Time Travel

Change is coming at warp speed these days. These Badger **futurists** help us make the leap.

By Niki Denison

If you're not just a little bit nervous about the future, chances are, you've never heard of the Singularity.

The term is defined (depending on your source) as a time when technology will have advanced so far that our limited, present-day minds can't even imagine the implications. We'll reach this tipping point in history, adherents say, as the result of implanting artificial intelligence into human brains, producing human-machine hybrids who will attain greatly increased life spans and even a form of immortality — possibly by uploading the contents of individual minds onto computers.

For those who welcome this scenario, known as transhumanists, this brave new world can't come quickly enough. The Singularity also generates a lot of excitement among the high-tech community, and its fans approach the concept with an almost religious fervor. Others don't exactly relish the specter of a planet populated by Robo-Humans — not to mention the sinister implications of the next phase of the Singularity, when machine intelligence is expected to outstrip biological intelligence at an astronomical rate.

The Singularity is scheduled by one estimate to begin in 2035, when computers will supposedly become as powerful as human brains — although some say that we'll have a human-equivalent computer as soon as 2010, and a $1,000 model with the brainpower of everyone on the planet by 2049.

But even if we're not headed for some sort of dystopian reality à la *The Matrix* or *Bladerunner*, big changes are on the way. And a number of UW-Madison alums are trying to help you prepare for them.

The Futurist Manifesto

David Zach '79, who has been working as a futurist for the last two decades, first became interested in the field when he started reading science fiction as a child growing up in Monroe, Wisconsin. At UW-Madison, he majored in political science, but ended up with even more credits in philosophy. He went on to get a master's degree in future studies at the University of Houston.

"I barely passed the forecasting class," he says. "It had at the core of it something that I strongly disagreed with — that you can predict the future. They would use very rigorous, very complex statistical models. I was never about the predicting element of futurism. My approach was more about the thinking behind it — how do we think about the future?"

He believes there are two schools of futurists — the fortune-telling types and the court jesters — and he takes the latter approach. "Laughter diffuses tension. People are nervous about the future," he says. "I use the Socratic method — I try not to tell people what to believe."

Zach's first job involved clipping news articles for Johnson Controls in Milwaukee. When he lost his position shortly before his department was dismantled, he taught a few classes on the future at UW-Milwaukee, and then joined the strategic planning department at North-

zine, Dwell, and *Popular Science* "because it's so much fun. ... I don't subscribe to any newspapers, because I think that in many ways they are so outdated, so antiquated."

Prior to September 11, Zach had four employees who helped manage his calendar, travel, and graphics for his presentations, and he gave seventy-five talks per year, in venues ranging from tiny Amherst, Wisconsin, to Juneau, Alaska, to the island of Madeira off the coast of Africa. But after the terrorist attacks, he says, "no one was hiring, because the future was too scary." He closed his office and spent some time rethinking his company. "The speaking business is capricious," he says. "You may not be hot tomorrow — [people] are always looking for something new."

That doesn't mean they'll embrace the new, however. When Zach was delivering a presentation about some of the changes ahead, one young woman in the audience caught his eye. She was turned away from him and curled up in her chair in almost a fetal position, and she

"What's your wakeup call? What's going to cause you to really think about preparing yourself for your next career choice, for what you do later in life?" — Lori Silverman

western Mutual. Meanwhile, he enjoyed a chance invitation to speak at a Rotary Club so much that he continued speaking as a hobby, eventually realizing that he might be able to make a living at it. He left Northwestern in 1987 to go full time on the speaker's circuit and has not looked back.

"I get to learn about everything in my job, so that's kind of the glorious thing about it," he says. "I tell people that what I really do for a living is sit around and read books. I get to indulge my curiosity" on topics ranging from health care to microchips. "It doesn't seem like work."

He reads a lot online, and "I probably spend a good two hours a day reading editorials, articles, and various blogs," he says. He subscribes to, among other things, *Fast Company, Wired, National Geographic Traveler, Macworld, Gilbert Maga-*

protested, "I don't want this." It's probably not a coincidence that she was in the newspaper industry, which is undergoing a significant upheaval these days.

With many jobs now being automated or outsourced to Asia, with information overload and breakthroughs in science and technology coming at breakneck speed, that reporter in Zach's audience is not alone.

"I think there are some people who don't want to see the issues," says Lori Silverman '79, MS'81, who, although she's not a futurist per se, works with companies on strategic planning. "They go to work, they come home, they sit in front of the TV, or they might play with the kids. As far as they're concerned, they don't need to worry about what the bigger world holds for them." They believe

that society will take care of them, she says, which is fine, until the day when their companies' pension plans go bankrupt or can no longer pay for their healthcare after they retire.

Fifteen to twenty years ago, that was okay, because organizations had systems in place to help care for people. But "you can't be that way today," she says. People need to ask themselves, " 'What's your wakeup call? What's going to cause you to really think about preparing yourself for your next career choice, for what you do later in life?' "

Zach agrees. "The great failure of the average person is not to take personal responsibility for the future," he says. As he explained to an audience of high school students, "Anyone who stops learning and who stops playing — the future doesn't have a place for you. If you ever stop learning, you're toast."

He Who **Learns** Last, Gets Left

Alvin Toffler, who put futurism on the map when he wrote the bestseller *Future Shock* way back in 1970, got it right when he predicted that the rise of computers would radically change our world. Chances are, he's right about this, too: "The illiterate of the twenty-first century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn."

Bill Draves '71 isn't a futurist, although he's often called one. He founded a nonprofit association called LERN (the Learning Resources Network), and he's written a book called *Nine Shift: Work, Life, and Education in the 21ʰ Century.* In it, he points out that "in an age of continual change, learning has to be constant and continual." Because new jobs will require this habit of nonstop learning, he thinks that government will eventually move to supply business with knowledge workers by creating Individual Learning Accounts, or ILAs, to help workers fund their continuing education.

In the meantime, though, they're often on their own. Silverman, who teaches management courses at UW-Madison's Fluno Center for Executive

Education and at UW-Milwaukee, says, "I see people constantly who are paying their own way — their companies aren't — people are taking out home equity lines of credit, because they see the need to better themselves in terms of their skills and expertise."

In her work with businesses, Silverman takes her clients through personal learning exercises to give them some sense of control over their environments, versus having to be in a reactive mode.

> **Draves maintains that in the twenty years between 2000 and 2020, some 75 percent of our lives will have changed dramatically.**

"Lots of times when people do strategic planning, they're only using their opinions. I can guarantee you two things," she says. "They will woefully underestimate what will happen in the future. The other thing they'll do is miss issues on the fringe. And changes don't come from within your industry — changes come at the fringes of society." She cites as an example the rise of Facebook, which has caused some companies to question whether they need to have a presence on the social networking site.

The first thing Silverman does is to have her clients write a series of questions they'd like to answer, whether it's regarding competitors, technology, trends, or anything else that could have a future impact on their organization. She then has them break up into teams and go in search of what experts are saying about a specific question five to twenty years into the future.

She wants each team to discover the answer on its own, she says, "because when they find it, they actually take ownership of it. ... Their eyes are opened to a world that is far broader and deeper than the one [in which] they actually live

today." In some ways, this method lessens her clients' stress and anxiety, and in other ways it heightens it. "If they find disconcerting information about the future, that can be disquieting," she says. On the other hand, "they get extremely excited, because they see possibilities for a better world for themselves and for their organization [through] the decisions that they make."

You Can Run, But You Can't **Hide**

When Zach speaks, he emphasizes how fast the pace of our lives has become. We are "hyperliving," he says. "We're skimming along the surface of life, and the whole goal is not to enjoy what you're doing, but simply to finish what you're doing so you can go and do the next thing that's waiting for you." The average American, he says, spends less than fifteen minutes having lunch. And it's even worse for people with laptops, Internet access, and cell phones. One study found that those who use all of these technological tools work, on average, eight hours more per week than those who don't.

And that work is often very fragmented. Zach frequently quotes from another study that found office workers have up to eight windows open on their computer screens at once. They spend an average of eleven minutes on a project before being interrupted, and this time is typically broken up into three smaller tasks. It takes workers twenty-five minutes to return to their original tasks after being interrupted, and 40 percent of the time, they wander off to completely different tasks instead.

Zach doesn't think living at warp speed is necessarily a good thing. He is fond of using a quote from writer and philosopher Eric Hoffer: "The feeling of being hurried is not usually the result of living a full life and having no time. It is, rather, born of a vague fear that we are wasting our life."

In *Nine Shift,* Draves maintains that in the twenty years between 2000 and 2020, some 75 percent of our lives will have changed dramatically as we transition from the Industrial to the Internet

One View of **Changes** in the Near Future

Bill Draves '71, founder of the Learning Resources Network, believes these nine changes will alter our lives in the next ten or fifteen years. Most of them, he says, are already well under way.

1. Most people will work at home.
Organizations ranging from Best Buy to the federal government are moving more employees into telecommuting, because people who work from home work longer hours and are more productive.

2. Virtual offices, or Intranets, will replace physical offices.
In an office, managers supervise how employees spend their time, and that's simply dysfunctional, because businesses are really interested in results. Bosses will switch from supervising activities to supervising outcomes, which is far more efficient.

3. Networks will replace the organizational chart.
In the old pyramid structure, which was based on the factory model, information was limited to the top brass. But with a network, relevant information and decision-making power is shared across the organization, increasing efficiency.

4. Trains will replace cars.
In Europe you can now take a train from Paris to London (a seven-hour drive) in just two hours. The United Kingdom is going to spend $20 billion on trains in the next fifteen years, and Toronto is devoting $6 billion to a light rail system. Trains will be equipped with wireless access, allowing people to work and travel at the same time.

5. Suburbs will decline.
As knowledge workers become more acutely aware of the value of their time, they will want to live within walking or biking distance of shops, stores, and light rail systems. Poor people will move to the suburbs. In fact, as of 2007, more poor people are living in the suburbs than in cities. This shift will have an environmental payoff: the *Baltimore Sun* recently reported that simply eliminating suburbs would reduce driving by 20 to 40 percent.

6. New social infrastructures will evolve.
In particular, new systems of health care and continuing education are needed, because people will change jobs almost yearly in this century. People will need to receive continuing education no matter where they work or how often they change jobs.

7. Values and work ethics will change.
All of our values are for the factory — showing up on time, putting in long hours, and getting your work done. Now, because time is so valuable and because knowledge keeps expanding, we need to work faster and smarter. In the last century, if you were learning with others, it was called cheating. In this century, we value collaborative learning because people are more productive when they work with others.

8. Half of all learning will be online.
All subjects, even those such as music and ballet, can be enhanced with an online component. Online learning will do for education what the invention of the tractor did for food, making learning opportunities cheaper and more readily available in a wider variety of options.

9. Technology will replace buildings.
Higher education has this "edifice complex" — we're still spending too much money on buildings. In this century, technology expenses have to exceed building expenses, or individual institutions will be in real danger, because buildings are simply obsolete — they're just a cost.

Age. Drawing parallels between how things changed between 1900 and 1920, as the nation made the transition from an agrarian way of life to an industrial one, he outlines nine major societal shifts (see sidebar).

Draves says that just like Americans in the early 1900s, who sometimes took to shooting at the tires of those newfangled horseless carriages, "the majority of people in the first decade of [this] century are reluctant to change or to see the full extent of the changes taking place." Draves takes a cue from William Bridges,

the author of two books that help people deal with transitions. Bridges counsels that when we move through an ending, we then go through a "neutral zone" before beginning the new phase of our lives. Draves posits that in the first decade of the twenty-first century, we're now in this neutral zone, which is characterized by a vague uneasiness as we're not sure what's ahead and what we're leaving behind. For anyone making the transition to the Internet Age, he writes, "this gut level feeling of ambiguity and uncertainty is a constant presence."

And the feeling may turn to alarm if people listen to Ray Kurzweil, an inventor and futurist who is a well-known proponent for the Singularity. Kurzweil writes on his Web site, "An analysis of the history of technology shows that technological change is exponential. ... So we won't experience one hundred years of progress in the twenty-first century — it will be more like 20,000 years of progress (at today's rate)." To arrive at that conclusion, Kurzweil extrapolates from the oft-quoted Moore's Law, which

states that the capacity of a computer chip doubles every eighteen months. The futurist believes that this principle can also be applied to nanotechnology and most other advances, as well — albeit at an even faster pace than Intel founder Gordon Moore originally envisioned.

But even some of those in Kurzweil's camp disagree that things will change that rapidly, arguing that the futurist is using something called static analysis, which maps out statistical projections while failing to account for human variables and other factors that could change over time. The *Economist* magazine satirized this particular kind of reasoning by coming up with a model for safety razors, which have gone from a single blade to five blades in the last ninety-odd years. Projecting a hyperbolic curve on a graph, it appears that the number of blades on a razor should reach infinity sometime before 2020.

Still, at least one recent development is giving weight to Kurzweil's views. In September, the *New York Times* reported that an IBM research fellow is developing something called racetrack memory that could blow Moore's Law to bits. Stuart S.P. Parkin, whose previous research brought you the enhanced storage capabilities of the iPod, may have devised a way to enable us to carry around a college library's worth of data in a device the size of a small pocket calculator. Perhaps as soon as the next several years, he expects to increase data storage capabilities up to one hundredfold, which will have profound effects on the computer industry as well as the information, communications, and entertainment sectors.

Adaptability Saves the Day

Like David Zach, Garry Golden '98 got his master's at the University of Houston, which offers the only futurist degree program in the nation. Rather than taking a strictly keynote approach, Golden is an organizational consultant whose goal is to generate a range of possible future scenarios so his clients can avoid surprises. "What we're allowing them to

do is to rehearse the future," he says. His first project involved working with Harlequin Romance on the future of fictional entertainment, helping them to market it to younger audiences by creating virtual reality worlds that allowed young readers to blend their real lives with fiction.

He now spends a lot of his time helping clients understand technology as it relates to generational differences. And he's also the project manager for a Texas Department of Transportation initiative to explore road finance, congestion, safety, energy, and urban development.

> **"We live in an age where anything is possible, but that's scary, because not all things should be possible."** — David Zach

Golden loves what he does. Like many futurists, he considers himself an optimist. He concedes that as technology and science change, "conversation on ethics and values tends to lag ... [But] in the end, I think that what is good prevails, and that human beings and communities simply adapt." His optimism, he says, is not based on blind faith, but on past historical shifts. "When human beings went from an agricultural to an industrial society, it was a very disruptive thing. At the time, if you had extrapolated forward, you would have thought that we were forever going to be working in awful conditions, but things changed ... the laws catch up." Extrapolating the present, he says, often discounts how values and human nature will change.

Although the main driver of change right now is digital technology, Golden says, the next wave will be biological technologies, which will require us to have new conversations related to values. He sees nanotechnology as an area of hope, because "people who are involved in nanoscale science are actually getting ahead of the curve and developing

ethical guidelines now." He cites a recent announcement by DuPont to develop a set of research guidelines in conjunction with Environmental Defense (formerly the Environmental Defense Fund). "What impact will these tiny particles have on our environment and humans?" he asks. "What DuPont is saying is we want to understand the implications before we proceed."

Back to the **Future**

Zach would like to see more of this type of forethought before we plunge blindly ahead. In a time of tumultuous change, when we can't possibly keep up, he advises that we have to "figure out the things that *don't* change — and when you find those, it gives you a place to stand."

Not all change is progress, he says, and "sometimes the most radical thing to do is to not change." Zach bemoans what he sees as an obsession with technology and business as being the ultimate sources of solutions and meaning, and believes that we need to pay more attention to history, community, and families.

He describes his favorite futurist as G.K. Chesterton, because he believes that Chesterton embodies something that we are short of in our modern era: the willingness to learn from the past. "The more things change," Zach says, "the more we must learn from the past. We live in an age where anything is possible, but that's scary, because not all things should be possible." Chesterton advocated, he says, "giving votes to our ancestors. We assume that today is the most important thing and dismiss the past, blaming the past. History is full of accomplishments, and we should have gratitude for them. We have temporal arrogance."

And finally, although we may be opening a Pandora's box of nanotechnology, genetics, and robotics, Zach points out that the last thing left in Pandora's box was hope. "You must have hope," he says. "It's a moral imperative." ⌼

Niki Denison, who is co-editor of On Wisconsin, has always wanted to live in the past, and she can't wait until technology advances to the point where time travel will allow her to do that.