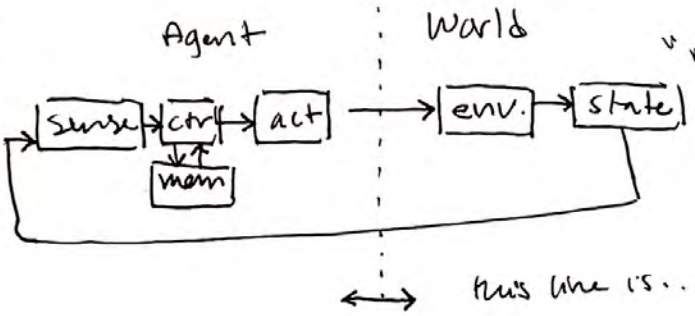
COGS 300 Distribution 01 Nov 4/25

into
signals → movement → control → detection

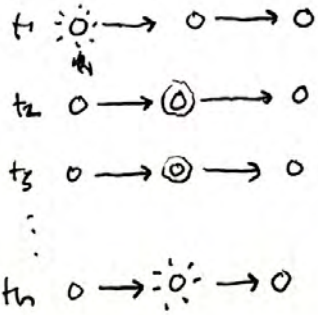
↑ 1 agent
multi-agent
+ memory

emergence.
↓
distribution



memory allows non-local effects!

non-local spatially 

non-local temporally 

Allowing for past information is actually a huge innovation! You can't:

→ compare w/o memory

→ predict w/o memory

→ evaluate w/o memory

Think about your robot:

```
void loop() {
    || what if all your robot could do
       was in the loop?
}
```

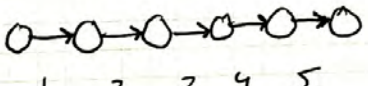
vs.

```
now { int a;
      int b;
      ⋮
```

← now you can compare, predict, anticipate.

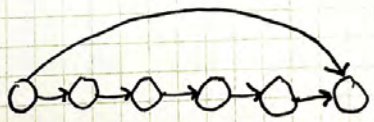
```
void loop() {
    int a = x;
    int b = y;
    ⋮
}
```

Let's imagine a causal chain:



each msg takes 1 second.

= 5 seconds to reach last.



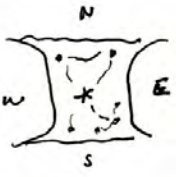
1 second to reach last

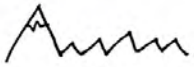
we "break" time!

Distributed kingdom

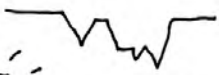
Let's imagine we wanted to coordinate an action ("attack at...") across the kingdom. Let's say clocks haven't been invented (no machines).

Let's remember our physical constraints.





mountains.



valleys.

coverage.

line towers + binary

☆ Design a protocol to coordinate an attack.
↳ error estimation.
→ no magic!!

Now, imagine that there are factions who are hidden. Underground, in a mesa, etc.

☆ How does the protocol change?

☆ Let's imagine that you have a power network. i.e. some load actors. How do you:

- send a message w/o it being read. expect key recipient.
- =
- ?

☆ coordinate different instructions across kingdom?

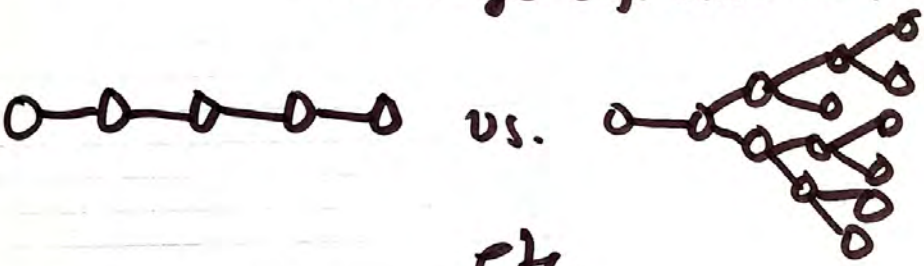
☆ Class room swarm.

You get UIDs + messages (short).

come up collectively with a transmission strategy.

Get msg. from part B each TA.

Warm up: Draw as many different network topologies as you can. Think about message transmission. How do topologies impact message dynamics?

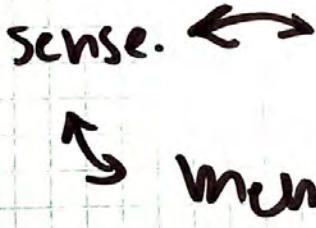


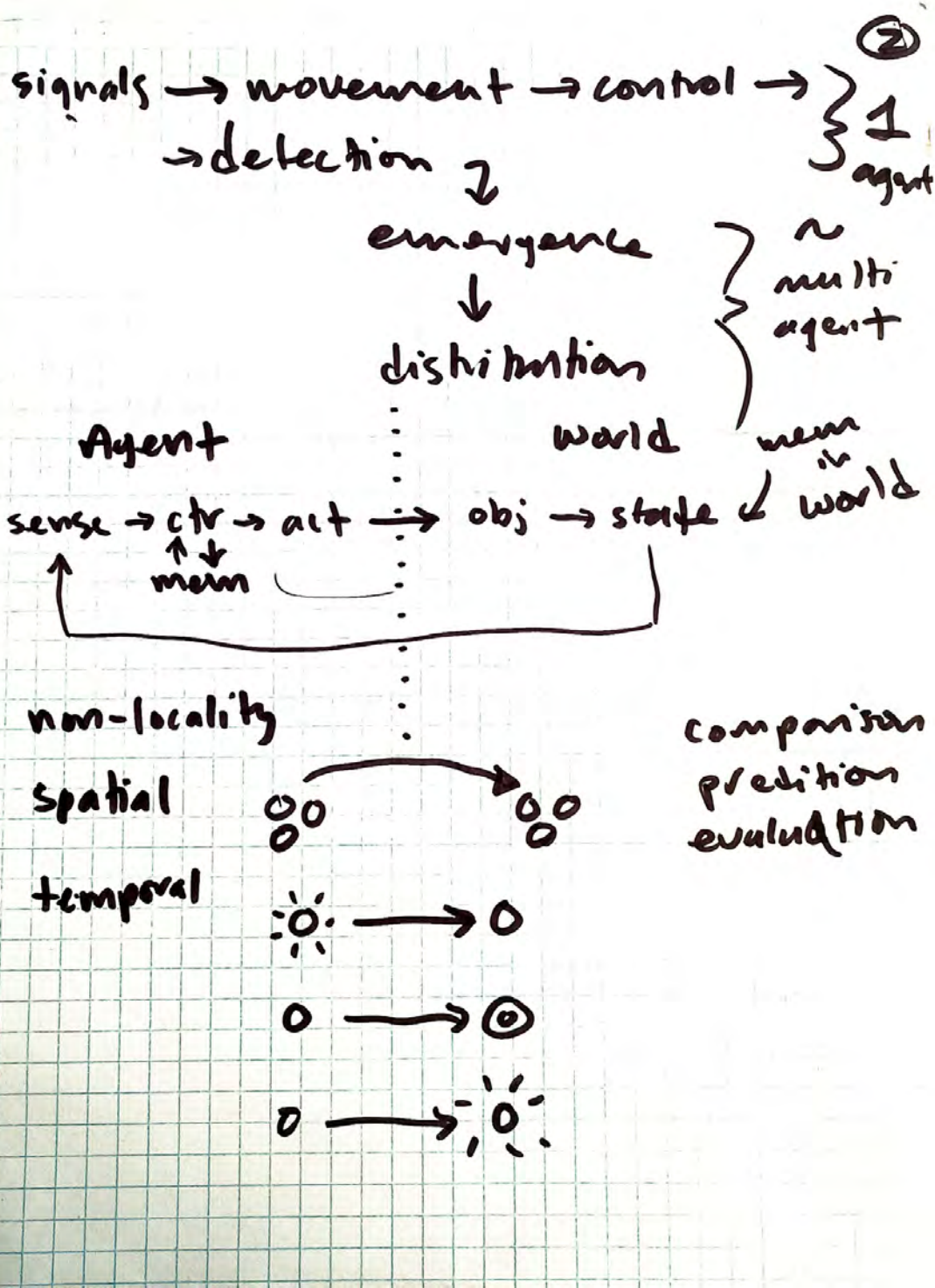
vs.

etc.

Meet the Profs Nov 6 5pm Koerner's.

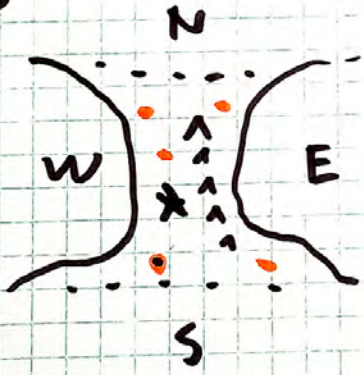
Internet




②
signals → movement → control →
→ detection
1 agent
emergence
distribution
~ multi agent
Agent
world
sense → ctr → act
mem
obj → state
mem in world
non-locality
spatial
temporal
comparison
prediction
evaluation

```
void loop() {
  // acts only on current val.
}

int a;
int b;
void loop() {
  // evaluate state.
};
```



binary

coordinate an attack
→ error bounds. week > sec.

prep: 1 msg for setup
1 msg for go.

pre movement

what happens if ppl are hidden from sun?

invent clocks.