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### Software models death row outcomes

By Susan Llewelyn Leach, [The Christian Science Monitor](#)

Convicts on death row can wait for years while appeals are filed and protests lodged. Many never get beyond this limbo. Others are executed.



A death-row inmate passes time at Pontiac (Ill.) Correctional Institution, where death sentences were later commuted to life in prison.

AP

What determines the final outcome? That is the question two professors, one a criminologist, the other a computer scientist, asked as they took 28 years of data on prisoners facing the death sentence and fed it into a software program.

What the software — known as an artificial neural network — managed to do was to predict with more than 90% accuracy who would be executed.

The implication, says Dee Wood Harper, one of the researchers and a professor of criminal justice at Loyola University in New Orleans, is that "if this mindless software can determine who is going to die and who is not going to die, then there's some arbitrariness here in the [United States justice] system."

The neural network, which learns by constantly scanning the data for patterns, was given 1,000 cases from 1973 to 2000 where the outcome was known. Once trained on that information, it was fed another 300 cases but without the outcome included. That's when its

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prediction proved highly accurate.

What some observers find alarming about the outcome is that the 19 points of data supplied on each death-row inmate contained no details of the case. Only facts such as age, race, sex, and marital status were included, along with the date and type of offense.

"That's what makes this important," Dr. Harper says. "We didn't look at the crime itself. We didn't look at whether the defendant had received a fair or unfair representation. We simply looked at characteristics of the inmate."

Although the research is in its early stages, Harper and his colleague Stamos Karamouzis plan to refine the data group and gradually remove variables until the neural network loses its ability to predict and the most significant factors become apparent.

The clues are already there, Harper says. For instance, the state where someone is convicted is key. California has the largest number of inmates on death row and has executed just two people in the last 38 years, whereas Texas has been "an execution machine," he says.

The reason, in part, is the appeals process, he says, which in Texas, Virginia, and Florida is "short-circuited" compared with other states.

"If you can die in Texas three times faster than you can die in Louisiana, or you happen to have committed a murder in one of the 38 states where the death penalty occurs, then that in itself is an arbitrary thing," Harper says. "You can be one foot over the line in the next state and not be subject to this kind of penalty."

Arbitrary imposition of the death penalty has long been an argument used by those who oppose it.

In a 1972 Supreme Court case *Furman v. Georgia*, the court found evidence of "arbitrary and discriminatory" sentencing, which violated the Constitution and its provision against "cruel and unusual treatment." As a result, states were forced to reexamine their statutes for capital offenses to ensure that they weren't capriciously applied.

A later 1976 Supreme Court case, *Gregg v. Georgia*, set in motion a restructuring of capital trials to provide a separate phase for sentencing including guidelines for jurors, again to create more fairness.

Since 1977, more than 900 executions have taken place in the US.

"Despite all our efforts since the 1970s, who gets executed still appears to be random and arbitrary," says John Wright, a habeas corpus lawyer in Huntsville, home of Texas's execution facilities.

He says it surprises him that the 19 factors used in the research could produce such accurate results.

In response to Harper's comment that theoretically, "everybody who receives the same sentence for the same crime should receive the same punishment in the same period of time," Mr. Wright says, "it's a standard to which to hold the justice system, but it's not something we think about very much at all." The attitude and discretion of the judge and the effectiveness of the attorneys, he says, can have a major impact on

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the ultimate outcome of a trial.

Harper and Professor Karamouzis are now working to further refine their software model to give the research greater impact.

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