

The Big Score

by Daniel McGinn

Inside Chicago's top-ranked Whitney Young High School, the posters started appearing last December. LET'S BE #1! GIVE IT 110%! Usually this sort of rah-rah propaganda supports the basketball team, but this campaign by the principal had a different aim: urging kids to score high on the Illinois Goal Assessment Program, a standardized test that students would take in February. Tests are nothing new to the kids at Whitney Young—they already take three other batteries of standardized exams each year. But for a group of high-achieving 11th graders, the pressure was just too much. These kids say real learning is being shoved aside as teachers focus on boosting test scores. Creative writing? Forget it. Instead, they say, teachers emphasize a boilerplate essay format that exam scorers prefer. So on Feb. 2, eight juniors purposely failed the social-studies portion of the test. The next day 10 failed the science test. Then they sent a letter to the principal: "We refuse to feed into this test-taking frenzy."

As rebellions go, it wasn't exactly the Boston Tea Party. But it's a small sign of the growing anxiety among parents, teachers and kids over the proliferation of standardized tests. Fill-in-the-bubble exams have been part of classroom life for decades, but for most of their history they were no big deal. Scores were tucked in students' folders; at most, they were used to segregate kids into higher- and lower-level classes. That's changed dramatically in the last decade as reformers try to improve school quality by holding educators accountable for learning. Every state has a different testing scheme, but many state legislatures are writing new standards for what kids should learn in each grade and mandating tough new "high stakes" tests to gauge progress. Unlike such old-style standardized tests as the Iowas or Metropolitans, many of the new exams are linked to the curriculum and feature essays and short answers, not just multiple choice. The biggest difference: low scores can bring real pain. Kids can be held back, forced into summer school or, under rules in 26 states, denied a diploma. Educators can lose pay or be fired; schools can face state takeover. In polls, the tests win wide public support, and more states are jumping on the bandwagon.

Yet there is no easy answer to the most basic question: do these tests help kids learn? As the testing movement has grown, opposing experts have churned out a mountain of conflicting research. Fans of the tests say they're as necessary to schooling as a scale is to dieting. Ideally, they're diagnostic tools, letting teachers know Jack doesn't understand two-digit multiplication and Jill needs help with subject-verb agreement. Yes, it's sad that a single exam might keep a child from graduating, but most European countries already use exit exams, and some U.S. students are kept from graduating for lesser

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offenses, like flunking gym or cutting too many classes. And as schools ask for money to hire teachers and cut class size, taxpayers have every right to expect a measurable payback. Supporters of the new exams point to encouraging results in Texas, one of the first states to implement this type of reform plan.

Despite those arguments, a growing number of critics say this testing inevitably leads to dumbed-down teaching. "Every hour that teachers feel compelled to try to raise test scores is an hour not spent helping kids become critical, creative, curious thinkers," says Alfie Kohn, author of *The Schools Our Children Deserve*. It's those skills, after all, that put the United States ahead of world competitors in areas like entrepreneurship. Last fall the National Research Council warned Congress that schools should refrain from basing important decisions like who gets promoted or graduates solely on test scores, and called for more exploration of the unintended consequences of high-stakes exams. Teachers in the inner cities, where many children are being held back for failing the tests, worry that these exams are overwhelming their already overcrowded and understaffed classrooms. Suburban homeowners have more bottom-line concerns; they fear that dismal test scores will lower home values. For now, those worries will persist. Testing opponents have scored small victories in places like Wisconsin, but momentum is on the side of reformers. As kids return to classrooms this fall, the new exams will be part of the curriculum.

At Madison High School in Houston, the tests have already brought an innovation that makes teenagers cringe: Saturday classes. In 1990 Texas replaced its old tests with a tough new one (its acronym: TAAS); students who failed wouldn't graduate. Early results were abysmal. Madison principal Warner Ervin remembers when dozens of seniors failed. Students were crushed, parents were irate, teachers embarrassed. "It was difficult for everyone," Ervin says. So in 1997, Ervin began requiring every failing kid to attend tutoring sessions, some held on Saturday. The year before the tutoring began, 57 seniors failed; last spring the whole class passed. Results are also improving statewide. Last spring 78 percent of Texas students passed the test, up from 53 percent in 1994. Education is certain to be a key issue in the presidential race, so expect Gov. George W. Bush to tout this track record.

Other states can boast of their own success stories. Take 9-year-old Steven Ip of Brooklyn, one of 17,591 third graders who failed the high-stakes test given to New York City kids for the first time last winter. Steven, whose parents emigrated from China, has solid math skills, but because of his limited English ability, he scored in the 11th percentile on the reading test. So like a record 37,000 New York City kids, he faced mandatory summer school; if he failed his retest in August, he'd be forced to repeat third grade. During five sweaty weeks in a classroom at P.S. 241, teacher Maria Teresa Maisano worked with Steven and seven other students. They read books in class and for homework, learning how to ask questions and find key ideas. When test day arrived, Steven felt prepared. Like roughly 60 percent of the summer students, he passed the exam and can start fourth grade. The city's school chancellor, Rudolph Crew, has been blasted for retaining kids and mandating summer school, but he's standing firm. "This is high anxiety—it's not for the meek of heart," he says. "But I think it's the right thing to do."

Other educators aren't so enthusiastic. At Santa Monica Boulevard Elementary in Los Angeles, the lilting sounds of Spanish fill the playground. But in teacher David Levinson's fifth grade, as in all other California schools, classes must be taught in English. For 31 of his 32 students, English is a second language. "The scores for most of these kids are low and it's not too hard to figure out why," says Levinson. "These tests are extremely unfair." But they're the law, and as a consequence they're beginning to drive the curriculum. "We spend a lot more time teaching to the test and a lot less on the kind of hands-on, learn-by-doing teaching we did in the past," says the school's longtime principal, Albert Arnold. "My teachers are very frustrated, and kids pick up on that." They'll be more frustrated next year when, for the first time, students who fail the test are held back.

California's on-again, off-again testing regimen shows just how messy the transition to exam-driven reform can be. Until the late '80s, California's schools were topnotch. Then in the early '90s, a sinking economy, political bickering over education reform and a growing immigrant population set them

back. So the state devised a new test, the California Learning Assessment System. But critics attacked essay questions as too subjective to be fairly graded, and reformers who favor a back-to-basics approach lobbied for more focus on the three Rs. By 1994, the CLAS was dead, and students went untested for three years as legislators debated new standards. Most experts urged them to design a customized exam that tests exactly the skills the state's kids should be learning, instead of an off-the-shelf national exam. When standards, curriculum and tests are aligned through the made-to-order tests many states are adopting, "teaching to the test" can become a positive technique, experts say. But California's leaders couldn't wait for a custom exam, so they opted to use a generic test in the interim. Experts say that's been a weak link in their reform plan. "The system in California is imperfect," says Stanford professor Kenji Hakuta. "What's needed are tests that more closely line up to instruction." This disparity is a recurring theme: experts favor a gradual, methodical transition, but political realities often force quick, crude steps to try to show improvement before the next election.

As testing spreads, experts aren't the only ones parsing the quality of exams. When Wisconsin Gov. Tommy Thompson proposed a statewide graduation exam in 1997, he had wide public support. Then parents saw sample questions. "It scared the heck out of them," says state Sen. Bob Jauch. "They weren't sure they could pass it themselves." A strange coalition of opponents emerged, consisting of parents concerned that the tests were too tough, educators who resented the state's giving orders to locally run schools and legislators who'd rather spend the \$10 million testing budget on a tax cut. By June, Wisconsin's new test was dead.

Tales like that one give hope to the Chicago kids at Whitney Young who bucked the test last winter. Over the summer they rounded up like-minded students from other schools and named themselves the Organized Students of Chicago. They've already passed out leaflets denouncing the city's testmania; now they're planning teach-ins. The focus on the exams "just seems so totally excessive," says Will Tanzman, 17. Eli Presser, an 18-year-old who graduated last spring but is still active in the group, says the rising number of tests makes students feel "like they're under constant jeopardy—like every single test was going to influence their life." Principal Joyce Kenner ordered the students to perform 10 hours of community service for refusing to take last year's exam. So far, they haven't served it, and may rally more students to boycott the exams this winter.

School officials are sympathetic to charges that they're giving too many tests. "Nobody wants to be test crazy . . . We don't want you to be drones," says Chicago school board president Gery Chico. But like administrators around the country, he says schools need to face the reality that the status quo, in which thousands of kids languished in classes with virtually no instruction, couldn't continue. Parents like Jay Rehak, who's also a Whitney Young teacher, worry their kids are suffering for the sake of the system. When his daughter faced her first high-stakes exam two years ago, "she came home panicked every night," he says. But University of Chicago researcher Melissa Roderick, who's followed 100 students at five schools through Chicago's pass-the-test-or-stay-back program, says the get-tough approach is needed, the same way financiers impose harsh, short-term measures to stabilize troubled economies. "The tests are getting us moving," Roderick says. "Over time we'll look to other things."

Perhaps. Or maybe this new breed of exam will become a defining part of school days well into the next century. Most states are only beginning to get their curriculum in sync with the new tests, so experts say it will be years before we see whether they deliver improvements dramatic enough to justify the investment. "We're in the middle of the maelstrom—it's very difficult to see which way it's going to go," says Judith Mathers, a policy analyst at the Education Commission of the States. Until then, pencils in hand, we all plunge ahead.

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Remarks by the First Lady at Topeka School District Senior Recognition Day

by Michelle Obama

MRS. OBAMA: Thank you, guys. Thank you so much. Wow! (Applause.) Look at you guys. (Applause.) All right, you all rest yourselves. You've got a big day tomorrow. I want you guys to be ready.

It is beyond a pleasure and an honor, truly, to be with you here today to celebrate the class of 2014. Thank you so much for having me. I'm so proud of you guys. (Applause.) Days like this make me think of my own daughters, so forgive me if I get a little teary. You guys look great.

We have a great group of students here. We have students from Highland Park High School. (Applause.) We have Hope Street Academy students here today. (Applause.) Topeka High School is in the house. (Applause.) And of course, we have Topeka West High School in the house. (Applause.)

Tomorrow will be a big day for all of you. You all have worked so hard, I know—I can tell. You've come so far. And as you walk across that stage tomorrow to get your diploma, know that I'm going to be thinking of you all. I am so proud of you all and all that you've achieved thus far.

And you have got so many people here who are proud of you tonight. Your families are here, your teachers and counselors, your principals, your coaches, everyone who has poured their love and hope into you over these many, many years. So, graduates, let's just take a moment to give a round of applause to those folks, as well. Tonight is their night, too. Yes! (Applause.)

Now, I want to start by thanking Lauren for that amazing introduction. (Applause.) Yes, indeed. Well done, Lauren. I want to thank a few other people here—of course, Secretary Sebelius. As you know, my husband and I are so grateful for all that she has done, her wonderful service. (Applause.) And I'm so glad that she and her family could join us tonight.

And of course, I want to recognize Congresswoman Jenkins, Governor Brownback, and Mayor Wolgast, as well as Superintendent Ford, School Board President Johnson, and all of your great principals—Principals Carton, New, Noll and Wiley. (Applause.) Yay!

And finally, to our fantastic student speakers—Alisha, Rosemary and Noah — just hearing your backgrounds makes me feel like an underachiever, so thank you so much for your remarks about Brown vs. Board of Ed.. I know Noah is coming. You have approached this issue past, present and future.

And I think it's fitting that we're celebrating this historic Supreme Court case tonight, not just because Brown started right here in Topeka or because Brown's 60th anniversary is tomorrow, but because I believe that all of you — our soon-to-be-graduates — you all are the living, breathing legacy of this case. Yes. (Applause.)

I mean, just look around at this arena. Not only are you beautiful and handsome and talented and smart, but you represent all colors and cultures and faiths here tonight. (Applause.) You come

from all walks of life, and you've taken so many different paths to reach this moment. Maybe your ancestors have been here in Kansas for centuries. Or maybe, like mine, they came to this country in chains. Or maybe your family just arrived here in search of a better life.

But no matter how you got here, you have arrived at this day together. For so many years, you all have studied together in the same classrooms, you've played on the same teams, attended the same parties—hopefully you behaved yourselves at those parties. (Laughter.) You've debated each other's ideas, hearing every possible opinion and perspective. You've heard each other's languages in the hallways, English, Spanish and others, all mixed together in a uniquely American conversation. You've celebrated each other's holidays and heritages—in fact, I was told that at one of your schools so many students who aren't black wanted to join the black students club that you decided to call it the African American Culture Club so everyone would feel welcome. Way to go. (Applause.)

So, graduates, it is clear that some of the most important parts of your education have come not just from your classes, but from your classmates. And ultimately, that was the hope and dream of Brown. That's why we're celebrating here tonight, because the fact is that your experience here in Topeka would have been unimaginable back in 1954, when *Brown v. Board of Education* first went to the Supreme Court. This would not be possible.

As you all know, back then, Topeka, like so many cities, was segregated. So black folks and white folks had separate restaurants, separate hotels, separate movie theaters, swimming pools, and, of course, the elementary schools were segregated, too. So even though many black children lived just blocks away from their white schools in their neighborhoods, they had to take long bus rides to all-black schools across town. So eventually, a group of black parents got tired of this arrangement—and they decided to do something about it.

Now, these were ordinary folks. Most of them were not civil rights activists, and some of them were probably nervous about speaking up, worried they might cause trouble for themselves and their families. And the truth is, while the black schools were far away, the facilities were pretty decent, and the teachers were excellent.

But eventually, these parents went to court to desegregate their children's schools because, as one of the children later explained as an adult, she said, "We were talking about the principle of the thing."

Now, think about that for a moment. Those folks had to go all the way to the Supreme Court of the United States just to affirm the principle that black kids and white kids should be able to attend school together. And today, 60 years later, that probably seems crazy to all of you in this graduating class, right? You all take the diversity you're surrounded by for granted. You probably don't even notice it. And that's understandable, given the country you have grown up in—with a woman Governor, a Latina Supreme Court Justice, a black President. (Applause.)

You have seen Latino singers win Grammys, black coaches win Super Bowls. You've watched TV shows in—characters of every background. So when you watch a show like *"The Walking Dead,"* you don't think it's about a black guy, a black woman, an Asian guy, a gay couple and some white people—you think it's about a bunch of folks trying to escape some zombies, right? Period. (Laughter.)

And then when some folks got all worked up about a cereal commercial with an interracial family, you all were probably thinking, really, what's the problem with that? When folks made a big deal about Jason Collins and Michael Sam coming out as gay, a lot of kids in your generation thought, what is the issue here? (Applause.) And if someone were to say something racist on Twitter, well, I imagine that many of you would tweet right back, letting them know that's just not cool.

You see, when you grow up in a place like Topeka, where diversity is all you've ever known, the old prejudices just don't make any sense. Seems crazy to think that folks of the same race or ethnicity all think or act the same way—because you actually know those folks. They're your teammates, your

lab partner, your best friend. They're the girl who's obsessed with the Jayhawks but loves computer science programming; the guy who loves the Wildcats and dreams of being an artist. (Applause.) That's the world you've grown up in.

But remember, not everyone has grown up in a place like Topeka. See, many districts in this country have actually pulled back on efforts to integrate their schools, and many communities have become less diverse as folks have moved from cities to suburbs.

So today, by some measures, our schools are as segregated as they were back when Dr. King gave his final speech. And as a result, many young people in America are going to school largely with kids who look just like them. And too often, those schools aren't equal, especially ones attended by students of color which too often lag behind, with crumbling classrooms and less experienced teachers. And even in schools that seem integrated according to the numbers, when you look a little closer, you see students from different backgrounds sitting at separate lunch tables, or tracked into different classes, or separated into different clubs or activities.

So while students attend school in the same building, they never really reach beyond their own circles. And I'm sure that probably happens sometimes here in Topeka, too. And these issues go well beyond the walls of our schools. We know that today in America, too many folks are still stopped on the street because of the color of their skin—(applause)—or they're made to feel unwelcome because of where they come from, or they're bullied because of who they love. (Applause.)

So, graduates, the truth is that Brown vs. Board of Ed. isn't just about our history, it's about our future. Because while that case was handed down 60 years ago, Brown is still being decided every single day — not just in our courts and schools, but in how we live our lives.

Now, our laws may no longer separate us based on our skin color, but nothing in the Constitution says we have to eat together in the lunchroom, or live together in the same neighborhoods. There's no court case against believing in stereotypes or thinking that certain kinds of hateful jokes or comments are funny.

So the answers to many of our challenges today can't necessarily be found in our laws. These changes also need to take place in our hearts and in our minds. (Applause.) And so, graduates, it's up to all of you to lead the way, to drag my generation and your grandparents' generation along with you.

And that's really my challenge to all of you today. As you go forth, when you encounter folks who still hold the old prejudices because they've only been around folks like themselves, when you meet folks who think they know all the answers because they've never heard any other viewpoints, it's up to you to help them see things differently.

And the good news is that you probably won't have to bring a lawsuit or go all the way to the Supreme Court to do that. You all can make a difference every day in your own lives simply by teaching others the lessons you've learned here in Topeka.

Maybe that starts simply in your own family, when grandpa tells that off-colored joke at Thanksgiving, or you've got an aunt talks about "those people." Well, you can politely inform them that they're talking about your friends. (Applause.)

Or maybe it's when you go off to college and you decide to join a sorority or fraternity, and you ask the question, how can we get more diversity in our next pledge class? Or maybe it's years from now, when you're on the job and you're the one who asks, do we really have all the voices and viewpoints we need at this table? Maybe it's when you have kids of your own one day, and you go to your school board meeting and insist on integrating your children's schools and giving them the resources they need.

But no matter what you do, the point is to never be afraid to talk about these issues, particularly the issue of race. Because even today, we still struggle to do that. Because this issue is so sensitive,

is so complicated, so bound up with a painful history. And we need your generation to help us break through. We need all of you to ask the hard questions and have the honest conversations, because that is the only way we will heal the wounds of the past and move forward to a better future. (Applause.)

And here's the thing—the stakes here simply couldn't be higher, because as a nation, we have some serious challenges on our plate — from creating jobs, to curing diseases, to giving every child in this country a good education. And we know—we don't even know where the next new breakthrough, the next great discovery will come from.

Maybe the solution to global warming will come from that girl whose parents don't speak a word of English, but who's been acing her science classes since kindergarten. (Applause.) Maybe the answer to poverty will come from the boy from the projects who understands this issue like no one else. So we need to bring everyone to the table. We need every voice in our national conversation.

So, graduates, that is your mission: to make sure all those voices are heard, to make sure everyone in this country has a chance to contribute.

And I'm not going to lie to you, this will not be easy. You might have to ruffle a few feathers, and believe me, folks might not always like what you have to say. And there will be times when you'll get frustrated or discouraged. But whenever I start to feel that way, I just take a step back and remind myself of all the progress I've seen in my short lifetime.

I think about my mother, who, as a little girl, went to segregated schools in Chicago and felt the sting of discrimination. I think about my husband's grandparents, white folks born and raised right here in Kansas, products themselves of segregation. (Applause.) Good, honest people who helped raise their bi-racial grandson, ignoring those who would criticize that child's very existence. (Applause.) And then I think about how that child grew up to be the President of the United States, and how today—(applause)—that little girl from Chicago is helping to raise her granddaughters in the White House. (Applause.)

And finally, I think about the story of a woman named Lucinda Todd who was the very first parent to sign on to *Brown vs. Board of Education*. See, Lucinda's daughter, Nancy, went to one of the all-black schools here in Topeka, and Mrs. Todd traveled across this state raising money for the case, determined to give her daughter — and all our sons and daughters — the education they deserve. And today, six decades later, Mrs. Todd's grandniece, a young woman named Kristen Jarvis, works as my right-hand woman in the White House. She is here with me today. (Applause.) She has traveled with me around the world.

So if you ever start to get tired, if you ever think about giving up, I want you to remember that journey from a segregated school in Topeka all the way to the White House. (Applause.) I want you to think about folks like Lucinda Todd—folks who, as my husband once wrote, decided that “a principle is at stake,” folks who “make their claim on this community we call America” and “choose our better history.”

Every day, you have the power to choose our better history—by opening your hearts and minds, by speaking up for what you know is right, by sharing the lessons of *Brown v. Board of Education*—the lessons you all learned right here in Topeka—wherever you go for the rest of your lives. And I know you all can do it.

I am so proud of all that you've accomplished. This is your day. I am here because of you. And I cannot wait to see everything you will achieve in the years ahead.

So congratulations, once again, to the class of 2014. I love you. Godspeed on your journey ahead. Thank you, all. God bless you. I love you. (Applause.)

Blue Collar Brilliance

by Mike Rose

My mother, Rose Meraglio Rose (Rosie), shaped her adult identity as a waitress in coffee shops and family restaurants. When I was growing up in Los Angeles during the 1950s, my father and I would occasionally hang out at the restaurant until her shift ended, and then we'd ride the bus home with her. Sometimes she worked the register and the counter, and we sat there; when she waited booths and tables, we found a booth in the back where the waitresses took their breaks.

There wasn't much for a child to do at the restaurants, and so as the hours stretched out, I watched the cooks and waitresses and listened to what they said. At mealtimes, the pace of the kitchen staff and the din from customers picked up. Weaving in and out around the room, waitresses warned *behind you* in impassive but urgent voices. Standing at the service window facing the kitchen, they called out abbreviated orders. *Fry four on two*, my mother would say as she clipped a check onto the metal wheel. Her tables were *deuces*, *four-tops*, or *six-tops* according to their size; seating areas also were nicknamed. *The racetrack*, for instance, was the fast-turnover front section. Lingo conferred authority and signaled know-how.

Rosie took customers' orders, pencil poised over pad, while fielding questions about the food. She walked full tilt through the room with plates stretching up her left arm and two cups of coffee somehow cradled in her right hand. She stood at a table or booth and removed a plate for this person, another for that person, then another, remembering who had the hamburger, who had the fried shrimp, almost always getting it right. She would haggle with the cook about a returned order and rush by us, saying, *He gave me lip, but I got him*. She'd take a minute to flop down in the booth next to my father. *I'm all in*, she'd say, and whisper something about a customer. Gripping the outer edge of the table with one hand, she'd watch the room and note, in the flow of our conversation, who needed a refill, whose order was taking longer to prepare than it should, who was finishing up.

I couldn't have put it in words when I was growing up, but what I observed in my mother's restaurant defined the world of adults, a place where competence was synonymous with physical work. I've since studied the working habits of blue-collar workers and have come to understand how much my mother's kind of work demands of both body and brain. A waitress acquires knowledge and intuition about the ways and the rhythms of the restaurant business. Waiting on seven to nine tables, each with two to six customers, Rosie devised memory strategies so that she could remember who ordered what. And because she knew the average time it took to prepare different dishes, she could monitor an order that was taking too long at the service station.

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Like anyone who is effective at physical work, my mother learned *to work smart*, as she put it, *to make every move count*. She'd sequence and group tasks: What could she do first, then second, then third as she circled through her station? What tasks could be clustered? She did everything on the fly, and when problems arose—technical or human—she solved them within the flow of work, while taking into account the emotional state of her co-workers. Was the manager in a good mood? Did the cook wake up on the wrong side of the bed? If so, how could she make an extra request or effectively return an order?

And then, of course, there were the customers who entered the restaurant with all sorts of needs, from physiological ones, including the emotions that accompany hunger, to a sometimes complicated desire for human contact. Her tip depended on how well she responded to these needs, and so she became adept at reading social cues and managing feelings, both the customers' and her own. No wonder, then, that Rosie was intrigued by psychology. The restaurant became the place where she studied human behavior, puzzling over the problems of her regular customers and refining her ability to deal with people in a difficult world. She took pride in *being among the public*, she'd say. *There isn't a day that goes by in the restaurant that you don't learn something.*

My mother quit school in the seventh grade to help raise her brothers and sisters. Some of those siblings made it through high school, and some dropped out to find work in railroad yards, factories, or restaurants. My father finished a grade or two in primary school in Italy and never darkened the schoolhouse door again. I didn't do well in school either. By high school I had accumulated a spotty academic record and many hours of hazy disaffection. I spent a few years on the vocational track, but in my senior year I was inspired by my English teacher and managed to squeak into a small college on probation.

My freshman year was academically bumpy, but gradually I began to see formal education as a means of fulfillment and as a road toward making a living. I studied the humanities and later the social and psychological sciences and taught for 10 years in a range of situations—elementary school, adult education courses, tutoring centers, a program for Vietnam veterans who wanted to go to college. Those students had socioeconomic and educational backgrounds similar to mine. Then I went back to graduate school to study education and cognitive psychology and eventually became a faculty member in a school of education.

Intelligence is closely associated with formal education—the type of schooling a person has, how much and how long—and most people seem to move comfortably from that notion to a belief that work requiring less schooling requires less intelligence. These assumptions run through our cultural history, from the post-Revolutionary War period, when mechanics were characterized by political rivals as illiterate and therefore incapable of participating in government, until today. More than once I've heard a manager label his workers as “a bunch of dummies.” Generalizations about intelligence, work, and social class deeply affect our assumptions about ourselves and each other, guiding the ways we use our minds to learn, build knowledge, solve problems, and make our way through the world.

Although writers and scholars have often looked at the working class, they have generally focused on the values such workers exhibit rather than on the thought their work requires—a subtle but pervasive omission. Our cultural iconography promotes the muscled arm, sleeve rolled tight against biceps, but no brightness behind the eye, no image that links hand and brain.

One of my mother's brothers, Joe Meraglio, left school in the ninth grade to work for the Pennsylvania Railroad. From there he joined the Navy, returned to the railroad, which was already in decline, and eventually joined his older brother at General Motors where, over a 33-year career, he moved from working on the assembly line to supervising the paint-and-body department. When I was a young man, Joe took me on a tour of the factory. The floor was loud—in some places deafening—and when I turned a corner or opened a door, the smell of chemicals knocked my head back. The work was repetitive and taxing, and the pace was inhumane.

Still, for Joe the shop floor provided what school did not; it was *like schooling*, he said, a place where you're constantly learning. Joe learned the most efficient way to use his body by acquiring a set of routines that were quick and preserved energy. Otherwise he would never have survived on the line.

As a foreman, Joe constantly faced new problems and became a consummate multi-tasker, evaluating a flurry of demands quickly, parceling out physical and mental resources, keeping a number of ongoing events in his mind, returning to whatever task had been interrupted, and maintaining a cool head under the pressure of grueling production schedules. In the midst of all this, Joe learned more and more about the auto industry, the technological and social dynamics of the shop floor, the machinery and production processes, and the basics of paint chemistry and of plating and baking. With further promotions, he not only solved problems but also began to find problems to solve: Joe initiated the redesign of the nozzle on a paint sprayer, thereby eliminating costly and unhealthy overspray. And he found a way to reduce energy costs on the baking ovens without affecting the quality of the paint. He lacked formal knowledge of how the machines under his supervision worked, but he had direct experience with them, hands-on knowledge, and was savvy about their quirks and operational capabilities. He could experiment with them.

In addition, Joe learned about budgets and management. Coming off the line as he did, he had a perspective of workers' needs and management's demands, and this led him to think of ways to improve efficiency on the line while relieving some of the stress on the assemblers. He had each worker in a unit learn his or her co-workers' jobs so they could rotate across stations to relieve some of the monotony. He believed that rotation would allow assemblers to get longer and more frequent breaks. It was an easy sell to the people on the line. The union, however, had to approve any modification in job duties, and the managers were wary of the change. Joe had to argue his case on a number of fronts, providing him a kind of rhetorical education.

Eight years ago I began a study of the thought processes involved in work like that of my mother and uncle. I catalogued the cognitive demands of a range of blue-collar and service jobs, from waitressing and hair styling to plumbing and welding. To gain a sense of how knowledge and skill develop, I observed experts as well as novices. From the details of this close examination, I tried to fashion what I called "cognitive biographies" of blue-collar workers. Biographical accounts of the lives of scientists, lawyers, entrepreneurs, and other professionals are rich with detail about the intellectual dimension of their work. But the life stories of working-class people are few and are typically accounts of hardship and courage or the achievements wrought by hard work.

Our culture—in Cartesian fashion—separates the body from the mind, so that, for example, we assume that the use of a tool does not involve abstraction. We reinforce this notion by defining intelligence solely on grades in school and numbers on IQ tests. And we employ social biases pertaining to a person's place on the occupational ladder. The distinctions among blue, pink, and white collars carry with them attributions of character, motivation, and intelligence. Although we rightly acknowledge and amply compensate the play of mind in white-collar and professional work, we diminish or erase it in considerations about other endeavors—physical and service work particularly. We also often ignore the experience of everyday work in administrative deliberations and policymaking.

But here's what we find when we get in close. The plumber seeking leverage in order to work in tight quarters and the hair stylist adroitly handling scissors and comb manage their bodies strategically. Though work-related actions become routine with experience, they were learned at some point through observation, trial and error, and, often, physical or verbal assistance from a co-worker or trainer. I've frequently observed novices talking to themselves as they take on a task, or shaking their head or hand as if to erase an attempt before trying again. In fact, our traditional notions of routine performance could keep us from appreciating the many instances within routine where quick decisions

and adjustments are made. I'm struck by the thinking-in-motion that some work requires, by all the mental activity that can be involved in simply getting from one place to another: the waitress rushing back through her station to the kitchen or the foreman walking the line.

The use of tools requires the studied refinement of stance, grip, balance, and fine-motor skills. But manipulating tools is intimately tied to knowledge of what a particular instrument can do in a particular situation and do better than other similar tools. A worker must also know the characteristics of the material one is engaging—how it reacts to various cutting or compressing devices, to degrees of heat, or to lines of force. Some of these things demand judgment, the weighing of options, the consideration of multiple variables, and, occasionally, the creative use of a tool in an unexpected way.

In manipulating material, the worker becomes attuned to aspects of the environment, a training or disciplining of perception that both enhances knowledge and informs perception. Carpenters have an eye for length, line, and angle; mechanics troubleshoot by listening; hair stylists are attuned to shape, texture, and motion. Sensory data merge with concept, as when an auto mechanic relies on sound, vibration, and even smell to understand what cannot be observed.

Planning and problem solving have been studied since the earliest days of modern cognitive psychology and are considered core elements in Western definitions of intelligence. To work is to solve problems. The big difference between the psychologist's laboratory and the workplace is that in the former the problems are isolated and in the latter they are embedded in the real-time flow of work with all its messiness and social complexity.

Much of physical work is social and interactive. Movers determining how to get an electric range down a flight of stairs require coordination, negotiation, planning, and the establishing of incremental goals. Words, gestures, and sometimes a quick pencil sketch are involved, if only to get the rhythm right. How important it is, then, to consider the social and communicative dimension of physical work, for it provides the medium for so much of work's intelligence.

Given the ridicule heaped on blue-collar speech, it might seem odd to value its cognitive content. Yet, the flow of talk at work provides the channel for organizing and distributing tasks, for troubleshooting and problem solving, for learning new information and revising old. A significant amount of teaching, often informal and indirect, takes place at work. Joe Meraglio saw that much of his job as a supervisor involved instruction. In some service occupations, language and communication are central: observing and interpreting behavior and expression, inferring mood and motive, taking on the perspective of others, responding appropriately to social cues, and knowing when you're understood. A good hair stylist, for instance, has the ability to convert vague requests (*I want something light and summery*) into an appropriate cut through questions, pictures, and hand gestures.

Verbal and mathematical skills drive measures of intelligence in the Western Hemisphere, and many of the kinds of work I studied are thought to require relatively little proficiency in either. Compared to certain kinds of white-collar occupations, that's true. But written symbols flow through physical work.

Numbers are rife in most workplaces: on tools and gauges, as measurements, as indicators of pressure or concentration or temperature, as guides to sequence, on ingredient labels, on lists and spreadsheets, as markers of quantity and price. Certain jobs require workers to make, check, and verify calculations, and to collect and interpret data. Basic math can be involved, and some workers develop a good sense of numbers and patterns. Consider, as well, what might be called material mathematics: mathematical functions embodied in materials and actions, as when a carpenter builds a cabinet or a flight of stairs. A simple mathematical act can extend quickly beyond itself. Measuring, for example, can involve more than recording the dimensions of an object. As I watched a cabinetmaker measure a long strip of wood, he read a number off the tape out loud, looked back over his shoulder

to the kitchen wall, turned back to his task, took another measurement, and paused for a moment in thought. He was solving a problem involving the molding, and the measurement was important to his deliberation about structure and appearance.

In the blue-collar workplace, directions, plans, and reference books rely on illustrations, some representational and others, like blueprints, that require training to interpret. Esoteric symbols—visual jargon—depict switches and receptacles, pipe fittings, or types of welds. Workers themselves often make sketches on the job. I frequently observed them grab a pencil to sketch something on a scrap of paper or on a piece of the material they were installing.

Though many kinds of physical work don't require a high literacy level, more reading occurs in the blue-collar workplace than is generally thought, from manuals and catalogues to work orders and invoices, to lists, labels, and forms. With routine tasks, for example, reading is integral to understanding production quotas, learning how to use an instrument, or applying a product. Written notes can initiate action, as in restaurant orders or reports of machine malfunction, or they can serve as memory aids.

True, many uses of writing are abbreviated, routine, and repetitive, and they infrequently require interpretation or analysis. But analytic moments can be part of routine activities, and seemingly basic reading and writing can be cognitively rich. Because workplace language is used in the flow of other activities, we can overlook the remarkable coordination of words, numbers, and drawings required to initiate and direct action.

If we believe everyday work to be mindless, then that will affect the work we create in the future. When we devalue the full range of everyday cognition, we offer limited educational opportunities and fail to make fresh and meaningful instructional connections among disparate kinds of skill and knowledge. If we think that whole categories of people—identified by class or occupation—are not that bright, then we reinforce social separations and cripple our ability to talk across cultural divides.

Affirmation of diverse intelligence is not a retreat to a softhearted definition of the mind. To acknowledge a broader range of intellectual capacity is to take seriously the concept of cognitive variability, to appreciate in all the Rosies and Joes the thought that drives their accomplishments and defines who they are. This is a model of the mind that is worthy of a democratic society.

