

'The Retinator'

Revenge of the machines



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When I was a boy, an older friend told me a joke about a man who spent all his time washing, waxing, and working on his car, while ignoring his wife.

"You love that car more than you love me," complained the man's wife.

"That's not true," replied the husband, who in fact did not listen carefully to his spouse. "I love this car *more* than I love you."

We boys thought this was hilarious.

In the movie "The Terminator," starring Arnold Schwarzenegger, the machines and computers prove smarter and tougher than humans and begin exterminating all the people. Arnold went on to become the leader of California's state government ("The Governator"). And as proof that life imitates art, by all news accounts, the stapler on the desk in my office could run a government better than the elected officials currently in Sacramento.

The point of these two anecdotes is that computers and the machines they control can function extremely well, seemingly be extremely intelligent, and even (at least in the case of cars) become objects of affection. No matter how advanced these machines become, I have always thought that they can't replace physicians. Until recently.

Automated detection of disease?

According to a recent article entitled "Automated early detection of diabetic retinopathy" (Abràmoff MD, et al. *Ophthalmology*. 2010;117:1147-1154), machines may be as good as people when it comes to detecting diabetic retinopathy in fundus photographs. In this study of photos of 16,670 people, the ability of a retina expert to detect disease was compared with that of two computer algorithms.

"Further improvements in detection performance cannot be differentiated from best clinical practices, because the performance of competitive algorithm development now has reached the human intrareader variability limit," conclude the authors.

Although the authors believe that further stud-

ies should be performed to validate the work of these computers, they anticipate that this approach will result in "cost-effective early detection of [diabetic retinopathy] in millions of people with diabetes to [perform] triage [in] those patients who need further care at a time when they have early rather than advanced [retinopathy]."

At a time when obesity is a worldwide epidemic, and the number of patients with vision loss from diabetic retinopathy is increasing, we need better ways to ensure that all patients with diabetes are screened regularly for eye disease.

Some ophthalmologists may disagree, resent, or even fear the replacement of human eyes and minds by computers to inspect retinal photographs for evidence of disease. But I don't.

'Ophthalmologists are best employed using their highly specialized skills and talents.'

Peter J. McDonnell, MD

My view is that ophthalmologists are best employed using their highly specialized skills and talents to counsel and treat patients with diseases that need our expertise. Performing screening exams in asymptomatic diabetic patients who turn out to have no disease, and continuing to have so many diabetics in this country go years without any eye exams, do not make sense to me.

Is this a dangerous trend? Will the increased use of electronic medical records, digital imaging, and computers lead to a depersonalization of medical care and undermine the physician-patient relationship? Or will it free up physicians to perform less scut work and spend more quality time with their patients? Is this a slippery slope?

What's next, robotic pharmaceutical representatives bringing samples and pens to our offices? My own view is that as long as they cannot program computers to write rambling editorials that are not particularly funny, everything will be okay. **OT**

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