these drives into account’. The student ‘should come to understand himself as well as his associates; to join group activity, or not to join, depending on... the student’s own understanding of his need and his potential for being helpful to the group; to learn how to cooperate freely with others’. In the description of ESG sent to freshmen in 1969 (as in subsequent years) the student was exhorted: ‘You must now decide, if you haven’t done so already, just why you want to come to college; if you understand your motivation for college, you will be able to assess the suitability of this program for you’.

C. The Type of Students the Program would Attract.

‘It is definitely intended that these students will be more mature than average’, but *not* ‘specially selected for high academic standing’. They did not want students ‘who cannot learn to adjust, (or) to stand on their own two feet’. Put more emphatically at another stage of the proposal: ‘the floundering, can’t make up his mind what to do type (of student) is the diametrical opposite of what we are after’. They were looking for ‘the potentially independent minded student’.

D. Difficulties of Self-Direction.

‘A few students may begin to drift or to show various kinds of unease. Over such, the faculty after due consideration will have to assume a more authoritative role’. It was acknowledged that freshmen - (who) ‘already have many problems of adjustment’ - might have ‘a large additional problem... to adjust rapidly and without help to a completely free and undirected academic environment’. The proposal went on: ‘We believe that guidance toward the use of freedom should and can be given to inexperienced individuals’.

E. Structure.

‘If each student is to set his own plan for learning, then there cannot be very much formal structure in the academic environment itself’. (“George Valley managed to sell a contentless¹ program”, *former CEP member*). The proposal says: ‘let it develop naturally next September’. A curriculum without structure,

¹i.e. there was no formal syllabus issued.

and an environment that went with it: informal time periods, informal seating arrangements, informal lab work, etc. Thus, a need for ‘a suite of rooms laid out for the purpose’, (regular MIT instruction rooms were ‘suited neither to quiet contemplation, nor to loud and informal argumentation, nor to informal group activities’.) Informality and lack of a structure did not indicate acceptance of ‘an unplanned pattern of life’: ‘We know that people need to set tasks and goals for themselves. . . the student’s life will not be determined for him, but he will form his own goals and schedules’.

2.3 USSP - The Early Plan.

No proposal was submitted to CEP. The program evolved out of several earlier projects considered by ERC, one of which was to set up a pre-medical program for disadvantaged students. USSP had several different elements. It was to be an experimental program at MIT; but also, ‘Once under way and successfully operating’, a model for programs at other institutions in this and other countries’. ‘We are undertaking to design, test, and proliferate teaching materials and educational strategies to audiences of varied composition and sophistication’.

The driving force was dissatisfaction with ‘the traditional constraints of American higher education’. It was *not* directed at MIT as such, but at college teaching in general. USSP would ‘question all the assumptions of form and strategy: credentials, certification, style, scope, topic, pace, technique and organization’. Again, I shall focus on key notions in their thinking.

A. Unified Science and Problem-Centered Study.

‘It requires only guidance, observation, inquisitiveness and the willingness to dig patiently for clues and answers, for the complex and truly multidisciplinary nature of our environment to emerge - an environment that presents us, ready made, with all the illustrative teaching material that anybody could ever want’. The program would ‘deliberately blur the boundaries which commonly separate our departmental disciplines’, and concentrate on projects or problem centered studies, that were ‘recognizable and representative examples of phenomena and problems taken from nature as man finds it or makes it’. Many students ‘do not acquire skills and knowledge best in the conventional classroom atmosphere’.

‘In college, students believe that they will at last begin to move close to their chosen interests’. Instead, they undergo ‘a series of courses. . . designed to improve their ability to do something. . . (and do not) . . . come close. . . to the actual work or profession that a student wants to pursue’. Interdisciplinary projects, ‘can appeal to audiences that vary widely in sophistication, prior training, and vocational or professional aspirations’. They permit ‘many entry points, many routes through, and many exits from, the formal educational experience. The choice of entry point, path, and exit point for each student should be a function of his style, and ability, not limited by artificial constraints’

B. Units.

The unit was to be both a topic, and a package of learning aids: ‘background information about the phenomenon, relevant equipment and audiovisual material, suggestions for further studies, and an extensively annotated bibliography’. The unit was to be the basic component of the curriculum, and starting point for projects. ‘The problem, phenomenon, or idea the unit represents, is recognizable and manageable at first’. The units, on such topics as moldy bread, soap bubbles, water pollution, were to form a ‘pivot’ for a student’s ‘deep excursions into the sciences and the humanities’. For instance, ‘by isolating molds

and finding out how and where they grow, he could reach topics in microbiology, biochemistry, pathology, nutrition, cross-cultural food processing methods. From there he might study problems in enzymology and chemical thermodynamics, or genetics and perhaps even anthropology’.

C. Reports.

There were recurring references to students making reports of various kinds: ‘written records in laboratory notebooks’, ‘written and verbal reports. . . that are multidimensional. . . rigorous and honest techniques for attempting to enforce and evaluate logical thinking, the careful analysis of data, the grasp of theoretical concepts’, etc. The report allowed the student ‘to be judged under actual working conditions, to be judged on the basis of performance’.

2.4 Three General Points.

- (i) The above extracts and summaries are selective rather than comprehensive.
- (ii) A general difference between the programs. USSP hinged on a specific theory of instruction: cross-disciplinary project-based studies which start with some everyday phenomenon and lead the student into deeper, more sophisticated, and more abstract study. It could almost be regarded as a higher order exercise in curriculum reform.

ESG, on the other hand, had no detailed model as to how students should study, and said so explicitly: ‘It still has to be done the old way - chair, table, lamp, book, apparatus, pencil, paper, and brain’. Its central focus was to ‘take the pressure off’ and to provide opportunity for independent study in an informal environment conducive to study and talk.

Both proposed to remove constraints that blocked: in USSP particularly those that arise from chopping up knowledge by arbitrary divisions (by discipline, by units of one hour lectures, etc.) and which artificialize knowledge and turn off students; in ESG particularly the constraints on the independent and maybe off-beat type of student, of the pressure, depersonalization, and inflexibility of the conventional system of instruction.

- (iii) ESG was more detailed, in advance, about its proposed organization and operation than was USSP. There was no shortage of idealism and general thinking in the latter - but all the appearance of a lack of specifics. This was obviously, in part, a result of the haste in which the program was put together.

2.5 Certain Common Expectations.

Despite their differences there was certainly one shared expectation between the two new programs: that the entering students would want to engage in intellectual activity of some sort. Not only this, but there was also the confident hope that a good many would ‘take off’, ‘catch fire’, ‘get turned on’, or ‘get locked (or latched) onto something’²; that they would go into depth, and do a sustained piece of work. The ‘catching fire’ type of imagery was more prevalent in USSP than in ESG. On the other hand ESG made more reference than USSP to ‘a community of scholars’. (One ex-ESG faculty member said he had envisioned ‘very specifically academic, very intense intellectual activity’.)

²All these metaphors were heard in the course of our study.

Associated with the general anticipation of intellectual vitality were several subsidiary predictions: that students would be around and would be seen; would use resources available; form interest groups and attend discussions, seminars, and meetings if there were any; follow suggestions from faculty and do assigned work if asked to.

It is not surprising, given these ideas, that the organizers of the program, when they began, were uncertain what precise procedures they would use for handling certification and credit. Surely they thought, these issues would look after themselves, except, perhaps, for a small minority. It is also not surprising that when these predominant expectations were by and large *not* fulfilled, it should have led to re-thinking, to staff anxiety, to many of the preliminary ideas undergoing transformation.

Chapter 3

What Happened in the First Year?

3.1

By general acknowledgment the first year of each program (1969-70) was tumultuous, the second pale by comparison. So formative were the first year experiences that inevitably attention must be paid them. To jump straight from the proposal to the present would simply bewilder. The first year was the decisive time, and it provides the link.

There is another reason: the majority of those we spoke with, themselves made reference to the first year. Even those - both faculty and students - who had joined a program in its second year (1970-71) were deeply conscious of what had happened in the first. Consistently, the first year was the base line for comparison.

Two words of caution: first, a program should not be judged on what it was then, but on what it is now. Considering the order of change both programs sought to effect, it would have been surprising if their first year had proceeded with NASA-like predictability. The second point is that I must necessarily be selective, and I may seem to linger disproportionately on the crises. However, it was to the difficulties that, in retrospect, staff and students chiefly and spontaneously referred. They did so, in my view, because not only had they been profoundly affected, but they also saw these events and trends as most influential in the program's evolution. Other fuller accounts of the first year already exist¹ and should also be consulted.

3.2 USSP in the First Year: Projects and Contracts, Enthusiasm and Evaluation.

A.

As was discussed in Section 2.3., the keystone for students' projects (the original basis for study in USSP) was to be the unit - a type of curriculum package. During the summer preceding the first entry of students (summer 1969) 20 students (mainly upperclassmen) were employed. Each was to produce a unit. This did not work out. The term "fiasco" has been used by several USSP staff members:

¹For USSP: Judah Schwartz's account - 'Unified Science Study Program - the first year 1969-70' (Occasional Paper 9. of the Education Research Center). For ESG: Mark Levensky's report - 'The Experimental Study Group: a New Undergraduate Program at MIT', (Unpublished). The former gives perhaps a slightly more optimistic view than others would hold; the latter is seen to err, perhaps, toward a pessimistic viewpoint. But both are valuable and informative documents.

“The ‘summer workers’ didn’t know what they were supposed to be doing. . . they got conflicting demands. . . Many of them were screwing ERC. . . coming in only on Fridays to collect their pay-checks. Others were trying desperately to produce, but seemed lost. Several attempts were made. . . to draw things together and organize the summer. . . (but) were not what I call successes” (*ex-staff member, USSP*)².

It is not clear how many units were actually completed. But it is certain that neither students nor staff liked or used them. “The idea was OK. . . (but) there was nothing there, no substance - the cupboard was bare” (*Staff member*).

In the absence of units, how did students get started on projects? One retrospective account was this: “When the students arrived we said, ‘What would you like to do?’ They said, ‘We don’t know what to do’”³.

In general, students did not find it easy to fasten on to a project. The effect of this on the program was substantial. While a number of students, possibly about ten, did get immediately involved in projects, the majority did not. It was the first inkling of ‘floundering’. There were some who did nothing. There were others who looked for a project to latch on to but did not find one. A third group dipped into numerous different projects, collected commitments, but seldom focused long enough to do a sustained piece of work. This latter syndrome was regarded by the staff as a defense mechanism - the appearance of productivity without the hazards of in-depth study. It was known as ‘smorgasbording’.

B.

The first month or so was a time of considerable confusion. A gulf loomed between the expectations and plans couched in general terms on the one hand, and the detailed day to day business of running a full time program on the other. In retrospect, staff members comment on how naive they were at the beginning. Others spoke of “a lack of communication” between senior and junior staff, as well as between staff and students. Particularly, some felt, there had been a lack of certainty about the program’s precise objectives; others, however, had regarded the formulation of any such list as ‘failing to keep one’s options open’.

The staff - many of them anxious about the obvious uncertainty of many students (one said: “I felt guilty that the kids were not getting more out of it”) - met regularly to discuss the program. Discussion ranged over policy and organization, but also students’ progress and problems.

This latter aspect predominated at first: “At the very beginning we were very uptight about what was happening, about what we were doing. It was very important to us to go through in detail each of the students and assure ourselves that each one was spending his time productively”. These came to be known as evaluation meetings. A student would be discussed and any staff member who had contact with this student would add his comments. After the meeting transcripts of the discussion were prepared and the part relating to a student was given to him. At least one staff member was critical of this: “A crude evaluation. . . anecdotal, off the top of our heads. . . the transcripts that have resulted have been very crude

²Surprisingly no careful or searching post-mortem ever took place: “If the summer experience had been adequately analyzed and hashed over immediately afterward. . . we could have crystallized the problems, and proposed solutions which might have made the first year of USSP somewhat easier. . . We could have learned more about. how much structure is necessary for people to actually accomplish a task and could have learned from the failure to communicate” (*ex-staff member*).

³At least one faculty member, however, adopted a different approach. Instead of saying “Tell us what you want to do”, he said “I am interested in. . .” and mentioned a research project he was engaged in. He was described to me as a “very good teacher - charismatic, enthusiastic”.

approximations”. Nevertheless it reflected the keen desire of staff to keep a closer eye on what the students in the program were doing, and to monitor their progress.

Students, however, regarded closed faculty meetings as contrary to the spirit of the program: “somehow it didn’t bother you in high school that they talked about you, (but) it did upset you here” (*Junior, ex-USSP*). The staff had been at pains, explicitly, to diminish the barriers between themselves and students. The evaluation meetings, the students went on, led to “disappointment that things they said were going to happen weren’t really happening”.

After students had urged “a USSP-wide meeting”⁴ to discuss the matter, it was decided that students would be admitted in future.

“Although some staff members argued that they could not be sufficiently candid at an open meeting, the students’ view that closed meetings were contrary to the spirit of the new experiment in education prevailed”, (Report by Judah Schwartz, *op. cit.*).

From then on these evaluation discussions were conducted with students present, though attendance was low. Sometimes the student himself was brought into the discussion. It is not, perhaps, altogether surprising that one student at least was still dissatisfied: “You always had the feeling they weren’t being honest”.

C.

The issue of evaluation emerged again at the end of the first semester. How was credit to be awarded? Some thought credit should be based on work completed - the better the work the more credits. Others believed credit was a ‘false currency’, that small discriminations were impossible, and that a fixed number of credits should be given for a “completed satisfactory term’s work”. The latter view prevailed. A student was given an ‘Incomplete’ grade, or a ‘Pass’ - in which case he or she received 50 units of credit - “the average load carried by an MIT student during a traditional first term”⁵.

The basis for evaluation of students’ work was to be the report. Again there had been a general expectation that students would naturally document their work. A number of students claimed they had been given inadequate warning that they would have to do so. There was a flurry of activity at the end of the first term. There is ambiguity as to whether they had been sufficiently warned. One staff member said:

“As I recall, we never mentioned to them that they would be responsible for documentation of their work at the end of the semester or year - we weren’t clear on that ourselves”.

More probably, however, it was a case of “We had said the words but we didn’t communicate it” as another staff member put it.

⁴At the same meeting another issue was discussed, that of colloquia. These had been set up to promote the sharing of experiences and to provide foci for students’ efforts. But “...staff and student expectations about the function of a colloquium proved significantly different. While students viewed it as an opportunity to share...experiences...some staff members appeared to use the colloquia as oral examinations”, (Report by Judah Schwartz, *op. cit.*)

This led to another student recommendation: “We, the students, suggest that colloquia be voluntary and non-hostile, i.e. explanatory and not investigatory”, (*ibid.*). Colloquia were subsequently “presented when the individual student felt ready” (*ibid.*)

⁵This procedure meant that several students, given Incompletes, received no credit for the term. The Committee on Academic Performance had to consider some of these students. Members of the CAP pointed out to me that the USSP scheme meant that “when there is a failure, it’s a catastrophic failure”. They merely observed this - it was not a criticism, they were at pains to say.

D.

The high level of concern with evaluation of students' work signified, perhaps, the staff's lack of certainty as to whether students had accomplished as much as they could or should have done. It was concern over this that led to two staff members writing a memo which led to a day-long closed staff meeting in March 1970, at Endicott House. It contained a number of issues for discussion. Some referred to students: "failing to keep appointments without notifying anyone"; projects often had "no clear short-term goal"; "ultimata" were ignored. Other points concerned staff: "What's bothering us?... What am I (specifically) doing? What kinds or responsibilities for which students do I have?"

The Endicott House meeting resulted in several plans for the future particularly the notion of formal 'contracts' between students and staff: "People weren't working enough, we didn't know what people were doing, people were getting lost... (We) came up with a number of strategies to deal with it... proposals and documentation". The student would produce a proposal, and with his adviser, "work out how he was to spend his time... what he would do for the term" (*staff member*). The full effect of these procedural changes was not felt until the program's second year. They represented a shift toward defined structure and explicit demands on students.

E.

This fleeting and selective survey cannot do justice to the complexity and excitement of USSP's first year. For the staff members it was demanding. Some had never taught before, and some had no idea, when they joined USSP, that they would be teaching. There are specific difficulties, even for an experienced teacher, in a program like USSP: e.g. "There was no real reason to prepare your thoughts... because you didn't know what they were going to be doing."

In addition there was a good deal of staff anxiety. For those at the Endicott meeting, the most memorable feature was a startling intervention by Judah Schwartz. He brought up what he, and others, considered the underlying cause of staff anxiety - namely the joint issue of their being untenured, and the "marginal nature of education research and innovation at MIT". There was also a deeply felt concern (it seems strange in retrospect) that the CEP might abruptly terminate the program at the end of the first year, if the program did not make a satisfactory impression. In addition there was the initial apprehension that attends the inauguration of almost any new venture, ("I felt we had created a monster", *staff member*). These various worries were undoubtedly known to students, and in fact contributed to feelings of unease that they, too, experienced.

However, significant though the confusion and anxiety was, it is by no means the full story. USSP also maintained a unique brand of exuberance and vitality throughout. Overall there was general informality, good humor, and a refreshing lack of bureaucratization and regulation. Judah Schwartz exercised strong and optimistic leadership. In many ways he served as a role model: one staff member supposed that they had wanted students to "turn out like miniature Judahs". He was charismatic and friendly. One student, asked who his close friends had been among students and staff, listed "Judah - he was everybody's friend I guess". There was a good deal of irritation too: e.g. he was "a hierarchy of one"; "he is an idealistic type who doesn't want to be bothered with administrative detail". But it remains true that he was the inspiration of the program and kept long term self-confidence to a high level, preserving the feeling that they were pioneering a revolutionary new approach.

There were other factors. The staff were informal and enthusiastic, most were professionally committed to educational reform. One student, now a Junior, though critical of USSP, looked back nostalgically: "It was really nice... the staff were bright and liberal people. You had the feeling you could always find

somebody who knew about a particular topic or would talk to you about it”. Staff were seen as friendly and open; most of them were young and this helped too. Sandy Morgan, as administrative assistant, counseled, befriended, sorted out muddles, and knew what was going on. Another staff member could be relied on to crack jokes and reduce tension. There was staff disagreement, but discussions never became embittered.

3.3 ESG: Academic and Non-Academic Freedom; and Requirements.

A.

Undoubtedly ESG was more prepared than USSP for the beginning of the year - perhaps too much so: “We certainly overdid preparation in some respects” (*Faculty member*). The faculty had thought about how to get people going and had a wide choice of topics worked out - some specialist, some interdisciplinary. The general assumption was that students “would start some intellectual exercise almost straight away” (*ESG senior faculty member*).

In fact, things began steadily, most freshmen getting started on some private study or joining a seminar. But after a few weeks this seemed to peter out. One ex-faculty member reported: “students seemed totally uninterested in virtually any topic”. Students began to drift off, coming back two to three weeks later “when they had explored MIT and the vicinity”. “. . . *Now* we thought they would start work. But instead, they started these weird introspections”, (*Senior ESG faculty member*).

Like USSP there was less academic work being done than they had expected. There was no central emphasis on projects, of course, in ESG; but like USSP there was the expectation that they would ‘take charge of their own education’ and involve themselves in various intellectual activities. When generally this did not materialize it provoked, as in USSP, prolonged discussion of what should be done. How individual faculty members reacted, “depended on their degree of rigidity” (*ESG faculty member*). One ex-staff member reported how they had attempted to make suggestions, only to be rebuffed: students would say “You’re over-organizing us - that’s not why we came to ESG”. This professor had been “horrified at the way students let time go by without stretching their minds and getting on with subjects they would need at MIT”. But other faculty argued against intervention and structuring: it would negate the whole concept of ESG. This argument won out - but only after heated debate. One opinion was that it resulted in leaving the faculty “with nothing to do”; another was that ESG “gave the student a chance to realise that if you don’t do anything, nothing happens”.

B.

For one group of the staff it was not at all clear that the students were in fact doing *nothing*, just because they were not studying physics, math and so on. This issue became the focus of discussion in two separate areas.

- (i) **Debate over credit.** The question of credits had been left open. It was not discussed seriously until eight weeks into term “When it became clear that some students would have spent five months at MIT with no credit” (*ESG faculty member*). As in USSP there were advocates of both ‘tough’ and ‘tender’ approaches. There were those who argued “that someone who had done little work should still get credit - because there had been personal growth, e.g. through yoga”; others who felt “that

you had to demand something from the students - preferably written” to provide a basis for award of credit⁶.

George Valley, who at the start had been, he said, “right of center”, changed position on credit: the humanities faculty “turned our own arguments on us in a very logical manner”. In short, the ‘tender’ view won out. But individual decisions about credit persisted through June in the first year. Only in the second year did block credit get awarded automatically.

- (ii) **What is ‘academic’?** The first year report to the Task Force on Educational Innovation posed this question in sharpened form:

“Where is the borderline between ‘academic’ and ‘non-academic’ activity? We seem to be deciding where this line lies in connection with military studies; we have also decided it with regard to physical education and athletics; where is it with regard to studies of mysticism and subjective experience?”

This issue had arisen over ‘yoga’. Some of the faculty and instructors argued that the logic of ESG was that “Students could learn what they wanted to learn”. This group refused to accept that students “weren’t doing anything” when they were in fact “practicing yoga, reading contemporary American poetry aloud, learning how to use pay telephones without paying, or talking about interpersonal relationships and themselves” (Mark Levensky’s report, *op. cit.*).

The definition of what constituted ‘learning’ was thus expanded. The students began it, some of the faculty backed it, and eventually it was accepted as an “ESG thing”. One student, in his qualitative evaluation, wrote that in “honestly evaluating his years spent in ESG” he had “not learned much academically”. He went on:

“but I did wind up receiving an education after all. An education much more meaningful and valuable than the one I had originally intended. It was an education on learning, on freedom, on myself, on people, and on life”.

C.

ESG was not without its faculty-student disagreements and tension. (It was complicated by other tensions, for instance, between some senior and some junior staff.) One particular conflict was over the program’s governance.

Unlike USSP, ESG set out to involve students in the day to day administration of the program. They had some say over expenditure, they looked after the library, built study carrels, etc. But questions of hiring and firing remained the faculty’s prerogative. ‘This became a matter for dispute when George Valley called a meeting of professors to discuss a particular instructor. There was, in his words, “a real flare up, a tremendous storm”. Long, angry meetings of students ensued. George Valley became a focus for abuse. “Everything was projected on him - projected in the psychoanalytic sense. People put an awful lot of crap on him” (*ESG faculty member*). Eventually a committee formed, consisting of faculty and students

⁶At this time the faculty were evidently “very badly divided. . . , it was naive not to have settled these matters, but fighting them out gave an experiential center to the group. . . There were bitter fights, (but) it didn’t break the place apart. . . people even changed views as a result of discussion. . . George Valley’s character and presence added stability. When people think things will explode - you need a stabilizing influence” (*faculty member*). Another said he had been “absolutely amazed at how George Valley disciplined himself, held back from imposing his own views. . . it was a model job, given the acceptance of the idea that faculty and students should decide the program”.

to discuss appointments. But then the students seemed to lose interest, their representatives attending irregularly.

General meetings, for all in ESG, occurred frequently throughout the first year, and these were marked by both long and intense arguments:

“At... most meetings people complained. People complained about some administrative aspects of the program, about the use or misuse of some part of the ESG area, or about faculty in the program, or students, or each other. Suggestions were made. Proposals written. Committees formed”. (Mark Levensky’s report, op. cit.)

Another cause for what seems to have been intense student dissatisfaction, arose in connection with the general Institute requirements. In the ESG qualitative reports⁷, complaints about the requirements were legion. There was very wide agreement over this. There were numerous comments of the type: “the single most obvious way to improve ESG is to eliminate general requirements”. With so much freedom, and so few limitations how could it have generated so much steam?

There are several possible reasons. Students seemed to feel implicit ‘pressure’ from certain faculty members, resented perhaps the more because it was implicit. Some said that the requirements gave rise to tension between “accreditor and accretee”. It was certainly the case that few were qualifying for their ESG certification (that they had reached a standard comparable to the regular subjects). This inevitably led to faculty concern about the future of these students. (After all, “George had always wanted his students to be able to do all the things a conventional student could, but have other things too” *faculty member, ESG*).

Other students *were* studying physics and math, but “in very non-orthodox ways” (*ESG faculty member*), jumping around mastering certain areas and leaving others out that failed to interest. Given that they were supposed to be in a ‘free’ environment, in which they could study ‘the way they wanted to’, students saw no reason why they should not study in this way. If they were not supposed to, it was because ESG was yielding to external pressures from ‘the system’.

In both these areas, which touch on the issue of authority, the student tutors should have played a central part, according to the original proposal. They would - it had been hoped - ‘be the social agents for cohesion’. (In fact, they had said, ‘the program depends on student tutors’.) However, it did not work out this way. The tutors were in an ambiguous position: they were seen “as faculty by the freshmen and as freshmen by the faculty” (*Junior, ESG*).

“For many of them this was their first official teaching experience in a university and they were really looking forward to it. But even when the program was going well, they weren’t used much. Freshmen probably thought: why work with an undergraduate when there are all these professors around?” (Mark Levensky’s report, op. cit.)

Subsequently tutors have been recruited from ESG upperclassmen and this has been regarded as successful.

3.4 Certain Common Experiences.

For complicated historical reasons (of enduring fascination to students in both programs, incidentally) there has been little direct communication between ESG and USSP⁸. Only one person was simultaneously

⁷These were produced by the program for submission to both the Task Force on Educational Innovation, and to the CEP; they consisted of extended, open-ended comment by students on ESG and their experiences within it.

⁸The first joint meeting was in spring 1971.

on both faculties for a long period. She realized, more than anyone, how similar and parallel were their developmental stages. In fact the program's crucial meetings on 'credit' occurred on the same day.

There were (i) the common student difficulties of drift, indecision, and fluctuation of interests; (ii) similar arguments about awarding credit; (iii) student/faculty conflict in both, over who should vote and who should attend meetings; (iv) differences among faculty members in both programs in the detailed interpretation of the programs' educational philosophy; (v) similar experiences with regard to the difficulties of locating students who disappeared, the short lifetime of seminars, and the lack of notable success with T-groups that were tried; (vi) similar patterns of excitement, idealism and prodigious effort by faculty, mixed with anxiety and occasional loss of nerve and the reliance for stability on the single-mindedness and convictions of their strong leaders - markedly different personalities though they had.

The parallelism is hardly surprising, given the programs' similar contexts of time and place. They occupied a similar structural relationship to MIT, providing a 'total alternative' to the freshman year. Both had their own faculties, premises, facilities, and administrative procedures. Neither had much structure, (USSP had more, on paper, but there was little difference in practice). Both were ideologically committed not to reintroduce conventional teaching or assessment procedures. Both stressed faculty/student informality, and practiced it, e.g. first names of faculty were used. Both chose to "abandon departmental structure, abandon compulsion, and do without social engineering (i.e. rigorous screening) all at the same time - it's like throwing away all their clothes in an arctic environment" (*Professor in Faculty of Science*).

There was another factor of immense importance. To my surprise it was rarely mentioned⁹. The academic year 1969-70 was extraordinary in every respect. The November Action occurred two months into the programs' first semester: the protest strike over Cambodia concluded the second. It was a time of prolonged tension, anger, and distress. A more unfortunate year to begin two major education experiments one could hardly imagine. It must have immeasurably added to the difficulties of the experimental programs. (For instance, distraction is likely to have interacted with lack of structure.) As an ex-USSP faculty member has written, it was:

"A time of crisis, or rather, a time in which men questioned more than ever the actions of others as well as their own; a period in which conflict seemed to have become the most dominant human relationship, a time in which those of us concerned with education, both as educators and to be educated, began to face each other across seemingly unbridgeable chasms of distrust".

⁹Why it was so little referred to is an intriguing question, one for which I have no ready answer. Is it that 1969-70 is still too little distant in time?

Chapter 4

How Has USSP Developed Since the First Year?

4.1

“USSP has become a new way of doing the same things as opposed to a new way of doing new things” (*Junior, ex-USSP*). This student puts into words what has been realized by many: that the program’s orientation has shifted from the “project idea. . . to ‘lots of different ways to study the same subject’” (*Sophomore, USSP*). Of course, “they know they can do a project” (*Senior staff member in October ‘71, at USSP staff meeting*).

The first year’s experiences led to changes in the second. The faculty thought too little had been accomplished (“it had never occurred to us that there would be a group of people who didn’t want to do anything,” *USSP staff member*), and they resolved to “figure out ways to get them to do more.” In particular there was a sharpened awareness of the time limitations:

“I don’t have the guts to let people flounder for a year and then come up with something good. I wish I did, but I don’t have the guts.” (*Staff member, USSP*.)

“When you operate on a Summerhill basis, you have to have Summerhill time constants. . . I think the Summerhill concept that is willing to let the student fuck around until he finds something that he is interested in, which is still the USSP concept. . . undermines the student because we don’t have an infinite amount of time per student to prepare for this.” (*Former staff member*.)

There was concern for the students. Staff were aware of reactions of the type:

“It’s very discouraging to spend an entire semester or year supposedly working only to find you haven’t produced anything at the end of the year.” (*USSP Junior*.)

There was also concern for the program, not only for its survival at MIT, but for the idea, which they hoped would be proliferated:

“We didn’t think a program could be built if that sort of phenomenon is widespread.” (*Staff member, USSP*.)

In short, the staff wanted to ensure, in the second year, that there was no “general atmosphere of people not turning up,” and no “flopping around.” They therefore instituted, in a much more systematic way, required formulation of proposals, to serve as contracts between advisors and advisees, and subsequent ‘documentation’ of work completed. “Useful work,” they emphasized, “is something that is communicable, can be documented, and criticized by other people” (*Staff member*).

4.2

This was one set of changes. The other sought to reduce the period of floundering by providing “an intensive warm-up period.” They began the year with seminars that lasted three weeks. The idea was: “1) to get to know students; 2) to give them the taste of posing questions; 3) to get them to decide what they want to do” (*Staff member*). Students had to choose one seminar to attend, and this met more or less continuously for three weeks. At the end of that time they stopped, and students then moved on to producing proposals of what they were going to study. One faculty member, asked if he thought the 3-week seminars had helped, replied: “They helped for the three weeks. It seems that after the three week seminars that everything went glomph after that. It postponed their floundering for a three week period.” He acknowledged, however, that “more students knew what they wanted to do the second year, after the three week seminars, than the first year.”

There was some general criticism, on the grounds that the seminars had been “*too* structured.” It was this feeling that led this year, the third year, to their trying a different arrangement: seminars that were “not mandatory and more flexible by being part-time” (*Staff member*). This had some unforeseen consequence. Faculty, left to structure a seminar series but without any time limitation, tended to think in terms of a semester. Moreover, the fact that the seminars were part-time “left the door open for people to sign up for several.” Thus, they “operationally have become courses,” and were frequently referred to as such by students. There were trends even more significant: students registering in USSP so they could ‘take such and such a course’; other students saying, “if I take this seminar, will it satisfy requirements?” (*Staff member*); “they go and ask permission to join seminars - wouldn’t have happened last year” (*Sophomore, USSP*).

It was certainly never the intention that the program should develop anything like a set of parallel courses that students enrolled in. It is a good example of how unanticipated consequences can change the focus of an organization.¹ The arrangement this academic year “we hoped would be a happy medium” (*Senior staff member*). But as another pointed out, it could be “a tragic mistake.” He added: “Of course, if the seminar becomes a team (and works on a group project) that’s great.”

The development over three years was described this way, by a junior staff member: “In the first year there was the idea of taking a project around which you unified your studies. The second year the project was still central - but you could study how you like. The third year the project was emphasized less. . . there was no particular unified study.” He added, by way of explanation, that “doing class-like things was easier to evaluate than a free-floating project.”

4.3

The second year brought other changes too, again in the direction of making USSP arguably less radically different from the regular program. Materials for self-paced subjects, already being developed in

¹It is not unlikely that ‘usual’ forms of instruction and assessment developed in this way - by accretion of change on change, each to fill a gap.

ERC, were now also developed within USSP, and became common ways of satisfying required subjects. At the present time a USSP student can take freshman physics and math subjects, and also 5.41 self-paced² (Introduction to Structure, Bonding, and Mechanism).

There was also a substantial increase in the number of subjects taken *outside* the program. Thus, the 24 freshmen entering in the second year of USSP took a total of 31 MIT subjects between them in the first term. The 31 freshmen of the first year had taken a total of only 11. (Full details are given in Appendix D.) Again, this reflected a trend that has gone further this year, judging by initial subject registrations (these are, of course, not an accurate guide to final registrations). Accompanying this increase of ‘part-time USSP’ for MIT students enrolled, was an increase in the number of ‘external’ students from other colleges. The ratios of MIT to non-MIT students have been as follows (first term enrollment, and including sophomores and special students in the MIT figure):

1969:	31 (MIT)	12 (non-MIT)
1970:	39	41
1971:	44	43

In the first year students came from *Tufts*; in the second year from *U. Mass. Boston, North Shore Community College*, and from the *Model Cities Program*. In general, although relations were cordial, they were never close between MIT students and the others. One of the effects of having these students in USSP was to substantially increase the size of the operation. This factor alone perhaps dictated greater structuring and organization.

During two weeks, early in October, we made a study of the extent to which USSP facilities were being used: we visited each of 14 major rooms within the program area on six separate days at times ranging from 9:30 a.m. to 4:00 p.m. and counted the number of students present. One or two students may have been missed but it is unlikely. The median number of MIT students present in the program area was 4, the median number of non-MIT students was 6. It is possible, though I doubt it, that students were around in greater numbers after 4:00 p.m. No, the low figure arises because we deliberately avoided making the survey when a seminar was on. Students came to these, and tended then to disappear.

4.4

Again, this reflects the program’s being less of a comprehensive, community based program; and for many of their MIT students, more of a resource center where they can come for part of their time. USSP is now far less isolated (as perhaps is ERC); less distinctive; and perhaps more respectable than it used to be. “We got much less paranoid in the second year. . . in the first year we thought we had the ultimate in education. When we got more confident, we didn’t have to pretend this” (*ex-staff member, USSP*).

Though the use of more self-paced subjects and the reduced emphasis on projects led to “more work done, somehow we were less excited by it” (staff member); “Enthusiasm had been lost” (*Junior*). Another Junior said:

“There were more people in the second year. There were rules to cope with this - more rules this year. Now everything seems to have a rule. May be fine, but we *were* trying to get away from that in the beginning.”

²The latter is open to freshmen in the Institute at large. The number wishing to take it was considerable at the beginning of the fall semester ‘71. We were told this had caused a measure of embarrassment in the Chemistry department.

Another summed it up:

“It lost a tiny degree of something in the second year. It was still revolutionary, but it was ‘if you’re really dying to do something you can do it’ . . . you provide different modes for different people. . . some people have given up ‘unified science’ aspect. . . they accepted the fact that some people need structure, so there’s self-pacing and, if you want to do something on your own, you can.”

4.5

This is not a comprehensive review, obviously, of the later developments of USSP. These, however, are touched on at other points in the report. Here I have merely sketched the main line of evolution.

Chapter 5

How Has ESG Developed Since the First Year?

5.1

Unlike USSP, ESG mounted no major new initiative in the second year. There were some small changes:

“We agreed to see our Advisees at least every two weeks, to offer students more frequent opportunities for testing their knowledge, to have more realistic expectations about how much curiosity a student can have concerning a topic that he knows nothing about, to provide self study guides in physics, and to have frequent seminars by outside people who were not members of ESG” (*Mark Levensky’s report, op. cit.*)

He added: “None of us expected that this would be enough. But none of us knew what else we should do.” They aimed to do better what they had done in the first year. They assumed, as did USSP, that the students would be similar. They were not. “They were quiet, straight, and enormously concerned about satisfying Institute requirements” (*Ibid.*)¹

Concern with issues of personal identity became fully legitimized in the second year. One ESG junior described how “humanistic introspection had not been considered as valuable” in the first year, but that in the second, “George *had* to change. . . Freshmen were sitting in the midst of sophomores,” and were being influenced toward the idea of “intellectual activity on a personal, self-identity basis. . . (using) the study of physics to find out who they were. . . Self-identity is not apart.”²

5.2

Most significant, however, was that students were studying Institute requirements. Both ESG sophomores and staff regretted the freshmen’s lack of adventurousness. One faculty member reported thinking

¹As discussed elsewhere, the notion simply that ‘students were different’ ignores the fact the program was presented to them differently, with significant changes in its handouts and publicity, stressing the previous year’s difficulties. Almost certainly, freshmen were influenced toward not ‘screwing themselves,’ particularly with regard to requirements.

²I asked whether the study of self-identity had included any reading of Erikson. Evidently not, though “Erikson’s book on Ghandi was read in Peter Elbow’s non-violence seminar.”

one day that ESG looked more formal than her recitation. She described, too, how students would say they wanted help “in getting Institute requirements out of the way.” (Her response would be: “Go and take the course, I only want to work with people who want to do something different.”) She added: “Often they wanted to do a deal on the syllabus - ‘after all,’ they would say, ‘you only do half of the course normally’... they wanted a minimum thing, a favorable contract.” Her experiences were similar to those of other faculty members.

5.3

Another change was that general meetings were far fewer than in the first year; and there was “far less argument.” The first year’s students, aware of the danger of institutionalizing ESG, had suggested a rule, which was passed in a general meeting, that no ESG rules carried over, and that freshmen would have to make up their own. But they didn’t. Compared with the first year, it was all very staid and proper. One faculty member said he “found it a very sleepy place. It was nice to get out and get some fresh air again.” On another occasion he wrote:

“I find that the atmosphere is stale and enervating...the amount of intellectual excitement seems small compared to other groups of students of the same level of ability...many of these students are doing very good things in areas of interest to themselves. ESG does give them a chance to do that. It gives them a chance to grow at their own rate. But the thing that bothers me is that most of their freedom comes about from utter neutrality, blandness or whatever that ESG as an intellectual community represents” (*Quoted in the Levensky report*).

During the second year, a student began ‘the ESG Book’. This contained a miscellany of personal statements, religious argument, personal invective. It surely must have channeled, in privatized form, some of the liveliness that seemed publicly missing.

The sophomores exercised a powerful influence on the freshmen. In many ways they overshadowed them. This year, 1971-72, a reduced number, as juniors, are still around; they seemed to talk to the present freshmen at least as much, if not more, than did the sophomores.

A number of people have commented, disparagingly, about cliques among the students. These discouraged at least five students of those we interviewed from going to ESG much. Some students were seen as being more ‘in’ than others.

At the same time, there has been reduced internal program conflict since the first year, when there were ideological battles, for instance between what were called the ‘Thinkies’ and the ‘Feelies’. Students, tutors and faculty were divided. (The ESG Chairman explained his own stance: “I preached that everyone should be a ‘thinkie-feelie’.” He tried to “glue” the factions together.) The second year these divisions within the program melted into obscurity.

During the first year, I was told, about half the freshmen had formed a ‘community’ - the others were ‘off doing things’. The ‘community’ group may have been somewhat less after the first year. The program has consistently tended to comprise a small group of ‘residents’, a small group of ‘regular visitors’, and a large group of affiliated but infrequently visiting members. Some of these are almost complete strangers to each other.

5.4

Another development in the second year was that a greater number of students in ESG enrolled in subjects outside the program; (a similar trend as in USSP - see Appendix D). ESG - unlike USSP - had always encouraged students to take 18 credit hours within the regular program. But there was a tendency for this to increase in the second year (though it may not be so marked in the third).

In other ways, too, ESG students tended to ‘use’ the administrative flexibility of the program, joining it, but without intending to become part of it in any communal sense. There were a lot who “never came around” and for many of these membership was a procedural device, with which they bought some guaranteed credit (“I never approached it as being a member of ESG...I used it to do what I wanted to do...I got 38 credits out of ESG,” *Sophomore, ex-ESG*); or were able to remain at MIT with the least possible participation in its academic activities, or achieved some other personal and idiosyncratic benefit:

e.g. “I was buying the right to live in the dorm” (*Sophomore, ex-ESG*).

When I put it to one ESG faculty member that the program had been merely an administrative mechanism for a number of students, he replied: “It is the most serious charge, and it’s true.”

It is not in fact altogether clear whether or not ESG wanted to be a close community. There were some who wanted it to be, certainly. But others did not. Each would caricature the other’s position. Thus, one faculty member said of another, “he wanted a 24 hour a day T-group.” But the first faculty member himself was described, as being “jealous of individuality...he thinks if a student is in a group, his rights might be violated.”

5.5

Again, like the preceding section on USSP, I emphasize that this account is not comprehensive but is thematic. Other issues will be discussed at later stages.

Chapter 6

What are the Facilities and Characteristics of the Two Program Areas?

6.1

One thing visitors to the programs always seem to agree about. The two programs look different, and somehow feel different - fundamentally so.

USSP is housed in the ramshackle labyrinth of Building 20, occupies 11,190 sq. ft.,¹ and has the atmosphere and appearance of a research lab. ESG is much smaller - 2,970 sq. ft., and its image is that of a comfortable reading room: carpeted, easy chairs, people sitting around reading and chatting. The discrepancy in the overall size of the programs' space is, first, because most of the USSP staff have their offices within the program area, whereas only the chairman and administrative assistant have offices in ESG; and, second, it arises because USSP has several sizeable labs. ESG has only a small workshop/lab, which seemed to be used, at the beginning of this term, mostly for bicycle repairs. (USSP also has the use of the Education Research Center Workshop facilities.)

They differ not only in size and furnishings, but also in their layout. ESG has its rooms (e.g., library, music listening room, seminar rooms, office, lab, etc.) clustered around a central lounge area which forms a definitive focus and communal center. Anybody entering ESG must go through it. It would be difficult to avoid all communication. It is easy to see whether people are in or not. USSP is quite unlike this. Rooms it uses are spread along four corridors on three floors. "Have you seen Harry?", "No, have you seen Don?" is an instantly recognizable USSP corridor encounter. While Edna Torgerson in ESG could tell you at once whether a particular student or faculty member was around, her counterpart in USSP would find it impossible. USSP is diffuse, its boundaries uncertain. It's just sections of corridor and numerous little rooms. ESG is an intimate little enclave, distinct, intraregarding, and secure. Its members' descriptions reflect this: ESG is "a home," "a private club," "a refuge," "a type of commune," "a womb," "a fraternity without the artificial garbage." The most common metaphor is "a home" (and, as one visitor remarked, "a middle class home at that"). ESG has a kitchen, used privately and for preparing group lunches; most

¹This does not include the area of general ERC facilities (e.g., shop, Xerox room, conference room) that are used by USSP.

of the ESG area is open 24 hours, and there is an extensive night life.² In addition, there are organized social activities - e.g., excursions to the beach. In fact, ESG set out to be home-like (“comfortable, colorful, almost child-like,” *ESG faculty member*), providing facilities more often associated with living groups than with academic programs.

USSP is not like this, and even if it wanted to be (which it does not) it would be severely hampered by Building 20. USSP has no kitchen; it designates less than 2% of its total space as ‘lounge area’ (the lounge in ESG is 37% of its total); it is not generally open and in use much after office hours; its social activity is sporadic and limited (the Friday afternoon beer parties seem to have dried up). This is not to say that USSP is against informality and pleasant surroundings. Visually speaking, USSP is by far the most cheerful area in Building 20. (It was instrumental in getting some of the corridors painted in non-gray.) However, for USSP, its labs, workshop, and computer room - in the best tradition of Building 20 - are seen as its most significant facilities.

6.2 Different Values and Orientations.

It is fascinating to see other differences between the two programs that are entirely compatible with their contrasting physical environments: differences in their value systems and general orientations. This is speculative; and I am not suggesting an architectural determinism. Nevertheless, the connections are there. Of course, each program could also use its space in a varied number of ways, each could create its environment to some extent.

What are these differences in orientation? Well, ESG seeks to soften the division between academic and non-academic, between intellectual and personal. “The ESG offers the opportunity to concentrate on this absorbing task... finding their own goals” (*ESG report*). This has led to immense concern with counseling, caring, and showing sympathy and concern. The move toward ‘nurturitive’ values is customarily linked with female influence. It is interesting, therefore, that ESG argues, in one of its reports, that “there should be more opportunities for students to talk with and be advised by mature women.” Already, in ESG, such counseling exists. Edna Torgerson, the administrative assistant, spends half her time at it. She is warmly regarded and has a very central position.

If the imagery appropriate for ESG tends to be ‘female’ and ‘maternal,’ it is certainly not so for USSP. There it is consistently male. Various familial relationships were proposed: Judah Schwartz was “a father figure” with “Zach as the grandfather”; or “Zach is the absent father, Judah is the eldest son”; or “the staff see themselves as elder brothers.” While behavior and expression in ESG were those permissible in a home, here, in USSP “you require an active front, a coolness... if you are confused you are supposed to get over it” (*USSP faculty member*). There was nowhere near so much tolerance of psychological confusion as there was in ESG: “I was his advisor - I was a bad thing for him - I kept away from psychological problems. If I could get him to do *work* I knew it would be good for him” is a remark typical in USSP, but would not be at all typical in ESG.

²My colleague Ellen Ehrenfeld stayed late one night and subsequently filed this report on “ESG after 5 p.m.”: “ESG has a distinctly different atmosphere from 7 p.m. on. Several people who never are there during the days are regular frequenters, and many old ESG-ers drift in, some of them at least 4 hours a day. Atmosphere is like a private club - several groups stand out, yet everyone’s presence is acknowledged and anyone can join in a conversation. Activities range from purely theoretical physical or math discussions, to studying, to doing crossword puzzles. One ex-ESG-er made a spaghetti dinner for anyone who wanted it, a group of 5 went for ice-cream, people were sleeping, a game of ‘Go’ was continuously going, others were studying in corners, on couches and in the library. I left at 11:45 p.m., and there were about 20 people there at that time, with no signs of anyone else leaving.”

There are other contrasts of a similar type. Thus, humanities, one suspects, should have been less prominent in USSP than in ESG. This was so. The humanities staff were very influential in ESG; much less so in USSP, where until this year they were underrepresented.³ Another difference - in the planning of the first year: ESG had been absorbed in how they would put freshmen at their ease (and in the event provided “a sort of pampering experience,” *ex-faculty member, ESG*); whereas USSP had been “totally curriculum oriented” (*ex-faculty member, USSP*) in their planning.

The most vivid contrast came, though, from discussions with senior staff members in both programs. We asked them about the characteristics of students they judged to be ‘successes’ in the program. Their criteria and certainly their imagery were distinctively different: at ESG we heard of students who had “opened up,” “were happier now,” “become somewhat less convergent.” At USSP we were told of students who “had done a lot of work,” “had done things,” “had written a paper.” A similar contrast emerged in considering ‘unsuccessful’ characteristics. In ESG there were comments of the type: “just as confused as ever,” “didn’t make any friends,” “no more mature”; and at USSP there were remarks such as: “never pulled things together,” “did little to justify his time,” “around but didn’t make good.”

Naturally this is only a sample, and there were many other types of comments made. But there was certainly a difference in emphasis: ESG concerned more with personal development, USSP more with intellectual productivity. In line with this there was a far higher incidence in ESG than in USSP of remarks such as “we did something for him,” or “he didn’t come around here enough for us to do much for him,” or “getting him to think rationally - but didn’t get through to him.” It seemed that ESG was almost anxious to assume a wider responsibility. USSP talk was more robust, and left responsibility more with the student: “he didn’t make it here,” “he had problems here but now he’s found himself,” “he never faced up to the problem of how he can do something on his own.”

When the two programs first began, there was general agreement that in their relationship to MIT, USSP was the more separate of the two. At the start ESG had seemed “much less likely to really challenge the assumptions of the Institute” (*faculty member well acquainted with both programs*). However, it is possible the converse now applies: that ESG, with their particular orientation toward students, may be far more at variance with basic values and attitudes of MIT, than is USSP.

6.3

There is a strange, indeed paradoxical series of observations that is applicable to both programs. I do not fully understand what they mean.

There were numerous statements and opinions, forcibly put in both programs, that there had been relaxed interchanges between staff and undergraduates; students had acquired their friends within the programs; all seemed to have enjoyed and appreciated the small scale, community-like nature of the program, very much fostered - even in USSP - by the idea of a contained environment for the program, an island within the Institute.

Group activities, however, had generally been a flop, and collaborative projects and joint studies between students were the rare exception. We were told “students did not come naturally together” (*Staff member, USSP*). A USSP staff member was “flabbergasted” when, on calling his advisees together, he

³Students were aware of what they called “an anti-humanities bias” in USSP. One said: “USSP needs physicists, chemists, engineers. Otherwise it sinks. If USSP becomes a collection of weirdos, it’s had it.” Whether there was a strong bias of this sort is an open question. What *is* clear is the faculty supply/demand problem for programs like these: in the first year of USSP there were a number of students who would have benefited by more humanities faculty. This year there are more such faculty, but fewer students are interested in the humanities.

heard one student say that “he was glad to meet others in USSP.” At a discussion meeting, that we ourselves convened, three ESG sophomores attended. Each had to be introduced to the other two. An ESG ex-faculty member remarked: “The kids were very individualistic...they didn’t interact with each other very much.” The dean of a faculty had discussed USSP with some students of his who had been in the program: “I thought it was a community...but they don’t work intimately with other students. They say they ‘never see ’em’.” ESG students were “a tight-lipped group of individuals” (*Faculty member, ESG*).

With a longer, more intensive study it might have been possible to throw more light on this conflicting picture. It applied to both programs, though the discrepant interpretation seemed more poignant in ESG. An apparently sociable and talkative student sitting in a group, inside the ESG ‘home’, complained bitterly of feeling ‘isolated’. It was not a single instance.

Chapter 7

What Have Students Learned by the Time They Have Come Out of One of the Programs?

7.1

This question is multi-dimensional. Interpreted widely it asks for a summary of the enduring experiences of a couple of hundred students. Interpreted narrowly it boils down to a question of what subjects have been ‘covered’. If you go for the narrow definition you immediately put the programs at a disadvantage, because their conceptions of learning were different: they were not simply trying to ‘cover’ subjects. To attempt to summarize all their experiences, on the other hand, would be an impertinent naivety.

7.2 Academic Case-Studies.

I asked both program Directors to furnish detailed descriptions of ‘the intellectual activities engaged in by students while in the programs’ and gave each the names of a sample of students I had selected for this purpose (24 in ESG, 18 in USSP). The students had been members of the programs for differing lengths of time, but otherwise no systematic selection of the sample was made. I told both Directors that I might include what they wrote in this report. I have not done so, for three reasons: (a) space limitations; (b) they are more evaluative and personal than I had anticipated; (c) they are, out of context, both uninformative and potentially misleading. Thus, what is one to make of such statements as:

‘Studied mostly the Institute required subjects in very non-orthodox ways’; ‘Planned a film on the origins and reasons behind the Student Center - never produced’; ‘Read some Freud and some child psychology and creativity’; ‘Built a house with soil cement’; and ‘Was very happy and seemed to be getting a good education’?

Such reports - though useful in several ways for our particular investigation¹ - could not really serve, on their own, as a basis for rigorous and searching analysis of what students accomplished intellectually,

¹We could connect each description with previous data obtained, (for instance, information as to whom was regarded generally as ‘successful’ and whom was not). Also, the exercise of collecting this information was itself revealing: the information had never previously been collated to form a single record, in either of the programs.

though it could be argued that, expanded, they could be vastly more informative than most academic transcripts.

In considering these brief extracts one is confronted at once by a more general issue. Take one summary - referring to a USSP student, now a Junior². Included were the following statements:

'Taught 4th grade science - mostly elementary physics'

'Took Economic Principles (14.01)'

'Corresponded at length with the Peach Corps (sic), about his research in housing'

'Became interested in tropical marine ecology and did reading related to this'.

'Wrote a report on the physical and chemical aspects of additives of soil cement'

Interpreted broadly, each of these may have constituted a 'learning experience'. But simply that they share this label indicates no close resemblance otherwise. To regard academic learning as measurable on standardized scales; to compare the amount of learning here with the amount of learning there; to use with certainty such phrases as 'levels of competence'; is simplistic and dangerous.

7.3

I cannot digress far on this subject here, but I will briefly distinguish and discuss three different forms of learning, and their relative emphases in the 'normal and 'experimental' programs.

- (i) **'Regulated' Learning** arising from study of distilled or pre-packaged knowledge that has been presented in an orderly progression (in lectures, textbooks, programmed learning materials, self-paced courses, etc.).
- (ii) **'Adjustable-Intensive' Learning** arising from in-depth study within an area (or areas) of knowledge that has not been preorganized for transmission in a learning context; selection of what to study being determined by a topic, issue, or problem.
- (iii) **'Adjustable-Extensive' Learning** arising from study of the same types as in (ii) but study proceeding in a less focused, more exploratory, and more flexible way than intensive learning.

This list is not exhaustive, the definitions are not water-tight. But in discussing learning they may be useful.

Regulated learning occurs in the majority of MIT subjects. Knowledge is presented in a formal, tidy and sequentially coherent way designed to facilitate rapid mastery of fact, concept, or technique. It is generally considered appropriate for transmission of large bodies of material in relatively formal and often impersonal settings. As one engineering Professor put it: "the person gets carried along... he feels he is getting somewhere" - regulated learning might be called 'rapid transit' learning.

Adjustable-intensive learning occurs in some project labs, occasionally in senior thesis work, often in graduate study, and in other situations where the student works on a topic, project, or problem in a systematic, focused way over a period of time. The knowledge he needs to acquire is, for much of the time, dispersed, or 'raw' or without continuous textbook structure. Largely - though not completely - it is his own choice as to what to look up; what to seek help with; what to include and exclude. The

²Considered, in fact, one of the outstanding students of USSP.

interface between knowledge and learner is untidy: the opportunities for confusions, blind alleys, and disappointments are legion. Unlike the ‘rapid transit’ traveler, (whisked from here to there, according to design and on schedule) this traveler is making his way cross-country toward a particular location. His progress is often slow, taxing, potentially frustrating, but also - if successful - highly satisfying. Because his learning is ‘location seeking’, his route specific to him, there is no guarantee he will have ‘covered’ (or visited) all the points that many (usually residents of the area) think he should have.

There are many differences between the two modes: evaluation of a students’ regulated learning is more straightforward - indeed it’s quantifiable - in the regulated mode; more valid perhaps, yet trickier in the adjustable-intensive. In educational costing terms regulated learning appears (at least superficially) to have the clear advantage. Many would argue the advantages of adjustable-intensive learning. But few regard it as ever becoming more than a highly nutritive supplement, to a staple diet of regulated learning. This is perhaps questionable in the light of the proposals of the Rogers Task Force.

Both USSP and ESG intended their student to be engaged in adjustable- intensive learning: USSP in a more lab-oriented and cross-disciplinary way than did ESG³, which was keener on such study occurring within traditional subject boundaries. In fact, however, this type of learning never became a majority pursuit. There was always a certain amount of regulated learning. This increased after the first year, with USSP’s development of self-paced study materials, and ESG’s study guides. What characterised both programs, however, was the third form of learning, *adjustable-extensive*.

7.4

As defined above this is similar to adjustable-intensive but is diffuse rather than deep. It is exploration rather than travel. What is learned tends to be determined by current interest, availability of stimulating material and past experience. This open-ended type of adjustable learning is the hardest to witness happening and is often impossible to evaluate. Many would dismiss it as sloppy, undirected, vague, and timewasting⁴. But it is also - others would argue - the most ‘natural’ way to learn and the most genuinely exploratory. All of us browse, read outside our specialties, occasionally go and look something up or dip into an area that interests us but which does not have any clearly defined ‘objective’ or endpoint. It is free exercise of our curiosity.

Several of the USSP students’ activities listed above come into this category, e.g. ‘became interested in tropical Marine ecology and did reading related to this’. With this sort of learning, said one USSP staff member: there is “often no product...but it is a legitimate way to spend the time”. On another occasion he said: “We want to encourage people to explore, to enjoy exploring, to take exploring as a habit of mind”. He was concerned that the contracts introduced in the second year may have hampered this; “Students feel we are inhibiting them from exploratory learning”.

“The ESG has allowed me to dip into and examine and probe many areas of endeavor and to discover what truly interested me. Some may complain that this, therefore, has resulted only in superficial knowledge...but this is the same thing that Institute requirements are designed to do - to give...the student a potpourri of courses designed to enhance his background”, (*ESG sophomore*).

³A USSP staff member at a general meeting in the first year wrote on the blackboard a comment said to have been made the day before by George Valley, over at ESG: “Quit doing this USSP project stuff and start learning something”.

⁴“All the best things in life come from wasting time”, (*ex-faculty member ESG*).

A dean of a faculty also thought there might be value in adjustable-extensive learning, particularly for freshmen.

“Students ought to be trying lots of things and maybe we ought to promote this. If you get wrapped up in research you have to sacrifice a lot - maybe at that age you *shouldn't* get wrapped up”.

The boundaries of this exploratory form of adjustable learning are indistinct: it might rapidly evolve into more intensive study, or it might become so unsystematized and random that to argue that it was beneficial would be specious.

Staff and students in both programs recognized its importance as a mode of learning. They encouraged it, but maintained the private hope that it would develop into something more recognizably committed and taxing. But as discussed in Section 8, their students found independent initiatives difficult both to mount and to maintain.

It is dangerous to summarize without conclusive evidence. However, what evidence there is suggests that compared with students in the regular program there was less regulated learning; more adjustable-intensive learning; and unquestionably more adjustable-extensive. What is quite certain is that adjustable learning, in general, was supported; that it occurred to a medium extent; and that students learned it was difficult.

“ESG is like trees in the forest - in ESG you run into the trees. In the regular curriculum you walk through the paths in the forest - it's too easy” (*ESG Junior*).

7.5 The Three Learning Modes at MIT.

At this point it may be useful to extend the discussion briefly.

A senior member of the administration suggested four basic objectives for MIT undergraduate education. They were, *first*, “to develop some level of competence and skill. . . the bag of techniques you need to function as an engineer or scientist”. The *second*: “The student wants to understand what sort of problems the professional deals with, and how to deal with them”. The *third* objective should be that the second “works in a context, not a vacuum. . . there should be some articulation with human attitudes, with the social dimension”. The *fourth* objective “is the most difficult: the student has got to become educationally self-sufficient. . . (he must) learn to manage his own education. . . this means the domain of question *posing* as opposed to question *answering*”. He saw the experimental programs addressing, in particular, this fourth objective. “They provide for a big dose of this at the earliest opportunity. . . (they give) students who have got the necessary maturity and motivation. . . a chance at the beginning of their career”.

Looking at each objective in the light of the three types of learning might suggest the following: (a) that the first objective is best achieved with regulated learning; (b) that the second and third - with their emphasis on ‘real life’ are probably better suited to adjustable than to regulated learning; (c) that the fourth - concerned with posing questions - is almost certainly achieved by experience with adjustable learning, and possibly in its extensive form. This is, of course, grossly over-simplified, but to elaborate would entail digressing too far.

7.6 ‘Spin-off’ learning.

There were at least three types of learning commonly thought to have occurred in the programs, two of which were not part of what was originally intended. All three are widely regarded as valuable. These were as follows.

- (i) **Finding their way around the Institute.** The evidence suggests that students had a much gentler and less abrupt introduction to MIT, and that they appreciated an environment that was more supportive, less monolithic, and more ‘relatable-to’ than that encountered by freshmen in general.

“For me the ESG’s biggest strong point was providing a supportive and enjoyable track for ‘getting into’ the main stream of the Institute life. I found this to be quite superior to the bone-jarring cold-shower treatment which characterized what happened to many other freshmen like me” (*Sophomore, ESG*).

There was more time, closer contact with staff, and more use of specialized MIT facilities. These all contributed to a greater awareness of MIT at the HowToGAMIT level⁵.

- (ii) **Acquiring an interest in the educational process itself.** In both programs ‘education seminars’ were notable for their longevity compared with seminars on other subjects. Many students, particularly in USSP, taught in schools in the Boston area - including all 5 students who remained in USSP for their first four terms. It appeared, for several of them at least, that their interest in this field followed from a self-consciousness concerning their own experience. Their program questioned many fundamental pedagogic assumptions.
- (iii) **Academic assertiveness.** The lack of fear of professors was a recurring theme. Professors were seen as ‘people you can talk to’, ask questions of, go to for help. One or two, from ESG, claimed that when they did not understand something in a lecture, they attributed it to bad exposition on the part of the instructor than to any deficiency of their own, and in my experience this is not commonplace. Students interacted with their program’s faculty members in a face to face context. The staff - even if they wanted to, which they did not - would have found it difficult to distance themselves. The fact, too, that they were asked questions on an immense range of topics meant that not infrequently they had to admit ignorance or ask for time to think about it. All these factors helped to ‘humanize’ the faculty member. That he was seen ‘out of role’ also created some problems, discussed in Section 17.

7.7 The Re-Entry ‘Problem’.

Before I began my study several people considered that I would find a re-entry problem of large proportions. This was not the case. The *entry* problem, the difficulties for the student in working in the experimental program he joined, was usually severe. Returning to conventional courses seemed to cause little disturbance:

“This year I haven’t found it at all difficult to adjust to the regular curriculum. After all, I spent twelve years learning how to deal with a regular curriculum in public school. A one year time out from that particular game doesn’t mean I forgot how to play” (*Sophomore, ESG*).

⁵There was one clear dissenting view, from a staff member, that students “had picked up the MIT mythology but had never experienced it”, and in fact “rarely even knew the buildings”.

There was another reaction: one student who regarded his time in USSP as having been “more valuable than staying in the regular curriculum”, nevertheless found that when he “went back, (he) wasn’t dissatisfied with the regular program any more”. Another USSP sophomore had a similar point: “There are good points for both styles. . . the lecture is a useful tool; you can read a book, but when someone’s talking, it’s different”. (This student had nevertheless thoroughly appreciated his time in USSP).

For a few individuals there were perhaps difficulties (“Now I have the big problem that I have been spoiled” *Junior, ex-USSP*) but these were generally minor - that is, except for the frequent lack of completed Institute Requirements, which is discussed in Section 10. There was certainly no major or widespread re-entry problem in re-acclimatizing to conventional teaching modes.

Chapter 8

What Was ‘Floundering’? Why Did It Arise? How Was It Handled?

8.1

To flounder comes from a Dutch word meaning to splash through mire or to flop about. It was a term used in both USSP and ESG, and was used in various ways. For some it meant a short-lived phenomenon - the initial uncertainties of a student entering the program; for others it referred to longer term personal or intellectual disarray. Theories abounded as to its causes. There was a disagreement on how, and even if it should be handled.

Mark Levensky has defined ‘general floundering’ as:

“Aimless activity, vacant stares, starts and stops, unrecognized fantasies, unpredictable forgetfulness, some non-academic work but a strong reluctance to do any academic work on their own or to work with other students on traditional academic subjects, self-deception about what they were or weren’t doing, too much sleep.”

Whether lesser degrees of disorganization are also defined as floundering is unimportant. To some extent nearly every student floundered - though there were a very few in each program who seemed to be sure of what to do and where to go.

8.2 Floundering and ‘Self-Realization.’

For some, floundering reflected profound self-questioning, introspection, and concern with long term goals. Partly this arose because, in the words of one ESG faculty member, “the aim in life for these students is to get into the best college. Now he’s in the best college, what’s his aim in life now?” Students also spoke of this:

‘Imagine that you are a freshman. You have been tracked and molded and disciplined to the Ivy League Express but since you dug science you want to come to MIT. Thoughts about the future always ended up at the point where you would leave home and go to College. Then you got there and it is all big and exciting. And then you get into the ESG and no one puts the huge iron lid back on you the way it was in High School. At last, a breathing space, but what do you do? You don’t know, you are too bewildered.’

There were several other references to “the 12 years of being bulldozed.” “Certainly it gave me my first opportunity in over 12 years to really think about what I learn, to be introspective, and to be human as opposed to being a ‘good student’.” These and other students “were anxious . . . to figure out who, exactly, they were, how, miracle of miracles, they happened to be at MIT, and what, on earth, they wanted or at least were going to do now” (Mark Levensky’s Report, op. cit.).

Were the programs the right places for students to confront these issues? Certainly ESG thought that it was. One of their publications says that ESG should not only serve those who know their goals, but others “who are preoccupied in finding their own goals.” Among other things, “they need help in exploring possibilities of self-commitment in life.” Some faculty outside also thought so, but others did not. Thus, one department head argued that the problem should not arise:

“A student should not have doubts; he should be highly motivated if he comes to MIT. . . many should be counseled out of coming here.”

But the more general view was that students *did* “need a self-assessment procedure” (*Professor, management*). A department head thought it was acceptable if it was a “functional self-realization” of the type - “What am I going to work on for the next couple of years?” It would not be acceptable, however, if meant in “a mod sense. . . we don’t want poets and potheads . . . hopefully a man matures here. But our principal focus should not go away from getting to do things well” (*Department head*).

Clearly a good number of students did go beyond this narrower definition of ‘self-realization’. “The kids are infected with the psychological literature. Finding their identity is an enormous challenge,” was the view of one mathematics professor. (He added, wryly: “I always thought ESG was for people who *know* they like an unstructured environment. But it seems as if it’s full of kids who are trying to *find out* whether they like it.”)

An even more basic question seemed to be raised: should questions of the variety “What shall I do with my life?” be considered early or late? Some thought freshmen were too young to be absorbed in these issues.

“I seriously question the ability of a 17-year old to say this is what I want to do with my life. Even to say that this is what I would like to do with my life in the next three months. Because you are just coming out of adolescence and you are not quite sure what you want from one moment to the next” (*USSP staff member*).

A mathematics professor, unconnected with either program, recalled how he had had to write an essay, at age 16, on “My Philosophy of Life.” His comment: “How absurd that now seems.” A former faculty member of ESG: “It is a criticism of both programs: people of this age are too likely anyway to become introverted. . . I felt uncomfortable to see students paying so much attention to these matters.”

The contrary view was that it was a bad thing for students to be swept along, straight from high school, through a set of experiences which left them no time to address central questions, and which simply put off, until a much later stage, basic questioning about life-style, career choice, and so on. (I heard it said that many MIT faculty had addressed these problems only when they were middle-aged.)

I asked a senior faculty member in ESG: “Is it the right time to go through this, when they first get to college?” His reply: “I don’t know. . . (pause). There are some people who do it after graduation. It is hard to justify the situation that allows *that* to happen - even on economic grounds.”

A view expressed by an ESG student is by no means unrepresentative:

“This experience has not been particularly pleasant... I have had to go through a great deal of painful self-evaluation... I think that this is the proper time in my college career for this to happen. Otherwise I could have slid through four years without ever having examined my real motives, desires, etc. This could have led to a great deal of pain if I had suddenly discovered that the whole enterprise had been a waste... it has been most valuable in forcing the issue... ESG has greatly speeded my maturation process.”

The controversy, Early or Late, is one for which there may be no simple answer. Seventeen year olds have to make important decisions, yet clearly they have a limited set of experiences on which to base them.

One view, for which there was widespread enthusiasm, was that many more students should take a year off between high school and coming to MIT. Fifteen students, admitted to MIT in 1971 arranged to do this. One ESG staff member wondered whether these students might not have gravitated toward ESG, had they been here this semester (“Take their year off in ESG instead” - was his mock-serious comment).

8.3

Another question, frequently posed by faculty and administrators outside the programs, was whether the programs’ staffs were competent to handle such questions. Whether or not they were, in one sense, is irrelevant, for they could not escape them. They *had* to be competent. In USSP one sensed the staff’s reluctance, and the threshold ‘for suggesting a kid goes to the shrink’ was lower in USSP than in ESG. “Clearing his head, before he can proceed intellectually” is a theme of ESG that has been noticed by many outside the program, including the senior administrator who described it that way. He went on: “I don’t know whether it’s the student’s concern or the faculty’s preoccupation.”

I found, in my discussions outside the program, considerable opposition to the view that a faculty member should be involved in these more psychological questions. “Though they have a deep interest in young people they are not professionally qualified to deal with the students in this way” (*department head*). One psychiatrist referred to it as “pseudo therapy”.

“Most people at MIT see the professional/intellectual side as partitioned from the emotional/developmental... There is only very peripheral attention to the latter. There would be near unanimity in the science and engineering faculties that this was ‘not our concern’, and a majority in humanities, also” (*senior administrator*).

The arguments on the other side, though unfashionable at MIT, should not be lightly dismissed. One non-academic dean condemned “the failure of current teachers to recognize the emotions... the immediate reaction was: ‘send ’em off to the shrink’.” An ESG faculty member argued: “We are not short of ways of communicating information... far less is known about motivation and direction. Fear is a major problem... the faculty are seen as all-knowing. There is intellectual isolation”.

Other questions were also raised by students, that it would be less easy to argue should have been referred to professional counselors or psychiatrists. These were philosophical, ethical, and political questions: “Why strive to do something or be somebody when we are all going to be blown up in 10 years?” or “Can I know that I won’t discover some truth which will be applied to do great evil?” (*from an ESG report*). These tended to merge with more immediate issues of academic motivation: “I am still programmed... I look at the requirements - it’s a big farce. Your high school diploma doesn’t mean anything; my only motive for staying in school is to get a degree” (*ESG sophomore*).

8.4 Interests, and Difficulties with Independent Study.

There were obviously real difficulties for freshmen in being asked to study independently, and to choose what they wanted to do. It is a procedure often deferred until graduate school. Here it was early, and the support structures were limited. Of course, difficulties at the day to day level of deciding what and how to study are not separable from the deeper and longer term questions of what and how to study during their MIT years.

“People come in full of big ideas, saying ‘I’ll do all the requirements’... they don’t, they procrastinate. They get worried. They begin to question whether they should be in ESG... they begin questioning whether they should be in school” (*ex-ESG student, now out of school*).

The criterion of ‘what to work on’ was presumed to be ‘what you are interested in’. But interests were not constant. They fluctuated - often dramatically. ‘One freshman changed the topic ‘he very much wanted to work on’ at least once a week” (*Mark Levensky’s report*).

“Someone would come to me with an idea that he wanted to pursue. We would talk about it. I would make some suggestion. He would seem enthused and committed. Then a week later everything was forgotten - the idea, our conversation, the enthusiasm, the commitment. Sometimes the student would have a new idea that he wanted to talk about. But usually not”(*ibid.*).

Interests, at the best of times, are intensely personal, unpredictable, and labile. They make nonsense of the traditional psychological distinction between ‘cognitive’ and ‘affective’. The complexity of their relationship to educational activities deserves more attention than I can give them here.

What is certain is, first, that the programs gave ample opportunity for students to try out a wide range of topics and subject areas: “ESG has allowed me to dip into and examine and probe many areas of endeavor and to discover what really interests me” (*ESG sophomore*). Second, the programs’ characteristics permitted a high degree of flexibility: “In ESG, ‘dropping a subject’ consists of nothing more than putting the book away; ‘adding a subject’ consists of opening the book” (*ESG sophomore*). Third, the programs, in one sense, *demanded* that the student choose what he wanted to do. A USSP staff member: “The kids we’ve got here... are sort of forced to see what they are interested in and what they aren’t interested in.” A USSP student remarked that the regular program was easier: “You are being told what to do... much easier, because you don’t have to work out what to do yourself.”

8.5 Floundering and Structure.

Is it possible that the extent of floundering was a function of particular types of students gravitating toward the programs? It is possible, of course, but the programs themselves thought not: the director of ESG reported that the “general consensus around here is that if you put other people in ESG type situations it will happen. It didn’t happen to all people in the first year, but it did to most of them.” (The issue of whether ESG and USSP students are representative of MIT freshmen as a whole is discussed in Section 9.) Many staff in the programs would argue that such questioning exists equally among freshmen generally (“the question of ‘who I am’ occupies most 19 year olds” *tutor, ESG*), but that in the regular program it goes underground, is suppressed, or is given less opportunity to develop.

“Had all of these students been in the regular curriculum, they would have been permitted to think about such questions on their way to classes and in the last moments before sleep” (*Mark Levensky’s report, op. cit.*)

Without question there is more packed in to a freshman’s day in the regular program, than in either ESG or USSP. There is likely to be less time to dwell on the metaphysical, and - as one professor unkindly put it - “to pick at their navel.” At the same time, it should not be forgotten, there is also less opportunity in the regular program for a freshman to look around, explore laterally, and follow up things of interest. “The beauty of USSP is that when something within a subject really interested you, you could pursue it without feeling you were falling behind - as you would in the regular course” (*Sophomore, ex-USSP*).

8.6 Good and Bad Effects.

Numerous positive and negative features of floundering were cited. Only some can be considered here. One prominent USSP faculty member wrote the following:

“A prominent ingredient of the phenomenon is the sudden discovery... that the removal of an external driving force leaves them far less intellectually motivated than they would like to be.”

This, however, is only part of the story. He goes on:

“It is painful to discover truths about oneself. When that discovery makes personal reassessment necessary, some time, energy, and support are required to deal with the problem.”

Asking a student, in other words, “to do his own thinking about his own course (can) cause a hell of a lot of commotion in the kid’s mind for a while...” (*USSP staff member*). People in USSP “have been forced to think and figure out what they are doing and why they are doing it, or what they are not doing and why they are not doing it” (*ex-staff member, USSP*).

These experiences, perhaps uncomfortable at the time, were likely to be formative ones. But they did not proceed in isolation: they were often accompanied by anxiety or feelings of guilt. There was also an interesting tendency to hive off ‘motivation’ as a reified concept and to bemoan the lack of it. “I was turned off by my lack of motivations” (*ex-ESG student*). “USSP I think is really a wonderful thing. If I was motivated to do work I think it could have been the best thing that ever happened to me. But I couldn’t get myself to do the work” (*Sophomore, ex-USSP*).

An MIT psychiatrist, who strongly believed that the programs had been “actually detrimental for certain persons” described how one or two students he had seen “got alarmed at their capacity to let things go.” They had had “a nice feeling of freedom... it was like a temptation offered and taken... in retrospect, they would feel very sad and bitter about it.” Another psychiatrist, when it was suggested that one of the programs’ aims was to take “the Institute pressure off,” replied: “Sometimes it increases the pressure - lack of structure produces anxiety, guilt that they are not getting anything done which produces depression.” One professor, outside the programs argued that they “put too big a psychological burden on the student. ‘Remember the choice is yours,’ they say. ‘It will show you what sort of person you are - if you can’t manage it here then get back to the regular program’.”¹ This is almost certainly an exaggeration, but the idea that these programs are a soft option for playboys, a theme we heard from time to time, is equally

¹One USSP student, according to a staff member, got particularly worried “about not being able to find one thing which turned him on more than everything else.”

untrue. The regular program causes certain types of strain, these programs cause others. One freshman joined ESG this term because he saw it as “a challenge” - it was almost a trial of strength which he was making for himself. This is in contrast to the view of one MIT alumnus, whose nephew was in USSP. He told his nephew: “Be a man, go into the regular program.”

Chapter 9

Are the Students Entering ESG and USSP a Very Special and Unrepresentative Group of MIT Freshmen?

We examined a number of admissions variables for the students from the classes of 1973 and 1974 who entered ESG and USSP during the first term of their freshman year. (Where information was not available for the entire class comparison was made with a random sample of 100 students from the class of 1973 - see Appendix E.) The ESG and USSP groups were indistinguishable from other entering freshmen on the following admissions variables: *Geographic Region; Birthdate; Percent of high school class attending college; High School Grade Sum; PR (Personal Rating); Father's occupation; Parents' education; Sibling rank; Number of eldest/only children; Major Course preference.*

However, on academic variables, differences between the two special programs and the rest of the respective classes did appear. These were as follows: *SI-1, and its components; Rank in high school class; Verbal SAT scores; English Achievement scores; Maths SAT scores; Maths Achievement scores; Science Achievement scores.*

The SI-1 (Scholastic Index-1) is a variable devised by the Admissions Office¹ (and is used here without comment as to its suitability to serve as a major admissions variable). Median SI-1 scores for the two groups and for the class were as follows:

Class of '73: ESG - 92; USSP - 84; Class - 90

Class of '74: ESG - 81; USSP - 69; Class - 76

Thus, 58% of ESG entering freshmen were above the '73 class median for SI-1 (61% for '74 class); whereas only 28% of USSP freshmen were above the median in the class of '73, 27% for '74.

¹An estimate of the probability of success in MIT's freshman year. The range of possible scores on this index is 01 to 99. The SI-1 is compiled by the Admissions Office from the following components: Maths and Science Achievement Scores; Rank in high school class; high school grade sum; Math SAT; Verbal SAT; English achievement score; percent of high school class going to college; (the weighting of these components decreasing as the list progresses).

Comparisons of individual College Board scores showed a similar and consistent trend: ESG students had higher scores than USSP students in all three areas - verbal, mathematical, and scientific. (Details are given in Appendix E.)

There was one other small but possibly noteworthy difference between the USSP/ESG students and other entering freshmen: for the class of '73 as a whole, only 10% were *not* in the top tenth of their high school class, but 18% of ESG students and 17% of USSP students were not. The same pattern appeared for the class of '74. Percentage of students *not* in top tenth of high school class:

8% of the total MIT class of '74
16% of ESG students
22% of USSP students.

The numbers are small. But the result is of interest in that many students in USSP and in ESG referred to unsatisfactory and unhappy high school experiences. Preliminary data kindly provided by Dr. Bennett Simon tend to confirm this. His study, restricted to USSP, involves interviewing entering freshmen of the class of '75, both those who signed up for USSP and those who visited during orientation week but decided not to join. He found few differences between the two groups, except that the joiners had enjoyed high school less than the non-joiners, and also had 'unpleasant' first memories of school as opposed to the non-joiners' 'pleasant' recollections. Another finding: the joiners had often done individual project work, the non-joiners less often.

Throughout the studies, various phenomena were attributed to the supposed 'odd' characteristics of students in the programs. Remarks beginning, "the program attracts the kind of student who..." were usually speculative, often sensible and plausible, but speculative nevertheless. Certainly, on admissions criteria, there do not appear to be gross differences between freshmen entering programs and freshmen who do not, but admissions data are not everything. And it may well be that the programs did attract particular types of student. One acute observer hazarded a guess: ESG is a "home for independent and possibly confused super-intellectuals"; USSP is a "home for doers, those who want to shake the system - more action oriented."

While it was impracticable to consider any in depth studies of entering freshmen, we did ask them why they had joined the program they did, in preference to the regular program. What was striking about this data was that the reasons given were very diverse: schedule flexibility; self-pacing; proximity to expert help; the 'challenge' aspect; opportunity to 'go faster than in the regular Institute'; previous experience with independent study; and many others. Their varied motives for joining certainly do not suggest a single, stereotyped personality type: they suggest that lots of different types saw something in it for them.

Finally, we made a check on the position of minorities in USSP and ESG. There was no wild discrepancy between the programs and the classes as a whole, though ESG's proportions of women and black students were somewhat low: a matter of considerable and continuing disappointment for the ESG chairman.

Chapter 10

Did Students in the Programs Complete their General Institute Requirements?

10.1

A word of caution is in order. The data available refer to the freshmen who entered the programs in the fall of 1969-70. Both programs changed in their second year and more actively encouraged students to complete required subjects. The number of GIR's completed is likely to have increased substantially. But these data unfortunately were not available.

We examined the number of graduation requirements completed by the end of the fourth term for the Freshmen of the Class of '73 who entered the first term. About one third of the ESG group, and less than one third of the USSP group had completed the five 'core' subjects (2 math, 2 physics, 1 chemistry freshman subjects), compared with over 90% of the random sample. We also looked at the number completing upper class Institute Requirement subjects by the end of the fourth term, and again there was a difference between the students in the experimental programs and those in the random sample in the regular program. The details are given in Appendix E.

We interviewed several students that had not completed GIR's during two years in the programs. There were several reactions:

- (i) They all considered that not having done them made difficulties for them now: e.g., "I have scheduling difficulties because my old required courses conflict with courses I need for my major." Some said that as juniors their freshman requirement subjects were graded, instead of being pass/fail. One of the students that USSP regarded unanimously as one of its stars, was in difficulty: "The Institute requirements are nailing me to the wall, I have most of them left... USSP says that traditional education is bullshit, but you still have to do it." Another 'top' USSP student remarked - again about the required subjects: "Now it's a log jam, having everything on top of me now." There appeared to be less emphasis on this issue from students in ESG, but the data are not complete enough to confirm whether this is a real difference or not.
- (ii) There was deep resentment felt toward their program by at least some former USSP students we spoke with, over the program's early attitude to the GIR's. "They didn't stress the need for the requirements in the first year - they do now"; "You can't send someone out into the Institute without his Institute requirements."

In this respect there was an interesting (and well documented) difference between the programs: in ESG resentment was directed to MIT, or to themselves, rather than to ESG. This may reflect the fact that vocal opposition to the idea of requirements was more heated in ESG in the first year than it was in USSP. It seems that ESG, to some extent, had thought of itself as a ‘living protest’ against the requirements.

- (iii) There was also, in both programs of course, the view that concentrating on GIR subjects was going against the ideals of the program; that somehow it was too ‘easy’ to do these subjects; and that to do as many of them as students customarily do in the regular program, would simply entail working in much the same way as students do in the regular program, though independently. As one former USSP student remarked: “You can learn the physics, math, chemistry, if you do nothing else. . . (but) that’s like giving up everything that was the ideal.”

10.2

It is not clear from the evidence (it conflicts dramatically) whether, in general, the standard for fulfilling a GIR subject was higher or lower in the programs than it was in the Institute generally.

In each program there were some staff and some students who thought that getting certification for a subject was considerably harder than in the regular program, and that testing of understanding was far more exhaustive and meaningful than would be possible in an ordinary written exam. There were comments of the type: “It was much easier in the regular course, but here the work has to be based on understanding” (*Junior, ex-USSP*).

However, there were comments from others that contradicted this view, in both programs. Partly it depended on the individual faculty member. Since generally non-standard, non-formal, oral exam type methods of testing were in use, this was probably inevitable: some were lenient and some severe.

Several faculty members compared their students’ grasp of the subject matter with that of other students they had taught in the regular program. Of these a majority thought students in the programs were less prepared when they came to be tested. However, such judgments should be treated with caution. First, students could choose both their ‘level of preparedness’ and the time at which they came for testing. Second, it is rare that a faculty member in the regular program gives anything remotely like an oral exam. If he did, he might discover his ‘regular’ students’ understanding did not match their written quiz performance.

10.3 Should there be Institute Requirements at all?

There was strong agreement in both programs that the GIR’s had been a powerful external constraint. The programs had been based on the idea that students should be able to choose what they studied. Having to complete requirements ran counter to this. A predominant view was that they would have been far more truly experimental if there had been no such requirements.

The ‘GIR issue’ - though not a principal focus for the study - could not be avoided. What was the feeling about requirements outside the programs? What is the rationale for preserving required subjects? The interviews with outside MIT faculty members indicated near unanimity that they should be preserved. A senior member of the administration dismissed it as “a dead issue.”

The argument *for* their preservation seemed simply to be that in an institution such as MIT, centered on science and technology, the essential character of the place depended on certain minimal qualifications in

basic scientific subjects. There was a fear that without them MIT would become “a second rate Harvard”; “if a student didn’t want to shape up to that extent in physics, he shouldn’t be here”; and so on. (Surprisingly, no mention was made of the ‘necessity to take elementary subjects to provide a basis for more advanced work’ - an argument that is often tendered in discussions of compulsory courses.)

The arguments *against* requirements were: (a) that the same arguments for preservation had been used in the past with the Committee on Curriculum Content Planning (CCCCP), which had decided to reduce them; (b) that MIT’s distinctiveness would not be in jeopardy - students would still be immersed in a highly technological environment, and students who were not science oriented could be counseled out of coming to MIT; (c) that the argument for their retention is nonsensical when you consider individual cases - some need chemistry and others most clearly do not; (d) (from the ESG report) that they create “a cloud of anxiety which, the student feels, inhibits him from getting on with his own education.” There were others. These seemed to be the main ones.

10.4

One point in conclusion. When those students who joined the programs in 1969-70 as freshmen reach the normal time for graduation, it may well be that some of their freshmen requirements will remain unfulfilled. There may well be a re-opening of the controversy about the place of GIR’s in the Special Academic Programs. I discussed the issue with past and present chairmen of the Committee on Academic Performance. Both were adamant that the CAP was there to apply the rules, not to discuss them; and that the programs - if they wished to raise a matter as a question of policy - should do so in advance of that time, not with CAP, but with the appropriate committee.

Chapter 11

How Well Do Students Perform Academically After They Have Left the Program?

11.1

We examined sophomore term ratings and cumulative credit units, for the original freshmen, i.e., the students in the class of '73 who entered USSP or ESG in their first term. We gathered comparable information for the random sample (see Appendix E for details of random sample).

The Committee on Evaluation of Freshman Performance (CEFP) has calculated that the median Spring term's sophomore rating was 4.3 (Fall term median not available). Of the sophomores in the random sample with term ratings, 47% scored above 4.3. Of the ESG group, 62% were above 4.3. And of the USSP group, 39% were above the class median.

The distributions of term ratings are given for both terms of the sophomore year, in Appendix E. Two factors should be born in mind in interpreting this data: there was a higher level of attrition in these programs than in the regular program (see Section 12) and the students entering the programs were not, on academic qualifications, exactly representative of the class as a whole (see Section 9).

In terms of credit hours the ESG and USSP samples were broadly comparable to the random sample at the end of four terms. In view of the procedures that both programs arrived at in their awarding of credit, this is not surprising. Appendix E gives mean cumulative units by term.

11.2

It was suggested to me that faculty counselors and departmental registration officers might have got general impressions of 'alumni' of the programs. I wrote to all 114. What were the general impressions of these students' competence? "Were they found to be adequately prepared and could they handle upper class work satisfactorily? Had they made any particular or special impact on the departments they had gone into - either positive or negative?" I received very few replies,¹ and of these several asked for a

¹There seem three or four possible reasons for why so few replied: I simply gave them too little time to attend to it; or the students in question had made no impact, good or bad; or the faculty concerned were disinterested, or unable to make a judgment, or simply averse to yet another mailed appeal for their cooperation.

list of names and others said they had had no students from the program. Only two replies were at all informative.

“I have had *almost all bad* impressions of USSP alumni who have applied to me...most of those I see have wasted most of their time in USSP in the sense that they have failed to master the fundamental subjects like calculus. They are *not* prepared to go into normal sophomore subjects. Invariably these students *put the blame on USSP* and tell me that USSP should have prevented them from goofing off.”

Another Professor, speaking of one ex-USSP student, wrote:

“I would be surprised if he did not perform well. He is a bright and engaging young man who seems to have a good idea of where he is going...whether USSP helped or hindered him is an evaluation I can't make. The confidence he has may have been enhanced in USSP, but the people selected for this program may have been atypical of the students at large.”

11.3

There were a number of other anecdotal references to particular students encountered by MIT faculty members we spoke to. These are only of limited usefulness. On the whole, the references were approving. One senior member of the administration had been greatly impressed by an ESG sophomore (“the most creatively competent sophomore I had seen for ages”); a department head - on the basis of his own experience with alumni - said that “What’s clear is that nobody thinks a great disaster has happened”; a dean of a faculty commented favorably on a freshman advisee of his: he had been “a natural for USSP - probably wouldn’t have survived at MIT.” There were also occasional negative references to lack of sufficient background.

To have obtained more data of this type, but much more fully and systematically, would have been a useful addition to this study. If it had been easier to gather such information we would have done so. The inquiry to registration officers was not encouraging.

Chapter 12

What Were the Rates of ‘Dropping Out’ From the Programs?

12.1

This section relates to withdrawal from MIT (which, except in one instance in the groups studied, coincided with withdrawal from the program). Withdrawal rates were high in both ESG and USSP.

From the original group of 38 members of ‘73 entering ESG, 31 completed the fourth term as sophomores (18% attrition). From the group of 31 in USSP, 23 sophomores completed a fourth term and one negotiated withdrawal at the end of the fourth term (29% attrition). From the random sample of 100 freshmen of the class of 1973, 91 completed the fourth term of sophomores, juniors or seniors, and 2 negotiated withdrawal at the end of the fourth term (11% attrition).¹

Reliable data for the class of ‘74 entry (those who entered the Special Programs as freshmen in their first term) were not available, but registration, as of about October 1, 1971, suggested that 3 of the 38 ESG freshmen of ‘74 were not registered this term, and 4 of the 24 USSP equivalent group were not registered.

12.2

In a discussion of the high withdrawal rate, there were three main possible explanations advanced:

- (i) The programs attract students who are prone to dropping out, and they would have done so even if they had been in the regular program.
- (ii) The programs ‘loosen things up.’ Students who - in the regular program - might be ‘carried along,’ are, here in the program, not so supported. Instead of wavering and staying in, they waver and leave. (This suggests dropping out may be the logical extension of ‘floundering’.)
- (iii) The programs have a different approach to withdrawal, and taking time out, than a student generally encounters at MIT. This influences him in the direction of withdrawal.

¹Around October 1, we investigated registrations for the first term, 1971-72. At that time these were not considered to be final by the Registrar’s Office. However, they suggested that withdrawal rates for the class of ‘73 (first term entry) will probably have to be revised: only 25 of the original 38 ESG freshmen had registered for this semester; and 20 of the original 31 USSP freshmen. This includes all members of the two groups - irrespective of whether they were registered in the program as sophomores or not. No data were gathered for the random sample, due to pressure of time.

I discussed each student who had left a program and MIT simultaneously with the two Directors. I was unable, in the time, to contact those who had left but who were still in the Boston area. I did not attempt to discuss individual students either with Psychiatry or with the Dean's Office (a procedure that would have entailed getting each student's permission to do so). Inevitably, therefore, I got only one picture: that of the programs' Directors, and it is unlikely that they were always in the best position to know why a student was leaving. However, I was greatly impressed by how much the Directors *did* know, and by their frank and detailed statements. They provided general insight into the problem and much specific information. I shall stick to the general rather than move to specifics.

I discussed 9 students with the ESG Chairman; 13 students with the Director of USSP.²

Of the ESG group, 4 had either returned to MIT or were known to have transferred to other schools. The same number, 4, fitted this category in USSP. Beyond this, categorizing becomes artificial. There were some the Directors thought should never have been admitted to MIT (at least three from each list). Some students went through major redefinitions of what they wanted to do, and concluded they should not be in college; e.g., one - in ESG - wanted to travel the country making jewelry. There was a Weather-woman (since returned), a Yippie, and two Panthers. Some clearly had recent family problems: e.g., father died, parents divorced; or were seriously psychiatrically disturbed. Some were heavily involved with drugs.

In all but two or three instances in each list there were factors such as these. It is hardly likely that membership of the regular program would have made much difference. Indeed, as both Directors pointed out, it would probably have made matters more strainful.

The first possible explanation - that the programs attracted a higher proportion of those students who, in MIT terms, are 'at risk' - certainly appears to be the best supported. One cannot, of course, know for sure. There are doubtless many students in the regular program who have family problems, or think of joining the Panthers. Do they leave in the same proportion? We do not know.

The second hypothesis - that the programs loosen things up - also receives some support. One USSP student had "left of his own accord, having decided this wasn't the thing for him. . . Again the need to drive oneself. . ." Another was "not prepared to drive himself. He did bits and pieces, but (was) not ready to assume responsibility." Both - I was told - were unlikely to have 'made it' in the regular program, though like an ESG student cited, they "might have held on, working 40-50 hours a week. . . (might have) stayed at MIT as C-minus hacks."

The third explanation is the least likely. Our discussions generally around MIT revealed two different basic approaches to withdrawal. There were those who thought that dropping out was a serious issue for the Institute, and that it was a matter for concern when leaving rates were high. Others thought this notion out-dated.

"Dropping out should turn into a more positive exercise. . . the social climate doesn't help and the Institute was not wholly supportive either. . . (There were students who were) fed up to the gills with school and need time away. . . (There's) a long way to go in encouraging people to take time off" (*Counselor from Office of the Dean for Student Affairs*).

A senior member of the administration added the following:

"We have been through a time when people were in college for negative reasons. . . it can't be counted against the programs (if their dropout rates were high); many in the regular program drop out but stay in, marking time. . . they have a sensitivity to this in the programs."

²These figures do not match those given in 12.1. The present figures include one or two students who entered the programs in either spring 1970 or spring 1971. These students, generally in our study, were omitted from the demographic and academic performance inquiries. (Statistically speaking, they were in no way remarkable, it appeared.)

This latter view - of seeing withdrawal as not necessarily calamitous³ - was shared by staff in both programs. Knowing their students as well as they did they were often conscious of the positive possibilities of taking some time out. In the occasional instance (perhaps more than occasional in ESG) they may have prompted or supported voluntary withdrawal. But to explain the high dropout rates simply in terms of explanation (iii) would be unwarranted.

There are many interlocking and interacting influences at work in students deciding to leave. According to a study by the MIT Commission, 35% of MIT students think of transferring from MIT in their first year. They do not do so, evidently primarily because of ‘inertia’. It is easy to speculate over these matters, but extremely difficult to disentangle the complexities to the point of definitive conclusion. The limited evidence discussed in this section suggests the likelihood of explanations (i) and (ii) jointly leading to the high dropout rate. I would agree, I think, with the non-academic dean who remarked, “they maybe appeal for a student who wants to break away, to get out on his own before he is ready.”

12.3

A small additional study was made. While both ESG and USSP groups of students had higher withdrawal rates than the rest of the class (class of ‘73), the USSP group were *less* well-qualified academically on entering MIT than was the class as a whole. The ESG group was, on average, *better* qualified than the class as a whole. We examined the SI-1 scores (see Section 9 and Appendix E) of those who withdrew. In the regular program, withdrawals (which of course include voluntary withdrawals for often non-academic reasons) were distributed evenly across the SI-1 range. In other words, withdrawal rates do not seem to be affected by academic qualifications on entry. The discrepancy in withdrawal rates between USSP and ESG cannot be explained in this way, therefore.

A closer study, however, revealed an interesting finding. In USSP leavers had low SI-1 scores. But so did the USSP group as a whole. Correcting for this there was still an even distribution across the SI-1 range. However, in ESG, whose SI-1 scores as a group were high, leavers were disproportionately represented in the low SI-1 quartiles. Only 16 of 38 entering students (in 1969) had SI-1 scores in the third and fourth quartiles (of the distribution for the class of ‘73). Of these 16, seven students withdrew. Less well qualified students appeared to be at risk in ESG. This might lend weight to the view we heard that ESG was ‘elitist’, though otherwise there seemed little evidence for it.

³If they do not return to college subsequently, many more would argue it was a calamity.

Chapter 13

Why Was Enrollment in the Special Programs Less Than Expected?

13.1

The enrollment after R/O week 1971 (ESG 12, USSP 24 (MIT only), Concourse 14) was, for each program less than had been expected and hoped for. USSP's figure included a number of students who were taking fairly full loads in the regular program and were registered as 'part-time' USSP members.

Numerous theories were advanced for the low enrollment in September 1971. There were four predominant explanations.

13.2 Theory 1: That the students in the entering class were more academically conservative and less inclined to take risks than freshmen in previous years, and thus were less likely to join a special program.

"Squares from Squareville", "the Nurds are back", "like an entering class in the '50's," were typical of many comments about the class of '75. Impressions from many sources were similar, and seemed to have been independently arrived at: the freshmen were more science-oriented, more professionally committed, keener on taking an overload and on graduating earlier than their counterparts in the last two years. They struck a number of freshmen advisors as quieter, more serious, and more conventional in appearance; (an MIT psychiatrist reported walking from his office across the Harvard bridge and not seeing a beard 'until the 54th smoot'). I heard (but did not check out) that participation in athletic activities had gone up. At USSP they reported that there had been several enquiries of the type: "Can you avoid all humanities by joining USSP?" which was in marked contrast to two years ago when enquiries were often from those who wanted to avoid a science requirement¹.

These impressions received support from examining freshmen enrollments in science requirement subjects. There were sizable increases over September 1970 enrollments in subjects such as 18.001 and 8.012 which are more advanced and more demanding versions of 18.01 and 8.01 (which both showed decreased enrollment except 18.01 in its 'toughest' six week 'C' version which also shot up this year).

¹There are more ways of completing requirements now, of course, than there were two years ago.

Assuming that freshmen, 1971 style, are in fact ‘straighter’ what are the reasons? I was surprised to discover how commonly it was attributed to a deliberate policy of admissions office and administration to keep out freaks and radicals. I made enquiries and found, at least to my own satisfaction, that this was not the case. What was far less considered was the possibility of some very subtle, non-deliberate, but significant biasing somewhere in the admissions procedure². I do not think that such a possibility can be excluded altogether.

One non-academic Dean argued strongly that “self-selection is a misnomer” and that when “the admissions office say people self-select, they are talking rubbish”. He argued that MIT is constantly portraying itself, in its publications, in the media, in extensive personal contact. The image of the ‘normal’ MIT student is subtly and widely communicated, and encourages some to apply, and discourages others. (Of course, reference to ‘self-selection’ may already take into account its interactive nature: changes in applicants being in part attributable to the institutional image.)

The most usual explanations for the supposed change in freshmen invoked national trends; (and I understand that many colleges have in fact registered differences in their 1971 freshman class).

The trends are various:

“Freaks are not going to college”;

“There are 10,000 unemployed scientists and engineers in the Boston area ... students want to work hard and get good jobs - the whole climate has changed”;

“Kids want very serious things - I think there may be a swing toward a Germanic view of school... hard, tough, maybe a reaction against encounter groups and the like”;

“I believe parents are involved in students’ changing attitudes - partly as reaction to the previous unrest, partly in response to the economic depression”.

Theory 1 supposes that because the class is different the pool of students from which the special programs are likely to draw, is correspondingly less. However, a year ago, at the beginning of 1970-71, a similar observation was made about the ‘straighter’ entering freshmen. It may not have been so marked a phenomenon, but it was certainly noted. On Theory 1 there should have been a drop in both program enrollments last year. USSP freshmen enrollment did drop from 31 in 1969 to 24 in 1970. However, ESG went up from 36 to 38.

13.3 Theory 2: That the modifications of the regular curriculum have reduced the attraction of an experimental program.

As noted elsewhere, the freshman year has changed considerably in recent years. In particular there has been an increase in the degree of choice a freshman can exercise³. Various effects of this were suggested:

²I heard mentioned, informally, one possible ‘unconscious’ bias: applicants manifesting a strong but narrow commitment to science, with muted or negligible interests beyond science, may have been in the majority a few years back. But now they may form a minority of applicants, making them more ‘special’ and thus more often selected. This is probably a little far-fetched, and one member of the Committee on Admissions certainly thought it implausible. However, my own view is that any such theory should be examined carefully.

³For instance in Physics in 1968-69 a freshman had a choice of 8.01, 8.011, or 8.015. By 1971-72 he could choose between 8.01, 8.01X, 8.011, 8.012, 8.013. Similarly, in 1968-69 a freshman could fulfill his chemistry requirement by doing 5.01, (or by petition 5.41 or 5.60). In 1971-72 any of the following subjects could suffice: 3.091, 5.01, 5.41, 5.60, or 7.01.

- (i) “Freshmen are overwhelmed by choices, they just give up,” (*Faculty resident*) which may imply that they do not explore all the possibilities;
- (ii) Enterprising freshmen can now do an unconventional set of subjects and ‘take risks’ without opting out of the regular curriculum altogether (“ultimately it is comforting to be in a large class” - *Faculty resident*). Another way of putting it was that the greater number of ‘middle’ options had made choosing to join an experimental program a more ‘extreme’ decision.

The large scale adoption of ‘self-paced’ teaching was singled out⁴. These subjects, along with UROP, provide opportunities for greater student independence than was available when ESG and USSP began. An ex-ESG student said in this connection: “You don’t need ESG now”. The Education Research Center, by pioneering self-pacing and administering UROP, itself contributed to the increased competition to USSP. It was reported that several students - who visited but did not join USSP - had made remarks such as “had it not been for UROP I would have come to USSP”.

The programs themselves are acutely aware of the wider changes in the freshman year: “A program like this is a reaction to the heaviness and cold shower of the normal freshman year. . . now the regular program is a reasonable approximation to the experimental program” (*ESG Faculty member at ESG General Meeting*).

13.4 Theory 3: That entering freshmen have heard bad things about the programs on the student grapevine or from their advisors.

The evidence is ambiguous. Several general themes have been suggested as existing on the grapevine: that “You didn’t have to do anything but you still got credit” (*USSP student*); that “You might miss out on something - be short-changed. Freshmen get the idea that the programs are easier - not such a good education, and they will not satisfy Institute requirements”. (*Faculty resident*); that it’s “a gamble - if he blows it, he’s wasted a whole term” (*Faculty resident*), that “if you can work independently it’s fine, but can you?” (*ESG freshman describing reaction in his fraternity to his joining.*)

While such themes certainly exist, only one or two of the 37 freshmen joining special programs mentioned hearing anything at all from other students⁵. The predominant impression was of freshmen ignorance. Several deans and advisors reported asking freshmen whether they had considered the experimental programs: they discovered students had heard nothing about them.

We sought out and interviewed six students - 3 who visited USSP, 3 who visited ESG - none of whom had joined an experimental program. Their reasons were as follows:

Freshman A (ESG): Afraid of not getting ‘accustomed’ to MIT right away, wanted explicit and demanding structure: “I’d never cover as much as I have under a self-paced system”.

Freshman B (ESG): “Freshman year is too important to risk loss of direction”. He was “conditioned to a high school structured learning” and thought he would “scatter his efforts away from Physics too much”.

Freshman C (ESG): She had wanted to take a Chinese course at Harvard, hoped ESG might be a rule-bending medium. It was not; contact with ESG terminated.

⁴‘Self-pacing’ in this sense is not of course the same as in ESG. An ESG faculty member referred to the regular program’s self-pacing as “more like a Skinner box approach”.

⁵Of course, it could be argued that as they were joiners rather than non-joiners the fact that they heard nothing is irrelevant to the argument. This is true, but if the grapevine was a powerful influence it is likely that students thinking of joining a special program would have at least been aware of it.

Freshman D (USSP): “USSP would be great for the right person - one who does his own work independently in response to a challenge. I’m not that kind; I like more structure and ways of gauging myself; so I didn’t join”.

Freshman E (USSP): Had had an experimental program in high school, was interested in self-learning. But “51 units with no requirement credit is somewhat a waste of time”. Also, he got a “hard sell” from a very senior USSP staff member and from a student, which he didn’t like. He was, however, impressed with facilities and with five other students he met.

Freshman F (USSP): “Program is very self-paced and self-directed, but if I’m that self-directed, I don’t need USSP - I can get what I need from the regular program”. A USSP student told him that it was “hard to get started and to connect with people, but that it was good once you got going”. He also said that the “problem of self-learning is that you miss out on the ‘spice’ - great lectures, etc”.

Only this last student mentions communications with a third party about the program. There is no evidence of these students, at least, being turned off by outside comments.

Before dismissing Theory 3, however, there are some other data to consider. Students joining each of the experimental programs were asked about the other two. Though they said they had not discussed their choice with others, their responses to the enquiry had a repetitive quality - as if they were drawn from a pool of stock phrases and stereotypes. It is possible, therefore, that some general views of the programs do in fact circulate, rather like vague rumors, but are not pressed systematically on entering freshmen. They still feel they have been ‘told nothing’, but they may have heard the odd remark in a casual context.

One last point on Theory 3. If there is any truth in it, it is possible that Concourse suffered from a backlash against USSP and ESG. It has been closely linked with them in the public eye, e.g. in the Freshman Handbook. The Concourse Faculty are aware of this.

13.5 Theory 4: (Applied to USSP and ESG only). That changes may have occurred in the program or in its entry procedures, such that it presents a different face to freshmen, a face they do not like so much.

I did not hear this theory discussed. But it is worthy of consideration. Last year, the second of each program, there was a general mood of a ‘new start’. There was a lot of excitement - at least at the beginning of the year. This year there was less. The programs thought of themselves as having settled down. Both aimed to do essentially what they did last year, and perhaps carried over a slight sense of boredom that had been registered in the preceding spring semester.

At USSP it was a far cry from the scene two years ago when: “before the students arrived on campus, a tension had been building up that was becoming unbearable”; eventually the first student arrived - “We breathed a sigh of relief - here was a student, he was scared too, but he was certainly human and not at all a monster. We relaxed” (*Former USSP staff member*). Indeed, this year’s Open House meetings at USSP may have been too casual; we heard of one or two students who could not find anyone to speak to. About ESG, we heard comments on its “slowness” and “inactivity” and almost certainly such impressions were not given in previous years: in both years there had been intense interest in the incoming freshmen - what would they be like?

With Theory 4 in mind, we also examined the Freshman Handbook entries over the last three years.

For USSP the entry was completely rewritten in the second year, and again in the third year⁶. For ESG there was a big change between first and second entries, and only trivial editorial changes between last year and this. There is a subtle shift in tone: from 'pioneering' to 'established'.

It is, of course, impossible to register the effects on freshmen of changing public presentation of the programs (a presentation, incidentally, that reflected major development of the programs). Almost certainly these 'internal' changes played some part: the publicity, the atmosphere, sign-up procedures, and so on. Take two facts: First, several students wrote to USSP for information and received nothing back; second, ESG began its 'rushing' later in R/O week than usual. Factors such as these may appear trivial in themselves, but linked with external, background factors, may assume significance.

13.6

The wave of speculative sociology that greeted the low enrollment is not fully contained in these four theories. There were others. Some saw Concourse as siphoning off part of the population who would have considered joining. However, Concourse was perceived as altogether different from ESG and USSP, by freshmen in all three programs (see Appendix F).

The theories, as expressed here, interact and also contradict. If part of the change in image of USSP and ESG is that they have 'settled down', then - one would have thought - they should not necessarily have suffered from the cautiousness of the freshman class as a whole. And so on. To decide between the theories, or even to weigh their applicability, is impossible with the evidence at hand. My guess (that is all it is) is that the economic/parental factor interacts with Theories 2 and 4, and that Theory 3 is the safest to discard.

⁶USSP listed a selection of 'last year's projects' in the 1970 Handbook but did not in 1971; for the first time, this year, they spoke of the 'confusion' and 'disorientation' of 'virtually every student... some time during the first term'; in the previous two years, but not this time, there was reference to the suitability of USSP for 'students who had not yet narrowed their interest to a specific discipline'.

Chapter 14

What Have Been the Advantages and Disadvantages, both Professional and Personal, For Those Who Have Taught in the Programs?

14.1 Some Comparisons Between the Programs.

I heard it frequently said that the USSP staff felt professionally insecure, more so than the ESG faculty.

“If they don’t have faculty appointments they are anxious. . . they don’t feel secure and accepted in their discipline. In ESG they don’t have all their emotional eggs in one basket” (*faculty member in ESG, but with close contacts in USSP*).

There is some truth in this, doubtless. The main group of USSP staff, as was described in Section 1, have no departmental affiliation, and are untenured.

The lack of “classical career patterns,” as a USSP staff member put it, was not, however, seen as an unmitigated disadvantage: “It can screw you up sometimes, but other times it gives you freedom, and you say ‘who cares?’” Another staff member, present at the time, added, by way of explanation: “The program doesn’t have status.”

The career patterns within USSP, and in the Education Research Center generally, are certainly not straightforward. What is common is a basic idealism and interest in education practice and reform. This is generally accorded low professional status in academic institutions, and it might be regarded as a high-risk occupational pursuit. The situation at MIT is more complicated: for there is a long-term Institute commitment to research and experimentation in the educational field. A number of the USSP staff are involved, to a greater or lesser extent, in other ERC work.

To assume that the ESG faculty’s lot was altogether a happy one, would not be accurate. Certainly, older tenured professors have been involved in ESG: but so have younger and untenured ones. For these, there is a clear professional risk if they join the program. This was the opinion of two department heads, both of whom had ‘loaned’ junior faculty to ESG. One said that it was “like going on a sabbatical” - he was simply not around the department so much and tended to be forgotten. The other department head made a similar point. He cited one particular “very bright guy” who might be passed over, in tenure discussions,

because though he may be a good teacher “he cannot be *seen* to be a good teacher.” Although this is perhaps more of a comment on MIT in general, it draws attention to the isolation of ESG (discussed in the next section).

Since these untenured faculty in ESG were not in general intending ‘education research and innovation’ to be their main professional direction, it could be argued that teaching in ESG was more of a professional risk for them, than teaching in their program was for the staff in USSP. This is not, in any way, to downplay the professional difficulties for USSP staff members at MIT. These were considerable, and that they were so is - again perhaps - a comment on MIT.

Another difference between the programs arose from the position of USSP - administratively speaking - within ERC. There was an uncertainty about major decisions, which were made at ERC level: “Decisions are made upstairs, in the clouds somewhere” (*staff member, USSP*) was not an uncommon type of remark.

The decision about bringing in a small number of Tufts students into USSP in the first year was described as an example of this. Arranged, the story goes, at a cocktail party by the director of the Education Research Center, it did not, somehow, get clearly communicated to all the staff. “I didn’t know how they got here, all of a sudden they were here - 10 Tufts students” (*a senior USSP faculty member*). Another staff member picks up the story:

“So they came - and after a week or so, it was decided (you are always safe using the passive when referring to decisions around ERC; that does resemble the way most of our staff hear about them) that the Tufts students might as well spend their entire time here as commuting was inconvenient. There may have been other reasons, but I can’t remember hearing any others offered at the time. Most of the Tufts kids seemed lost for quite a while; they didn’t know quite what hit them. I think... their faculty member also felt somewhat lost and out of touch with the USSP staff.”

It is possible that the uncertainty reflected in this statement may not have been altogether absent in other areas of program policy - including hiring and firing.

14.2 Personal Rewards and Frustrations.

One professor, outside the programs but knowing them well, thought that teaching in programs like ESG, USSP, and Concourse was ultimately “immensely unrewarding and frustrating, with no internal or external rewards.” The ‘internal’ rewards, at best, are intangible and nebulous: “If you manage to get students motivated and educated, the millennium has arrived”; and the “external reward system - remuneration, rewards, tenure - largely calls the tune... (It) is more powerful than any internal reward system that operates.” He concluded with a statement common in the MIT Commission: “Hard values drive out soft values.”

The internal rewards (of ‘soft’ value) outweighed the internal frustrations. At least, the great majority of those who had taught in one or other program did not regret having done so. Even the critical and pessimistic acknowledged how much they had learned: about teaching, students, and their fellow faculty. Several suggested that all faculty members at MIT should have experience of teaching this way at some point in their careers. Many different learning experiences were cited. This was one of them:

“Teaching now seems to me to be redefined as helping someone figure out what he wants to do, and not so much showing how to do something, but showing them how to go about finding out

how to do something. You don't teach facts and figures, you teach techniques. That's what I found out" (*USSP staff member*).

During the beginning year, the staff in the programs were intensely involved. They were anxious:

"I remember the terror of the first year - thrown in, thinking 'my God, is it going to work?' It was like a space probe. . . we wondered 'have we shot something up that will never come back?' . . . I went round saying everything was O.K. But underneath I was very frightened" (*ESG faculty member*).

They were also unsure what they were supposed to be doing: if the situation was unstructured for students, so it was for staff. One USSP staff member made the following connection: "We floundered and they floundered for the first so many months." And an ex-ESG staff member reported that he felt he had been operating "in a vacuum": "I had a feeling of helplessness; what can I do? How can I be useful?"

But the sense of exhilaration and new opportunity felt by students in the first year, was shared by many of both faculties. As the second year progressed, this faded somewhat: it became less exciting; they were "coasting" (*ESG faculty member*).

The 'teaching' was, of course, quite unlike conventional teaching. Moreover, it was more difficult. "It is a very erratic business. . . everyone wants to know something different - in the regular program you know what you want to be wise about" (*ESG senior faculty member*). He characterized his previous teaching as "handling elementary physics in rote fashion." When he began teaching in ESG he "simply couldn't do it, made outrageous mistakes." The successful staff member had to get used to admitting not knowing the answer, or that he had forgotten a point, or that he needed time to work it out. This almost certainly helped to make faculty 'more human' in students' eyes.

The time demands were heavy. One phenomenon is of interest. One faculty member reported: "Somehow time disappears in ESG. . . you are not sure you have done enough, you always want to invest more time." Another put it differently: that "the number of intellectual quanta transmitted per unit hour is very low." The uncertainty and lack of formality of the teaching left many staff questioning, when they went home, whether they had achieved much that day.

In USSP the time problem was magnified. Their offices were in the program area itself (unlike ESG) and (unless they took determined action) were always available.

Interactions with students in programs where "education is in the personal mode" (*sophomore, USSP*), inevitably draw more heavily on the teacher's emotional resources. A USSP faculty member described how both disappointments and achievements were felt more deeply than in the regular program. A student breaks an appointment and it is a cause for concern. But, in the regular program, "If a fellow drops out of my recitation, I don't even notice." The best rewards, likewise, are felt personally. The 'greatest reward' for one ESG faculty member was, "to see individual students, one at a time, slowly loosen up, turn on, behave more adventuresomely with regard to their work."

Chapter 15

How Are These Programs Viewed From Outside?

15.1

Why do the MIT faculty know so little about them? Partly, it seems, indifference: several times I heard the view that “if somebody wants to do something, even if it’s foolish, let them do it, especially if they can talk the Administration into it” (*Dean of a faculty*). There was also the view that “As long as they stay small, you don’t have to have much of an opinion” (*Professor, Mathematics*).

The picture painted of apparent faculty disinterest (one Department Head said the faculty were “too busy with their knitting to care about it”) is not so straightforward as is often implied. A number of professors thought the programs had changed the climate. They had broken taboos, done the unthinkable - i.e., disturbing the basic lecture/recitation pattern. (“There’s a feeling you can’t tinker with things” *Faculty Dean*). It meant there was a new standard of what constituted an innovation. Smaller scale changes slid through more easily. One department head saw evidence for the changed climate in the ease with which Concourse passed without debate in the Faculty meeting. “Two things had been established: there were two programs already, and the CEP was using in a non-trivial way the experimental license it has.”

Clearly the programs were not wholly responsible for the change in climate. But they represented the most far out innovations, and their effect has probably been considerably more than is generally acknowledged. By showing, as one Professor put it, that “one *can* do things differently,” the programs may have performed an outstanding service to the Institute. Both had intended to serve this ‘change agent’ function and if they have done so it represents a successful achievement of one of their original goals.

The Faculty’s supposed lack of interest is not the only factor in the programs’ being relatively unknown. The programs have also tended to isolate themselves. Particularly at the beginning, each program tended to distance itself from MIT, USSP more than ESG. Unquestionably, at certain times there have been elements of hostility expressed, for instance toward the CEP. This encouraged separatism. Both programs tended to “exaggerate the awfulness of the conventional program” (*in the words of an ex-ESG faculty member*).

Yet another factor was the physical location on campus of the two programs. ESG is at the top of Building 24, reached by the slowest elevator in the Institute; USSP is located in Building 20. Neither place is it exactly easy to drop in on.

Finally, in considering the MIT Faculty's relative ignorance, there was the limited impact of the programs' publications. ("I don't really know what they do. It's not entirely their fault. None of us can keep up with the MIT literature" (*Non-academic Dean*.) It seemed the most widely read has been 'A *Qualitative Assessment of ESG*' sent out by George Valley in February '71; "Valley's report was more informative because of student letters... whether objective or not we don't know - but it gave a flavor of how students see it" (*Department Head, Engineering*).

15.2

Probably all these factors have contributed to the limited amount of communication between the programs and those outside them. One department head remarked: "It's our failing in being cut off - there's little interaction." Others thought the programs had not always made it easy for the outsider to get a full picture, say when they want to visit. Indeed, among those we spoke with outside the programs who had visited them, a majority seem to have felt dissatisfied. Somehow, they said, they had not been able to get to grips with the program; they had felt blocked by an impenetrable wall of benign talk. Others spoke of being submerged in anecdote, unable - at the end - to carry away any general opinion. Still others referred to the "almost religious" fervor of some of the students advocating their program: a fervor that made the visitor suspicious when he had not been before.

The difficulties encountered by the casual visitor were compounded for those who came in an official capacity.

The Task Force on Educational Innovation ('established by the CEP in the spring of 1969 to coordinate and evaluate programs at MIT that represent significant departures from the traditional curriculum'¹) visited both programs. This Task Force has generally been regarded as not altogether successful. Its membership included representatives from ESG and USSP, which was probably a mistake. Not only was it seen as biased by those outside the programs, but it also lacked credibility within them. In one program, TFEI was described as "a *you scratch my back and I'll scratch yours* charade."

There was a tendency, in both programs, for visits of the TFEI, and even more so of the CEP, to be regarded as special occasions, requiring a 'performance'. At USSP, certain members of TFEI felt they had had "a snow job," presentations taking up so much time that there was no opportunity for questions. When CEP visited ESG, it was preceded by intensive cleaning and tidying (and, for some obscure reason, copies of 'Thursday' were deliberately placed around).

This mild defensiveness was perhaps natural, given that the programs were so young, and that they saw their values so differently from those of the Institute - the Institute of which they were part and to whom ultimately they were responsible. It is a general difficulty associated with evaluation of programs by inside agencies.

15.3 Enthusiasm for the Programs' Aims.

Generally speaking, we encountered a high level of approval of what were seen as the basic aims of the programs. Even those who knew next to nothing about how the programs had actually gone, were often eager to register their regard for the aims.

¹This description - taken from the First Report of the CEP Task Force on Educational Innovation (April 21, 1971) uses the word 'evaluate'. A prominent member of one program, himself a member of TFEI, disputed this: it was specifically stated at the beginning, he said, that it was not an *evaluating* group, but an *enabling* one. That disagreement about this should exist, is in itself remarkable.

“I wonder whether the basic aims of the programs are what we should all be striving for. . . At the core of our objectives should be graduating students who are highly self-organizing and self-directing. . . (There is) no excuse for offering a continuation of the great structure that characterizes high school. . . We need to foster the spark, curiosity, drive” (*Non-academic Dean*).

Even those skeptical of what they had heard or seen of the programs often qualified what they said by remarking that they remained enthusiastic ‘for the idea.’ There were some, whose views are discussed elsewhere, who questioned whether the programs should be for freshmen; whether they cost too much; whether they should not be severely overhauled; and so on. But it would be wrong to assume that these were majority views.

There was one interesting and sharp discrepancy of opinion: between MIT psychiatrists and counselors we talked with. The former (with one exception) were most guarded in their approval of the programs, particularly questioning the short and long term effects of the lack of structure; (one thought the experimental programs should have been reviewed by the Committee on the Use of Human Beings as Subjects: “Giving somebody a potassium-free diet is not going to affect their whole life. . .”). The counselors, on the other hand, were consistently and warmly enthusiastic, emphasizing the more ‘human’ introduction to MIT afforded by the programs; the faculties’ concern for students; the freer and more relaxed contexts of the programs. They would, as a group, I think, have agreed with the ESG student who remarked: “I would hate to see the programs go and see a whole lot of other garbage stay.”

Chapter 16

What About the Cost of the Programs?

I shall not discuss cost in detail. The answer is that these programs do cost more per student enrolled than the regular freshman program, and clearly the discrepancy increases when there is a small enrollment. Cost comparisons are difficult however. Estimates for the regular program are difficult to produce and “there are very real problems in definitions of cost allocation” (*Faculty Dean*): if a student chooses small classes or low enrollment courses, he is in a sense getting a more expensive education.

There were sharp divisions in general faculty opinion over the cost of these programs. There were some who argued that too much was being spent on too few, “too expensive, too artificial” (*Department Head*). These views were, however, unrepresentative. Rather, there was strong feeling that concentration of resources was indeed “justified as an experiment. . . (provided that) the cost differential is not *too* large” (*Faculty Dean*).

ESG, USSP and Concourse are all supported from the Land Fund. This is separate from the MIT general budget, and it had to be spent on educational experimentation and innovation - to be within the terms stipulated by Professor Edwin Land. A senior member of the administration pointed out that these programs were never intended to apply “across the board”; that it was hoped there would be a lot to learn, of general usefulness for undergraduate education. He also pointed out that start-up costs were considerable; and that it had been the idea that the programs would run below the optimum number of students at first, and would absorb more students, without greatly increased expense, year by year.

One opinion, often expressed and in emphatic terms, was the questions of cost should not dominate discussion of the programs, and that people should be worrying about the *educational* issues instead. It is unfortunate, therefore, that little attention has generally been given to these (a situation I hope this report may partly redress).

Chapter 17

Could the Programs Have Been More ‘Successful’? If So, How?

17.1

No one we spoke to in either program claimed their program had been successful for all students. Undoubtedly, for some, it had been useful, productive, and maturing. They learned a lot, got very excited, and wouldn't have missed it for worlds. For other students, on the other hand, it was little short of disastrous; they achieved little, came away dissatisfied, and usually blamed themselves: “It's not the program's fault, it's mine”. Then there was a larger, intermediate group, for whom it was a partial but not complete success: e.g. ‘they got *something* done’ (USSP); or, ‘they made *some* progress in sorting themselves out’ (ESG). A *very rough* general estimate (based solely on the statements and estimates of staff and students in both programs) was that 25% fitted the first category; 25% the second; 50% the third¹.

Given the commitment, enthusiasm, and industry of the staff; the excellent facilities; the immense opportunity and availability of expertise; why were there not more resounding ‘successes’ - as defined by the programs themselves? Are the principles on which they were founded, inappropriate for MIT? Were the programs held back by external forces beyond their control? Did they try and do too much? The questions are many, sensible and reliable answers too few.

There were those who argued that the programs should have not been for freshmen, but instead for sophomores or juniors. The rationale for this was that by then they would be more likely to realize (and grasp) the opportunities the programs offered. Others argued that there should be “varying degrees of commitment” (*ESG faculty member*). Students “should be invited to join tentatively; (it could be) available for those who want it, maybe half time”. He added: “All the qualities needed for independent study need to be built up slowly”, A USSP staff member made a similar suggestion “the programs should not be considered as for all time. It should be very easy to surface, to come and go”. Still others thought the programs had tried to do too much. One Professor, who knew both programs well, said they had been “destroyed by being all things to all students. They don't focus, yet they cannot cover everything”. Instead, “they should look at their audience, should think about what they *can* do... they could be thematic, e.g. medically oriented, or ecology oriented”. With a theme, it would be possible for students to work in a

¹*A priori* it seems remarkable to get similar estimates for both programs. However, despite their many differences, there have been - as noted before - a number of parallel trends, so their similarity of estimates is perhaps not so surprising.

structured way to begin with, and then to branch out: “Learn some basic facts first, then get into some thing”.

These analyses and proposals are all very well, but they do not, perhaps, go to the root of the matter. Before prescription, is the diagnosis complete? I think it may not be.

17.2 Interaction Between Teacher and Taught.

At the heart of any form of instruction is an interaction - between someone who knows more, or who has more experience, or more institutional responsibility, than someone else. The relationship between teacher and student varies with the instructional context, differences in age and status of the two parties, and so on.

The conventional system of MIT instruction has modes of interaction between faculty and students that have evolved into relatively standard forms. They may be partly renegotiated or redefined by individuals: some faculty are vastly more approachable than others, some more naturally authoritative, and so on. But there is a framework of common expectation and accepted ritual.

These programs, USSP and ESG, lie outside this framework:

“Outside the framework they are grappling with souls. The beauty of the normal system is that you don’t have to grapple with souls, which is also why (as a teaching program) it is mediocre” (*Professor, Faculty of Science*).

In the programs the normal rules and conventions cannot be relied on. Inevitably there is strain on individuals involved, as they seek to redefine roles and relationships in a situation of flux. In these particular programs (unlike, perhaps, Concourse) it was more difficult still: both sought, as a central objective to redefine the faculty/student relationship itself.

17.3 Faculty Ambiguities.

It is my view that for both programs their chief difficulty lay in certain unresolved ambiguities: some concerning this relationship directly, some deriving from the program but profoundly affecting this relationship. These were present from the beginning; were exacerbated by the program’s difficulties of the first year, and by the additional strain of that particular academic year; and are perhaps still present, though each program has learned to live with them.

One such ambiguity seemed to arise in conflicting messages signaled to students. In blunt, summary form these were: first, ‘do what you like’; and second ‘match up to our expectations’. The ‘expectations’ were themselves not simple: one of them was ‘do not ignore studying conventional academic subjects’; another was ‘study unconventional things and don’t be a tool’. (I emphasize that this is an exceedingly complex area, and that I am certainly oversimplifying.)

Another ambiguity - or area of uncertainty - arose from considering the actual role of the faculty member. Was he ‘friend’, ‘pal’, ‘parent figure’, ‘elder learner’, ‘teacher’, ‘tutor’, or ‘supervisor’? Or all at the same time? Should the staff member encourage, cajole, or leave the student alone? If he actively encourages or makes suggestions, is he curtailing the student’s freedom and abrogating a principle? Or is he fulfilling an important staff responsibility? Outside the framework the faculty member is grappling not only with souls, but also with all the inherent conflicts of teaching: e.g. achieving depth without sacrificing

coverage; criticizing without discouraging; encouraging students to come and talk without its absorbing all his time; all these and many more.

It is not that such profound educational questions are absent in the standard system, but that they do not obtrude to the same degree. There are usually precedents and mechanisms and catalog regulations. The edifice is there - you live within it.

17.4 Student Ambiguities.

The ambiguities so briefly sketched have been the faculties'. Those of the students were the greater. Take the example of a student who has joined the program and is very excited. As many students had, he has high expectations of what he will be able to do. But as the weeks go by he does not achieve as much as he expected or hoped.

There were several gloomy references of this type: "the initial procrastination that takes over... you have this absolute freedom, it's difficult to get the discipline together" (*Junior, ex-USSP*). The student above is likely to be worried by how rapidly time has passed with so little to show for it; he may feel discouraged about the program's suitability for him; or even guilty that he 'has let the program down'. He may feel he needs guidance but to admit it would be some form of weakness. Since his arrival in the program was probably dictated, to some extent at least, by being opposed to 'the system', it is difficult to acknowledge that maybe he needs it if he is going to achieve anything.

All these various strands, and many, many more, may be affecting the students at this stage. The ambiguity and uncertainty arises from the multiplicity of explanations and rationalizations. In the regular program there are familiar slogans, e.g. 'Tech is Hell', 'drinking from a fire hose' etc., and plenty of advice from upperclassmen, fraternity brothers, and various MIT student publications. In the programs there are virtually no 'myths' or generally accepted guidelines of this type, with which the student can begin to order his reality. He cannot, for instance, take for granted that his program, like the Tech, 'is Hell' - because, manifestly it is not. Generally speaking his faculty members are approachable and interested in him; are supportive, and concerned; and they do not 'hassle' him. The program is clearly no 'great grey monolith'.

The uncertainties felt by students are perhaps inevitable, given that the signals provided by the staffs of the programs, (as discussed above,) were rarely consistent and clear.

17.5 Evaluation of Students' Work.

The ambiguities are most acute when it comes to evaluation of students' work and staff feedback generally. There was a general and pervasive feeling among students in both programs that it was "very hard to know when you have accomplished anything" (*Junior, ex-USSP*). He went on: "(there are) no hard and fast three hour finals. No way to compare my work vis-a-vis the Institute". There was often a lack of certainty about what was good work, what was not; what could reasonably be expected per month; what was a competent standard; and so on. Evaluating (and going through the procedures of testing before a waiver for an Institute requirement was granted by a program faculty member) brought these matters to a head. Not surprisingly there were elements of tension, occasionally misunderstandings, and a good deal of ambivalence. We heard two separate views in USSP: from students who complained that there had been 'too little evaluation of their work'; from advisors that, if they evaluated a student, he was likely 'not to come back for three weeks'.

Underlying the conflicting feelings toward evaluation were two other factors, each of which was highly significant. The programs were different from the regular system of instruction by being personal and by a merciful lack of bureaucratic procedures. This had numerous effects, of which I shall mention two.

- (i) Had the faculties of the programs been inclined to pressure or coerce their students - which of course they were not - it would have been immensely difficult. The conventional system, by comparison both heavily bureaucratized and impersonal, permits a good deal of pressure to be put on a student without face-to-face encounters between individuals. If, in the regular program, all assignments were collected together and presented by a single individual (say a personal tutor) across a desk, the work load on the student might well appear to be too heavy an imposition. In the programs there were face-to-face encounters, fewer divisions of responsibility between faculty members, and far less opportunity to say: 'I'm sorry, it's the regulations'.²
- (ii) It is well known that in college education generally there are any number of strategies used by students for coping with the demands made on them by their professors. Many of these strategies may be necessary for survival (see *'The Hidden Curriculum'*, Benson R. Snyder, Knopf, 1971). Often they have an element of deception, faking, or 'bullshitting'. A number of students made remarks of the type "I got by at High School - just slop off the work...not really doing the stuff". 'Getting by', or pulling the wool over the instructor's glasses, is an entrenched part of student academic practice. Because the instructor is assigned a distant role, which is defined by the system, the undergraduate's deception is not seen in personal terms: he is cheating the system, not an individual professor. In ESG and USSP, however, this does not apply. Teachers are not distant figures whom you meet in formal situations. Students are also grappling with souls. Faking, bullshitting, or getting by are now seen differently. They *are* deceiving an individual; it *is* personal; it is no longer a ritualized and widely accepted institutional phenomenon.

The evaluating exchanges between faculty and students had to cope with these factors. Most of the staff found it difficult, for instance, to demand that students reach a particular standard, or complete an assignment *without fail* by a certain date, even when they wanted to. Similarly, the students - who were often worried about completing the Institute Requirements - were greatly tempted to 'get by' and do only enough to appear, to the program faculty member in question, that they knew the stuff. Some, inevitably, did fake: "do less and get by - you still want to maintain this...the ethic here was work; if you appeared to be doing work it was OK" (*Junior, ex-USSP*). "Bullshit, sheer bullshit. I got 18.02, 5.41, and 18.60. They thought I knew my stuff, but I didn't" (*Junior, ex-ESG*). But to a greater extent than for many students in the regular program, students who did this had feelings of considerable guilt. They also felt that their interaction with their instructor had been subtly undermined - and by them. They had cheated their friend.

17.6

The points raised above have been only roughly sketched. I cannot explore all the various ramifications and subtleties, in this report. One thing is clear: much of the uncertainty derived from the faculty and students having to work out what they should be doing and why, in the absence of pre-existing and accepted guidelines. Moreover, the uncertainty was the greatest around issues relating to 'authority' and

²An ex-USSP junior remarked: "In the second year, the staff were going to be Fascist if necessary to get some work out of the students". It is interesting to note that this trend, (incidentally a trifle exaggerated by this student) was accompanied by the introduction of certain 'mechanisms', impersonal 'rules' that applied to every student, etc.

the exercise of it. To what extent should the faculty member control the lives of his students? How much does he intervene, if at all? To what extent does he remain responsible for a student in a situation where the student is regarded as being responsible for his own education? These questions, rephrased, could correspond to others applicable to the students.

In both programs these questions have been addressed seriously - though rarely perhaps in quite this form. What is important and significant is that the options considered were, for most staff members, ranged along one principal dimension: *either* they should put pressure on students *or* they should leave them alone; *either* they should intervene with deadlines *or* adopt a sit-it-out strategy, waiting for students to take the initiative. This dimension, of degree of pressure or coercion applied, was the one that dominated in discussion within both programs. In fact, the programs took up different positions along it - USSP moved toward greater pressure, ESG moved the other way.

But there are other dimensions. There are other ways that teachers influence students, and some staff members capitalized on them. Unequivocally the evidence points to these staff members being the most well liked and most highly regarded by students, and this applies to both programs.

17.7 “You need to overcome Glop.”

One ESG faculty member described ‘glop’ as more or less ‘defensive inactivity’ - a heavy, rather resentful and unenergetic state that characterized a number of students in ESG (and a great many more in his classes in the standard program). He thought glop had multiple causes: “it is resentment at being in school, at society, at parents,” but is obviously more besides. In some sense it seems to serve as a self-protecting withdrawal from being involved in group or institutional activity. The paucity of questions from students and the lack of intelligent and lively discourse in recitations are perhaps further indications of this state. Whatever its complex tangle of roots, the phenomenon is well known in numerous educational settings - not only at MIT of course.

Glop (I use the term because I can find no better) often involves a show of lack of any defined interest. Enterprising teachers attempt to provide interesting and enjoyable experiences, one of which they hope will ‘turn their students on’. (The imagery of drugs is revealing - they locate the source of interest in a particular topic or curriculum arrangement.) When such attempts to spark interest fail, there is a ready explanation to hand: ‘Their previous unsatisfactory school experiences have been too deadening.’ Most deliberate attempts within the programs to ‘interest a group of students in something’ were not successful. Setting up seminars, for instance, however ‘interesting’, generally failed to overcome glop.

Teaching involves human interaction. This may be anathema to many educational technologists and system analysts, but it remains true. Just as telling a person to ‘be spontaneous’ or ‘be amused’ and expecting them to be so, is laughable; so is telling a person to ‘be interested’. Yet that is the thinly disguised message that many teachers pass to their students.

There are clues to an alternative: successful actors, novelists, and lovers, for instance. They do not ask directly for response; they win us over, court us, capture our involvement. Overcoming glop involves winning the student over to the point that he lets himself become vulnerable to opportunities beyond it. It is not merely attempting to interest him, but persuading him to let himself become amenable to being interested.

How is this accomplished? There are no glib formulae or pat answers. But I can briefly describe what the most successful faculty members seemed to be doing when they overcame glop. They did not all do it in the same way. They were *not* all ‘charismatic’, nor were they always the most experienced teachers.

What they shared was having a context or style of interaction with their students that was free of many of the ambiguities recorded earlier in this section.

One or two had students working on their own research with them. This immediately removed a lot of uncertainty: the student was treated as partner and as apprentice; the student knew what he was doing and saw it as being worthwhile. It was a situation that encouraged commitment and often won it. The faculty member may well have been serving as a 'role-model' for the student, someone with whom the student identified. The key factor was that they were working together. They were not always successful, of course. One USSP staff member, who consistently had students working on his research with him, remarked: "They are very hesitant about making commitments to anything. They are convinced that once they do that the road to the end of their lives has been paved."

Some faculty members worked alongside students in joint learning activities within a new area. These, too, seemed to cut through the ambiguities and have a closer and franker relationship. They were consistently singled out as being 'good advisors' or 'really interested in you'. These faculty, along with those with research apprentices, commented on their *own* personal interest in the outcome of the student's efforts, over and above their interest as teachers or advisors.

Finally, there were one or two individuals, who were seen as 'tough' and demanding teachers. They would get angry and show it, if suggestions were not followed up or reading had not been done. One of these was described as "more honest somehow... you know where he stands." Again, this teacher had established a way of relating to students that was free of many of the ambiguities usually present. Like the others mentioned he largely overcame glop. His manifestly great concern for students' well being was something they responded to with their commitment - tough or not.

17.8

In short, I suggest there may have been too little attention paid to analyzing which types of interaction context between staff and students were effective and which were not. This would have perhaps demanded much closer contact between the members of the faculties themselves; and perhaps a more searching review of what experiences they wanted students to have. With a different first year they may well have evolved in these directions.

Appendix A

Part of Memorandum

TO: Dan Kleitman

FROM: Malcolm Parlett

SUBJ: Proposed Study of USSP and ESG

DATE: June 16th, 1971.

Preamble

There seems to be general agreement about the aims of the proposed study:

- (i) To examine the two programs, USSP and ESG with a view to describing them, exploring pedagogic issues they raise, distinguishing between their central and peripheral features, and detailing what participants and others regard as their advantages and disadvantages relative to the normal MIT program.
- (ii) To emphasize throughout, to all concerned, that my function is to “illuminate” rather than to “evaluate”. My task is not to suggest policy but to provide information and insight that can contribute to discussion and decision.
- (iii) To provide, by actually doing this study, an example of one way in which educational innovations can begin to be appraised and understood; to demonstrate that there is perhaps more to evaluating than reading grade-point averages off print-outs.
- (iv) To include, as a subsidiary study, a preliminary outline description of Concourse.
- (v) To produce a report (or, perhaps preferably, two separate reports) on USSP and ESG, which after submission to the CEP should be made freely available to all members of the MIT community.

General Outline

The general aim will be to examine the programs at three different levels:

- (i) The aims, ideologies, learning models, and assumptions that underlie each program;
- (ii) Each program's organization, practices, conventions, prohibitions, faculty-student and student-student relations, resource management, and decision-making processes;
- (iii) Participating students' coping strategies, methods of study, academic activities, work records, and perceptions of experiences.

Appendix B

Component Investigations Within the Research Study

The research was planned and carried out as an interlocking series of subsidiary research inquiries. These are summarized below, in note form. (No attempt is made here to give a detailed rationale of the methodological approach. This represents a rough sketch, not the detailed working plan.)

1. Programs' History

Trace the evolution of the program from planning stages on. The expectations, adaptations, unrealized hopes, unexpected bonuses, achievements, worries, high-points, low-points, significant events. Analysis of documents, reports, tapes; interviews, discussion groups, and conversations.

2. Retrospective demographic study

- (a) Compare entering students in each program with each other, and selectively with students in the rest of their class. Examination of Admissions data.
- (b) Trace paths of students entering and leaving the programs, period of enrollment, etc. Construction of charts and use for reference purposes throughout study. Data from Registrar's grade reports and from program records.

3. Subsequent Academic Performance

Examine performance of 'Alumni' by normal academic criteria - e.g., grades, term rating, Institute requirements completed. Information from Registrar's grade reports. Also contact (largely unsuccessful) with faculty advisors and departmental registration officers. General qualitative information from external interviews.

4. Dropouts

Explore the circumstances and events surrounding and relating to students, when they left the program and MIT simultaneously. General (*not* specific) discussions with counselors, psychiatrists, members of the Administration. Detailed discussion with program directors of students who had dropped out.

5. Learning Activities in Programs

Discover what intellectual experiences and activities students underwent while in program. Discussion meetings and interviews with students. Examination of their intellectual activities, as listed by senior staff. Interviews with staff. Analysis of documents.

6. Experiences of Entering Freshmen

- (a) Study why students had chosen the program they had, or why they had rejected them in favor of the regular program. Short structured interviews.
- (b) Review initial experiences, intentions, disappointments (if any), achievements, excitements of entering freshmen through first four weeks of first semester 1971-72. Analysis of semi-structured interviews with freshmen, observation of seminars, conversations.

7. Experiences of Program Staff

Document some of the common experiences, perceptions, opinions, problems, pleasures, and frustrations of program teachers - present and past. Analysis of documents, staff memoranda, reports, transcribed interviews (USSP only), taped interviews (USSP only). Interviews, informal discussions, attendance at meetings.

8. External MIT Opinion

- (a) Assess how programs were viewed outside, by senior faculty and members of the Administration. Interviews with a small group of selected faculty deans, department heads, other faculty and administrators.
- (b) Review programs' 'external relations' and contacts. Discussion with counseling Deans, psychiatrists, representatives from student housing, members of the administration - how they respectively view the programs from their position.

9. Program Areas

Study the physical environment of each program - their size, layout, furnishings, facilities (and use made of them). Examination of floor plans and architects' drawings; interviews, group discussions, conversations; structured observational techniques; extensive informal observation.

10. Program Philosophies

Examine, isolate, distill, and describe underlying models, aims, rationale, manifest and latent objectives of each program. Analysis of available documents, reports, memoranda, and initial proposals and position papers; information from interviews, discussions, conversations.

Formal Interviews

(usually single, occasionally small group interview)

MIT faculty members - 18 professors (including 5 Department Heads).

ESG staff - 12 past and present faculty members.

USSP staff (less because we were kindly provided with tapes and transcripts of staff interviews already carried out) - 8 past and present faculty members.

6 Representatives from the Office of the Dean for Student Affairs.

5 Psychiatrists from the Medical Department.

USSP students - 21 Freshmen (structured interview),
17 Freshmen (unstructured second interview),
18 Others (past or present students).
ESG students - 10 Freshmen (structured interview),
4 Freshmen (unstructured second interview),
24 Others (past or present students).

These numbers do *not* include informal discussions and conversations. There are also others (e.g. other ERC personnel) that were interviewed but are not listed.

Appendix C

Descriptions of Special Academic Programs in the Freshman Handbook 1971

8.1 The Experimental Study Group (E.S.G.)

Last year 45 freshmen, 20 sophomores and a staff of 15 faculty members and 5 tutors joined in the second year of an experiment in education called the Experimental Study Group. Two years before, a group of seniors and faculty members had met to consider recent innovations in teaching methods, and had proposed a plan to let students learn as much as possible in ways of their own choosing. Considerable thought went into how to create an atmosphere where people would be relatively free of restrictions and the usual competitive atmosphere of college learning. The major goal of the program was to create an environment where faculty and students could learn from each other.

During the two years since then many interesting things have happened. For instance, many freshmen found it was difficult for them to decide what they wanted to do. Socializing with the faculty and upperclassmen was hard to get used to. Some of the seminars began to look suspiciously like regular classes. Getting everybody together was a real problem. Yet many ideas were found to be good. Students were able to accept most of the responsibilities offered them. They were able to study topics which interested them up to whatever level they chose. Many did upperclass work. But even more

important, people were experimenting-in teaching, studying, learning, communicating.

The Experimental Study Group will continue in the coming year and will be able to accommodate up to 50 members of the Class of 1975. The academic year will begin with a week of intensive discussions about the general direction of the Group and the particular interests of students. As the year goes on, there will be more shared activities, such as luncheons, talks by guests, and trips of general interest. Each student will be able to choose one of the faculty members to be his faculty advisor. Hopefully, every freshman will meet at least once a week with one of the faculty.

Independent study will be supplemented by seminars, concentrated study groups and individual laboratory projects. Students may informally attend the lectures in the regular curriculum; they may also sign up for one or two regular M.I.T. subjects, but these should constitute only a small part of their total academic program. Each person will develop his own way of demonstrating what he is learning. The students and faculty will jointly set the tone of the Experimental Study Group.

Students will reside in the regular M.I.T. living

groups. The Experimental Study Group has its own work area, including reading, seminar, study and music rooms, a work-shop and library, and a commons area with kitchen. Other resources of M.I.T. which are normally available to freshmen are also available to E.S.G. members.

The importance of the Experimental Study Group is that it emphasizes independent study. The program can be used to satisfy as many of the regular M.I.T. requirements as does the normal curriculum; however, this is not necessary. What is necessary is a willingness to learn and change, to try new ideas and methods of learning. It will not be easy. You

might wind up wasting an entire year. Experiments, including this one, can fail.

If you find our ideas intriguing and feel that you can contribute to and profit from our program, then write us a note, or return the form provided in Section 1.2, or put your name on a postcard and send it to:

Experimental Study Group
c/o Professor George E. Valley, Jr.
M.I.T. Room 24-612
77 Massachusetts Avenue
Cambridge, Massachusetts 02139

8.2 Unified Science Study Program (U.S.S.P.)

The Unified Science Study Program is an alternative freshman and sophomore program sponsored by the Education Research Center. Students in this full-time program work with the faculty individually and in small groups to plan and carry out their studies. The emphasis in the past has been on the natural and social sciences, with some work also in pure mathematics and humanities. The program will begin its third year in September.

One purpose of the U.S.S.P. is to encourage students to spend much of their time working on projects they formulate themselves in order to learn investigative skills and to have a concrete focus for their study of other subjects. The program also serves as a laboratory for developing and testing new educational materials and techniques which may be useful elsewhere at M.I.T. and in other schools. Examples are: films, students-as-teachers, interdisciplinary seminars and project study, interactive computer programs, self-paced courses, and total immersion in a single subject.

HOW IT OPERATES

The U.S.S.P. is intended for students who want to assume a major share of the responsibility for the detailed planning, execution and evaluation of their own education.

With the help of an advisor chosen from the program faculty, the student develops a written plan telling what he wants to do, how and with whom he will do

these things, how his work will be documented and evaluated. The student also indicates what facilities he will need for his project and how much it will cost.

The advisor puts the student in touch with other people who can work with him. When a student's interests lie outside the areas of competence of the faculty, or when he needs specialized facilities, arrangements are made so that he can use the resources of the remainder of the Institute or of other organizations in the area. Many students take one or two regular Institute subjects.

The advisor has a continuing responsibility to see to it that the student's plans are achievable, balanced, and compatible with the student's long-term objectives, including meeting the requirements for an M.I.T. degree. Periodically, he helps the student evaluate his progress.

In order to address the issue, "How do we get started," we began last fall with a three week period during which everyone participates in one of a dozen working groups led by a faculty member. Each group met daily doing a lab project, discussing readings, or working on problems. This initial period provided students and faculty with an opportunity to explore one another's interests and expectations. It also allowed students to have some work already accomplished and some ideas to pursue before beginning the less structured remainder of the year. Next year's program will probably start in a similar way.

Once a week, students and faculty meet as a group to review the operation of the program. Decisions are made about the policies and plans of the program.

These meetings have revealed that virtually every student spends some time during the first term confused and disoriented as he copes with the problems of managing his own affairs. Most students feel this period valuable, while a few feel they have wasted time. We feel that the resolution of these problems is an important, albeit trying educational experience.

WHERE IT'S LOCATED

U.S.S.P. takes place in a ramshackle wood frame building, vintage W.W.II. Computer facilities, laboratories, a shop, a small library, a lounge, seminar rooms, faculty offices, and working space for each student are all mixed together. The arrangement of our space is flexible and can accommodate changing demands of U.S.S.P. The place is typically cluttered with coffee pots, posters and artifacts from various projects; many people spend most of their days here.

8.3 Concourse

As an alternative to the regular freshman curriculum, Concourse offers a full-time program of integrated study for the first year, with the possibility of extension into the second. Small in size (8-10 faculty, 35-50 students), the program affords close personal contact between teachers and undergraduates, as it seeks to develop ongoing intellectual collaboration through concerted group effort. There is intense and lively interaction of ideas and techniques from a great number of different academic fields, with the aim of breaking down the sharp boundaries that often separate the various professional specializations from each other. Concourse explores in a rigorously critical way the relatedness of several areas of knowledge as well as the particular substance and methodology of each discipline. Within what might be called a teaching and learning community, the usual relationship between the student and the faculty member is made far more flexible; learning becomes everyone's business, a shared endeavor.

The faculty of Concourse are drawn together from a widely representative range of academic fields and

MORE INFORMATION

If you write to us or mail the inquiry form in Section 1.2 of this handbook, we will send you the following additional material:

1. A report on the first year of operation of U.S.S.P. and a preliminary report on the second year, including descriptions of what some students did.
2. A document containing answers to some commonly asked questions about U.S.S.P.
3. A brochure describing the Education Research Center, which sponsors the U.S.S.P. We also invite any specific comments or questions you may have. Send inquiries to:

Donald P. Lombardi
Unified Science Study Program
Education Research Center
Massachusetts Institute of Technology
Cambridge, Mass. 02139
(617) UN4-6900, x2042, x5383

departments at M.I.T. - Physics, Literature, Mathematics, Psychology, Aeronautical and Astronautical Engineering, Economics, Computer Science. Chemistry, Electrical Engineering, and Urban Studies—they represent several of the Institute's most distinguished laboratories, including the Space Propulsion Lab, the National Magnet Lab, and Project Mac. Several of the faculty have received Institute recognition for excellence in undergraduate teaching. What the group has in common is a wide interest in learning, a strong commitment to undergraduates, and an ideal of intellectual engagement among Scientists, Social Scientists, Engineers, and Humanists.

The program comprises two major elements, the General Meetings and the Working Groups. Running together through the entire academic year, these elements provide an unusual opportunity both for intellectual reach and for practical acquaintance with techniques in specific fields of inquiry. A student who satisfactorily completes Concourse will have covered basic materials in Mathematics, Science and Humanities prerequisite for more advanced

work, and will be given Institute Requirement credit. The General Meetings study is focused on a unifying central theme, one that embraces scientific, technical, and humane ideas. The Meetings are frequent and open-ended, taking different forms as occasions demand. A characteristic situation is a group of twenty students and four or five faculty members engaged in open discussion at a round table; another is the formal lecture, delivered by one of the teachers to the whole membership of the program; a third might be an extended laboratory session, or an organized debate, or a dramatic presentation. This part of Concourse, which depends upon the constant participation of several faculty members at once, is certain to involve the entire community in tricky problem sets, lengthy reading lists, frustrating laboratory exercises, and healthy field trips.

The Working Groups employ a wholly different, and complementary, mode of learning. Small groups (5-8 students) undertake design or research projects and carry them out fully. Each group is responsible to define and implement its own project - making judicious use of available facilities and resources, including a modest sum of money provided at the outset - and to report its progress regularly to the whole community. Faculty are not members of the Working Groups. but act as outside consultants at the students' discretion.

Activity in the General Meetings and the Working

Groups engages about three-quarters of a student's time. How the rest of his or her time is spent depends on the student's individual interests in preparing for later study in specific fields. In planning this part of their work, students consult closely with faculty members who are well acquainted with them and with their particular needs.

Concourse headquarters, located atop the Aero and Astro building at the center of the M.I.T. campus, contain a comfortably furnished common room with adjacent kitchen, library, and photographic dark-room. This is the gathering place for informal meetings and social events. The General Meetings and Working Groups make use of classrooms, conference rooms and laboratories throughout the Institute.

Concourse welcomes any student who is interested in a genuinely integrated and extensive educational experience. The program is not designed for any special "type" of person, nor does it require a particular sort of educational background for admission. Diversity, in fact, is what makes it work best. If you think you might like to join the program for 1971-72, or if you simply want more detailed information, mail the card at the beginning of the Handbook (or a letter, if you prefer) to:

Professor Louis Bucciarelli
33-315
M.I.T.
Cambridge, Massachusetts 02139

Appendix D

‘Regular’ MIT Subjects taken ‘Externally’ by Students in the Special Programs

N.B.: *students entering first term only; freshman year subjects only; regardless of grade in subjects; advanced standing credit omitted.*

Table 1: Subjects taken while in program

Class of ‘73: ESG

Number of students	Number of Subjects						Not in	Not at	Total
	0	1	2	3	4	5	Program	MIT	
First term	17	15	3	1	-	-	-	-	36
Second term	17	5	7	4	-	-	1	2	36

Class of ‘74: ESG

Number of students	Number of Subjects						Not in	Not at	Total
	0	1	2	3	4	5	Program	MIT	
First term	6	12	15	4	1	-	-	-	38
Second term	4	10	3	8	3	2	6	2	38

Class of ‘73: USSP

Number of students	Number of Subjects						Not in	Not at	Total
	0	1	2	3	4	5	Program	MIT	
First term	21	9	1	-	-	-	-	-	31
Second term	17	8	2	1	-	-	1	2	31

Class of '74: USSP

Number of students	Number of Subjects						Not in Program	Not at MIT	Total
	0	1	2	3	4	5			
First term	5	9	8	2	-	-	-	-	24
Second term	-	4	7	2	2	2	7	-	24

Table 2: Types of 'external' subjects taken while in ESG
(GIR = General Institute Requirement)

Class of '73: ESG

Students registered	Number of subjects					
	0	1	2	3	4	
Freshman science GIR	35	1	-	-	-	First term
Freshman humanities GIR	36	-	-	-	-	36 students
Other subjects	17	15	4	-	-	
Freshman science GIR	30	3	-	-	-	Second term
Freshman humanities GIR	31	2	-	-	-	33 students
Other subjects	18	7	5	3	-	

Class of '74: ESG

Students registered	Number of subjects					
	0	1	2	3	4	
Freshman science GIR	32	6	-	-	-	First term
Freshman humanities GIR	29	9	-	-	-	38 students
Other subjects	10	17	8	2	1	
Freshman science GIR	25	5	-	-	-	Second terms
Freshman humanities GIR	24	6	-	-	-	33 students
Other subjects	4	12	6	5	3	

Table 3: Types of ‘external’ subjects taken while in USSP
(GIR = General Institute Requirement)

Class of ‘73: USSP						
Students registered	Number of Subjects					
	0	1	2	3	4	
Freshman science GIR	31	-	-	-	-	First term
Freshman humanities GIR	30	1	-	-	-	31 students
Other subjects	22	8	1	-	-	
Freshman science GIR	27	1	-	-	-	Second term
Freshman humanities GIR	28	-	-	-	-	28 students
Other subjects	17	8	3	-	-	

Class of ‘74: USSP						
Students registered	Number of subjects					
	0	1	2	3	4	
Freshman science GIR	19	3	2	-	-	First term
Freshman humanities GIR	13	11	-	-	-	24 students
Other subjects	13	9	2	-	-	
Freshman science GIR	4	11	2	-	-	Second term
Freshman humanities GIR	6	11	-	-	-	17 students
Other subjects	12	4	4	1	-	

Appendix E

Demographic and Quantitative Comparisons

(A) Sources of comparative data (between students in the programs and other students)

Where possible, comparative data for all members of the classes of '73 and '74 were obtained from the Registrar, the Admissions Office, the Committee on Evaluation of Freshman Performance (CEFP), and the Commission on MIT Education. Since such data were not available in many cases, a 10% systematic random sample of the class of '73 was selected (students enrolled in ESG or USSP removed before sampling). This random sample (100 students) closely matched the entire Class in sophomore Course, SI-1, (Scholastic Index-1) and PR, (Personal Rating).

(B) College Board Scores of ESG and USSP students

The major difference in SI-1 averages (see section 10) is due to College Board scores. These were distributed as shown in Table 1. Since the lower the percentage shown in Table 1, the higher the range of scores in the group, ESG students tend generally to have better scores than USSP students in all three areas - verbal, mathematical, and scientific.

Table 1: Percentage of group below Class median

	'73		'74	
	ESG	USSP	ESG	USSP
Verbal SAT	37%	47%	39%	54%
English Achievement	50%	50%	49%	61%
	'73		'74	
	ESG	USSP	ESG	USSP
Math SAT	58%	50%	55%	67%
Math I Achievement	59%	60%	35%	73%
Math II Achievement	46% ¹	56% ¹	33%	53%
Joint Achievement ²	47%	63%	n.a.	n.a.

¹percentage of group with scores less than 300.

²"Joint Achievement" refers to the highest of two possible Achievement scores. It is this single highest score that is used in computing the SI. The Class median was obtained from the random sample.

	'73		'74	
	ESG	USSP	ESG	USSP
Physics Achievement	30%	47%	52%	58%
Chemistry Achievement	56%	46%	59%	47%
Joint Achievement	39%	47%	n.a.	n.a.

(C) Institute Requirements

Data on requirements not completed was gathered from the Registrar's Spring term 1970-71 grade reports.

Table 2: Number of "core" subjects not completed at end of sophomore year.

Number of students	Number of subjects						Total Students
	0	1	2	3	4	5	
Random sample	86	5	-	-	-	-	91
ESG group ³	10	6	7	4	3	1	31
USSP group ³	6	4	5	4	2	2	23

Table 3: Number of students completing freshman requirements: ESG (31 sophomores).

Requirement	Completed by		Not completed by end of fourth term
	Advanced Placement	Sophomore Subjects	
Chemistry	2	8	9
Physics 8.01	2	1	12
8.02	-	2	16
Math 18.01	18	-	3
18.02	3	1	9
Humanities 1 subj.	n.a.	-	12
2 subjs.	n.a.	1	5

Table 4: Number of students completing freshman requirements: USSP (23 sophomores).

Requirement	Completed by		Not completed by end of fourth term
	Advanced Placement	Sophomore Subjects	
Chemistry	4	7	10
Physics 8.01	1	5	6
8.02	-	8	13
Math 18.01	8	3	5
18.02	-	8	10
Humanities 1 subj.	n.a.	-	3
2 subjs.	n.a.	-	17

³Freshmen entering programs in 1969-70, in their first term.

Table 5: Number (%) not completing upper-class GIR requirements by end of fourth term.

Requirement	Random	ESG	USSP
Sophomore humanities	34 (37%)	24 (77%)	15 (65%)
Upper-class humanities	78 (86%)	25 (81%)	17 (74%)
Science distribution	25 (27%)	25 (81%)	21 (91%)
Laboratory requirement	56 (62%)	23 (74%)	17 (74%)
Physical Education	27 (30%)	19 (61%)	15 (65%)
Group size	91	31	23

(D) Sophomore Grade Performance

Available information on '73 sophomore grades showed the following (some missing grades and incom-
 pleted are unresolved for Spring term):

Table 6: Fall term. Term ratings

Ratings	Class (%)	Random (n)	ESG (n)	USSP (n)
0.0-2.5	n.a.	4	1	2
2.6-3.0	n.a.	4	-	3
3.1-3.5	n.a.	8	1	3
3.6-4.0	n.a.	28	7	6
4.1-4.5	n.a.	26	6	1
4.6-5.0	n.a.	21	14	5
not available	n.a.	-	2	3
total	n.a.	91	31	23
mean rating ⁴	n.a.	4.1	4.4	3.7

Table 7: Spring term. Term ratings

Ratings	Class (%)	Random (n)	ESG (n)	USSP (n)
0.0-2.5	4%	3	-	1
2.6-3.0	4%	3	1	1
3.1-3.5	7%	10	1	3
3.6-4.0	20%	18	5	6
4.1-4.5	28%	26	12	5
4.6-5.0	37%	28	2	7
not available		3	31	1
total	860	91	31	23
mean rating	n.a.	4.1	4.4	3.9

⁴Unweighted. Would be slightly higher if weighted by subject load.

(E) Cumulative Credit

Table 8: Mean cumulative units (credit hours)

	Random	ESG	USSP
Second term (A)	115	111	112
Third term (B)	161	158	158
Fourth term (C)	208	206	193
(B) - (A)	46	47	46
(C) - (B)	47	48	35
Number of students	91	31	23

The CEFP has determined that the median number of units added in fourth term (e.g. (C) - (B)) was 48, for the entire class of '73.

Appendix F

Freshmen's Views of the Other Special Programs

Why did students gravitate to the programs they did? Did they think of joining the others? How were the programs seen by freshmen?

Views of ESG by USSP Freshmen

21 USSP freshmen were interviewed. 3 students saw ESG as being more structured; 8 saw it as being less structured (“I didn’t want total unstructure - I would slack off”; “ESG is loose - I would do nothing”; “You must do everything on one’s own, you must go to them”; “Too laissez-faire - you didn’t have to do anything, you could just sit there for all they care”).

3 students saw ESG as having a humanities or non-science orientation; 2 students remarked on the difference in premises (“ESG had a nicer building”; “One big difference - a nicer place to work in”). But 3 commented on the lack of experimental facilities (“ESG is centered on studying - not experimental”). Other comments were: “It’s based on learning how they can study, in discovering themselves - I had more definite plans than that”. “ESG is a way to learn - you have to have specific things in mind - you need a single topic to work on”.

ESG Freshmen on USSP

9 students were interviewed. One saw USSP as being less structured than ESG; one saw it structured the same; 5 saw it as being more structured. The project orientation (mentioned by 5 students) was often linked with structuring (“In USSP you are bound by a project which I didn’t want - too much structure”; “USSP - basically project oriented, not a real alternative to the regular curriculum”; “it’s more structured, project oriented - I don’t have any specific ideas”). One student thought that in USSP there were “more groups working together” and he “didn’t want groups”. Another student thought USSP was “mainly into science”. He was “also into psychology and humanities”. Another student pointed out that USSP “had no place to go (lounge)”. Also he “didn’t like the atmosphere. It was hard to put into words - USSP seemed more protective and defensive of the program”. Another student commented: “not as comfortable there - uglier”.

ESG and USSP Freshmen on Concourse

Of the 30 students interviewed 25 commented about Concourse. (There were no systematic differences between ESG and USSP students and they have been analyzed together).

21 students saw Concourse as being much more structured than either USSP or ESG, 10 of these specifically likening it to the regular curriculum, and in several instances saying it was more structured

even than that. Some of the comments about structure were as follows: “I was very interested...but too structured for me”; “might as well be in regular curriculum”; “like the regular curriculum, except in a different building - instead of taking different courses in many classes, you take different courses in one class”; “Concourse is ridiculous... more structured than regular curriculum”; “a miniature institute”; “no choice as to what I’d be doing”; “Concourse is a bunch of Professors defining what you learn... packaged learning scares me”; “easier for you - maybe too easy”; “similar to regular Institute but do it in interdisciplinary fashion”.

There were a few comments on other aspects of Concourse. One student had “placed out of some of the regular subjects - you can’t do advanced work there”. Another student complained that at Concourse “They talk only about educational things - I’m not interested in the field of education, but in my own education”. Another was dismissive: “All rap sessions”. Another student commented: “It’s not independent study - but you work with a group - that’s an interesting way to learn”.

Concourse Freshmen on ESG and USSP

Only 7 Concourse freshmen were interviewed. Of these, 6 singled out the “individual” aspect of the other two programs: “The individual commitment is primary”; “ESG and USSP have a specific project orientation - it doesn’t guarantee *new* material will be encountered”; “ESG uncontrolled - not different from doing one’s own work in a library”; “USSP depends mostly on personal discipline and independent study”. 2 students commented on the lack of humanities in USSP. 2 students were obviously not impressed by ESG when they went to visit: “The faculty were not visible”; “ESG was unenergetic”.

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