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SFGate.com**INSTITUTE FOR THE FUTURE****On the Record: Paul Saffo**

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Paul Saffo gets paid to look ahead at the trends, technologies and companies of Silicon Valley. But please don't call him a futurist.

In a wide-ranging interview, Saffo, who works with the Institute for the Future in Menlo Park, described himself as a "professional bystander" who uses the history of technology to forecast what may lie ahead.

Saffo, who also teaches at Stanford University's School of Engineering, described the world as being in the midst of a media revolution that is "blowing right down the hallways" of publications like The Chronicle.

The quick-witted Saffo occasionally turned the tables on the reporters and editors who questioned him. When one journalist asked him how technology is changing the way young people learn, Saffo, 51, turned to two high school students who happened to be observing the session and quipped that the question should have been directed at them.

What follows is an edited version of an hour-long interview in which Saffo balanced his fears -- notably of an anti-modern, fundamentalist backlash -- against a more hopeful view that technology will elevate moderation over extremism -- even if the digital future turns out to be more suburban than utopian.

Q: You call yourself a forecaster. Some people call you a futurist. Is there a difference?

A: People who call themselves futurists don't have a sense of history of the term. It dates back to the early 1900s. Tied into fascism, these guys would have parties and go hang out and stroke the streamlined lines of new cars. I think of futurists as people who have a particular attitude about the future. They're advocates for a certain kind of outcome. As a forecaster I am something very different. I am a professional bystander. I have opinions about the future, of course. But my whole posture is to be detached and to identify what I think will happen and not allow my judgments of what should happen to get involved.

Q: Like a journalist.

A: The fact is that you and I are in the same business. We're all trying to help our audiences make sense of what lies ahead. The only difference is your audience pays less per report than mine do.

Q: What makes you qualified to look into the crystal ball?

A: We have a whole set of formal methodologies for the Institute. We've been around since 1967 so we have a track record. This is systematically applied common sense and intuition. The message I give my clients is that anybody can do this and everybody should do this. You don't want to rely on an expert to tell you what lies ahead. The answer is I have a bunch of fancy degrees, but the fact is any thinking person is qualified to be a forecaster, and in fact, everybody does it every day.

Q: How has technology impacted how young people learn and how they get information?

A: (Saffo asks Walnut Creek high school students Christine Lei and Jocelyn Sears, visiting the newspaper on a job-shadowing exercise, which they use more, e-mail or instant messaging. When they say, "About the same," he continues.) I have a sister who is a professor. She was complaining that she can't talk to her son who's a sophomore at the University of Chicago. "He won't answer my e-mails," she says. I told her, "Well sis, get on instant messaging, because he doesn't use e-mail." She said, "I hate instant messaging." If you are 40, you use e-mail and not instant messaging. The thing I see happening is that there's a real compression between generations. There used to be about 20 years difference (in technology use). Now you talk to 15-year-old kids and their 9-year-old brother or sister is using stuff that they don't understand.

Q: Because of the number of hours younger people use e-mail and the Internet, and play video games, are they processing and absorbing information differently than they were before television?

A: I think that is absolutely true. I see my students at Stanford doing it -- they would rather interact electronically than face-to-face. It does not mean that if you're a fortysomething that you're doomed to be clueless. It's not like learning a foreign language where you have to begin at 5 years old or you're sunk. I think older generations can get into things like multiplayer games and instant messaging if for no other reason than to talk to teenagers. It's interesting to see the lament of each generation overwhelmed by the next new tool. I can show you passages from scholars of Germany in the 1480s lamenting the fact that they are overloaded with all this stuff to read because of the printing press.

Q: You've written that "Information Age" is "a profoundly wrongheaded description" of our times. What would be a better phrase?

A: It's not information. It's media. This is why I think it's been so hard for traditional media to cover what's going on. I can't imagine how you can find the discipline to be emotionally detached reporting on a revolution, the winds of which are blowing right down the hallways of the publication you work for. That's like an orthopedic surgeon trying to perform arthroscopic surgery on their own knee. It's possible, but it's hard to see through all the pain. It really is a media revolution and I think the closest

parallel is what happened in the 1950s with the rise of television. The arrival of television established a mass-media order that dominated the last 50 years. This is a personal media revolution. The distinction between the old order and the new order is very important. Television delivered the world to our living room. In the old media, all we could do was press our noses against the glass and watch. This new world of personal media -- the Web, the Internet and et cetera -- not only delivers the world to your living rooms, but everywhere. And we get to answer back. And we're expected to answer back.

Q: What are the practical results of this compression of time and this demand that we answer back immediately?

A: Sometimes I wonder if this pressure to constantly respond begins to look like a disease-state. We've become more and more interrupt-driven. If you have six tasks to do in an hour, you can't just take 60 minutes and divide and have 10 minutes per task. You have 10 minutes per task minus the time required for context-shifting. That will be the next big challenge: figuring out how to fight the distraction-driven mode we're in and stay focused on one thing long enough to get it done. Every new thing upsets people. We all know someone that has a teenage kid who sits in the room and the television is on, their iPod is on, they have the computer on and at least three other electronic devices going while they're doing their homework. It drives the dad nuts, but he can't complain because the kid's a 4.1 (GPA) student. Think about reading: Today, parents would love it if their kids read books more because the parents understand the books. Just over 100 years ago, parents were upset because their kids were reading dime-store novels. Parents would say, "I don't want you inside reading anymore. Get outside and play." I guarantee you, in 50 years or so, parents are going to say, "You're not going outside to play until you finish that video game."

Q: Can we continue to speed things up or is there a logical limit to information overload?

A: I don't think information overload is a function of the volume of information. It's a derivative of the volume of information plus the sense-making tools you have. Think about the rise of info-graphics in newspapers. Those were sense-making tools to help people (absorb information). You can bookmark your Web pages. Now we have things like (the Web site) Del.icio.us that allow you to create tags to share and organize Web pages. In my class, we're using a wiki (a Web page that is like an open bulletin board). The rise of Wikipedia (an online encyclopedia) -- that's a sense-making tool. These are tools that help us make sense of information. I think it was Samuel Johnson who said, "There are two kinds of information in this world: that what you know and that what you know where to get." The tools help the latter, and that's what keeps us from going nuts. The sense of overload comes from the gap between that sudden jump in volume (of information) and the tools we have to make sense of it.

Q: How does the speed of information and the way we obtain information impact our culture and politics?

A: As a global society we are performing a great experiment on ourselves. Half of the world population

wants to race faster into the future. Go visit China and India. They're ready to go. And half of the world wants to drag us into the past. The problem is both sides have guns. I think there really is a reaction. A lot of people are saying enough is enough.

Q: Is information-sharing a force for peace or a force for conflict, or does it matter?

A: No. More information and more communications foster world peace and understanding. But connecting extremist nut cases together on the Web -- whatever flavor extremism they are -- is a really bad thing. More information may not be a good thing, either. As recently as the '70s, people were forced to see information that they didn't agree with in newspapers and the like. Now there is so much information you really can build your own walled garden that just has the stuff that reinforces your view. I think it applies to all of us. People are really going into these separate camps, and that's the big social challenge in this age of too much information. How do we crack that and create a common dialogue?

Q: You talk about the benefits of using wikis and a divergence of thought. How do the two things come together? What are your thoughts on the reliability of Wikipedia in this culture of polarized thought?

A: I'm actually an optimist about what lies ahead. Are wikis reliable? It depends on the specific business. Is Wikipedia reliable? You bet. Wikipedia is a researcher's dream.

Q: What about efforts to limit information? We've had the major search engines comply with China's rules about filtering certain kinds of results.

A: What's happening in China is frightening, and the acquiescence of companies in it is also very frightening. People were touchingly naive at the dawn of the Internet revolution when they said the Internet will route around censorship the way it routes around damage. With any revolution, the establishment catches up and figures out how to screw it up. The answer is to keep technology advancing fast enough so that those who would try to control it can't. It's up to people to defend what they care about. We shouldn't be complacent that this stuff is going to be a force for good.

Q: So did Google do the wrong thing?

A: I'm so glad I'm not (Google CEO) Eric Schmidt. They stood up to the feds (by fighting a subpoena seeking search records to explore whether there is a need for new Internet child pornography laws) and it's "Yea!" Then it comes to the Chinese government and it's "How could you disappoint us?" It's such a dynamic situation. Who knows what pressure was put on them. I'm not sure I would want to judge unless I was in their shoes.

Q: Do you think Google is the exemplary new-age corporation?

A: Stock prices turn people's heads. When prices are high, we treat a company like gods, and if they drop, we treat them as fools. It's important not to overstate what's going on. Google was the right set

of people at the right time, and they ended up doing the right set of things. It's worth looking at how they are managed. They are network-oriented and allow a lot of flexibility and creativity.

Q: What emerging technologies have your attention?

A: Let's start with the obvious one, biology. The human genome being decoded was an indicator of where that field is going. If you look at the last 150 years, about every 30 years or so, a new scientific discipline emerges that starts spinning out technologies and capturing people's imaginations. Go back to 1900: That industry was chemistry. People had chemistry sets. In the 1930s, it was the rise of physics and physicists. They build on each other. Chemists laid the experimental understanding for the physicists to build their theories. It was three physicists who invented the transistor in 1947. That started the information revolution. Today, kids get computers.

Q: Talking about information overload, what about digital photos and e-mails and stuff that we just keep adding and never delete.

A: On the bright side, at least you don't have boxes of pictures filling up your house. There's something about a collector mentality. Sometimes I think we're on this world for three reasons: to be useful, to tell each other stories and to collect stuff. It's the only explanation for eBay. We love to collect stuff, and at least if we're collecting stuff in cyberspace we're not deforesting the Sierra Nevada.

Q: Are we running any risk of storing important data digitally and then not being able to retrieve it in 50 years?

A: As Stewart Brand (co-founder of Emeryville's Global Business Network) likes to say, "Information lasts forever. Digital information lasts forever or for five years, whichever comes first." There are examples everywhere. The tapes from the original Viking landers that went to Mars are at (NASA's) Jet Propulsion Laboratory, but there is no machine that can read the tapes. Every day huge amounts of information break off like icebergs and melt away. What worries me is that much information in electronic form is never reduced to paper. Some people have described this as being on the edge of a digital Dark Age and fear we may commit a massive act of amnesia.

Q: Isn't that an indictment of the digital revolution, that there could be a huge hole in the archives and library of our times?

A: I'm worried enough about it that I'm on the board of the Long Now Foundation, which is based in San Francisco. One of our projects has been figuring out how we can store things for 10,000 years so they can still be read. There is an interesting counter-idea here: I worry about a society that can remember everything. (He asks the students if they keep online journals and whether they would feel self-conscious if anyone read them. They say no because their online writings are not personal.) The difference between our collective generation and your generation (differentiating the reporters from the students) is that we poured our souls out on paper that got easily yellowed and lost. The danger is that

many of your friends (nodding at the students) are putting intimate ideas in cyberspace journals. So when today's 15-year-old is 40, some friend is going to drag out all of that idiotic stuff at their class reunion. The curse of cyberspace is that everything we want to preserve will get lost and everything we want to lose will be preserved.

Q: Do you think people will pass away and leave so much of their lives stored in digital form that their survivors will have to deal with a digital afterlife?

A: I remember that the first digital suicide was someone on the Well (a pioneering online community). I think it was about 1988 or 1989, and there was one person who, just before they committed suicide, went on the Well and used their status as a system administrator to delete everything about themselves. That's an indication there is something very profound here. But I would say digital technology probably doesn't have much impact on us so far. We've seen photographs of people from when they are alive. We see home movies. We have videotapes now and e-mails. When it's going to get interesting is in massively multiplayer online games where you have avatars (online personas). You could actually create an avatar that's semi-autonomous. It could do things for you while you get off the game to run the rest of your life. I think it is just a matter of time before we have literal ghosts in the machine so you can create an alter ego of yourself that learns from your social experiences and extends a life even if you're no longer in the game or you are no longer alive.

Q: Does this lead us to rethink privacy and how we protect it?

A: The privacy debate is poignant given what the National Security Agency has been doing (referring to the controversy over warrantless surveillance President Bush authorized). Most people don't realize that our Department of Homeland Security and the Federal Communications Commission have all mandated that cell phones need to have position recording built in. They want to be able to pinpoint your location with a global positioning chip in your phone or some other way of identifying your location. This costs the telephone companies money, so the bargain they made with the Feds is that we'll implement it, but then we get the right to use this for commercial purposes. You will get location-based marketing. People don't realize but their cell phone will become their personal billboard. We do need to rethink privacy. I think we need to fall back on (former Supreme Court Justice) Felix Frankfurter's definition of privacy which is, "Privacy is the right to be left alone."

Q: What else does technology force us to rethink?

A: Digital technology is the solvent leaching the glue out of all of our traditional institutions.

Q: You call yourself an optimist, but some of your forecasts are dark.

A: There is reason to be scared. Look at what has happened with fundamentalism -- this is a reaction against modernity. It happens to be cloaked in religion, but these are people saying enough is enough. It's happened again and again through history. The good news is that modernism has always won. It

will take a decade or two, but fundamentalism is going to burn itself. I am an optimist that we're going to come out on the other side in pretty good shape, with a much more humane view of technology, and maybe for the first time in a while the middle will win and the two extremes will fail.

Q: Are we in control of technology or is technology in control of us?

A: So far, at least, the technology is not autonomous to be in charge. That will be the worry for people 20 to 40 years from now. It is people who are in control. The main lesson is that we invent our technologies and then we turn around and use our technologies to reinvent ourselves as individuals, communities and cultures. We're right in the middle of that now. Take cyberspace as an example. We had this wonderful utopian vision of a new home for the mind. What we've reaped isn't cyberspace. It's cyberbia. It's this vast, bland wasteland of vulgar people and trivial ideas and pictures of half-naked starlets. But despite all the uncertainty, has there ever been a more fascinating moment to be alive?

On technology

AND THE HUMAN CONDITION: Sometimes I think we're on this world for three reasons: to be useful, to tell each other stories and to collect stuff.

ON HOW THE INTERNET CHANGES EVERYTHING: Digital technology is the solvent leaching the glue out of all of our traditional institutions.

ON PRIVACY AND INFORMATION OVERLOAD: The curse of cyberspace is that everything we want to preserve will get lost and everything we want to lose will be preserved.

Briefcase

Name: Paul Saffo

Organizations: Institute for the Future and Stanford University School of Engineering

Jobs: Forecaster and consulting associate professor

Age: 51

Education: Bachelor of arts, Harvard College, 1976; bachelor of laws, Cambridge University, 1980; doctor of jurisprudence, Stanford University, 1980

Work experience: Forecaster for the Institute for the Future in Menlo Park since 1985; currently teaching a class on the future of engineering at Stanford; frequent essayist and writer

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Beyond the boardroom

What's your favorite hobby? I mountain-bike every day. Fanatically, rain or shine.

What book are you reading now? I usually have five to 10 going at any time. (Who said we should read only one at a time?) I am actively reading (partial list): "Uncentering the Earth: Copernicus and the Revolutions of the Heavenly Spheres," "Illicit: How Smugglers, Traffickers and Copycats are Hijacking the Global Economy," "American Prometheus: The Triumph & Tragedy of J. Robert Oppenheimer" and "Cosmography: A Posthumous Scenario for the Future of Humanity."

Favorite forecast? It's actually a bet on whether the universe will eventually stop expanding. (Computer and artificial intelligence guru) Danny Hillis says yes. (Former Microsoft chief technology officer) Nathan Myhrvold says no. Each has wagered \$1,000. It is a wonderful bet that provokes thought and discussion. I hope I am around to see the answer.

Participating in this interview were Business Editor Ken Howe; Deputy Business Editor Alan T. Saracevic; Assistant Business Editors David Tong and Sam Zuckerman; Multimedia Editor Marcus Chan; Podcast Editor Benny Evangelista; News and Culture Trends Editor Tamara Straus; Deputy Managing Editor Stephen Proctor; Managing Editor Robert Rosenthal; staff writers Tom Abate, Verne Kopytoff, Ellen Lee and Ben Pimentel; and editorial assistant Steve Corder. Christine Lei of Northgate High School and Jocelyn Sears of Las Lomas High School attended through a program sponsored by the Walnut Creek Chamber of Commerce's Education Committee known as Job Shadow Day.

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