Propagator Networks

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A propagator is a machine that reads some cells and can write to some cells always on, asynchronous, stateless.
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A propagator is a machine that reads some cells and can write to some cells always on, asynchronous, stateless
A propagator is a machine that reads some cells and can write to some cells always on, asynchronous, stateless.
Network them, and values propagate
this distributes naturally
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Network them, and values propagate
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Win: Constraints are just piles of mutually inverse propagators
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Win: Constraints compose into multidirectional computations
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which can grow incrementally without adjusting explicit controls
which can grow incrementally without adjusting explicit controls
But: A cell can get stuff from multiple sources
But: A cell can get stuff from multiple sources

Is this bad?
“Old View”: Cells hold values

Leads to all kinds of trouble

▶ precedence

▶ overwriting

▶ infinite reactions and fights

...
“Old View”: Cells hold values

Leads to all kinds of trouble

- precedence
- overwriting
- infinite reactions and fights
- ...
New View: Cells hold information about values
New View: Cells hold information about values and merge it as it comes in from many sources
E.g. interval arithmetic is partial information
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Win: Truth maintenance is partial information
Win: Truth maintenance is partial information
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Win: Truth maintenance is partial information
Win: Truth maintenance is partial information
Win: Making merge generic decouples the accident of kind of accumulator from the essence of propagation
Win: Making merge generic decouples the accident of kind of accumulator from the essence of propagation and now we can use many different kinds of accumulators
And much can look like propagation
if you squint
TSA −> FBI
TSDB
PNRs
Airline −> TSA
Matcher
Lookup
DeadbeatDB
FBI case
TSA case
TSA −> FBI
Laws,
policies
Arrest?

And much can look like propagation
if you squint
And much can look like propagation
if you squint
And much can look like propagation
if you squint
PNRs

Airline \rightarrow TSA

TSA case

John Doe
Flying AA
Terrorist?

Matcher

TSDB

TSA case

TSA \rightarrow FBI

FBI case

DeadbeatDB

Lookup

Arrest?

Laws, policies

And much can look like propagation
if you squint
And much can look like propagation if you squint
And much can look like propagation if you squint
And much can look like propagation

if you squint
And much can look like propagation if you squint
And much can look like propagation

if you squint
Pick the knowledge representation for your own problem, but
Partial information and propagator networks are essentially intertwined