Deming, Schwab, and School Improvement

Maurice Holt

For some 30 years, beginning in the 1950s, Joseph Schwab wrote extensively about the field of curriculum. His vision was broad: curriculum was not to be conceived narrowly as an agenda for instruction, but as an inquiry into what should be taught and how, always with reference to his five "commonplaces": subject matter; learners; teachers; milieu; and the process of curriculum-making itself. Thus directed, the field of curriculum would "continue its work and contribute significantly to the advancement of education." In 1940 Schwab had become associated at the University of Chicago with Robert Hutchins's reform movement, aimed at promoting an education that would further the "moral, intellectual, and spiritual" as well as the material. As Westbury and Wilkof, editors of Schwab's papers, point out, "virtue and citizenship were the characteristic themes of the entire reforming movement," and Schwab's notion of school improvement retains this moral character. Liberal education is a good, defining the character of improvement: "A value is embodied in a stated educational intention . . . [which] then serves as an imperfect guide or pattern for the construction of a curriculum."

W. Edwards Deming devoted his long life exclusively to the improvement of business practices, rarely glancing toward education. His ideas grew from the notion that if the quality of consumer goods were to improve, the causes of variation in the manufacturing process needed study. Further, Deming realized that a telephone or automobile that was reliable and pleasant to use would bring a sense of well-being to its owner, and making them would bring satisfaction to their producers, as well as a stake in the market place. It followed that the pursuit of improvement must reach beyond outputs and profits to the character and virtuous conduct of the manufacturing institution.

"Management's job is to create an environment where everybody may take joy in his work" had become a Deming principle by the time he went to Japan in 1946 to advise on the post-war reconstruction of industry. Invited in 1980 by the Ford Motor Company to repeat his all-too-palpable Japanese success in America, his list of "Fourteen Points for Transformation" included such unusual suggestions as "cease dependence on inspection," "adopt leadership," and—most surprisingly—for a company dedicated at that time to the pursuit of profit through accounting procedures—"eliminate numerical goals" and "drive out fear."

The use of test results to guide school improvement would be inconsistent with Schwab's view of curriculum, for he had noticed that "a test which is highly valid and at the same time highly useful is not possible in the very nature of the case." Equally, the use of profit figures to guide business strategy is anathema to Deming: "It would be poor management . . . to maximize sales . . . to the exclusion of the effect on other stages of production." Both Deming and Schwab insist that judgment be based on the entire context of the institution, and on a sense of what it is good to do in terms of intrinsic purpose rather than extrinsic ends. A business run on Deming's principles will be profitable, just as a school operating a liberal curriculum is likely to come out well in conventional tests. These are important gains, yet incidental to the real purpose of the institution and to the way in which improvement is brought about.

Improvement and Change

The observation that change does not imply progress is hardly novel, yet the stream of books and articles on the value of educational change as a good in itself seems limitless. Student teachers are urged to become change agents, as if any reflective act will lead to improvement. Deming is explicit on the need to avoid "tampering"—the kind of change that will only make matters worse:

Suppose we have been using Method A for a particular task, but we now have some evidence that Method B is better. Do we change to Method B? Not necessarily. If it is only a little better, the change may not be worth the hassle. There may be some evidence that method B is a lot better but, if that evidence is not convincing, we may still decide to retain method A on the grounds that the change may do more harm than good.

I note here the first of several similarities between Schwab and Deming in their view of change and improvement, by way of introducing a more systematic analysis of their positions, and thus advancing my argument that they present a common approach to the resolution of theory/practice dilemmas. That they both view improvement as an inherently moral pursuit has been argued already. The above passage from Deming takes the matter further, stress-
ing the need to base judgment on **evidence**. The kind of evidence Deming looks for would be primarily, though not exclusively, statistical in character. To say that Deming's approach is data-driven is true providing we recognize that Deming takes a catholic view of data. Although a statistician by profession, Deming is sceptical about the value of numbers: "The most important figures needed for the management of any organization are unknown and unknowable." We find the same perspective in Schwab: a "practical programme of improvement of education… would require that we know what is and has been going on in American schools" (emphasis in original).  

As regards **improvement** in general, Deming saw it as a continuous process, virtually an obsession, and an absolute necessity for any institution. Indeed, he preferred to see his profession as "the management of improvement," and abhorred the term "total quality management," with its implication that through some totalitarian system, variation could be abolished. For Schwab, the urge to improve was a continuation of Dewey's approach:

Learning, for Dewey, is active participation in... the recovery and test of meaning. Hence, the effective "learning situation" is not the one which leads by the quickest, most comfortable route to mastered habit and attitude... but the one which is provocative of reflection, experiment, and revision.  

Deming's focus on the pervasive nature of variation—a unique insight for the business world of the 1950s—made him ever aware of *uncertainties* in institutional life. Schwab's view that an educational intention can only form an "imperfect guide" to curriculum construction likewise led him to see that everything depends on an unpredictable context: "This student, in that school, on the south side of Columbus, with Principal Jones during the present mayoralty of Ed Tweed and in view of the probability of his re-election."  

Lastly, both Deming and Schwab focus on the need to see the resolution of dilemmas in terms of **practical inquiry** involving both theory and practice. For Schwab, the method of the practical is neither deductive nor inductive. It is deliberative," and his summary of the method bears repeating:

Deliberation is complex and arduous. It treats both ends and means and must treat them as mutually determining one another. It must try to identify, with respect to both, what facts are relevant... It must try to identify the desiderata in the case. It must generate alternative solutions. It must make every effort to trace the branching pathways of consequences which may flow from each alternative and affect desiderata. It must then weigh alternatives and their costs and consequences, and choose, not the right alternative, for there is no such thing, but the best one.  

Deming's view of the improvement of practice shares common ground with Schwab. In observing that "Examples teach nothing unless they are studied with the aid of theory. Most people merely search for examples in order to copy them," Deming notes the importance both of theory—of recognizing how ends and means interact, how each alternative will have traceable consequences—and of context; improvement is not a matter of transferring examples of "best practice" or "benchmarks" from one setting to another, without regard to people and tradition.  

Like Schwab, Deming knows that the business of improving practice—the activity Schwab calls "the practical"—is arduous: "Practice is more exacting than pure science; more exacting than teaching." And Deming agrees that the arts of the practical are neither deductive nor procedural: "You may have come for a formula. There is no formula. There is no Step 1, Step 2, Step 3. We are going to learn a whole lot more. We're going to learn theory. We're going to learn why we have to do what we need to do."  

**Current Prescriptions for School Improvement**

How then, does this shared perception of the practical arts, independently derived from two diverse careers and experiences, connect with that major preoccupation of legislators and pundits, the need to improve the current state of American schools? It will be helpful first to look at the two strategies dominating the present school reform scene, and identify their shortcomings. I shall then argue that of two further reform strategies, only the deliberative approach inherent in the work of Deming and Schwab is valid. I conclude by suggesting that Deming's perspective complements and extends Schwab's insights.

Aristotle's observation that the form of an inquiry must be matched to its purpose is of central importance here, and it will already be evident that both Schwab and Deming recognize that choosing the right method is of paramount importance in addressing the improvement of practice. The point seems almost trite: we would not advisedly use a hammer to insert a screw, neither would we use a screwdriver to remove a nail. Yet when it comes to resolving issues that lie in the domain of uncertain, moral problems, where the delicate touch of a surgeon is needed, the equivalent of the monkey wrench is usually the recommended device.  

The first approach currently in evidence I shall categorize as **pragmatic**: it asks, "What seems to work?" The preferred technique is then recommended for general adoption in schools, irrespective of context. It is this approach Deming denounces as merely "copying examples," but it is widely advocated as a route to school improvement. What is lacking, as Deming points out, is any reference to...
theory. It is a matter of using practice to improve practice. This strategy dominated the "effective schools" movement that arose in the wake of the 1983 report *A Nation At Risk*, but the inability of this "first wave of reform" to penetrate the real structure of a school had become evident by the end of the decade.

It is a strategy born of ignorance: the presumption is that rather than seek to understand what happens in a school, it can be treated as a "black box." A behavioral search for correlative patterns between inputs and outputs then yields portable recommendations for improvement. An influential 1979 English study of twelve London schools, funded by the UK government's department of education, exemplifies the approach and prefigures similar American initiatives of the 1980s. The research findings were attributed to the school's "ethos"—a surrogate for the "black box"—and included such puzzling results as "overcrowded schools tended to have somewhat better outcomes" than schools with more space per pupil, and "schools which use much display of pupils' work tended to have a somewhat better level of exam success." Good may, of course, come from this strategy, if used cautiously; some schools are run better than others, and simple measures may improve a poor school, at least for a time. But if we seek continuous improvement, we need a strategy that cuts deeper.

The second approach begins not with recommendations drawn from practice but with some theory for reform. The reform is then applied to the practice of schools through "implementation," permitting some local adaptation but retaining the assumptions implicit in the theory. The current *Goals 2000* program exemplifies this bureaucratic approach to school reform. The goals, constituting the theory on which reform is to be based, originated in a conference of state governors held in Charlottesville, Virginia in 1990, and the precursor document *America 2000* makes explicit its debt to the feverish rhetoric of *A Nation at Risk*: "There will be no renaissance without revolution." This theme of change that is both fundamental and "systemic"—an important word in the lexicon of centrally-led reform—is now echoed in a thousand gung-ho documents at state and school district levels.

The question that arises is: have the theorists got it right? Has the right diagnosis been made of the defects of the present school system? If not, the cure may be worse than the alleged disease. Some researchers have argued that this is indeed the case: that *Goals 2000* is based on unsound data (for example, the comparisons between American and Japanese schools, which do not compare like with like) and offers inappropriate prescriptions for improvement. Any reform strategy that depends on some general "expert" theory will be vulnerable to this charge.

The similarities between the two approaches are more important than the differences. Both apply to the school an agenda for change derived outside the school; both are decontextualized strategies, separating the ends of reform from the means. Both begin by defining some end-state, and work back from it to determine appropriate forms of curriculum. And both are indebted to the "Tyler Rationale," the protocol for curriculum improvement formulated by Ralph Tyler in 1950 and organized around four fundamental questions:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain those purposes?
3. How can these experiences be effectively organized?
4. How can we determine whether these purposes are being attained?

The key point is the focus on the initial purpose or outcome: everything, it seems, is to be derived from this, although Hlebowitsh has argued that Tyler may have had in mind a more flexible interaction between purposes and experiences. Whatever Tyler's intentions, the rationale soon became vulnerable to a behaviourist emphasis on objectives, and to a rationalist emphasis on using ends to define means. It has therefore emerged as the category killer in the market for models of change, underpinning such diverse initiatives as federal top-down programs (beginning with the 1970s "Great Society" initiatives) and the evaluation of teacher education (for example, the model used by the National Council for the Accreditation of Teacher Education requires institutions to define a "knowledge base" from which its curriculums and practices are to be derived.)

The business equivalent of this reform strategy is "management by objectives," or MBO, and Deming is emphatic in rejecting it: "A numerical goal accomplishes nothing. Only the method is important, not the goal. By what method? . . . Management should work on improvement of the process." Aguayo, in a valuable study of Deming's methods, quotes the confident assertion of the MBO-oriented chairman of ITT at the height of its stock-market triumph: "You read a book from the beginning to the end. You run a business the opposite way. You start with the end, and then do everything you must to reach it." Eventually, ITT's emphasis on financial results led to a spectacular collapse and the replacement of its chairman.

Currently, "starting with the end" is the favored strategy for school reform. The emphasis on what students "know and can do" is encouraging schools everywhere to define "competencies" or "proficiencies," with grade-level assessments to match. Probably most students will meet the
defined norms, since teachers will have no alternative but to teach to the test. As Deming remarks, "a numerical goal leads to distortion and faking, especially when the system is not capable to meet the goal." Such results are of doubtful educational value, since the method of reform fails to address what really matters, the system itself—that is, the commonplaces that define the learning encounter.

This is not to deny that a school and a curriculum need an aim, or "end in view," in Dewey's phrase. The point is that the function of an aim is not to define a curriculum, but to inform it. As Dewey noted, attempts to specify the curriculum in terms of finite knowledge are doomed to failure: "Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time." Deming understands this perfectly; "The system must have an aim. The aim is a value judgment.... It is important that an aim never be defined in terms of activity or methods. It must always relate directly to how life is better for everyone." Jonathan Adler reminds us that "the inference from accepting an educational aim ... to a conclusion as to the content or structure of a curriculum ... is a fallacy." We might have, for example, the aim of being healthy, but the aim does not itself determine how much time we spend cycling, rowing, or running; it simply directs us to consider what methods might be healthful in our own particular case.

**The Case for Deliberation**

These two strategies, which I have called the pragmatic and the bureaucratic, represent two of the four ways in which Richard McKeon, a contemporary of Schwab's at the University of Chicago, suggests theory and practice may be linked in the development of institutional action. The first of these he called the operational, since it derives future actions from past actions "without the intervention of reasoning founded on a priori abstractions." Future practice, in short, is to be based on some analysis of past practice, without benefit of theory, and this corresponds precisely to the approach I have termed pragmatic.

In McKeon's logistic mode, theory is kept separate from practice, has a rational, analytic basis, and is used to influence practice by means of what McKeon termed a "science of human action." This mode is what I have termed the bureaucratic approach to improvement; the basis of the goals in Goals 2000 is a theory, though its basis is far from clear. But the goals have now been bestowed with iconic status and are being used to change practice, using the applied science of support systems, advisory teams, explanatory material and the like.

As I have noted, distinguishing the operational mode from the logistic mode is not always as clear cut as one might suppose. Reid, indeed, suggests that at least in its original conception, Tyler's rationale was operational in nature:

Although disciplinary knowledge plays a part in the formulation of the "theory" which is to drive the planning process, the principal source of ideas for curriculum activities is what is already being done in schools, or what is happening in the outside world which could provide objectives for the practice of schooling.

What matters is that neither strategy for general reform starts with the concerns of particular schools, and neither is therefore likely to have much impact. The evidence bears this out: a Rand corporation study of the "Great Society" programs showed little effect at school level, and a dozen years after the publication of A Nation At Risk and its ensuing flurry of initiatives, most schools are much the same as before. Even where coercive force has been used to impose a bureaucratic strategy, as in England with the 1888 Education Reform Act, the result has been over-specification, confusion at all levels, and a severe drop in teacher morale.

All this raises a fundamental question: can central agencies decide what it is "good" for a school to do? If Schwab is right, improving schooling as a systemic exercise will always be fruitless: reform is contextualized and begins in individual schools, and ultimately the only people who can do this are to be found in and around each individual school. In a democracy, the locally-based course of action is not only the most defensible, but also the most viable. Some guiding principles may have emerged from principled inquiry and research, and have national or state endorsement, but ultimately the agenda that matters will be the agenda that the school and its constituency adopts. The focus must therefore shift to the ways in which such an agenda can be a moral undertaking.

Some writers would argue that public education is so important in society that reform should be based on some socio-political ideology, and this brings us to the third of McKeon's modes. In a democracy, for example, the virtues of a neo-Marxist philosophy might be urged, or of a curriculum based on existential precepts, as in the "de-schooling" doctrines of the 1970s. This approach to reform starts not with schools as they are, but with schools as they ought to be, and is implemented by means of a back-and-forth process of persuasion and dialogue, agreement and dissent, in which the doctrines of the chosen ideology constitute the theory, to be constantly tested in practice and then reshaped from practice. McKeon characterizes this view of change as the dialectic mode.
resting, Reid suggests, on "acceptance of interactions of a cyclical nature between theory and practice, involving thesis, antithesis, and synthesis."\(^{33}\) The difficulty with the approach, however, is that unless you accept the social theory being offered, you are excluded from the process.

This mode of reform has gained some academic support, in spite (or perhaps because) of its irrelevance to the real life of schools. Often linked with "critical theory," writers in this "reconceptualist" tradition have begun to attach the label "postmodern" to their contributions.\(^{36}\) Since their common ground is a rejection of top-down strategies, such as the operational and the bureaucratic, they often provide helpful critiques of current practice.\(^{37}\) But even if it were possible to establish the dialectic mode in a particular school, it seems likely to be of more benefit to the theorists themselves than to the students, given its detachment from contextual problems and commitment to disputation for its own sake.

The fourth of McKeon’s modes is that of deliberation, and valuable accounts of its basis and application have been offered by Reid.\(^{38}\) The advantage of the deliberative mode is that it brings together not only experts in relevant theory, but indeed everyone involved in the actual school process; and it invites them to take part in identifying the real dilemma that lies behind some perceived challenge or predicament, and then seek a resolution through practical reasoning. Theories are treated eclectically, in the light of practical inquiry based on the problem in question. For example, a school might identify its procedures for accepting new curriculum courses as a problem in need of attention. Since a new course often means eliminating an existing course, political and territorial issues arise and there are a variety of factors to consider. Numerical data on current preferences and practices will be needed, and the criteria for acceptance subjected to scrutiny. In one high school where a deliberative process was used to address this question, what had previously occupied two or three residential weekends could now be completed in a few hours, to general satisfaction.\(^{39}\)

Reid identifies four advantages that are unique to the deliberative model:

1. It appropriately reflects the logic of the process of curriculum planning;
2. It respects the practical and institutional nature of the curriculum of schooling as it has been historically determined;
3. It enables potentially conflicting interests which can legitimately influence curriculum decisions to be reconciled;
4. It appropriately reflects the moral and ethical character of curriculum planning.\(^{40}\)

An extensive treatment of the method of deliberation is given by Dillon and his contributors.\(^{41}\) Aristotle proposed it as the appropriate method for dealing with practical problems where the course of action is uncertain and involves the good of others. Once a school gets accustomed to this approach, it becomes part of normal discourse and an instinctive way of handling problems as they arise. Major issues, like a proposed new curriculum with scheduling implications, will call for the full deliberative treatment, since many interests will be involved: principal, pupils, teachers and staff certainly, but also the school’s governing body (if it has one), the school district, parents and other community stakeholders, and possibly advisors from higher education and business. But at the level of everyday events, such as a teacher confronted in the classroom with an uncertain moral problem—do I interrupt the course of events and tell this pupil to stop talking, or do I let things lie for the moment and deal with her later, because of certain practical and personal factors—one has recourse to a kind of "instant phronesis"—to use Aristotle’s word for "virtue in action." The following list (Figure 1) indicates how different language might be used in discourse about the same kind of topic, thus giving it an aspect that reflects whether the prevailing school mode is logistic or deliberative. It is, of course, meant to be suggestive rather than exhaustive.

<table>
<thead>
<tr>
<th>LOGISTIC</th>
<th>DELIBERATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes</td>
<td>Encounters</td>
</tr>
<tr>
<td>Analysis</td>
<td>Deliberation</td>
</tr>
<tr>
<td>Procedures</td>
<td>Process</td>
</tr>
<tr>
<td>Objectives</td>
<td>Content</td>
</tr>
<tr>
<td>Specifications</td>
<td>Principles</td>
</tr>
<tr>
<td>Accountability</td>
<td>Judgment</td>
</tr>
<tr>
<td>Methods</td>
<td>Values</td>
</tr>
<tr>
<td>Implementation</td>
<td>Improvement</td>
</tr>
<tr>
<td>Structure</td>
<td>Context</td>
</tr>
<tr>
<td>Procedural</td>
<td>Moral</td>
</tr>
<tr>
<td>Delivery</td>
<td>Enactment</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Engagement</td>
</tr>
<tr>
<td>The parts</td>
<td>The whole</td>
</tr>
<tr>
<td>Skills</td>
<td>Capacities</td>
</tr>
<tr>
<td>Competency</td>
<td>Understanding</td>
</tr>
<tr>
<td>Standards</td>
<td>Variation</td>
</tr>
<tr>
<td>Behavior</td>
<td>Character</td>
</tr>
<tr>
<td>Performance</td>
<td>Perception</td>
</tr>
<tr>
<td>Technique</td>
<td>Tradition</td>
</tr>
</tbody>
</table>

Figure 1: Forms of discourse
Deming and The Improvement of Practice

Because Deming pursued improvement not in an academic but in a business context, his philosophy of moral action is not as accessible as that of Schwab. Working alongside Deming, either in seminars or in the field, was certainly an incomparable opportunity to get inside his ideas and a number of useful texts draw upon this experience. From about 1987, Deming began to use the term "profound knowledge" to summarize the core of his approach. In his last book it appears as four interrelated items:

- Appreciation for a system
- Knowledge about variation
- Theory of knowledge
- Psychology

However, the treatment of these elements is somewhat inchoate, as if Deming is struggling to bind them more firmly together. What follows is a personal interpretation of Deming’s commentary, with particular reference to school applications.

The concept of a system, defined as "a network of interdependent components that work together to try to accomplish the aim of the system" is vital in Deming’s thinking. The term “system,” however, has a range of meanings. Deming’s may be described as a weak concept of a system: a strong concept would take us into electrical theory and

### Deming’s Fourteen Points for Transformation

1. Create constancy of purpose for the improvement of product or service.
2. Adopt the new philosophy.
3. Cease dependence on inspection to achieve quality.
4. End the practice of awarding business on price tag alone. Minimize total cost by working with a single supplier.
5. Improve constantly every process for planning, production, and service.
6. Institute training on the job.
7. Adopt and institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations, and targets for the work force.
11. Eliminate numerical quotas for the work force and numerical goals for management.
12. Remove barriers that rob people of pride of workmanship. Eliminate the annual rating or merit system.
13. Institute a vigorous program of education and self-improvement for everyone.
14. Put everybody in the company to work to accomplish the transformation.

feedback loops, or a Stalinist view of society. Deming regarded people as the greatest asset of any organization, and would have agreed with Bertalanffy—a pioneer of systems thinking—that "The Leviathan of organization must not swallow the individual without sealing its own inevitable doom." What Deming wishes to convey is essentially E. M. Forster's admonition, "only connect"; no organization can do its best work unless people come to agree on its general intention. To do this, everyone cooperates in getting the components to work together—to connect, so as optimize the system and get the best out of it. "Profit centres" and similar competitive mantras Deming rejects, since they only serve to set one part of an organization against another.

Defining where to draw the line around a system is not always obvious when one moves from the private sector to the public, and this is particularly the case with schooling. Deming notes the complexity of the arrangements that have grown up over time, and almost despairs:

Optimization is obstructed by a city superintendent, a county superintendent, a school board (elected, shifting over time, no constancy of purpose), district board, local government, county government, state board of education, federal government. 

This disjoint mix of democracy and bureaucracy often seems to work to the disadvantage of the students it is intended to serve, and is increasingly coming under scrutiny. One solution is to see the individual school as a system in itself, with its own governing body, responsible chiefly to its constituency, as if it were a private institution. In system terms this has much to commend it, and thinking along these lines has given rise to the notion of a "charter school"—part of the public school district that funds it, yet autonomous and often free from district and state stipulations. Politically, the strategy raises more problems than it solves: each school is in effect an unfunded mandate on the district; the end result may be merely "grease the slide" for the introduction of voucher systems; and a network of independent quasi-public schools disconnected from any shared concept of the public good is hardly democratic. A better approach would retain the concept of a group of public schools holding broad intentions in common—as in a school district—but investigate ways of reducing the micromanagement and sudden policy changes that plague current practice. Deming's point is that the elements of the system must be capable of optimization, which implies the capacity to share a culture and an aim. Schools are innately collegial in style; many school-district bureaucracies have acquired a culture based on authoritarian line management, and this needs to change.

A similar question arises if we apply Deming's ideas to the relationship between an institution for initial teacher education, and the school in which its students obtain practical experience. Do the two constitute a system, to be bound together ever more strongly? Evidently not, since the two institutions, in the nature of things, serve different purposes and possess different cultures. Tight coupling could be a recipe for mutual misalignment; loose coupling would facilitate the operational connection while retaining the autonomy of each.

Knowledge of variation, the second element in Deming's list, also has significance for education. Deming's "red beads experiment" is fun to do, and deepens understanding of both variation and systems. Volunteer "workers" are invited to scoop out a sample of beads from a box containing mainly white beads but with some red ones added to the mix. The number of red beads, or "defects," is recorded for each worker, and the one with the fewest red beads is praised. The worker with the most is dismissed as inefficient, and replaced. In the next round of the "process," it often turns out that the previous best worker—the one with the fewest beads—now has the most. This is regarded as a serious breach of loyalty to the "company." After some six rounds, all the red-bead counts are plotted as points on a graph, and are seen to lie within definite limits—usually, three standard deviations on either side of the mean. This, in Deming's experience, defines the process as stable, and the variable performance of the workers has nothing to do with their individual ability. The observed variation is inherent in the process itself, and the workers are all equally proficient.

Deming's research suggests that most variation arising in operational systems is due, as in the red beads experiment, to the process and not the worker. Improvement starts, therefore, not with exhortations to workers but, with new thinking by managers, whose job it is to optimize the system and therefore understand the process by getting much closer to it. This has two important implications for schools. First, it argues against the separation of "supervision" from the actual business of the curriculum. Not only do principals need to see themselves as educators first and managers second; the artificial divisions in U.S. schools of education between administration, curriculum, and the foundations of education need to be eliminated. All three are unified around the key school process—as Schwab argued, the process of curriculum—and improvement means seeing it whole.

Second, it follows that when we make an assessment of a pupil's work, the result is not an exclusive assessment of some innate quality possessed by the pupil: it is an assessment of the system, consisting of the pupil, the teacher, the subject matter, and the context—in short, of Schwab's commonplaces. In general, the result will naturally reflect in some degree what the pupil can bring to the exercise, but it would be a gross error to suppose that the result gives us an objective measure of the pupil's "ability," "intelligence,"
“understanding” or whatever. Hence Deming’s insistence that the
assessment of people, whether children or adults, is not
only misleading, since the results will always be subjective,
but positively harmful in lowering morale and creating fear.

Deming’s concern is with reducing variation so as to yield
as uniform a product as possible. At first sight, this seems to
be contrary to the task of schools—to foster individual talents
and thus encourage variation. But to achieve that aim, we
need to ensure that every student gets the best out of the
system—in other words, the variation we need to reduce is
the variation in student gain from the learning process. The
red beads experiment tells us that to do this, the process must
be designed so that it embodies enough variety of learning
experiences to engage every student, and that assessment, by
the same token, should be sensitive to the different ways in
which students can demonstrate their understanding of the
subject matter. Only then will the implications of the whole
system of teaching and learning for that topic be adequately
treated. As Gartner points out, this means that if the system
is stable and optimized, everyone will merit an ‘A’ grade,
because everyone will do equally well. Instead of a zero-
game, everybody wins. This turns conventional statistics, with its addiction to the bell curve, on its head—the
chief reason why Deming insists that his approach cannot
succeed unless a statistician with a thorough background in
systems thinking is appointed to a position of influence in
the organization.

In his treatment of theory of knowledge, Deming stresses
that knowledge is not mere information: “knowledge comes
from theory.” And knowledge, because it embodies theory,
permits prediction, which is essential to “management in any
form.” To use data intelligently requires prediction. Finally,
“there is no true value ... Change of procedure for
measurement or observation produces a new number.”
Management, Deming is saying, involves judgment and not
mere procedures, since what look like matters of fact always
involve matters of value. We cannot claim a science-like
precision for our knowledge of the process; we live with
uncertainty and ambiguity. Deming always referred further
inquires after his “theory of knowledge” to a little-known
1929 book by the philosopher Clarence Irving Lewis, Mind
and the World-Order. A brief quotation from this book seems
to support the interpretation advanced here:

The reflective method is pragmatic in the same sense that it is
empiric and analytic. It supposes that the categories and
principles which it seeks must already be implicit in human
experience and human attitude ... The relativity of
presentation to the perceiver can hardly be denied. That this
does not affect the validity of knowledge, can be established,
since all knowledge is conceptual and interpretive.

In essence, Lewis rejects scientific rationalism as a way
of understanding human experience, and instead advocates a
“reflective method” that stresses a humanistic context. Taking this together with Deming’s general points, the “theory
of knowledge” becomes the Aristotelean assertion that
process improvement, since it concerns the affairs of mankind rather than of the natural world, requires deliberative
judgment.

Regarding the last element, psychology, Deming seems
merely to want to indicate that “People are different ... A
manager of people must be aware of these differences,” and
that intrinsic motivation through joy in work is always
preferable to extrinsic motivation through rewards. He notes
the false supposition of many managers that “all people are
alike,” and that in reality we learn in different ways. His
emphasis on providing opportunities for continuous education, as well as training, is consistent with the need for
judgment to be well informed.

One further point stressed in Deming’s work is the need
to think carefully before acting, and to modify a new
proposal in the light of practical experience. His “Plan-Do-
Study-Act” cycle urges caution in the planning stage, looking
at all the evidence and estimating possible effects; trying
out the proposal on a small scale; studying the results and
changing it accordingly; and only then bringing it into play
as part of the entire system. It is, of course, a deliberative
stratagem, but by no means the most common one. Many
new ideas are urged upon schools and implemented without
deep prior thought. When poor preparation leads to spotty
results, the initiative is abandoned although, if properly
considered and adapted, it might have been of value.

Uniting Deming and Schwab

Deming’s “profound knowledge,” together with other key
elements in his philosophy, are derived from direct practical
experience of the management of change. I believe that if
we look at his ideas as a whole, they are consistent with the
view that process improvement problems are practical
problems of an uncertain, moral nature; and that they are to
be solved by having regard to the relevant data, to the
context, to the personal elements involved, and to the
interaction between the various interest groups involved in
the process. In short, Deming’s understanding of change
in organizations is essentially Aristotelian in character and of
a piece with Schwab’s account of curriculum reform and the
arts of the practical.

To suggest that Deming’s ideas form part of a historical
tradition is not to detract from them; on the contrary, Deming
deserves to be recognized as by far the most important of the
post-war management gurus, precisely because he has recognized the true character of the problem and combines practical wisdom with intellectual power. The deliberative position marks a welcome journey from the certainties of Descartes to the ambiguities of Montaigne. Yet our world of legislation, business, and administration is Cartesian in character, and it took great courage on Deming's part to assert a doctrine that challenges its fundamental beliefs. Deming brings to education the authority of business success at a time when it is fashionable to see education in utilitarian terms. To those of us who consider Schwab's ideas of great merit in the enterprise of schooling, it is not unhelpful to be able to associate them with Deming, quality, and the marketplace. In doing so, however, there is the danger of losing sight of Deming's principles and perhaps inadvertently distorting them. I have yet to see a book on the application of Deming to schooling that accurately represents the deliberative character of his ideas, and in some cases what is offered is the very reverse of Deming's position. In one recent book claiming kinship with Deming, for example, appears the statement: "Aims and goals must be translated into a set of student performance standards and indicators that can be measured and frequently monitored." In another, we have: "Educational goals provide a basis for developing and evaluating a school's program of study." Both assertions are a travesty of Deming's thinking. Often these errors appear under the banner of "total quality management." It is unfortunate that in an effective attack on TQM-inspired reforms, Capper and Jamison themselves misinterpret Deming by supposing that "customer feedback serves as the fundamental definition of quality." Yet Deming is on record as declaring, "we don't have customers in education".; as this account hopes to have shown, his ideas have nothing to do with using data in order to define conformity.

In the previous section I have taken the opportunity to make connections with school problems in outlining Deming's key ideas. By putting Deming in double harness with Schwab, we are able to deal in practical terms with two deficiencies in Schwab's treatment of deliberation. First, there is, in Reid's words, the task of "unpacking the commonplace of the milieu which, in Schwab's practical papers, is called on to do a huge amount of work, encompassing the classroom, the school, the community, the polity, and ultimately the world." This is where Deming's concept of a system is particularly valuable: it enables us, as I have indicated, to look critically at organizations and at what we can reasonably expect them to do. Second, there is the difficulty of relating deliberation and the arts of the practical to the management of organizations, and of schools in particular. Schwab's experience did not extend to this arena. But Deming's treatment of variation, of management structures related to action and not status, of the implementation of new strategies—and most of all, the deep understanding of moral action that comes through in his writings—all these equip us to make deliberation the natural strategy in schools, just as it is in businesses operating on Deming lines.

Is it possible to summarize Deming's principal concerns, so that they may be interpreted and applied more readily? A Deming associate, Brian Joiner, has suggested, as a diagrammatic representation, a triangle with the three vertices: Obsession with Quality; Scientific Approach; All One Team. In Figure 3 I have adapted this idea to my own analysis, indicating the differences between conventional practice and the recommendations of Deming.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Not</th>
<th>But</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Improvement</td>
<td>Goals, products, benchmarks, slogans, performances, targets</td>
<td>Studying the process—why as well as how</td>
</tr>
<tr>
<td>Working Together</td>
<td>Divisions, profit centers quotas, threats, rewards, merit pay</td>
<td>Community, common purpose, shared values, collaborative leadership, optimizing the system</td>
</tr>
<tr>
<td>Linking Theory and Practice</td>
<td>Management by numbers, by objectives, by results</td>
<td>&quot;Profound knowledge&quot;: of variation, of statistics, of people, of institutions</td>
</tr>
</tbody>
</table>
My aim in this paper is to establish a correspondence between Deming and Schwab and advocate the strengths of a deliberative approach to curriculum development. It amounts only to an introduction to an approach rich in possibilities for education, and one that is as yet largely unexplored. Much needs to be done in applying deliberative thinking at every level in schools, and this will be a challenging business. At a time when performance pay for teachers is high on legislators’ lists in many states, and output-based curriculum is seen as the new silver bullet, it will not be easy to stress the virtues of cooperation, the primacy of input and process over outcomes and goals, and the system-based character of assessment. All three principles appear to challenge commonsense views of schooling. But as Deming liked to say, common sense tells us that the earth is flat. Meanwhile, it is good to see that some school reform proposals align well with a deliberative perspective: for example, Sizer’s advocacy of “thoughtfulness” as the mark of a good school could be replaced by “deliberation,” without loss of meaning. The strength of Deming’s and Schwab’s ideas encourages optimism.

Finally, I return to my starting point, and the fundamentally moral nature of the deliberative approach to reform. For deliberation is not value-free, or devoid of ideals; it is not a procedural calculus for deciding what we should do next. It embodies the essence of liberal education, as Reid remarks: “Liberal education, like curriculum planning, was, for Schwab, a process transacted by and for moral agents within the setting of a community whose values it reflected.” If nothing else it is a democratic process, and it reminds us of Schwab’s acknowledged debt to Dewey. As Carr points out, Aristotle’s phronesis was what Dewey called “social intelligence”: “A form of reasoning that guides practical action in a democratic society—a society which has ceased to rely on the certitudes of theoretical knowledge and prefers instead to operate on the basis of contingent practical belief.” Deming and Schwab both remind us of Toulmin’s advice, as we move from a belief in rationality as certainty, and recognize that practical reasoning offers a form of rationality for our own age: “All we can be called upon to do is to take a start from where we are, at the time we are there: that is, to make discriminating and critical use of the ideas available to us in our current local situation, and the evidence of our experience.” As Deming has noted, this is not a recipe for a twelve-step program; it will not be greatly helped by attempts to reform schooling by fiat. But Deming’s examples from business, coupled with Schwab’s understanding of curriculum, can help us get started.

References


4. Idem.


17. Neave, op.cit., 111.


27. Schwab, op.cit., 38.


32. Reid, op.cit., 503.

33. See, for example, Milbrey McLaughlin and David Marsh (1978) “Staff Development and School Change.” *Teachers College Record* September.


35. Reid op.cit., 502.


54. Neave, op.cit., 139.


Maurice Holt is professor of curriculum theory at the University of Colorado at Denver, and has research interests in education reform, organizational change, and policy making. In the United Kingdom he developed, as principal, an innovative core curriculum structure at a comprehensive high school; established an education consultancy; and taught in higher education. Subsequently he served as director of a group of international American schools. His most recent book is *Judgment, Planning, and Educational Change* (London: Harper and Row, 1987).