

The Slate Programming Language

<http://www.slatelanguage.org>

An overview by Brian T. Rice for PDX.st
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What is it?

- Open source (MIT-style public license)
- Smalltalk-style syntax
- Image-based, with a tiny VM
- Bootstrapped from an interpreter in Common Lisp, then self-hosted
- Inspired by Lisp machines, Self, Strongtalk, wanted something practical and free (libre)

Who Made It?

- Lee Salzman, who wanted a better language to write compilers and system software
- Me (Brian Rice), who wanted to cultivate better idioms, libraries, and UI sans politics.
- Shared background: appreciation for Squeak, Common Lisp, Self, the TUNES project (!)

Big Steps

- Multi-method dispatch (left-to-right order)
- Self-style Prototypes with delegation
- Implicit-receiver message sends, no syntax for assignment or returns, no “self”
- Code blocks are always closures, and methods are “installed” blocks.
- Optional/rest arguments, and even macros

And PMD means?

- Method dictionaries on classes become *role* entries on objects to index the methods.
- Method lookup involves all arguments in order, each knowing their methods and *where* they fit into those methods.
(role=selector+positions)
- The VM makes this look easy; performance approaches single dispatch for normal cases

How we “do” prototypes

- Delegation slots are messy and flawed
- We provide a facade for linearized inheritance composition (like Squeak Traits)
- We provide all the usual “new*” methods, using the receiver as dynamic template.
- Namespaces are just objects, scripts are just methods. (like NewSpeak)

A Short Timeline

2000-2002	Noncommittal toy interpreters
2003	Settled on PMD basis, bootstrapped.
2004	Expansion, VM work.
2005	More libraries, FFI, and UI work
2006	Team breakup

So What Happened?

- Slate libraries were too layered, Strongtalk-style, without a supporting PIC* runtime.
- UI was embarrassingly slow as a result.
- Optimization efforts (Mobius SSA/native compiler) flew too high, never paid back.
- Lee felt overburdened, wanted to hack for personal rewards instead.

The Wilderness

- Lee went away, I worked on my consulting skills/career, and Timmy Douglas experimented with the VM technology.
- FONC, NewSpeak, Strongtalk happened.
- Gradually, Tim came up with a working VM with SSA instruction set and register-based frame format, to replace our naive stack VM.

What now?

- LLVM integration, experimental.
- CGI interface, HTML/XML generator.
- Shell integration
- Incorporating more recent ideas in Ruby, NewSpeak, etc.