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Theory, Practice, and the Student of Education

Theory/practice is an important topic but a tired one. It's difficult to say anything new about it. I'm going to try, however, and to that end I shall avoid concentrating very much on three engaging areas of inquiry that beckon comfortingly but, alas, can become ends in themselves rather than shedding any fresh light on the concerns of this conference.

First, for purposes of this paper, I intend to shun the task of doing a literature review on what counts as a theory, and whether as a field of study education can claim to have any. Second, I shall not be detained by the cousin literature on what *kind* of theory an educational theory is supposed to be. And finally, I'll sidestep detailed analysis of the literature that purports to tell whether and how theory relates to practice *in the abstract.*

Instead of reworking that literature as a starting point, I propose to examine the matter almost (but not quite) innocently by considering the intellectual tasks facing a beginning student of education. For the problem being discussed today needs some fresh vantage points. Let us remind ourselves of its tenacity with the help of some comments by a British professor of education, writing in the Foreword to an interesting two-volume set called *Theory and the Practice of Education* (Hartnett and Naish, 1976).

> I once had a colleague who referred to the refectory menu as 'the theory'. Most Englishmen would probably have some sympathy with his usage. For what passes in England as common sense is an attitude according to which theory is something slightly suspect and slightly unnecessary. No Englishmen hold this view more deeply than teachers; at least, that is, when teachers are talking about education. Practice, they say, makes perfect: theory does not even make sense . . .
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> It is small wonder, then, if the place of theory in the training of teachers causes problems. What exercises the ingenuity of an experienced specialist for a lifetime has to be offered to the initiate in a hurry. It is scarcely surprising if the student teacher selects one aspect of it, according to inclination . . . Or he may reject it all in favor of the accumulated folklore of the teaching profession which appears to work, at least to the extent of keeping the children in their desks and producing CSE results that will not give rise to awkward questions.

The writer of those words goes on to assert that there is, in the two volumes, much to dissuade the holders of such a view. My concern, however, is with the *origins* of that view. How is it that education students could come to see theoretical work in education courses as painting an unworkable, irrelevant picture of educational practice?

The context on which I am drawing for this paper is an introductory curriculum and methods course on the teaching of science in secondary and junior high school. For some of the students, it is their first experience with an education course, although they are taking others simultaneously. Others have some study of education in their background, but this course nevertheless is their "major" preoccupation. They are all professional-year students, so the course meets in two foreshortened blocks of time each preceding a block of practice teaching. In what follows, I ask the reader, as the song says, to "put yourself in the other fellow's shoes" — that is, to see from the students' point of view the intellectual tasks confronting them. I trust it will not bother the

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reader that this is an analytic venture — undertaken to develop a way to see the situation — rather than an empirical report on the students themselves. Also, I trust that the particular context of science education, a convenience for the analysis, can be seen for what it is — an example of what, mutatis mutandis, faces all education students.

The paper examines two major clusters of intellectual tasks. First, there are the tasks associated with coming to understand how anything theoretical (i.e., explanatory) relates to the performance of a craft, when one has little experience of the craft itself. These tasks are examined from the perspective that a theory/practice relationship is a meta-level issue insofar as the instruction of education students is concerned. It follows that the students' understanding of how practice and theory relate is not an automatic development to be taken for granted, but rather is a matter of explicit teaching in context. Second, and closely allied to the first set of tasks, are those involved in coming to grips with a new view of causation. It is a bald fact that teaching is *both* an act of will *and* a matter of technique, hence teaching is appropriately viewed and understood as a matter of *practical* causation. Yet university students in general, and science majors in particular, tend to be more inclined to construe all causation as theoretical (i.e., strictly a function of technique), and most presentations of educational research do little to help them see the inadequacy of that point of view when trying to understand teaching.

In the course of exploring these matters (cf. Roberts, 1980), I put forward that an appropriate "theory/practice schema", as I shall call it, is one that gives more honour to the categories of thought appropriate to practice and simultaneously demands a more sophisticated view of theory, than one finds in most discussions of theory/practice.

I. Learning A Different Reason for Learning

Professional-year students in education are confronted by a massive task of re-learning the reasons for learning. They need a new *schema* about why they are learning, to cash in on a current term. This places them in double jeopardy, so to speak, in that they are both learning and learning a new use to which learning is to be put. A key feature of the new schema is that the students are learning material which is instrumental to the accomplishment of something else, and something immediate. Let us explore some facets of their double learning task.

Why Are We Learning This Stuff?

One of the most difficult questions for pre-service and in-service teachers alike is the central curriculum question, posed on behalf of the learner: WHY AM I LEARNING THIS STUFF? The appropriate answer, for the student of education, is this: TO INFORM YOUR DECISION MAKING AS A TEACHER. But professional-year students in education come to the curriculum and methods course very likely having reflected little on this question during their university coursework in the subject they are hoping to teach. Why *did* they learn all of that science? Seldom do professors of science provide explicit reasons, but when they do those reasons corroborate what the student has already inferred: to build a background of knowledge about selected aspects of the natural world. Imagine, then, a student taking a sequence of courses in science, together with other students who are intending to pursue graduate work in the sciences and become practising scientists. At the undergraduate level, "why are we learning this?" is almost a non-issue: we are learning this stuff because it is part of what is known in science, and we need a complete picture of that theoretical background if we're going to go on and do scientific research.

The overall purpose for learning any particular subject matter, such as the theoretical formulations of physics, I have dubbed the "curriculum emphasis" associated with the instruction. The

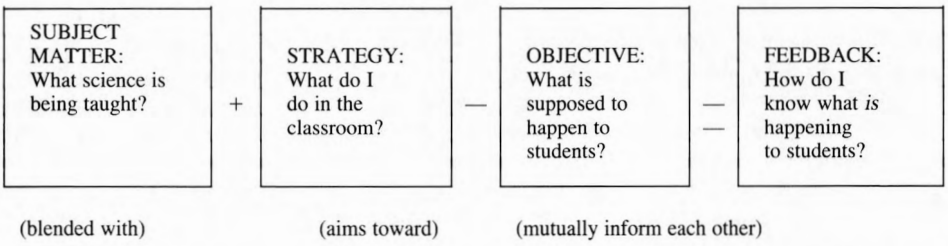
term is intended to signify that there are *different* overall purposes, therefore *different* emphases, which any curriculum can have (cf. Roberts, 1982). Now, the curriculum emphasis of most university science courses is *not* an orientation that views knowledge as an instrument for making decisions. That is, the emphasis is *not* one in which scientific knowledge is mastered in the context of, or for the purpose of, such other activities as designing a bridge, applying the knowledge to understanding societal decision making, or teaching. Indeed, if the purpose of learning some bit of physics (say, Newton's Laws) has been touched upon at all, it is likely to have been done in the context of completing a theoretical formulation within the discipline of physics. (They are needed as the "zero case" in the theory of relativity.)

That view of the purpose of learning constitutes the simplest curriculum emphasis of all, one which I have called "Solid Foundation". Students who arrive at a course on the teaching of science are steeped in it from their science courses. Their schema for the purpose of learning science is, simply, to master science. They are likely to be completely unaware of any other purpose for their own learning (or anyone else's). That has two unfortunate consequences. The first has to do with part of the methods course: the students are unable to grasp readily that science is taught for a variety of purposes in the schools, not just Solid Foundation. (The Alberta science program, for instance, mandates seven different curriculum emphases.) The second, more germane to our concerns today, has to do with the way schemata function, if I understand schema theory correctly. The "Solid Foundation" schema governs how the students *hold* the knowledge they get in the curriculum and methods course. The purpose for learning is seen, via that schema, as business as usual, in that the theoretical material is to be stored up just as it was in the students' prior experience in science courses.

I submit that such a situation sows the seeds of discontent with all that passes as theory in education courses. The students need to learn a new schema and they need to learn it on a systematic basis *as* they proceed through their courses in education — not later, and not as a prerequisite.

Trying For a New Schema

Imagine that it is early September in the professional year and that the students are in the first meeting of their course on curriculum and teaching methods. The instructor explains what the course is all about: developing a conceptual framework for understanding the events of teaching and learning. That means nothing to the students at this point. The basic structure of the course is explained as having four inter-related components, thus:



The structural framework is explained to the students as a representation of the *decision making* a teacher lives with constantly. What is to be learned in the course, then, is presented as a means of understanding the several aspects of those four boxes and their relationships. The word "schema"

is never used, yet this structural framework has the potential and scope to be precisely the theory/practice schema needed. It embodies the reason for learning. It demonstrates where theoretical material finds its roots in practice and vice-versa. Everything taught and researched in a Faculty of Education has a link to it, and everything done in the practice of education is captured by it.

But the students suffer from serious gaps of information. First, they have no reason to believe that those four components and their linkages constitute the kinds of decisions science teachers have to make, since the students have never had to make those decisions. Second, since it is implausible to imagine that the students have reflected on the purpose of their own learning to any significant extent, they lack evidence about what it means to reflect about the purpose of learning at all — especially a purpose which has as its end point the understanding of *something else* (namely, their own teaching performance). Finally, of course, they are lacking in substantive aspects of the areas the framework represents.

Three corresponding intellectual tasks face the students, then: (1) getting evidence that teachers make decisions and becoming familiar with them, (2) learning a new reason to learn (i.e., learning the new schema) and thus reorienting their whole approach to the purpose of learning, and (3) mastering the actual content of the course. The attention to be paid to the development of the schema cannot be over-estimated: if *that* fails, the course fails.

For a specific example, let us consider the first box of that four-box model: the subject matter itself. I begin the course by having the students analyse one of the Harvard Case Histories in experimental science, specifically the one on heat (Roller, 1950). As they work through the analysis, the students are introduced to the philosophy of science through an examination of the way in which scientific knowledge about heat and temperature developed from early times. (The cases are based on original documents.) As a result, they see a side of science they have not seen before, namely the way in which it develops from ordinary common-sense observations through more detailed examination and theoretical formulation for the purpose of explanation. From that analysis is developed a set of terms for analysing what *all* of science is about — that is, an analytical framework for reflecting on any science subject matter they might teach. (This draws heavily on theoretical work by Stephen Toulmin and Henry Margenau.) The use to which the framework is then put is to understand the kinds of decisions a science teacher has to make about readying the subject matter of a lesson. (For example, teaching a theoretical statement lays different logical requirements on a teacher than does teaching an observation statement.)

All of that is heavy going for the students intellectually. They are obliged to consider different ways of thinking about what they themselves have learned in science — the status and character of scientific knowledge, where it came from, and similar philosophical and epistemological matters. They have to think about an altogether different purpose for their own learning — to inform decision making *now*, not just to master information for some vague purpose later. They must develop reflectiveness about *why* they are learning this material, in addition to mastering it. The credibility of the instructor is sorely hampered by the students' lack of any personal evidence that this material is useful to guide one of the kinds of decisions a teacher has to make. Let us turn, then, to a related area of concern: the actual conduct of lessons.

What Happens to the Schema?

How does one convince a pre-service teacher, before practice teaching, that teachers really do make decisions? One kind of stimulus material which is quite valuable is the transcript of actual

science lessons taught in secondary school. The students' first reaction to a verbatim lesson transcript is one of shock at the number of incomplete sentences, the grammatical errors, and the other features which normally distinguish spoken discourse from cleanly written discourse. The second reaction is to criticize the teacher unmercifully. Once they are beyond that, however, the notion that there is a flow of events *controlled by teacher decisions* is a difficult idea for them to grasp: they must infer what kinds of decisions are involved, what the actual decisions were, and what knowledge (theory) the teacher used in making the decisions. The notion that teaching is intentional, that a teacher in conducting a lesson is driving toward some objective, is a key point and perhaps an obvious one — but even that point is difficult to grasp. Analysis of curriculum guidelines can show the students the variety of objectives that are expected in a science program, but it is yet another intellectual feat for them to link subject matter to objectives (especially given their long experience with Solid Foundation). From their point of view, how is it possible that a lesson based on, say, the theory of genetic drift could contribute to any objective other than simply understanding that theory? Here, of course, the student's conceptual habits about the purpose of learning science actually constitute an interference to learning anything about the curricular potential of subject matter.

September wears on into October and the students meet and observe their cooperating teachers before the first round of practice teaching. At this point, the advice and assistance of a sympathetic experienced teacher whose lessons the novice is observing can be of inestimable value in convincing the novice that decisions are actually made in teaching. The theory/practice schema is put to the test severely, since the immediate reaction of the novice who is observing is that teaching simply happens and "you just practice at it until you can do it". A reflective and well-informed cooperating teacher can counter that view. Back at the university, further evidence that the schema works is provided by short videotaped "micro-teaching" lessons which the students teach and which are then analysed under guidance by the entire class when the videotapes are played back. The obstacles which the students are overcoming, intellectually speaking, are thus at two levels: first to see that the actions of a teacher are based on decisions and second to see that knowing more (understanding more theory) about aspects of teaching can assist in deciding on those actions.

The substance of the course moves hand in hand with the development of the schema. All four components are dealt with in the first part of the course. So let us assume that, prior to the first round of practice teaching in late November and December, the students have learned something about teaching techniques, lesson planning, classroom management, etc., and also that they have developed enough trust in the credibility of the curriculum and methods instructor that they are willing to accept four meta-level points, namely these. (1) Their subject matter does indeed have several facets (i.e., there is much theory pertinent to issues about knowledge and knowing). (2) The curriculum guide (*any* curriculum guide) does indeed require a variety of objectives beyond the learning of the subject matter itself (i.e., there is much theory about what society expects from schooling). (3) Teaching strategies are *selected* in order to deliver the goods toward the accomplishment of those objectives (i.e., there is much theory pertinent to understanding how children learn and what teachers do). (4) What they see children doing in response to teaching can be interpreted meaningfully (i.e., there is much theory pertinent to an understanding of human behavior). If they are convinced of the usefulness and appropriateness of the theory/practice schema we have been examining, what happens when they hit the schools for practice teaching?

Cooperating teachers who supervise novices vary greatly in their ability and willingness to discuss teaching in terms which even remotely resemble this theory/practice schema. Those

fortunate students who work with reflective, knowledgeable cooperating teachers can strengthen their understanding of these matters in the early weeks of observation and gradual induction in the classroom. But other, less fortunate students are either subjected to a "sink or swim" approach or they are not encouraged to reflect on what they have done and why, when they make a tentative effort at teaching a class in the early days of practice teaching. For the latter students, a developing understanding of an appropriate theory/practice schema can be left in tatters by the experience. For at best instruction at the university can provide no more than putting a theory/practice schema forward as a means to understand and conduct the elaborate acts of teaching. Cooperating teachers and other colleagues in the schools either nurture it or kill it.

II. Learning What Causes Educational Events to Happen

A second major cluster of intellectual tasks for the professional-year student in education centres around understanding what causes educational events to happen. This is vital both to interpreting theory and to interpreting practice. Most students, especially in science, have developed through their previous education a theoretical understanding of causation, buttressed to a greater or lesser extent by courses in science. But a teacher is an agent of *practical* causation, a distinction I shall clarify in a moment, and getting a *sense* or *feel* for practical causation is as much a challenge as accepting that this sense of causation is appropriate and legitimate in the business of education. After all, theoretical causation, at this moment in our history and especially for science students, is held to be much more prestigious as a manner of thinking.

Will Others Do My Bidding?

Education students who have been lifeguards, babysitters, directors of youth groups of one sort or another, even politically active in the university student body, have a sense of what it means to take charge of a group and make it go. But there are some young adults who are preparing to teach who have few or no such experiences and who are, therefore, unaccustomed to taking charge, requiring that other people do their bidding. To the latter group, it makes little sense to point out that teaching is intentional and, therefore, that determination to carry out one's intent is crucial to the act. Yet very often in practice teaching we find that the student's *strength of will* (to have it quiet, to get the task done, to command discipleship) is a major variable in the success of a lesson.

I'm not talking about classroom management, which is a set of technical skills. I'm talking about exerting raw will power, and about the apparent refusal by some education students to recognize that (logically speaking) they *must* assume and maintain an unequal power position vis-a-vis groups of children when they are teaching. Thus, an essential part of the "cause" of effective classroom management is clear, unambiguous communication that the novice stands ready to exert greater power than the mob. When they *prefer* not to do that, I have to ask how students of education *think* about the issue. What makes the difference between those who will take charge and those who seem either unable to or else lacking an understanding about why such a matter would be of importance?

I find R.G. Collingwood's analysis (1940) of different senses of causation to be helpful here. The major distinction between causation in theoretical science and two other senses of cause (that of history and that of so-called practical natural science) is the act of will associated with the latter two. Yet — certainly in science education students, and perhaps others as well — a deep-rooted sense that causation is always theoretical (i.e., events are linked to one another causally without reference to a personal agent) seems to be an overwhelming barrier to overcome in thinking through what occurs in a classroom. The learning task which faces the student is not assisted by

the way in which research on teaching is presented in some education courses — as if the theoretically determined links between abstract independent and dependent variables represent actual causes and effects in classrooms. Put more bluntly, a research study linking variation in time on task to variation in student achievement has nothing to say directly about the *acts* of teaching — since, pedagogically speaking, the former doesn't cause the latter to happen. To be sure, the study might suggest a condition to be set up in the classroom, but the teacher must then exert the will and take the pedagogical actions necessary to set that condition. A decision in context is required, not just the simulation of conditions reported in a research study. In short, the way in which education students "hear" and attach significance to such research results depends on how well they understand practical causation, and on the quality and appropriateness of the theory/practice schema they have developed. Let me give an example.

I vividly remember a beginning student teacher I supervised in a large city some twenty years ago. She was in an intern program (no cooperating teacher). It was the third day of school and I dropped in for a courtesy visit, only to discover that her grade eight pupils were nearly jumping out of the windows. She had a science demonstration set up and kept encouraging the pupils in a quiet voice to come and see what she was demonstrating. But about 80 per cent of the class were having none of that. In discussing what was going on, afterward, I asked her why she was not asserting her right (and obligation) to control the class. She didn't see it that way and responded: "It isn't good teaching to seven the kids". To my astonished request for more information, she told me that in her "crash" summertime general methods course they had spent most of the time studying Flanders' Interaction Analysis System. The "7" category, of course, codes statements that justify the teacher's authority. The theoretical linkage she had been taught was that justification-of-authority statements (7's) contributed to a low I/D ratio, and that there was overwhelming theoretical support to indicate that teachers with low I/D ratios did not achieve "good" results, while those with high I/D ratios *did* achieve "good" results (with pupils). She took it that this theoretical linkage was a principle of good teaching.

Why did she think that way? To begin with, the "integrative" ("I") acts of the classroom (vulgarized to "indirect" from the original group psychology formulation) cannot happen — this is a logical point — unless the teacher is in control. But asserting control is a "dominative" or "D" act in the original group psychology formulation, vulgarized to "direct" in the educational application. The only way out of this apparent paradox is to see the theoretical linkage for what it is: only *part* of the explanation for what causes what in the classroom. For the teacher wills *all* of her/his acts, be they dominative or integrative. But teacher will power had no place in the explanation this student was using: it was a positivistic, theoretically driven linkage between independent variables (lots of indirect acts and not too many direct acts in the classroom) and a dependent variable (good pupil results of one sort or another). She did not see those research results as potentially informing her *decisions*, but instead as dictating the technical *conditions* she should set — at whatever cost. My interpretation is that such a view represents a badly distorted theory/practice shema: specifically, it is one which does not acknowledge the legitimate requirements of practice.

The example may seem extreme and perhaps even amusing, but it had disastrous consequences for that student's teaching for a long time. The example serves to point out that the sense in which beginning education students learn about, and hold in their thinking, *what causes what* in the classroom is rather an important part of the intellectual agenda they face. It also points out the central role of causation in the formulation of a theory/practice schema by an education student.

How Did I Look?

It is easy to forget, in our aged and somewhat jaded life space as experienced professionals, that the first few performances of teaching potentially subject the novice to ridicule and embarrassment. How to overcome that anxiety? Again, professional-year students in education vary greatly in background, and those who have been active in amateur theatre or who have performed musically, or even those who are natural hams, have an edge over their colleagues who have no experience of what it means to perform before an audience.

Once again we are talking about practical causation. The smoothness of a performance, or rapid improvisation on one's feet, both reflect the strength of will to take charge and make things go. Such aspects of performance (as in theatrical performance) reflect the apparent comfort with which the novice assumes the unequal power position necessary in the classroom. Yet, suggestions such as "act like you're organized", or "don't act scared even if you are", are baffling to some; they are seen as trickery and dishonesty. I recall a student teacher who stood up in front of a class holding and reading her notes, but then said "Sorry I have the wrong notes here". The class was a shambles; instead of improvising and continuing with a lesson, she had the pupils study their notes on their own. She was genuinely puzzled when they misbehaved. And she found it hard to accept the analogy, when I suggested to her that she (or any other patron) would want her money back if a night club singer stopped in mid-performance and announced she had the wrong music but then did nothing more. Some students are better performers than others, clearly, but there is also wide variation in students' willingness to accept this aspect of causation as appropriate to the classroom.

A Note on Intellectual Territoriality in Education

The introduction of such terms as "theatrical performance" and "teacher will power" in this section will no doubt grate on professors who are hard-nosed educational researchers. Perhaps even "philosophy of science" and "epistemology" in the previous section will grate on hard-nosed educational practitioners. To foreshadow my concluding remarks a bit, it seems to be an occupational hazard in the education of teachers that professors and practitioners frequently appear to be vying for students' intellectual loyalties. "We can provide the disciplined knowledge", say the professors. "We know what works in the classroom", say the practitioners. But who speaks for the student, in placing theoretical knowledge and practical knowledge into proper perspective? If Professor X overlooks the methodological and ontological constraints of a pet theoretical discipline, and Practitioner Y overlooks the uniqueness of the features of his/her own personally fashioned approach to teaching, the only resolution to the impasse (for the student) is what I have called a theory/practice schema — and it had better be a good one.

The particular schema presented early in this paper casts the teacher as decision maker, and places both theoretical knowledge *and* practical knowledge in the role of informing decisions. One kind of knowledge is no more legitimate than the other, provided the schema is constructed in such a way that it honours the practical character of teaching as an endeavour — and that is an *ontological* point rather than an epistemological one. That is, the point argues about the reality of the kind of activity teaching is, rather than about which kind of knowledge is more pertinent to understanding it. (Hence the importance of recognizing practical causation in the classroom: one has not accomplished a teaching act when one has established a theoretical connection.)

I confess to being short of patience with intellectual territoriality in teacher education. Practitioners who urge student teachers to ignore what they have learned in education courses denigrate themselves as much as do professors who suggest (or declare) that practice is conducted badly in

general. Such academic/professional catfights could be resolved if both parties would look, at a meta-level, at the *task* of learning to teach, and then discuss critically the contributions made by each party.

III. Some Concluding Comments

The right blend of theory and practice in the teaching program of a Faculty of Education is not a matter of addition and subtraction only. We are not blending paint, such that more theory or more practice is like more white or more brown in search of the most pleasing beige. Theory/practice is a metacognitive issue — a matter of how education students *hold* their theoretical and practical knowledge, not just a matter of whether they have more or less of one or the other.

Behold a dilemma, however — and, indeed, one that is already foreshadowed. Education professors and cooperating teachers are partners in teaching education students. On one hand, education professors are university professors, called repeatedly as part of their duties to contribute to the development of knowledge about education. And rightly so. Hence their part of the partnership is automatically assumed to be "the theory". Cooperating teachers in the schools, on the other hand, are the masters to whom education students are apprenticed. And rightly so. *Their* part of the partnership is automatically assumed to be "the practice". Certainly it is quite natural that professors would be preoccupied with theory, while teachers would be preoccupied with practice. But theory is *about* some aspect of practice, while practice is *guided by* some kind of theory. So education professors and cooperating teachers each have their own versions of an appropriate theory/practice schema.

Who is responsible to teach education students explicitly and systematically about an appropriate theory/practice schema, and whose version should it be? All too frequently, I daresay, neither group is explicit about this matter. Or, if one of the partners presents one view of theory/practice, the other promulgates another. More likely, it is *implicit* communication that the student receives from the two partners, and one suspects it is frequently confusing. Let us pause for a moment over two points of view about theory/practice which are probably detrimental to the development of education students.

First, there is a point of view that finds expression in a genre of educational research which appears to hold practice in contempt. My colleague John Fritz refers to this assumption as the "teacher deficit image". Such research doesn't seek to *document* "teacher deficits", but *assumes them from the outset.* That's why I say it reflects contempt for practice, for this type of research doesn't seek to understand why teachers think and act as they do. Teachers who get evidence of that attitude are bound to be suspicious of professors.

Second, there is a point of view that appears to denigrate everything theoretical, therefore everything the university stands for. In its extreme form, this viewpoint about theory/practice posits that there is no educational theory — that is, no publicly tested knowledge in education — that is useful in understanding teaching, since teaching is so highly personal. Professors who get evidence of that attitude are bound to resent teachers who promote it.

Each of those viewpoints may seem like a caricature, but each is real. Unfortunately, each reflects contempt for the work of other people who are *partners* in the teaching of education students, so the students pick up the contempt of the partners for each other. And it is the students who suffer. While the word "professional" has too many meanings for my taste (many of them patently self-serving), one which I do find useful is "acting in the best interest of the client". For my purposes in this paper, the client is the student of education, and it is analysis of the best

interest of that student which I have been pursuing. If the heuristic device of a "theory/practice schema" has any merit, it shows something the client needs, and perhaps the partners in our students' education can get together on it. Let any formulation of the right blend of theory and practice in a Faculty of Education begin there.

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