

**Technology, Reform, and Replication: Lessons from the School of the Future**

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## **Introduction**

The School of the Future (SOF), as Philadelphia now calls it, is an appealing educational institution that many teenagers would find a swell place to attend secondary school.

Not everyone, to be sure. It is in an iffy neighborhood and is not big enough to boast every imaginable course, sport, or extracurricular activity. Some people do not take well to its “progressivist” approach to teaching and learning.

But it has a lot going for it: an awesome facility; committed teachers; ample resources; sustained help and involvement from one of the world’s most successful companies; and tons of nifty technology, including a laptop for every student—one that they can even take home.

Nobody can yet be certain about the school’s results, however. The first class will graduate in 2010, so we have little idea what their subsequent education and career trajectories will look like. As I write, the first round of state accountability testing is at hand. There is concern that SOF’s emphasis on “project-based” learning is poorly aligned with Philadelphia’s curriculum and Pennsylvania’s assessments. And there has been plenty of turnover among students, as well as in the school and district’s leadership.

Like the adolescents enrolled in it, SOF abounds in both promise and uncertainty. Today, however, it cannot be termed a proven success, a school that reliably produces solid academic results and collateral social benefits in interesting ways and at a manageable cost.

But conferring on SOF the benefit of the doubt, let us assume its results turn out to be good. So what? Gratifying as it always is to come across a commendable school that does well by disadvantaged youth, in and of itself that probably would not justify this chapter, much less the larger volume of which it is a part. America has dozens of impressive one-off schools. Our problem is that the country craves hundreds, even thousands, and what therefore makes an

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outstanding school truly interesting is the possibility that it—or at least its key ingredients—might be scalable.

The holy grail of U.S. education reformers is replicating success, not emulating truffle hunters by spotting another solid school. It is figuring out how to change the life prospects of large numbers of children by creating and successfully operating—year in and year out—large numbers of high-impact schools.

In recent years, that quest has often led to the launch of ventures by entrepreneurs dedicated to creating “break the mold” schools and systematically replicating them.

That is no oxymoron. America needs new education molds to replace the ones that have not worked well. It is fine to start with a single new school that works. But if all we can learn from it is that a bunch of remarkable people came together to do something good for one set of kids in one place at one point in time—well, we should most definitely applaud them but in reality we will not derive much wider benefit. What America needs today is the kind of education accomplishment that can be transformed into a new mold in which many strong schools can be formed and scattered across the land.

We ought not expect this national mission to be embraced with passion or skill by any single school system or state. Their proper concern is with their own students, not those a thousand miles away. We would also be foolish to count on the elaborate infrastructure of establishment institutions that serve districts and states (e.g. colleges of education, publishing companies, professional associations, teacher unions) to play lead roles in developing and replicating new schools. Entrenched quasi-monopolies are almost never capable of such innovation. (Consider current goings-on in the Detroit auto industry.) And myriad restrictions on uses of public funds—not just in education—make it exceptionally difficult to deploy tax dollars

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in flexible yet precise fashions. If we hope to find this sort of creativity, investment capital, openness to innovation, and zeal to propagate success, we must look to entrepreneurial ventures and individuals.

The purpose of this paper is not to appraise SOF's educational offerings, laud its technology, judge its performance, diagnose its shortcomings or predict its future. My mission is to place SOF in the context of that entrepreneurial strand within U.S. school reform that has sought to create and reproduce innovative schools that reliably succeed with underprivileged youth on a significant scale. We do not have many such examples, but they include the well-known Knowledge Is Power Program (KIPP), the Core Knowledge Foundation, Aspire Public Schools, Achievement First, and at least a few more.

I have been involved in various ways with three earlier ventures that shared this aspiration. I took part in the brainstorming team that helped Lamar Alexander and David Kearns develop the New American Schools Development Corporation (later New American Schools). I was a founding partner of Chris Whittle's Edison Project (now EdisonLearning). And I was a founding board member, and chaired the education advisory committee, of K12 Inc., the Bill Bennett-Lowell Milken virtual-school company.

These initiatives were very different. New American Schools raised philanthropic dollars to underwrite a competition among nonprofit school-development teams to devise rival models that public-school systems were then expected (with the help of federal money) to embrace. Edison deployed venture capital to finance a profit-seeking effort to invent a single, modern, replicable school design that Whittle first planned to grow into a chain of private schools, then modified into a blend of public charter schools and privately-managed district schools. K12 is also a profit-seeking firm that used private capital to develop an on-line curriculum and

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instructional program that home-school parents could purchase directly. In addition, it developed a national network of “cyberschools”, most of which operated as statewide charter schools. K12 has also recently begun to offer its wares as supplemental programs for district-operated schools.

SOF differs sharply from all these because—so far as I can tell—it never overtly aspired to be more than a single, district-run public school. It did not set out to be a chain or network. But neither was it a random shooting star. From the standpoint of one of its organizational parents, the School District of Philadelphia, it was a promising example of a new genre of high school—innovative, small, start-from-scratch, undertaken in partnership with respected outside organizations. For its other parent, the mighty Microsoft Corporation, it was to be a showcase where the world could glimpse not only technology’s potential to transform teaching and learning but also what might be accomplished by using the products, insights, and strategies of Bill Gates’s company. Both parents, in other words, saw SOF as a solitary heavenly body—but one endowed with rare powers to pilot, demonstrate and ultimately help transform a larger cosmos.<sup>1</sup>

### **The DNA of SOF**

Besides its parents, SOF had numerous ancestors and relatives. Indeed, its gene pool incorporates five big trends in American education and six unique circumstances that converged in Philadelphia around 2002.

#### *National developments:*

1) Deepening interest in high-school reform. For two decades after the National Commission on Excellence in Education declared the United States “a nation at risk”, much

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attention was paid to elementary and middle schools, which led to modest upticks in scores on national and international assessments. States channeled much of their education-reform energy into grades K-8 and so did the federal government, particularly in the 1994 reauthorization of the Elementary and Secondary Education Act and the 2002 version known as No Child Left Behind. High schools, however, proved stubbornly resistant to reforming and their results (whether measured in test scores, graduation rates, or college readiness) remained essentially flat. By the early twenty-first century, policymakers, education reform groups such as Achieve, policy leaders such as the National Governors Association, and major funders (notably the Bill and Melinda Gates Foundation) were turning their focus to high-school reform.

2) The creation of start-from-scratch, innovative, smallish schools, usually with unaccustomed independence from traditional districts, many of them schools of choice. American education was gradually weaning itself from the assumption that schools are immortal institutions. Rather, a school was something that could be built from a purposeful new design, as illustrated by the emergence of thousands of charter schools in dozens of states, the work of New American Schools (which held its design competition in 1992) and the federal “Porter-Obey” program that underwrote the spread of many such school models.

3) Widening use of technology in education. Though technologies of various sorts—from the chalkboard to the overhead projector to television—are familiar elements of U.S. schools, by the early twenty-first century, the education system was also warily experimenting with more sophisticated applications of information technology, computers, telecommunications, and the brave new world of the Internet. (The federal subsidy for schools accessing the web—known as “e-rate”—began in 1996.)

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4) Outsourcing of school functions—even the operation of entire schools—to private organizations, as well as all manner of partnerships between public schools and a menagerie of outside entities. Public education was no longer seen as the sole responsibility of public-sector employees working for government bureaucracies. (“Partnering” has been going on forever, but the first full-fledged outsourcing of public-school operations seems to have occurred in 1992 when Baltimore entered into a management contract with Education Alternatives Inc. to run a dozen of its schools.)

5) Leveraging private resources to augment public funding and expertise. Here, too, the taxpayer had stopped being the sole source of public-school resources. This development went far beyond magazine sales, carnivals, and other traditional raisers of small discretionary sums for schools and their PTAs. Now it included the half-billion dollar 1993 gift of Walter Annenberg, the mounting munificence of Eli Broad, the Gates Foundation, and hundreds of other national and local funders, not to mention the outside brainpower and technical assistance by groups ranging from the Coalition of Essential Schools to Standard & Poors.

*Philadelphia-specific circumstances*

All of those national trends have endured—and, indeed, intensified—in American education, but in and of themselves they do not cause anything to happen in a particular place. Action only occurs where the local stars are also aligned, as happened in Philadelphia in 2002-6 when SOF was conceived, planned, and built. (Ground was broken in November 2004. The first students arrived 22 months later—and those who remain are now finishing eleventh grade.)

Six elements were key.

1) In late 2001, the Commonwealth of Pennsylvania effectively seized control of the city’s deficit-riddled, poorly performing public-school system and assigned responsibility for it

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to a new School Reform Commission (SRC), with members appointed by the governor and mayor. This unusual governance arrangement conferred sweeping powers on the SRC and at least partly insulated its members from the local political influences and interest groups that typically block change in urban school systems.

2) Chaired by the determined and foresighted James Nevels, a successful investor, banker, and attorney, the SRC quickly recruited the high-powered, hyper-kinetic Paul Vallas from Chicago to Philadelphia to take charge of the school system. He arrived in summer 2002, bent on confirming his reputation as a successful urban-education reformer.<sup>2</sup>

3) This included an immediate push to launch small, innovative high schools in partial replacement of the city's traditional but faltering behemoths and a "portfolio" approach to school management that featured both charter schools and the outsourcing of dozens of district schools to private managers.<sup>3</sup>

4) A gritty West Philadelphia neighborhood that needed a shot in the arm. What could be better than a new school to function as an anchor institution, housing various community services and helping to catalyze larger renewal efforts?

5) Microsoft's interest in building a model high-tech school to boost its visibility in the education market, much as it had done with a "home of the future" on its main Seattle campus. That the school turned out to be in Philadelphia was due in no small part to the charismatic Vallas. But SOF's access to essential outside resources—money, talent, and expertise—was due principally to Microsoft.

6) A teachers-union contract that made it easier in Philadelphia than in most cities to confer personnel independence on a new school—that is, one with the authority to decide for itself who would teach in it.

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## **Risks and Resilience**

Aligned stars are essential for innovations to occur. The risk for new and unconventional schools, however, and a hazard for education reform in general, is that stars move. No alignment lasts long. So a crucial question is whether an innovation can become sufficiently embedded in the “system” while they are aligned to have a decent shot at continuing once the alignment goes askew. (That is doubly important if the innovation is ever to be cloned or reproduced.) This turned out to be a challenge for SOF.

The peripatetic Vallas left for New Orleans in 2007 and Nevels left the SRC the same year. Neither’s successor was particularly bullish about SOF—and their reform strategies and leadership styles were quite different. Particularly when key Vallas lieutenants also exited, SOF was vulnerable to recapture and denaturing by the school system.

That remains true today, and SOF devotees have additional jitters about academic performance. What will happen to the backing for the school if assessments indicate that students are not learning enough? There is also concern about pupil turnover (as is the case throughout Philadelphia high schools), which exacerbates the worry over academic results. And there is concern about the community and school system’s patience while an innovation like this takes the time to work out its kinks, complete its design, and prove itself.

This volume is partly intended to foster such patience and sustain hope. Yet SOF’s very structure and birthing amplify its vulnerability. With the best of intentions, its founders sought to show that such an innovative school could succeed with the regular kids found in a challenging urban district—and that this could be done “within the system.” They did not want a selective school. They did not want a charter or outsourced school or other special governance

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arrangement. And they opted to start with high school, which everyone knows is a greater challenge than beginning with young children.

These are all worthy intentions. But every one of those decisions added to the vulnerability of this innovation, and in the end, left it urgently needing precisely the sorts of interventions and protections that the founders had opted not to build into its basic structure.

Indeed, one might well say that the insistence on innovating via a “regular” school—a high school, open to all, in a tough neighborhood, governed in the usual way, with no constitutional protections or security guarantees—was naïve if not foolhardy.

In some ways, of course, SOF was not a “regular” school at all—and I am not just referring to its dazzling technology. Fundamental to its launch—its site selection, its physical design and construction, its emphasis on “project learning,” its budget and staffing, and its hardware and software—was high-level political support within the school system as well as the wider Philadelphia community, millions of dollars in private fundraising, the deep involvement and assistance of Microsoft, and a handful of dedicated individuals who nurtured it (and still do).

Continuity of something this unconventional and expensive is an immense challenge. That would be so even if the original rainmakers were still in place and is obviously more so in their wake. Yet the founders opted not to construct any of the obvious breakwaters that would help it withstand changing political tides and pressures to conform.

School systems generate many such pressures, and the larger the district, the more intense the pressure. Whether it is teacher credentials, annual calendars, daily schedules, transportation arrangements, homework policies, core curricula, standardized tests, identical textbooks, compatible software, or just a citywide cafeteria menu that can be published in the newspaper,

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the district pushes hard on its schools to be alike in crucial ways, even when it may simultaneously declare that they are different and that people can choose among them.

Such pressures have plagued SOF from the beginning as they do any unconventional school or program. Resisting them—and winning the requisite exceptions, waivers, and special alternative arrangements—has presented enormous challenges and still does today. The question is how to sustain nonconformity in an environment that engenders and rewards conformity.

Making this challenge even more difficult, however, is what we might term its very obverse: leadership instability, both at the system level (Vallas, Nevels, etc.) and in the school “chief learner’s” office. At SOF, that office was occupied by three different people during the school’s first three years. Such turnover is a major handicap for any school and worse for an innovative startup with no track record, no loyal alumni, and no compelling traditions.

The change of chief learners was partly bad luck. The first occupant—hand-picked by the school’s planners a year in advance, intimately involved with SOF’s design, development, and initial staffing, and reportedly well-suited to the post—experienced family issues that made it necessary for her prematurely to leave Philadelphia. It was the appointment of the second principal that demonstrated the school’s vulnerability to changes and pressures beyond its walls.

The system first installed an interim school head, a retiree who “really didn’t get” what SOF was about. Then (in the leadership vacuum arising from Vallas’s departure) an “area superintendent” ignored the results of a careful search process and instead appointed someone whose experience was in elementary schools and who did not understand the singularities of SOF. “By the end of the year”, I was told, “everyone realized she had to go” and the school’s allies and strategists, likely including Microsoft, persuaded the system to offer her a position

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downtown. The third chief learner is reportedly doing fine, but as I write she has not yet completed even one full year on the job.

This kind of turnover in the front office could wreck the best of established schools, much less an unconventional start-up. In the case of SOF, what kept it—as well as a hundred pressures from the district to conform to its city-wide norms—from doing major damage was the project’s powerful informal support system: the involvement of Microsoft, influential private donors, a well-disposed mayor, and several remarkable individuals who have been devoted to the school.

Yet the school has no constitutional authority to settle any of these things for itself. It has no charter or contractual right to self-governance. Its freedom to be different—even to continue, much less to grow, prosper, and spin off lessons or clones—depends on the will of the Philadelphia school system and those who run it. Given the revolving-door leadership and “spinning wheels” strategies of large urban school districts, in retrospect it seems short-sighted that SOF’s founders installed no institutional mechanisms to vouchsafe the school’s long-term integrity. It does not even have a high-status advisory committee consisting of community influentials who can pick up the phone to persuade officials and enforcers to make exceptions. That is no way to build a strong, secure, and durable institution that can continue to go against the grain of a large public-sector bureaucracy in a highly political environment.

### **To Replicate or Not to Replicate?**

Though replication is the Pole Star of most serious education reformers, cloning SOF was never the explicit goal of its founders. From day one, Vallas and Nevels and their colleagues intended SOF as a unique one-off—a single flower within a mixed bouquet of new schools

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affiliated with various partners—rather than a model to be copied. Its launch owed much to proving a reform theory that was specific to Vallas and Philadelphia at the time. Though that theory entailed cultivating many distinctive flowers, none was meant to evolve into a hillside of identical blossoms.

Microsoft also did not view SOF as the first of a chain of identical schools. It is a software firm and had no interest in running or being responsible for schools. It did, however, need a showcase. Primary-secondary education is potentially a giant consumer of its wares and services, but developing and exploiting any market means having persuasive marketing materials—and in this field nothing is more compelling than a living, breathing school. That meant ensuring that SOF was an awesome school, not just at its birth but also as it matured. Hence, it was in Microsoft’s interest not only to invest financial and human capital in SOF but also to shield it from the vicissitudes of Philadelphia school-system practices, policies, and people that might spoil the model. In return, the company’s resources, experts, and political clout have proven enormously valuable to SOF. The mutual benefit is obvious. But no company would want to shoulder such obligations in lots of places—and SOF’s tribulations likely reinforced that view.

That the project itself ended up in Philadelphia was adventitious, even opportunistic. Pre-SOF, Microsoft had not been particularly active in the school market, which was generally seen as Apple territory. (Of course Bill Gates and his foundation have been much engaged in the K-12 reform arena.) As a result, the firm had neither a deep presence in any one school system nor any obvious place to put its prototype. As its interest in this big and potentially lucrative market quickened, it plainly needed a demonstration site. Instead of dummifying up a no-student “school of the future” in Seattle, however, company executives were persuaded by Vallas to create a real-

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world model in Philadelphia where he was experimenting with new small high schools run in league with well-regarded outside entities. It turned out that Microsoft and Vallas's interests dovetailed.

Still, SOF is more beta site for Microsoft than something to be reproduced directly. A company veteran insists that theirs "is not a McDonalds approach". Rather, they have distilled a few successful "processes" from the SOF experience—notably the "6I" planning cycle by which the school was developed<sup>4</sup> and the "education competency wheel" by which its staff was selected<sup>5</sup>—and they now make these available as free goods to interested people and schools via three-day-long Microsoft Institute training modules.<sup>6</sup> They say they have learned from SOF experience that educational technology is not the hard part; what is truly difficult is planning, implementing, and staffing something as radical as a new school model—an insight to which we return below.

Microsoft has plenty of education software and services available for purchase and use by school systems, and it has many U.S. customers and clients. But no more full-fledged Microsoft-branded schools can be found on American shores. One wonders if company executives concluded from the SOF experience that it might encounter warmer climates abroad because they have moved from SOF to catalyze a dozen "innovative schools" in other lands where—as far as I can tell—these, too, serve more as demonstration sites than as something to be cloned.<sup>7</sup>

### **Antecedents and Analogues**

Microsoft is in this market for the long haul. It does not need to rush, does not depend on K-12 education as a primary revenue source, and does not want to make major mistakes. It can afford to give away some appetite-whetting products and services, even to train people for free,

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if such offerings build loyal customers. Though it is not replicating SOF per se, it is using the lessons learned there, and the school's demonstration value, as part of a broader strategy for the education market.

That is very different from the experiences of three earlier efforts—two of them still continuing—by entrepreneurial organizations hoping to bring large-scale change to American primary-secondary education by developing innovative schools, then reproducing them in quantity. Interestingly, their missions more closely resemble the efforts of the Gates Foundation than of the company that produced the Gates fortune. Their stories are instructive, however, if one believes that the slippery grail of replication is worth trying to grasp.

*New American Schools* faced four difficulties—and gradually died.

First, New American Schools (NAS) “rounded up the usual suspects” to devise break-the-mold models, an obvious contradiction in terms. NAS did not set out to do this; it staged a design competition that others could have joined—and some did. But the winners, likely because of a screening-and-selection process that tended to favor conventional thinking about education, yielded that result.<sup>8</sup>

Second, once the school-design process itself was complete, NAS and its winning design teams relied almost exclusively on established public-school systems and states as customers. This was limiting, frustrating, and a source of compromise and incomplete implementation.

Third, both because it started with the goal of innovation-for-its-own-sake, which led to multiple models, and because it became entangled with federal “comprehensive school reform” funding for its propagation, NAS had no unique educational franchise, no single conceptual flag to wave, nor any good answer to the question, “why not this other model, too?” In time, states were using their federal Porter-Obey dollars to pay for more than 250 different designs, most of

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them with no NAS affiliation, obviously leading to dilution—mockery, even—of the strategy and eventually to its demise.

Fourth, NAS got going just as states were also installing standards, assessments, and accountability arrangements and as America was coming to judge its educational innovations more on the basis of academic performance. Yet RAND’s careful evaluations of NAS basically found that its schools were producing no better results than the older models they more-or-less replaced.<sup>9</sup>

NAS began outside the system, as a privately-funded venture. Yet the schools that its design teams devised could only be implemented within the system—and faithful implementation of unusual school models proved daunting. More and more compromises were made even as Washington failed to put limits on which designs qualified for federal subsidy. The organization known as New American Schools no longer exists. And if one checks on the remaining “design teams” that it spawned, one finds, for example, that the Modern Red Schoolhouse now terms itself a provider of “technical assistance to districts and schools.” Atlas Communities “partners closely with schools to develop and implement a comprehensive, multi-year plan for school transformation.” America’s Choice “helps districts and schools focus on five critical elements of school improvement.” In other words, they all now function as consultants, advisors, and service providers to public schools and school systems. The system is their client and their revenue source. They are probably doing some good. What they are not doing is replicating large numbers of highly effective break-the-mold schools.

Edison was only the second major profit-seeking U.S. venture to propose to operate public schools on an outsourced basis—and it immediately encountered resistance, both to the profit motive and to the loss of establishment control that is a byproduct of outsourcing. Though

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“reinventing government” by introducing private-sector competition into the delivery of public services was gaining traction in other sectors, K-12 education was slow to embrace this concept.

Outsourcing was not the original game plan. Chris Whittle’s “Edison Project” was conceived in the early 1990s—around the same time as NAS—as a chain of futuristic *private* schools precisely because Whittle understood the difficulty of making fundamental change within public education. But just as he and his colleagues were concluding that the economics of this ambitious private-school plan did not add up, two promising innovations arose within public education that Edison pivoted to take advantage of: the debut (thanks to E.A.I.) of outsourcing entire schools to private operators and the emergence of charter schools more-or-less outside the system. That pivot, however, meant that the rules, norms, politics, and budgets of public education rather than private markets would thereafter determine the venture’s fate. One thing led to another and here is how the (renamed) company describes itself today:

EdisonLearning works with educators and communities to improve public schools and boost student performance. Our expertise and the value we bring to clients results from over 17 years experience not only servicing but operating public schools in collaboration with districts, boards, and other authorities with whom we partner.

Edison was handicapped by the sorry precedent set by E.A.I., which failed in both Baltimore and Hartford while sensitizing the public-education establishment to the threat of outsourcing and setting that establishment’s teeth on edge with regard to profiteering.

Disingenuousness abounds in this area, for public education has long purchased all manner of goods and services from profit-making firms that range from transportation companies to food service suppliers to the purveyors of computers, textbooks, and even pencils and paper. Profitable activity is widespread in the instructional area, too, as many school systems outsource their Title I programs to private tutoring firms or contract with outside organizations for special-

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education services. Yet E.A.I., then Edison, and subsequently all manner of other profit-seeking entities (including K12) ran into heavy fire when they proposed to make a profit by operating entire schools and furnishing their entire instructional program.

While Edison's relatively low-tech school design had merit—not so much a mold-breaker as a coherent pulling-together of many promising practices and good ideas—this project, too, swiftly found itself with government as essentially its only customer as well as its regulator and competitor. Inevitably, this led to dilution and compromise of the school design and major implementation challenges, particularly with respect to funding, personnel, and the myriad compliance and accountability obligations of both district-operated and charter public schools, not to mention shifting policy priorities and unstable election results.

Though it had a single coherent school design, Edison never quite cracked the replication nut. Some of its schools succeeded admirably while others (including some in Philadelphia) were dismal. Often the reason was personnel: Did they pick the right leader for a particular school? Was such a person available in that locale? More often, however, Edison's promising model was undermined by the local compromises that were demanded of it. Moreover, state standards, tests and accountability systems turn out to differ enough to pose a significant challenge to any would-be national template for curriculum and instruction.<sup>10</sup> And the objections to profiting from public schooling never abated. Particularly since personnel, mostly teachers, are the main budget item of every school, the obvious way to squeeze some profit from the same revenue is to employ fewer of them or pay them less. This was bound to be unpopular with the unions. When Edison's test results were not good enough, the inevitable response was “you should take that money you are making for your investors and spend it on the kids instead.”

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It is no wonder Edison began to search for less contentious lines of work—and, like Microsoft, also sought other countries in which to work.

*K12 had a better profitability plan.* It would not need as many teachers because most instruction would be delivered online, and it would not need school buildings or building maintenance because most instruction would take place in students' own homes or other non-school settings. Yet the company faced huge up-front capital needs in acquiring all its technology and developing interactive on-line courses, tutorials, assessments, and management systems.

K12 faced other challenges, too. Insofar as the firm sought to sell its program directly to home-schooling parents via the private market, it encountered competitors and price sensitivity. And when it sought to establish virtual charter schools, it ran up against a host of public-sector and education-establishment difficulties, of which objections to the profit motive were merely the beginning. These problems included:

1.) how to price its product, considering that states paid varying amounts per pupil to their charter schools. Why should the same identical education program charge more in high-spending Massachusetts than the sums it apparently found sufficient in low-spending California? How could an online program justify charging as much as brick-and-mortar schools when its facility and personnel costs were obviously lower?

2.) a shelf of varied but irksome, sometimes crippling, state-specific constraints on charter schooling in general and “virtual” schooling in particular. Some charter laws restricted enrollment to children living in a particular location, which makes little sense when instruction is delivered through the Internet and could as easily reach youngsters in Stockholm or Bangkok. Some states insisted on a maximum pupil-teacher ratio even though K12 was engaged in distance

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learning via, for the most part, pre-packaged lessons rather than real-time interaction between students and instructors.

3.) a boatload of competitors—some excellent, some shoddy, some national, and some local.

4.) diverse state standards and assessments—through which this national curriculum had somehow to be “aligned.”

5.) implementation woes, some peculiar to the virtual-instruction model. Is there enough bandwidth in people’s homes? Who shoulders the risk when providing students with company-purchased computers? Others questions arose from the fact that the program was not exclusively online. For example, each K12 pupil was to receive at home a carton of physical materials—manipulatives, science equipment, traditional books, and such—but getting these delivered on schedule to thousands of different addresses posed a severe logistical challenge.

6.) market limits. How many families really have the desire and capacity to educate their children at home even if someone else is furnishing the instruction?

7.) public (and parental) anxiety about virtual schooling’s inability to deliver such non-academic desiderata as sports and socialization.

8.) unexpected resistance within the home schooling community itself, some of whose leaders are so suspicious of governmental entanglement of any sort that they reject the charter-school idea even when nearly all the teaching and learning takes place under parental supervision.

When Bill Bennett, Lowell Milken, and a few other deep-pocketed investors launched K12 in 1999, it was with the expectations, first, that America’s growing population of home schoolers—wielding their own checkbooks and credit cards—would eagerly purchase a high-

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quality technology-based curriculum and instruction program; and, second, that the fast-growing charter world would eagerly embrace virtual schooling.

The company is still doing both those things with some success, but increasingly it, too, wants to “partner” with traditional districts and sell its products more as curriculum supplements to regular public schools. Its website now describes three main “channels” by which “tens of thousands of students” are helped to achieve “their true personal possibility”:

- *full-time online public schools in many states across the country*
- *individual course and product sales directly to families*
- *in a growing number of public schools across the country, which are engaged in bringing individualized learning approaches into the traditional classroom.*

In other words, K12, like Edison and NAS before it, is finding that the regular old school system is now its client and rule-maker, if not its rival.

### **Technology and the Limits of School Reform**

SOF has avoided many of the tribulations of K12, Edison, and NAS. It is not trying to make a profit, at least not here and now. It does not educate kids at home. It only operates in one place so does not have to deal with varying academic standards and dissimilar testing and accountability systems. It is not a charter school or do true outsourcing. Its teachers are covered by Philadelphia’s union contract. It turns out, however, to share one specific liability with these other ventures: personnel, especially in the principal’s office. And, more importantly, it shares the larger challenge of having to work with—indeed, within—public education and all that this means. It also lacks the organizational insulation—mainly via charter laws and outsourcing

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contracts—that Edison and K12 typically enjoyed. It does not have dependable continuity mechanisms, at least not the formal kind. (Its informal equivalents have served it well.) And being a small one-off, it does not have the throw weight of high-profile national ventures (though, again, it had a more-than-serviceable substitute in the form of Microsoft’s corporate involvement).

Like NAS, Edison, and K12, SOF benefits from a rich stock of extra resources, experts, advocates, rainmakers and political protectors—but that advantage poses its own disadvantage for anyone thinking of scaling such an innovation. Even if the prototype succeeds, can such additional assets realistically be marshaled in quantity and sustained over time? To be sure, the “unit cost” goes down a bit as the model is field-tested, improved and replicated, but creating new schools never achieves the economies of scale or predictability of, say, building Hampton Inns or opening Chipotle franchises. And as long as the school model deviates from the district norm, it will need yet more special resources to launch and keep going. With the rarest of exceptions—and almost never in K-12 education—America’s public sector is ill-equipped to provide such venture capital and targeted assistance. Its mechanisms favor sameness and equity, not originality and uniqueness. That is why private-sector investment and involvement have proven critical to innovation in primary-secondary schooling—but also why the public sector into which they intrude is seldom welcoming or helpful. Which, of course, leads the private entrepreneurs to tiptoe, to ingratiate themselves, and not to make needless waves. This in turn limits their capacity—and eventually even their ardor—to effect major reforms. For the flow of private capital to continue, acceptable profit margins must be visible. But for that to happen, the capitalists must not alienate their customers.

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Today, both K12 and Edison—neither of whom are securely profitable with its original format—are putting themselves forward more as suppliers of curriculum and instruction to other people’s schools than as school operators (though they still do that, too). They have concluded, probably correctly, that (a) the market is vastly larger if you supply existing schools than if you try to launch or take over your own; and (b) the hassles and pushback are far less, particularly for for-profit firms, because U.S. school systems are accustomed to buying curricular materials, professional development, and technical assistance from corporate behemoths. They have also deduced that (c) the potential profit margins are wider (and easier to justify politically); and (d) they will not be directly accountable for school results in the fraught NCLB era or held responsible for the million pain-in-the-backside issues (parent satisfaction, pupil discipline, human resource challenges) that arise when one is actually running schools.

One might even say that Edison and K12 are coming around to the Microsoft (and eventual NAS design team) approach, functioning as vendors, consultants, cheerleaders, troubleshooters, advisors and mentors rather than as school operators. In other words, they are now doing things for which one tends to get thanked and paid by the public-education establishment rather than criticized, picketed, and sued.

But, of course, there is a profound trade off. Vendors are not reformers. Consultants are not agitators. In real political cycles (and in the lives of real kids), ventures that opt—or are forced—to work with and within the system are not going to transform it overnight, not going to compete with it, not going to provide alternatives to it, and not going to do anything that angers it.

Technology itself has boundless potential in education, as Clayton Christensen, John Chubb and Terry Moe have recently noted (and as Lewis Perelman presciently pointed out in

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1992).<sup>11</sup> The sky is the limit in terms of what it *could* do to strengthen instruction, foster learning, and boost productivity—not to mention all the back-office, managerial, and communications gains that might also be made with its help. The limiting factors on its usage in K-12 education are not inherent in the technology itself (with minor, manageable exceptions such as electrical capacity and bandwidth). Rather, what limits technology are the same factors that limit non-technological innovations and reforms, such as teacher compensation schemes, school calendars, accountability schemes, and choice programs.

Here is the paradox: the best way to deal with the political and regulatory obstacles—if one is bent on *reforming* education rather than simply making a buck from it—is to circumnavigate them by starting and running one’s own schools outside or semi-outside the system, via outsourcing or chartering, as both Edison and K12 first set out to do, winning exemptions from constraints, getting waivers from rules, sidestepping collective bargaining agreements, and generally poking holes through at least some of the limitations.

Yet starting and running one’s own schools, whether innovative or not, tech-heavy or not, brings a boatload of other problems, all manner of pushbacks and constraints—and much vulnerability to changing circumstances, people, and priorities in the policy sphere. The system and its unstable collection of fickle political overlords and unchanging bureaucratic procedures continue to set the rules by which exceptions are encouraged, tolerated, and contained—and in K-12 education, those rules are far more elaborate than in, say, postsecondary or preschool education.

To avoid those vulnerabilities while enlarging their markets faster than such exceptions can ever grow, the developers and promoters of technological innovation in education prudently—or despairingly—steer away from full-fledged school operations (or, in Microsoft’s

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case, never enter into it) and instead opt to become “vendors” of curriculum, instruction, software, and expertise to the system itself. But that is a Faustian bargain, too. For now the system becomes their customer, very likely their primary, if not sole, customer, and *its* constraints and norms, its needs and practices, take over. Vendors wanting to keep doing business with the system have little choice but to accommodate its wants and limits, its procedures and timelines, its idiosyncrasies, and folkways. This brings us nearly full circle: either one works in those ways with the system, in which case one does not do much reforming; or one works from outside to create alternative options, in which case the system delimits how much one can actually do.

By happenstance, both Edison and K12 also learned those painful lessons in Philadelphia in the post-Vallas era. He had outsourced some 30 low-performing district schools to Edison (and a dozen more to other for-profit and nonprofit operators) as part of his effort to transform the school system’s academic results as well as its organizational structure. He also entered into contracts with K12 to advise the district on science curriculum and to take charge of science instruction in one middle school.

But, for reasons that had more to do with politics (and race relations) than educational effectiveness, K12’s Philadelphia contracts were terminated or not renewed.<sup>12</sup> Edison is still there, managing fewer schools, delivering mixed results—and rather chastened by the experience. The company learned the hard way that the adjustments it agreed to make in its model (particularly with regard to personnel selection and management) truly did impair its capacity to run successful schools. It also learned that a working relationship that was cordial enough while Vallas ran the show was destined to become more acrimonious when the revolving door spun.

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Philadelphia illustrates the big, ugly reality that America's established public-education system is nearly impregnable to changes, interruptions, innovations and challenges that it does not want. Although its wants appear to fluctuate in quixotic ways, its true pace of change is glacial and, of course, its performance can charitably be described as uneven-to-unsatisfactory, especially for poor kids in urban communities. Yet it is awesomely well fortified to resist assault, save where it sees the invader as bringing something that can be turned to the system's own benefit—and even then the entrepreneur may be out on his ear a year or two later when the system's theories or priorities revolve again.

Thus, the system has largely succeeded in tempering the changes sought by promoters of standards, assessments and results-based accountability (particularly forms of accountability that might affect adults employed by the system). Never mind that the “outsiders” advancing these changes are usually governors, legislators, and influential tycoons.

Where the system has yielded to such reforms, it has usually been because extra money was also offered, whether from the public purse, private philanthropy, or venture capitalists. Yet even then the changes typically last through just one or two election cycles before the K-12 enterprise snaps back into something resembling its previous configuration, like a rubber band that allowed itself to be stretched but never stopped yearning to resume its original shape.

The public-education system has also succeeded, for the most part, in fending off, containing, co-opting, or slowly vanquishing the changes sought by advocates of choice-based reforms such as charter schools and vouchers. (Though millions of young Americans now attend schools that their parents choose, the overwhelming majority of those schools are themselves creatures of the system—and not so different from the rest of the system.)

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Even so potent and transformative a force as technological change has come slowly and painfully to K-12 education, which is notably less altered by modern telecommunications, the Internet, and the cyber revolution than most other realms of contemporary life. Indeed, as Tom Vander Ark recently wrote, “Education remains one of the few sectors that information and communication technologies have not transformed.”<sup>13</sup> Although the kids themselves are consumed by such developments, that is mostly out-of-school. (Observe how many schools ban cell phones, text messaging, and such on their premises; how many teachers lack their own laptops, email access, even at-work phone numbers; and how often computers are still confined to special “labs” or isolated in the back of the classroom.) Public education generally views technology as a supplement or special program for which—once again—additional money must be found, not as a powerful productivity enhancer or cost-effective substitute for traditional personnel.

To date, therefore, the main value of SOF to the K-12 enterprise is approximately what Microsoft intended it to be: a demonstration site where, as Kant said, the actual proves the possible. It shows that technology can do a lot more for education than the system normally allows it to.

That is worth demonstrating. Yet it is no real surprise. Indeed, it is much the same conclusion that Microsoft reached when it determined from the SOF experience that technology itself is not the source of the vexing constraints on its own transformative potential in the public-education sphere. Rather, the SOF tale illustrates the stop-and-go, three-inches-forward-then-two-and-three-quarters-back nature of change in American public education. This sector is not permanently immune to developments in the world around it or to shifting needs and demands on the part of its clients, funders, and elected officials.<sup>14</sup> But it seldom behaves in the ways that

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outside innovators and entrepreneurs, favor and it never operates on their timetable. Most importantly—and frustratingly—the system that needs to change remains largely in control of the change process and can thus dictate terms to those innovators and entrepreneurs, or else tame them into accepting its terms as a more prudent and potentially more rewarding path than competing with or harassing it.

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<sup>1</sup> I cannot state with absolute certainty that nobody at Microsoft ever envisioned a “chain” of SOF clones within the United States, but if they did, they kept their aspirations quiet—and later changed their plan. Since SOF was—and remains—an expense item for the company, not a revenue producer, and since its basic setup shows no prospect of becoming a revenue producer, I am inclined to take at face value the statements of SOF’s Microsoft team that this was always intended as a showcase rather than the “first of many.”

<sup>2</sup> Dale Mezzacappa, “The Vallas Effect,” *Education Next*, vol. 8, no. 2 (Spring 2008), available at <http://www.hoover.org/publications/ednext/16109997.html> (accessed May 12, 2009).

<sup>3</sup> Lynn Olson, “District Making ‘Transition’ to Bigger Supply of Schools of Choice,” *Education Week*, February 9, 2005, available at <http://www.edweek.org/ew/articles/2005/02/09/22phillyside.h24.html?qs=K12+Philadelphia+science> (accessed May 12, 2009).

<sup>4</sup> Microsoft Education, “School of the Future: Explore the Process,” available at <http://www.Microsoft.com/Education/SchoolofFutureProcess.aspx> (accessed May 12, 2009).

<sup>5</sup> Microsoft Education, “Competency Wheel,” available at [http://download.Microsoft.com/download/3/4/7/3477e49d-315d-4ee7-a8ca-ff653a4455d6/Competency\\_Wheel.pdf](http://download.Microsoft.com/download/3/4/7/3477e49d-315d-4ee7-a8ca-ff653a4455d6/Competency_Wheel.pdf) (accessed May 12, 2009).

<sup>6</sup> Microsoft Education, “Overview,” available at <http://www.Microsoft.com/education/uspil/institute/overview.aspx> (accessed May 12, 2009).

<sup>7</sup> Microsoft Education, “Innovative Schools Program Participating Members,” available at [http://www.Microsoft.com/education/pil/ISc\\_members.aspx](http://www.Microsoft.com/education/pil/ISc_members.aspx) (May 12, 2009). These “innovative schools” are not, however, without replication challenges of their own. A colleague who has spent time in the Brazil school reports that its “technology was not innovative at all there; kids used the free access to the Internet to play mindless games.”

<sup>8</sup> Jeffrey Mirel, *The Evolution of the New American Schools: From Revolution to Mainstream* (Washington, DC: Thomas B. Fordham Institute, 2001), available at <http://www.edexcellence.net/doc/evolution.pdf> (accessed May 12, 2009).

<sup>9</sup> Mark Berends, Susan J. Bodilly, and Sheila N. Kirby, *Facing the Challenges of Whole-School Reform: New American Schools After a Decade* (Santa Monica, CA: RAND Corporation, 2003).

<sup>10</sup> A little-discussed benefit of national standards and tests, if the United States ever gets there, is the simplification this will bring to all sorts of private vendors in the K-12 space—from school operators like Edison to textbook publishers like Pearson and Scholastic, which will no longer have to tailor their products to differing state standards. (The corresponding “losers” will be testing firms and test publishers, which benefit from today’s cacophony.)

<sup>11</sup> Clayton M. Christensen, Michael B. Horn, and Curtis W. Johnson, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (New York: McGraw Hill, 2008); Terry M. Moe and John E. Chubb, *Liberating Learning: Technology, Politics, and the Future of American Education* (San Francisco: Jossey-Bass, 2009); Lewis J. Perelman, *School’s Out: Hyperlearning, the New Technology, and the End of School* (New York: Avon Books, 1992).

<sup>12</sup> Vallas’s departure was not the whole story. K12 board chairman Bill Bennett had made some ill-advised race-related comments on his morning radio show—to which the African-American community in Philadelphia (and Chicago) took strong exception. Vallas indicated to K12 that, if Bennett remained in his position, the school system would no longer be able to work with the company. Bennett was dumped, and then Philadelphia dumped K12 anyway.

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<sup>13</sup> Tom Vander Ark, “Private Capital and Public Education: Toward Quality at Scale,” working paper (Washington, D.C.: American Enterprise Institute, 2009).

<sup>14</sup> David Tyack and Larry Cuban, *Tinkering Toward Utopia: A Century of Public School Reform* (Cambridge, MA: Harvard University Press, 1995).