

## 7 A Sermon concerning the Divinity of Languages; or, Dijkstra considered Racist

*an epistle from the Rt. Rvd. Pastor Manul Laphroaig,  
for the Beloved Congregation of the First United Church of the Weird Machines.*

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GENERATING SOUNDS  
As you have seen,  
PEEK < -16336 >  
clicks the speakers of the APPLE II.  
POKE -16336,0  
will also click the speaker , and any program which repeatedly PEEKs or  
POKEs the address -16336 will produce a steady tone.
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Figure 4: Excerpt from Apple II Basic Programming (1978)

Indulging in some of The Pastor’s Finest, I proclaim to my congregation that there is divinity in every programming language.

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“But,” they ask, “if there is divinity in all languages, where is the divinity in PHP? Though advertised as a language for beginners, it is impossible for even an expert to code in it securely.”

Pouring myself another, I say, “PHP teaches us that memory-safe string concatenation is just as dangerous as any stupid thing a beginner might do in C, but a hell of a lot easier to exploit. My point is not in that PHP is so easy to write, as it isn’t easy to write safely; rather, the divinity of PHP is in that it is so easy to exploit! Verily I tell you, dozens of neighbors who later learned to write good exploits first learned that one program could attack another by ripping off SQL databases through poorly written PHP code.

“If a language like PHP introduces so many people to pwnage, then that is its divinity. It provides a first step for children to learn how program execution goes astray, with control and data so easy to mangle.”

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“But,” they ask, “if there is divinity in all languages, where is the divinity in BASIC? Surely we can mock that hellish language. Its line numbers are ugly, and the gods themselves laugh at how it looks like spaghetti.”

Pouring myself another, I proclaim, “The gods do enjoy a good laugh, but not at the expense of BASIC! While PHP is aimed at college brogrammers, BASIC is aimed at children. Now let’s think this through carefully, without jumping to premature conclusions.

“BASIC provides a learning curve like a cardboard box, in that when trapped insider a clever child will quickly learn to break out. In the first chapter of a BASIC book, you will find the standard Hello World.

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10 PRINT "Hello World"
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“Groan if you must, but stick with me on this. In the sixth chapter, you will find something like the following gem.

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250 REM This cancels ONERR in APPLE DOS  
260 POKE 216, 0
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“Sit and marvel,” I say, “at how dense a lesson those two lines are. They are telling a child to poke his finger into the brain of the operating system, in order to clear an APPLE DOS disk error. How can C or Haskell or Perl or Python begin to compete with such educational talent? How advanced must you be in learning those languages to rip a constant out of the operating system’s brain, like PEEK(222) to read the error status or POKE 216, 0 to clear it?”

A student then asks, “But the code is so disorganized! Professor Dijkstra says that all code should be properly organized, that GOTO is harmful and that BASIC corrupts the youth.”

Pouring myself another, I say “Dijkstra’s advice goes well enough if you wish to program software. It is true that BASIC is a horrid language for writing complex software, but consider again the educational value in spaghetti code.

“Dijkstra says that a mind exposed to BASIC can never become a good programmer. While I trust his opinions on algorithms, his thoughts on BASIC are racist horse shit.

“A mind which has *\*not\** been exposed to BASIC will only with great difficulty become a reverse engineer. What does a neighbor who grew up on BASIC spaghetti code think when he first reads unannotated disassembly? As surely as the gostak distims the doshes, he knows that he’s seen worse spaghetti code and this won’t be much of a challenge!

“Truly, I am in as much awe of the educational genius of BASIC as I am in awe of the incompetence of the pedagogues who lock children in a room with a literate adult for a decade, finding those children to still be unable or unwilling to read at the end. Lock a child in a room with an APPLE II and a book on BASIC, and in short order a reverse engineer will emerge.

“There is divinity in all languages, but BASIC might very well be the most important for teaching our profession.”

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“But,” they ask, “if there is divinity in all languages, where is the divinity in Java?”  
Pouring myself another, I drink it slowly. “The lesson is over for today.”