thrashing

What's a csp?

<V,D,C>

- a set of variables
- each with a domain of values
- a collection of constraints (I'm going to assume binary for the present)
- assign each variable a value from its domain to satisfy the constraint

Consider the following problem (csp5)

- variables V[1] to V[10]
- uniform domains D[1] to D[10] = {1,2,3}
- constraints
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How will search proceed?

A solution is 3--3--2--1

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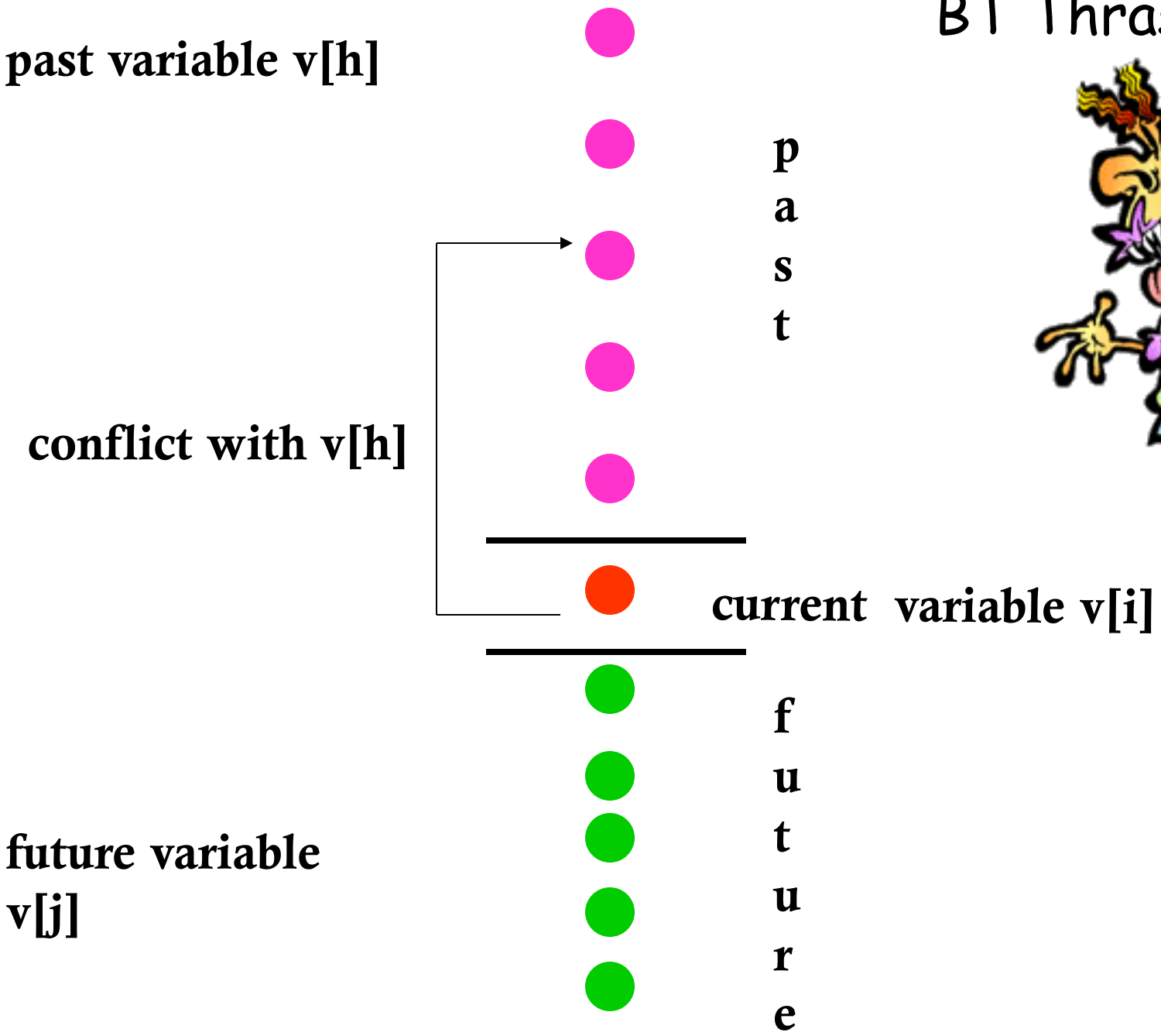
BT Thrashes!

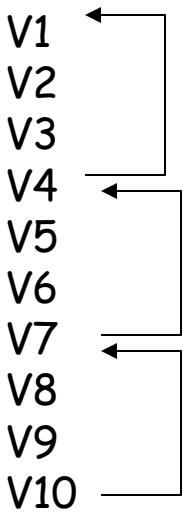

past variable v[h]
p
a
s
t
conflict with v[h]
current variable v[i]
future variable
v[j]
f
u
t
u
r
e

Thrashing:

Slavishly repeating the same set of actions with the same set of outcomes.

Can we minimise thrashing?

Recording conflicts



Cause for conflict in csp5

- When we hit a dead end on V[7] we should jump back to V4
  - the deepest conflicting variable for V[7] is V[4]
  - if there are no more values for V[4] jump back to V[1]
    - the deepest conflicting variable for V[4] or V[7], (excluding V[4])
- and so on