In previous articles in this series on viruses and law, I’ve asked whether we should make virus-writing illegal and whether dissemination of fully-functional viral code should be forbidden by law. On the latter question, US attorneys have invoked First Amendment rights protecting certain kinds of speech against government interference.

But is viral code speech at all, let alone protected speech? For that matter, is any kind of computer program necessarily speech? U.S. District Judge Marilyn Patel certainly thought so in August of 1997 when she ruled that the US government attempt to stop Professor Daniel Bernstein from publishing his source code for the encryption algorithm “Snuffle” (I love that name).

I think that considering programs to be a form of speech rests on a misperception due to the way we represent programs. Programs look like written language. Programs use letters and numbers and can be interpreted by human beings.

However, it's irrelevant how we *represent* computer programs. A program is the instructions themselves, not the medium in which they're coded. A program in assembler is a program whether it resides on a hard disk, a CD-ROM, or a portion of a memory array. Indeed, that sequence of computer instructions would be the program itself even were it written on a papyrus, chiseled in stone, signaled by semaphore or printed in a book.

If computer programs were represented as colored squares and circles with lines coming out of them, perhaps we would be less inclined to think of them as speech. For example, consider a wire-board controlling a card sorter. Is the wire-board speech? Not in any sense most people would use the word. How about a paper punch tape controlling a machine tool? What about a useful computer program expressed as machine language codes (0001010000110101)? I don't consider these codes to be speech and I don't think anyone else should either.

Here are some scenarios to think about:

- Alice works in a factory with Bob. Alice decides to kill Bob by publishing a printed tape for the robotic equipment they all use. Alice cuts out the machine-readable tape and includes it in Bob's pile of tapes for the next day's operations. Bob doesn't notice anything wrong and gives the tapes to the robot, which reads the instructions into its memory. Some time later, Bob's robot punches 2,000 extra holes at random, four of which end up in Bob's head. Is Alice's act protected because the published paper tape contains letters and numbers such as “A0 1F 22 BB?”

- A molecular geneticist named Gene Hacker is arrested by police for having made several colleagues very ill with a new biological virus. Gene constructed the virus from bits and pieces of known RNA. Gene argues in court that his act is protected by the First Amendment: the virus, he claims, is speech. It is speech because it consists of four nucleotide codes, A, U, C and G, put together in a particular way. He claims to “write”
using ribonucleotides just as computer virus authors “write” using machine instructions. Gene argues that his virus is just as much a symbolic expression of his opinions and feelings as the virus authors' printing their viral codes in publications. Indeed, he argues, he has been “publishing” his biological virus just as they have published their computer viruses.

- A virus-writer named Ig nominious (Iggy) Scoundrel publishes completely functional source code for a virus in the underground publication “3711.” An eight-year old with an IQ of 79 types it into his C++ compiler and releases the object code at his school. The virus spreads to a hospital system with poor network topology and no internal firewalls and kills three patients in the intensive care unit. Iggy is arrested. At his trial for manslaughter, Iggy’s lawyer argues that (a) Iggy had a perfect right under the First Amendment to express his creativity by publishing the viral code and (b) it’s entirely the eight-year old’s fault that something bad happened. The publisher of 3711, Mandelbrot Steingeld, wholeheartedly agrees and appears on _Oprah_ to defend his magazine, causing a 38,412% increase in sales (but only for one issue).

I think programs are not speech and therefore viral code is not speech. Thus it is possible in theory to craft laws which make it a punishable offense to publish fully functional viral code.

Quod erat demonstrandum.

* * *

For complete records of the Bernstein “Snuffle” case, see

< http://www2.cddc.vt.edu/eff/bernstein/Legal/ >

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