

TECHNOLOGY REFUSAL AND THE ORGANIZATIONAL CULTURE OF SCHOOLS,
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By

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ABSTRACT:

Analyses of the deployment of technology in schools have tended to note its failure to affect the day-to-day values and practices of teachers, administrators, and students. This absence of trace is generally regarded as an implementation failure, or as resulting from some temperamental shortcoming on the part of teachers or technologists. Such a construction is predicated on the frequently tacit assumption that the refused technology is value-free and its implementation therefore not a field of struggle. This paper proposes that no technology is ever neutral: that its values and practices must always either support or subvert those of the organization into which it is placed; and that the failures of technology to alter the look-and-feel of schools frequently result from a mismatch between the values of school organization and those values that are embedded within the contested technology itself.

THE CULTURE OF SCHOOLS

For nearly a century outsiders have been trying to introduce technologies into high school classrooms, with remarkably consistent results. After proclaiming the potential of the new tools to rescue the classroom from the dark ages and usher in an age of efficiency and enlightenment, technologists find to their dismay that teachers can often be persuaded to use the new tools only slightly, if at all. They find further that, even when the tools are used, classroom practice--the look-and-feel of schools--remains fundamentally unchanged. The fact that we can cite occasional counter-examples of classrooms and schools where new practice has crystallized around new technologies only highlights the overwhelming prevalence of conventional school structures. Indeed, the last technologies to have had a defining influence on the general organization and practice of schooling were the textbook and the blackboard.

What is often overlooked in such assessments, however, is that schools

themselves are a technology, by which I mean a way of knowing applied to a specific goal, albeit one so familiar that it has become transparent. They are intentional systems for preserving and transmitting information and authority, for inculcating certain values and practices while minimizing or eliminating others, and have evolved over the past one hundred years or so to perform this function more efficiently (Tyack, 1974). Since schools do not deal in the transmission of all possible knowledge or the promotion of the entire range of human experience but only a fairly stable subset thereof, and since their form has remained essentially unchanged over this time, we can even say that schools have been optimized for the job we entrust to them, that over time the technology of schooling has been tuned. When schools are called upon to perform more "efficiently," to maximize outputs of whatever type (high school or college graduates, skilled workers, patriotic citizens, public support for education and educators) from a given set of inputs (money, students, staff, legal mandates, public confidence), it is their capacity to act as technologies, as rational institutions, that is being called upon. It is widely but mistakenly expected that, after analyzing the facts at hand and determining that a problem exists (high drop-out rates or functional illiteracy, for instance) and within the limits of their discretion (since they are not free to act however they wish), schools will attempt to implement an optimal solution, the one that yields the most bang for the buck. This expectation, too, derives from the assumption that schools, since they are purpose-built machines, will pursue the rational, deductive means-ends approach that characterizes rational pursuits. Following this, it is also expected that schools will embrace, indeed will clamor for, any technology that would help them increase their productivity, to perform more efficiently and effectively. It seems natural that they should employ the same tools that have led the world outside the classroom to become a much more information-dense environment, tools like film, television, and computers. Certainly many educational technologists reflexively expect such a response, and are both miffed and baffled when it is not immediately or abundantly forthcoming.

But schools are not simply technologies, nor are they purely or even mainly rational in the ways in which they respond to a given set of conditions. They also have other purposes, other identities, seek other outputs. They are, perhaps first and foremost, organizations, and as such seek nothing so much as their own perpetuity. Entrenched or mature organizations (like the organisms to which they are functionally and etymologically related) experience change or the challenge to change most significantly as a disruption, an intrusion, as a failure of organismic defenses. This is especially true of public schools since they and their employees have historically been exempt from most forms of pressure which can be brought to bear on organizations from without (Chubb & Moe, 1990;

Friedman, 1962).

Organizations are not rational actors: their goal is not to solve a defined problem but to relieve the stress on the organization caused by pressure operating outside of or overwhelming the capacity of normal channels. Their method is not a systematic evaluation of means and ends to produce an optimum response, but rather a trial-and-error rummaging through Standard Operating Procedures to secure a satisficing response. As organizational entities, schools and the people who work in them must be less than impressed by the technologists' promises of greater efficiency or optimized outcomes. The implied criticism contained in those promises and the disruption of routine their implementations foreshadow, even (or especially) for the most dramatic of innovations, are enough to consign them to the equipment closet. What appears to outsiders as a straightforward improvement can, to an organization, be felt as undesirably disruptive if it means that the culture must change its values and habits in order to implement it. Since change is its own downside, organization workers must always consider, even if unconsciously, the magnitude of the disruption an innovation will engender when evaluating its net benefit and overall desirability. This circumspection puts schools directly at odds with the rational premises of technologists for whom the maximization of organizational culture and values almost always takes a back seat to the implementation of an 'optimal' response to a set of conditions defined as problematic. Indeed, a characteristic if unspoken assumption of technologists and of the rational model in general is that cultures are infinitely malleable and accommodating to change. As we'll see later, schools' natural resistance to organizational change plays an important (though not necessarily determining) role in shaping their response to technological innovation.

Organizations are defined by their lines of flow of power, information, and authority. Schools as workplaces are hierarchical in the extreme, with a pyramidal structure of power, privilege, and access to information. Indeed, proponents of the "hidden curriculum" theory of schooling propose that acceptance of hierarchy is one of the main object lessons schools are supposed to impart (Apple 1982; Dreeben 1968). At the bottom, in terms of pay, prestige, and formal autonomy are teachers. Next up are building- level administrators, and finally, district-level administrators. Although students have even less power than teachers, and state-level actors more power than district administrators, neither of these groups is considered a part of school organizational culture (Fullan, 1991). Any practice (and a technology is, after all, a set of practices glued together by values) that threatens to disrupt this existing structure will meet tremendous resistance at both adoption and implementation stages. A technology that reinforces existing lines of

power and information is likely to be adopted (a management-level decision) but may or may not be implemented (a classroom-level decision). The divergence of interests between managers and workers, and the potential implementation fissures along those lines, is a source of much of the implementation failure of widely-touted "advances."

Finally, in addition to their rational and organizational elements, schools are also profoundly normative institutions. Most obviously, schools are often both actors and venues for the performance of significant shifts in social mores and policy. Within the lifetime of many Americans, for example, schools have institutionalized successive notions of separate-and-unequal, separate-but-equal, equal resources for all, and, most recently, unequal resources for unequal needs as reifications of our shifting cultural conceptions of "fairness." Because schools are the ubiquitous intersection between the public and the private spheres of life, feelings about what "values" should and should not be represented in the curriculum run deep and strong among Americans, even those without school-age children. When thinking about values, however, it is crucial to remember that schools generally do not seek this contentious role for themselves. More often than not it is imposed upon them by legislators, the courts, community activists, and others whose agenda, though it may to some degree overlap with that of the schools', has a different origin and a different end (See Note 1). For if anything, the norms of school culture are profoundly conservative, in the sense that the underlying mission of schools is the conservation and transmission of preexisting, predefined categories of knowing, acting, and being in the world. As David Cohen points out, the structure of schools and the nature of teaching have remained substantially unchanged for seven hundred years, and there exists in the popular mind a definite, conservative conception of what schools should be like, a template from which schools stray only at their peril (Cohen, 1987).

When parents or others speak with disapproval of the "values" that are or are not being transmitted to children in schools they largely miss the point. For the values that predominate most of all, that indeed must always predominate, are less the set of moral and social precepts which the critics have in mind than the institutional and organizational values of knowing, being, and acting on which the school itself is founded: respect for hierarchy, competitive individualization, a receptivity to being ranked and judged, and the division of the world of knowledge into discreet units and categories susceptible to mastery (Dreeben, 1968). To a very great extent these values are shared in common with our other large-scale institutions, business and government. Indeed, if they were not, it seems most unlikely that they would predominate in schools. They are, in fact, the core values of the bourgeois humanism that has been developing in the West since the Enlightenment, and it is these norms and

values, more than the shifting and era-bound constructions of social good, that schools enact in their normative capacity. There is a tight coupling between these values and schools-as-a-technology, just as there is between any technology and the values it operationalizes. Given this linkage it's often difficult to say with certainty whether school values predate the technology of schools-as-we-know-them, in which case the technology is a dependent tool dedicated to the service of an external mandate, or whether the technology produces, *_sui generis_*, a set of values of its own which are then propagated through society by school graduates. When it is this difficult to extract a technology from its context, you know you have found a tool that does its job very, very well.

SCHOOL WORKERS

In manifesting its culture, school places teachers and administrators in an unusual and contradictory position. They are subjected to many of the limitations of highly bureaucratic organizations but are denied the support and incentive structures with which bureaucracies usually offset such constraints. School workers are the objects of recurring scrutiny from interested and influential parties outside of what is generally conceived of as the "school system," many of whom have conflicting (and often inchoate) expectations for what schools should accomplish. Their means, ends, and abilities are regularly called into question by parents, politicians, social scientists, the business community, and any group with an ideological axe to grind, not least by those who consider themselves to be allies of schools. Yet teachers and administrators almost always lack the rights of self-definition and discretionary control of resources (time, money, curriculum) that generally accompany this kind of accountability to give it form and meaning. Despite their strident protests school workers are treated more as day laborers than as professionals.

At the same time, even the most complacent bureaucracies direct some incentives at their workers. These may be monetary, in the form of performance bonuses or stock options, career enhancing in the form of promotions, or sanctions like demotion and the consequent loss of authority and responsibility. Schools generally offer none of these. Instead they proffer to good and bad alike a level of job security that would be the envy of a Japanese *_sarariman_*: unless you commit a felony or espouse views unpopular in your community you are essentially guaranteed employment for as long as you like, no matter what the quality of your work. Teachers cannot be demoted: there is no position of lesser authority or responsibility within schools.

Just as students are essentially rewarded with promotion for filling

seats and not causing trouble, so teachers are paid and promoted on the basis of seniority and credentials rather than performance. Providing they have not violated some school norm, it is not uncommon for teachers or administrators who demonstrate incompetence or worse at their assigned tasks to be transferred, even promoted, to off-line positions of higher authority rather than being fired, demoted, or re-trained. Perversely, the only path to formally recognized increase in status for dedicated, talented teachers is to stop teaching, to change jobs and become administrators. Some schools and states are starting to create Master Teacher designations and other forms of status enhancement to address the need for formal recognition of excellence, but the overwhelmingly dominant practice provides no such acknowledgment for outstanding practitioners, thus lumping all teachers together into an undifferentiated mass. This condescension towards the teachers' craft, often accompanied by cynical paeans to their selfless devotion to Knowledge and children, is central to the organizational culture of schools, and teachers' reaction against it forms the base of their suspicions of the motives and values of technologists who claim to be able to improve education by substituting the output of a teacher with that of a box.

As with any organization possessed of a distinct and pervasive culture, schools attract and retain either those most comfortable with their premises and conditions, those without other options, or those who care deeply about the organizational mission and are willing to accept the personal disadvantages that may accompany a "calling." Most beginning teachers identify with the latter group, and approach their nascent careers with excitement and commitment. Indeed, they are prepared to work for not much money under difficult conditions in order to pursue this commitment. It's in the nature of people and organizations, however, for workaday values and practices to replace idealism as the defining experience of place and purpose. This means that over the long term the idealism and enthusiasm of the novice teacher must necessarily give way to the veteran's acquiescence to routine. It is this willingness to accept the values of the organizational culture and not the nature of the personal rewards that determine s who remains in teaching and who fails or leaves.

In plumbing the nature of a bureaucratic organization, we must take into account the personalities and skill sets of those who seek to join it. According to studies cited by Howley et al, prospective teachers have lower test scores than do prospective nurses, biologists, chemists, aeronautical engineers, sociologists, political scientists, and public administrators (Howley, Pendarvis, & Howley, 1993). They also cite studies which demonstrate a negative correlation between intellectual aptitude and the length of a teacher's career. Recognizing that there are

many reasons to dispute a correlation between standardized test scores with intellectual capacity, depth, or flexibility, Howley cites Galambos et al to demonstrate that

"teachers, as compared to arts and sciences graduates, take fewer hours in mathematics, English, physics, chemistry, economics, history, political sciences, sociology, other social sciences, foreign languages, philosophy, and other humanities." (Galambos, Cornett, & Spitler, 1985)

She reports other studies which show that teachers read no more, and probably less, than the average middle class person (approximately three to eight books per year) and that their reading tends overwhelmingly to be popular material rather than scholarly or scientific work (Duffey, 1973, 1974; Vieth, 1981). The fact that teachers are not, as a group, accomplished or engaged intellectuals does not require that they be resistant to change. It does suggest, though, a certain comfort with stasis and a reluctance to expand both the intellectual horizon and the skill set necessary to achieve proficiency with new technologies. This may help to explain the unusually long latency required to master personal computers that has been reported to Kerr and Sheingold by teachers who have incorporated technological innovations into their practice (Kerr, 1991; Sheingold, 1990).

Given that long-term school workers are well adapted to a particular ecosocial niche it is understandable that their first response to attempts at innovation would be one of resistance. Calls for change of any kind are seen as impositions or disturbances to be quelled as soon as possible, as unreasonable attempts to change the rules in the middle of the game. Larry Cuban has described the position of teachers as one of "situationally constrained choice," in which the ability to pursue options actively desired is limited by the environment in which teachers work (Cuban, 1986). While this is true as far as it goes, I prefer to see the process as one of gradual adaptation and acquiescence to the values and processes of the organization, rather than the continued resistance and frustration implied by Cuban; in other words, as one of situationally induced adaptation. This, I think, more easily explains the affect and frame of mind of most veteran teachers and administrators, and accommodates the possibility that the average teacher might no more heroic or enduring than the average office worker.

THE CULTURE OF TECHNOLOGY

If the State religion of America is Progress, then surely technology provides its icons. It is largely through the production of ever-more marvelous machines--the grace of technology made flesh--that we redeem the promise of a better tomorrow, confirm the world's perfectibility, and

resorb some to ourselves and to our institutions. As Cohen succinctly puts it,

"...Americans have celebrated technology as a powerful force for change nearly everywhere in social life...[and] are fond of picturing technology as a liberating force: cleaning up the workplace, easing workers' burdens, making the good life broadly available, increasing disposable income, and the like." (Cohen, 1987, p. 154)

But it goes further than that. Our machines not only signal and refresh our modernity, they serve as foundational metaphors for many of our institutions, schools among them (See Note 2). Machines corporealize our rationality, demonstrate our mastery. They always have a purpose and they are always *prima facie* suited to the task for which they were designed. Every machine is an ideal type, and even the merest of them, immune to the thousand natural shocks the flesh (and its institutions) is heir to, occupies a pinnacle of fitness and manifests a clarity of purpose of which our institutions can only dream. They reflect well on us, and we measure ourselves by their number and complexity. It is nearly inconceivable that we would imagine a school to be complete, no, to be American, that was without a representative sample of these icons of affirmation. It is absolutely inconceivable that we would trust our children, our posterity, to anything less than a machine, and so we consciously model, relentlessly build, and generally fill, our schools.

For although they often seem so ageless and resilient as to be almost Sphinx-like in their inscrutability, schools as we know them are both relatively recent and consciously modeled on that most productive of all technologies, the factory (Tyack, 1974). For at least the last hundred years, schools have been elaborated as machines set up to convert raw materials (new students) into finished products (graduates, citizens, workers) through the application of certain processes (pedagogy, discipline, curricular materials, gym). It is this processing function that drives the rationalist proposition that schools can be tuned well or poorly, can be made more or less efficient in their operation. Although it seldom articulates them overtly, this view is predicated on the assumptions that we know what we want schools to do, that what we want is unitary and can be measured, and that it can be affected by regular, replicable modifications to one or more school processes. It presumes that the limits of education are essentially technological limits and that better technology will remove them. It is the most generic and encompassing theory of "educational technology," since it embraces all curricular, instructional, and material aspects of the school experience. In its more comprehensive and embracing instantiations such an attitude does not limit its concerns only to the school plant. For early progressive educators (and again today) students' readiness-to-learn, in

the form of adequate nutrition, housing, and medical care, was seen as a proper concern for school "technologists."

So far we can detect at least two impetuses for wanting to bring machines into schools. The first is the desire of the central planner and social scientist to have these social crucibles be as modern as the world of tomorrow they help conjure into being. Cuban details how each new development in the popularization of information and entertainment technology (radio, film, television, computers) in society at large brought with it a corresponding insistence that the deployment of this revolutionary machine into schools would, finally, bring the classroom out of the dark ages and into the modern world (Cuban, 1986). Attempts to deploy technology that follow this pattern seldom specify how the machines will be used, and if outcomes are discussed at all it is in vague, incantatory language that employs words more as talismans than as descriptors. The connection between such scenarios and the outcomes they believe they strive for is essentially semio-magical, using up-to-date machinery to signify modernity and believing that the transformative power resides in the box itself rather than in the uses to which it is put. Given their non-rational character, it's not surprising that these initiatives originate with elected officials, school administrators, community groups (business, parents) and others for whom the signaling function is important. They tend not to originate with technologists or classroom teachers, who have very different (if very differing) agendas.

By "technologists" I mean those whose avowed goal is to make schooling more efficient through the manipulation of its objects or processes. "Efficiency," however, is not the straightforward, value-free quantity that those who most embrace it suppose it to be. An industrial-revolution coinage, the concept of efficiency was intended to denote the relative quantity of useless energy consumed during manufacturing or processing, contexts in which such things can be easily and unambiguously measured. Clearly, the socially-situated diffusion of skills and values that is our system of education presents a very different case, one that is more complex, more contested, more informed by subjectivity. In order to apply the concept of efficiency to such a messy world technologists and others must narrow their gaze to focus on one particular element of the process. (Under "others" I include economists, those technologists-without-machines, whose persistent attempts to discover and apply a production function to education in the face of piles of their own unambiguous evidence, ranks with the alchemists' persevering search for the philosopher's stone as one of rationality's great cul de sacs.) Technologists have therefore tended to focus on the transfer of information to students, partly because it is one of the few processes in schools that can be measured, and partly because it is one of the few

functions that everyone agrees schools should perform. What they discovered almost immediately was that when judged simply as knowledge-transfer machines schools are just not very good. It seems to take an awful lot of workers, money, and other resources to transfer a relatively small amount of information. By framing the question in this way, technologists (re)cast education as a fundamentally didactic process, and problems with education as problems of "instructional delivery." This didacticism posits education as the transfer of information from a repository to a receptacle, a cognitive diffusion gradient across a membrane constituted not by the rich, tumultuous, contradictory social processes that situate the student, the teacher, and the school within society, but solely by the "instructional delivery vehicle." By this light, of course, nearly any organic, indigenous school practice or organization will be found wanting, since schools intend to promote many outcomes ahead of information transfer.

The second concern of technologists has been standardization. Schools are supposed to produce the same outputs year after year. They are supposed to ensure that seventh graders, say, will emerge at essentially the same age with essentially the same sets of skills and broad values this year as last. If they do not then important categories like "seventh grade" or even "common school" lose their meaning. Signaling functions aside, the explicit reason given for modeling schools on factories was their promise of standardization, of uniformity of outcome. Technologists and planners have long realized that the weakest link in this chain is the last, "the instructional delivery vehicle," the teacher. Standardization of curricula, of facilities, of teacher certification requirements, means little once the classroom door is closed and the teacher is alone with her students. The inefficiency and variability of this last crucial stage undoes all prior ratiocination. For this reason, educational technologists have tended to produce solutions designed not to aid the teacher, but to recast, recapitulate, or replace her, either with machines or through the introduction of "teacher-proof" curricula (See Note 3).

Yet all these attempts to modernize, to rationalize, to "improve" the schools by making them more efficient have had very little effect. Textbooks, paperbacks, blackboards, radio, film, film strips, airplanes, television, satellite systems and telecommunications have all in their time been hailed as modernizers of American education (Cuban, 1986). Cohen, for his part, demonstrates how, with the exception of the textbook and the blackboard, none of these much-vaunted exemplars of modern efficiency have had any significant effect on school organization or practice (Cohen, 1987). They have not made schools more modern, more efficient, more congruent with the world outside the school, or had any of the myriad other effects their advocates were sure they would have.

Why is this so?