

Color Plate 1 Early model of the Tinkertoy computer, on display at The Computer Museum, Boston, also plays tic-tac-toe.

The Tinkertoy Computer and Other Machinations
by A. K. Dewdney

<http://www.amazon.com/exec/obidos/fg?detail/-/071672451X/102-4408706-6267821-1>

CS150: Computer Science
University of Virginia
Computer Science

Lecture 40: Computing with Glue and Photons

I will have extra office
hours after class
Friday

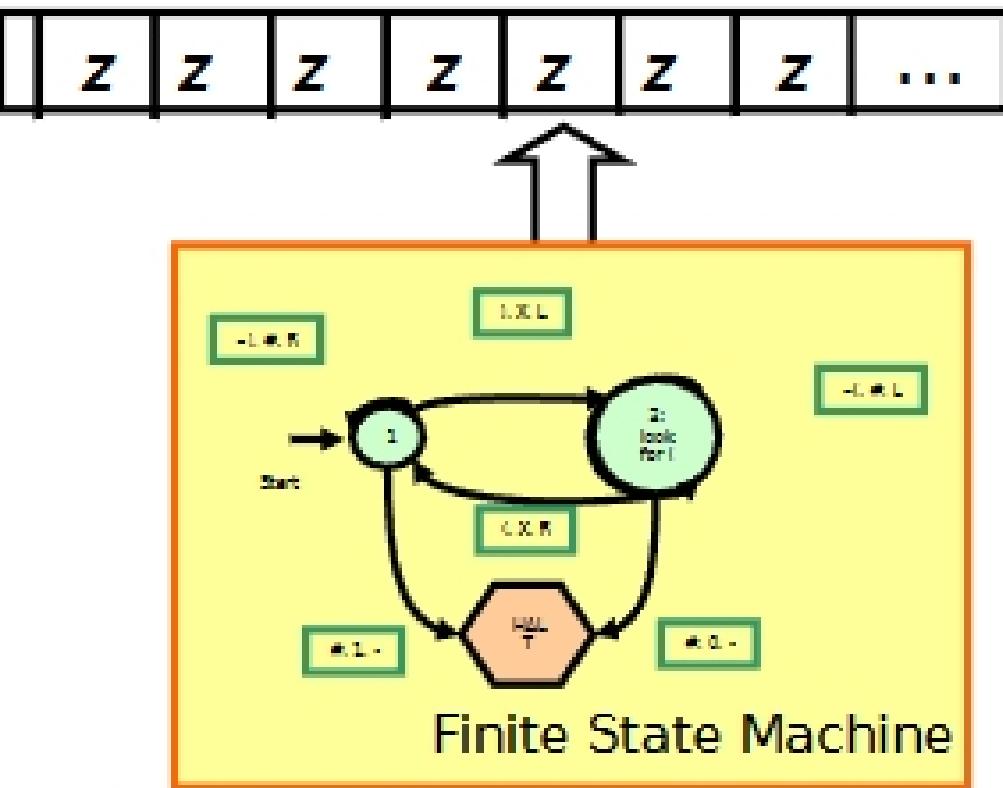
(1-3pm), in addition
to the normal office
hours after class

Wednesday
and Thursday 3:30-
4:30.

David Evans

<http://www.cs.virginia.edu/evans>

Equivalent Computers?



Turing Machine

≡

$term =$

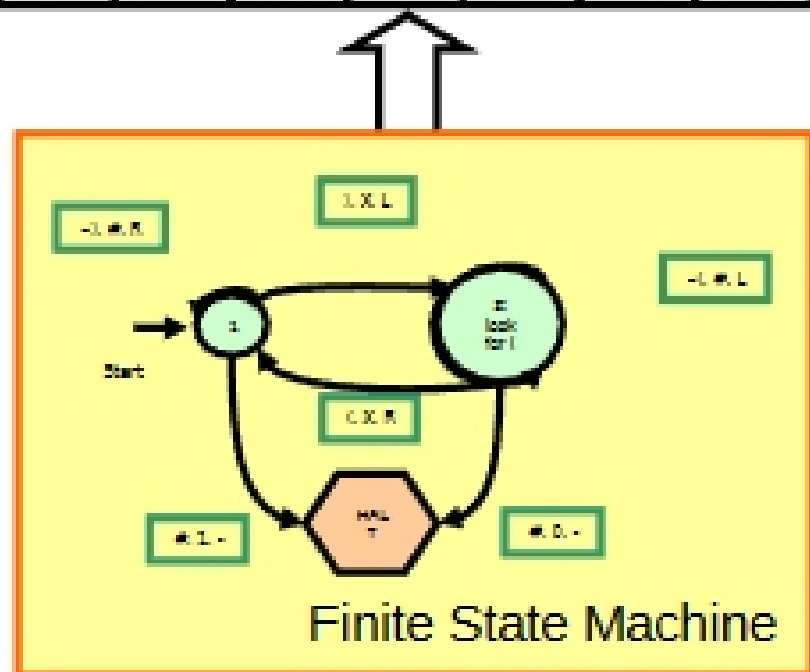
- $variable$
- $| term\ term$
- $| (term)$
- $| \lambda\ variable$
- $. term$

$\lambda y. M \Rightarrow_{\alpha} \lambda v. (M [y \mapsto v])$
 where v does not occur in M .

$(\lambda x. M)N \Rightarrow_{\beta} M [x \mapsto N]$

Lambda Calculus

Lambda Calculus is a Universal Computer?



- Read/Write Infinite Tape
- **Mutable Lists**
- Finite State Machine
- **Numbers**
- Processing
- **Way to make decisions**
- **Way to keep going**

(if)