This article describes the process by which policymakers and program managers incorporate new research or evaluation findings into their larger stores of knowledge. The incorporation process can lead to conclusions that differ substantially from those embedded in the original findings.

Working Knowledge

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Much of the literature on how social science evidence is used tends to be concerned with its use in formal decision-making situations. Public policy-makers or administrators are envisioned as acting something like a jury, which has a clear body of evidence it must use, clear rules for how that evidence should be weighed, and a clear time and place in which the decision must be made. The analogy is not perfect, of course, because policy issues ebb and flow, change and circle back again. Within the overall process, there are particular decision points, such as times when all participants are expected to vote, but in between these times are hundreds of occasions whose boundaries are not clear, but which may nevertheless influence policies or practices. These are the hallway conversations, the hearings, the committee meetings and so forth, when participants must spontaneously draw on whatever knowledge is in their heads to respond to whatever ideas have been put forward.

Working knowledge is the organized body of knowledge that administrators and policy-makers use spontaneously and routinely in the context of their work. It includes the entire array of beliefs, assumptions, interests, and experiences that influence the behavior of

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individuals at work. It also includes social science knowledge. The term working, as used here, has two meanings. First, it means that this is a special domain of knowledge that is relevant to one's job. Second, it means that the knowledge itself is tentative, subject to change as the worker encounters new situations or new evidence. Although administrators and policy-makers may prepare for particular decisive events by studying relevant social science evidence, they must still depend on their working knowledge for the majority of situations they encounter. Working knowledge often has a greater cumulative influence on policies and practices than does the evidence that is selectively brought to formal decision points.

Despite the convenience and broad applicability of working knowledge, there are reasons to distrust the quality of judgments and decisions that are based on it. Cognitive psychologists have documented a wide range of weaknesses and flaws in unaided human thought processes (Faust, 1982; Kahneman et al., 1982; Meehl, 1971; Sadler, 1981) and have suggested that clinical insight is not nearly as powerful as those who use it would like to think. Findings such as these are among the reasons why some social scientists feel that social science should play a greater role in the decision-making process. Hammond (1978), for instance, defines six "modes of inquiry," which differ primarily in the extent to which they rely on scientific evidence as opposed to private judgments. The sixth mode is most analogous to ad hoc uses of working knowledge. Hammond describes this form of reasoning as

the kind of thought most of us engage in most of the time. It involves an uncertain data base, no manipulation of variables, no statistical controls, and inconsistent logical rules never made explicit. . . . [It is] particularly vulnerable to the effects of numerous psychological factors and therefore it is methodologically very weak. Moreover, . . . no one (not even the person making the judgment) can be sure of what the judgment process is. . . . In short, [it] is not only the weakest means for solving problems, it is the most dangerous one [1978: 18; italics added].

What is not clear, however, is whether or to what extent the availability of social science evidence would improve these ad hoc judgments. To suggest that it would is to make two important assumptions: first, that social science offers a superior form of reasoning, as well as a superior form of knowledge; and second, that the policy-maker or administrator has a choice about what knowledge will be used. These assumptions do not apply to the thousands of daily
situations in which the policy-maker has access to nothing but working knowledge. For these daily situations, social science can only be used if it has become a part of working knowledge, so that the findings of relevant research are readily available to the user.

Little attention has been paid to the relationship between working knowledge and social science evidence—to how evidence is incorporated into working knowledge and to how these two structures of knowledge influence one another. There are two possible directions of influence. On the one side, Weiss (1977, 1980) has shown that evidence feeds into working knowledge, expands it, and can have a major role in changing it. This is the direction of influence that social scientists wish to encourage. But on the other side of the relationship, working knowledge is used to interpret new evidence and to judge the validity and applicability of each new source of evidence encountered (Lindblom and Cohen, 1979). This side of the relationship is also important, for social science comes in both good and bad forms, and the range of evidence available must be sifted to determine what is valid and what is relevant. However, given the limited capacity of the human brain for synthesizing complex bodies of data, serious errors could occur in the process of integrating these two bodies of knowledge. This article is designed to shed light on these issues by describing the way in which evidence becomes incorporated into the working knowledge of public school administrators and teachers.

The data on which this article is based came from 16 school districts which participated in a study of school district uses of evaluation and test data. The districts were quite diverse. They ranged from poor to wealthy, served from 4,000 to 240,000 students, served communities in all regions of the country, and their student bodies ranged from mostly White to mostly Black to mostly Hispanic. The data gathered from these districts were entirely qualitative, coming from interviews with individuals or from observations of group meetings. Although the observations were limited to those meetings which happened to occur at the time of our field work, the interviews were scheduled to include members of the policy-making community (superintendents, assistant superintendents and school board members), the program development community (program directors or curriculum coordinators), school buildings (principals) and classrooms (teachers).

The intent behind both observations and interviews was to expose the relationship between evidence and the working knowledge these participants had about substantive issues within their districts. Ob-
servers described everything that transpired during meetings, including any references to evidence, so that their notes from these meetings could indicate the substantive context in which the evidence was drawn upon. Interviewers discussed issues of current interest to interviewees, rather than the use of evidence per se, but they did so with an eye toward documenting how and where different kinds of evidence fit into the interviewee's train of thought, if it did at all.

Analysis of the notes from these observations and interviews indicates that there are three analytically distinct, though in practice interdependent, processes involved in the use of evidence. The first is that of seeking out new evidence and attending to it; the second is that of incorporating it into existing working knowledge, and the third is that of applying it to working situations as they arise. The processes are dynamically interdependent in that all of them contribute to the ongoing evolution of thought and action. Since this article addresses only the relationship between evidence and working knowledge, it presents findings about only the first two of these three processes.

The article has three main sections. The first offers a brief note on how illustrative quotes were selected for presentation. The second elaborates on the concept of working knowledge and the third discusses the interaction between working knowledge and evidence.

A Brief Note on Methodology

The argument presented here relies heavily on an analysis of verbal material gathered either from interviews or from observations of meetings. One of the problems inherent in such an analysis is that the reporter cannot present averages, but instead must present "illustrative" material. Yet readers may not be sure how typical these examples really are. Here, then, are the rules I followed for selecting illustrative material.

(1) I have restricted myself to quotes that are relatively self-explanatory, avoiding those that require elaborate contextual description or methodological detail in order to be understood. One result of this decision is that many of the examples refer to simple descriptive statistics rather than complex reports which would require explanation. Another is that I have not included any observation material, for although many observations vividly illustrate the points made here, they tend to be complicated and therefore are difficult to quickly summarize.

(2) I have avoided examples in which interviewers paraphrased their interviewees, rather than directly quoting them. This decision meant that
some districts could not be called upon as often as others, since field workers varied in their inclination to directly quote their respondents. I have, however, checked the relative frequency with which different kinds of examples appear across districts, and found no evidence of variation among districts on the points made in this article. The preference for direct quotes is entirely an aesthetic one.

(3) Within a given set of examples, I attempted to illustrate variation rather than typicality, and I sought variation on these dimensions and in this order: First, I tried to vary the substance of the comment. Second, I tried to vary the districts from which the examples came, unless the point of the presentation is to illustrate within-district variation. Third, I tried to vary the titles of the people quoted.

(4) Across the sets of examples, I also tried to vary districts and positions of interviewees.

The first two of these rules are more valuable to the reader than to the analyst, for they enable a more succinct and lively presentation of the findings. The latter two rules are more valuable to the analyst, for they force me to check my impressions of trends against the full set of data, rather than relying on those districts I personally visited and consequently know best. The result of these rules is that the illustrations do not in fact represent the full set of data in the way that a random selection would. But they do not misrepresent it with respect to the points made in this article.

**Characteristics of Working Knowledge**

Human beings are apparently capable of collecting and organizing an amazing variety of information into global, if somewhat vague, patterns. How this is done has been the topic of research in psychology, sociology, and organizational theory. And the products—the organized systems of knowledge that result—have been called gestalts (Kohler, 1970), cell assemblies (Hebb, 1949), schemata (Piaget, 1971), problem spaces (Newell and Simon, 1972), theories of action (Argyris and Schön, 1978), conceptions of social reality (Caplan et al., 1975), and Weltanschauung (Weiss, 1980). Broadly speaking, these several terms refer to the same phenomenon of actively organizing knowledge, but each has its own special meaning that limits its applicability to a particular subset of the vast range of knowledge people normally have. Gestalts, for instance, are perceptual configurations that are formed almost instantaneously upon perceiving a situation. The whole gestalt cannot be
derived from merely a listing of the parts, for it is the relationship among the parts that is significant, rather than the parts themselves. Schemata, on the other hand, are representations of dynamic properties of physical objects, particularly as they counterbalance one another. They are not acquired as quickly as gestalts—we have to manipulate a situation in order to develop a schema of it. For instance, our knowledge of teeter-totters constitutes a schema. We know that both ends cannot be up simultaneously, presumably because we have teetered on them or watched others teeter on them, and these active experiences led us to construct schemas of teeter-totters that represent them in a particular dynamic way. Problem spaces are different still. They are definitions of particular problems. A problem space includes the variables involved in the problem, the heuristics and algorithms that may be used to solve it, and some estimates of, or assumptions about, what the solution might look like. People create unique problem spaces for each problem they face. Theories of action encompass yet another aspect of knowledge. They are developed from social experiences, and include such things as estimates of other people's points of view and how others might respond to one's own behavior.

Working knowledge does not quite fit any of these definitions, though it contains elements of them all. Working knowledge is more subject to change than are gestalts and schemas; it contributes to the full range of problems people encounter at work, rather than being limited to a particular problem; and it includes more than just what is learned from experiences at work. For participants in this study, working knowledge included assumptions about how children learn and develop, pedagogical theories and educational philosophies, legal and economic knowledge, knowledge about how educational services in their districts were organized and delivered, about how well certain programs or certain colleagues were performing, and the interests and predilections of their colleagues, as well as value judgments about all these things, goals pertaining to them and consequent interests in them.

If working knowledge were to be broken down into its constituent parts, four distinct components could be identified. Two of these, formal evidence and experiences, constitute the empirical parts of working knowledge. The other two parts are the individual's interests, or goals; and his beliefs, which include myths and legends as well as value judgments. But to say that such components can be identified is not to say that any particular statement made by an interviewee could be labeled as belonging to one category or another. What appears to be myth could in
fact be based on evidence, and what appears to be based on evidence could be myth. Some authors have suggested that individual interests have a dominant role in the overall system of knowledge. Holzner and Fisher (1979), for example, argue that knowledge is organized according to its intended uses, and Lindblom and Cohen (1979) argue that it will necessarily be used to serve one's own interests.

In the minds of users, the components of working knowledge are indistinguishable. They are blended together to form an integrated and organized body of knowledge. The result can be seen in the following example. One school board member participating in this study was interviewed at length about her views regarding whether or not her district should convert junior high schools to middle schools. During the course of the interview, she listed a number of reasons why she opposed this idea. The variables she considered included the costs of the conversion and the probable effects it would have on student achievement, student social development, and student exposure to drugs. She viewed the issue from a number of angles and her conclusions were formed from a variety of elements of her working knowledge. Throughout the interview, she brought in facts to support her arguments, and the interviewer repeatedly asked her where she had learned these things. Her sources included a newspaper article describing the results of a comparative study done in another school district, a survey of parent attitudes conducted locally, her own observations, things teachers and parents had told her, local budget documents, "common sense" and so on. Toward the end of the interview, on being asked once again how she knew something, she said the individual facts were not as relevant as the collection of them was:

You see, it's piecing it all together. For instance, we get kids pulled out for drug abuse. And the ages seem to be getting younger and younger. You have two things occurring at the same time. One, kids are exposed to more things, especially at junior highs.... [Second], I can break that down into feeder schools—kids from an elementary building with a strong anti-substance abuse program are less likely to get into drugs. This helped quite a lot. But I can still pick up my drug instance report and see sixth graders [District 115, school board member].

In addition to being characterized by its component parts, its organization and its continual evolution, working knowledge can also be characterized by its individuality. Even members of the same district can encounter different situations and different evidence, thus develop-
ing different bodies of working knowledge and “improving” their programs in different, even opposite, ways. For instance, in District 220, two program directors came to opposite conclusions about how to supply resource teachers to help regular teachers implement their programs. One said “I’ll get eight people to travel so they won’t get involved in local stuff. With my current staffing, resource teachers visit the schools too much and they get involved in local crap. [How do you know that?] I know the people and I know the situation, and I get weekly reports from everybody. There’s a comment section in these reports and I can tell what business they’re getting into by the nature of their comments and concerns”[District 220, director of reading curriculum]. The other program director said he got the idea for his program from a model he had seen “out West somewhere,” and that the people there told him it didn’t work unless the resource teachers were accepted by the building staff. He opted for a residential expert in each building, saying, “They’re part of the local gang; they’re not outsiders who are sent in” [District 220, director of math curriculum].

This then is working knowledge. It is continually accumulating and evolving; it consists not only of evidence but of experiences, interests and beliefs as well; it is organized; and its contents and organization differ from one individual to another.

The Interaction Between Evidence and Working Knowledge

The foregoing account of working knowledge suggests not only that it can change over time but also that evidence can be a part of it. It does not, however, indicate how evidence and working knowledge accommodate one another. This section describes two interrelated processes that are relevant to that interaction. First is the process by which users seek out new evidence and second is the process by which they incorporate new evidence into their working knowledge.

Seeking Out New Evidence

The bulk of the evidence available to these educators was locally produced. It included program evaluations, patterns of test scores across grade levels, buildings, or subject matters, and demographic or census trends in the district. When participants referred to studies done
outside their own districts, they generally had learned about these from newspaper accounts or articles in professional magazines, rather than from the original research report. Their descriptions of the process of seeking out these sources of evidence suggest that the process could be characterized by three adjectives: active, continual, and unsystematic. The process is active in that participants usually did more than merely glance at reports that came their way. Though they often perused them very quickly, they did pay attention to them, and they looked for information that they thought might contribute to their understanding of their work environment. It was continual in that new evidence was continually becoming available, and it was unsystematic in that participants tended to look indiscriminately at everything that came their way, and in that they could not describe exactly what it was they were looking for. Here are some descriptions of the process.

— [showing us histograms he had put together himself] I put these together every year when the test data come out, and I use them to talk with teachers about the strengths and weaknesses for each area the test measures [District 50, elementary principal].
— I look for patterns. . . . I look for trends and red flags [District 4, superintendent].
— I'm interested in looking at the difference between math and reading [in computer-assigned education programs]. I don't have any ideas about whether [my] program works better in one area or another, but it would be interesting to see [District 25, director of bilingual education].
— What happens is you look at the summary and something will catch your eye, so I will asterisk that and ask for a review of that [District 220, director of Title I programs].

Though these participants were aware that their search was active and continual, they would probably not have called it unsystematic. They knew what they were looking for—strengths and weaknesses, trends and red flags. Something that would catch their eyes. Yet even when they gave their reasons for studying new evidence, the reasons were vague.

— I find evaluation reports useful in stimulating me to think about the curriculum in new ways. [District 50, program director].
— It seems to me that this [problem of differences in test scores between Black and White students] is an area we have to start looking at.
[Otherwise] we won't even have a definition of the problem [District 115, assistant superintendent].

— I always have an eye out for new ideas for bringing money into the district for the arts, because "basic skills" is threatening our program [District 35, director of arts].

— [Regarding test scores] It gives you a place to start [District 27 teacher].

For these participants the purpose of the search was not to find answers to particular questions, nor to solve pressing problems. In that sense, the search was not systematic. But it was nevertheless controlled by their interests and by the large and vague body of working knowledge that served those interests.

These comments suggest two things regarding the relationship between working knowledge and evidence. First, participants appear to feel that their knowledge is incomplete or inadequate, and that they need to expand it. Second, participants seem to be genuinely open to the knowledge that can be gained from formal evidence. They are not only willing to, but also want to, use evidence to influence their working knowledge. But in order for evidence to have such an effect, it must become a working part of their knowledge. Participants must do more than study it; they must incorporate it.

Incorporating New Evidence

Incorporation is the process of making evidence a part of working knowledge. Though participants in this study often claimed to have learned from the evidence they reviewed, these claims were not automatically taken as valid. For an interviewer's comment to be taken as evidence that something was learned, it had to meet two criteria. First, it had to state what the specific knowledge was, rather than stating that, say, some piece of evidence was helpful, interesting, informative, and so on. Second, the comment had to be generated spontaneously during the course of a discussion about a substantive issue, rather than given in response to a specific question about the use of evidence. Using these two criteria, I found 233 examples in which formal evidence had been incorporated into working knowledge. These examples indicated that incorporation could occur in three different ways. First, the evidence could be incorporated in its original form. Second, it could be interpreted. When evidence was interpreted, the interpretation as well as—or even instead of—the evidence itself became part of working knowledge. Third, inferences could be drawn by bridging the evidence to already available working knowledge. In these cases, the inference does not derive from the evidence alone or from working knowledge.
alone, but is instead a bridge between the two. All three of these methods of incorporation are cases in which evidence has influenced working knowledge, but they also are cases in which working knowledge has influenced the evidence.

Here are some examples of comments which implied that evidence was being retained in its original form.

—Between 60 and 65% of the citizens in this community do not have school-aged children [District 35, superintendent].
—This school has changed from 80% minority to 50% minority in just the past three years [District 50, elementary principal].
—Special education enrollment is not decreasing even though regular education enrollment is [District 4, director of special education].
—We have the brightest fifth grade we've ever had [District 7, assistant superintendent].

At first glance, retention of descriptive facts such as these seems to be a rather direct method of incorporation. But it is not. Working knowledge influences what is retained in two ways. First, the volume of evidence from which these participants could learn such descriptive facts is enormous. Every district in this study had multiple annual testing programs and had annual data on enrollment and attendance, and many had annual data on vandalism and drug abuse as well. Every district had annual evaluations of its state- or federally funded programs since these evaluations were mandatory. Many had findings from surveys of high school graduates or of the community, surveys required by accrediting agencies. And those districts with their own evaluation offices had other studies and evaluations as well. Particular facts were not randomly recalled from this mass of information; they were recalled because they were meaningful to the speaker. The superintendent who noticed that the majority of the citizenry did not have school-aged children was also aware of the implications of that fact for the school's enrollment and for whether proposed tax millage increases would be approved by the voters in the future. And the school principal who described the changes in his building's enrollment pattern could see the effects of this change every day when he walked his hallways. Without a method of screening the mass of available data, the entire array might be incomprehensible. Working knowledge provides a means of identifying facts that are relevant and, once identified, those facts become part of working knowledge.

Second, when the evidence itself is more complex than the descriptive statistics referred to in these illustrations, working knowledge reduces the evidence to a simpler form, usually to a one-line proposition
comparable to those quoted above. For instance, one district had conducted an elaborate study of reading achievement—a series of multiple regressions which include variables relating to student, teacher, principal, and school characteristics. The study was complex and had its share of methodological caveats, but several members of the district referred to the study as if it was as unambiguous as the statistics mentioned above. One said the study showed "the importance of principals" [District 220, program director], and another that it showed that "there are basically two types of principals—the public relations type and the curriculum and instruction type" [District 220, principal]. Thus, though several participants made comments which implied that evidence was retained in its original form, these comments also suggest that working knowledge played an important role in reducing the evidence to a simple, and perhaps therefore retainable, form.

The above illustrations suggest not only that the participants incorporated those facts that were relevant to them, but also that the facts were accurately retained, and there is the possibility that the latter point is not true. Since I could not find all of the original data to which participants referred, I could not judge the accuracy of many of these remarks. However, I did encounter some evidence of inaccuracies in cases where the same evidence was referred to by multiple interviewees in the same district. For instance, district 7 had conducted two surveys, one fifteen years prior to this study and the other just one year earlier. Both were done to fulfill accreditation requirements for the district's only high school, and both were interpreted by members of the district as indicating a need for more vocational education. Here are four references to these data:

—[Fourteen years ago,] only 40% of the high school students were going to college. And of that group only 20% were graduating from college. We [therefore] felt we needed to teach students salable skills [superintendent].
—Now only 40% of the middle school students plan [to go to] college. So we'll need to make some curriculum changes and offer more vocational education [associate superintendent].
—We realized in the early sixties that only 55% of the students were going on to college. We sold the board on the idea of vocational education [senior high principal].
—It used to be that parents of students here, 40% of them had been to college, but now only 17% of our students' parents have been to college [vocational education coordinator].

These participants all knew why the evidence had been relevant: the statistics indicated a need to expand the high school's vocational
education program. But the participants were less sure of what the facts actually were, perhaps because the particular statistics were less important to their working knowledge than the implications were.

These examples from district 7 introduce the second way in which evidence can be incorporated into working knowledge: facts are not merely recognized as relevant, but are made relevant by being interpreted. Here are some examples in which evidence has been interpreted.

— [In reference to the migration of families in and out of the district] We still lose about 25% of our enrollment before the end of the school year, but we used to lose 90%. The migrant parents’ views about education are beginning to change. They’re starting to realize that they should wait until the end of the school year before leaving [District 25, principal].

— The mobility of students in this district is evidence of the need for a curriculum that is uniform across the whole district [District 83, curriculum director].

— I saw math scores go up after the change. Reading scores are down slightly but are solid [District 50, Title I director].

Keeping in mind that the figures quoted to interviewers may not be accurate, the interpretations can still shed light on the relationship between evidence and working knowledge, for the interpretations rely on other aspects of already available working knowledge.

For instance, individual interests influence many interpretations. The curriculum director quoted above who interpreted student mobility as indicating a need for uniform curriculum would gain a great deal of influence if his district mandated a uniform curriculum. Other examples of personal interests influencing interpretations include a special education program director who had just completed her master’s degree in the education of the deaf and interpreted the test scores in her district as indicating a need for a new program for deaf children [District 240]; a principal in a school district with only five elementary schools describing her school’s test scores as “third from the top” in the district, rather than third from the bottom [District 4]; and the director of a bilingual education program who had just received a negative evaluation of her program and interpreted the evidence not as indicating that the program’s practices were inadequate, but rather that

we were expecting too much from our students and I think if we can be more realistic we can accomplish what we set out to do [District 57].

Beliefs also play a part in interpreting evidence. A school board member uses value judgments when he says, “eight hundred is too many
to close a school" [District 115], and a principal draws on her values when she says she is dismayed by the findings from a study that indicated that disproportionate number of minority students (boys) receive corporal punishment or are suspended [District 50]. There were also some cases in which participants appeared to use myths to interpret their evidence.

— [In reference to a lack of test score growth among the district’s sixth graders] It’s a national phenomenon that when kids reach sixth grade there is a plateau [District 7, superintendent talking with his cabinet].
— [In reference to a change in first grade scores from the thirty-second percentile to the seventy-second] I brought teachers in to discuss this. I know test scores are up all over the country [District 240, principal].

Sometimes the particular aspects of working knowledge that are used to interpret evidence cannot be identified, even though the interpretations themselves can be. For instance, two principals in the same school district received test data indicating that children in the first and second grades were scoring relatively high, while children in the later grades were scoring relatively low. Here is how each of them interpreted these data.

—Our kids don’t do as well in later grades as in earlier grades. I think it’s a function of the test and to some extent the curriculum. I think the test is biased for our population in the later grades [District 220, principal].
—When I get the test results I do nothing with them.... I know the results are inflated for grades one and two. So I don’t put much reliance on the first grade scores because they just don’t jibe with what we’re doing [District 220, principal].

Interpretations, then, rely on elements of already-available working knowledge. Working knowledge enables users to define the relevance of the evidence to their working situations, thereby rendering the evidence meaningful. But meaningful evidence is not necessarily accurately retained, even though its meaning is retained. The administrators in District 7 could all recall their interpretations of the evidence, but when called upon to justify their conclusions, they appeared to reconstruct factual data that were consistent with their original interpretations.

The third way in which evidence becomes incorporated into working knowledge is by means of bridging inferences². These inferences connect
evidence to other elements of working knowledge—interests, experiences, or beliefs. For instance, a teacher uses an inference to build a bridge between his experiences and his classroom's performance on test scores:

Last year I was the lowest in the sixth grade and this year I'm the highest, and I've done nothing different.... Tests are simply not reliable [District 220, teacher].

And a board member bridges two kinds of evidence with an inference.

The achievement test results indicate a great diversity in our student body. Twenty-two percent of them are Oriental [District 4, school board president].

Bridging inferences not only enable users to view the evidence as part of a larger picture of what is occurring, but also to view it as part of a larger argument for what should be occurring. A school board member in district 220 discussed the importance of parent involvement in education and bolstered his argument with the following facts: (a) there is a known relationship between student attitudes and parent attitudes, (b) low test scores tend to be in schools with low attendance, and (c) one school with severe attendance problems served students for whom only 12% of the parents had ever completed high school. He could not recall the sources for these facts, even for the specific 12% figures, and said, "I don't know how I know that; it's from something I read somewhere" (District 220, board member). But even if these "facts" are all true, they do not automatically add up to a conclusion that parent involvement is needed. He has bridged these relationships together by creating a model that runs something like this: parent attitudes affect student attitudes, student attitudes affect student attendance, and student attendance affects student's grades. Parent involvement in the educational process can improve parent attitudes toward education and can thereby improve their children's attitudes, attendance, and ultimately their achievement as well. This school board member hasn't the sort of evidence needed to actually test his model, yet the evidence he does have has contributed to the development of the model and is now being used to justify his conclusion that more parent involvement is needed.

Most bridging inferences are implicit rather than explicit, and must themselves be inferred by interviewers. For instance, one superintendent
had been impressed by a study of voter behavior which indicated that senior citizens voted out of proportion to all other groups of voters. He said,

This study showed me two things. It showed me the weak links [in my campaign to get voter approval for a proposed tax millage increase for the schools] and it made me study the location of our young families and senior citizens... You've got to be aggressive [District 7, superintendent].

Clearly the study did not tell this superintendent to be aggressive, nor did it say anything else about what he should or shouldn't do. The study was not even conducted in his community. But he did seek it out and read it with the intention of bridging it into his knowledge of his own situation. The inferences he drew were not from the study alone. Rather, they bridged a number of elements in his working knowledge, no doubt including the following: (a) experiences or beliefs to the effect that senior citizens had less money to contribute to taxes than working citizens did and that senior citizens did not have children in the schools; (b) an inference that senior citizens would be less likely to approve of a tax millage increase for the schools than employed parents of school-aged children would be; (c) legal knowledge that the majority of people who actually vote must approve of a bill in order for it to pass; (d) evidence that senior citizens usually comprise the majority of voters in elections; (e) interest in having the millage bill pass; (f) experiences of the campaign he had waged so far, which was targeted primarily toward parents of children enrolled in his schools; and (g) the inference that even if he convinced the majority of parents to approve of the bill, these parents might not constitute the majority of voters. The three inferences he volunteered during his conversation were the bridges that connected all of these elements of his working knowledge together: (h) his campaign had weak links in that it did not include senior citizens; (i) he needed to learn more about the voting residences of senior citizens and working parents in his community; and (j) he needed to be more aggressive in order to succeed in his campaign.

When participants describe their processes of seeking out evidence and give their reasons for looking at evidence, they indicate both an awareness that their knowledge is tentative and a willingness to use new evidence to improve it. Their comments imply that the evidence has at least the potential to greatly influence their working knowledge. But when they relate what they have actually learned from the evidence, they tell a slightly different story. It is not clear that even the most
rudimentary descriptive statistics influenced working knowledge without first being influenced by working knowledge. And the most substantial alterations in working knowledge came from interpretations of evidence and from inferences that bridged the evidence to other elements of working knowledge, not from the evidence per se.

Summary

Working knowledge is a large and amorphous body of knowledge that includes experience, beliefs, interests and a variety of forms of evidence. These components are blended together so completely that individuals often cannot distinguish its parts. Knowledge derived from empirical evidence may seem to derive from beliefs such as myths or legends, and vice versa. Working knowledge continually accumulates new elements and its structure continually evolves.

Although public administrators and policy-makers may prepare for specific decisions by studying available evidence, they rely on their working knowledge for the majority of their interactions with their colleagues. Because working knowledge is used for the multitude of daily, spontaneous policy discussions, evidence that is part of working knowledge may have a greater cumulative effect on policies than does evidence that is only called upon for special occasions. And that possibility raises questions about whether and how evidence influences working knowledge.

The participants in this study appeared to have incorporated a great deal of evidence into their working knowledge. They used three techniques to incorporate new evidence. One was to retain it in what appeared to be its original form, a strategy that depended upon working knowledge either to select facts from the volumes of available data or to reduce complex evidence to succinct propositions that could be retained. A second strategy was to render the evidence meaningful by interpreting it, a strategy which usually resulted in retaining the interpretation as well as—or even rather than—the evidence per se. The third strategy was to create inferential bridges between the evidence and other elements of their working knowledge. These bridges could be quite complex and, like interpretations, were often retained in lieu of evidence.

The strategies used to incorporate new evidence into working knowledge suggests that evidence is not merely attached to working
knowledge like barnacles are attached to clams, riding unchanged from one situation to another. Rather, it is acted upon by working knowledge and its original source and character are often lost. It is sorted, sifted and interpreted; it is reduced to simple propositions, translated into implications, and transformed into bridging inferences. Once these simplifications, interpretations and bridging inferences are created, they are incorporated into working knowledge and become part of the user's conceptual baggage. And it is these, rather than the evidence per se, that are most likely to be carried to working situations and used.

Notes

1. District code numbers indicate the approximate numbers of students served, in thousands. District 4 serves about 4000 students and District 240 around 240,000 students. Code numbers deviate randomly from actual enrollments by ±15%.

2. I borrow this term from psycholinguists, who use it to refer to inferred connections among sentences of text (Abelson, 1981).

References


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