

THE CASE FOR INTERDISCIPLINARY STUDIES: RESPONSE TO PROFESSOR BENSON'S FIVE ARGUMENTS

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The objective of this paper is to respond serially to Professor Benson's five arguments by setting forth a conception of interdisciplinary study, not necessarily as it is practiced but as it should be, which largely meets his criticisms.¹ The final section of the paper offers suggestions for steps that the interdisciplinary studies profession should take to respond fully and effectively to its critics.

A. Responses to the five arguments

1. Interdisciplinary studies rest on serious conceptual confusion.

While single interdisciplinary courses may have a clear sense of purpose and method, it is undeniable that the practitioners of interdisciplinary or integrative studies share no such clear sense. This is apparent in the very analysis used by Professor Benson. While he assumes that interdisciplinary studies are concerned with "connections ...between disciplines,"² he recognizes that some interdisciplinarians are more concerned with connections in the real world ("the natural connectedness of things"³), others with connections in ("the unity of") our knowledge of that real world, while still others emphasize the "practical value of interdisciplinary projects in the solving of specific problems"⁴ where it is unclear that any of the above connections are of direct concern. In my view this last problem-solving conception of interdisciplinary studies is the most fruitful. It has the greatest capability of meeting the five arguments against interdisciplinary studies, and the connections that it requires are different from any of the above.

Interdisciplinary study should be understood to start with the confrontation of the interdisciplinarian with the world, be it a problem, an event, or even a painting. Out of that phenomenological confrontation comes a question, one which is too broad to be answered by any single discipline. The strategy of the interdisciplinarian is to bring the relevant disciplines (or schools of thought) to bear upon the question, one at a time,

letting each illuminate that aspect of the question which is amenable to treatment by the characteristic concepts, theories, and methods of the respective disciplines. Out of the resulting disciplinary insights, the interdisciplinarian fashions a response to the question that would ideally be a complete answer but which at the least leads to a greater appreciation of the nature and complexity of the question. What distinguishes interdisciplinary study from simple eclecticism is that disciplines provide much more than pieces of a jigsaw puzzle that the interdisciplinarian need merely arrange in proper order. Disciplinary insights are often conflicting, and when the disciplines are chosen from more than one area, such as the natural sciences and the humanities, their insights are typically of a qualitatively different nature as well. As Professor Miller stresses,⁵ disciplines each have their distinctive world view or way of looking at the world, and it is these world views with their often contradictory underlying assumptions and diverse value judgments that lead to conflicting or incommensurate insights. The interdisciplinarian, then, may not simply combine disciplinary insights; rather, each world view and its assumptions underlying those insights must be illuminated and then evaluated in the context of the question at hand, before any interdisciplinary answer can be attempted. Out of this process comes a richness of insight not available to the adherent of any one disciplinary orthodoxy, as the interdisciplinarian comes to appreciate the value and legitimacy of alternative perspectives .

Professor Benson asks that we construct a "coherent, defensible sense of (our) purposes," that we be clear on "what it means to connect the disciplines" and on "what the value of such activity might be,"⁶ and that we refrain from excusing our lack of clarity on the purported vagueness of the disciplines themselves. He is correct in his contention that none of the notions of "connecting disciplines" which he presents meets these requirements, but I submit that the conception set out above does meet them. The disciplines can give only partial answers to questions that go beyond their bounds, and when seen from the perspective of certain other disciplines their answers seem flawed as well as incomplete.

The purpose of interdisciplinary study is to address questions that transcend disciplinary boundaries. Only the interdisciplinarian, who is familiar with and receptive to those contrasting world views, can deal adequately with such questions. Further, interdisciplinary study does not directly involve the connection of disciplines, which would constitute a colossal intellectual task and a politically hopeless one in times of turf protection. Instead the interdisciplinarian connects disciplinary insights. This task is formidable but limited to the one question at hand, and it admits of the possibility for specialization, so that, for example, an interdisciplinarian might specialize in questions related to the modernization process. Professor Weaver has argued quite convincingly, I

believe, that interdisciplinarians can only achieve intellectual respectability when they specialize.⁷ Further, the value of interdisciplinary study lies in the fact that many important questions transcend the disciplines.⁸ Finally, this conception of interdisciplinary studies in no way depends on well-defined boundaries between disciplines, only on clarity in their insights and in the world view underlying those insights.

Professor Benson goes on to criticize interdisciplinary studies which are nothing more than "a matter of borrowing insights or methods from one or more disciplines to illuminate problems in another." He also insists that we "should be prepared to articulate more fully the principle or principles that determine when these connections are to be sought." He asks, "What principles guide the integrative studies practitioner in choosing to make these connections rather than those?"⁹ Finally, he requests that we define our methods more clearly. The conception of interdisciplinary study presented in this paper involves questions transcending any one discipline, thus avoiding the first criticism. The second one is not so easily addressed. Certainly it can be argued that the interdisciplinarian chooses disciplines that purport to address at least some aspect of the question, and the interdisciplinary specialist may only ask questions which require a certain set of disciplines for an answer. But it is not so clear what principles guide the interdisciplinarian in constructing a coherent response to the question out of mutually incoherent disciplinary insights. How does the interdisciplinarian, for example, connect the ethical insights of the philosopher, the technical insights of the natural scientists and the behavioral insights of the economist and political scientist into a coherent proposal for U.S. energy policy? Developing sensitivity to the world views and underlying assumptions of each discipline points out the direction, at least, which the interdisciplinarian must take to look for connections, but we are still far from meeting the last requirement that we spell out our method with some precision.

2. Interdisciplinary study requires a mature base in the disciplines.

Professor Benson presents the argument that until a student has a "firm hold" on "at least one of the contributing disciplines," that student can be "little more than a spectator" in interdisciplinary studies because of the "voluminous literature and often highly technical research traditions" of the disciplines. He goes on to note that if students are assumed to have little disciplinary sophistication, the course will be "almost totally void of a critical base."¹⁰

The appropriate relationship between the disciplines and interdisciplinary study is a divisive issue among interdisciplinarians too. Even those who accept the notion of interdisciplinary study presented in this paper might well argue that it takes time to learn the world view and assumptions of various

disciplines, to say nothing of their characteristic concepts, theories, and methods. If interdisciplinary study builds on all these, then perhaps graduate school is the earliest we can expect students to be prepared to undertake serious interdisciplinary study.

I believe, however, that there is an essential complementarity between the disciplines and interdisciplinary study that makes it desirable for students to learn them together, from first semester freshman year on if not in high school. An academic discipline is a challenging intellectual game at best, and a sterile and meaningless exercise at worst, when it is taken out of the context of human experience, which is always too broad and complex to be captured fully by any one discipline. The disciplines need interdisciplinary studies to come alive to the students, to connect meaningfully to their lives, fully as much as interdisciplinary study needs the disciplines. Moreover, when students are thoroughly grounded in a discipline before becoming exposed to interdisciplinary studies, they tend to become indoctrinated into its world view, uncritically accepting its often implicit assumptions.¹¹ This indoctrination makes even more difficult the task of developing in students the openness to alternative ways of looking at the world which lies at the heart of the interdisciplinary method.

Interdisciplinary studies should, and can, be taught alongside the disciplines. A typical freshman takes four or five courses at a time, each in a different discipline. An early and continuing task in each of these introductory courses is to get the student to think like an economist, a physicist, or whatever, to imbue her or him with the world view of that discipline. Moreover, students are usually given problem sets or writing assignments in each course, in which they are asked to apply what they are learning. No one expects the freshman to bring the sophistication of the graduate student to these tasks, to address the assignments in their full complexity, or to select from the full range of concepts and theories in the technical literature of the disciplines. Why should we think any differently about the freshman student undertaking an interdisciplinary analysis?

A freshman could reasonably take a load of three or four disciplinary courses and an interdisciplinary one that builds on those disciplines. As the student learns the world views of each discipline, she or he can learn to contrast them and scrutinize their assumptions in the interdisciplinary course. The assignments in the interdisciplinary course can start out as simple as those in the disciplinary course, leading the student to draw rudimentary connections between the insights of those disciplines. In fact, the problem can be chosen so that the student need draw only on those disciplinary insights taught so far in the disciplinary courses. Were we to construct such a freshman year, our students would not only learn solid disciplinary material, but they would also learn an interdisciplin-

ary appreciation for those disciplines as limited but useful tools in their own lives.

When the curricular relationship between the disciplines and interdisciplinary studies is viewed in this light, it becomes possible to appreciate the educational merit of a well-conceived interdisciplinary program for freshmen. Instead of the administratively cumbersome freshman year sketched out above, why not set up a program where students are taught the relevant disciplinary materials in the same course where they learn to think about problems from an interdisciplinary perspective? Interdisciplinary students can select and teach the relevant disciplinary materials in the context of analyzing an interdisciplinary question. Disciplinary world views can be contrasted as they are learned and their strengths and limitations revealed as they are applied to an interdisciplinary question that grows out of the experience of the students. For example, I teach a first semester freshman social science course that examines what kind of control the students have over their own lives. They learn a portion of each social science discipline dealing with individual freedom, which means they learn everything from the theory of consumer behavior in economics, to operant conditioning in psychology, to the socialization process in sociology. The theories are treated in their full academic rigor, right down to problem sets with graphs; and their underlying assumptions are examined and explicitly compared. In the concluding section of the course entitled "Freedom within Social Controls," we pull together these disciplinary insights into a discussion of how much freedom students have and how that freedom can be expanded. Students come away from the course with a critical appreciation of a representative portion or two of each discipline, an appreciation for its analytical power and for its limited but genuine applicability to the world of their experience, and the beginnings of an awareness of the interdisciplinary process. Over a series of such courses, students become familiar with a considerable body of disciplinary material as they develop increasing sophistication in the interdisciplinary method.

While I believe that students can and should learn interdisciplinary studies alongside the disciplines, the difficulty of teaching the interdisciplinary approach should not be underestimated. The kinds of thinking involved in interdisciplinary study are more difficult and require more intellectual maturity than do the disciplines. Scholars studying the process of intellectual development of college students, from Bloom to Piaget to Perry to Kohlberg,¹² have argued that there is a hierarchy of intellectual skills or a series of stages of intellectual development through which students must pass on their way to full intellectual maturity. The integrative thinking required in interdisciplinary study which involves pulling together and synthesizing disparate disciplinary insights into a coherent whole is at the top of the hierarchy. The ability to embrace tentatively the use of one disciplinary world view and then switch to using another, possibly opposing, world

view, and take that equally seriously requires some of the most advanced stages of intellectual development. Most freshmen I have taught find these skills difficult to develop, and a few never do; but the majority have risen to the occasion. In spite of the intellectual challenge of interdisciplinary studies, I conclude that they can and should be taught in conjunction with the disciplines instead of waiting for students to develop disciplinary competence first.

3. Interdisciplinary study impedes essential disciplinary competence.

The substance of Professor Benson's third argument is that time is scarce in the undergraduate curriculum, time that is required to provide adequate training in the more important disciplines rather than in possibly desirable but clearly less important interdisciplinary study. Disciplines are not only more rigorous and their study an orderly progression into more sophisticated thinking, but they are also practical preparation for graduate schools and competitive careers that expect and require disciplinary training. Time spent outside a disciplinary major in general education, so the argument goes, is best spent in disciplinary introductory courses because they are "rigorous" and "challenging" (not "fragmentary" like interdisciplinary courses) introductions to the "concepts, methods, and traditions" which form the foundations of the disciplines.¹³

The first part of this argument strikes me as having the most force. Certainly some students should major in disciplines, specializing in one intellectual tradition in preparation for a career as a specialist. After all, division of labor based on specialization is essential to an industrialized society. But many, if not a majority, of the jobs in our society bear scant correspondence to any one liberal arts discipline: retail salesmen and administrators are more common than industrial chemists. For such positions, the abilities to understand and critically evaluate the work of experts and to make decisions based on that evaluation seem more important than a specialized knowledge of any one discipline. Furthermore, increasing numbers of careers require specialized backgrounds that are interdisciplinary. Dealing with environmental problems, urban problems, energy problems, and many others requires training in synthetic thinking, in weighing arguments from diverse narrow disciplinary perspectives, and in placing them in the larger context. The narrow vision and piecemeal approaches of disciplinary specialists have only exacerbated these problems.

While the expectations of employers are that college graduates applying for jobs will have a disciplinary major, most employers have no particular loyalty to the academic disciplines, especially when they are hiring for jobs that do not build directly on disciplinary competence. Employers are particularly attracted to interdisciplinary majors because of the abilities of the students "to think conceptually, to identify and solve problems, to understand other value systems, to evaluate alterna-

tives and decide on a course of action, and to change one's opinion in the light of facts."¹⁴ Employers also cite traditional liberal arts skills of effective written and oral communication when they explain why they hired graduates of interdisciplinary programs, as well as affective skills like effective group participation, ethical sensitivity, and constructive response to criticism which reflect the experimental college setting of many interdisciplinary programs. According to available data, placement rates of graduates from interdisciplinary programs are quite high.¹⁵

The charge that the disciplines are more rigorous and ordered than interdisciplinary studies has some limited validity as well. Because the disciplines have been around longer than formal interdisciplinary study, they have evolved further, become more codified and articulated, and have developed more systematic methods. But if one accepts the conception of interdisciplinary study as based on the disciplines, then serious interdisciplinary studying involves these disciplines in their full intellectual rigor. In addition, it is not at all clear that interdisciplinary study is inherently less rigorous than a discipline at the same point in its evolution. After all, rather rigorous and technical fields like biochemistry can be argued to have grown out of interdisciplinary efforts. Few scholars today would wish to claim that oceanography, for example is non-rigorous. Surely the intellectual skill of synthesis is as challenging as any required by the disciplines. There is an element of art in the interdisciplinary process of synthesis or integration which may never prove amenable to systemization, but many disciplines in the humanities contain similar room for creativity in their method without charges of nonrigor, and there is no basis in principle why interdisciplinary study should face that charge as well.

The argument for a general education composed of introductory disciplinary courses is curious indeed. What can be more fragmented than a series of disciplinary courses that are completely insulated from one another? What can be less fragmented than a well-constructed interdisciplinary course? Nor is it clear that rigor in general education is best served by more of the same disciplinary training. After all, the real claim to rigor by the disciplines is based on their highly developed literatures and technical methods which are inaccessible to students in the introductory course. It may be that the charge here is fundamentally one of poor quality, not fragmentation or lack of rigor. In part, however, I suspect the basis for the charge lies in the implicit premise that the disciplines are sufficient as well as necessary to the world of the intellect, and consequently that introductory courses should have as their primary goal the introduction of a discipline, and only secondarily the introduction of knowledge or intellectual skills. This logic clearly relegates interdisciplinary study to secondary importance at best, but it also begs the question.

On the other hand, if one believes that most use of the

disciplines by nonspecialists requires the judicious weighing of the contributions of several disciplines to the analysis of a problem and the eventual formulation of a means of dealing with the problem that goes beyond any of the disciplines while being informed by them, then interdisciplinary study forms a necessary component of general education alongside the disciplines. Certainly the trend in higher education over the last few years has been to increase substantially the role of interdisciplinary study in general education. Klein and Gaff found that 69% of the colleges they surveyed include an interdisciplinary component in their new general education programs; 55% require a core of interdisciplinary courses.¹⁶ The motivation for including interdisciplinary study in general education appears similar, at least, to the argument presented here: 53% cite the ability to synthesize as a major objective of their new general education programs.¹⁷

4. Interdisciplinary courses are shallow.

Professor Benson's fourth argument against including interdisciplinary courses in an undergraduate liberal arts education is that they trade "intellectual rigor for topical excitement. Three criticisms are leveled under this heading. First, too many interdisciplinary courses are big-picture counterparts of the trendy, relevant and superficial treatments of important issues by the mass media: "There are simply too many interdisciplinary faculty driving curricular ice cream trucks down the academic alleys."¹⁹ Second, such courses are "taught in a sloppy, chat-in-the-round fashion that does little to cultivate either critical skills or a systematic grasp of the issues.....compounded by a heavy reliance on splashy special events..." such as films and guest speakers.²⁰ Third, too often "the anticipated synthesis fails to materialize,"leaving students as guinea pigs for irresponsible faculty who have not thought out the course with sufficient care.²¹ Each of these charges is serious, in my opinion, because each contains a substantial element of truth, and my discussion of each is aimed at understanding why, inasmuch as it is defending interdisciplinary studies.

One can reasonably point out, in response to the first point, that interdisciplinary study is ideally suited to address the relevant issues of the day crying out for analysis, that there is educational merit in enhancing student motivation to learn through the use of interesting examples, and that disciplinary criticism comes from sour grapes tasted by faculty whose fields have less innate interest and less direct applicability to the world we all live in than does interdisciplinary study. Nonetheless, I saw many so-called interdisciplinary courses taught in the late 60s and early 70s that were little more than academic froth, and I still run into such courses today on occasion. These courses lack substance, in my opinion, because they ignore the disciplines, preaching instead an ideology or simplistic solution--say the 'soft-path' approach to energy--which draws selectively upon disciplinary findings without giving students any feel for how each discipline arrives

at those findings or how each has a different perspective on the issue that might contribute to a richer analysis. I call this approach 'adisciplinary' because it tries to operate in an intellectual vacuum, drawing facts from the disciplines while pretending that their extensive intellectual traditions and well-developed perspectives are nonexistent or worthless.²² In some cases this approach stems from the faculty member's adherence to any of several partisan ideologies, but in others it simply reflects a lack of clear notion of the nature of interdisciplinary study.

It is not surprising that faculty who are curricularly innovative will be pedagogically innovative as well. Indeed it must take a moss-backed traditionalist to argue that films and guest lectures lead to lack of rigor. But too often self-styled interdisciplinary courses are little more than a sequence of "splashy special events" which replace critical student thinking more than they excite it. Too often discussion groups in interdisciplinary courses slide from recognizing the limited validity of alternative disciplinary perspectives into accepting each participant's perspective as equally valid, without examining either the limitations or interrelationships of those perspectives, and certainly without attempting to synthesize them into a more comprehensive approach to the issue under discussion.

One consequence of innovation is that well-established norms are left behind. Faculty attempting to put together and teach interdisciplinary courses can draw upon no clear curricular and pedagogical guidelines, any more than interdisciplinary researchers can be guided by the canons of interdisciplinary scholarship. Until the interdisciplinary studies profession reaches some agreement on what it means to put together and teach an interdisciplinary course, and do it well, we will continue to find nonrigorous and uncritical interdisciplinary courses designed in good faith by faculty in pursuit of the elusive goal of interdisciplinarity.

The third point especially hits home to me, since most interdisciplinary courses I have taught failed to result in a clear-cut synthesis. My observation is that most other interdisciplinary faculty encounter similar difficulties even though there is widespread agreement that a synthesis at the end of the course is desirable. In some cases, synthesis is attempted by assigning a paper at the end of the course in which the student is asked to integrate the course material into a coherent position or policy or personal statement. I have used this device myself on several occasions. When a paper assignment replaces an integrative unit in the course, however, faculty are simply asking the students to do what they themselves cannot or will not. Synthesis is a skill that requires training and practice and feedback like any other skill: assigning the task of synthesis and grading the result does little to foster the development of this skill. Especially with a higher order skill like synthesis, students need exposure to several alternative attempts at synthesis which are analyzed and critically evaluated before

attempting their own. They need guidelines, or helpful hints at least, to get them started, and they need standards by which to judge their own progress. Unfortunately guidelines and standards are hard to come by in our profession. The process of integration or synthesis is poorly understood and little studied by professional interdisciplinarians. It is no wonder that we achieve synthesis so seldom in our courses.

There is a sense, however, in which it is unnecessary as well as unreasonable to expect that each interdisciplinary course should end with a synthesis. Perhaps interdisciplinary courses, like disciplinary ones, should not be expected to present definitive answers to the important questions they raise. Perhaps synthesis should be an ideal, not a goal. It seems more realistic to ask that interdisciplinary study illuminate the question, pointing up the limitations and strengths of competing disciplinary approaches, exploring the full scope and implications of the question, clarifying the nature of the question, and devising standards which an answer must meet, rather than insisting that the question be answered. After all, the pedagogical value comes from getting the students to see the richness of the question and what would be involved in answering it, more than from learning the answer itself.

5. Interdisciplinary courses are relatively expensive.

The final argument that Professor Benson raises against interdisciplinary studies is that their heavy reliance on team-teaching methods, special events, independent study, and relatively low student-faculty ratios" makes them too "cost-ineffective," at least during the era of fiscal austerity faced by higher education during the next decade. In addition, he points out, many interdisciplinary programs compound this waste by borrowing adjunct faculty from the disciplinary departments, creating thereby a need for part-time replacements, or by hiring their own psychologist,...etc., and thus duplicating...the faculty resources already available in the departments."²³ Even if one grants the validity of the responses in this paper to the other four criticisms of interdisciplinary studies, one might still oppose them on the basis of this argument alone—such is the power of economic arguments today in educational decision-making.

Two of the four examples on which this argument is based are simply inappropriate. Special events and independent study can enrich any course, interdisciplinary or disciplinary, but they play no inherent part in interdisciplinary study as it is conceived in this paper. Innovative faculty can be expected to include them in their courses, and if such innovators are found in disproportionately large numbers in interdisciplinary programs, then it is easy to see why faculty unacquainted with the nature of interdisciplinary study might leap to the conclusion that such features are necessary to it.

The example of low student-faculty ratios is equally inappro-

appropriate, but for different reasons. High student-faculty ratios are achieved largely through lectures, which have come to gain acceptance in most disciplines, but which seem to me to serve the same limited functions in the disciplines as in interdisciplinary study, namely to summarize large bodies of literature by placing the issue in its intellectual context, to impart facts, or to explain a technical process. While such background information is necessary to any intellectual process, the heart of that process begins later as we critically evaluate, proffer alternative hypotheses or interpretations, and move towards an appreciation of the issue and towards our own position. This process can be done on one's own, with sufficient feedback from the instructor, or it can be done rather more expeditiously in a well-conducted seminar or discussion section where the group as a whole explores the issue and feedback is more frequent; but it cannot be done in a lecture, where the student is passive recipient not active learner. It is unclear to me that disciplinary inquiry needs active student participation and interaction any less than does interdisciplinary study, or that discussion groups need be smaller in interdisciplinary courses. The problem of student-faculty ratios is not that interdisciplinary courses require lower ones, but that the disciplines have come—perhaps through previous encounters with financial exigency—to accept uncritically a predominantly lecture format for their lower division high-enrollment courses. Because the interdisciplinary programs are the "new kids on the block," and their faculty more idealistic perhaps, they may understandably insist on lower student-faculty ratios; but as they and their faculty grow more worldly in the face of economic pressures, there is no reason inherent in the nature of the interdisciplinary process why they cannot come to tolerate ratios fully as high as those of disciplinary departments.

The example of team-teaching, on the other hand, points up a serious economic problem facing interdisciplinary studies. Team-teaching, meaning two or more faculty in the same classroom at once and hence greater expense, has become a common feature of interdisciplinary programs because it is the simplest way to ensure that different disciplinary perspectives are accurately and convincingly presented to the students, and that any synthesis take full account of each discipline involved. Advocates of team-teaching for interdisciplinary courses argue that a faculty member alone in the classroom is likely to present the strongest case for the discipline of her or his graduate training because it is most familiar, and more likely to accept its implicit presumptions uncritically. Since most faculty in interdisciplinary programs do not have interdisciplinary graduate degrees (and those that do seldom have the kind of grounding in several disciplines needed for interdisciplinary study as conceived in this paper), this argument appears to have considerable force.

Where interdisciplinary courses can attract sufficient enrollment to justify multiple sections, however, team-teaching can profitably be replaced by team-curriculum development. In

the Western College Program at Miami University, for example, we rely on team-curriculum development in all our lower division core courses: faculty teach separate sections of a multisection course but they plan the course together and, most importantly, they cover the same material in their respective sections and evaluate their students with the same examinations and paper topics.²⁴ In my experience, this approach has educational as well as economic advantages over team-teaching. Because faculty must confront the students alone when they lead discussions that prepare students for common course examinations, the faculty are motivated to take seriously the disciplines outside their expertise and to learn them carefully. Faculty colleagues become important educational resources, and weekly staff meetings of the course become cooperative learning experiences as well as an opportunity to debate conflicting disciplinary perspectives. While this approach loses the spontaneous fireworks in the classroom from untrammelled debate between team-teachers, through which the relative merits of each disciplinary perspective are sorted out in front of the students, I believe it more than compensates by forcing the faculty to appreciate the strengths of opposing perspectives before they come into the classroom. Students become more active in the process of exploring the relative merits and weaknesses of relative merits and weaknesses of competing disciplinary perspectives when they are not observing faculty argue among themselves, and faculty can better guide them through the process because the faculty have been through it themselves and need not concentrate on defending their discipline. Team-curriculum development is no more expensive than traditional teaching since only one faculty member is in the classroom at a time. Its staff meetings may appear to cost more faculty time, but the difference lies more in the manner of course preparation, where individual contemplation of a text is partly replaced by group discussion.

In courses where multiple sections are simply not feasible, the additional expense of team-teaching is more difficult to get around. Most interdisciplinary programs I have visited hold regular faculty seminars that are designed to break down the disciplinary parochialism of faculty. Sometimes these seminars are tied to courses where faculty teach their own sections as they wish; other times, they are unrelated to any course, moving from topic to topic of mutual interest to the participants. Stockton State College, New Jersey, has developed a peer curriculum review process which provides an alternative other than team-teaching to ensure that individually taught courses are in fact interdisciplinary. Their general education curriculum committees review course proposals and talk with the faculty submitting them while the courses are still in the planning stage. They offer suggestions for readings and topics and for ways to make the course more interdisciplinary, much as faculty do in our program during the early stages of team-teaching curriculum development. The proposals are reviewed again before they can appear in the catalog. These examples point up the feasibility of alternative means to team-teaching for promoting the full interdisciplinarity of courses that wish to be inter-

disciplinary. In my view they are not as effective as team-teaching, but they are possible compromises. Much more effective is to train faculty in interdisciplinary studies through team-curriculum development or team-teaching, and then wean them to individually taught interdisciplinary courses after they have demonstrated sufficient command of and sensitivity to the other relevant disciplines and sufficient familiarity with the interdisciplinary method. This last approach is effective, as I can testify from personal experience, and while it is expensive at first, it holds the promise of future costs more in line with disciplinary teaching.

The final charge under Professor Benson's fifth argument is that interdisciplinary programs are expensive because they borrow or duplicate faculty in disciplinary departments. The preceding discussion has already shown that many interdisciplinary courses can be staffed at a full cost quite comparable to that of disciplinary ones. In these cases, faculty may be borrowed to expand the disciplinary perspectives available in the interdisciplinary program or to make professional development opportunities available to faculty in disciplinary departments, but the program would be well served politically to compensate departments fully for borrowed faculty in order to make it clear that it is not hiding excessive costs in the process.

The duplication argument, on the other hand, reflects a confusion caused by the lack of Ph.D. programs in interdisciplinary studies. When an interdisciplinary program hires a new faculty member with a Ph.D. in psychology and a specialty in social psychology, the department of psychology sees that person duplicating the social psychologist in their department, while the interdisciplinary program believes it has hired someone with interest in and commitment to interdisciplinary studies who will bring the perspective of psychology to the program. What appears by virtue of formal training to be an overlapping specialty in social psychology is by virtue of interest a non-overlapping specialty in interdisciplinary studies. This confusion would be reduced, but not eliminated, by establishing Ph.D. programs for those wishing formal credentials in interdisciplinary studies. Some disciplinary faculty will still be attracted to interdisciplinary study, however, as part of the process of normal intellectual growth after graduate school. Neither the borrowing nor the apparent duplication of faculty, however, constitutes support for the criticism that interdisciplinary programs are too expensive. Such criticism need only be well-grounded when interdisciplinary programs cannot attract the enrollment to justify multiple section courses and when they are also too young to have trained their faculty on-the-job in interdisciplinary teaching. Even then, the root cause of the expense is the lack of graduate training in interdisciplinary study and not its nature.

B. Where do we go from here?

The model set out above of what interdisciplinary studies should be seems to meet all five criticisms identified by Professor Benson. If our profession were to agree on a conception of interdisciplinary studies similar to it, we would be in a position to argue that, in principle at least, interdisciplinary studies can answer its critics. Until such agreement is reached, however, we are quite vulnerable to attack at the very time in American higher education when weak or ill-defined programs are being cut back or eliminated. The traditional means for reaching such accord is debate at professional conferences and in professional journals. The annual meetings of the Association for Integrative Studies provide such a forum, and with the advent of this publication we now have the other one in embryonic form at least. I hope that this exchange between Professor Benson and myself turns out to be the opening of a debate that will move our profession towards consensus on the nature of interdisciplinary study.

Even if that consensus is achieved, we then face the further challenge of bringing our practice in line with our rhetoric before our courses can meet the arguments against interdisciplinary studies. The preceding analysis of these arguments identifies two major tasks essential to meeting that challenge. We need to set standards of excellence in the conduct of interdisciplinary study, and we need to train faculty who teach interdisciplinary study in its method.

We need to agree, in particular, on what it means to teach interdisciplinary studies well. We need to exchange information on individual interdisciplinary courses from a variety of institutions in order to identify models of the most effective ways of introducing students to the interdisciplinary approach or to essential interdisciplinary skills. We need to examine sequences of interdisciplinary courses at various interdisciplinary programs to explore the most fruitful ways of developing interdisciplinary competence in our students; the sequence for introducing disciplinary concepts, theories, and methods; the timing of the introduction of models for bridging disciplines such as structuralism, general systems, etc. And we need to examine the process of teaching itself, not just of curriculum development. Are there special pedagogical or classroom techniques which are particularly appropriate to teaching interdisciplinary studies?

Finally, we need to train faculty in interdisciplinary study. In part, this means training them in the interdisciplinary method, but probably more importantly it means developing in them an appreciation for the world views of the disciplines in which they have not been trained but which are relevant to the kinds of interdisciplinary problems they address. Of course, that appreciation comes only with command of the concepts and theories of at least one portion of the discipline, making the task of training rather substantial. We need to retrain faculty already teaching in interdisciplinary programs as well

as training those about to enter the profession. For the latter, we will eventually require a solid graduate program in generic interdisciplinary studies, or at least core courses of such studies in graduate programs in interdisciplinary topics like urban or women's studies. Retraining of existing faculty, both to sharpen their interdisciplinary competence and to provide them with the formal interdisciplinary credentials most lack, can be accomplished in a variety of ways--faculty seminars on individual campuses leading to summer workshops,²⁵ national summer institutes, summer courses offered by new interdisciplinary graduate programs, leading perhaps to formal certification. The tasks are formidable, as is that of securing consensus, but I am confident that we will accomplish them, and that we will be able to meet the arguments of our critics, both in principle and in practice. I hope that Professor Benson's article plays a key role towards the achievement of that goal.

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FOOTNOTES

¹This conception is presented in my article with William Green, "Defining and Teaching Interdisciplinary Studies," *Improving College and University Teaching* 30:1 (Winter 1982), pp. 23-30.

²Thomas C. Benson, "Five Arguments Against Interdisciplinary Studies," *Issues in Integrative Studies* 1 (1982), pp. 39.

³Benson, p. 40.

⁴Benson, p. 41.

⁵Raymond C. Miller, "Varieties of Interdisciplinary Approaches in the Social Sciences," *Issues In Integrative Studies* 1 (1982), pp. 4-8.

⁶Benson, p. 39.

⁷Frederick S. Weaver, "A Study of Interdisciplinary Learning and Teaching at Hampshire College" (Amherst, MA: Hampshire College, 1981).

⁸Ralph Ross, "The Nature of the Transdisciplinary: An Elementary Statement," in Alvin White (ed.) *Interdisciplinary Teaching* (San Francisco: JosseyBass, 1981), p. 23.

⁹Benson, p. 40.

¹⁰Benson, pp. 41-42.

¹¹Charles B. Fethe, "A Philosophical Model for Interdisciplinary Programs," *Liberal Education* 4 (1973), pp. 490-497.

¹²B.S. Bloom (ed.), *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (New York: Longmans, Green, 1965).

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¹³Benson, pp. 43-44.

¹⁴William H. Newell, "Interdisciplinary Studies Are Alive and Well," ms., p. 3.

¹⁵Newell, "Interdisciplinary Studies," p. 2.

¹⁶Thomas Klein and Jerry Gaff, "Reforming Higher Education: A Survey" (Washington, D.C.: Association of American Colleges, 1982), p. 4.

¹⁷Klein and Gaff, p. 6.

¹⁸Benson, p. 45.

¹⁹Benson, p. 45.

²⁰Benson, p. 45.

²¹Benson, p. 46.

²²Newell and Green, p. 24.

²³Benson, pp. 46-47.

²⁴William H. Newell, "Interdisciplinary Curriculum Development in the 1970s: The Paracollege at St. Olaf and the Western College Program at Miami University," in Richard Jones and Barbara Smith (eds.), *Alternative Higher Education* (Cambridge, MA: Schenkman, forthcoming).

²⁵Alvin M. White, "Developing and Challenging Faculty Through Interdisciplinary Teaching-Learning," in William C. Nelson and Michael E. Siegel (eds.), *Effective Approaches to Faculty Development* (Washington, D.C.: Association of American Colleges, 1980), pp. 71-76.

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