

Top 10 Disappearing Futures

A special report by members and friends of
the World Future Society

Introduction

One of my family's legends (unverified) was that my great-grandfather invented the coin-operated newspaper-vending machine. He never patented it, however, so watching the gradual disappearance of this sturdy, useful invention—first from my apartment building's lobby, and then from the sidewalks outside my office—leaves me with no sense of grand, despairing loss. Today, I can read whatever I want digitally, without ever having to bash a frequently failing machine that eats my quarters.

For me, the saddest loss from my youth is the soda fountain, that countertop fixture in just about every drugstore in the United States a half a century ago. Folks could have a quick meal of grilled cheese sandwiches and cherry Cokes, and then buy sundries on the way out. As the car-crazy nation spread our lifestyles out into suburbs, it became easier and faster to order food at drive-through windows. Cars with cup holders reigned supreme, and the soda fountain disappeared.

So, what else might disappear in the next 15–20 years? And will we miss these things much? The loss of newspaper vending machines hasn't affected our access to news, for instance. Soda fountains were replaced by alternative methods of meal dissemination. But in some cases, things have disappeared irrevocably and irreplaceably, some for better (smallpox) and some for worse (passenger pigeons).

One thing we might *not* see disappear: predictions. Though many futurists believe we would be better off learning to make "robust" decisions that enable us to adapt and succeed in a variety of potential future scenarios—without benefit of definitive forecasts—humans have always felt a compulsion to know the future with as much certainty as possible.

And that is why we have gone to members and friends of the World Future Society, once again, to seek out their informed and eye-opening insights about the future—in this case, the future we may *not* see.

—Cynthia G. Wagner, editor

Contents

1. Intolerance and Misunderstanding	23
<i>John M. Smart, Daniel Egger, John F. Copper, Alan Nordstrom, Jed Diamond</i>	
2. Educational Processes	24
<i>Jason Siko, Jason Swanson, Dan Tuuri</i>	
3. Europe (Maybe, Maybe Not)	26
<i>Manuel Au-Yong Oliveira, Neill Perry</i>	
4. Jobs and Workplace Processes	27
<i>Thomas Frey, Paul Rux, Carrie Anne Zapka, Lawrence Loh</i>	
5. Stores	28
<i>Barry Minkin, John P. Sagi</i>	
6. Doctors	29
<i>Joe Thomae, Benjamin C. Yablon, Morton Chalfy</i>	
7. Paper—and the Places It Goes	30
<i>David Pearce Snyder, Lane Jennings, Karl Albrecht</i>	
8. Human Experiences	32
<i>Brenda Cooper, Lisa Gualtieri, Apala Lahiri Chavan, Richard Yonck, Elizabeth D. Leone and Jean Georges Perrin, Josh Lindenger, Michael Rees</i>	
9. Smartphones	34
<i>Paul Saffo, Harish Shah, E. Scott Denison, Alexandre Pupo and William E. Halal, Rob Bencini, Jim Breaux</i>	
10. Insecurity	36
<i>Tom Schaffnit, Clayton Rawlings, Thomas Frey, Frank McDonough</i>	
More Missing Futures	37
<i>Dave Allman, Douglas Cornish, Peter Eder, LuAnne Feik, Virginia Holbert, Lester Kuhl, Jonathan C. Lippe, Werner Mittelstaedt, Gregory Pashke, Garry Schulz, Alexandru Tugui, and Ruth Wise</i>	
About the Authors	38

1. Intolerance and Misunderstanding

Disappearance of Endangered Languages, Economic Immigration Barriers, and Mass Religious Intolerance

By John M. Smart

The advent of wearable smartphones could accelerate the disappearance of endangered languages, but also lowering of economic barriers and of fundamentalist intolerance.

By 2020, the ubiquity of wearable smartphones and the power of the conversational interface will give youth everywhere “teacherless education”; that is, conversation, both with remote peers and with the Web itself.

For kids in developing nations, the killer app of teacherless education will be learning a more developed nation’s language at the same time they learn their own. Their wearable will “listen in” as they learn their native language and deliver the same words in the foreign language of choice, along with images, learning aids, and games that test proficiency.

Of the roughly 6,000 languages spoken today, perhaps 3,000 endangered languages will no longer be spoken by children in 2030. Most other languages will have lost users as well, as the languages of developed nations with the most open cultures increasingly take their place. We’ll also see many more scientific, technical, business, social, and artistic “languages” (knowledge systems) taught from birth.

English, the global language of business today, will benefit the most, bringing English-speaking nations as many as a billion new “virtual immigrants” by 2030.

In the high-bandwidth 2020s, many economic barriers to participating in the global economy will disappear. Eager underemployed youth anywhere, speaking the same language and understanding the same global culture, will be able to work with large and small compa-

nies everywhere, vastly accelerating innovation and entrepreneurship.

Those who learn English or another leading language from birth, rather than relying on automatic language translation, will gain the greatest new economic opportunities and cognitive fluencies. Leading languages have by far the largest semantic vocabularies, and they allow the learner to deeply understand foreign cultures.

Now for perhaps the most controversial prediction: As long as global science, technology, free trade, resiliency, and wealth continue to accelerate, as I expect they will, all the major religions and ideologies will continue to grow more ecumenical and secular. Mass fundamentalist religious intolerance will disappear. Political and religious fundamentalist backlashes will always be with us, but they’ll be increasingly small, weak, and short-lived, driven as always by short-term catastrophes. Amen!

Counterpoint: Why Cultural Understanding May Disappear

By Daniel Egger

In shared social environments, we create a single cognitive and perceptual understanding of complexity through language, words, stories, music, and other cultural elements. But this could change. Globalization with a “world language” can drive cultural distinctions—and sensitivity for them—to extinction.

In the mid-2020s, technical barriers in speech recognition, translation, and speech synthesis will not exist anymore. Real-time mobile language-translation devices are going to be available to the mass market. By 2030, their world market penetration will surpass 80%. In this era of social connectivity, it will be possible to access everyone and any information. Without language barriers,



ALLEX MAX / BIGSTOCK

world population reaches a new understanding of social connectivity.

But in this hyperconnected scenario with its streamlined “global” communication, fewer people will be willing to invest time in learning new languages and cultural immersion. This unwillingness may then reduce people’s capacity to observe, reflect, understand, and respect other opinions, leading to new cultural misinterpretation and conflicts.

We may thus see the rise of new conflicts as cultural understanding disappears. Rather than resolve conflicts, we will merely shift attention away. Rather than improve collaboration, it will change how we judge, evaluate, and create trust in our relationships.

In 2030, we will navigate our social web and filter, judge, ignore, and classify at high velocity; the risk is that we will also transform our interpretation into social realities that ignore cultural contexts.

Vanishing Languages and the Rise of English and Chinese

By John F. Copper

By 2030, more than a third of the world’s estimated 6,000 languages will have disappeared. First to go will be those spoken by only a small number of people. Unwritten languages will also pass early. Other languages, except for two, will experience gradual or rapid disuse.

Most people are increasingly learn-

ing and using a “dominant” language such as English and/or Chinese, both of which are growing fast in terms of their number of speakers and their usage in business and science.

English is the language of science and technology, education, business, the media, movies, and the global culture. It is the language of democracy. The English vocabulary is vast compared to other languages. Some call it the necessary or indispensable language.

Chinese is the language of more people than any other and is becoming an important business language. China is also excelling in science and technology, registering more patents than any country in the world and publishing more scientific articles. Many predict that China will be the world’s dominant economic power and military power in two or three decades.

The ability to speak both Chinese and English would allow one to communicate with half of the people on the planet. This figure will grow to 60% or more in 15 years. At that time, the dream of a universal language may be upon us.

In the future, linguists and historians will be able to study the extinct languages, as they will be recorded and preserved. Bilingualism and multilingualism will keep the ones falling into disuse from becoming irrelevant, while most of the planet’s population will regularly use English or Chinese, or both.

The End of Religion, The Rise of Spirituality

By Alan Nordstrom

The most revolutionary change underlying the transformative era in the next half century is the demise of religion and the rise of spirituality. Society will outgrow doctrinaire belief systems accepted on traditional “faith” and inculcated by authoritarian intimidation.

By 2030, the pervasive power of communication systems will enable human beings collectively to achieve a higher level of common sense, informed by advanced sciences (physi-

cal, social, and spiritual) that make the world of 2013 seem neo-Medieval.

We will have stabilized our population sustainably. Our former penchant for exploitation and domination will have been sanitized by education, informed by humane values promoting cooperation and collaboration on common interests and mutual benefits. Aggressive, acquisitive, exploitative behaviors are deemed pathological and regressive, even primitive.

Most distinctive in 2030 is the pervasive kindness and civility of human behavior. Only a generation earlier it would have been ludicrous to suppose that the outrageous violence of the 9/11 era could ever be transcended: ethnic cleansing, terrorism, financial exploitation, plutocracy. But the “Big One” finally brought inhumane humanity to its knees and its senses, waking us collectively to our radical sense of kinship and kindness.

Goodbye, Macho Man

By Jed Diamond

For millions of years, humankind lived in balance with nature, one voice among many in the chorus of life. But gradually we became disconnected from the earth and dominant over it: All other life on the planet must serve the needs of humans or die.

In the words of the philosopher Martin Buber, our relationships changed from *I-Thou* (sustained connections to the external) to *I-It* (separated from the external). Using increas-

ingly destructive methods of violence, macho man rose to the top. Cut off from his own feelings, he could more easily control nature, other men, women, and children.

But this *I-It* relationship to the world is not only destructive to the life spirit, it is also unsustainable. When macho man lives as though he

2. Educational Processes

Disappearing Public Education

By Jason Siko

Public schools are privatizing, and new ways of mastering and assessing the attainment of knowledge and skills are replacing the factory model of education.

Public education in the United States will have all but disappeared by 2030, beginning with the primary and secondary systems that have been in place since the end of the nineteenth century. The decline of the public tertiary educational system will take longer, but will be due to the same factors.

Technology will help to destroy the long-held traditions of grouping students by age. Smart systems will allow us to solve educational psychologist Benjamin Bloom’s “Two-Sigma Dilemma,” where education progresses through mastery learning and individualized instruction based on quality data analytics. As students progress, they are allowed to specialize earlier and earlier (much like athletics today)—so much so that no one has a generalized diploma, only certificates of competencies in skills that the workforce demands.

While this sounds desirable, the process was handed over to a select few companies that were directed to maintain the status quo by the elite. This change was facilitated by the United States’ inability to fund public education, as state budgets con-

were separate from nature, thinking he could rule the world, it is like the brain thinking it could rule the body, demanding all the life-giving blood. "To hell with the kidneys, the lungs, or the spleen," the head says. "I'm the most important organ in the body and I want more, more, more."

Macho man is on his way out. The

I-Thou man is replacing him, and there is a chance for humanity to return to a way of life that has sustained us for millions of years. Locally sustainable earth communities are emerging throughout the world, and men are learning to be kind to themselves, each other, and the wonderful planet we all share.

tinued to fail to generate the necessary revenue for all public services.

Like current U.S. telecommunications and postal delivery systems, what the government initially set up will be handed over to three or four major companies. They will provide instruction and training online based on regional demand trends and forecasts from corporations in a particular geographic region. In addition, they will provide site-based technical and pedagogical support; the local companies will purchase the old school buildings to generate revenue for the state and convert them to tutoring stations and early childhood daycare facilities.

While students could specialize and obtain employment (which lowers unemployment numbers significantly), their choices are limited; thus, upward mobility becomes nearly impossible.

Education Abandons the Factory Model

By Jason Swanson

In the list of things that may potentially disappear by 2030, we might also include ways of doing things, or processes. And one process that could potentially disappear is the factory model of education, or the idea of "one size fits all."

There is already a strong case for this process to disappear in the future. Ideas such as an Individualized Education Plan (IEP) for every student have garnered a lot of atten-

tion. Advances in technology like learning analytics will allow educators to process large amounts of data on students in order to get insights into how students learn best.

These are signposts that point to a shift away from the mass-production education model and toward a future in which each student's educational experience is truly individualized and tailored to how he or she learns best.

The End of Grade Point Averages

By Dan Tuuri

In 2030, the grade point average (GPA) will no longer be the primary instrument to validate academic achievement.

The GPA is based upon the value that an instructor has provided a student. In many institutions, instructors define their own valuation of how points are distributed, in some instances with certain categories having little to do with the actual learning achieved. Furthermore, some instructors face pressures to inflate grades.



FRANCESCO SANTALUCIA / BIGSTOCK

In recent years, even the U.S. government began to call for independent third-party testing of some programming. The inclusion of this data provided reference points of independent data that instructional staff could utilize for course and program improvement and could further develop comparative data between institutions.

Recently, the concept of badges has also taken off. I believe we will continue to see these developed. Noted endorsements of specific skills that a person would need for success are much more valuable than a single identified reference.

3. Europe (Maybe, Maybe Not)

A World without a Unified Europe

By Manuel Au-Yong Oliveira

Long-term culture change will be needed to hold Europe together till 2030.

The European Union will have to change a great deal if it is still to be around in 2030, but no one is currently focusing on the changes necessary to make the EU a success. In business mergers, attention to the differences in the organizational cultures of the merging companies is at the forefront of managerial concerns. But this has not been the case in the European merger.

The European Union is basically a merger of very diverse nations and faces the same kinds of issues as companies do: How can we get different countries—where people with very different values, attitudes, and beliefs live—to pool together their unique knowledge capital to make the merger a success?

For instance, is it fair to say that highly assertive “Type A” Germans think and act differently from the “Type B” French, Italians, Irish, Finns, and Portuguese (to use the classification by Deanne N. Den Hartog)? Ideally, these countries would have similar economic as well as social behaviors.

To lead Europe out of its predicament, a new vision is called for. Only with a far-reaching common culture will different governments and the people they represent share the view that, for the union to prosper and to have a sustainable future, they have to put in at least as much as they want to take out.

What should a European culture, common across its borders, look and feel like? Will northern European countries need to soften toward

more socially oriented values, while southern European countries converge to take a more assertive stance?

As Nobel Prize-winning economist Douglass C. North has said, structural and institutional change cannot be disassociated from long-term culture change. This is where Europe needs to focus its attention, before it is too late for the dream of a prosperous, long-lasting, unified Europe.

Counterpoint: Europe, Tear Down Your Borders

By Neill Perry

By 2030, with the advent of the euro as a multinational currency, the economic and commercial relationship among the nations of Europe will have changed. Restrictions on trade are eliminated, helping raise the economic condition of the poorer countries. This eliminates the need for formal borders between them, and as a result, a new central gov-

ernment, United Europe, emerges.

The old national borders serve as a way to maintain their history, cultural roots, and social distinction. Over the years, the differences between individual nations have dissipated. Merged into one larger central government, the former nations are now independent provinces with democratically elected officials who represent them in the central government of United Europe. With the elimination of the former borders and a common language, United Europeans have more freedom and independence.

The combined resources increase United Europe’s economic and political clout, allowing it to compete against technological and industrial giants like the United States and China. The nations that meld into one larger country of United Europe strengthen their ability to provide products and services, raise their standard of living, and gain commercial and political influence globally.

JAM-DESIGN.CZ / BIGSTOCK

4. Jobs and Workplace Processes

Two Billion Jobs to Disappear by 2030

By Thomas Frey

As technologies disrupt economies, jobs will disappear. But learning new skills will keep people in business.

By 2030, more than 2 billion jobs will disappear, roughly 50% of all the jobs on the planet. This is not intended as a doom and gloom scenario, but rather as a wakeup call for the new skillsets we'll need in the future.

According to McKinsey's Global Institute, 12 disruptive technologies are at the heart of this disruption: mobile Internet, automation of knowledge and work, Internet of things, cloud technology, advanced robotics, autonomous and near-autonomous vehicles, next-generation genomics, energy storage, 3-D printing, advanced materials, advanced oil and gas exploration and recovery, and renewable energy.

Pay very close attention to these 12 technologies. They will be both the job destroyers and the job creators in our future. Here are a few examples of how this will occur:

- **Driverless cars** will be on the verge of eliminating millions of driver positions. Buses, taxis, trucks, limos, UPS, FedEx, and more will be transitioning into driverless forms of themselves. At the same time, we'll see a dwindling of parking lots, gas stations, traffic cops, and traffic courts, and fewer doctors and nurses will be needed to treat injuries.

- **Education** will see a mass transition from teaching to coaching, as 90% of all traditional classes will take place online by 2030, even in K-12.

- **3-D printers** will disrupt everything from manufacturing, to health care, to retail, to art, to construction and building materials. Printed clothing and shoes produced at the store you're shopping in will replace garment districts around the world. Printed buildings and houses

will eliminate the need for contractors and building materials. Pill printers will replace entire pharmacies.

- **Automated manufacturing** is already eliminating tons of jobs. Bots and drones will begin disrupting many other industries along with their base of employment.

At the same time that billions of jobs are disappearing, we will be creating billions more. But to do so, we will need to streamline our systems and prepare for the skill sets and job demands of tomorrow.

The Coming Demise of Teamwork

By Paul Rux

In his classic 2001 study *Free Agent Nation*, Daniel Pink observed a growing trend toward solo practitioners instead of teams. He foresaw how relentless changes in technology and corporate greed would combine to reduce workers en masse to the level of office temps. It is hard to build teamwork around workers who constantly come and go. Despite a pop culture that lauds teamwork in sports, this is not the emerging workplace reality.

So forget teamwork. Instead, coach creative "stars." The powerful trend toward freelance workplaces signals the coming demise of teamwork. Get ready to move, re-skill, and coach innovative individuals as leaders.

Obsolescence of Fixed Pay-Per-Time Compensation

By Carrie Anne Zapka

Only museums will display punch-in time clocks. Future historians will view this artifact as a failed attempt to mechanize human behavior—an unfortunate result of the Industrial Revolution. Without punch-clocks, neither performance nor

compensation will be correlated to time.

Dynamic pay-per-task networks will replace fixed annual salaries and hourly pay rates. Work will be negotiated between temporal workers and "workees"—those for whom work is performed. Compensation will be volatile. Real-time supply and demand, crowd reputation ratings, experience points, and recommendation networks will replace résumés and job titles.

Whither the Board of Directors?

By Lawrence Loh

Gone will be the days when a seat on a company's board of directors carries a sense of prestige, a sign of arrival, and a sure way to make big bucks.

Over recent decades, a spate of corporate governance disasters has triggered fast and furious regulatory reforms, such as the U.K. Cadbury Report in 1992 and the U.S. Sarbanes-Oxley Act in 2002. Both of these have resulted in a significant tightening up of requirements, especially for being a company director.

Many qualified and experienced personnel will thus no longer want to be directors, as the risks and liabilities are getting just too high and not worth the time and effort for the returns. And that is the hollowing out of the supply of directors.

The corporate sector should go back to the basics. Stakeholders, especially investors, must take the company back from the directors, who are at present not necessarily selected by or even serving the interest of investors.

Instead of the board, companies will experience investor activism in the form of direct corporate democracy. Investors will themselves elect representative, council-like mechanisms to take charge of corporate governance.

Companies will be too important to be left to boards of directors, which will disappear by 2030.

5. Stores

Locations, Locations, Locations

By Barry Minkin

All the prime retail spots will be taken, but new distribution opportunities will emerge.

By 2030, the best locations for retailers around the world will have been found and occupied.

You can already find a Big Mac or Starbucks coffee even in the most remote corners of the world. By 2030, companies will be looking for innovative low-cost distribution opportunities. For example, since Starbucks controls the retail locations, are there profitable opportunities to control the many beverage cart locations?

Innovative marketing channels will be the key to success. For instance, there are not a lot of candy stores in Russia, so Mars put kiosks in places like Red Square to sell its products. Gillette uses suppliers with trays around their necks to sell its blades in India.

There are also opportunities to sell many other products once you have developed distribution channels. Colgate distributes more than 173 products in more than 50 countries, and some of these products are manufactured by other companies.

Of course, the Internet will continue to help put “going out of business” signs in the store windows of retailers in marginal locations.

“Mommy, What’s a Store?” Consumerism in the Connected Age

By John P. Sagi

For Christmas shoppers at big stores, the most popular toys fly off the shelves—Furby, Monster High Dolls, Angry Birds, Legos. Parents frantically use their iPhones to check other stores and eBay for availability (and better prices), then leave the



NMEDIA / BIGSTOCK

store to make the purchase.

In the future, these toys will be replaced, but even bigger change is coming to the process of shopping.

For example, my spouse recently went shopping for an iPhone. The Verizon store in the local mall had the very version of the phone she desired. The clerk then explained that her new phone was “being configured and on its way from the Midwest.” We couldn’t take our purchase home with us—it wasn’t even available in the store.

Stores are gradually becoming mere demonstration places, due to several forces: 3-D printing allows localized and instant manufacturing; radio frequency identification (RFID) tracks products at every stage; rapid transport and augmented reality promise overnight delivery (soon perhaps via drones). Our central-

ized, connected cities keep us ever local, and e-commerce connects us.

By 2030, shoppers will not use “stores” as we know them, but may visit membership-accessed “Demo Docks.” Beginning with items such as electronics and clothing, you’ll browse online for specifications, capability, and pricing; you’ll then visit a local dock to “play” with the product using augmented-reality tools.

These demo docks will market our favorite brands, and robots will show the items or clothes, very accurately responding to our questions. No expensive stock is on site, saving space and insurance costs. Completing the purchase online, the customer returns home, and the item arrives on the doorstep the next morning. No backorders, and no fights for the last “Furby”: Everything is available.

6. Doctors, Surgeons, and “Diagnostic Arts”

Disappearing Doctors

By Joe Thoma

Adults will no longer need to visit a doctor's office for routine checkups.

By 2030, adult visits to a doctor for an annual physical, blood cholesterol screening, exams for prostate or breast cancer, and many other important but nonemergency consultations will be a thing of the past.

Several trends will drive this change:

1. Technology will enable an accurate and personalized diagnosis in your own home. The ubiquity of smartphones and sensors tied to cloud computing will allow screening for chemical indicators for cancer, blood glucose and oxygenation levels, EKG, respiration rate, heart attack and stroke precursors, and more. The information will upload into a personal medical database, and no human will ever see it until your database alerts your doctor that something is amiss.

2. Patients will, after initial privacy concerns abate, begin to understand that regular, consistent monitoring of many health indicators will act in their favor, preserving good health and indicating potential catastrophic conditions.

3. Insurers will price policies and make coverage conditional on the use of this system of monitoring and detection.

4. The efficient economics of this system address the cost implications of socialized medicine and the looming doctor deficit.

The public-health benefits begin to become evident as daily, real-time reporting of conditions like typical flu symptoms will aid in the delivery of medicines and enable people to avoid interactions where they might either become ill or spread their own illnesses.

Users will be alerted to issues via algorithms that scan daily test results. Computers may send simple text questions to obtain more infor-

mation; if that questioning cannot resolve the issue, the computer will schedule an examination with an appropriate specialist.

This system will not likely be used for early childhood pediatric exams, but parents will use the same daily monitoring hardware and software on children. This allows us to catch childhood maladies early and will allow new parents to gain valuable insights related to child care.

Operating without Surgeons

By Benjamin C. Yablon

By 2030, America will be 150,000 doctors short, just as the median age of the country's baby boomers hits 72. A voracious consumption of health care will far eclipse what can reasonably be provided by the current distribution model, but technological solutions are ready to fill the void.

Today, there are more than 200 robot-assisted da Vinci Surgical Systems deployed across the United States. Also in use are products such as the Socrates Robotic Telecollaboration System, which allows shared control of robotic surgical assistants operating from different locations. These machines dramatically decrease the invasiveness of many procedures, greatly improving recovery times. By 2030, this technology will be ubiquitous, allowing sought-after surgeons to perform procedures all over the world without having to leave their offices.

There are some obvious drawbacks to having your surgeon working in a distant location. For instance, what if the cardiologist performing your heart transplant lives in California and an earthquake hits, interrupting her connection with the robotic assistant whose mechanical fingers are in your chest? As many safety and redundancy fea-



DMITRIY SHIRONOSOV / BIGSTOCK

tures as possible will be built into these new medical service models, but it may always be better to have surgeons and patients in close proximity, robotic assistant or not.

The doctor shortage is largely due to the fact that talented people who could be doctors are moving into fields in which their skills can be more richly rewarded. By 2030, only the privileged will actually have their surgeons in the operating rooms with them; the rest of us had better hope for highly stable communication grids.

The End of the Art of Medical Diagnosis

By Morton Chalfy

For centuries, medical diagnosis has been an art more than a science. In the hands of its finest practitioners, the art has saved lives and averted disasters; in the hands of the less than great, it has caused unnecessary procedures, intense discomfort, and sometimes death.

Art will succumb to science as the massive power of machines like IBM's Watson enable computers to learn from repetition. Over the next decades, medical records will be fed into "Doctor" Watson's memory banks, and diagnosis will become scientific and statistical.

Physicians will be able to do away with guesswork and prescriptions of "Let's try this and see if it works," and go right to "This is the likeliest diagnosis and this is the likeliest treatment for best effect."

7. Paper—and the Places It Goes

Paperless, Cashless, and Wireless by 2030

By David Pearce Snyder

A futurist ponders the fate of his data when the world is finally paperless.

I am a data-based forecaster, and for over half a century all of that data has been on paper. My colleagues and I learned about futures methodologies by reading print-on-paper books and professional journals, and we kept up with future-shaping trends and developments by reading magazines and newspapers, think tank reports, and tomes by policy wonks—all on paper, from

which relevant material was clipped or copied and filed.

The long-term consequence of our paper-based operation is immediately apparent to anyone entering my office. The countertops are stacked with file folders in piles two to three feet high, over which rise bookcases filled with more files. On my desk, a dozen more piles of paper cover most of the surface.

Most futurists I've met have offices that look very much like mine. But all of us also understand that, by 2030, all that paper will be gone.

I'm having trouble dealing with that reality. Having all my information literally within arm's reach has been the mainstay of my professional practice. With my paper data-

base, I *know* exactly—and *feel* kinesi-thetically—where all my facts are. To be equally certain in cyberspace would require me to master an entirely new set of skills. It would also require a level of confidence in information technology that I do not yet possess.

Information and communication are dematerializing. Paper money will also disappear by 2030, and I'm perfectly prepared to live in a cashless future. Commerce will be cashless, phones will be wireless, and print will be paperless.

I am prepared to live with the first two of those future realities. But I still find it hard to accept that I will no longer be surrounded by my



© MICHAEL VENTURA

Futurist David Pearce Snyder in his office.

easy-to-access, user-friendly paper database.

The Private Library

By Lane Jennings

Even 10 years ago it would have been inconceivable, but the evidence is growing and the trend seems clear: Instead of *owning* works that bring us knowledge, delight our senses, and stimulate our dreaming, we will soon become mere “borrowers” sucking on an electronic straw.

My father collected books. Most of these simply interested him, a few directly helped in his profession, and the rest were useful reference volumes—dictionaries, encyclopedias, and bibliographies. But then encyclopedias and dictionaries were reduced from print to floppy disks; ultimately, they were rendered redundant by online sources more complete and current than any book could be.

Without a multivolume set of *The Great Books*, a well-thumbed copy of *Webster’s International Dictionary*, or the *Encyclopaedia Britannica* in my living room, how will anyone *know* that I am still a scholar and a gentleman? Or will those terms themselves have become obsolete?

O tempora, o mores, oh bother!

Paper Here Today, Gone Tomorrow

By Karl Albrecht

Communication has been digitizing inexorably, but not completely, for the past four decades. By 2030, we may finally see the disappearance of:

- **The U.S. Postal Service and Local Post Offices.** The USPS is a classic example of a long-term “sitting duck” extinction. Decades ago, Sears, Roebuck & Co. left the mail-order catalog business, and “COD” (cash on delivery) service by the local post offices went with it. Private firms like Mailboxes Etc., FedEx, UPS, DHL, and others began stealing the business. Then technologies



LARRY MALVIN / BIGSTOCK

like the fax machine and then e-mail radically reduced the mailing of business letters. Most residential mail now consists of junk mail and bills; both are being steadily replaced by electronic options.

- **The Personal Check.** Businesses spend billions of dollars annually to bill their customers and process the checks they mail. Electronic billing and online payments are slashing costs for both. The few customers who hold out will probably have to pay penalty fees for printed documents.

- **The Newspaper.** Two forces will probably make the newspaper as we know it extinct. One is the information glut that is changing the reading habits of consumers; the other is the flight of advertising revenues to Internet monopoly sites like Google, Facebook, Yahoo, and others. Attention spans are shrinking, information bites are getting smaller, and people seeking information expect it to be instantaneous. As conventional newspapers die or migrate to online platforms, publishers will try to develop pay-per-view models that reclaim their revenue streams. We may see the emergence of dynamically packaged online newspapers that compile stories, articles, and advertisements to suit the viewer’s unique preference profile.

- **The Magazine.** Ditto what’s happening to newspapers. All popular magazines now have online versions, many for free. Most are struggling to maintain readership and subscription revenues, and online advertising has stolen a large part of traditional ad revenue. With a vast range of blogs, online news pages, streaming video, and online games,

the general public may be approaching a saturation point for information. Dynamic packaging of content will probably become the primary model for magazines as well as newspapers.

- **The Book.** The physical book may not go extinct completely, because it offers certain subjective experiences not replicated exactly by electronic media. However, as publishers offer e-books at lower prices, and e-readers become cheaper and more available, e-books will almost certainly outnumber physical books. The two will probably co-exist. Self-publishing will probably continue to grow rapidly. Video books, or “v-books,” with chaptered video content presented in digital format, may also become popular, especially for educational purposes. Some physical book publishers, however, will probably go extinct because they fail to make the wrenching transition to a new and more risky publishing and distribution model.

- **The Greeting Card.** Ounce for ounce, the traditional printed greeting card is one of the most ecologically wasteful products that people buy. The average useful life of a greeting card is about 15 seconds—perhaps a few minutes if it gets passed around at a party. Then it usually goes into the waste stream, or a bottomless drawer. As with books, cards might survive if they can be “repurposed,” or used to provide some additional value. Reusable greeting cards, for example, might become popular. Perhaps the card can be made edible, or even biodegradable, with seeds attached so it can give birth to a garden plant.

8. Human Experiences

The End of Anonymity

By Brenda Cooper

Living off society's "grid" is getting harder. We may give up trying to live our quiet, anonymous lives.

Today, our paychecks generally show up in our banks without touching our hands. We leave credit-card trails behind us, and our phones constantly beam our location to nearby cell towers so we can be helped in an emergency. But the average person we pass on the street may know nothing about us; to learn more, they need only obtain partial information and pay some money.

Anonymity is tough, but it's still possible to live off of the grid, even in developed countries—as long as you use cash for housing and food and don't fly on a commercial airline. An anonymous lifestyle is certainly not for the faint of heart, but it's possible.

It will be far harder to remain anonymous in a cashless society

with multifactor logons to everything and biometric data that every public camera in the world can access. The loss of anonymity will hopefully cause increased accountability, decreased rates of many crimes, and a culture that is more careful.

We will know more about each other, and it will be up to us as a society to choose how personal data is treated or mistreated. Not long from now, the difficult job of staying off the grid will be close to impossible for all but the ultra-rich (who may still be able to use personal assistants and shadow companies to stay partly invisible).



TATIANA GLADSKIKH / BIGSTOCK

To navigate this future, we'll need to assure that single mistakes don't haunt people forever. We'll need to find a way for financial details, health issues, and bedroom choices to remain cloaked. We need to become pre-

Bad Mood Is History: A Scenario

I awaken in a bad mood. The bed is empty next to me and I suspect Liz is working again. She works too much. Without opening my eyes, I know it's time to get up. Every morning, at 7 o'clock, the windows change from light-blocking to transparent. The late autumn sun fills the room. I peruse some wardrobe choices, my virtual mirror reflecting my image in each selection. I wait for my choice to rotate toward the front of the rack and proceed with my morning ablutions.

As I head downstairs, our garden appears through the walls. The fall colors warm me. The walls appear

completely transparent with the thin layer of LED. I open the window and the curtains billow in the fall breeze. It took some time to get used to seeing the curtains suspended in midair, like some domestic apparition. Now, I barely notice. I breathe in the fresh morning scent.

As I move into the kitchen, news begins to flow on the walls. CNN knows my bad mood and sticks to light news. Madonna and Mick Jagger are going to have a baby. At past 70, Madonna says she feels vital and invigorated to be pregnant at the same time as her grand-

daughter. With a life expectancy of 110 and the support of her record label, she is thrilled to bring a new pop sensation into the world.

My thoughts of children have prompted the walls to display images of my sons as babies, toddlers, and eventually young men. Emotions flow. The warmth begins to repel this bad mood.

With freshly brewed tea (my custom blend) in hand, I find my way to the office. Liz is indeed working. She smiles as I walk to her. We kiss tenderly. This is going to be another great day.

—Liz Leone and Jean Georges Perrin

pared for our lives to be open electronic books.

The Death of Reflection

By Lisa Gualtieri

I love my smartphone as much as the next person and rely upon the immediacy of information access in my busy life. Is there a downside to this for me and for our society? Yes: the death of reflection.

Being almost constantly connected—and agitated when not connected—means losing those moments when disparate ideas come together, when pleasant memories lead to inspiration, or when pondering a problem leads to innovation. Accessing and using too much information all the time stifles reflection and all of its benefits.

Fitness, I believe, offers the solution of listening to one's body, which is the antithesis of the quantified-self movement in which everything is tracked. When I run, I can feel last night's overindulgence or, equally, last night's eight hours of sleep. But all the devices to track where I am—my pace, the comparison to other women my age or my last run—distract me from the reflective process that often leads to great work after my run.

Letting one's mind wander and reflecting on both one's internal thoughts and feelings and the external world leads to great ideas—and by that I don't mean just new and better devices.

No More Waiting

By Apala Lahiri Chavan

Waiting will disappear by 2030. The concept of having to wait for something or someone is increasingly shifting to another verb, *unwaiting*.

We once waited for the bank to open in the morning to be able to transfer money; waited for answers to our letters that arrived by post/courier; waited to travel to a shop-

ping area, or even to a specific country/city to buy particular items.

Or we waited in queues till we got to the front of the queue. We waited at airports till it was time to board the flight. And then waited in court for the next step in the process to happen, whether a property dispute or a divorce proceeding.

There is no waiting anymore, really. The 24/7 access to the Internet via different devices means that we can do our money transfers at any time of the day or night, can shop for that specific item of clothing online whenever we want to. So whether we are at the airport or in the courthouse, we are not really waiting. We are immersed in a digital world doing other things, like e-mailing, reading news, watching a show, or shopping.

Very soon, the "intelligent cloud" that always knows us will constantly serve suggestions based on our profile and location. And 3-D printers will help enable instant wish fulfillment. What will we need to wait for?

Whatever Happened to Free Will?

By Richard Yonck

Is free will disappearing? Are you reading this sentence because a chain of events going all the way back to the Big Bang set in motion everything that led up to this moment? Whether you agree with this premise or not, were you destined to do so?

The concepts of free will and determinism have long been debated by philosophers. Logically, if the universe is governed by a great chain of cause and effect events, then it seems plausible that, given sufficient knowledge and computing power, we would be able to state every subsequent event at any point in time. Of course, this runs counter to our intuition and experience. The world—not to mention the universe—is so vast in its scale, complexity, and randomness that such notions seem naïve.

It may be that we'll soon discover just how much free will we actually

have. As our technological world becomes increasingly intelligent, we find ourselves at a threshold. The Internet of Things, smart dust, embedded intelligence—everything that contributes to our increasingly smart environment—combined with data mining and statistical analysis, herald a new era that may challenge our notions about free will and determinism.

As ever more information about our actions becomes available from our environment, the ability to anticipate the statistical likelihood of our movements, our decisions, even our thoughts becomes possible. Which brings us to the question: Did we choose this path? Or were we destined to take it?

Losing the Ability to Get Lost

By Josh Lindenger

Humans are inherently curious. We have to explore. We are driven to figure out who we are and how we relate to everything around us.

Over the last two decades, we've had a revolution in mapping through the growth of localization technologies. Global navigation satellites, Wi-Fi based positioning, algorithms that map us around traffic—in the developed world, at least, location has become a given.

By 2030, with the continual expansion of these technologies, getting lost will have all but disappeared. Whatever the interface ends up being at the time, we'll be technologically tied to physical space at all times. Want to go somewhere? Paths present themselves to you.

But what if we want to get lost? Will we miss the serendipity of new experiences? We humans have a need to explore, to fuel our curiosity and understand more about ourselves by experiencing new things.

In losing our ability to get lost, we may rediscover in ourselves a new wanderlust: that, in the end, we not only want to get lost sometimes, but need to because it's part of what makes us human.

9. Smartphones

Farewell, Smartphone. We Hardly Knew Thee

By Paul Saffo

Devices will be superfluous in the more-intimate age of conversational interaction.

Looking back from 2030, it is hard to imagine just how central smartphones were to life in 2013—and how quickly they disappeared. Smartphones followed a trajectory similar to that other techno-antique, the PC, but the smartphone arc was even shorter.

The first smartphones appeared in the mid-1990s, but it was Android and iPhone that changed the communications landscape. By 2010, anything with a physical keypad seemed as obsolete as a rotary-dial Princess phone, and voice took a back seat to apps, Angry Birds, and tweets.

Ironically, it was voice that killed the smartphone. Robust AI-based voice recognition started to arrive in the mid-teens, and users discovered what they knew all along: We would much rather talk than tap. Driving directions were so much safer when spoken, allowing drivers to keep their eyes on the road. Tweet-sized quips were now uttered by AIs mimicking the voices of the celebrity dead. Even commerce became voice-based.

Robust voice eliminated the need to design around screens, just as touch-screen technology once pushed out keypads. Communicators shrank to the size of hearing



SCOTT GRIESEL / BIGSTOCK

aids, and their functionality melted into everything from eyeglasses, watches, and jewelry to vehicles and appliances. New functions such as breathtakingly accurate real-time language translation appeared (think Babel fish in Doug Adams's *Hitchhiker's Guide*), making these tiny devices essential and constant companions. Screens remained, but only as marvelous peripherals, not the center of communications activity.

We entered the age of conversational interaction, and our relationship with digital technology moved from personal to intimate. Couples who couldn't speak a common language fell in love and married. Sociologists cautioned users against over-attachment to voice-AIs to the exclusion of human contact. And at those rare moments when we happen to think back, we marvel that anyone could have ever communicated anything of consequence on a device as clunky and old-fashioned as an iPhone.

Computing's Future Is Wearable

By Harish Shah

Thanks to Google, the world will soon see the commercialization of the first wearable computer for the

Say Goodbye to News at 6:00

Most Americans migrated to cable television from broadcast television; now, many are cutting the television cord altogether. We watch what we want, when we want, using Hulu or Netflix or other content delivery media. And we watch wherever we happen to be, using laptops, tablets, and smartphones.

And advertising dollars that used to go to the networks are now going to social media delivered over mobile devices.

The major networks will likely survive, probably becoming subsidiaries of one of the social network juggernauts (Google, Facebook, etc.), much like ABC network is part of Disney-ABC Television Group. What is becoming expendable—and will likely disappear—is the networks' strings of local affiliates.

These outlets are largely repeater stations of their larger networks. Except for their morning and evening newscasts, they provide little that is substantially different from the network's product.

The 6 o'clock local news once had the advantage of timing over newspaper delivery; now, it is behind virtually every other means of communication. The nearly 900 local TV affiliates just aren't needed in the new mass communication marketplace. And despite how essential they seemed for all these decades, when they finally go away their collective presence will hardly be missed.

—Rob Bencini

masses, with a head-mounted display to be worn like a pair of glasses by its users. Apple is also likely to soon release a wearable computer in the form of a smart watch, which has already been dubbed by many as the “iWatch.”

The same Internet-based communication currently used on smartphones or computers will likely also be utilized on the wearable computers. The need for smartphones will thus simply start diminishing, especially as prices for wearables begin to decline. That the wearable will primarily be a computer, beyond being just a communication device, will be its most attractive feature.

The first few years that wearable computers are on the market will likely be a phase of trial and error, when makers will be perfecting their technology, adjusting to the market, and meeting consumer needs and wants. Once this phase passes, we can expect history then to repeat itself, and our beloved smartphones will simply fade away, like pagers and other devices did before them.

The Concurrent Evaporation of Hardware and Privacy

By E. Scott Denison

Hold in your hand for a moment the sleek minimalist design that is your smartphone. Note the thin metal case, and touch the glossy, glass interface.

If you like that sort of thing, then you should keep it around as an heirloom. By 2030, we will have dispensed with much of the hardware that we carry with us, including phones and laptops, car keys or key fobs, possibly even digital cameras.

All these devices will move from silicon chips encased in industrial designs to smart surfaces, smart clothing, or biomechanically engineered microcomputers that have been implanted in or attached to the body. Retinal implants or contact lenses will carry the visual interface to the individual, or the user will transfer it to a variety of other “active surfaces” such as tables or walls.

Each app will carry its own em-

Highway Signs

In 2030, the ubiquitous fixed roadway sign will have all but disappeared. This scenario begins in the late 2010s, as attention turns to decaying infrastructure. Thanks to increasing federal tax revenues driven by the shale oil boom, state departments of transportation will begin funding projects to replace bridges, repave highways, and (as an unexpected consequence) replace and update fixed-message signs.

Cars are becoming increasingly connected to their surroundings via GPS. The Internet of Place—connecting vehicles to traffic and roadway condition reporting systems—will emerge first in the more dense urban areas. Better information means there could even be fewer vehicles involved.

The old signs could be replaced by active media signs equipped with two-way communications that interact with the vehicles (rather than the drivers). These active-media posts might be updated via fiber-optic links. Some of their graphics could be sponsored by local enterprises, thus putting an end to billboards as well as roadway signs.

—Jim Breaux

bedded interface and, though true telepathy will still be a couple of decades away, gloves, rings, or bracelets could become the access point for manipulating the user interface. It may someday give way to subdermal implants that directly access brain imagery and transmissions to the microchips that are embedded in our bodies.

As our computers become more invisible and hardware design becomes more bio-design, we will also see our privacy nearly completely disappear. Each surface will become “aware” of our presence and our activities. Our bodies will carry an internal GPS tracking capability. Watch out for intrusive messaging, hacking, and surveillance that may come ever so much closer to our thoughts, actions, preferences, and individuality.

Passing of the Dumb Interface, Keyboard, and Mouse

By Alexandre Pupo and William Halal

Ongoing trend analysis at the TechCast Project suggests that the

next wave of computerization will drive far more intelligent and convenient interfaces into mainstream use, relegating today’s dumb interfaces, keyboards, and the mouse obsolete—like the old slide rules and typewriters. Here is a summary of our forecasts in this area:

Technology	Most Likely Year	Std. Dev.
Intelligent Interface	2019	4 years
Intelligent Web	2017	3 years
Virtual Reality	2019	4 years
Thought Power	2024	7 years
AI	2024	8 years

Source: www.TechCast.org (2013)

Humans may soon rely on these technologies to serve as virtual assistants and to automate routine mental work. Artificial intelligence, speech and emotion recognition and transla-

tion, touch controls, and other interfaces are already entering the market.

In some cases, we can extend the power of sheer thought to communicate at a distance. Experiments are finding ways that allow individuals to direct their thoughts into electrical signals that communicate silently

with computers, robots, and other people.

Graphical interfaces, digital games, and augmented reality are converging to immerse us in artificial environments that simulate sensory experiences. Other trends show that the Web is evolving into an intelligent system that understands

spoken inquiries, gathers relevant information, and forms meaningful answers.

Today's dumb interfaces will soon give way to touch, voice, avatars, language translation, augmented reality, and thought. An earlier TechCast study dubbed this virtual lifestyle "TeleLiving."

10. Insecurity

Car Crashes Will Disappear by 2030

By Tom Schaffnit

The convergence of technologies that connect and automate vehicles will keep us all safer on the road.

Two technologies related to vehicle safety are converging to significantly reduce or even eliminate accidents.

1. Connected vehicle technology uses specific wireless connections to allow cars to "talk" with each other and provide a warning when a conflict situation exists that is likely to result in a crash. The vehicles each broadcast a short message a number of times every second. Other vehicles receive these broadcasts and compute a dynamic state map in order to identify potential conflict situations, such as hard-braking events up ahead in their lane of travel.

2. Automated vehicle technology. Google's self-driving vehicle project has been able to demonstrate the convenience aspect of this advanced form of automated vehicle technology. Automobile manufacturers, meanwhile, have been conducting their own research programs and introducing automation features that assist with lane-keeping and help to maintain a safe distance from the car ahead, for example. These auto-

mated vehicle technology deployments have mainly been based upon autonomous sensors located on the individual vehicles.

A convergence of the two technologies, along with sensory fusion to allow the best use of both autonomous sensors and wireless communications from nearby vehicles, could lower costs and enhance consumer enthusiasm, ushering in connected, fully automated vehicles by the end of this decade. The disappearance of car crashes by 2030 could be a realistic possibility.

Nothing Left to Try? The End of Jury Trials

By Clayton Rawlings

In theory, a jury trial is a search for the truth in a way that ensures both sides can be heard. The jury itself is the fact finder. They determine what the truth is based on the evidence admitted before them.

But the types of cases that juries are asked to consider will decline.



OLEG GOLOVNEV / BIGSTOCK

Consider that there are now 35,000 fatalities and 400,000 catastrophic injuries in the United States every year from vehicle collisions. By 2030, robotic transportation will reduce these numbers dramatically. Robotic labor will reduce the number of workplace injuries on a similar scale. We will not have thousands of jury trials rendering personal injury verdicts, because we will no longer have the huge number of injury cases to be decided.

Most drug crimes will no longer be enforced in criminal courts, as genetic manipulation and vaccinations to cure addiction will do away with these crimes. Sixty-five percent of all criminal prosecutions are drug related, so removing drugs from the equation medically will eliminate the need for juries to convict and sentence those involved in the drug trade.

The End of Theft

In the country of India, a car is stolen every 6 minutes, but in the state of Texas, a car is stolen every 5.5 minutes. As every business knows, theft is a major problem, with most viewing some percentage loss as unavoidable. However, that attitude is about to change.

With improved security systems, vehicle theft has been dropping since 1998, and will be all but eliminated by 2030 with the Internet of Things.

By 2020, more than 50 billion devices will be connected to the Internet, and by 2030, virtually every item of value will become traceable because of smart dust sensors.

Next-generation manufacturing will automatically embed smart dust particles with sensors and transmitters into everything we own. Whenever a purchase occurs, items over a certain dollar value will be assigned to a personal ownership network that we control.

Sensors in our clothing, cars, jewelry, shoes, and homes will be primarily used to detect everything from air quality to health irregularities, but they will also alert an "owner" when a theft has occurred.

Whenever there is a "disturbance in the force," officials will be notified.
—Thomas Frey

Brain-scanning lie-detector tests already exist, but their results are still inadmissible, having failed to gain scientific acceptance as being reliable. Moore's law suggests that we'll see a scanner that will pass this last evidentiary hurdle in the next 10 to 15 years. When a reliable scanner can detect deception in the human mind, the need for a fact finder will be greatly reduced in all litigation. The fact finder (jury) will not be needed to know the truth.

This new reality will do away with the swearing match that goes on today. When the end is no longer in doubt, litigants will settle cases rather than incur the expense of a jury trial that is doomed to fail.

I predict that jury trials will all but disappear except for some special circumstances by 2030. They will be replaced by judicial intervention and summary judgment. When the facts are no longer in dispute, agreed settlements through mediation by both parties will become the norm, rather than the traditional jury trial.

More Missing Futures

Here is a selection of other things our readers suggested may disappear by 2030:

- **Accountants.** Traditional accountants will be replaced by "Meta-digital Accounting (MdA).... Analysis of, and transactions involving, economic and financial data will be automated; no human presence is required."
—Alexandru Tugui

- **The American Dream.** "Seventeen years from now the 'Dream' may not have totally disappeared, but expectations of achieving it will be smaller and may require two or three salaries for a family to have the American Dream that we had in the 1970s."
—Lester Kuhl

- **Artificial scarcity.** "With the advent of 3-D printing and nanotechnology, the illusion of artificial scarcity should break down once ... awareness of these technologies spreads and the implications of the capacity for global abundance becomes realized."
—Jonathan C. Lippe

- **Circus animals.** "By 2030, elephants won't be balancing on balls, tigers won't be jumping through hoops of fire, and bears won't be tightrope walkers.... Animals are gaining support from a wide variety of organizations intent on protecting them by legislation and legal action."
—LuAnne Feik

- **Fire Trucks.** "City managers recognizing the waste of sending 50,000-pound fire engines hurtling to a non-fire-related emergency will replace them with a modern communications system that provides rapid intelligence as to whether nature of the emergency. Instead, the more frugal option of SUV rescue sedans will be at the ready."
—Frank McDonough

- **Forest Fires.** "Within the next few years, flying drone technology will advance to the point where solar powered micro-drones will be able to achieve month-long flights without interruption. Once accomplished, we will begin equipping drones with infrared sensors to monitor any fires activity inside a forest.

"With proper fleet management, swarms of flying drones will be capable of detecting any fire before it reaches 100 square feet in size. Once a fire is detected, the drone network will instantly signal for fire extinguisher drones to fly over and extinguish it.

"Within 10 years, virtually all forest fires will be eliminated. However, not all fires are bad fires, and society will begin to debate the much larger philosophical question of who will get to decide."
—Thomas Frey

- **Genders** "will be nonexistent in civil law, in fashion, fragrance, and everyday life."
—Peter Eder

• **Human service.** Advertisements promoting the benefits of talking to a real person (rather than an AI entity) will disappear. “That’s because ‘real people’ aren’t as fabulous as we often make them out to be. They can be inconsistent, moody, and make mistakes. They suffer from a long list of cognitive biases and prejudices. ... In contrast, the automated, intelligent systems being developed by Google, IBM, and others won’t suffer from any of those drawbacks.” —*Garry Schulz*

• **Intelligence** “will be extinct by 2030—that is, the ability to think for oneself, to reason things out independently of a preponderance of false data coming in.” —*Ruth Wise*

• **Musical composers.** “The music created by ... algorithms can be saved to a computer/iPad with sheet music software. Entrepreneurs will present millions of pages to the public at a minimal cost. Festivals of spontaneously written music will flood the stadiums. Bye-Bye Sheet Music Pie.” —*Douglas Cornish*

• **Pennies** and other coins are “becoming less useful, as parking meters, tolls, and public transit use smartcards and RFID technologies to streamline payment. Presumably by 2030 we will also see widespread acceptance of virtual currencies such as Bitcoin.” —*Virginia Holbert*

• **Plastic** “for packaging material will be replaced by sustainable packaging material and strategies for the reduction of packaging worldwide in 2030.” —*Werner Mittelstaedt*

• **Quiet** in public places “will have disappeared, thanks to ubiquitous and intrusive electronic gadgets, visual and audio advertising everywhere, and ego-driven social manners.” —*Peter Eder*

• **Republicans and Democrats.** “Both parties will be gone. They will have morphed into two new parties representing even more extreme ideals, and a viable third party will exist.” —*Dave Allman, Elliott Wave International*

• **Sex.** “New technologies ... will provide safe, sanitary, ubiquitous, consequence-free sexual pleasure. In-the-flesh interaction with other humans will be purely optional and increasingly rare—in fact it may come to be seen as a fetish rather than ‘normal’ sexual behavior.” —*Virginia Holbert*

• **Shame.** “We are losing our collective belief in what is right and wrong. Our shared ethos is giving way to a situational morality more dependent on who commits the infraction rather than the act itself.” —*Gregory Pashke*

• **Wilderness.** “We are losing wilderness around the earth as the human population grows. More and more wilderness is being converted to farmland, mines, roads, towns and cities, and other human uses. Climate change is also significantly altering wilderness, even in protected areas. Aside from Antarctica, Greenland, deserts, parts of the United States (particularly Alaska), the Amazon, Canada, and Siberia, there likely will only be a few protected wilderness areas left for people to experience wild, primeval, undeveloped, and untrammeled areas—and those areas will all show varying signs of human imprints.” —*Michael Rees*

About the Authors

Karl Albrecht is an executive management consultant, business futurist, lecturer, and author of more than 20 books on professional achievement, organizational performance, and business strategy. E-mail Karl@KarlAlbrecht.com.

Rob Bencini, MBA, is a Certified Economic Developer (CEcD) and economic futurist from North Carolina. He provides trend impact analysis for businesses and local governments. Web site www.robencini.com; E-mail rbencini@earthlink.net.

Jim Breaux is a futures studies graduate student in the Foresight Master’s Program, University of Houston, College of Technology. He received the APF 2013 Student Recognition Award, Individual Graduate Student, for his paper, “Weather-Related Disaster Recovery.” He is an engineer by training and works with a major infrastructure engineering firm in Texas. E-mail breauxjw@gmail.com.

Morton Chalfy is a poet and novelist living in California. E-mail mchalfy@gmail.com.

Apala Lahiri Chavan is chief oracle and innovator at Human Factors International (HFI). She is an award-winning designer (International Audi Design Award), and has recently been made CEO of the Institute of Customer Experience (ice.humanfactors.com), a nonprofit initiative by HFI to explore the future of global user experience. E-mail apala@humanfactors.com.

Brenda Cooper is a technology professional, a science-fiction writer, and a public speaker who lives in the Pacific Northwest. She is associated with Futurist.com. E-mail brenda-cooper@sff.net.

John F. Copper is the Stanley J. Buckman Professor (emeritus) of International Studies at Rhodes College in Memphis, Tennessee. He is the author of more than thirty books. E-mail johnfcopper@gmail.com.

E. Scott Denison is a design lecturer at Ohio State University. His article “When Designers Ask, ‘What If?’” was published in *World Future Review’s* Summer 2012 conference edition. E-mail scott@scottdenison.com.

Jed Diamond is founder and director of MenAlive, a health program that helps men, and the women who love them, to live well throughout their lives. Visit MenAlive.com.

Daniel Egger is a business futurist, entrepreneur, and strategist, helping clients create a more comprehensive understanding of what could drive the future and how to influence the present. E-mail daniel@foltigo.com.

Thomas Frey is executive director of the Da Vinci Institute and the Innovation editor of THE FUTURIST magazine. His Web site is Futuristspeaker.com.

Lisa Gualtieri, PhD, ScM, is an assistant professor in the Department of Public Health and Community Medicine at Tufts University School of Medicine. E-mail lisa.gualtieri@tufts.edu.

William E. Halal is professor emeritus of management, technology, and innovation at George Washington University, and president of TechCast LLC, a virtual think tank tracking the technology revolution. Visit www.techcast.org.

Lane Jennings is managing editor of *World Future Review* as well as a poet. E-mail lanejen@aol.com.

Liz Leone is an editor for Rodale and a medical editor for GSK. E-mail liz@lizeleone.com.

Josh Lindenger is a futurist hailing from Baltimore, Maryland, with a not-so-secret desire to re-explore what it means to “get lost” in cities using the techniques of psychogeography. You can find him at www.thefuturesunderground.com or as @jllindenger on Twitter. E-mail josh@thefuturesunderground.com.

Lawrence Loh is a faculty member at NUS Business School, National University of Singapore, where he teaches strategic management, global strategy, and corporate governance. He is also leading the Governance & Transparency Index (GTI) project, which ranks and publishes the corporate governance performance of listed firms in Singapore. E-mail bizlohyk@nus.edu.sg.

Frank McDonough enjoyed more than 40 years of federal service, holding senior executive positions in four U.S. government organizations. He is currently working on a book titled *Advice to Fernando*, with 50 chapters discussing how to succeed in high-level government jobs. Visit frankmcdonough.com/.

Barry Minkin, author of *The Great Unraveling* (2012), *2020 Future Vision* (forthcoming, 2014), and other books, is a futurist, speaker, and global management consultant. Visit minkinaffiliates.com.

Alan Nordstrom is a professor of English at Rollins College, Winter Park, Florida. E-mail ANordstrom@Rollins.edu.

Manuel Au-Yong Oliveira is an invited lecturer at the University of Porto and at the University of Aveiro (Portugal), Department of Economics, Management and Industrial Engineering, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal, and Researcher at INESC TEC (coordinated by INESC Porto), Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 378, 4200-465 Porto, Portugal. E-mail moliveira@fe.up.pt.

Jean Georges Perrin runs a software company, focusing on content analysis and logistics. E-mail jgp@jgp.net.

Neill Perry has many years of experience in the field of marketing and sales as an independent manufacturer's rep. He writes on a variety of nonfiction topics, short stories, and how he envisions the future. E-mail 4neillperry@gmail.com.

Alexandre Pupo is an information technology professional and editor for the TechCast Project.

Clayton Rawlings is a licensed attorney in the state of Texas who has tried over 150 jury trials. He attended the Strategic Foresight program at the University of Houston under Peter Bishop. Web site HamptonandRawlings.com; e-mail Clayrawlings@aol.com.

Michael Rees is a natural resource planner with the National Park Service and has worked for the NPS for over 21 years. His views are his own and do not reflect the views of the agency.

Paul Rux, PhD, is a lifelong professional educator. E-mail paulrux@paulrux.net.

Paul Saffo is a forecaster with more than two decades of experience exploring the dynamics of large-scale, long-term change. He is managing director of foresight at Discern Analytics, www.discern.com, and a member of the World Future Society's Global Advisory Council.

John Sagi is a professor of business at Anne Arundel Community College, Arnold, Maryland. He is on the board of AACC's Institute for the Future. E-mail jsagi@aacc.edu.

Tom Schaffnit is an internationally recognized expert in wireless telecommunications technology and co-author of *The Comprehensive Guide to Wireless Technologies* (first edition 1999, APDG Publishing). E-mail tom@schaffnit.com.

Harish Shah is an entrepreneur, consultant, coach, trainer, futurist, and sole proprietor at Stratserv Consultancy, Singapore. E-mail harish_shah@stratservconsultancy.com.

Jason Siko is an assistant professor of educational technology at Grand Valley State University in Grand Rapids, Michigan. He is a graduate of the Futures Studies program at the University of Houston, whose interests include online learning, the gamification of learning, and the future of K-12 education. E-mail sikojp@gmail.com.

John M. Smart is a technology foresight scholar, educator, speaker, and consultant. He is president of the Acceleration Studies Foundation. Blog: EverSmarterWorld.com.

David Pearce Snyder is a consulting futurist and the Lifestyles editor for THE FUTURIST. E-mail david_snyder@verizon.net.

Jason Swanson is a futurist living in Pittsburgh, Pennsylvania. You can follow Jason at twitter.com/JasonSwanson and www.eufo.org.

Joe Thomae is a real estate asset manager. E-mail thomaej@gmail.com.

Dan Tuuri is a faculty member in the College of Business and a student in the Doctoral of Community College Leadership at Ferris State University in Big Rapids, Michigan. E-mail dan@tuuri.us.

Cynthia G. Wagner is editor of THE FUTURIST. E-mail cwagner@wfs.org.

Benjamin C. Yablon is a prominent attorney in Denver, Colorado, and author of two novels: *Pure Life* and its forthcoming sequel, *The Chinese Dam*. Visit www.PureLifeNovel.com. E-mail bcy@appletrerepublishing.com.

Richard Yonck is a foresight analyst for Intelligent Future LLC in Seattle. E-mail ryonck@intelligent-future.com.

Carrie Anne Zapka is a microbiologist in R&D at GOJO Industries by day and an industrial and organizational psychology student by night. E-mail nuts4ideas@gmail.com.