

'Mal-intent' may be the future of security

June 1 2010, By Bob Drogin

If Bob Burns is correct, terrorists may betray themselves someday by jiggling on a Nintendo Wii balance board, blinking too fast, curling a lip like Elvis -- or doing nothing at all. Burns and his team of scientists are researching whether video game boards, biometric sensors and other high-tech devices can be used to detect distinct nonverbal cues from people who harbor "mal-intent," or malicious intent.

"We're looking pre-event," said Burns, the No. 2 at the Homeland Security Advanced Research Project Agency, a counterpart of the fabled Pentagon agency that developed Stealth aircraft and the Internet.

"We're trying to detect a crime before it has occurred."

OK, roll the sci-fi thriller "Minority Report," in which Tom Cruise and other "pre-crime" cops use psychic visions to arrest murderers before they kill. Or maybe "The Men Who Stare at Goats," a George Clooney comedy inspired by real military experiments with supposedly psychic soldiers.

The work on mal-intent, which has cost \$20 million so far, represents the future in screening: trying to find the bomber, not just the bomb.

"Sometimes people look at our projects and say, 'This is crazy,'" conceded Burns, a former submarine weapons officer.

If Burns' group is delving into the mind of terrorists, another Homeland Security agency is studying its face.

The human factors division has spent nearly \$20 million to experiment with micro-expressions, or super-quick flickers of [facial muscles](#), that may -- or may not -- indicate hostile intent.

Researchers are studying 275 videos of test interviews -- frame by painstaking frame, 30 frames a second, each video up to 10 minutes long -- so analysts can catalog "micro-facial emotional leakages."

"We are breaking new ground here," said Larry Willis, the project director.

The need for improvement is clear. Security teams trained to spot suspicious behavior have pulled 152,000 people out of airport lines in recent years, according to a report this month from the Government Accountability Office, the investigative arm of Congress.

That led to about 1,100 arrests, mostly for immigration violations and outstanding warrants. No one was charged with terrorism.

But screeners failed to spot 16 travelers who later were linked to failed terrorist plots in New York and Virginia, jihadist training in Pakistan and lethal attacks in Somalia, Afghanistan and India.

The report didn't include the Nigerian man accused of trying to light a bomb in his underwear on a Detroit-bound flight on Christmas Day, or the Pakistani American who was pulled off a plane in New York on charges of trying to explode a car bomb in Times Square.

According to the report, the Transportation Security Administration failed to validate the underlying science before deploying 3,000 behavior detection officers to 161 commercial airports, about a third of the nation's total.

"A scientific consensus does not exist on whether behavior detection principles can be reliably used for counter-terrorism purposes," the report said.

Paul Ekman, the nation's foremost researcher into [nonverbal cues](#) that indicate deceit, disputes that claim and argues more human observers with better training are needed. He doubts high-tech tools can do the job any better.

"I'm ambivalent (about mal-intent) because it's a very high-risk endeavor," said Ekman, a professor emeritus at UC San Francisco. "The odds are against it actually working in the field. But if you're going to try it, they're doing the best job that can be done."

Ekman dismissed Willis' work, however. "The research already shows that not every person intending harm shows micro-expression," he said. "So it's a waste of time."

Other senior researchers and academics say both research teams appear to be on the right track.

"I was very skeptical at first," said Gary Berntson, a professor of psychology, psychiatry and pediatrics at Ohio State University. "But it's not voodoo science. It's cutting-edge."

Mark Frank, a psychologist who studies nonverbal behavior at the State University of New York at Buffalo, called the work worthwhile.

"If the science helps us make better guesses, I think that is very productive," Frank said. "Or at least it's the right approach."

David Matsumoto, director of the Culture and Emotion Research Laboratory at San Francisco State University, cautioned that people

"want a silver bullet, a 100 percent foolproof system."

"That's never going to happen," he said. "But can they deploy something that's better than we have now? I think both programs are well on their way to doing that."

The mal-intent project began in 2007 and is based on the unproven premise that technology can identify and interpret physiological, behavioral and paralinguistic cues from someone with mayhem in mind.

Rather than using a Ouija board, researchers have linked high-resolution cameras, low-level lasers and other devices to measure fidgeting, pupil dilation, skin temperature, heart rate and other supposed clues.

"Let's be clear," said Dan Martin, the project's director of research. "There is no terrorist cue, no Pinocchio growing of the nose to indicate a plotting terrorist."

At least in theory, the sensors would record key data as each traveler moved down a security line. A computer algorithm then would analyze any shifts triggered by a guard's questions and raise an alert if necessary.

The network is supposed to disregard travelers who simply are stressed out from flight delays, screaming infants, indigestion or other hassles.

"Whether or not your grandmother is afraid of flying doesn't matter," Martin said. "The question is how your grandmother responds to specific stimuli, and that indicates whether she should be pulled out for secondary screening."

John Verrico, a Homeland Security spokesman, said operators also will watch for people who show no response "because you have to take into account there are people who train themselves not to reveal themselves."

Age affects responses more than gender, race or ethnicity, the research shows. Experiments have included only Americans so far, so the system's utility with visitors from other countries and cultures is unclear.

Privacy advocates, civil libertarians and some social scientists are incredulous.

"This is like eugenics 100 years ago when scientists said you could tell criminals by the shape of their eyes or the slope of their head," said Lillie Coney, associate director of the nonprofit Electronic Privacy Information Center. "It was bogus science then and it's bogus science now."

Jay Stanley, a privacy expert at the American Civil Liberties Union, called the work "absurd on its face."

Bella DePaulo, visiting professor of psychology at UC Santa Barbara, said she doubted researchers could ever simulate what a terrorist thinks or feels.

"Lots of people, myself included, have studied how you tell when people are lying or telling the truth," she said. "But they're telling little lies. They're not trying to blow up a bomb or fly a plane into a building. How do you test for that?"

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