

Funk2: Causal Reflection

Reflective Programming Language

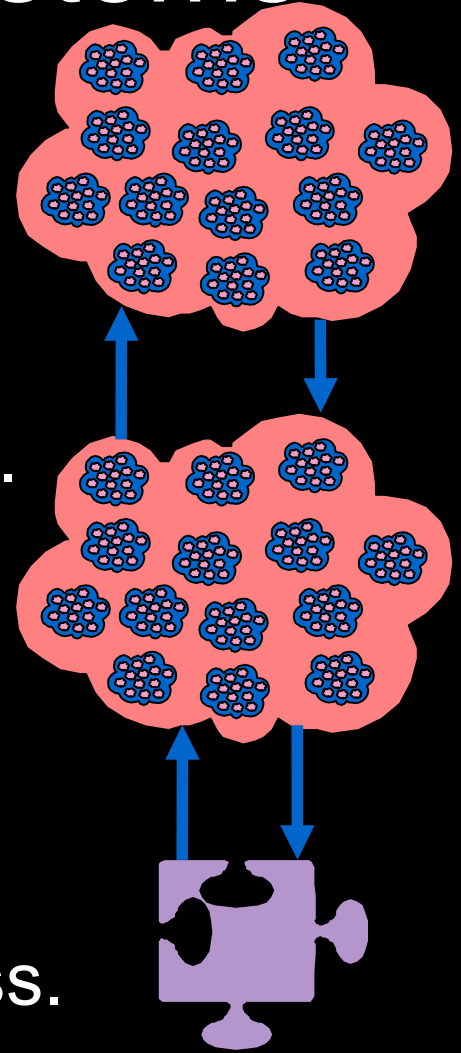
Neural Models of Mind Project

Trustworthy Control Systems

Causal Reflective Programming allows programs to monitor one another allowing intricate failure tolerant “responsible” programs.

A new field of algorithmic machine learning and pattern recognition!

Novel models of Human consciousness.

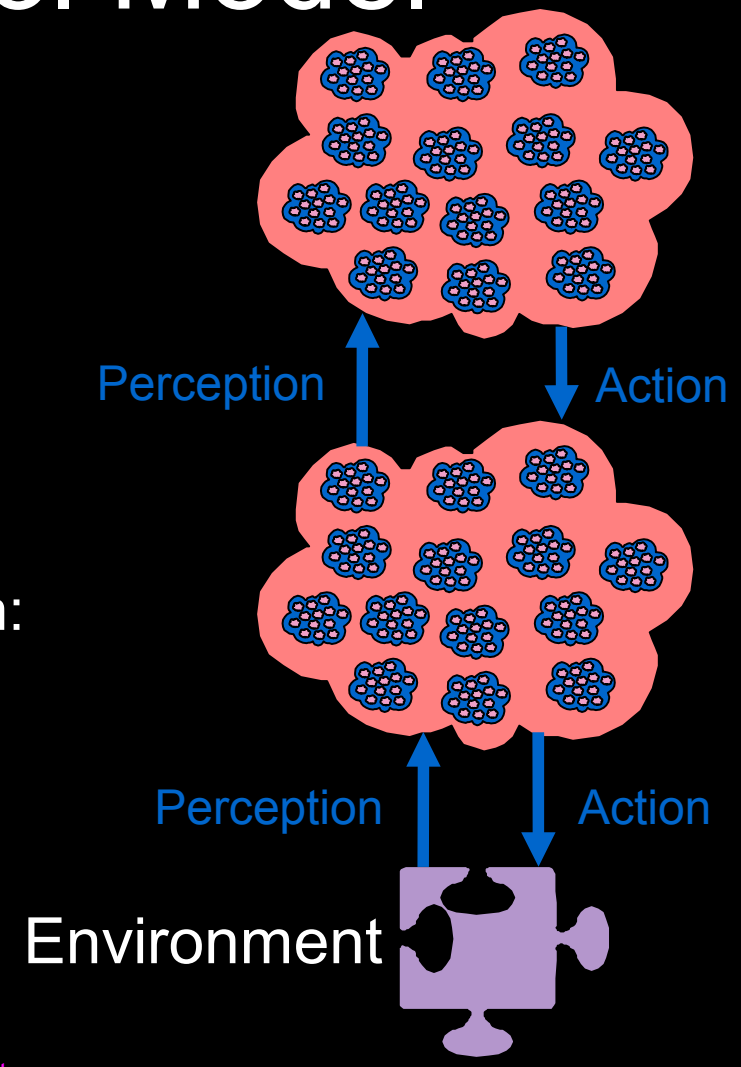


Reflective Control Model

The reflective model emphasizes that sometimes humans solve problems in their minds in addition to the physical world.

A few different types of critical reflection:

- faults in plans
- faults in planning processes
- faults in knowledge
- conflicts in goals
- credit assignment for failure/success

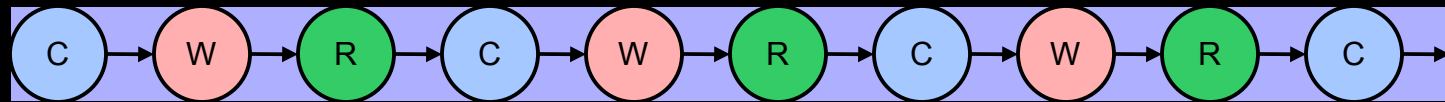


Reliable Models of Self-Reflective Priorities

Each individual uses
many different models
of Self in order to
prioritize goals.

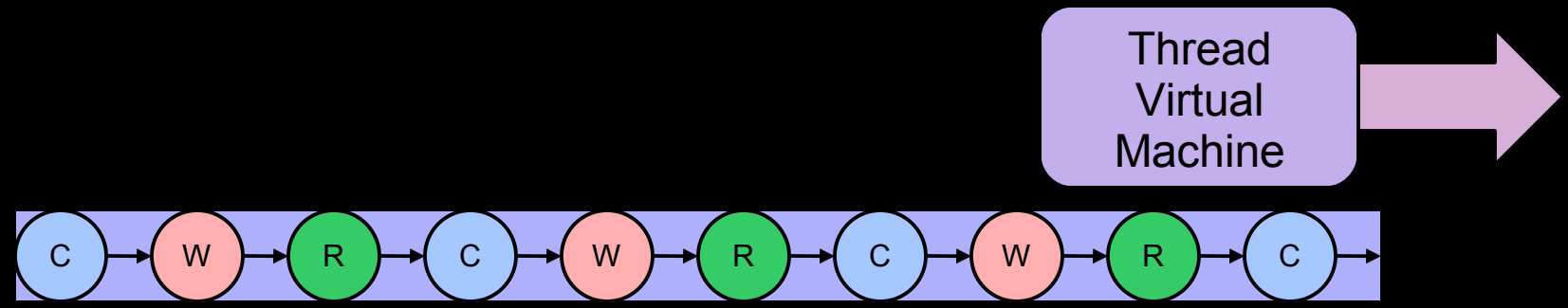
- Student
- Mother
- Daughter
- Boss
- Athlete
- Princess
- Rock Star

Recognition of Critical Patterns



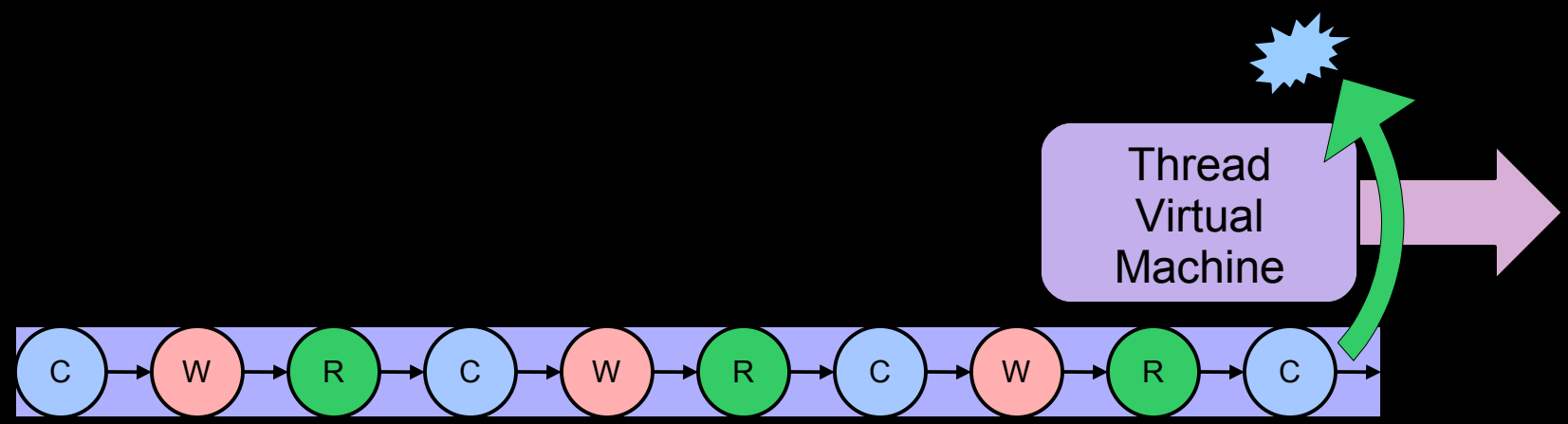
Executable Program Code

Recognition of Critical Patterns



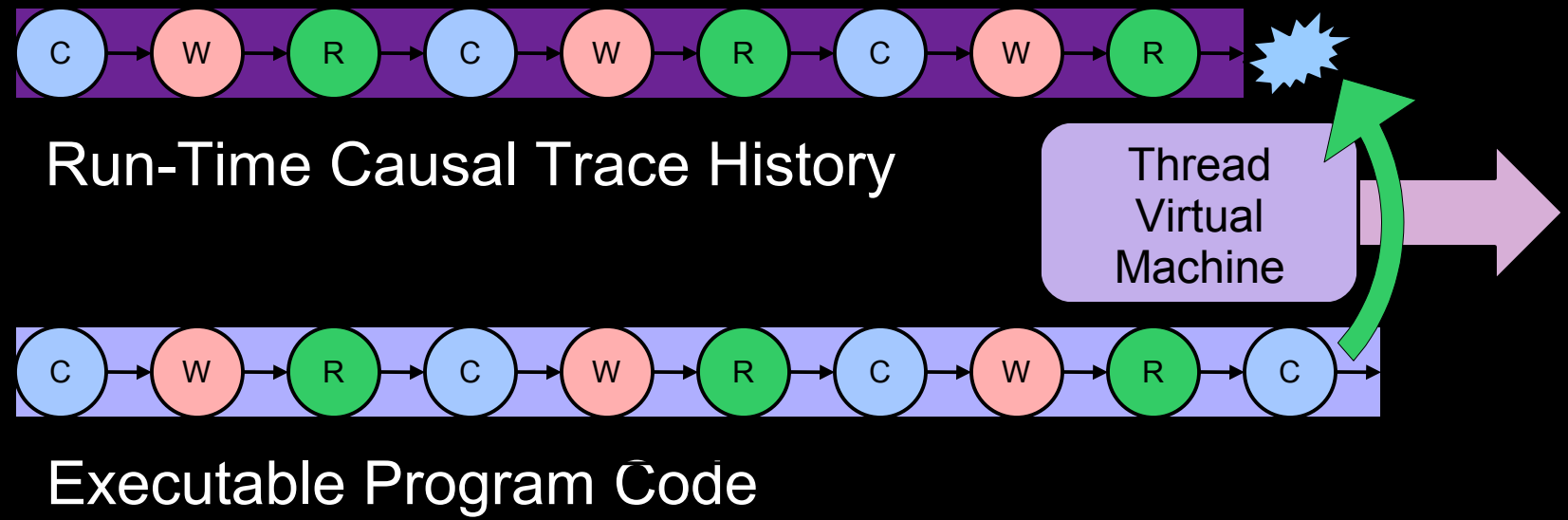
Executable Program Code

Recognition of Critical Patterns

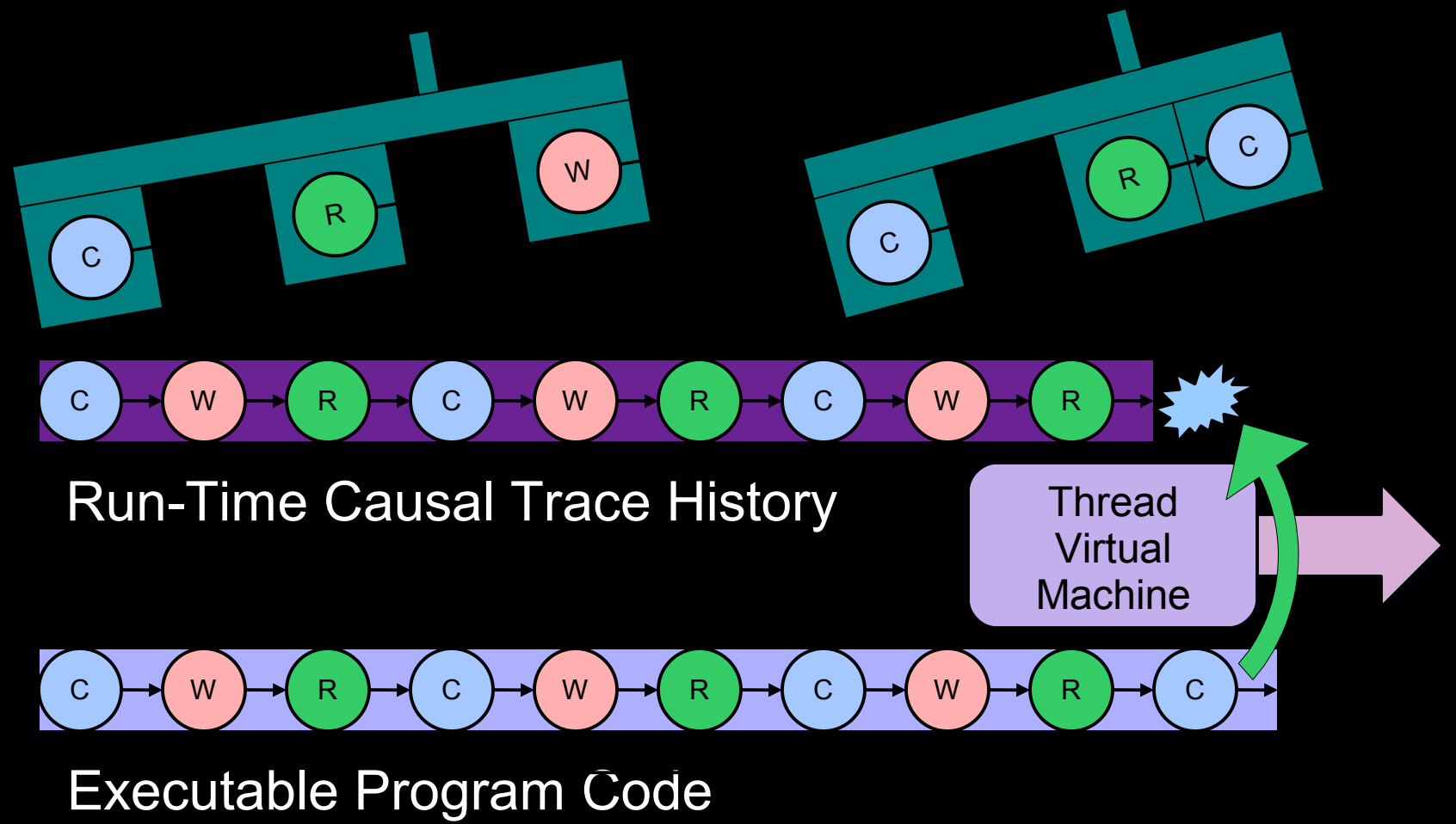


Executable Program Code

Recognition of Critical Patterns



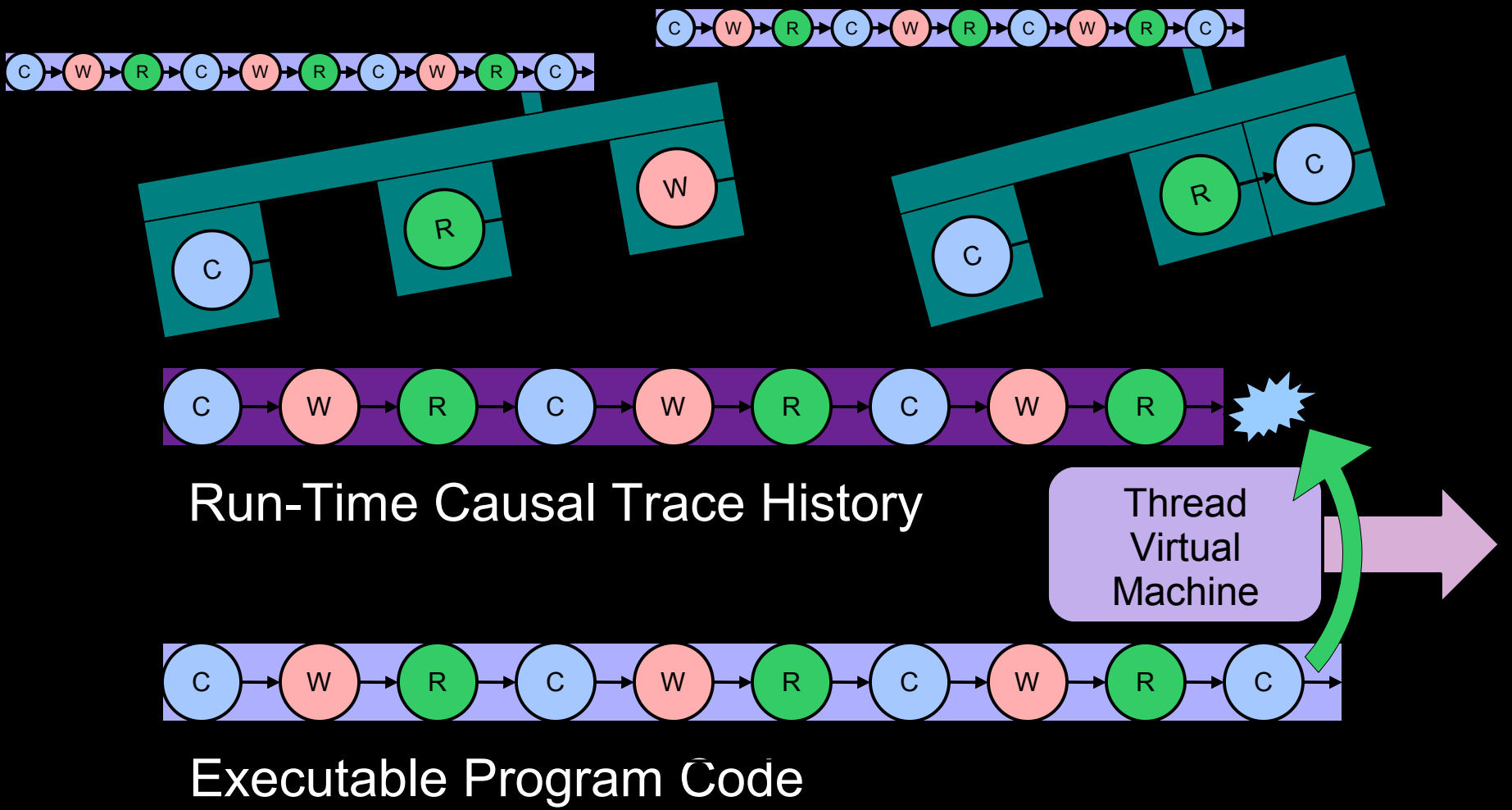
Recognition of Critical Patterns



Run-Time Causal Trace History

Executable Program Code

Recognition of Critical Patterns



Run-Time Causal Trace History

Executable Program Code

Responsible Software Learns through Self-Reflection

What if a programmed solution finds itself in a slightly novel situation where it fails?

Reflection allows

- (1) Recognition,
 - (2) Reaction, and
 - (3) Learning
- from these failures.

