HIGHLIGHTS FROM THE DAIS AND BEYOND

✔ The meeting
NSDC's 37th Annual Conference, "A Declaration of Professional Learning: The Revolution Begins," convened Dec. 3-7, 2005, in Philadelphia.

A CHALLENGE TO EDUCATORS

BY JUAN ENRIQUEZ

Excerpted from remarks made Dec. 5, 2005, by Juan Enriquez at the conference. Enriquez' book is *The Untied States of America: Polarization, Fracturing and Our Future* (Crown, 2005).

The basic language we use to communicate with one another is changing.

The masters of building and transmitting knowledge used to be the Chinese. They invented paper, gunpowder, great schools, had great explorers who went out and explored half the world. So why are we all not speaking Chinese yet? The answer is that this is a hard language to teach. It's a hard language to code.

Europeans and Americans became dominant because of code. They collapsed everything we learned into 26 letters. It got easier to learn and teach. Then, a few decades ago, we began collapsing 26 letters into two. That means when I use my computer, I'm not sending you ABCs, I'm sending you 1s and 0s. We've collapsed every word written or spoken, in every alphabet, in every language into 1s and 0s, plus every piece of music and every image, moving and still.

Today you better be digitally literate because a language that virtually nobody spoke in 1960 is now about 93% of the data transmitted in the world.

If that doesn't change the way you teach, then you haven't understood that the language has changed. The volume of data your students have to process has increased massively compared with when we were in school. The ability to adapt to new languages, to teach new languages, to prepare next generations for these languages makes the difference as to whether societies do well over time or whether they slowly decline.

If there's one message that I want you to take away today, it's that the language is once again changing. In 1953, James Watson and Francis Crick began to argue that all life on this planet is coded in what they call a double helix. Think of it as a spiral staircase. The sides of the staircase are sugar and phosphate. The rungs of the staircase are adenine, thymine, cytosine, and guanine. All life is coded in four letters: ATCG.

A century from now the most important date in 2001 will not be in September, it will be Feb. 12. That is the date we first saw the complete human genome, the 3.2 billion letters of gene code contained in each of your hundred trillion cells. The code that makes you you.

The difference between you and the person sitting next to you is about one in a thousand letters. Very small changes in your gene code have a huge impact.

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Participation is key feature in conference

BY IVAN SAARI

Wow, what an experience! That sums up my attendance at the NSDC Annual Conference in Philadelphia in December. My neurons are still firing and making connections based on my experiences and conversations. As a first-time attendee, I suspect I shared a journey similar to others' to an event I previously had only heard positive comments about.

When a call for presenters first crossed my desk last year, I began to

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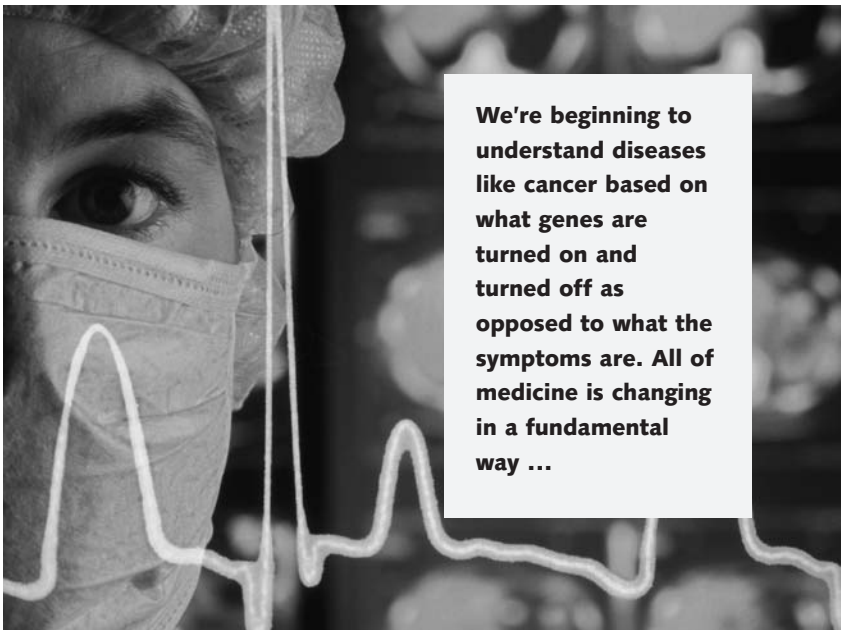
As we learn more about this language, we will begin to understand what will happen when we put a pill into your body and why some people get sick and others don't. We're beginning to understand diseases like cancer based on what genes are turned on and turned off as opposed to what the symptoms are.

All of medicine is changing in a fundamental way and so is our food. Almost every grain has now been changed. Some grains are drought-tolerant, others salt-tolerant. Some are herbicide resistant. But there are greater changes on the horizon. A Danish company modified the gene pathway that turns leaves red in the fall and now makes plants that turn red when exposed to TNT. When you spread these seeds you get a nice green field, except for where there are little red circles. That is where land mines are buried; plants have become biodetectors.

If you can program plants, you can program animals. A cloned cow was born in Argentina some months ago. Its gene code was altered so as to produce a cancer-fighting medicine in its milk. Twenty of these animals substitute for a large factory.

As we learn how to reprogram life, how we manufacture a series of materials, medicines, and compounds shifts from traditional factories into bacteria, plants, and animals.

Should we be cloning human beings? My answer is absolutely, unequivocally, no. But not cloning human beings doesn't mean we shouldn't be cloning human body parts. When we were kids and played with lizards, we sometimes picked them up by the tail and the tail fell off. No worries. Tails regrow. The same is true of tadpoles that have lost a leg. But this is not true of humans. If you lose an arm, it does not regrow. However, each of your cells contains your entire gene code. And that exact code already made one arm, another arm, one leg, another leg. And as we begin to understand how those things are coded, we will be able to regrow parts of our bodies. And we will likely add decades of quality life to our grandkids.



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EDUCATION IS A MATTER OF SURVIVAL

If most of the global economy is knowledge, it matters how you teach. It matters if those you teach stay in school. Just like a basketball team: If you recruit and coach the right people, you win. The same is true of teachers. The same is true of knowledge. If you don't develop the right people, if you don't develop the right students, if they don't stay, you lose.

Right now, it's the U.S.'s race to lose. It takes about 3,000 Americans to develop one patent; about 6,000 Koreans; 14,000 English; 780,000 Argentines and 1,200,000 Mexicans. Guess who gets rich and who gets poor and how fast it happens? Differences in access and ability to process knowledge can drive large gaps in wealth within countries as well. In the U.S., about 27% of Ph.D.s in science and math go to Asians and Asian-Americans. Two percent go to African-Americans and 1% to Hispanics. By 2050, 40% of the population in this country is going to be African-American and Hispanic. Guess what happens if we don't close that education gap? Not only will we have a significant ethnic divide in the ability to generate wealth, in the ability to understand the language that drives the global economy, but we also will have a country that is not competitive because we didn't find a way to educate a very large chunk of the population. That is the type of thing that makes countries rise and fall.

The United States government spends about $22,000 per person over the age of 65 and $2,000 on those under 16. That's an 11-1 ratio of what was compared to what's coming. You can often tell where a country's going by where it's investing. And that gap is likely to grow quickly as voters age. If we don't start investing in, teaching, and training kids as we do varsity teams, if there are not varsity teams in math, in physics, in the digital world, if we don't focus on education like we do on football and basketball and hockey, this is not

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gather information about the conference. I downloaded a list of attendees to the 2004 conference in Vancouver from the NSDC web site and contacted some of them. All assured me that the event was well-run and gave me a resounding go-ahead.

I submitted two proposals. One of my workshops was accepted; one was not. The selection process modeled sound assessment practices: NSDC gave us the workshop evaluation rubric in advance, and I could ask for feedback about the unsuccessful proposal (which arrived in the mail with reviewers' scores and comments). Even while declining my proposal, NSDC made it a learning process for me.

The most striking impact of attending the conference was the implicit understanding that I was a participant, not just an attendee. That was reflected in every contact, every smiling face, and by the design and schedule, which maximized meaningful opportunities for exchanges with colleagues, vendors, and hosts.

When my co-presenter and I registered Friday evening, we were greeted by conference co-chair Janet Samuels in the central area and invited to the first-time attendees orientation ("a special event just for you") Sunday evening. The next time I saw Janet, she was waving a flag to help the seating process at lunch on Saturday, filling tables in the hall where all attendees gather for a communal meal. I saw Janet and her co-chair, Victoria Duff, many times after that, but this illustrates the immediate welcoming atmosphere and a host committee fully engaged in making the experience a personal and positive one for all participants. The host committee certainly made this participant feel valued and included.

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The very nature of participation (versus attendance) was the interaction. Sharing meal tables quickly led to sharing ideas and then business cards. My participation has continued post-conference by e-mail. I also particularly valued the Provincial Affiliate Reception as another way to interact with a different group. By design, I was able to relate by role (presenter), experience (first-timer), interest (sessions), geography (affiliate), and randomly (meals, dance, etc.).

I also was stunned by the number of advocates promoting NSDC by expressing how many conferences they had participated in. It was clear that this environment is cultivated and important to the organization. I count myself as one of many "red-dot" participants (first-timers) who will remember Philadelphia as the first of many NSDC conferences. See you in Nashville in 2006!

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going to be a competitive country.

You can bet when Chinese kids and Indian kids and Korean kids and Singaporean kids get up in the morning, they take math and science training as seriously as Texans take high school football. This is one reason the U.S. imports so many brains. Already 40% of Silicon Valley CEOS are imported from India and China. But, post-Sept. 11, there has been a 50% drop in Indian and Chinese students taking the Graduate Record Exams required for admission to U.S. universities. Many brains now are choosing to go elsewhere.

Your challenge as educators is to prepare people for a rapidly changing world. Your challenge as educators is to learn a new language and then transmit it. Your challenge as educators is to teach about a world where there is an unprecedented amount of opportunity in every field — we're learning about life, robots, neuroscience, the cosmos, and building on a billionth of an inch scale. You have a front seat on the renaissance; it's coming at you in a tidal wave, and you have to prepare your students for rapid change.

What's at stake isn't just whether your students graduate, isn't just whether your schools get funded. What's at stake is what this country looks like in 50 years. Start by asking the question: "How many stars will there be in the United States flag?" This is a valid question because every great power, across time, has thought itself impermeable, indivisible, invulnerable. And it is also valid because there has yet to be a U.S. president buried under the same flag he was born under. Where this country ends up tomorrow depends, to a great extent, on what we do or do not do, with schools today. Education is a matter of national security, of national survival.

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