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Source: *Anthropology & Education Quarterly*, Jun., 1989, Vol. 20, No. 2 (Jun., 1989), pp. 74-96

Published by: Wiley on behalf of the American Anthropological Association

Stable URL: <https://www.jstor.org/stable/3195683>

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Lévi-Strauss's *Bricolage* and Theorizing Teachers' Work

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The concept of bricolage, as it is developed by Lévi-Strauss, is useful in characterizing the form of teachers' work. It subsumes extensive research concerning teachers' work and provides a heuristic device for developing causal explanations of teachers' work. This article begins with an account of bricolage on the technical plane and bricolage on the plane of speculation. The latter is distinguished from abstract science. Those features of teachers' work that should be seen as bricolage are discussed. These include conservatism, limited creativity, repertoire enlargement, teachers' use of theory, the use of devious means, and ad hocism. Some causal explanations of these features are then suggested. These include anticipatory socialization, preservice experiences reinforcing anticipatory socialization, failures and omissions in teacher education programs, and constraints in the work situation. The article concludes with an account of how the concept of bricolage functions to refine causal explanations of the form of teachers' work. BRICOLAGE, TEACHERS' WORK

An adequate understanding of teachers' work requires a characterization of the form of teachers' work and it requires a causal explanation of that form. An accurate characterization of the form of teachers' work is likely to provide clues as to its causes. I argue here that the concept of *bricolage*, as it is developed by Lévi-Strauss (1974), provides an illuminating characterization of the form of teachers' work. The concept subsumes extensive research results and provides a heuristic device that might be used in refining causal explanations of teachers' work. Moreover, seeing teachers' work as bricolage better enables us to see why teachers' work is too frequently pedagogically inadequate.

The Concept of Bricolage

Lévi-Strauss distinguishes between bricolage on the technical plane and bricolage on the plane of speculation. Bricolage on the technical plane concerns material manipulations or applications. Bricolage on the plane of speculation concerns general ideas or theory. The two kinds of bricolage are formally or structurally similar.

Bricolage on the Technical Plane

A bricoleur, one who performs bricolage, is, according to Lévi-Strauss (1974:16–17), "someone who works with his hands and uses

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devious means compared to those of a craftsman." "Devious" here would seem to mean remote, circuitous, or indirect. The old French verb "bricoler," which is the ancestor of Lévi-Strauss's "bricoleur," was used in the context of a variety of sports and ball games. Lévi-Strauss remarks that it was "always used with reference to some extraneous movement; a ball rebounding, a dog straying or a horse swerving from its direct course to avoid an obstacle" (1974:16). This presumably should be taken to imply that bricoleurs sometimes use means for achieving goals which are in some relevant respect circuitous or indirect.

Bricoleurs are reasonably proficient at performing a wide variety of tasks. While these may include odd jobs, bricoleurs are not really odd-job persons. A more adequate characterization is a professional do-it-yourself person.¹ In terms of abilities and skills the bricoleur falls somewhere between an odd-job person and craftsperson.

Bricoleurs adopt a distinctive approach to their tasks. They first review their already existing set of tools and materials to see what might be useful in the context of some present problem. This suggests several things about the *modus operandi* of bricoleurs. First, they do not consider a project and then ask what tools and materials are required for its completion. Rather, they review the materials they have at hand and ask how they might be used to complete, or approximately complete, the project. There is a fixed pool of materials. An understanding of the nature of the project does not motivate the bricoleur to acquire new materials. It is the possible uses of materials presently at hand that determine the degree to which the project is completed.

Second, a bricoleur's means are collected not with some particular use in mind but in the hope that they might turn out to be useful. Lévi-Strauss makes the point of saying the bricoleur works within a closed universe and that the "rules of his game are always to make do with whatever is at hand" (1974:17).

Third, the bricoleur's means are determined on the basis of past experiences and are heterogenous and finite. Heterogeneity of means arises from the fact that each element is open to a variety of uses and allows the bricoleur to function without "the equipment and knowledge of all trades and professions" (Lévi-Strauss 1974:18). The individual means at the disposal of tradespersons and professionals, by contrast, tend "to have one definite and determinate use" (Lévi-Strauss 1974:18). Of course, the uses toward which the bricoleur puts them are influenced in part by previous uses to which they have been put. The sense in which the set of bricoleur's means is finite has to do with the fact that bricoleurs operating on a technical plane do not, except by chance or luck, add to their stock of means. Their repertoires are not extended in principled, theoretical ways. Consider the analogy of a person with a knowledge of a few words and phrases of Japanese. These would no doubt assist this person to get by in some contexts as

a tourist in Japan. The person might even acquire a few more words and phrases. Moreover, by chance this person might be able to hit upon combinations of words that, while syntactically deviant, may be understood by Japanese people. However, a person with a principled understanding of the Japanese language would be quite differently placed. Such a person would be able to produce and understand sentences that he or she had never encountered before. This person's theoretical knowledge, in this case knowledge of Japanese syntax, allows for an infinite restocking of his or her means of communication and understanding.

Fourth, the bricoleur's response to the task at hand is limited to a rearrangement, understood as including new uses, of the existing set of means. This rearrangement involves a reorganization or improvisation with existing elements to create new structures as an ad hoc response to the environment. For example, consider someone who wants to divide a room into two distinct areas and does so using materials contained within the room. Bookshelves aligned along the wall are moved so that they extend into the room, thereby dividing it into two spaces. In this example the set of means was closed but permitted a structural rearrangement as an ad hoc, but rational, response to a problem posed by the initial structure of the local environment.

Bricolage on the Plane of Speculation

Lévi-Strauss (1974) holds that there are two distinct modes of scientific thought; a science of the concrete (which is a kind of bricolage on the plane of speculation) and what we might call "science of the abstract." The former is the mode of thought employed by so called primitive people, the latter by contemporary scientists. What these two modes of thought have in common is that they both involve sophisticated intellectual operations of similar kinds; they are formally similar. However, it should be emphasized that Lévi-Strauss (1974:19) concedes that the distinction between science of the concrete and science of the abstract is not absolute but one of degree. Indeed, there are a number of points at which the distinction does blur and where it is difficult to justify counting one thing as science of the concrete rather than abstract or vice versa. The chief difference is claimed to be in the nature of the explanatory categories employed in the two modes of thought respectively. In science of the concrete, "concrete categories (such as food or animals) . . . serve as intellectual tools to express abstract notions and relationships" (Sarup 1984:50). These categories are ones that are accessible through unaided, theoretically unassisted sensory perceptions. Science of the abstract employs categories that are not thus accessible: such as social class, economic base, electron, cell, atom, and so on. It is this difference that motivates Lévi-Strauss (1974) to see the science of the concrete as a prior science rather than a primitive or underdeveloped form of contemporary science. For example,

phlogiston theory can be seen as a forerunner to the theory of combustion in chemistry. Or Newton's physics can be seen as a forerunner of the more recent physics of Einstein. In these cases, the explanatory categories of both the earlier and the contemporary versions are abstract. Phlogiston theory and Newton's physics are primitive not because they are irrational or unsophisticated but because they have been superseded by a theory with greater capacity to explain, predict, and unify. Furthermore this has involved changes or modifications of their explanatory categories. Similarly, contemporary science may turn out to be primitive science relative to some future science.²

Science of the concrete is a prior science in that it "forms a complete and well articulated system" independent of contemporary science (Lévi-Strauss 1974:13). It is complete in the sense that it is thoroughly well worked out. It is independent in the sense that it has its foundations in a different set of categories; namely, concrete categories accessible through sensory perception. However, these categories are taken as fixed, given, unquestionable. The prior scientist, like the contemporary scientist, orders, explains, predicts, intervenes, and so on. However, the ordering, etc. of the prior scientist is based on classifications of naturally sensible qualities of objects available through images, percepts, and experiences without assistance from technologically supplied extensions to our sensory capacities and without the assistance of abstract theory. While the two sciences are parallel modes of acquiring knowledge insofar as they "require the same sorts of mental operations," the difference in the explanatory categories employed means that they will achieve different, but nevertheless scientific, results (Lévi-Strauss 1974:13). This is not to imply that the results of prior science will be as useful, helpful, or efficient as the results of contemporary science. In many cases they will not be.

According to Lévi-Strauss (1974:17) the method of the practitioner of prior science is analogous to that of the bricoleur on the technical plane. While bricolage on the technical plane has to do with results, projects, and the like, bricolage on the speculative plane has to do with ordering, explaining, and the like. Both the technical bricoleur and the intellectual bricoleur work within a closed universe. For technical bricoleurs this means working with whatever is at hand to respond to events on an ad hoc basis. The intellectual bricoleur is similarly confined within a limited, fixed structure. The structure is limited by the explanatory categories that the intellectual bricoleur employs. While it may be possible to judge that one science of the concrete is better than some other, it is certainly true that beyond a certain point theoretical improvement is impossible. That point is fixed by the nature of the explanatory categories available.

Both prior and contemporary scientists are limited in their response to problems by the current state of their respective disciplines. The set of means available to them will "restrict the possible solutions" each

can achieve (Lévi-Strauss 1974:19). However, there is a major difference in terms of the inverse functions they respectively assign to events and structures as ends and means. The contemporary scientist "creates events (changes the world) by means of structure and the prior scientist creates structures by means of events" (Lévi-Strauss 1974:22). Put more perspicaciously, while the contemporary scientist is able "to make his way out of or go beyond the constraints imposed by a particular state of civilization . . . the bricoleur (prior scientist) by inclination or necessity always remains within them" (Lévi-Strauss 1974:19). The explanatory categories employed by prior scientists do not permit the further theoretical development that would enable them to explain, predict, and intervene in the course of events better or more efficiently. The contemporary scientist, by contrast, is not imprisoned by a particular set of explanatory categories, at least not in the same way. There is always the possibility that the contemporary scientists' refinement of structures (theories) allows for the infinite extension of the means available to alter the course of events.

Teachers' Work as Bricolage

There are good reasons for counting teachers' work as bricolage, both on the technical plane and on the plane of speculation. There are sufficient parallels between bricolage and teachers' work to justify the claim that teachers' work is largely bricolage and that the concept of bricolage plays a unifying and heuristic role in understanding and explaining teachers' work. Recall that bricolage is a response to contingencies in which there is no attempt to develop or to seek new theoretical structures which provide greater understanding, provide greater technical competence, encourage new approaches to problems, etc. Rather the response is confined within an existing set of means or techniques or within a science of the concrete. The bricoleur reorganizes or improves ad hoc responses to the environment. In addition the means adopted by bricoleurs to achieve their goals may be remote, circuitous, or indirect. Much of teachers' work is like this.

The chief parallels between what teachers do and what bricoleurs do can be organized under the headings: conservatism, limited creativity, repertoire enlargement, teachers' use of theory, devious means, and ad hocism.

Conservatism

Teachers' work is typically conservative even where adaptive. Just as the bricoleur by inclination or necessity stays within existing constraints, so do teachers. A. Hargreaves (1978:77-78), for example, draws attention to the conservative nature of the coping strategies employed by teachers. Coping strategies are technologies devised by teachers to accommodate, rather than transcend, constraints on their work. And Denscombe (1982) draws attention to the way in which

consistent teacher responses to constraints encountered in the workplace have the effect of ensuring conservatism in teachers' work. Woods's (1977) descriptions of survival strategies (negotiation, domination, fraternization, absence of removal, occupational therapy, and socialization) also provide cases in point. These strategies, according to Woods, usually have nothing to do with the pursuit of educational goals; rather they serve primarily to make life more bearable for teachers. The point, however, is not that teachers as bricoleurs never try to pursue genuine educational goals. Many do, but their limited repertoire of means, constrained by the absence of theory, limits the goals that can be successfully pursued.

Limited Creativity

Teachers' work is also likely to involve creative, but limited, response to circumstances. A. Hargreaves (1978:76–77) stresses the fact that coping strategies are meaningful and creative responses to the world in which the work of teaching gets done. For example, resource-based teaching as a coping strategy allows teachers to respond in some measure to two often contradictory goals. It enables teachers to cover a set curriculum and to give some measure of freedom of choice to students. While it is a creative response, which is also bounded by the limited freedom of choice available to the students, it probably comes to no more than a choice of when to do the work and perhaps in what order. The point is that it is impossible, given the teacher's bag of tricks and the institutional context in which he or she works, to achieve both goals; one is totally achievable, the other only partially. What the teacher lacks is the capacity for open-ended creativity. This is a capacity the possession of which would be underwritten by theory, and better by abstract science rather than concrete science.

Repertoire Enlargement

The repertoires of means, or the bags of tricks, on which teachers draw in carrying out their work is typically enlarged in a nonprincipled way, that is to say, fortuitously, through the example of others. Indeed Lortie remarks that enlargement of a teacher's repertoire puts one in mind of "artistic rather than scientific conceptions of work. Practices which suit the person of the teacher become candidates for admission to his kit of regular behaviour and are then tried out" (1975:78). The idea is that practices are collected in a way that is typically unmediated by pedagogic theory. Theory is not deployed to generate the practices in question, to suggest how they might be developed, to predict how successful they might be, to suggest modifications that might improve them, etc. Practices are directly collected as they are encountered or invented and the initial criterion for selection is the teacher's subjective judgment that they will suit his or her purposes. Moreover, the criterion for retention is typically egocentric

pragmatism. The teachers' culture (attitudes, beliefs, personality) is held constant and left unquestioned, and against this backdrop a judgment is made about the usefulness of the practices. This is bricolage (see Lévi-Strauss 1974:19–22). Bricoleurs on the technical plane develop and add to their repertoires of means through experience, hazard, luck, and imagination. They do not add to them in a principled, theoretically motivated fashion.

Teachers' Use of Theory

If one takes seriously the suggestion that many teachers are bricoleurs this suggests that on the intellectual level (that is, on the plane of speculation) they will function in a manner more like the prior scientist than the contemporary scientist. Their intellectual bricolage will involve ordering, explaining, and the like within the confines of a limited, fixed, unquestioned framework. Moreover, the explanatory categories to which they will appeal will be those provided by sensory perception and almost certainly those of crude psychology. The explanations that teachers give of phenomena they encounter in schools sometimes resemble the appearance of explanation within prior science. For example, some teachers are inclined to explain comparative lack of academic achievement in working-class schools in terms of extraordinarily unsophisticated deficit theories. One can see the evidence of this in remarks like "These kids can't learn because their parents have just come down from the trees, their arms are still dangling on the ground" or, "Look at the gene pool these kids come from. How can we be expected to teach them anything?"³

Teachers, unlike Lévi-Strauss's "primitive" people, have access to both their own science of the concrete and to pedagogic and relevant social science. They make some use, albeit a very distinctive use, of the latter to order and explain in ways that lack the full rigor and complexity of the theories or they may use theories which are superseded. Either way they employ science that is deficient by contemporary standards (see Connell 1985:196). When they use abstract science it is as though they co-opt the explanatory categories and use them to perform intellectual bricolage (i.e., science of the concrete). Presumably this kind of bricolage will yield intellectual satisfaction to its practitioners since it does have some capacity to order, explain, and even predict. Jackson (1968) provides examples of concepts drawn from a variety of disciplines that have been employed by teachers in ways which strip these concepts of their potential richness. For example,

Motivation in pedagogical shop-talk, typically refers to student's zest for undertaking school assignments, and little else . . . when intellectual development is discussed by teachers, that development is described almost exclusively in terms of the student's mastery of curricular objectives or a summary statistic depicting his performance on a test of general ability. [Jackson 1968:146; emphasis in original]

The modified concept is a mere shadow of its ancestor in the parent discipline. Like the bricoleur, teachers borrow from other specialties, typically with less than full knowledge of them, and adapt these borrowings to their own purposes.

There is another instance of teachers' distinctive usage of abstract science that connects with the bricoleurs' closed universe. It is quite likely that teachers may make significant use of primitive rather than contemporary theories to explain their work. Consider the use made by teachers of cultural deficit theory to explain working-class students' comparative lack of academic success (see Giles 1981). Cultural deficit theory has been replaced by another theory with better explanatory power. Importantly, in appealing to cultural deficit theory teachers are likely to further their own interests at the expense of the students' interests. They are benefited by being able to rationalize their pedagogic problem, to deflect criticism, and to protect their status as competent professionals (see Connell 1985:174–175). As far as students are concerned the appeal of deficit theory, or some relative of it, typically contributes to and compounds the school's failure to meet their educational needs and to advance their interests.

As far as classroom practice is concerned, the teacher as bricoleur is likely to be more closely aligned to the technician than the crafts-person. In other words, the sharing that takes place between teachers is not likely to be craft-sharing understood as the exchange of principled theoretical understandings. Bricolage on the practical plane has to do with results, projects, solutions, and accomplishments that yield event satisfaction to the practitioner. Solving the immediate problem will have greater importance overall than the genuine, longer-term effectiveness of the means used to solve it. What this suggests is that acquisition, dissemination, and application of craft knowledge about teaching within the occupational group is unlikely to appear as a distinctive feature of what teachers do in their work setting. The more likely preoccupation of teachers (particularly beginning teachers) as bricoleurs is a search for strategies and methods that work for certain limited purposes. For example, beginning teachers may search for strategies that allow them to survive lessons with difficult students. "Survive" means here "get through a planned lesson with minimum disruptions and minimum loss of face." Wolpe provides a good illustration of the point:

The recipes for the maintenance of classroom control are essentially pragmatic and appear to have little to do with their [teachers'] training which includes psychology of learning and social psychology. Generally, the advice of experienced teachers to new colleagues is that by some specific act immediate ascendancy may be established in the classroom. This may be achieved by a range of strategies from the infliction of petty humiliations to corporal punishment. [1985:156]

Bricoleurs and teachers have a preoccupation with limited technical competence. They both can be characterized as professional do-it-yourselfers. Teachers gain a credential that allows them to claim the status of professional. However, for a variety of reasons, teacher preparation fails to equip teachers with an abstract science of teaching or even a decent bricoleurs' package (see, for example, Feiman-Nemser and Buchman 1987). The underdeveloped state of theories of teaching accounts, in part, for teachers' lack of an abstract science of teaching. Additionally, education as a field of study has found no way to "record and crystallise teaching for the benefit of beginners" (Lortie 1975:58). This being so, beginners in the profession, like bricoleurs, are in large measure thrown back on their own individually collected and contrived resources in real classrooms to discover, within a fixed, commonsense, taken-for-granted framework, how to teach. As Lortie puts it, "to an astonishing degree the beginner in teaching must start afresh, largely uninformed about prior solutions and alternative approaches to recurring problems" (1975:70). Teachers largely socialize themselves into their occupation. It is worth remarking here that there are two benefits that might result if knowledge about teaching were effectively recorded and crystallized. First, beginners might not have to construct the means of their bricolage comparatively unaided. Second, beginners might be encouraged to be more open to abstract pedagogic theory if it provided them with really useful knowledge.

Devious Means

It is not uncommon to find the bricoleur's use of devious means in teachers' work. They may be employed for sensible reasons as the following example shows. As an introduction to the literary work of Jonathan Swift a teacher stands in front of the class and blows up a balloon while the students observe. The teacher then produces a needle and explodes the balloon. The students are asked to report on what they observed. The teacher then remarks that during the forthcoming lesson they will be discussing the work of Swift and that Swift does to his characters the kind of activity they have observed with the balloon. That is, he inflates his characters only to deflate them very successfully. This example demonstrates the rational use of devious means to interest students in their work. Like the bricoleur who takes elements that are familiar and arrives at a surprising result, the teacher uses the familiar balloon and needle to acquaint the students with an important characteristic of an author's literary style.

Ad hocism

One of the most distinctive features of teachers' work is ad hocism. Ad hocism is an integral part of bricolage on the technical plane. The form of teachers' work may be conceptualized as an attempt to get results by developing new structures in a nonprincipled way, as ad hoc

responses to the environment. Bolster's (1983) depiction of teachers' work as situational decision-making indicates this tendency in teachers' work. These ad hoc responses are the responses of a group largely constrained by their culture, that is, the responses are devised and enacted within the confines of limited, fixed, often unquestioned structures of attitudes, beliefs, inclinations, dispositions, and so on. For this reason, it is likely that they may not solve problems in any genuine lasting sense. They are more likely to cause problems to diminish or temporarily disappear or reappear in other settings. For example, teachers often justify the well-noted unequal division of teacher attention between boys and girls in classrooms (see Spender and Sarah 1980) on the grounds that it is the only way to maintain control. Boys, it is claimed, demand more teacher attention. Failure to attend to this demand has consequences for good order in the classroom. While this "solution" has the effect of making classroom management easier for teachers, it does nothing to address the underlying sexism of the boys' expectation of superior treatment. Not surprisingly, teachers find themselves having to cope with instances of overt and aggressive sexism within and beyond the classroom setting (see, for example, Mahony 1985).

Note that even teachers who are theoretically motivated may sometimes find themselves in situations where theory fails to generate means which are adequate to securing all desired ends and where consequently they engage in bricolage. Consider Lampert's (1985) discussion of dilemma management. The need for dilemma management arises when it does not seem possible to secure all the goals relevant to some situation; sometimes the impossibility will be related to the means available, sometimes it will be generated by conflicting social demands, and sometimes it will be due to the inadequate development of theory. In such situations goals must be traded off. As Lampert (1985:184–185) says of one of the strategies she adopts: "It was not a general solution nor a permanent one; it was an act of improvisation which allowed the problems to remain." The trade-offs are typically accomplished by means of repertoires of strategies in the fashion of the bricoleur. Lampert (1985:193) speaks of the need for a capacity for "invention or improvisation" as "part of the manager's repertoire." Like bricoleurs, managers are "able to find a way to do something." They seem to thrive and act in adverse circumstances. However, there is a distinction between the two. Lampert's dilemma manager is likely to employ theory to judge "where potential adversity makes solving some kinds of problems inadvisable" (Lampert 1985:193). This case is a good example of the positive aspect of bricolage.

D. Hargreaves (1980:127) claims that at least some of the experiential problems of teachers arise from a teacher culture which is resistant to change. He draws attention to the need to explain "why the dilemmas which this culture helps to engender are resolved not so much by cre-

ating adaptations in the culture, but rather by the adoption of *ad hoc* coping strategies at the level of practical action" (D. Hargreaves 1980:127). This aspect of teachers' work is consonant with the claim that teachers are bricoleurs. Teachers' work, understood as bricolage, involves the adoption of *ad hoc* (coping, survival, dilemma management) strategies. These strategies are formulated by practitioners who have gained their knowledge of teaching through experience within these existing constraints. Existing constraints, including the culture that contributes to its own dilemmas, are what these bricoleurs own and to some extent control. For such teachers to consciously set about making changes in their existing teacher culture would be to erode those skills which they consider to constitute their competence.

Summary

Teachers' work can be seen to parallel what intellectual and practical bricoleurs do. The parallel includes a tendency toward conservatism and limited creativity brought about by limited repertoires of means and limited approaches to repertoire enlargement on both intellectual and practical levels. Like bricoleurs, teachers employ devious means and their actual work is characterized by *ad hoc* responses at the level of practical action. Importantly, characterizing teachers' work as bricolage, either on the plane of speculation or on the technical plane, involves accepting that it is typically a rational, even if limited, response to the circumstances in which teachers find themselves.

Why Teacher's Work Is Bricolage

The tendency of teachers to act as scientists of the concrete, or technical bricoleurs, occurs in an intricate way and relates to contributing causes frequently found outside the immediate workplace. They include anticipatory socialization for teaching, some preservice experiences that have unintended conservative outcomes, the failure in teacher education to radically challenge inappropriate predispositions, and the failure of educational theory and teacher education to offer real help to beginners and the constrained nature of the work situation.

Anticipatory socialization for teaching that occurs during the years spent in classrooms as pupils. As Locke (cited in Tinning 1984:54) points out, pupils receive an "invisible apprenticeship in pedagogy lasting from 12 to 15 years" that provides "more than enough time to acquire complex social behaviours through the agency of modelling." This "apprenticeship of observation" (Lortie 1975:65) occurs under conditions which ensure that "what students learn about teaching . . . is intuitive and imitative rather than explicit and analytical" (Lortie 1975:62). Just as bricoleurs on the technical plane lack a theoretical orientation to

their work, teacher trainees' initial learning about teaching takes place in a context where there is no chance that they can relate what teachers do to a body of theory. These early unsophisticated learnings about teaching appear to remain intact despite teacher education. (See also Britzman 1986; Hanson and Herrington 1976; and Lacey 1977 on the importance of personal history as a socializing influence.) Indeed, the teachers interviewed by Lortie:

place events within a *continuous* rather than discontinuous framework. Thus when they describe their former teachers they do not contrast their "student" perceptions with a later, more sophisticated viewpoint. They talk about assessments they made as youngsters as currently viable, as stable judgements of quality. What constituted good teaching then constitutes good teaching now; there is no great divide between pre-entry and post-entry evaluations. Training (and even subsequent experience) is not a dramatic watershed separating the perceptions of naive laymen from later judgements by knowing professionals. [1975:65–66; emphasis in original]

Initial beliefs about teaching tend to incline preservice students to work as bricoleurs and as scientists of the concrete. This fact constitutes an invisible barrier that limits preservice students' receptivity to, and future use of, abstract theory.

Some preservice experiences that have the unintended consequence of reinforcing the nonanalytic, nonreflective orientation to teaching acquired during anticipatory socialization. Notable experiences in this category include practicum (i.e., practice teaching) and courses in the area of teaching studies. There is a considerable body of evidence (see, for example, Fox et al. 1976; Gibson 1976; Hoffman 1971; Iannaccone 1963; Popkewitz 1977; Tabachnick et al. 1980) to support the view that practicum contributes to what Zeichner has called a "utilitarian teaching perspective." Specifically, during practicum:

Getting through the class in a quiet orderly manner becomes a major criterion for accepting or rejecting the use of a particular teaching activity. If a technique "works" (that is, solves the immediate problem at hand), it is evaluated as good for that reason alone. Within this perspective, the technique of teaching becomes an end in itself rather than a means towards some specific educational purpose. In fact, the issue of *why* something is taught and the possible latent long-term effects of a particular classroom action are typically not addressed by students. [Zeichner 1981–82:3; emphasis in original]

Zeichner indicates that this focus on technique ensures that teaching "is separated from its ethical and political dimensions" (Zeichner 1981–82:3). Rarely are practicum experiences structured to overcome these outcomes (for a notable exception see Zeichner 1981–82; and Zeichner and Liston 1986). Practicum experiences, as a component of

teacher education, may have the unintended effect of encouraging and supporting this previously acquired unreflective orientation and tendency to perceive teaching as a science of the concrete (see Feiman-Nemser and Buchman 1985, 1987). Abstract theory, despite any intellectual interest it might spark on campus is, as a consequence, likely to be perceived as having no immediate relevance to the real work of teaching, a view that is frequently reinforced by supervising teachers. Experience in the classroom, practical abilities, and pragmatic operational principles are likely to be perceived as most valuable to the teacher.

It is frequently suggested that student teachers' desires to go with strategies that "work," particularly those modeled by supervising teachers (see Tinning 1984; Zimpher et al. 1980), cause student teachers to ignore much of what they have learned in methods courses. Thus, student teachers' teaching style is governed by pragmatic concerns for efficiency, narrowly conceived, rather than by concerns to help students learn (Tinning 1984). Quite obviously there is some truth in these claims. However, it may well be that campus-based courses themselves make their own unintended contribution to student teachers' unreflective technical orientation toward teaching; specifically, courses that aim to equip students with a basic repertoire of skills and strategies (questioning, explaining, inductive teaching, grouping, and so on). The focus of these courses, like the focus of practicum, is procedural and involves attention to a very narrow, and, sometimes atheoretically treated,⁴ range of "how to's." These courses form part of the rather large survival component of teacher education (Rudduck 1985). In their attempt to provide students with immediate skills they typically divorce technique from substantive and theoretical issues relating to teaching.

Within such courses teaching is rarely viewed holistically. Issues like combating sexism or racism are seldom seriously addressed at the procedural level. Existing literature on students' resistance to schooling and the complex issues therein is not utilized. Existing practices are addressed only in a cursory manner (for example, bad teachers fail to vary the level of cognitive demand when they ask questions). The dominant emphasis is on equipping students to reproduce existing practices or some modified version of existing practices. The development of a critical reflective orientation to the work of teaching is considered the concern of other courses, particularly studies in education or foundation courses. Techniques and analytic, reflective thinking are effectively separated by course structure. This separation pushes teachers' work toward technical bricolage. This is because practical courses, provided they are appropriately shaped (see Lortie's (1975:68-69) teachers' criticisms of practical courses), are the kinds of courses preservice students perceive as relevant and desirable components of teacher education (see Britzman 1986; Rudduck 1985). To

the extent that courses of the kind described above are successful in appearing relevant to students' needs, they are likely to have the greatest impact on preservice students' orientation. Alongside practicum, these courses with their almost exclusive emphasis on technique may encourage:

the formation of habits of work which have an empirical, rather than a scientific, sanction. The student adjusts his actual methods of teaching, not to the principles which he is acquiring, but to what he sees succeeds and fails in an empirical way from moment to moment: to what he sees other teachers doing who are more experienced and successful in keeping order than he is: and to the injunctions and directions given him by others. [Dewey 1904:14]

The failure of teacher education to radically challenge preservice students' predispositions toward teaching as a science of the concrete or as technical bricolage. This failure manifests itself both in omission and legitimation. Omission occurs where teacher educators fail to confront their unique pedagogical problem, which may be put in the form of a question: "What implications are there for my teaching when my clientele, unlike the clientele of other groups in professional preparation, have had exceptional opportunity to observe members of the occupation at work?" (see Lortie 1975:66). Neglecting the effect of students' prior knowledge about teaching on the reception of new knowledge has a high cost; students resist, transform, or pick selectively from theory. This neglect increases the likelihood that teachers will be intellectual and practical bricoleurs rather than operating reflectively or analytically on the basis of contemporary pedagogic theory. Indeed, Britzman (1986) argues persuasively for the importance of "uncovering biography" as a means of moving away from teacher education as technical education producing technicians.

It is not so much that student resistance to theory goes unremarked. However, such resistance typically does not produce substantial changes in how theory is presented. This resistance is commonly explained away in the language of deficit theory (the students are not bright enough to understand theory) or in the language of readiness (we teach theory too soon) (see for example, Petty and Hogben (1980) who argue that introduction to theory ought to be delayed until students have experience to draw on; and Fuller and Brown (1975)). Omission may also occur through a total neglect of the point that some preservice experiences, notably practicum, may have unintended, conservative outcomes. Quite typically practicum debriefings are casual affairs slotted into crowded courses and focus largely on difficulties and problems experienced (Board of Teacher Education Research Report 1984:46, 51). This compares quite unfavorably with, for example, Zeichner's (1981–82) attempts to promote reflective action by restructuring field-based experiences in ways that promote critical reflection on classroom experiences. Negative outcomes, for example

the condition of "excessive realism" (Katz 1974), are ignored. This condition is one in which "student teachers tend to accept the practices they observe in their field placements as the upper and outer limits of what is possible" (Zeichner 1981-82:3). In other words, the very condition that will structurally limit preservice students' openness to more varied strategies (for example co-operative group work, individualized instruction and so on) is left unexplored and unchallenged.

Legitimation occurs when teacher educators uncritically draw on preservice students' prior knowledge as adequate knowledge about teaching. The layperson's perspective and the teacher's professional perspective should be different but are treated as one by the very people who should demonstrate a capacity to distinguish the two.⁵ Thus "experience" is taken as "both the means and content of important learnings" about teaching (see Feiman-Nemser and Buchman 1985). The supervision mode adopted by practicum supervisors may also tend to legitimate preservice students' predispositions toward teaching as practical bricolage, especially where the mode adopted is a "technical instrumental" one (Zeichner and Tabachnick 1982:43) in which the dominant emphasis is on practices and techniques of teaching. There is an additional way in which legitimation may occur, that is, through an inadequate pedagogic response by teacher educators. For example, a common response is a "watering down" of abstract theory or a reduction of courses to a recipe orientation in order to satisfy student-expressed (and teacher educator perceived) need for relevance. (It is not unusual to find teacher educators among those calling for a rejection of courses in teacher education that do not have a strict vocational utility—see, for example, Board of Teacher Education Research Report 1984:5.) There appears to be some reason to believe that many of those involved in teacher education themselves lack a reflective, analytic orientation to teaching. In other words, significant numbers of teacher educators may perceive teaching as no more than technical bricolage or a science of the concrete. This should not come as a surprise, since the pattern of recruitment has historically been one that draws heavily on experienced teachers (see for example, the background of staff in the Annual Report Kelvin Grove Campus, Brisbane College of Advanced Education, Brisbane, Queensland 1981:10).

The failure of educational theory and teacher education to offer real help to beginners especially with respect to recurring dilemmas. This is, in part, a consequence of the underdeveloped state of the art in theories of teaching. It is also, in part, a consequence of a somewhat myopic view of the teacher's task, indicated if not intended, when teacher educators exhort preservice students to attend to the needs of particular subsections of their client group (the gifted, slow learners, girls, the culturally different) who are presently seen to be disadvantaged. While some teacher educators may take a practical approach to educating the target group they favor, this practically never extends far enough. For

example, courses focusing on gifted children typically focus attention on specifics such as past neglect of gifted students, defining and recognizing the gifted, the learning style of gifted students, models of learning for gifted students and programming for the gifted. However, quite typically some ethical and practical questions are neglected or given inadequate attention. Practical questions such as "How do I implement a program for gifted students in my class when I still have the rest of the class to attend to?" or "What might the remainder of the class usefully do while I work with the gifted?" or "How do I get a teacher-dependent class to work independently while I give attention to a few students?" are glibly addressed if at all. Similarly, ethical questions relating to distribution of teacher time inside and outside of the classroom that, when time is finite, have consequences for time and attention to nonmembers of the target group are seldom adequately addressed. And since the questions go unaddressed the essential problems go unmet.

The lack of real help offered to beginners is exacerbated by the "sink or swim" induction into the profession that throws beginning teachers back on their own resources. They are left to discover their own useful knowledge about teaching. Not surprisingly,

the beliefs, values and norms—that is, the knowledge—that teachers come to have most faith in and use most frequently to guide their instructional behaviour are those consistent with predictions that have "worked" in the complex and demanding classroom arena. [Bolster 1983:197]

It is this knowledge that becomes highly resistant to change.

The constrained nature of the work situation. In attempts to account for conservative regularities in the form of teachers' work and, in particular, the pragmatic, atheoretical orientation of teachers to their work, researchers have focused attention on constraints that shape teachers' work (see, for example, Arfwedson 1979; Denscombe 1980, 1982; A. Hargreaves 1978; Woods 1977). While causal explanations vary somewhat, the general view is that teachers are not free agents able to implement their teaching as they wish (see Hatton 1985a, 1987). For example, Denscombe (1982) directs attention to the influence of classroom experience in contributing to shared teacher beliefs about what competent teaching consists of, especially as these beliefs relate to matters of control and privacy (see Hatton 1985a, 1985b; and Neate 1983). Denscombe's (1982:259) view is that teachers adhere to a hidden pedagogy, the need for which is generated by the social organization of the school. The argument is that

there are certain aims and methods of teaching which: (i) underlie competent teaching in practice; (ii) are generally taken for granted and not explicitly associated with pedagogic theory; and (iii) thus constitute a cryptic, covert or "*hidden pedagogy*." [Denscombe 1982:159; emphasis in original]

In conventional closed classrooms the significant conditions which force preoccupations with informal aims and methods are:

(i) The intensity of social pressures to conform with shared expectations about appropriate teacher behaviour. These pressures stem from pupils as well as colleagues; (ii) Limited resources which more or less oblige teachers to rely on personal qualities rather than resources or technical gadgetry to establish control; (iii) Adverse staff-pupil ratios that heighten the man-management aspect of the teacher's job; and (iv) A level of isolation between classes that fosters a belief in individualized practices and the autonomy of teachers in the classroom. [Denscombe 1982:258]

In this view, teachers can and do respond to liberal, progressive pedagogy at the level of ideas. However, such pedagogy is rarely implemented because

classroom experience has a hegemonic influence by controlling the range of alternatives that can be considered as real possibilities and, more to the point, by excluding others. [Denscombe 1982:259]

To summarize, taken together the conditions outlined above make it likely that teachers come to behave as technical bricoleurs or scientists of the concrete or some mix of both.

Conclusion: Bricolage as a Heuristic Device for Refining Causal Explanations of Teachers' Work

Some models of teachers' work make tight connections between work situations and the nature of teachers' work. Such models include Woods (1977) and Denscombe (1980). For example, Woods (1977) argues that increasing situational pressures force teachers to adopt survival strategies. When caught between commitment and an intractable situation teachers respond by adopting survival strategies. The point of this is more to secure their comfort in a difficult work situation than to make possible the achievement of worthwhile educational goals. This might happen in either of two ways. First, there are likely to be teachers who do have an intellectual, and even motivational, commitment to genuine progressive goals, who are simply unable to carry this commitment into practice because of the nature of the work situation. Examples of this include large classes, lack of resources, and so on. Second, there will be other teachers who do not have any such commitment, except vestigially, who may not even have thought seriously about educational goals. They would have done the thinking and developed the commitment had their work situations been appropriately different. Woods (1977:290) suggests that changes in the work situation would allow for "changes in teachers' conceptions of children, pedagogical paradigms, dedication to child-centeredness and so on."

It turns out that not only do survival strategies represent, at a particular time, a coerced choice against educational goals, but also that

in the longer term they interfere with the realization of educational goals. As Woods puts it:

A feature of successful survival strategies is their permanence and ongoing refinement. They contain the seeds of their own continuance and growth after outliving their usefulness and festering, causing another problem for which another survival strategy must be devised. They do not take the problem out of the arena . . . leaving more room for teaching. Rather they expand into teaching and around it, like some parasitic plant, and eventually in some cases the host may be completely killed off. [1977:275]

Denscombe (1980) uses the notion of "competent membership" to attempt to grasp the relationship between the formal structure of an organization and the routine, practical activity of members. He argues that "routine teacher activity constitutes a practical response to perceived exigencies of the situation" and that "these exigencies can be attributed to particular organisational arrangements" (Denscombe 1980:279). In this view, styles of teaching are more theoretically unmediated responses to the environment than the products of principled pedagogic choice or preference (Denscombe 1980:180).

Denscombe makes a distinction between official membership of an organization and competent membership. Official membership is no guarantee of competence; rather competence is, or is not, "continually accomplished by the kind of routine activity undertaken by members" (Denscombe 1980:283). "Competence would seem not to connect in any direct manner with the formal structure" (Denscombe 1980:283). And in fact what typically counts as competence in teaching derives from "*an underlying transcendent structure of activity distinct (if not divorced) from pedagogic principles*" (Denscombe 1980:284; emphasis in original).

Denscombe isolates three features of formal organization that, he argues, prescribe or at least significantly affect the competent activity of teachers in the work situation. These are: limited resources (time, materials, and staff-client ratio); the characteristics of the clientele; and the nature of accountability and supervision experienced (Denscombe 1980:285). These three features generate dilemmas and opportunities to which competent members must respond in practical ways. So, for example, limited resources affect teachers' perceptions of their tasks insofar as it forces adoption of patterns of activity that they regard as realistically possible under given circumstances. However, like Gracey's (1976) craftsman/progressive teacher, they may distinguish between what they feel compelled to do given existing dilemmas and what they might do under "ideal" circumstances. Teacher strategies are formulated in response to practical problems engendered by school organization. To this extent, these strategies are "context specific" (Denscombe 1980:289). This notion of the context specificity of strategies carries with it an implicit suggestion that given other structures, teaching might look different. In other words, in ideal condi-

tions teaching might be more likely to be guided by pedagogic principles.

The difficulty with models such as those proposed by Denscombe and Woods is that they underestimate the complexity and plurality of the causal connections between the work situation and the way the work gets done. However, characterizing teachers' work as bricolage encourages a more thorough, and ultimately more useful, causal explanation. Characterizing teaching as bricolage suggests that teaching should be seen as something other than the straightforward application of scientific principle thwarted by situational constraints. Teaching, in this view, has little to do with application of theoretical or pedagogic principle and much to do with the formulation of ad hoc responses guided in many instances by "primitive" theory. The Woods and Denscombe models are an inadequate representation of the situation for most teachers. There are some teachers who possess reflective orientation and a knowledge base that present circumstances prevent them from using. For these teachers even minor changes in the work situation may bring significant changes in the form of their work. Such teachers would no doubt have a clear grasp of appropriate goals and appropriate means available to them to achieve their goals. However, these teachers are a minority. There are ample indications in the literature that prior experiences (anticipatory socialization, dissatisfaction with preservice courses and unintended outcomes from such others as teaching studies and practicum) have encouraged teachers to eschew pedagogic knowledge and to adopt a nonreflective orientation to the work of teaching. There is a significant group of teachers who do not seriously reflect upon ends and means in their work. For these teachers changed working conditions are unlikely to change the form of teachers' work significantly. For these teachers, strategies formulated on the job have become teaching. There may be yet another group, in fact very significant, who have a clear vision of appropriate goals, who recognize their current means are inappropriate, and who possess or have real access to relevant pedagogical theory but who are unable to use the theory to generate effective means.

Characterizing teachers' work as bricolage directs attention to broader issues such as structural limitations on the acquisition of pedagogic knowledge at the preservice level (Lortie 1975; Zeichner 1981–82). It forces attention toward the very real possibility that teachers, despite socialization and professional preparation, may not possess any kind of theoretical orientation to teachers' work or, at best, only the kind underwritten by an inadequate prior science. The means at the disposal of most teachers are those they have acquired on the job and many of these quite obviously will be inappropriate for the realization of transformative goals. It also draws attention to the related point that earlier acquisition of prior and primitive theory, which is

used by teachers to explain their world, may in itself constitute a structural limitation to the acquisition of more efficient means.⁶

Notes

1. See translator's note (1974) *The Savage Mind*, p. 17.
2. It is not implausible to suggest that science of the concrete is primitive science. Lévi-Strauss (1974:13) concedes, as noted, that his distinction between the two is not a hard distinction. It would seem that primitive science and, by extension, contemporary science, developed out of a science of the concrete. And as we shall later see, elements of primitive and contemporary science may form part of the bricoleur's set of means. However, such elements are treated differently by the bricoleur than by the scientist of the abstract. The difference between them is best captured not by attending to the theories, etc. themselves but their modes of functioning. Many individuals will be both; either at the same time or alternately, or in some domains but not others.
3. These remarks were made to me during a period of time I spent as an in-service adviser in Brisbane primary schools.
4. In my experience it is not uncommon to find these courses staffed by a significant number of part-time lecturers. They typically have previous classroom experience but no specialized knowledge in the area. Not surprisingly, the knowledge transferred in some of these instances is little more than "recipe" knowledge.
5. This claim is made on the basis of interviews and participant observation carried out as part of a research project.
6. For a discussion of the implications of this conceptualization for teacher education see Hatton (1989).

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