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February 2, 2003

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Precime detective John Anderton (Tom Cruise) conducts an array of images that lead him to a murder that has not yet occurred in Twentieth Century Fox/Dreamworks' "Minority Report." (David James/AP Photo)

Future World
Privacy, Terrorists, and Science Fiction

Commentary
By John Allen Paulos
Special to ABCNEWS.com

Jan. 5 — Remember the trial in *Alice in Wonderland* where the sentence precedes the verdict? Not only did last summer's movie, *Minority Report*, borrow the theme, but so too does the federal government as it hunts for would-be terrorists.

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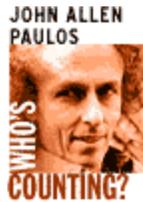
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Minority Report takes place in 2054. Its star, Tom Cruise, heads a police unit using futuristic technology and seemingly infallible psychics (or "pre-cogs") to locate people intending to commit murder. The unit's job is to spot these "pre-perpetrators" and then move in, arrest, and incarcerate them before they commit the crime.

The movie, like *Alice in Wonderland*, is a fantasy. Disturbingly reminiscent of the film, however, is a real-life practice that the city of Wilmington, Del., adopted this past August.

The Wilmington policy calls for police to take pictures of people on the streets near the sites of drug busts. Authorities collect the photos along with the names and addresses of these potential pre-perpetrators and add them to a special law-enforcement database. Although most of these bystanders are guilty of no crime, the police deem them more likely than other citizens to commit one in the future.

Total Information Awareness

Much more ominous and ambitious than this local initiative in Delaware is the Pentagon's recently proposed techno-surveillance system, Total Information Awareness.

Headed by retired Adm. John Poindexter of Iran-Contra notoriety, the initial $10 million for this project (some think the cost will be $240 million over three years) will help set up a system to "detect, classify, ID, track, understand, pre-empt." The objects of these verbs are possible terrorists, whom Poindexter hopes to spot before they do any harm.

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Using supercomputers and data-mining techniques, the TIA will keep records on credit-card purchases, plane flights, e-mails, Web sites, housing, and a variety of other bits of information in the hope of detecting suspicious patterns of activity — buying chemicals, renting crop-dusting planes, subscribing to radical newsletters, etc.

Once again, the aim is to stop pre-perpetrators before they commit any crime — certainly a most worthy goal. The problem is that since the government will collect, integrate and evaluate extensive personal data on all of us, the system will severely compromise our privacy. On top of this, it's doubtful that it will work anyway.

One objection to it that I want to discuss here stems from probability and the obvious fact that the vast majority of people are not terrorists, murderers or drug dealers.

Mathematically Flavored Science Fiction

A mathematically flavored science fiction scenario about the identification of future terrorists helps make the point.

Assume for the sake of the argument that eventually (maybe by 2054), some system of total information-gathering becomes so uncannily accurate that when it examines a future terrorist, 99 percent of the time it will correctly identify him as a pre-perpetrator. Furthermore, when this system examines somebody who is harmless, 99 percent of the time the system will correctly identify him as harmless. In short, it makes a mistake only once every 100 times.

Now let's say that law enforcement apprehends a person by using this technology. Given these assumptions, you might guess that the person would be almost certain to commit a terrorist act. Right? Well, no. Even with the system's amazing data-mining powers, there is only a tiny probability the apprehended person will go on to become an active terrorist.

The Calculation

To see why this is so and to make the calculations easy, let's postulate a population of 300 million people of whom 1,000 are future terrorists. The system will correctly identify, we're assuming, 99 percent of these 1,000 people as future terrorists. Thus, since 99 percent of 1,000 is 990, the system will apprehend 990 future terrorists. Great! They'll be locked up somewhere.

But wait. There are, by assumption, 299,999,000 non-terrorists in our population and the system will be right about 99 percent of them as well. Another way of saying this is that it will be wrong about 1 percent of these people. Since 1 percent of 299,999,000 equals 2,999,990, the system will swoop down on these 2,999,990 innocent people as well as on the 990 guilty ones, incarcerating them all.

That is, the system will arrest almost 3 million innocent people, about 3,000 times the number of guilty ones. And that occurs, remember, only because we're assuming the system has these amazing powers of discernment! If its powers are anything like our present miserable predictive capacities, an even greater percentage of those arrested will be innocent.

Of course, this is a fiction and the numbers, percentages and assumptions are open to very serious question. Nevertheless, the fact remains that since almost all people are innocent, the overwhelming majority of the people rounded up using any set of reasonable criteria will be innocent. And even though the system proposes only increased scrutiny rather than incarceration for suspected pre-perpetrators, such scrutiny might very well lead over time to a detailed government dossier on each of us with little if any increase in security.

There are many ways to combat terrorism without entering a futuristic Wonderland devoid of privacy rights. ■

Professor of mathematics at Temple University and adjunct professor of journalism at Columbia University, John Allen Paulos *is the author of several best-selling books, including* Innumeracy*, and the forthcoming* A Mathematician Plays the Market *, which will be published in the spring. His* Who's Counting? *column on ABCNEWS.com appears the first weekend of every month.*

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