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ABSTRACT

This report presents the preliminary results of an effort to identify and measure the benefits stemming from one kind of departure from the dominant departmental structure of the modern university. Because money costs of programs in higher education are easier to identify than benefits, a successful effort of this kind is a prerequisite to determining whether such a departure is worthwhile. Part one presents an economist's view of undergraduate education. Several of the possible outputs of higher education are described for the purpose of measuring the extent to which the structure of the Santa Cruz campus facilitates their production. Part two then reviews some major criticisms of structuralist reform. Part three looks at the organization and substance of undergraduate educational programs to see whether, in a collegiate university, significant educational programs can be mounted which are unlikely to arise elsewhere. Part four describes the collegiate structure of the Santa Cruz campus, beginning with a description of how decisions are made and closing with a set of hypotheses about the characteristics of Santa Cruz graduates. This is followed by an evaluation of the collegiate structure and with a specification and measurement of the benefits resulting from it. The paper concludes with some recommendations for supporting collegiate programs. (Author)

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ASSESSING THE BENEFITS OF COLLEGIATE STRUCTURE: THE CASE AT SANTA CRUZ

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PREFACE

This is one of a continuing series of reports of the Ford Foundation sponsored Research Program in University Administration at the University of California, Berkeley. The guiding purpose of this Program is to undertake quantative research which will assist university administrators and other individuals seriously concerned with the management of university systems both to understand the basic functions of their complex systems and to utilize effectively the tools of modern management in the allocation of educational resources.

This report represents the preliminary results of an effort to identify and measure the benefits stemming from one kind of departure from the dominant departmental structure of the modern university. Because money costs of programs in higher education are easier to identify than benefits, a successful effort of this kind is a prerequisite to determining whether such a departure is worth while. We have tried to avoid the oversimplifications that have led some critics to argue that cost effectiveness analysis is inappropriate in higher education. Partly as a consequence of this, but also because of the intractability of the measurement problems, we have not gone far beyond raising some fundamental questions about the benefits of undergraduate educational programs.

I. INTRODUCTION

The Santa Cruz campus of the University of California opened its first college in the Fall of 1965. This Fall there will be five colleges fully underway and a sixth operating under very modest circumstances. Santa Cruz differs from its sister campuses, both those which also opened in the mid-sixties and the older, well established ones, most strikingly in its departure from the traditional departmental organization of teaching and research. In the collegiate structure at Santa Cruz, each faculty member holds appointments in both one of the six liberal arts colleges and in one of the cross-campus disciplinary Boards of Studies. With the exception of those having studies near their laboratories, faculty members are physically located in their colleges. Undergraduates are also assigned to the colleges, from six to seven hundred in each one. They take instruction both from their college and from the Boards of Studies. How has this dual structure worked? Is it worth having? Should it be tried elsewhere? These are some of the questions we would like to answer, or at least begin to answer, in this report.

One way to begin an assessment of Santa Cruz is with a review of the intentions of those responsible for bringing the campus into being. Clark Kerr, in his capacity as President of the University of California, was the chief architect of the Santa Cruz campus. His intentions can be inferred from his analysis of the multiversity of his Uses of the University, and it is to this discussion we now turn.

Writing in 1963, Kerr judged the modern, national university basically successful in its production of new knowledge and of trained personnel for industry and the public, and in its provision of a wide range of services for state and federal governments. Although he might gauge this success somewhat differently today, he was also highly conscious of its failures. Thus, he wrote,

> 'there has been some success, but there are some problems still to be fully faced; and they are problems of consequence.
>
> One is the improvement of undergraduate instruction in the university. It will require the solution of many sub-problems: how to give adequate recognition to the teaching skill as well as to the research performance of the faculty; how to create a curriculum that serves the needs of the student as well as the research interests of the teacher; how to prepare the generalist as well as the specialist in an age of specialization looking for better generalizations; how to treat the individual student as a unique human being in the mass student body; how to make the university seem smaller even as it grows larger; how to establish a range of contact between faculty and students broader than the one-way route across the lectern or through the television screen; how to raise educational policy again to the forefront of faculty concerns.
>
> Another major task is to create a more unified intellectual world. We need to make contact between the two, the three, the many cultures; to open channels of intelligent conversation across the disciplines and divisions, to close the gap between C.P. Snow's "Luddites" and scientists; to answer fragmentation with general theories and sensitivities.
>
> A third problem is to relate administration more directly to individual faculty and students in the massive institution. We need to decentralize below the campus level to the operating agencies; to make the collective faculty a more vital, dynamic, progressive force as it now is only at the departmental level; to bridge the

growing chasm between the department that does the teaching and the institute that does the research, with faculty member torn between; to make the old departments and divisions more compatible with the new divisions of knowledge; to make it possible for an institution to see itself in totality rather than just piecemeal and in the sweep of history rather than just at a moment of time; to bring an understanding of both internal and external realities to all those intimately related to the process, so that there may be greater understanding; to see to it that administration serves and stimulates rather than rules the institution, that it be expendable when necessary and flexible all the time; to assure that the university can do better what it does best; to solve the whole range of governmental problems within the university.

If there are to be new departures, they are most likely to come on the campuses of those old, private universities which have prided themselves on control of their own destiny, and on the totally new campuses of the state universities in America and the new public universities in Britain. The university for the twenty-first century is more likely to emerge from these environments than from any others. Out of the pride of the old and the vacuum of the new may come the means to make undergraduate life more exciting, intellectual discourse more meaningful, administration more human.[1]

The collegiate structure can be seen as an attempt to provide opportunities to solve all three of these problems while maintaining as much as possible the research and public service capabilities of the University. Five years is a very short time for an experiment of this kind to produce definitive results. Because evidence bearing on the quality of undergraduate education is relatively plentiful, even if not conclusive, we shall

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[1] The Uses of the University, New York: Harper and Row, 1963, pp. 118-120.

focus chiefly on the relation of the collegiate structure to the undergraduate educational program and undergraduate life generally. Hopefully, in this way, we can begin to discover whether the campus works and whether it is worth what it costs.

Out procedure will be first to set out a conceptual framework for analyzing undergraduate education that will help to identify the main kinds of benefits that must ultimately be weighed against costs to determine whether a collegiate campus is worth the effort. We then review briefly some critiques of Kerr's "structuralist" position on university reform which argue that the obstacles to reform are grounded in aspects of university finance Kerr takes for granted as necessary and desirable and that we must take as given here. Next, we relate the benefits we have identified to the two kinds of undergraduate programs at Santa Cruz, collegiate and disciplinary, to show how this dual structure makes possible educational programs that the departmental university tends to rule out. After this introduction we turn to the Santa Cruz experience. We argue that the collegiate educational programs have fallen far short of initial expectations. We conclude by offering some recommendations for making the programs more effective.

II. AN ECONOMIST'S VIEW OF UNDERGRADUATE EDUCATION

The economists' division of human activities into production and consumption may appear to do less than justice to the on-going life of a university. We believe that appearances can be deceptive and that, when kept in proper perspective, the notion of undergraduate education as, among other things, an economic process in which capital is invested in human beings, can be helpful in understanding the university and making it better. Recent work in the field of investment in human capital provides a useful approach to the identification of the benefits produced by undergraduate education and could lead to the kind of cost-effectiveness analysis necessary to answer the questions raised at the outset.[2] In this approach, schools are regarded as enterprises engaged in the production of human capital and, for the university, the production of knowledge as well. When the production process is completed, students place this embodied capital into use in the economy. The treatment parallels quite closely the economic reasoning applied to the production of physical capital. It should be noted that economists working in the field tend to construe the educational investment process, especially in colleges and universities, rather narrowly, placing primary emphasis on the development of private capital, giving little weight to the kinds of human capital that do not fit well into the physical analogy.

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[2] For an overview of this work see Theodore W. Schultz, "Resources for Higher Education: An Economist's View," The Journal of Political Economy, May/June, 1968, pp. 327-347.

In treating the university as a producer of human capital, we shall give considerable weight to the development of social capital which, while not enhancing directly the private returns to individuals in whom it is embodied, nevertheless can produce social returns in the form of improvements in the quality of political and community life of the universities and of the larger society. We cannot hope to treat fully the problems associated with the challenges to the legitimacy of established authority, both educational and civil. We can, however, go beyond the excessively narrow view which ignores or denies this important class of externalities produced by undergraduate education.

Following is a listing of the outputs of the educational production process aimed rather specifically at the problem of estimating the magnitude of benefits attributable to the collegiate structure at Santa Cruz.[3]

1. Private Producer Capital

Differentials in lifetime earnings accruing to students completing differing years of schooling have been widely publicized, by, among others, the Federal Government (this being one of its ways of combatting poverty). Implicit in these pronouncements, and sometimes explicit, is the idea that it is the skills and knowledge required in college--the human capital put in place, as it were--that accounts for the earnings differentials. It is not altogether clear the extent to which the enhancement of earning power of, say, the college graduate over the college dropout or the high school

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[3] A full treatment of university as a production process would include the production of new knowledge and would recognize the fact that teaching and research are related in ways that make them difficult to separate in practice.

graduate is due to production processes within the university. As David Reisman and Christopher Jencks point out in The Academic Revolution, professionalized faculties are primarily interested in the absolute standing of their graduates and not very much in the value they add to students as they pass through undergraduate programs. They argue

> that the differences between college graduates and high school dropouts are only occasionally caused by exposure to high school and college. Mostly these differences are the result of the fact that, let us say, intelligent but docile youngsters find schooling relatively congenial and therefore stay enrolled, while the less intelligent and more rebellious find it intolerable and therefore withdraw.[4]

Reisman and Jencks go on to argue that admissions, financial aid and tuition policies, together with the channeling or stratification performed by the public schools, make access to higher education a conserver of the existing social structure. Santa Cruz is no exception. Its admissions policies are those of the University of California and these are, by virtue of the California Master Plan for Higher Education, elitist. Moreover, because the number of eligible applicants has greatly exceeded the number of places at Santa Cruz, additional selection by the Santa Cruz faculty has been possible. Students admitted to Santa Cruz have been exceptionally well qualified according to the standard criteria, and come from relatively well-to-do families.

Given this situation, we might expect Santa Cruz graduates to earn substantial incomes. We would, however, be reluctant to attribute this

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[4] The Academic Revolution, New York: Doubleday and Co., Inc., 1968, p. 79

to the collegiate structure. Moreover, the studies of earnings differentials focus on the effects of years of schooling on income, not on the quality of schooling.[5] One might guess that income differentials between Santa Cruz and Berkeley graduates in the same line of work would be miniscule. For these reasons, then, we shall give little attention to the production of private producer capital in what follows.

2. Private Consumer Capital

The returns to this kind of capital accrue in kind rather than through the market, and hence produce no pecuniary indexes of value. More concretely, this return can be seen as stemming from the cultivation of intellectual awareness and understanding and of aesthetic sensibility in individual students. Even if it were possible to exclude the effects of social stratification, it would still be difficult to measure these private benefits in a way which could be used directly in a cost-effectiveness analysis. These benefits do not give rise to directly observable pecuniary measures. Moreover, private satisfactions of this kind accrue over a lifetime. At the very best one could hope for proxy measures that were highly correlated with the flow of these satisfactions. We can do no more than deal in possible indicators of this sort.

3. Discovery of Talent

Theodore Schultz has argued that high school graduates often do not know whether they have the "capabilities and motivation" to complete an

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[5] See Schultz, op. cit., and the reference therein cited.

undergraduate program.[6] For many the only way to gain such knowledge is by actually undertaking such a program. However, if faced with the full cost of the program, some would not enroll and consequently, much human capital could remain idle. Since it would benefit society as a whole to avoid this underdevelopment of human capital, it should be subsidized. This is the extent of the social benefit produced by undergraduate education that Schultz is willing to argue for.

Students often do discover their talents or their lack of them in the university. They also discover, or believe they discover, that the faculty exploit a relation of trust to advance their own careers. They often see the undergraduate program as certification rather than education. Many believe themselves overtrained in any case for the employment opportunities open to them after acquiring the B.A.

The problem with Schultz's characterization is not that it is wrong but that it is much too narrow. Much more goes on and could go on in undergraduate programs than the search for talent and the production of private capital in human beings.

As far as Santa Cruz is concerned, we may ask how well it helps students make intelligent career choices. An essential part of this process must be the extent to which students adopt the attitude that they can and should develop their capacities along the lines open to them; that is, the extent to which they decide to remain within the system. Alienation has deep roots in conditions of society outside the university. Still, it can be argued that the university could do much to keep this alienation from leading to nonconstructive consequences and has not lived up to its responsibility in this matter. More of this later.

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[6] Schultz, op. cit., p. 345.

4. Social Capital--Citizenship

There seems to be a consensus among economists that training for citizenship produces social capital. However, some economists believe the possibility for the formation of such capital is pretty well exhausted by the end of high school.[7] This rather narrow view is far from common among other academics with equal claim to an understanding of the modern university and its antecedents. Indeed, there is some irony in the fact that Clark Kerr is both an economist and the father, as it were, of the Santa Cruz campus.[8]

The failure of economists in their professional capacity to recognize the role of general education (we shall return to this much-abused term below) can, perhaps, be understood in terms of professionalization of the faculty or, as Reisman and Jencks put it, as the consequence of the academic revolution. A succinct quotation bearing on the matter from Joseph Tussman is helpful here.

> The university is an organization of scientists and scholars engaged in research. Its concern is with knowledge. Its teaching is professional and technical, centered in the graduate school. So great is its attractive power that it has warped the college into its own orbit. The college of letters and science has become simply a part of the university, a holding company for a large number of university departments with administrative responsibility for undergraduate education. But it has lost the sense of any independent

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[7] See Schultz, op. cit., pp. 343-344 and Milton Friedman, "A Symposium, Financing Higher Education: The Policy Dilemmas," The Public Interest, Spring 1968, pp. 108-112.

[8] What appears as irony may be something quite different. For some members of the Economics Department at UCLA, Kerr's leadership as President of the University can best be seen, not chiefly as devising means to enhance the production of important social benefits, but rather as a species of empire building. See the discussion below of the criticisms of James Buchanan, a former member of the UCLA department.

mission. It measures success in terms of students sent on to graduate school; it is content to be a preparatory school for the professions--academic and other.

The college has drifted into this condition because it has never understood, or taken seriously, the implications of democracy. First, that democracy imposes on everyone, in the name of dignity and freedom, a political vocation. And second, that this vocation demands a special education. But the American college turned its back on this opportunity; and its institutional structure and the character and bent of its faculty make it highly unlikely that it will seize the opportunity now.

One of the consequences is that the college is ludicrously unprepared for the crisis in which it now finds itself. Its intellectual guns are fixed in the wrong direction. It expects the administration to cope with major student unrest as if this unrest were chiefly a question of bad manners. It meets the charge of educational irrelevance with bland incomprehension. Faced with a major moral and intellectual crisis it presents its kaleidoscopic array of courses in subjects leading, ultimately, to the Ph.D. It does not see that this form of salvation is--for the college--only another way of dropping out.[9]

We shall in due course describe some of the cross currents in the discussion of undergraduate education. Tussman represents but one of those currents, albeit in many ways a very persuasive one for us. For the moment we wish to call attention to some other aspects of undergraduate education which do not come strictly under the heading of investment in human beings.

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[9] "The Collegiate Rite of Passage," Experiment and Innovation: New Directions at the University of California, July 1968, pp. 1-19. A more extensive discussion of these matters and the Experimental College at Berkeley can be found in Tussman's Experiment at Berkeley, New York: Oxford University Press, 1969.

5. Education as Consumption

Colleges, in the broad sense Tussman intends and, hopefully, as they exist at Santa Cruz, can be both intellectual and social communities. The quality of life in these communities, the degree of participation by their members in their governance and the humaneness of the administrative process in them enhance what economists call current consumption benefits. But if Kerr is right, these aspects of community life are investment as well, for they are fateful for the development of the kinds of private and social human capital we have just distinguished. Presumably, a well-functioning residential college can contribute significantly to the investment process; a malfunctioning one is likely to do the reverse. We hope, then, to indicate the extent to which Santa Cruz has developed or promises to develop meaningful general education programs and supportive intellectual and social communities.

III. SOME CRITICISMS OF STRUCTURALIST REFORM

So far we have taken Kerr's assessment of the shortcomings of the multiversity at face value and in doing so may have appeared to imply that we believe its departmental structure is the major cause of the troubles besetting it. Certainly Kerr believed that a collegiate structure might make possible the vital reforms he described in The Uses of the University and which we quoted at length in our introduction. It may help to put this question of the primacy of structure in perspective if we take a brief look at some other analyses of the ills of the multiversity which run counter to Kerr's.

R. P. Wolff takes Kerr to task for failing to recognize that society's demands and society's needs are not the same, the former reflecting things as they are and the latter as they ought to be. "By systematically confusing the concepts of need and demand, Clark Kerr begs all of the major political questions of the day."[10] Thus, the failure of the University stems from its excessive responsiveness to market demand. We cannot do justice to Wolff in the short space available here. Suffice it that he wishes the University to refuse to "accept the goals and values of whoever in America has the money to pay for them."

A very different analysis is that of James Buchanan and Nicos Develetoglou.[11] They see the chief cause of the current sorry condition of

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[10] "The Ideal of the University," Change, September-October 1969. A more complete discussion can be found in Wolff's The Ideal of the University, Boston: Beacon Press, 1969.

[11] Academia in Anarchy, New York: Basic Books, 1970.

higher education as the unresponsiveness of university faculties to their student and taxpayer clienteles. This unresponsiveness, in turn, stems from what they regard as the special and peculiar way of allocating resources in higher education. In this industry consumers (students) do not pay for the product, producers (faculty) do not sell and the supplier of resources (the tax paying public) has no control over the process. Their analysis, while highly polemical, is nonetheless serious and worth consideration. They argue that, in consequence of these peculiarities, resources are allocated so as to maximize the satisfaction of the prestigious research faculty; that is to say, the faculty is rewarded precisely for allocating its energy according to criteria set internally by the disciplines. The failure of the faculty to innovate is not due to its inherent conservatism, as Kerr believes; the faculty does not innovate because it is not rewarded for innovation. There are no incentives strong enough to overcome those inherent in the present organization of the education industry to make the faculty responsive in a fundamental way to students, say, at Santa Cruz, nor to any other non-faculty group. Moreover, they do not believe the faculty will "set its own house in order."

Buchanan and Develetoglou believe that this fundamental unresponsiveness of the faculty more than any other factor is responsible for the disorder in the universities' recent past. Up to, say 1964, before the effects of this unresponsiveness became apparent, the public regarded the universities as a kind of secular church providing opportunities for tithing, as it were. The social benefits higher education afforded was precisely the opportunity to support a worthy cause; there was no significant concern about citizenship that went beyond the attitude that education was a good thing and the more of it the better.

Needless to say, the attitudes of the public have changed. It should be recognized, however, that no general and widespread understanding of the social benefits to be conferred by higher education has existed in this country. Not only that, but it is unlikely that a consensus on anything more substantive than the idea that a college education is a good thing can ever be reached. Consider the possible public response to the following argument for supporting general education.

> We have been drifting thoughtlessly on the wreckage of a shallow commercial individualism . . . students do not learn these things [the shallow values of middle class society] in college; it is part of their baggage when they arrive . . . The college must transform this state of mind--which at most can barely support a shallow and parasitic private life--into something capable of sustaining and developing the life of a democratic society.[12]

Even if the public would agree that it has such shortcomings, an assumption of heroic proportions, they could hardly be expected to believe that higher education has been producing good citizens. Once it becomes necessary to achieve widespread substantive agreement on the ends of higher education, the underlying conflicts of values will become explicit.

Buchanan and Develetoglou prophesy a drastic reorganization of higher education that will curtail the powers of the faculty. "The massive university monolith, dominated by hidebound faculty rigidity, is not among the shapes of the academic future we discern. This Clark Kerr monstrosity goes the way of the dinosaur." They themselves propose a radical shift in university finance, including full cost tuition and government guaranteed loans to students in place of direct institutional support, such that the possibility of student dissatisfaction can bring financial pressure to bear

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[12] Tussman, op. cit., pp. 3-4.

on the faculty. In a word, they propose competition in the education industry. The relation of finance to how universities function is much more fundamental than most critics, including Kerr, seem to recognize. We do not propose to pursue these matters here. However, we do not wish to convey the impression that by taking the structure of financial support in the current situation as given that we are not aware of the possibility and the consequences of changes in it. In an important sense, Santa Cruz is an attempt to put the faculty house in order without being forced by the pressures a different financial structure would produce.

IV. UNDERGRADUATE EDUCATIONAL PROGRAMS AND THE COLLEGIATE STRUCTURE

The notion of a collegiate structure taken by itself does not make clear how the improvements in undergraduate education Kerr envisaged are to come about. It is necessary, therefore, to look rather closely at the organization and substance of undergraduate educational programs to see whether, in a collegiate university, significant educational programs can be mounted which are unlikely to arise elsewhere. We have found Joseph Tussman's classification of university educational programs very helpful in this endeavor. He writes,

> The program is the significant educational unit. Programs may be and usually are constructed out of courses. The course is a familiar unit for teaching purposes, but it would generally be recognized--and the quarter system has brought this point home--that a single course is a fragment and that much of its significance depends on the context of courses and other modes of organized intellectual effort in which it is placed.
>
> Graduate work--the third program--is a program of sustained study designed by the faculty as adequate preparation for teaching and research in a particular field or area. A Ph.D. program may involve courses, but it is defined in terms of the mastery of knowledge and techniques, tested in various ways, and is relatively coherent.
>
> The upper division major--the second program--while it may often be defined in terms of courses is, in principle and intent, a more or less coherent plan of study designed to give the student some immersion in the basic concepts, the problems, the lore, the methods and techniques which characterize one of the great academic disciplines.

> The difficulty is with the largely nonexistent first program. (We seem to cover the range from program without courses through programs with courses to courses without programs.) The problem is, can we construct and maintain--largely within the framework of our existing resources--a suitable variety of coherent and appropriate first programs:
>
> What we have now, instead, is a loose system of "requirements." These have a long history and reflect genuine educational considerations. But, I believe, there is general dissatisfaction with what they add up or fail to add up to. They are conceived as guarding against premature specialization by insisting on "breadth" (a minimal sampling of courses in various areas), as providing for the tools or skills a college graduate should have (e.g., writing and knowledge of a foreign language). To these general requirements are added those which departments impose as prerequisite for the upper division major--amounting, in some cases, to as much as half of the student's lower division course work.
>
> The result is that, for most students, undergraduate education involves a single program (the major), supplemented by a variety of fragmentary courses. My suggestion is that we think of undergraduate education as involving two programs and attempt to reclaim the lower division years for appropriate first programs. "Appropriate" means at least (1) some measure of coherence and integration, and (2) an organizing principle different from that upon which the second program--the departmental major--is based. I also suggest that--for the sake of the integrity of the first program--departments be encouraged to claim a larger share of the student's time during the upper division years and, in exchange, minimize the lower division prerequisites for majors.[13]

There are few structures in a departmentally organized university that could permit faculty to join together in an educational enterprise that does not center on disciplinary concerns and where the professional standing

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[13] Tussman, op. cit., pp. 5-7.

of faculty is not significantly involved. At Santa Cruz the college is the institutional structure capable of providing a home for the first program.

A structure does not insure a satisfactory program. Not only must a college faculty have the opportunity and the desire to develop a meaningful general education program, there must also be rewards for doing so. In the economist's terms, need is not sufficient--there must also be effective demand and this means putting money where the need is. That Tussman has had great difficulty in finding faculty to staff his experimental first program at Berkeley is much to the point. We will take up the question of how the incentives work at Santa Cruz later. Let us first review some alternative conceptions of general education to prepare the way for judging the extent to which Santa Cruz has exploited its opportunities to develop meaningful first programs.

1. Tussman--Experiment at Berkeley

The object of Tussman's experimental program is, as you will recall, to prepare the young for the political vocation that a democratic policy imposes. Both its curriculum and structure differ dramatically from the traditional lower division work at Berkeley, but not so much from Alexander Meiklejohn's experimental college at Wisconsin with its Athens-America curriculum which Tussman chose as his model.

> The curriculum is "problem oriented," using materials which are, to some extent, historically clustered. The problems, however, are fundamental and perennial--that is, as contemporary as they are historical. Against the background of war and conflict we see men

> struggling to achieve peace and freedom, attempting to supplant power by legitimate authority, to embody moral values in a legal order, to reconcile submission to authority and the claims of conscience and individual judgment, to curb passion with reason, to tame destructive pride, to make wisdom operative in human affairs.[14]

The problems are studied through a common, fairly short list of classics. The faculty, numbering about six, determine this list and all proceed through it together. The student's choice is whether or not to be in the program. Once in it, they are expected to be docile in the sense of being open and responsive to the works and ideas and to the faculty.

Needless to say, this is a far cry from a student organized and student taught curriculum. Tussman is quite impatient with the argument that the faculty should be responsive to student interests as students see them. He argues that students quite often do not know what their interests are. Further, understanding the "fundamental and perennial" problem cited above is, he argues, clearly in their interests as well as in the public interest.

The program is not organized in courses. In Tussman's view the institution of courses stands in the way of serious efforts at developing meaningful first programs. The course leads to fragmentation and supports the faculty in its narrowness, in its isolation of its members from each other as teachers and in its thrust toward greater professionalization. Thus, the faculty and students are totally engaged in a program of study lasting two years.

The colleges at Santa Cruz could adopt a program similar in curriculum and organization to the one just described, though none have done so. Such

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[14] Tussman, op. cit., p. 9

an adoption requires more than being persuaded by Tussman's arguments: it also requires that the faculty members be paid to do so. Tussman recruited eminent scholars like himself in the beginning for whom virtue could be its own reward. The faculty at Santa Cruz is, on the average, younger and less eminent than at Berkeley, and hence cannot be expected to live on virtue alone. Many, probably most, of the younger faculty choose to come to Santa Cruz because of the prospect of opportunities to develop collegiate programs. Clearly, then, not only is the system of incentives for faculty central to the viability of all such programs, but it is crucial to the viability of the Colleges at Santa Cruz.

2. Daniel Bell--The Reforming of General Education

Daniel Bell's admirable book was written as a report to the Dean of Columbia College on the program in general education at Columbia. It is, in fact much more than that: it includes a broad-ranging discussion of trends in American society and their relevance for education; of the character of American universities and of undergraduate education; of the possibilities for a "common learning" in an age of specialization and in the face of an explosive growth of knowledge; of the rise and decline of general education at Harvard and Chicago, as well as at Columbia. Interpolated are thoughful essays on cultural styles in "post-industrial society"; the impact of computers on modern thought; the problems and possibilities inherent in what he calls "the new intellectual technology"--game theory, decision theory, simulation, linear programming, cybernetics and operations research; and the impact of large scale research on the role of the professor and the

> functions of the university. And, as the advertisement says, much, much more.[15]

We cannot attempt to deal with all of this here. Rather, we will limit ourselves to a brief review similar to the foregoing one. In both curriculum and structure, Bell's proposals resemble existing programs. The use of the course is the idea of student choice from among a set of courses. Bell recommends staff effort in the development and offering of these courses, but this proposal differs markedly from Tussman's of total faculty commitment to a nondisciplinary enterprise. Perhaps the most signigicant difference between Tussman and Bell is the importance Bell attaches to imparting to students an understanding of the methods of inquiry. Bell writes,

> In this emphasis on the centrality of method, there is, as I have argued before, a positive new role for the college as an institution standing between the secondary school and graduate research work. One of its fundamental purposes must be to deal with the modes of conceptualization, the principles of explanation, and the nature of verification. The world is always double-storied: the factual order, and the logical order imposed on it. The emphasis in the college must be less on what one knows and more on the self-conscious ground of knowledge; how one knows what one knows, and the principle of the relevant selection of facts.[16]

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[15] Martin Trow, "Bell, Book and Berkeley: Reflections Occasioned by a Reading of Daniel Bell's The Reforming of General Education," Experiment and Innovation, New Directions at the University of California, January, 1968, Volume 1, Number 2, p. 1. This perceptive essay deals in a very helpful way with the problems of incentives in a large, departmentally organized public university and how they impinge on undergraduate educational programs.

[16] The Reforming of General Education, New York: Anchor, 1968, pp. 167-168.

It may be helpful to state Bell's list of the purposes of general education, for it encompasses more than just a focus on methodology.

(1) To overcome intellectual provincialism;

(2) To appreciate the centrality of method (i.e., the role of conceptual innovation);

(3) To gain an awareness of history;

(4) To show how ideas relate to social structures;

(5) To understand the way values infuse all inquiry;

(6) To demonstrate the civilizing role of the humanities.[17]

Despite the considerable differences between Tussman and Bell, both see the program as primarily, if not exclusively, cognitive. There is little explicit concern about emotional and esthetic development. In neither is there any place given for extra-mural field work. We have not discussed their concerns about the upper division but both have recommendations for improving it. Bell suggests a "third" tier of integrative courses in the social sciences, humanities or natural sciences for seniors after they have done specialized work in their majors. In addition, he proposes a two-track major to accommodate students not planning scholarly careers. Finally, like Tussman, Bell is quite conscious of the problem of finding effective incentives to induce a professionalized faculty to make serious commitments to a general education program.

The Santa Cruz colleges offer a suitable structure, including, hopefully, appropriate incentives, for putting something like Bell's scheme into practice. Unlike the Tussman program, a number of the courses, especially those

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[17] Bell, op. cit., p. 154.

in the "third tier," would require cooperation of faculty from more than one college, since a good deal of disciplinary expertise would be required that might not be found in a single college.

3. The Hazen Foundation--The Student in Higher Education

This report is the work of a committee chaired by Joseph F. Kauffman of the University of Wisconsin and constitutes a critique of undergraduate education in American universities.[18] It is not, like Tussman's and Bell's, concerned finally with a particular program in a particular university. The main thrust of the report is that liberal education should be for the whole man, not just for his intellect, and that it should be for all men, not just for an elite. Emotional and esthetic development are to be explicit concerns of a faculty not committed solely to achieving success in their disciplines. They propose increased student participation in decisions concerning all aspects of their education, radical transformation of living and eating arrangements, and increases in opportunities for integrating academic work with the world outside.

They recognize, like Tussman and Bell, the problem of effective incentives. At this juncture in the history of Santa Cruz it is not yet clear whether effective incentives can be developed to provide the necessary faculty support for a program that deviates as radically as this one does from the cognitive orientation of most academics. The Hazen report has recieved serious consideration by some faculty members at Santa Cruz.

A particularly exciting feature of the collegiate structure at Santa Cruz is the possibilities of pluralism. Within the limit of the physical

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[18] Report of the Committee on the Student in Higher Education, New Haven: Hazen Foundation, 1968.

plant and the incentive structure, it is possible to have as many conceptions of general education as colleges, all proceeding at once. Such an eventuality could not be regarded as a carefully controlled experiment but could lead to some hard knowledge about what works and so provide guidelines for development elsewhere.

We have discussed all too briefly just these three possibilities. In looking over the literature on undergraduate education published over the past five years or so, it is clear that there are many more and many of them are being tried elsewhere. Our purpose has been not to review this literature but to provide something of a background for understanding and evaluating the possibilities and performance at Santa Cruz.

V. THE COLLEGIATE STRUCTURE DESCRIBED

Having set out the considerations that we think should guide the identification and measurement of the benefits of undergraduate educational programs, we now turn to their application to the Santa Cruz campus. We begin with a description of how decisions are made, sufficiently detailed to facilitate the tentative evaluation of the collegiate experience that follows. We then close with a set of hypotheses about the characteristics of Santa Cruz graduates, the successful testing of which would begin to provide useful measures of the results of the educational programs of the campus.

We shall proceed by first describing those structural elements that appear to be similar to those on other campuses.

1. The Boards of Studies

Santa Cruz is organized in part around disciplinary units similar to departments, called Boards of Studies. The chairmen and faculties of these Boards are responsible to a vice-chancellor of a Division. The disciplinary programs are organized around three Divisions; Science, Humanities and Social Science. The responsibility for the development of curriculi, courses, and majors in the disciplines rests with the Boards and the Divisions.

From this outer semblance of familiar structure, one moves to the inner reality that Boards are not departments in a number of important ways. Boards do not have budgets. In essence, they have no financial

existence outside of modest funds made available from the division for expenses incurred during recruiting and other very minor costs. More importantly, Boards only share with the Colleges command over faculty teaching time. No faculty member teaches only for his Board. The difference between Boards and departments is visually apparent in that faculty members' offices are located in the colleges and are not organized by Boards--with one major exception: members of the Boards of Studies in the natural science division have their studies in the science core facilities, Natural Science I and II. One should not, however, be led into assuming that the similarity in the science buildings' function at Santa Cruz represents any major departure in structure; it is rather a compromise that we shall consider later.

As Boards share resources with the Colleges, it is only natural that the responsibility for personnel matters is shared by the Board, through the Division, with the College. In all cases involving hiring and promotion, the faculties of both the Board and College are required to submit evaluations. These evaluations, together with an ad hoc review, are reviewed by the Divisional Vice Chancellor and by the Budget Committee of the Academic Senate and are submitted to the Chancellor for final approval.

There are a few other notes about the organization of Boards that we should make in passing. The disciplinary emphasis of the Boards is further diluted in that all Boards are required to invite at least one faculty member outside the discipline in question to participate in the deliberations of the Board. Moreover, most Boards have seated student representatives, the usual method of selection being the seating of representatives selected by students majoring in the discipline.

2. The Academic Senate

The Academic Senate at Santa Cruz is a division of the Academic Senate for the University of California as a whole. It operates on the Santa Cruz campus exactly as it would on any other campus of the University. Primary responsibility for academic programs and curriculum resides with the Academic Senate. The major vehicle for evaluation of academic programs and curriculum are the local and statewide committees on educational policies. All major issues of educational policy require approval by the local division and the academic assembly representing the statewide Academic Senate. All personnel matters are considered by the Senate Budget Committee. The Senate also functions through various other important committees such as Privilege and Tenure, Academic Freedom, and Research.

3. The Administration

The distinguishing features of the administrative structure at Santa Cruz are the Colleges with the Provosts as their chief administrative officers and the extent to which decision making authority over significant areas of university life have been delegated to them. The Provosts currently have authority over the student residence and dining and recreational facilities, and the nonacademic discipline of their students. In addition, the Provosts play a fundamental role in the educational programs of the colleges. In other respects, the administration at Santa Cruz does not differ greatly from those on other campuses of the University, except for the very significant influence the relative smallness of the campus has on the efficacy of administrative effort.

4. The Colleges

We now turn to those aspects of the Santa Cruz campus which differ from those on most other university campuses in the United States. The Colleges not only provide the opportunity for administrative decentralization--for "the university to seem smaller even as it grows larger"--but they provide a structure for educational programs that do not serve the objective of departments. So far, the Colleges have begun with a theme which was to provide direction for college curricula development. Cowell began as a humanities college with an emphasis on history, largely of the history of Western Civilization, but also on that of non-Western societies. Stevenson followed with a social science theme, Crown focused on science, Merrill on the Third World, College V on the fine arts and Kresge is focused on problems of the environment.

The selection of themes governed the selection of Provosts and while this basic compatibility may have been important for starting the colleges in the appropriate direction, it was not sufficient without a matching of interests of the respective faculties and also of students. As it turned out, the themes have not in most instances been satisfactorily transferred into academic programs. An example might be useful to the reader. Crown College began with science and society as its theme. The Provost is an eminent scientist, and most of the tenured Crown faculty at the beginning were scientists. Crown began by mounting a year-long core course required for freshmen that would deal with the major issues of man, science, and the community. This course no longer exists, and no core course has replaced it. Relatively few of the now optional Crown courses reflect science. Such evolution of the Colleges away from their themes is a general

phenomenon to which we shall return later in this paper as we deal speculatively with some of the outputs of the Santa Cruz campus. Instead, a process of curriculum evolution has occurred which has taken some programs far from their themes.

Beyond their curriculum, the Colleges represent the key to the social and intellectual community on the Santa Cruz campus for both faculty and students. The smallness and the architecture of the Colleges puts the students in close and fruitful proximity to the faculty. In addition, the continuity provided by the four year stay of students in the same College permits the growth of intensive and potentially rich relationships between students and between students and faculty that is difficult to achieve under the more usual conditions prevailing at departmentally organized universities. While this sense of community is there, we still know little of its impact on intellectual and social life of students. This important matter warrants intensive study.

Because only seventy percent or so of the students are residents in the college, one must ask what opportunities for community the Colleges have offered to the commuter students. In the past year the level of residence on campus has dropped. This decline raises the issue of the importance of the residential aspects to the effectiveness of the Santa Cruz system. Consequently, an understanding of how residence affects the student's participation in the intellectual and social community of the College is essential to the development of a sound educational policy.

The College also represents a terminal in a decentralized decision structure, particularly in regard to matters of daily life. Housing and feeding, as we have indicated, is a collegiate responsibility. Most of

the administrative details of concern to students are handled by the Colleges. The Senate has delegated to the College faculties the review and disposition in matters of academic standing. Thus, decisions to dismiss and place on probation are made by the student's College, not by his Board or by the central administration. If a student commits a social indiscretion it is the College's responsibility to review its severity and mete out the proper discipline.

Advising with regard to a student's major program may take place within a College if the adviser is in the student's discipline; otherwise the student can seek out professors in his major field as he might do at any other college or university.

The Colleges collect a fee that provides them with funds to undertake various kinds of activities deemed desirable by students and faculty. Colleges do have budgets and resources. These funds are used to purchase equipment, pay honoraria and to meet other projects such as providing for facilities in weaving, potting, gardening and photography.

It may be useful to describe the typical collegiate administrative structure. In addition to the Provosts, who are the chief officers of the College, the Colleges have Bursars who handle most of the financial and business aspects of the College. The Colleges have Senior Preceptors, faculty members who give part of their time to attending to the details of student life. Academic Preceptors are responsible for handling the administration of the College educational programs and advise students about the academic program of the College. They also supervise the interdisciplinary majors which, by Senate delegation, may be developed under College auspices. These are special programs tailored for individual students.

The faculties of the Colleges are committees of the Academic Senate and each is chaired by a Senate Member different from the Provost. The Colleges have by-laws which specify how the College faculties conduct their business. These usually specify, among other things, an executive committee which meets regularly with the Provost to conduct the regular business of the College. Some of the Colleges have regularly constituted curriculum committees, which handle the educational program in a less formal manner. Each College has a student government which selects representatives to serve in the various College committees. While the form of government and student service varies among the Colleges, students play roles in all major decisions--promotion, hiring, curriculum, use of student funds--in all the Colleges.

The student bodies differ among the Colleges, though the significance of the difference is not easy to evaluate. The Colleges are sometimes described as tribes, each with its own special character. For instance, Crown appears as a moderate, square, academically oriented college, while Stevenson is more activist. It may be too early to characterize the younger Colleges, but Cowell, as the pioneer, appears to others on the campus as a successful venture in the traditional humanistic and artistic mold.

These differences are due to many factors, not the least of which is student selection. At the time of acceptance for admission, students are asked to rank the Colleges according to their preferences, and these are given considerable weight in assigning students to colleges. Other factors taken into account are sex and field of academic interest, with the aim of achieving a balance in these respects in all the Colleges. The students' choices are based on two kinds of information: the informal kind arising

from the student grapevine and from personal acquaintances who have been at Santa Cruz and the description in the College catalogue. It is not easy to specify the relative weights students give to these sources of information. Because of evolving educational programs in the Colleges, the catalogue descriptions can be misleading. In any event, the evaluations of College programs will require an understanding of the differences between the Colleges just described.

VI. THE COLLEGIATE STRUCTURE EVALUATED

Having provided a brief overview of formal structure of the Santa Cruz campus, we now turn to an analysis of how it works; that is, we seek an answer to the question, "What kind of decisions get made?" To do this it is necessary to describe the system of incentives. The adoption of a collegiate structure at Santa Cruz was not accompanied by a formal change in the incentive system. Indeed, the instructions to ad hoc review committees (the committees specially appointed to review faculty members for promotion) remain the same for all campuses of the University of California. It is instructive to take note here of the views of Dean McHenry, Chancellor of the Santa Cruz campus since its inception, on the matter of incentives. McHenry, in a speech before the Utah Conference on Higher Education in 1966, had this to say:

> The fact is that physical planning cannot ensure educational soundness--it can only help it along. The fact is that small numbers cannot guarantee educational soundness--they can only make it more easily attainable. Put quite simply, we believe that the thing that will make the college work--given the assistance of a sympathetic physical and educational plan--is the fact that it will be to people's advantage to make it work.

We wish to raise and attempt to answer two questions about the extent to which it is to people's advantage to make Santa Cruz work. First, we ask, how has the review process worked at Santa Cruz? And second, to put it bluntly, since there is a structure to support undergraduate educational programs outside the major, we ask whether the system of incentives is likely to lead to programs commensurate with this structure.

1. Faculty Promotion Policy

The review procedure for promotion requires letters of appraisal from both the College and the Boards. The Boards treat performance and potential with respect to the standard items: teaching, research and public service. The College usually cannot speak to professional competence in the discipline, but it can assess the faculty member's contribution to College educational programs as well as other forms of College service. At this point it is not clear how much weight will be given to College service--we shall return to the difficulties in assessing the quality of College service shortly--but it is clear that a tension between the Boards and the Colleges exists. When, on a few occasions, the Boards have opposed candidates a College supported, the Boards have held sway.

The importance of involving the Boards and the Colleges in the hiring and promotion process makes it possible from the beginning to consider more than just professional competence. The Colleges look for candidates who can participate actively in the College programs, as well as show their wisdom and, hopefully, good-humored grace in helping to operate the College. The Board of Studies and Division are aware that most faculty members are housed within the Colleges and that the Colleges participate in personnel matters; hence, they know that faculty members must carry their weight and must gather the esteem of the College on the basis of qualities different from narrow professional competence. These can be mutually supportive interests. In the process of hiring, the Boards and the Colleges can be kept complementary in their objectives.

However, as we have just suggested, the situation is far more difficult with regard to promotion through the ranks.

It is important not to identify teaching interest solely with the college and leave research as the single concern of the Boards. The effectiveness of a faculty member as part of the College community goes much beyond his teaching ability. At the same time, the concern about undergraduate teaching is much greater on the part of Boards than we suspect is true of departments in many other institutions. But let us raise the following question: What changes in the traditional weighting of the criteria of research and teaching have taken place at Santa Cruz?

If asked how the criteria at Santa Cruz differ in their application, at the present time most everyone would agree with the statement that quantity of publications alone is not a criterion, but that quality is, and that at Santa Cruz the common law of the promotional system will be that teaching ability is an absolute minimum requirement, that faculty will not be promoted who perform inadequately in the classroom. To say this still leaves the problem of the evaluation of teaching ability and performance unsettled.

There is an additional practical reason for the downgrading of quantity of publications. The amount of time available for research must certainly be less than at other campuses. Because Santa Cruz is a very student-intensive campus, the faculty spends considerable time with students, not just in a formal advising capacity, but in very many informal ways. In addition, the campus has all the committees and the committee work that is associated with the Academic Senate; these are

the traditional committees that are found throughout the University of California, and this is a major burden for any young, small campus. Over and above this, as we mentioned earlier, the Colleges are run by faculties, and these faculties also have committees. The Colleges need counterpart committees to all the committees one finds in the Boards of Studies--committees in regard to hiring, an executive committee for the College, a library committee, common room committee, and many other committees associated with the College as well as those that are identified traditionally with Boards of Studies. This committee work adds a kind of burden which one does not find on other campuses. On the other hand, this activity offers some positive benefit (though at times this is hard to believe), by making it possible for faculty members to participate in the decentralization of the administration of the campus. This participation adds the element we have defined in part as "community." It does not necessarily change the academic program or the social-cultural life of the student directly, but it means that the faculty members are not just outsiders who on occasion enter the classroom and then leave. Rather, they participate significantly in most of the important decisions that affect the total community.

Finally, because Santa Cruz began from a vacant ranch, an immense amount of institutional development has been required; indeed, Santa Cruz had to be organized from the ground up. This added investment in the institution itself has taken much time and has often been trying. This combination of committee work, an "open-door policy" with regard to students and institution building, often keeps faculty from finding

large blocks of uninterrupted time in which to do research. Most faculty members find that they have to be very inventive about finding ways of getting these longer blocks of time in which to collect their wits. In the long haul, how much the purer forms of scholarly and scientific activity have suffered on this campus and whether this diminution ultimately affects freshness of the faculty ten years from now in the classroom, is a question that needs investigation.

As we noted above, in a few instances promotion to tenure was denied to faculty members the Colleges supported. This should be taken to mean, in the absence of a detailed analysis of the cases, which is obviously not possible, that the effect of the system of incentives is still unclear. As we shall argue below, it has not been powerful enough to enable Colleges to command the resources many College faculty members believe necessary for the proper development of College educational programs. The system's strength, or lack of it, has not been fully tested because, since graduate instruction has expanded much more slowly than initially planned, the impact of graduate programs on undergraduate teaching efforts has not yet been felt. It could be argued that attention to undergraduates has occurred simply because there are so few graduate students.

There is more to the matter than this absence argument. The lack of rapid growth at the graduate level has dampened the desire to hire faculty members who have a predominant interest in graduate instruction. This undergraduate first approach is another key choice in the development of the campus. The kinds of faculty members that even the Boards of Studies

sought had to be able to teach undergraduates no matter what their professional specialization. Many of the Santa Cruz faculty have had some small college experience. A fairly large number of them have either been undergraduates or at one time have taught in one of the better small colleges in the country, although practically all of the faculty have been hired from the major universities around the country. Most of the early faculty came with a strong undergraduate interest, and indeed, the kind of faculty attracted to Santa Cruz had to be willing for at least some period to give up any major graduate student involvement. Had the choice been made to begin with a development of a prestigious graduate program, a great deal of weight would have been placed on the visibility of the faculty member as a special researcher, grant-getter and graduate student teacher. Interest in and ability to teach undergraduates would have been unimportant considerations in the selection of faculty. What the introduction of graduate students and programs has and will do to Santa Cruz is one of the most important and unanswered questions facing the campus community.

Let us summarize the argument thus far in the following way. The collegiate structure combined with the present incentive system and the faculty and students presently on campus support a commitment of faculty to working with undergraduate students. This involvement represents one of the major thrusts of the campus and will be the basis for some of the hypotheses concerning the results of the educational process at Santa Cruz.

2. The Curriculum

It is important to have said that Santa Cruz is different, that it is headed in the right direction. Nevertheless it is also important to say

that the reality falls short of the promise. The collegiate educational programs are less than commensurate with the collegiate structure. To help make the shortcomings clear and pinpoint some of their causes, we shall set out an idealized model of a collegiate structure. Our purpose here is not to make easy criticisms of our colleagues but to highlight and make explicit some of the important problems facing the campus.

The ideal collegiate campus would have an academic plan that specifies the objectives of its educational programs with sufficient clarity and fullness to make clear the implication for the kinds of faculty by discipline and special interests. It would have at its center a theory of instruction that would generate efficient workload requirements such that the number of students working with individual faculty members would be fair to students and to faculty and make sense in terms of program objectives. The agencies, Boards and Colleges, responsible for programs would have to justify their command over faculty and other resources regularly in terms of fairness of workload and effectiveness of program. Faculty promotion and retention would depend heavily on the quality of contribution to program objectives.

The Santa Cruz Academic Plan has not, at least up to now, followed a procedure for allocating new faculty positions among the disciplines in a coherent way. The rule is of the thumb--one-third of the positions in each of the three Divisions. Further, the admissions policy has in the past been only loosely coordinated with staffing plans. There has been no theory of instruction or of class size. Individual instructors determine many of these questions unilaterally. Certain disciplines have very large classes, others rather smaller ones. A casual observer could conclude that undergraduate educational program objectives had low priority because so little

attention has been given to making sense of the program resource requirements. Indeed, one could conclude that like other non-collegiate university campuses, undergraduate programs were subordinated to the research interests of the faculty.

To some extent this is true. However, the academic plan is currently under revision and there is reason to believe that serious attention will be given to the specification of objectives and to program evaluations suggested above. It must be recognized that the sheer magnitude of the task of starting an institution on a cow pasture accounts for much of the lack of coordination in planning. However, if such a plan were in operation, we would expect to find reasoned and coordinated programs not unlike Tussman's, Bell's or the Hazen Foundation's described above. The question is, then, why have College programs developed in such a desultory way?

General education requirements are specified at Santa Cruz in terms of conventional distribution requirements which must surely be regarded as a stop gap measure adopted at the beginning but hardly the result of serious consideration by the Santa Cruz Faculty. Indeed, a proposal to abandon the breadth requirements has been fairly widely discussed, though it is not clear whether the abandonment is desired to make possible more coherent programs in the Colleges or to eliminate all efforts at providing coherence.

The themes have not, with one exception, provided a basis for developing a general education program. Cowell College has retained its six quarter sequence focusing on the history of Western and non-Western civilizations. Its approach has been largely traditional, demanding less of the faculty than new departures would have. Stevenson College has abandoned all but

one quarter of its core program. Crown College has abandoned its core program entirely and offers instead (as do all the Colleges to some extent) a potpourri of individual efforts by the College faculty. These courses taken individually are often exciting and imaginative, but taken together cannot be regarded as a coherent program of study. Merrill College and College V are still in the throes of early development. Kresge College is in the very early planning stages and will not have students until 1971.

One generalization can be made, we believe, about this state of affairs. It takes patience, time and effort to work out a general education program of the kind described above and the faculty chooses not to devote to these enterprises the requisite time and energy. We speculate that they do not do so because (1) they are apprehensive about taking on responsibilities in enterprises they regard as outside their special competence, (2) they are quite uncertain whether they will be adequately rewarded for doing so, and (3) in any event, they believe that such an investment of effort cannot be easily moved, as it were, to another university. Further, even if an individual faculty member is willing to bear the risk the incentive system appears to impose, he is impeded by the fact that others will not make similar commitments with the consequence that his efforts are likely to be largely wasted. However, it must be added that the collegiate structure does force the questions into the open.

Much can be done to clarify and improve the situation at Santa Cruz and the current revision of the Academic Plan appears to be moving in that direction. However, Santa Cruz is imbedded in a nationwide system, so that certain important aspects of the incentive system are out of its control. System wide remedies of the kind suggested by Buchanan and Develetoglou are out of our purview.

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Major programs in the disciplines do not suffer from these uncertainties to the same extent. The major programs at Santa Cruz appear to be more flexible than those found in most departmental universities. Of particular interest is the interdisciplinary major, administered by the College faculties, which affords interested students the opportunity to devise their own programs. Interdisciplinary options are available in many of the regular major programs. There is also the option for Colleges to devise their own major programs. How different Santa Cruz is from current practice elsewhere should be determined.

We have been, up to now, chiefly concerned with the relationship between the collegiate structure and the first or general education program. A few words about what happens to the interdisciplinary cooperation among faculty in a collegiate setting in the absence of powerful departments may be useful, especially since the breaking down of rigid departmental lines was one of the objectives set for the Santa Cruz campus by Clark Kerr and Dean McHenry.

One might say that propinquity is the mother of invention. One of the early ventures at Santa Cruz was the History of Consciousness graduate program planned and staffed by faculty in the Social Sciences and Humanities. Undergraduate majors are offered in Community Studies, which cuts across disciplinary lines in the Social Sciences and Humanities as well and also in Environmental Studies, which includes faculty from the Social and Natural Sciences. Further discussions about the possibility of interdisciplinary College major programs are underway in at least two Colleges.

The faculty has been hired in most instances chiefly on disciplinary criteria rather than interdisciplinary interests. The physical arrangements

of the Colleges afford opportunities for easy interaction and this ease has contributed to the development of the programs already mentioned. Moreover, many faculty offer courses in their Colleges which they probably could not offer under the auspices of a department, though the Boards at Santa Cruz offer a good deal of flexibility. On occasion, two or three persons have joined together in such efforts. In some instances, these ventures outside the narrow discipline have given rise to the question of how far a person should be permitted to range outside the areas of his special competence. Beyond this, some have asked what the minimum requirements of intellectual subsistance must be in a university course; that is, is having a "life experience" the proper subject of a course. These questions will be answered by common law decisions, College by College, and by the Academic Senate. The questions are not unique to Santa Cruz so that in due course comparison can be made between the solutions reached here and those offered in various universities.

VII. SPECIFICATION AND MEASUREMENT OF BENEFITS AT SANTA CRUZ

Given this brief description of the Santa Cruz experience, what can be said about the benefits likely to result from it? The problems of evaluating the collegiate structure are formidable, indeed. It will help to get perspective to see how Joseph Tussman has attempted to come to terms with the problem of evaluating his own Experimental Program. He states,

> Evaluation is difficult. The traditional lower division "programs"--if they can be called that--are not really evaluated. Individual courses generally are sponsored by departments and approved by faculty committees, but beyond that there is little "evaluation." We rest on tradition and ad hoc judgment. The Experimental Program, as a drastic departure from standard practice, will seem to need special justification, but it is difficult to see what that would be.
>
> Of the 150 students who entered the first class 90 completed the Program. Roughly, 20 students left the Program at the end of each semester. Most transferred into the regular program, some left school for a variety of personal reasons. Of the 90 who completed the Program, about 15 are taking a junior year abroad or elsewhere, a few have dropped out for a while, and the rest are continuing at Berkeley. It will be some time before we even know how they fare in their upper division programs, and it is not clear what that will prove.
>
> We are skeptical about evaluation procedures and are reluctant to get heavily involved in them. We recognize, however, that if the Program is to continue it must receive faculty sanction beyond the authorization sufficient for its "experimental" phase. A "case" for the Program will have to be made, but apart from giving its rationale and reporting the experience, we do not really know what to do or what will be required.[19]

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[19] Tussman, op. cit., pp. 17-18.

We, nevertheless, propose to walk in where angels fear to tread.

What makes this problem so intractable is that the payoffs take the form of the quality of student lives, both public and private, and direct evidence on quality can be gained only over a lifetime. One is reminded here of Aristotle's dictum that a man can be judged happy only after he is dead. As we noted above, there may be proxies for these qualities which can be measured, say, just at the end of the students' four year college career. It may prove helpful to consider what has already been done in this area.

In an unpublished paper entitled "The Methodology of Research on College Impact," Alexander Astin reviewed the state of the art and found it wanting in several important respects. His principal complaints are that most studies of the effects of college fail to make adequate allowances for variations in "the talents, skills, aspirations and other potentials for growth and learning that the new student brings with him to college" and "administrative policies and practices, curriculum, physical plant and facilities, teaching practices, peer associations and other characteristics of the college environment."[20] These are precisely two important classes of information we have, or could have, at our disposal at Santa Cruz. We want to know what the student brings so that we can estimate the influence of the collegiate environment on him.

The central question remaining, then, is how to measure what the student takes away. On this Astin is not so helpful. He notes that

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[20] See Alexander Astin and R.J. Panos, The Educational and Vocational Development of College Students, Washington: American Council on Education, 1969, for an example of multi-institutional research not subject to these difficulties.

> research is usually concerned with those relatively immediate outputs that can be operationalized. Specifically, then, the term outputs refers to measures of the student's achievements, knowledge, skills, values, attitudes, aspirations, interests, and daily activities. Adequate measures of relevant student outputs are, clearly, the sine qua non of meaningful research on college impact.[21]

To make a long story short, nearly everything that is susceptible to it has been "operationalized" but the resulting measures remain proxies for the quality of lives over lifetimes without any firm evidence bearing on how good these proxies really are.[22] We do not wish to suggest that Astin has failed to recognize the difficulties of measuring the products of higher education, especially those that do not lead to enhanced money incomes. Rather, we mean to say that we cannot expect to get easy answers by looking at what has already been done. Tussman was rightly perplexed and so are we.

We offer the following hypotheses to indicate the directions efforts to evaluate the results of undergraduate educational programs might take. In all cases it is to be understood that proper account of variations in what students bring to the university is taken.

I. The proportion of Santa Cruz graduates committed to developing serious careers and succeeding at them is higher than at departmentally organized universities.

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[21] Ibid., p. 2.

[22] Proxy measures, such as graduate record examination scores that can be observed at the end of a student's college career, need not be indicators of the quality of life students lead. Simply because they are "operational" should not mean that direct investigation of what students do later--as the investment in human capital becomes productive--can be avoided. We are skeptical of these proxies in the absence of a convincing indication of their connection to these investment returns, especially because they shift the focus away from the long-term pay-offs. If this investment is really productive, there must be a way to establish it.

II. The proportion of Santa Cruz graduates understanding, having a serious commitment to and devoting time and energy to res publica, the public thing, is greater than at departmentally organized universities.

III. The quality of the private lives of Santa Cruz graduates, including intellectual awareness and understanding and aesthetic sensibility, is higher on average than that of graduates of departmentally organized universities.

IV. The experience of students over their four years as undergraduates is more satisfying to them than their experience at a departmentally organized university would have been.

V. The quality of intellectual life of the faculty at Santa Cruz is more exciting, more wide-ranging and more productive of new perspectives and insights than the faculty at a departmentally organized university.

VI. Graduate programs at Santa Cruz make a more serious effort to train graduate students to be effective teachers for those students who plan to follow teaching careers than at departmentally organized universities. Graduate students are not exploited as a cheap supply of labor for lower division teaching duties.

We have little to say at this point about how to test these hypotheses. The next step is to devise ways to do just that.

There is another problem we have not confronted which should be stated clearly. Perhaps the best way to do so is to return to Clark Kerr's formulation of the unresolved problems, the major portion of which was quoted above.

> Additionally, there is the urgent issue of how to preserve a margin for excellence in a populist society, when more and more of the money is being spent on behalf of all of the people. The great

> university is of necessity elitist--the elite of merit--but it operates in an environment dedicated to an egalitarian philosophy. How may the contribution of the elite be made clear to the egalitarians, and how may an aristocracy of intellect justify itself to a democracy of all men? It was equality of opportunity, not equality per se, that animated the founding fathers and the progress of the American system; but the forces of populist equality have never been silent, the battle between Jeffersonianism and Jacksonianism never finally settled.[23]

There can be no doubt that the Santa Cruz campus is part of the meritocracy. There are many problems raised about the elitist character of the University of California and of this campus that we are not prepared to discuss, let alone suggest how a collegiate structure might contribute to their solution. Perhaps it will suffice to enter these remarks as a necessary caveat.

Let us say, in conclusion, that we regard these remarks as only a beginning in formulating a research program that might produce answers to the question whether the collegiate structure produces results of significant value. Moreover, even if it were possible to test at this time the hypotheses just set out, there are important reasons why the results could not be regarded as definitive. As we hope is clear by now, the campus is still in a formative stage. Definitive evaluation must wait until the character of the educational programs at Santa Cruz become clear.

To those who may want to look to Santa Cruz as a model for new campuses elsewhere, we submit the caveats already mentioned. We suspect that the crucial question is whether it is possible to hire and promote men and

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[23] Kerr, op. cit., p. 121.

women who wish to give a central place in their careers to excellence in undergraduate teaching. We have no doubt that the supply of able persons is adequate to staff Santa Cruz and many other institutions of similar size were such commitments given strong support. We do have doubts that, given the results of the academic revolution, the faculty will permit resources to be devoted to the support of such commitments.

VIII. SOME RECOMMENDATIONS FOR SUPPORTING COLLEGIATE PROGRAMS

We have proposed that the benefits produced by the introduction of colleges at Santa Cruz be measured by testing the six hypotheses outlined just above. At the same time we suggested that with respect to the development of substantive and imaginative non-professional educational programs in the colleges much remains to be done. Indeed, we have argued that because the changes in formal structure have not been accompanied by corresponding changes in incentives, serious obstacles to the development of such collegiate educational programs have arisen which may keep these programs from getting off the ground--hence to be observed in catalogue descriptions only. Moreover, as we noted earlier, faculty find it difficult, in the absence of successful models, to imagine what promising collegiate programs would look like.

To the extent that this is true and the obstacles remain, tests of the hypotheses may show that the collegiate structure has not produced its promised benefits, even though these benefits could be achieved if these obstacles were eliminated or, at least, partially removed. Thus, it may be found that the proportion of Santa Cruz graduates making commitments to socially constructive careers and sustaining concern for the public thing does not differ from that of graduates of departmental universities with similar admissions policies. Such a result could be interpreted as showing that the "value added" at Santa Cruz is no different from that added at other elitist campuses falling chiefly into the category of identifying candidates for the meritocracy. But this result could also mean that the potentialities of the structural changes at Santa Cruz have not been fully

exploited. Proper tests of the hypotheses require that all feasible steps be taken to encourage development of collegiate programs. Only then can we tell whether Clark Kerr's structural revisionism works. It seems desirable in view of this that we propose some such steps.

The chief impediment to the development of collegiate programs arises out of the system of incentives that governs not only faculty promotion, but also access to status and prestige in the academic professions. The character of this system was dramatically portrayed in the recently published report of the American Council on Education, ranking the graduate programs of the nation's universities. Very simply put, a university's standing depends on the standing of its departments; its departments' standings in turn depend on the standing of their faculty; the standing of their faculty depends on the quality and quantity of their professional output, and this output is chiefly of a kind that is easily attributable to the individuals who produced it. Participation in collegiate programs cannot be expected to result in output that could readily be attributed to individual faculty members and that would enhance their own and the institution's prestige. The challenge, then, is to find ways to reward faculty members for participation in collegiate programs that will compensate them for the impact on their professional careers such diversion of their time and energy entail.

The problem is complicated by absence of a working model of a general education program. Ideally, a successful program would provide evidence to faculty of both the intrinsic and extrinsic rewards to be had from diverting energy from their professional concerns--we argue here, admittedly, from faith, not works. But to have a working model requires that the faculty

act on faith initially. Not only must they be willing to leave their professional interests for a time, but they also must cooperate with each other and depend on each other in unaccustomed ways. Faculty members have been trained to be individualistic. In graduate school they have observed the workings of Mahoney's principle[24]: "Your course is your castle--protect it." It is not surprising in the light of this that courses are often organized to supplement research. Of course, this is as it should be when the students taking the course are being trained to do research. However, this arrangement is not a satisfactory way to achieve the humanistic objectives of general education. The problem, then, is to find ways to encourage faculty to break out of this individualistic mode of teaching and to join in a cooperative effort that does not afford the usual professional rewards.

There has been a good deal of discussion at Santa Cruz about changing administrative procedure to create incentives for faculty to contribute to college programs. Some have even argued that Boards be eliminated from decisions on promotions and tenure. We discuss some possible ways to substantially reduce Board involvement in personnel matters below. Although we believe such changes could prove beneficial, we suspect that these changes would not, in themselves, fundamentally alter matters. Presently, the recommendations of the Boards reflect the traditional weighting of teaching, research and public service. Knowing this, most faculty members are quite broadminded when reviewing their college colleagues. The absence of generally accepted criteria for college service, owing to the absence of substantive collegiate

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[24]George Mahoney, a perennial candidate in Maryland, ran for the Governorship against Spiro Agnew on the platform "Your home is your castle--protect it."

educational programs, has not been of much concern because of the existence of the Boards and their proven criteria. Given this situation, colleges have often served as disinterested parties reviewing and checking the Boards. The fundamental question is how the college faculty will act when it weighs college service and research, knowing that it is the sole faculty agency reviewing the question. Would the college faculty be willing to reward good college service then? We do not know. Given the uncertainty the lack of a positive answer to this question creates, let us turn to a consideration of what is to be done.

A Program for Change

The following list of changes are of two kinds: (1) those which serve to change the context in which courses are offered from the individualistic to the programmatic mode; and (2) those which make administrative procedure more supportive of college programs. Later, we will attempt to place these changes in a coherent planning framework. For now we offer them as a partial list of feasible steps in the right direction.

A. Changes in the Context of Instruction

1. Support for planning college curriculum. Resources should be made available to permit the faculty of each college the time and other necessary support to develop coherent educational programs in which most of the faculty in each college could participate. Programs should be designed to take advantage of the strength of the faculty in terms both of intellectual substance

and of modes of instruction. However, the programs should meet the following criteria. Programs should be designed so that a majority of the students will participate because they find them interesting, attractive, and focused centrally on their own best interests in the broad sense, as set out by Joseph Tussman.[25] Programs designed to serve a few students with large benefits going to the faculty should be ruled out. Lower division core courses organized around the theme of the college are not likely, judging from past experience, to be addressed to the entering students' condition and needs. These themes are more suitable for interdisciplinary major programs and the benefits that confer are likely to be narrowly distributed among students.

2. Support for promising programs. Resources should be provided to those colleges which develop promising programs to permit experimentation. A very important part of the experimental mounting of programs is the concommitant development of evaluations procedures both in relation to the impact on or value added to students and to the quality and quantity of faculty contribution to them.

3. Continuing support for successful programs. Resources should be made available to colleges to continue successful programs. Equally important is the provision of assurance to faculty members that significant contributions to these programs will be recognized in the promotion process. Parenthetically, it should be noted that

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[25] See p. 20 above.

successful programs of this kind could be first steps in the development of a three-year B.A. as suggested by the Carnegie Commission.[26] It is highly unlikely that Boards will make the kinds of innovations the Commission has proposed.

B. Changes in Administrative Procedure

1. Faculty promotion. To give the colleges more explicit control of the promotion process, the colleges should be allowed to take full responsibility for promotion and tenure for those faculty who devote at least two-fifths of their teaching effort to collegiate programs. Boards would only review the quality of the research of such faculty in a letter to the Provost.

2. New appointments. Colleges with successful programs should be permitted to take the initiative in hiring with advice from the Board on competence in the field, but with the substance and direction of the candidate's interests outside their purview. This advice might be gained by small ad hoc or special committees chosen by the Chancellor from among those able to judge the particular scholarly competence in question.

3. Organization of resources not used by college programs. All teaching time and effort not used productively by the colleges should be placed under the administration of the three vice-chancellors. We have not hitherto made substantive comments on major programs. We wish to say here, very briefly, that these

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[26] The Carnegie Commission on Higher Education, Less Time, More Options, New York: McGraw-Hill Book Company, 1970.

programs should not be left to drift with allocations of FTE made on the basis of student loads only. Rather, they, too, should be subjected to judgments about performance. On a growing campus, this is relatively easy to achieve, since new FTE can be withheld from unsatisfactory programs. On the basis of performance, disciplinary programs should be permitted to bargain for resources from collegiate programs.

4. Allocation of FTE. The allocation of FTE has to be centrally managed by the Chancellor and Executive Vice-Chancellors who are the only persons in the administration who can take a global view of the institution. This means that a consistent set of priorities must be reached in which all undergraduate, and indeed, all programs are given their proper weight, and FTE allocated on the basis of program performance and faculty productivity.

5. Teaching load. Teaching in one's discipline at the upper division level can strongly complement one's research and scholarly activity. The teaching load required of faculty members at Santa Cruz varies among the disciplines, reflecting to some extent variations in complementarity of teaching and research, but also the fact that Boards have the power to reduce teaching effort at their own initiative. Recognizing the smaller extent of complementarity between research and teaching in college programs, a powerful means for rewarding extra effort and good college service could be created by requiring a five course load of all faculty with released time for research in the hands of

the colleges. Productive effort in the college which takes time from scholarly pursuits can thus be compensated in a very direct way.

We have already suggested what we regard as an essential ingredient in an ideal collegiate campus; namely, an academic plan, together with sufficient staff to coordinate on-going planning and budget review, that specifies objectives of all the educational programs on the campus with sufficient clarity to ensure adequate support for them according to an established set of priorities. In most universities, program budgets (which are chiefly departmental budgets) are keyed to inputs, not outputs. This procedure ensures the subordination of undergraduate programs to the research interests of the faculty. The kind of output or performance budgeting we suggest here is really the only way we know, given that the Buchanan-Develetoglou recommendation radically altering the financing of universities referred to above is out of the range of our recommendations, to make faculty believe that priorities have really been reordered.

We mentioned earlier that the administration at Santa Cruz has already begun a major effort at coordinated planning and budgeting this year. While it is still too soon to tell how this will develop, it is a move in the direction which could produce significant concrete evidence on the commitment of the central administration to support collegiate educational programs. We would like to give some idea of the ingredients of an adequate planning and budgeting process and then address ourselves very briefly to the problem of measuring output.

The need for a greater emphasis on coordinated management of resources exists on all campuses that aspire to effective undergraduate educational

programs, and not just to Santa Cruz. Effective management of resources requires a strong sense of institutional objectives that can be translated into educational programs. These programs must be specified in such a way that their requirements and the costs can be identified. Thus, programs must specify the kind of staff required and the amounts of time and energy required of them which in turn requires specification of models of instruction, of class size and of other kinds of program support. Program requirements must be projected over appropriate intervals of time, say, three to five years, and all programs should be subjected to at least annual review which compares the results of programs to their cost and which makes whatever adjustments are necessary between programs to meet the objectives of the overall academic plan. In a word, resource allocation must be centrally coordinated within an overall plan, decision-making about programs delegated to those in charge of the programs and good performance rewarded and inadequate performance penalized. We will return to the problem of measuring performance later.

One can observe various aspects of these management tools in operation on many campuses. The academic plan is available. The committee on courses reviews the qualifications of the instructor and the content of a course, the committee on educational policy reviews the content of new educational programs, and the graduate council reviews new graduate programs. In administrative councils similar reviews are undertaken; however, these reviews are usually undertaken when changes occur rather than on an annual basis. They usually emphasize inputs rather than outputs, and usually have no costs attached to them. Rarely are they tightly related to the objectives of the campus. It is not surprising, with this kind of fragmented management, that the control over the use of important resources within the university has

rested with departments and under such circumstances that resources have not always been used for the advancement of undergraduate educational programs. Indeed, the achievement of high ratings by the American Council on Education would seem to require this kind of fragmentation.[27]

This kind of a review procedure undoubtedly has allowed the disproportionate resource comsumption for graduate work; it has undoubtedly allowed for the setting of teaching loads so that they vary among departments and within departments. Any even casual review of most campuses would show commitments of resources to instructional and research areas that have a high priority to faculty but not necessarily the same priority in student or administrative communities.

We should mention that most major universities have made large investments in institutional research. Such studies are essential if the kind of centralized management we propose is to be successful. However, these studies unfortunately are seldom related to resources, costs and benefits and seldom used in reviewing operations of university programs. This suggests that such information is not helpful in the drive for high ratings by the ACE. A test of seriousness of purpose is the significance attached to internally generated analytical studies in the annual review process.

Once programs are adopted and resources allocated to their support it will become necessary to review them to determine whether they merit continuing support and to judge the quality of faculty contributions for use in the promotion process. This means that programs might be discontinued, an

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[27] See David Breneman, An Economic Theory of Ph.D Production: The Case Berkeley, Ford Foundation Research Program in University Administration, 1970, paper P-8.

infrequent phenomenon in the university, and that faculty members might be judged wanting, a much more frequent phenomenon. To do this, criteria must be established to judge program benefits and faculty contributions. These will differ from the standard criteria based on usual individualistic models of faculty productivity. Moreover, as a humanistic enterprise, general education is not "value free."

We recognize that the liberalizing role of the university has been under attack from outside forces. Some would have us teach students "commonly accepted moral values." But there are other dangers closer to home. Thus, some faculty members, who might argue along the lines Joseph Tussman attributed to some of the academic critics of general education programs, would say

> we are not . . . an institution for moral reclamation; we are not the spiritual arm of the political state. We are a secular institution of higher learning in a pluralistic society. We are not the priests of your invisible city. Moreover, this is a democracy, and a democracy is based on individualism . . . and furthermore--who are you--or we--to judge, to presume to teach virtue, to impose values on others?[28]

This argument must be confronted. Of course, it may be that no internal consensus can be reached, that in truth "the center does not hold" and we are adrift. However, we have no right to conclude this before we have really tried.[29]

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[28] Tussman, op. cit., p. 4.

[29] There is the possibility, very strong in our opinion, that the problem of achieving consensus is less one of conflicting values than one resulting from the bureaucratic intrenchment of individualism. It may be that only something like the drastic overhaul proposed by Buchanan and Develetoglou discussed above can really break the back of bureaucratic resistance to change.

Assume that a workable consensus can be reached on objectives of collegiate programs and on the principle that this consensus is to be reflected in the level of resources devoted to these programs. It remains to be determined how the performance of program and of faculty is to be evaluated. Evaluating teaching performance in departmental universities has long been an "unresolved problem." We do not wish to enter the "publish or perish" debate here. However, we note that efforts to evaluate performance in standard courses are not new: the University of Washington has done this in a systematic way for very many years. We believe that where there is a will there is a way and a good place to begin is with the fairly extensive amount of work that has already been done.[30] Beyond this beginning we believe that the question of criteria will in large measure be answered in the process of developing and executing programs. Much of what we say here is based on faith and not works, but if we are right we will, as Chairman Mao has said, "learn to evaluate by evaluating."

A final word on the probability of success is in order. In our judgment there is some chance that the faculty at Santa Cruz will seize the opportunity afforded them in large measure by the concerted efforts of the administration to support collegiate programs. Only time will tell. Nevertheless, the power of professionalism cannot be understated. The Santa Cruz campus is part of a nationwide, indeed, international system and the administration and faculty can have no direct influence over any but a very small segment of this system. Moreover, the tradition of academic freedom means that the

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[30] One reason that faculty may not make use of the available literature on evaluation is because of the low priority they attach to teaching performance relative to the standard kinds of output.

university is decentralized in a way no other public institution is. Faculty time and energy are the major resources of the university, and these are largely allocated by faculty members individually. Indeed, given that our proposals are put into operation and that they achieve the desired results, it will remain for faculty to choose between the alternatives. Promotion and prestige will still come in the University of California from scholarly achievement. Like the French aristocracy before the revolution, the academic meritocracy, supported by the taxpayers, is free to do what it pleases. They will still be able to urge the masses to eat academic cake.

Thus, success depends on the will and imagination of individual faculty members who can, if they choose, make the colleges work, or instead give them the appearance of working while using them in chiefly individualistic ways. Whether they do this depends in part on the leadership and vision of the administration including now, and especially, the Provosts whom we have more or less implicitly grouped with the faculty rather than the administration. This grouping can easily be given too much weight. Leadership is, perhaps, the crucial element, but it is one about which, as economists, we can do no more than assert its importance. Given imaginative leadership we believe a collegiate campus can be made to work. At the very least, it's worth trying.