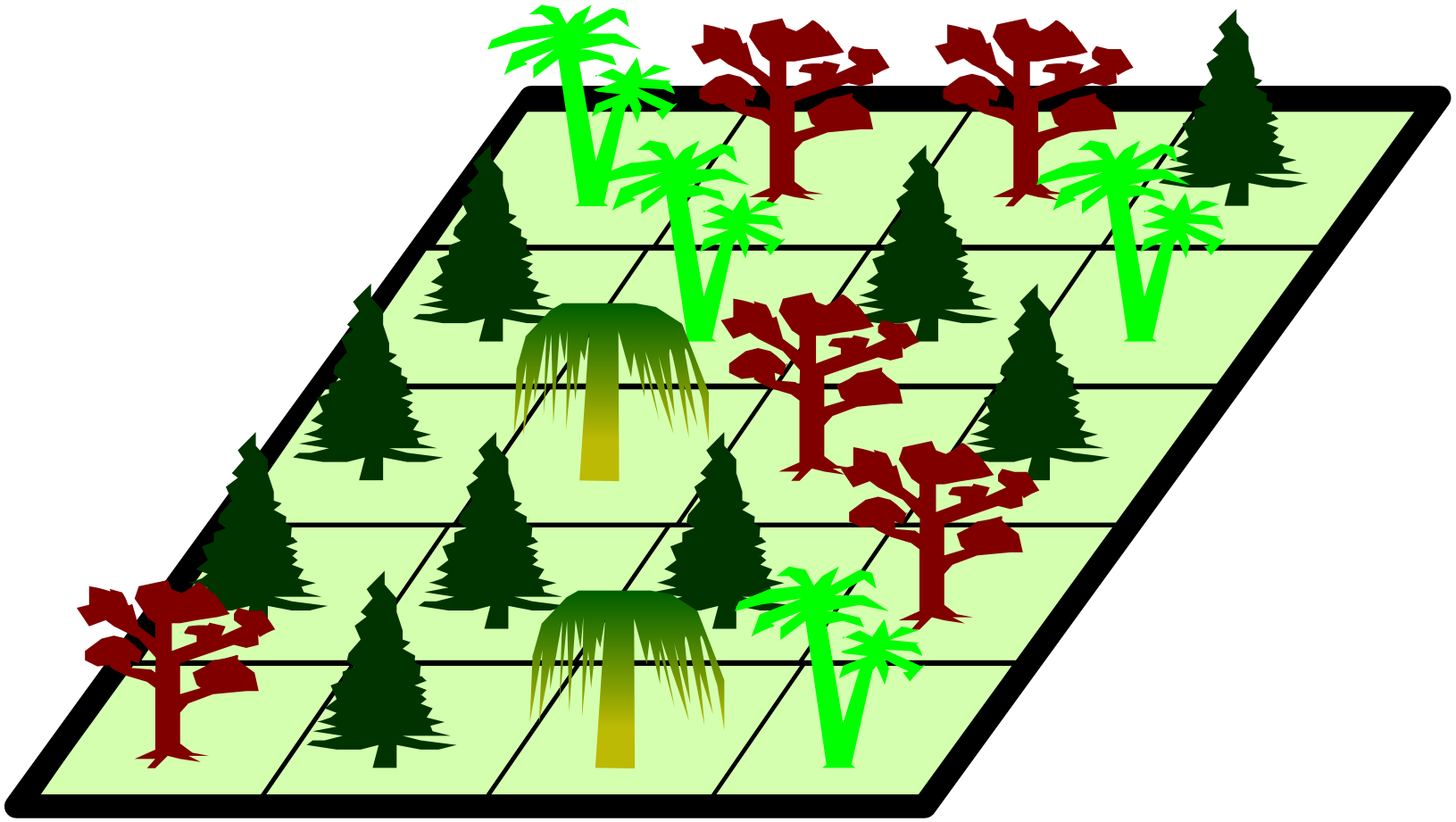
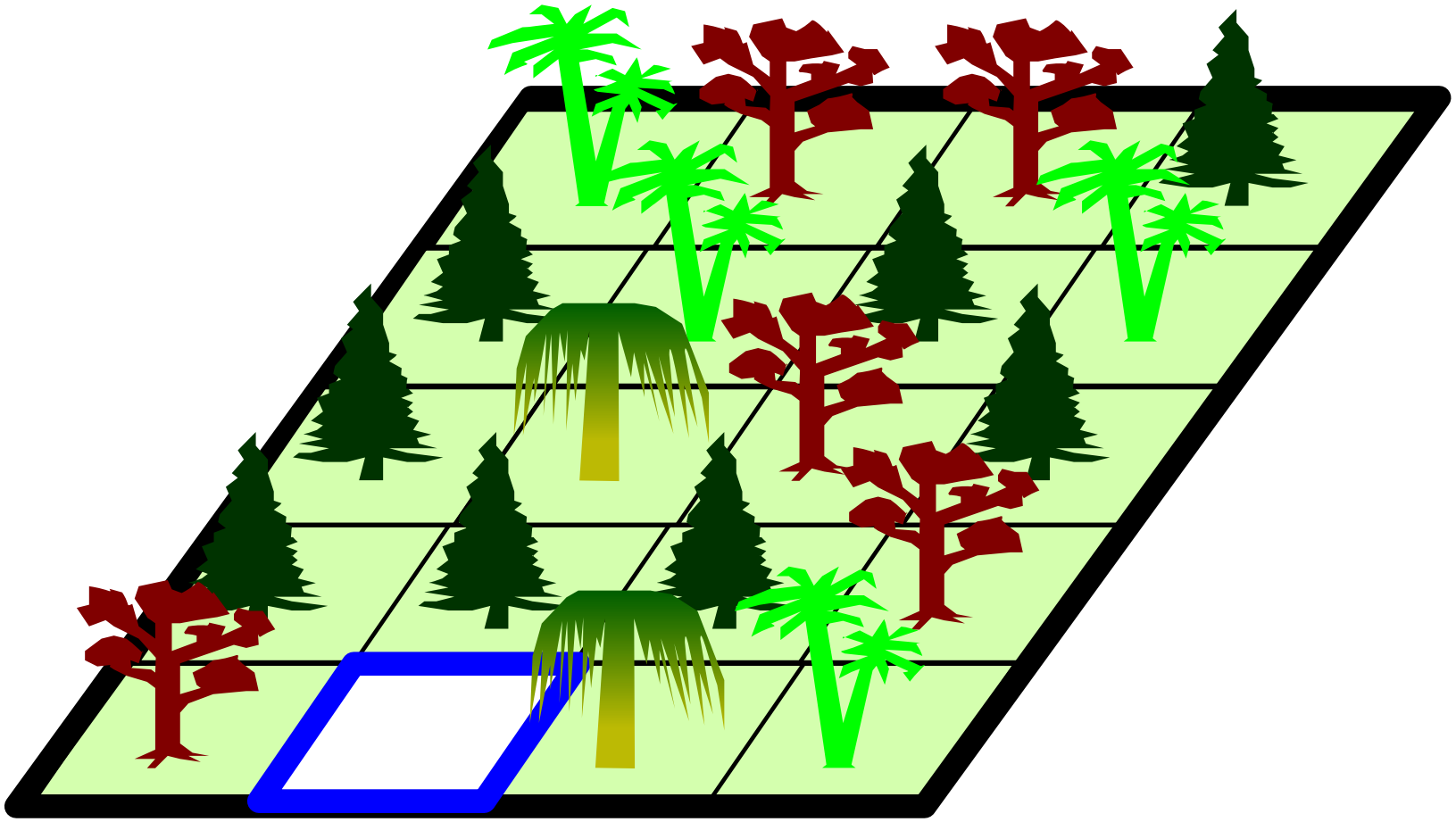
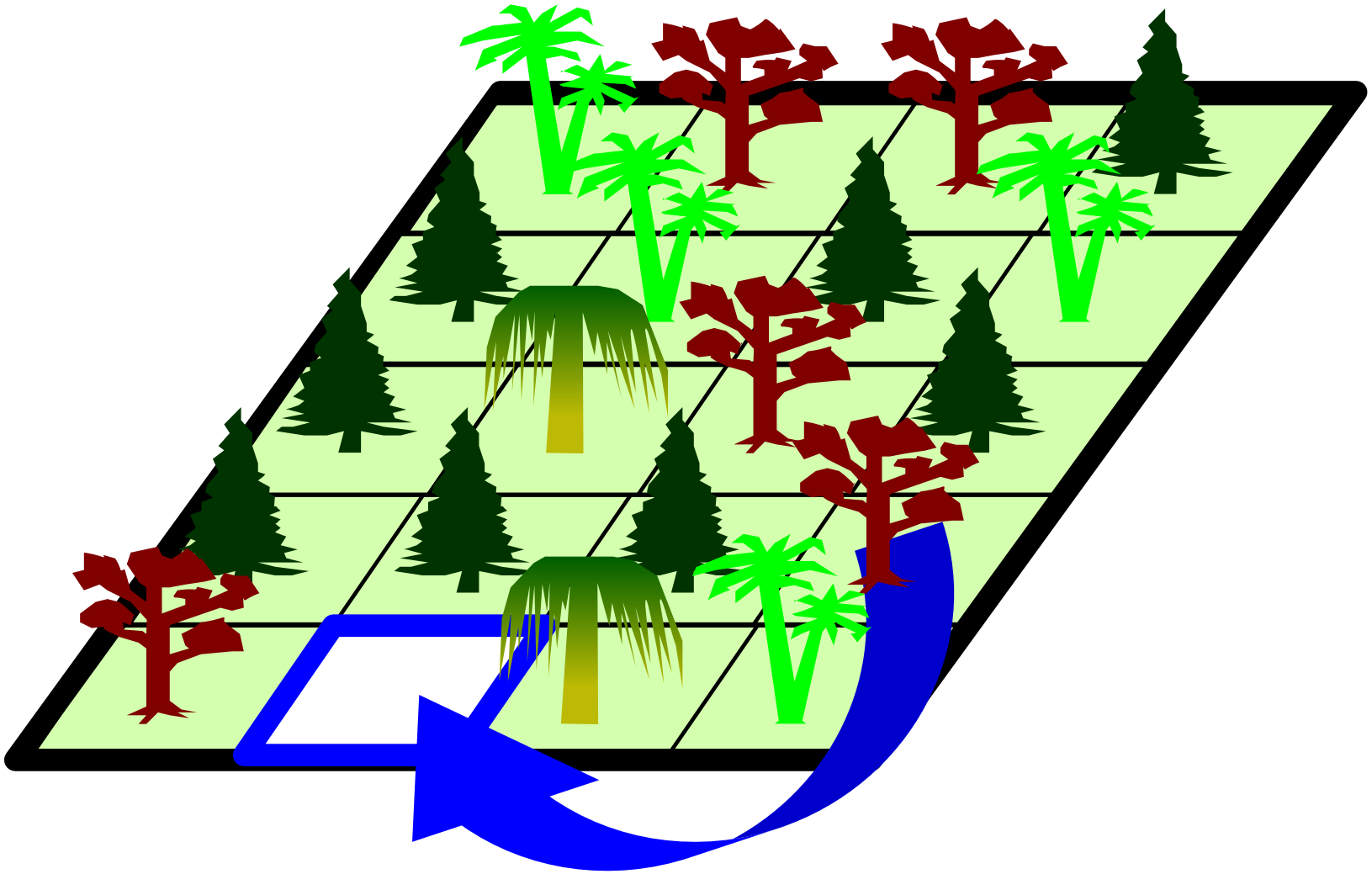
The model rules in brief



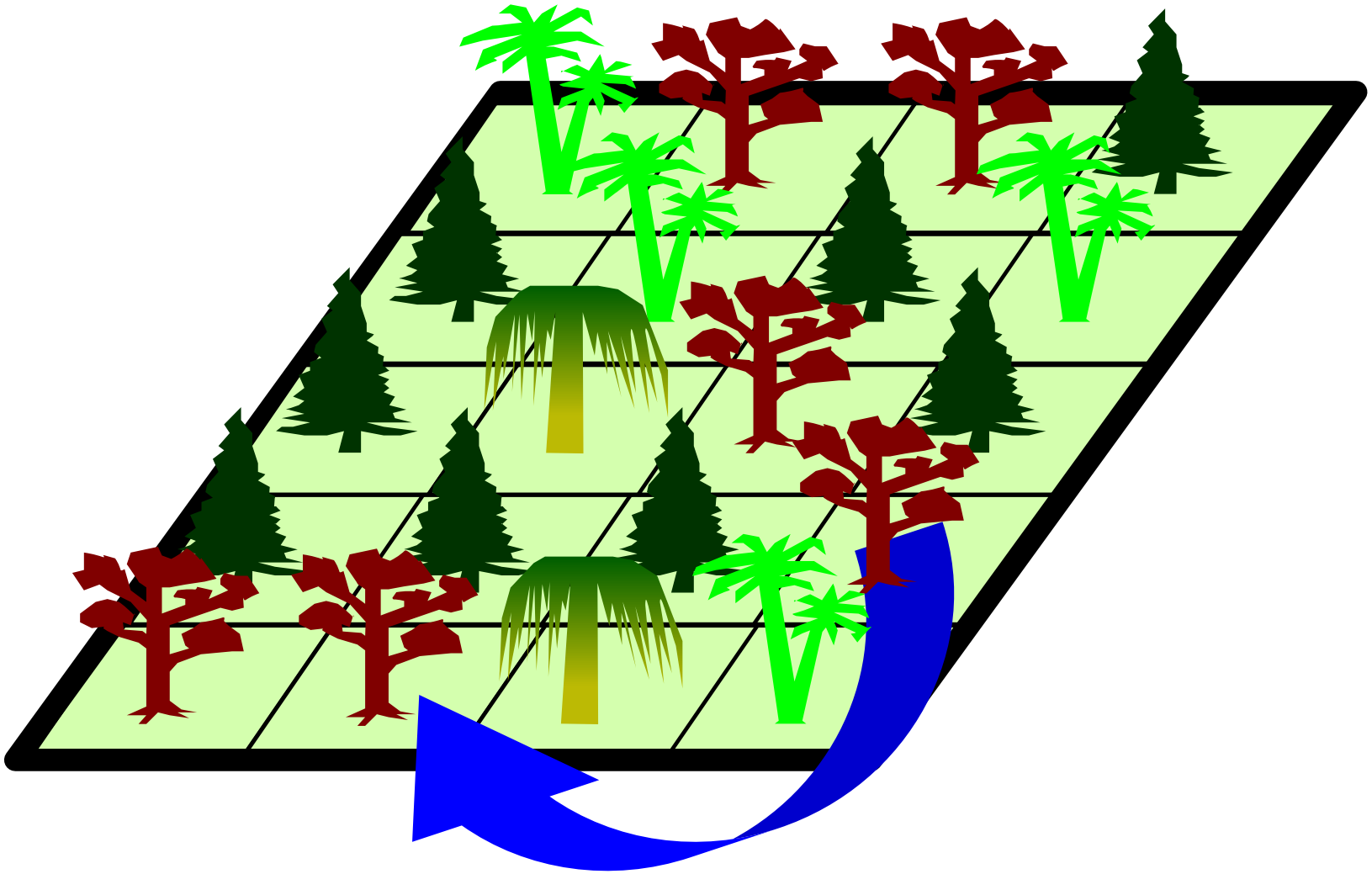
The model rules in brief



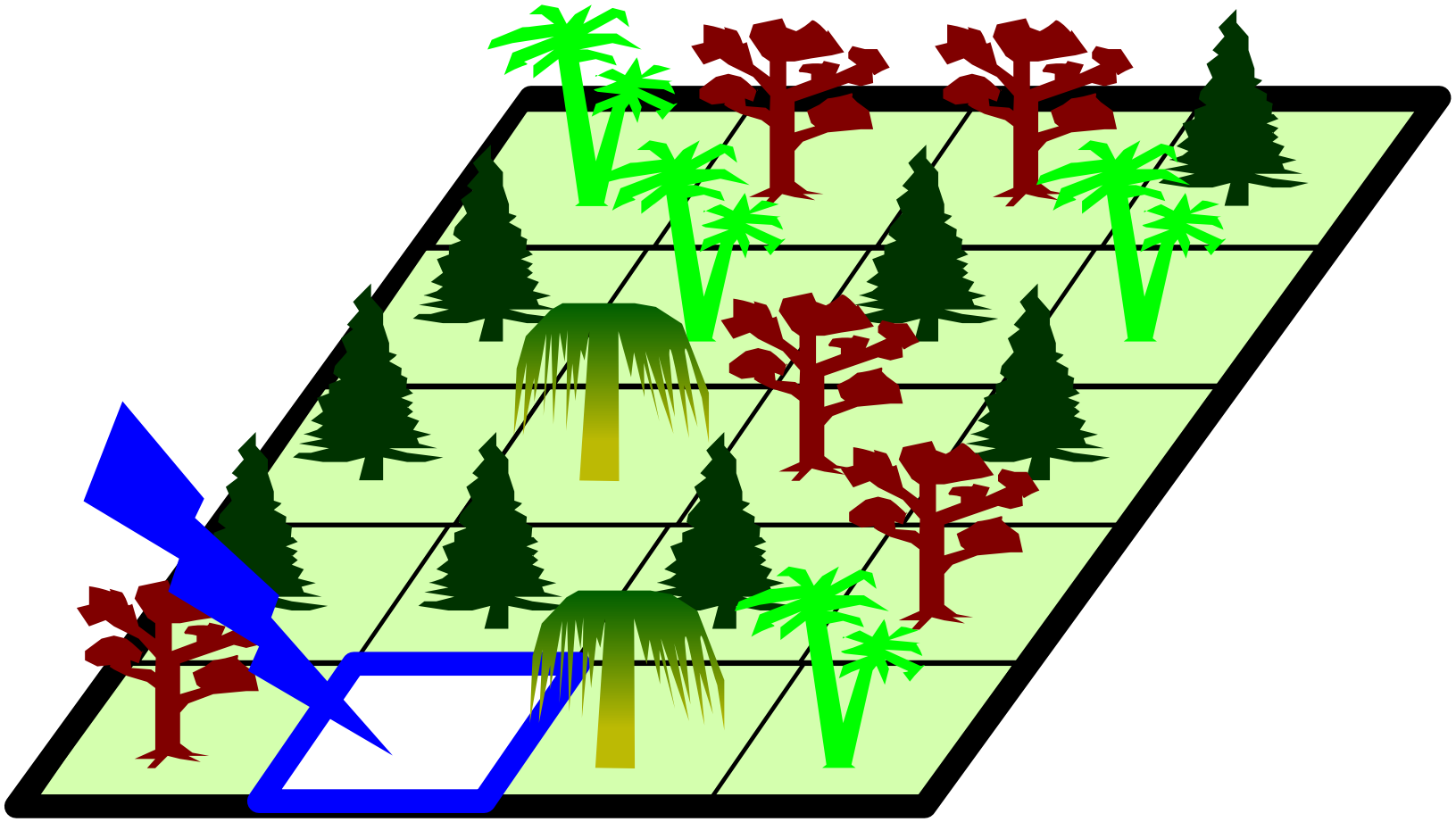
The model rules in brief



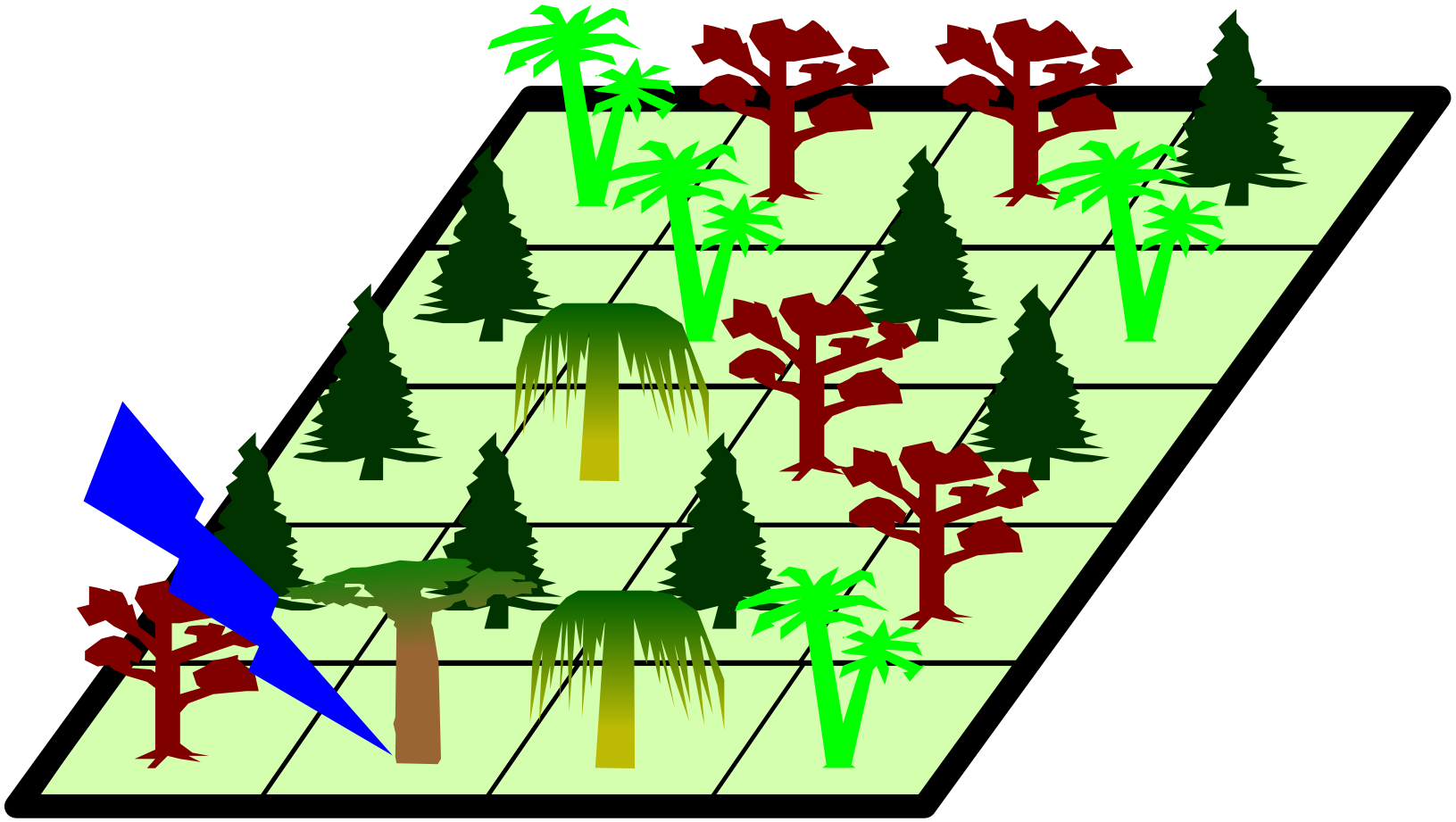
The model rules in brief



The model rules in brief

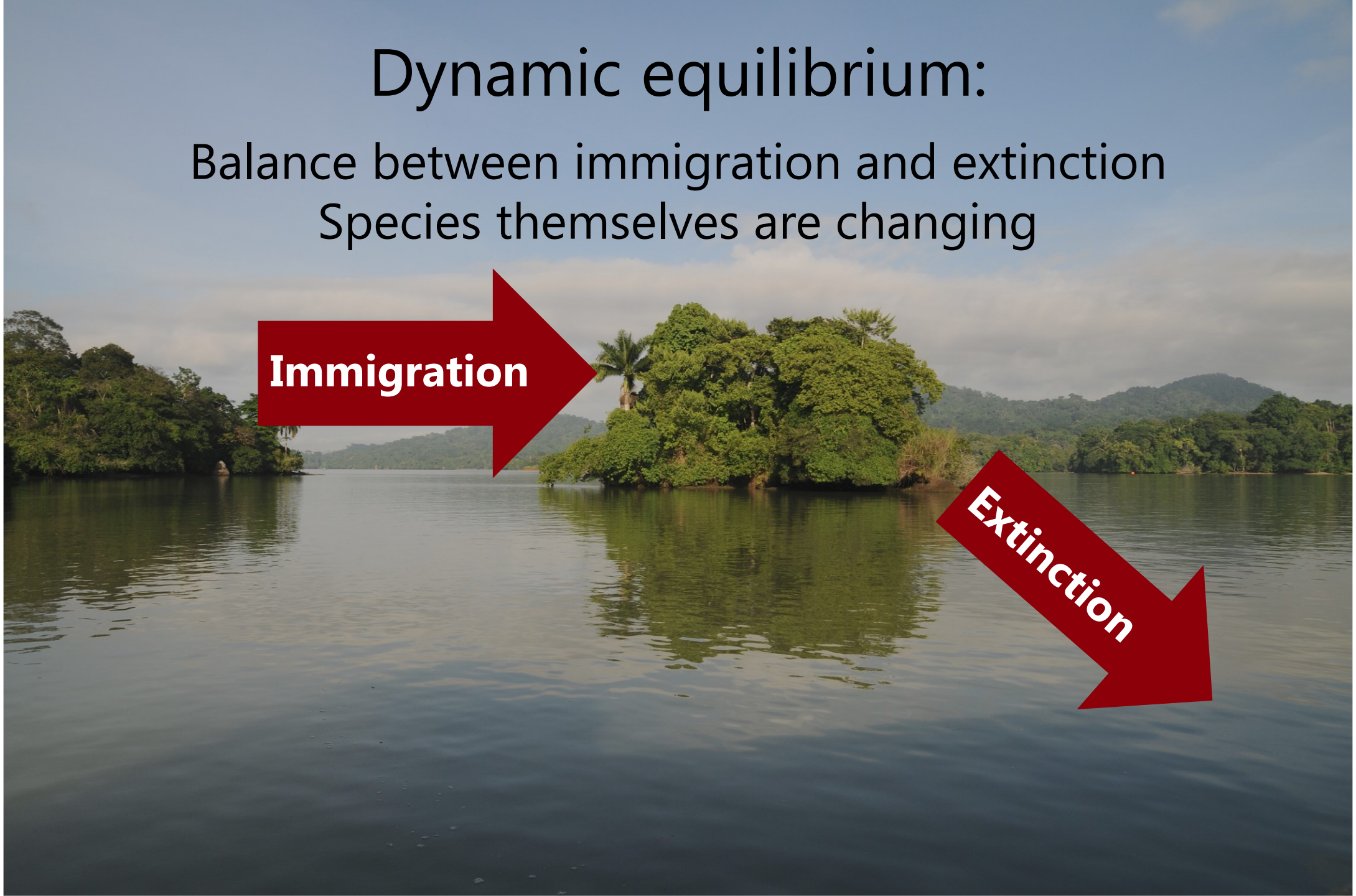


The model rules in brief



Dynamic equilibrium:

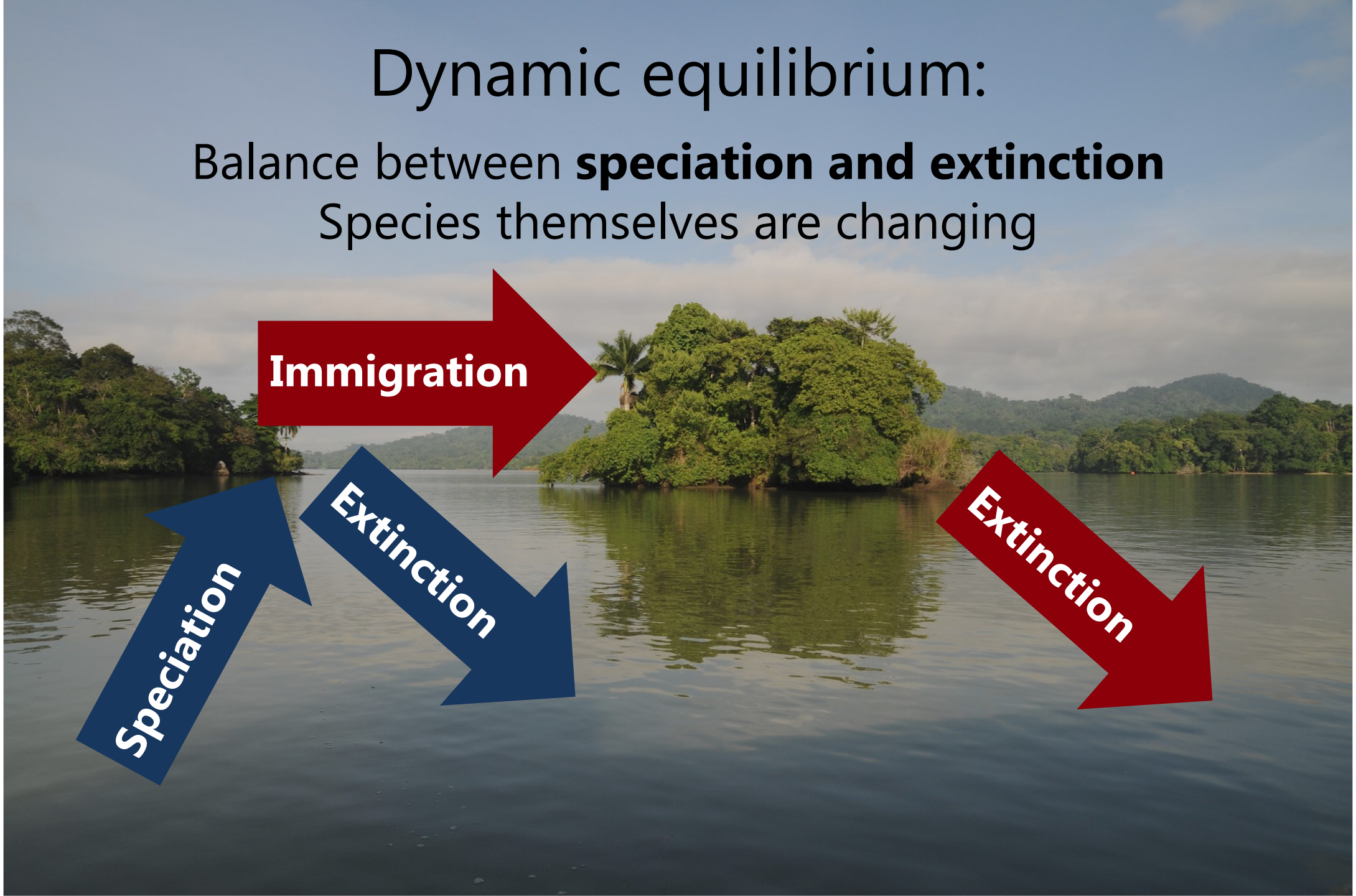
Balance between immigration and extinction
Species themselves are changing



Dynamic equilibrium:

Balance between **speciation and extinction**

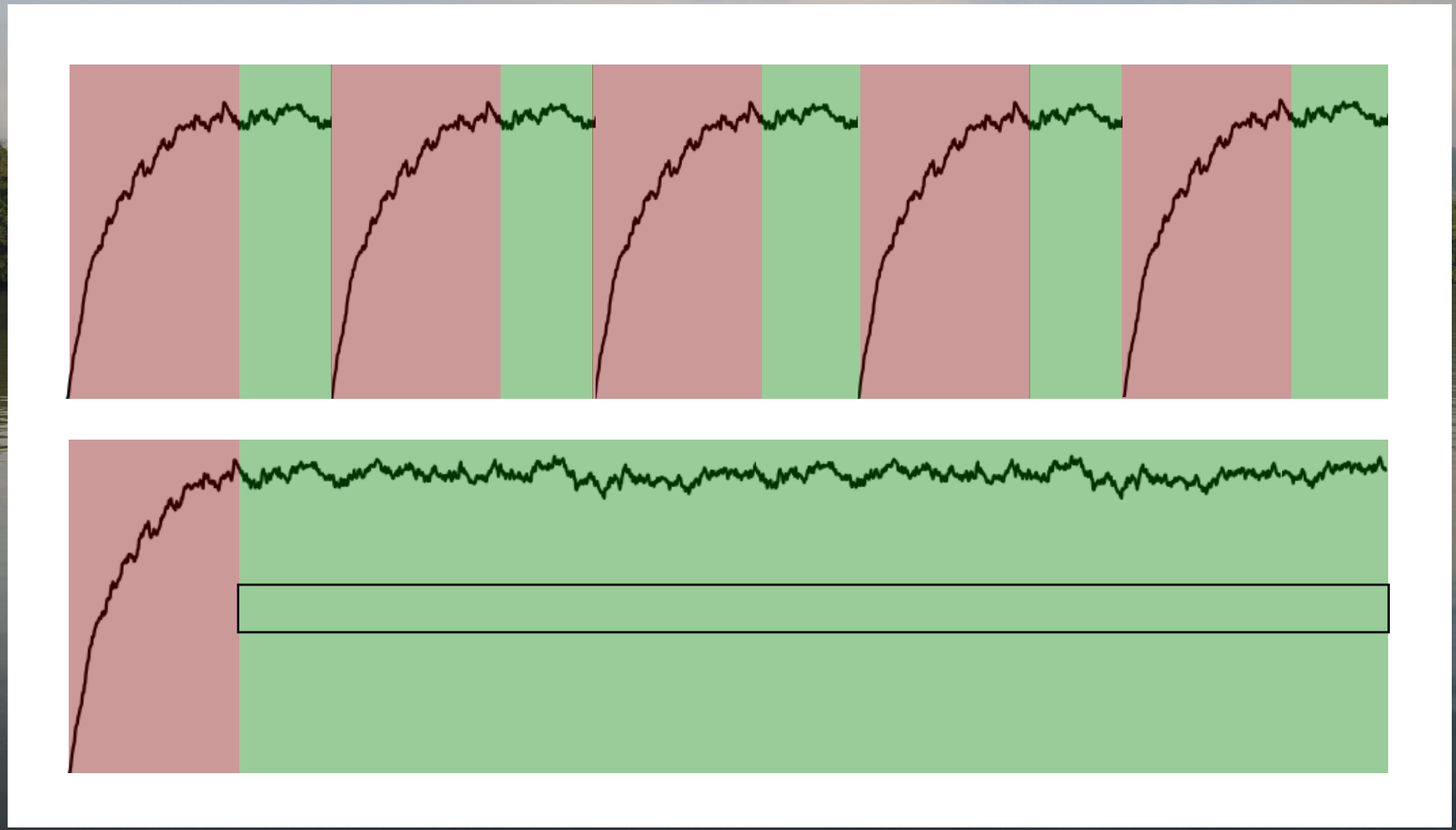
Species themselves are changing

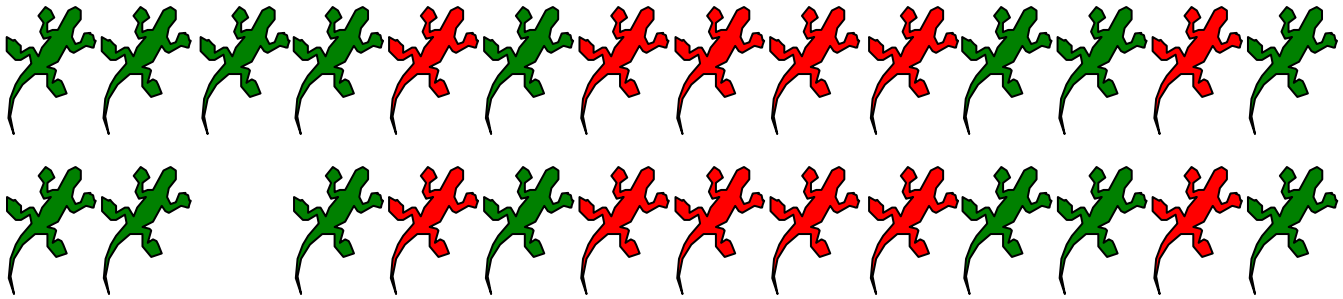


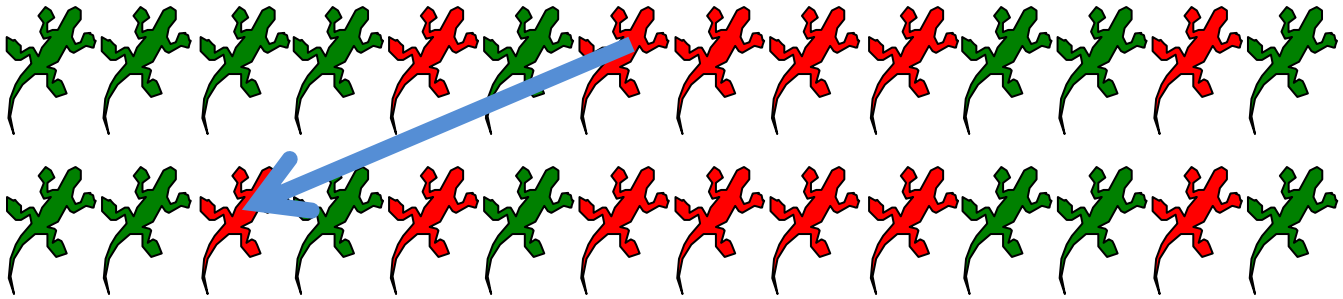
Dynamic equilibrium:

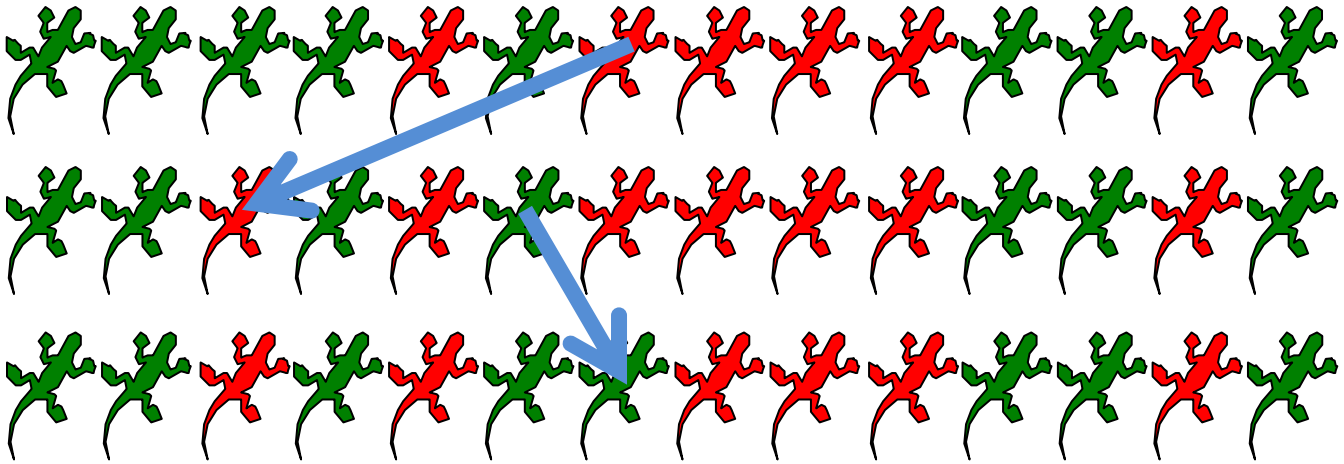
Balance between **speciation and extinction**

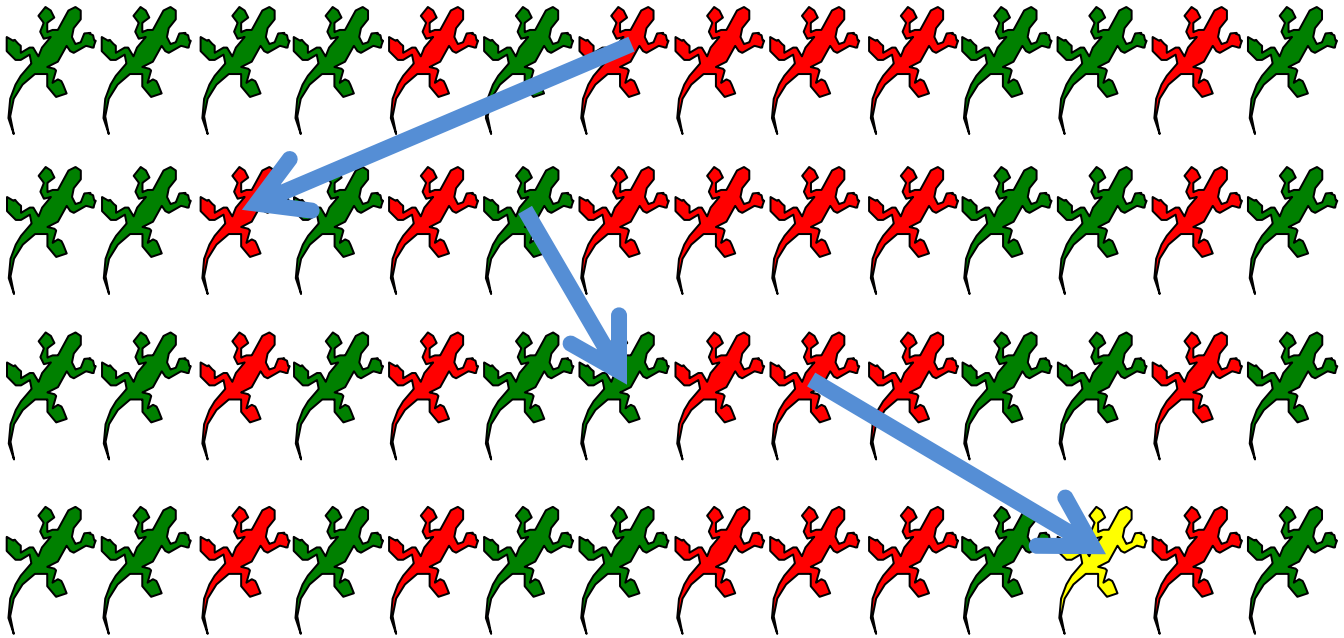
Species themselves are changing

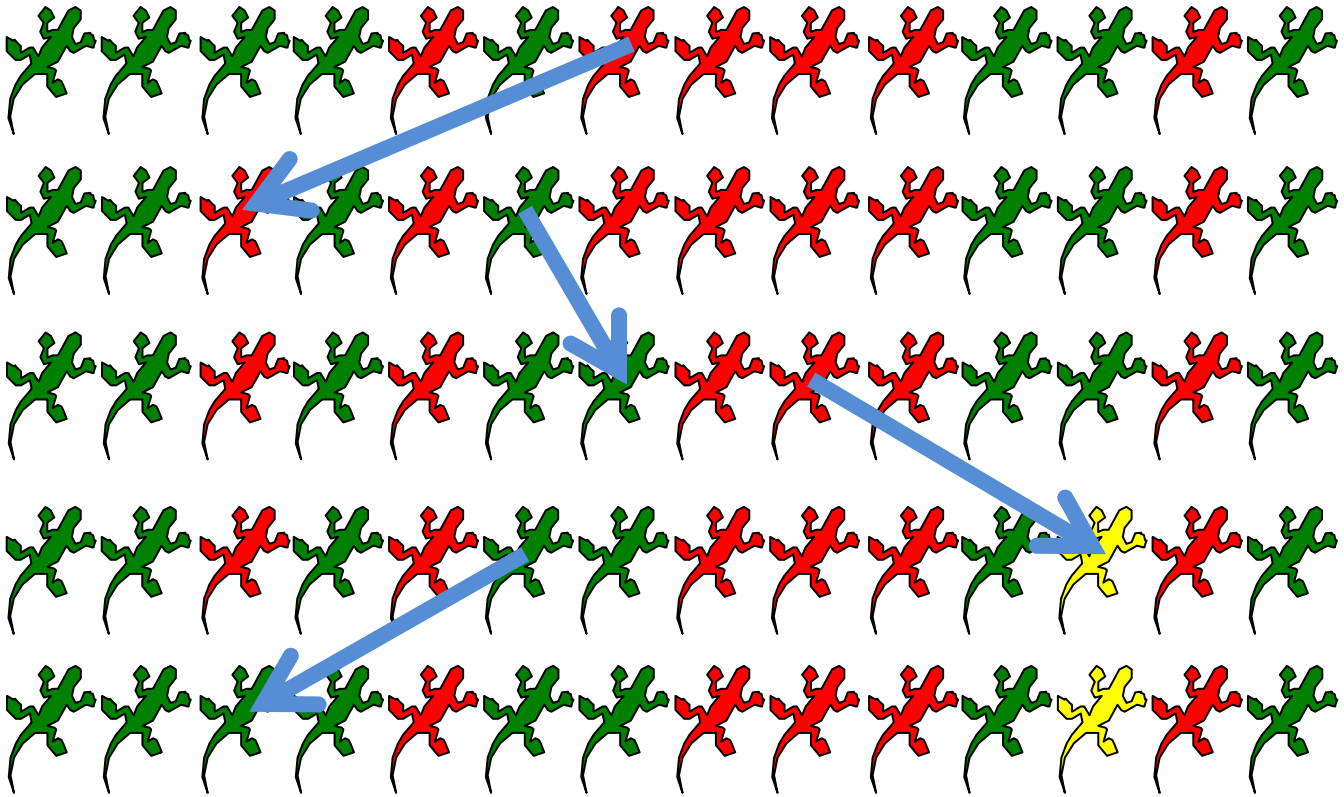


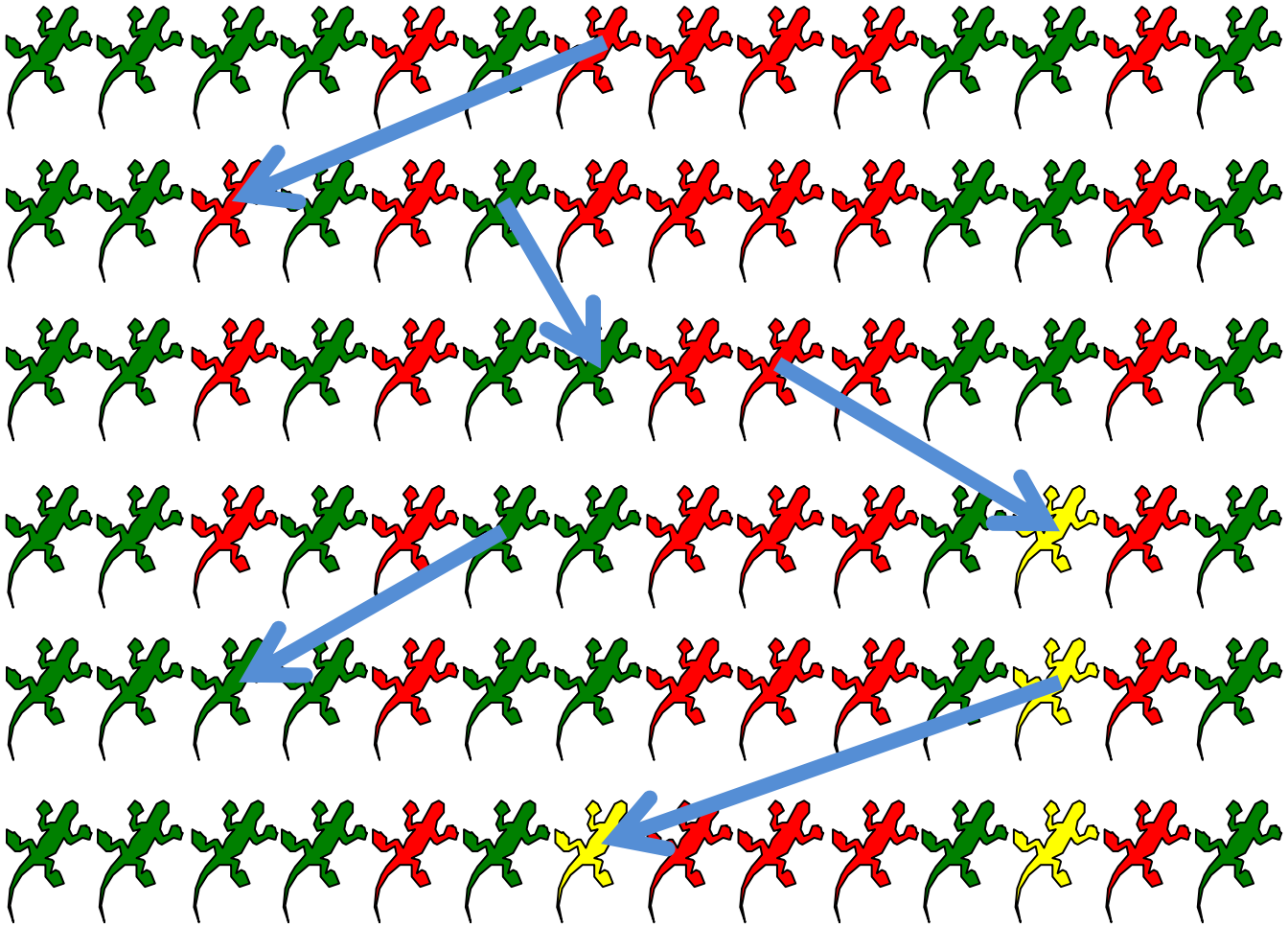


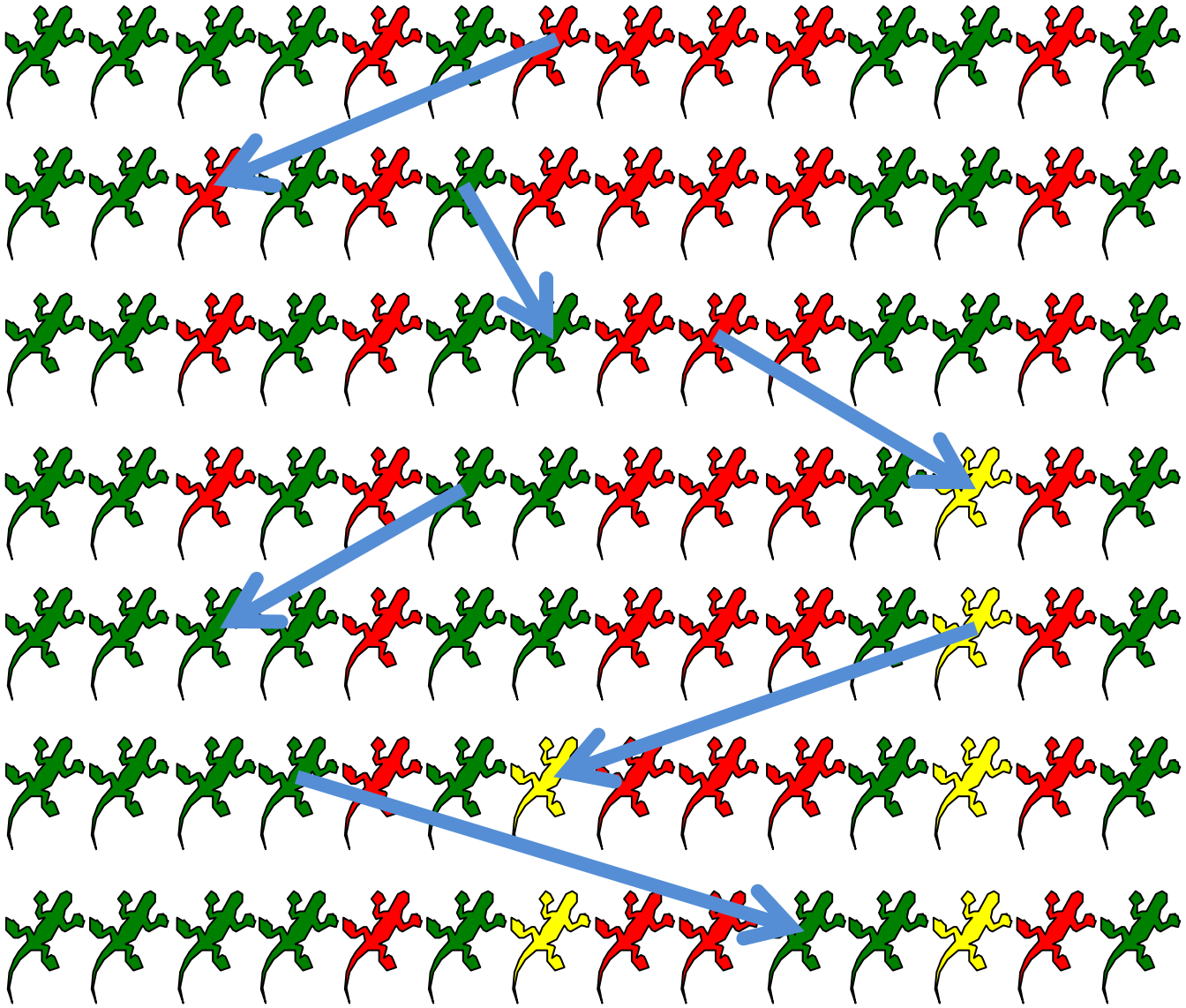


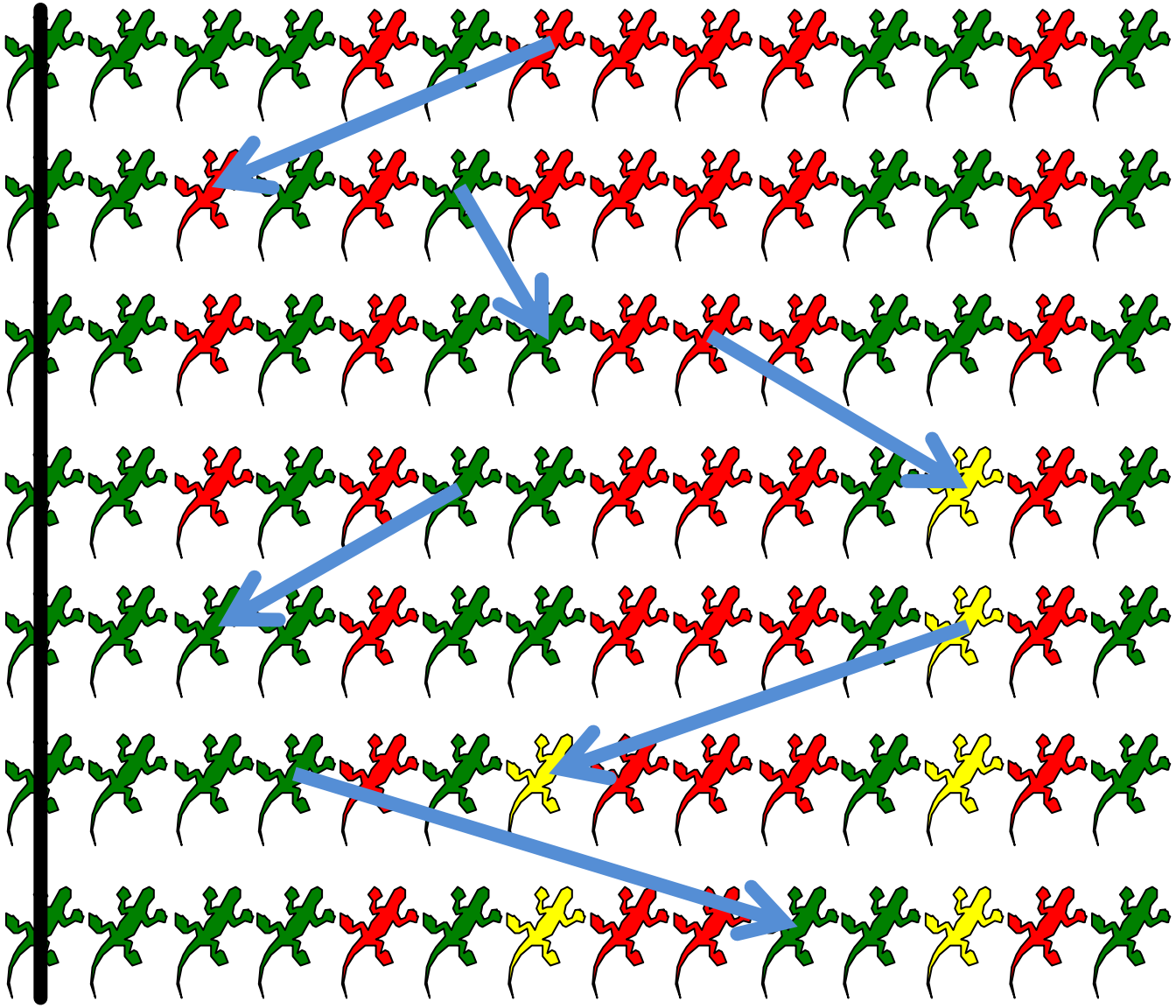


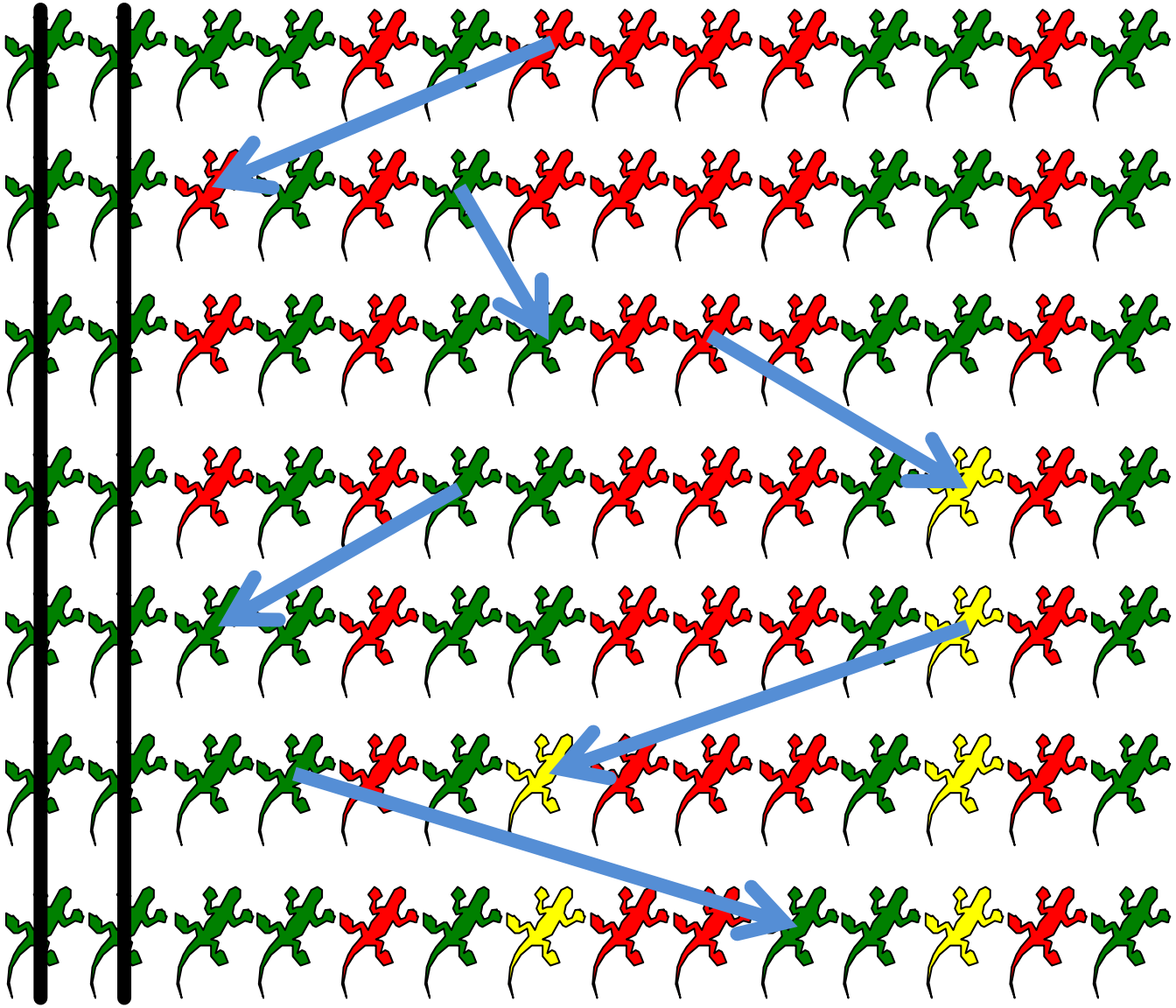


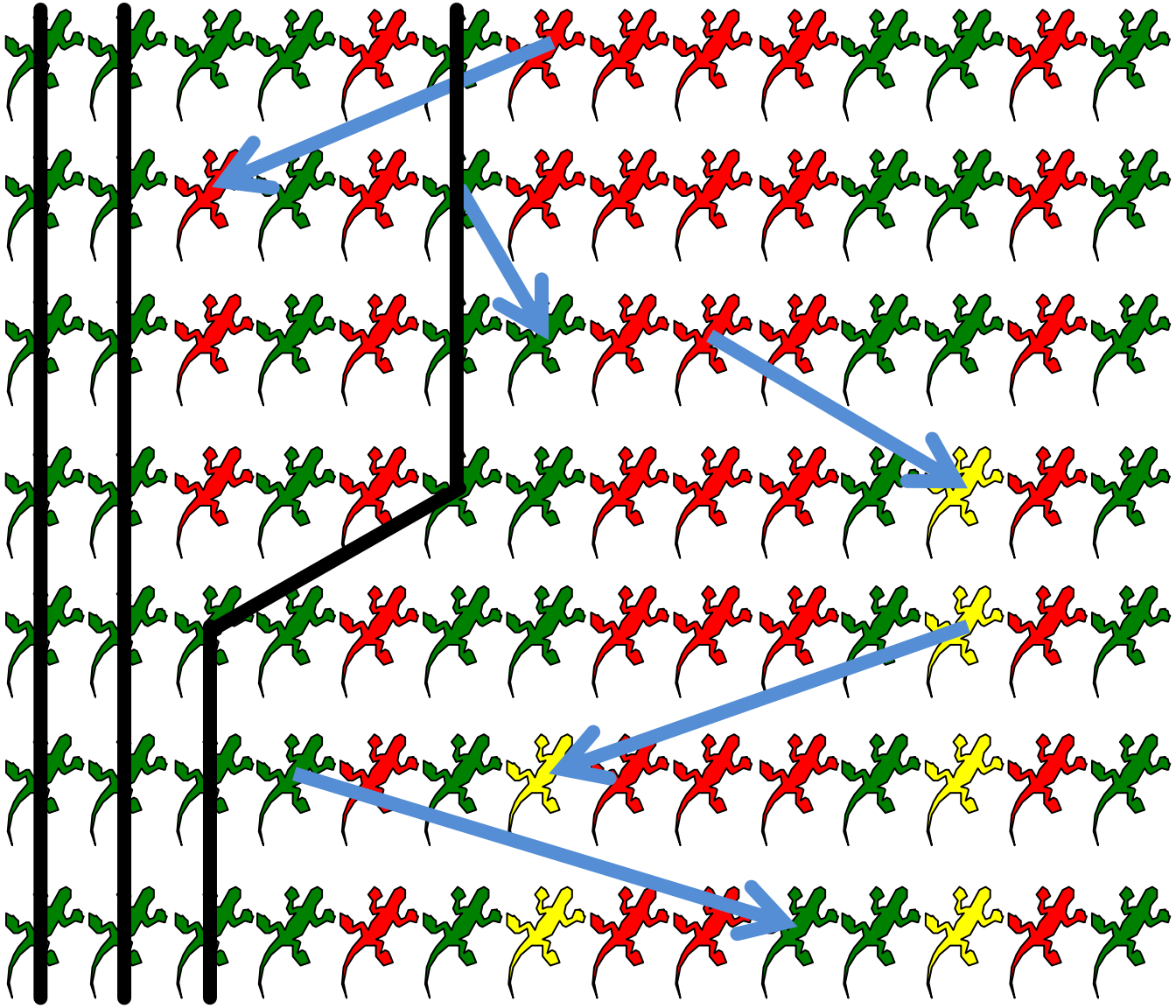


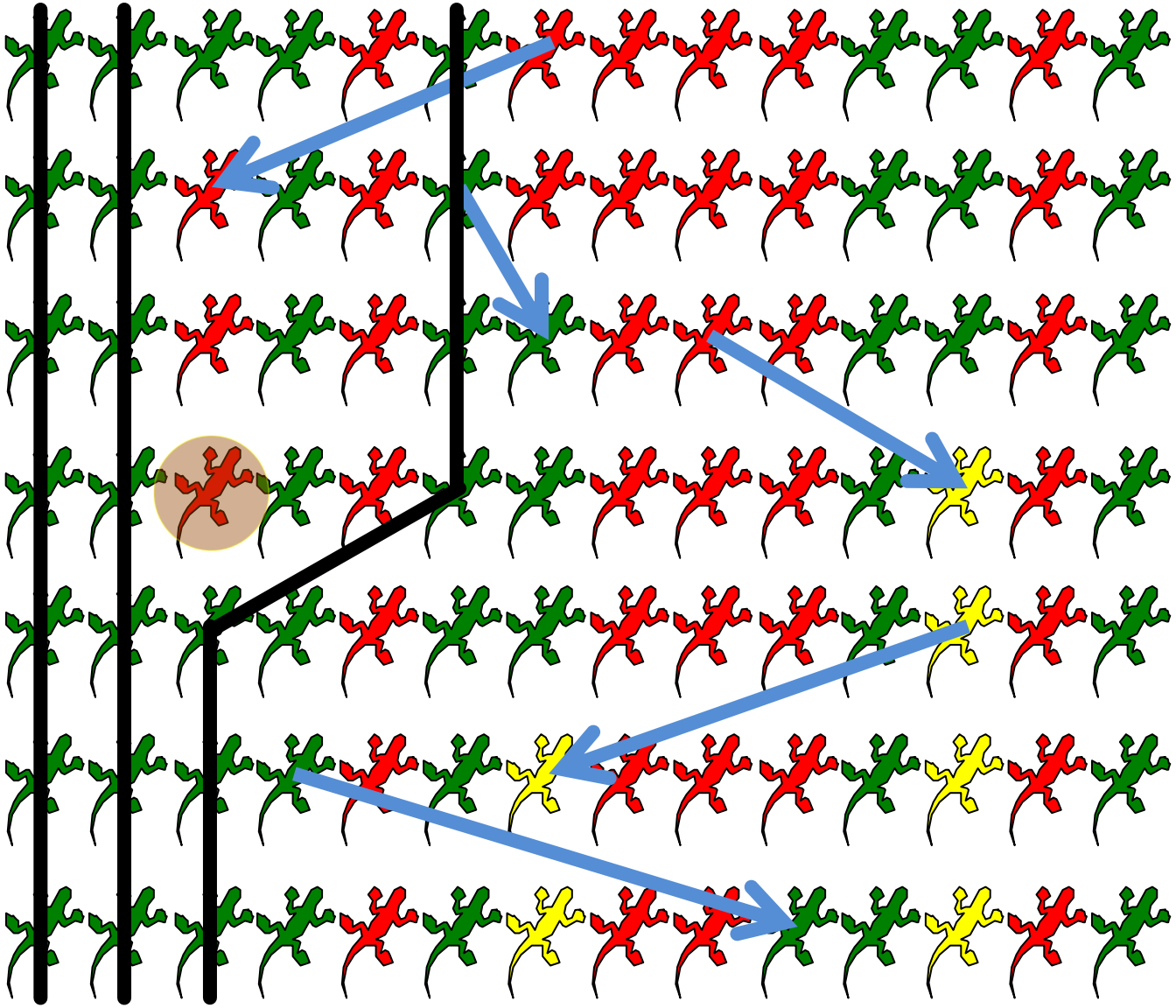


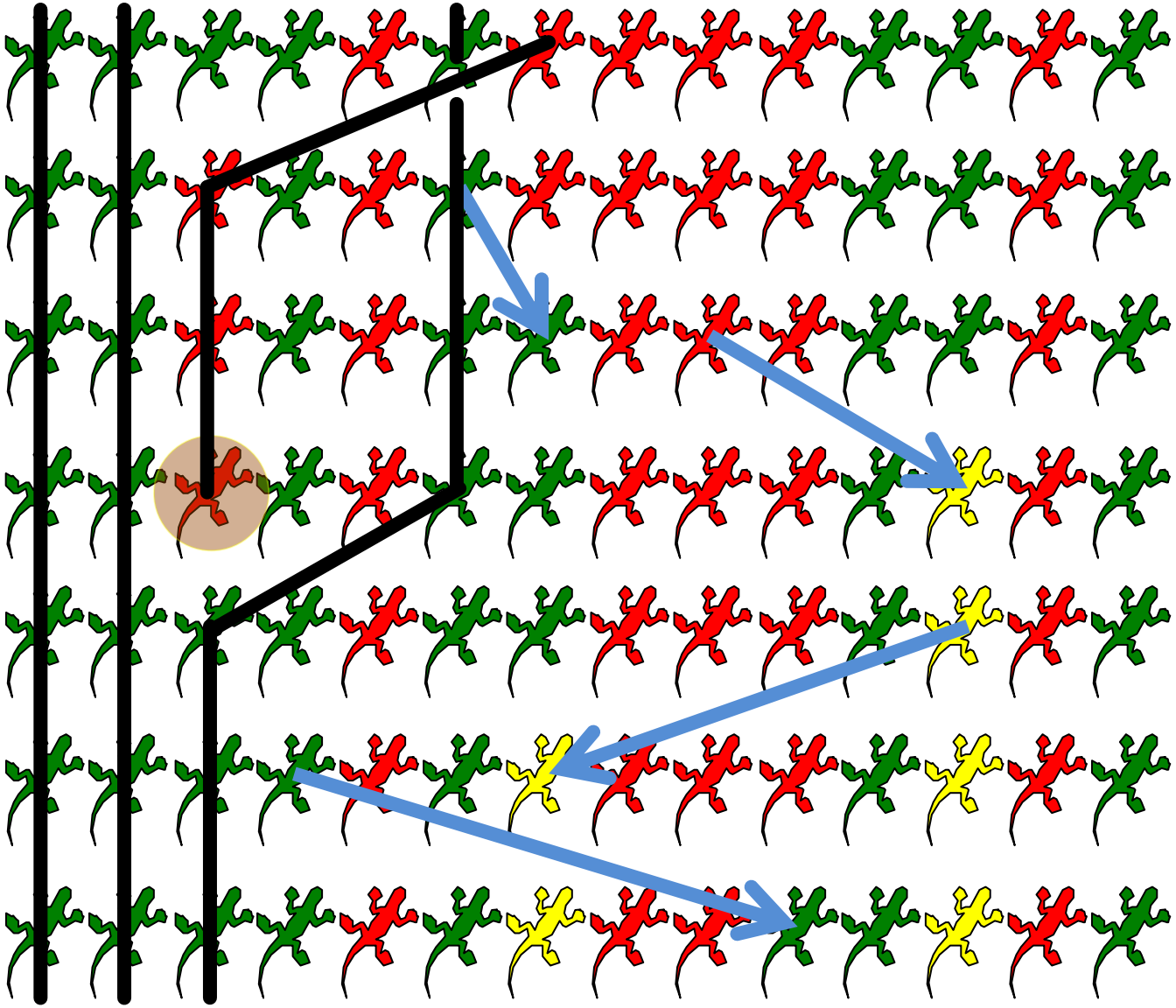


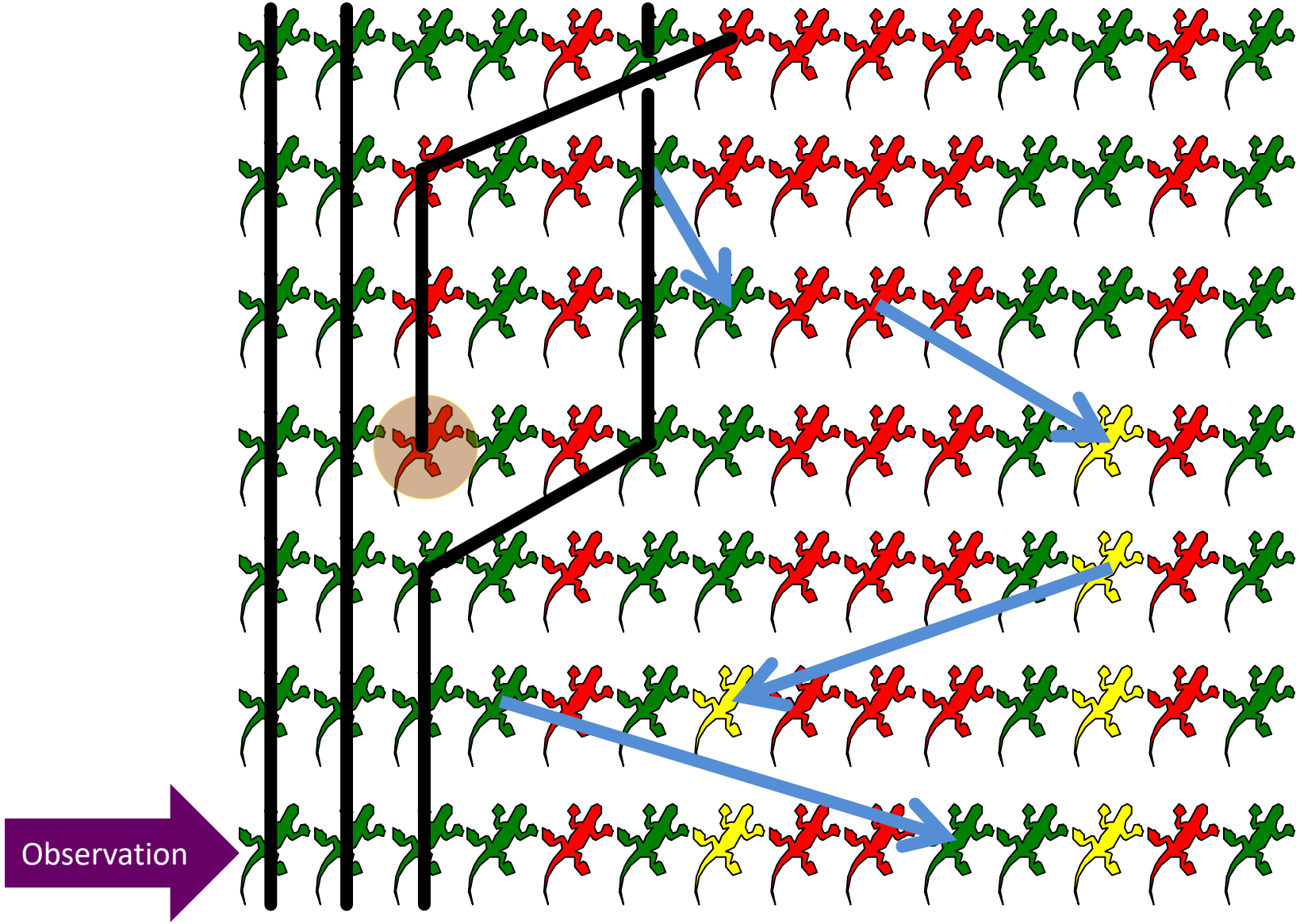


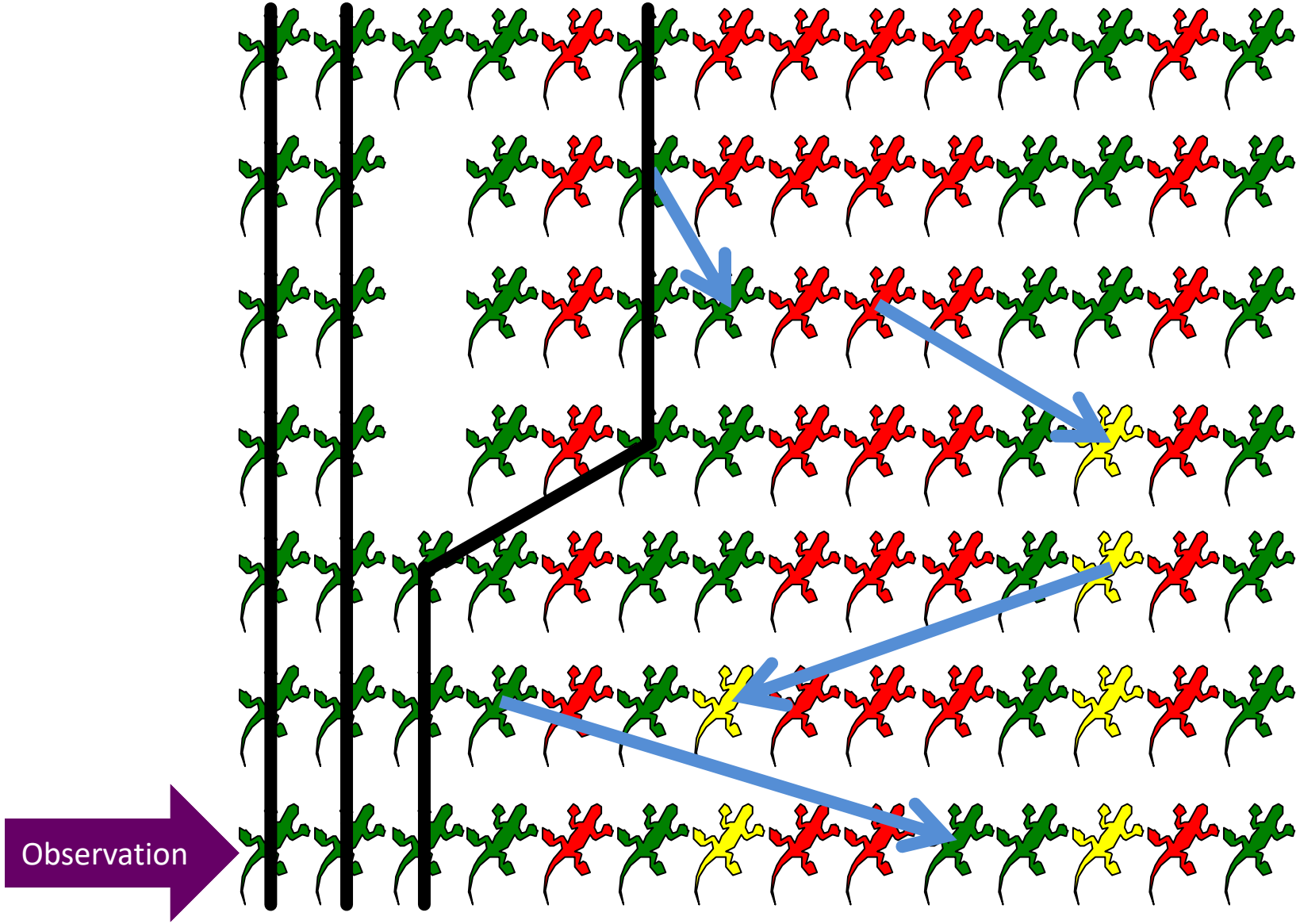


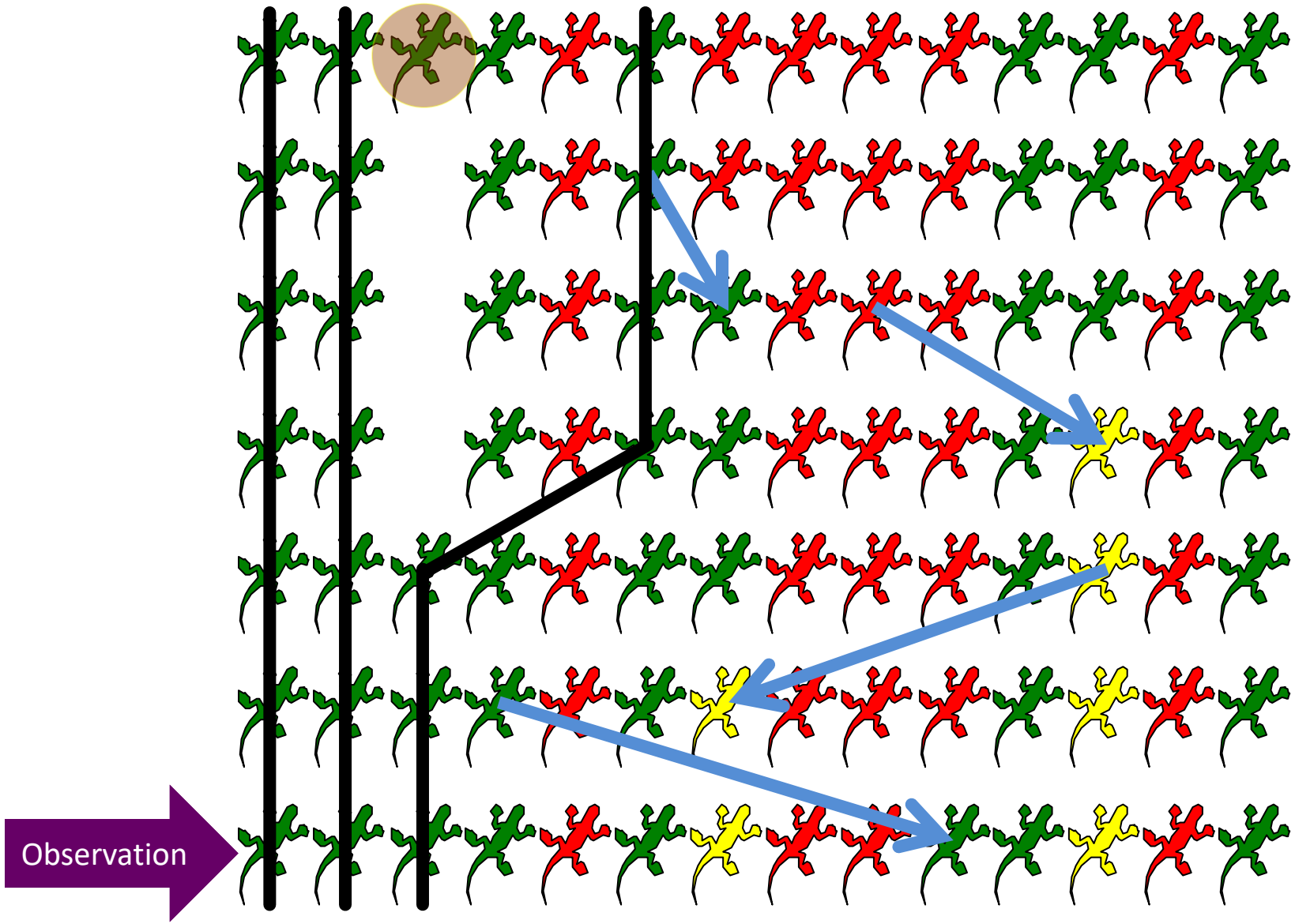


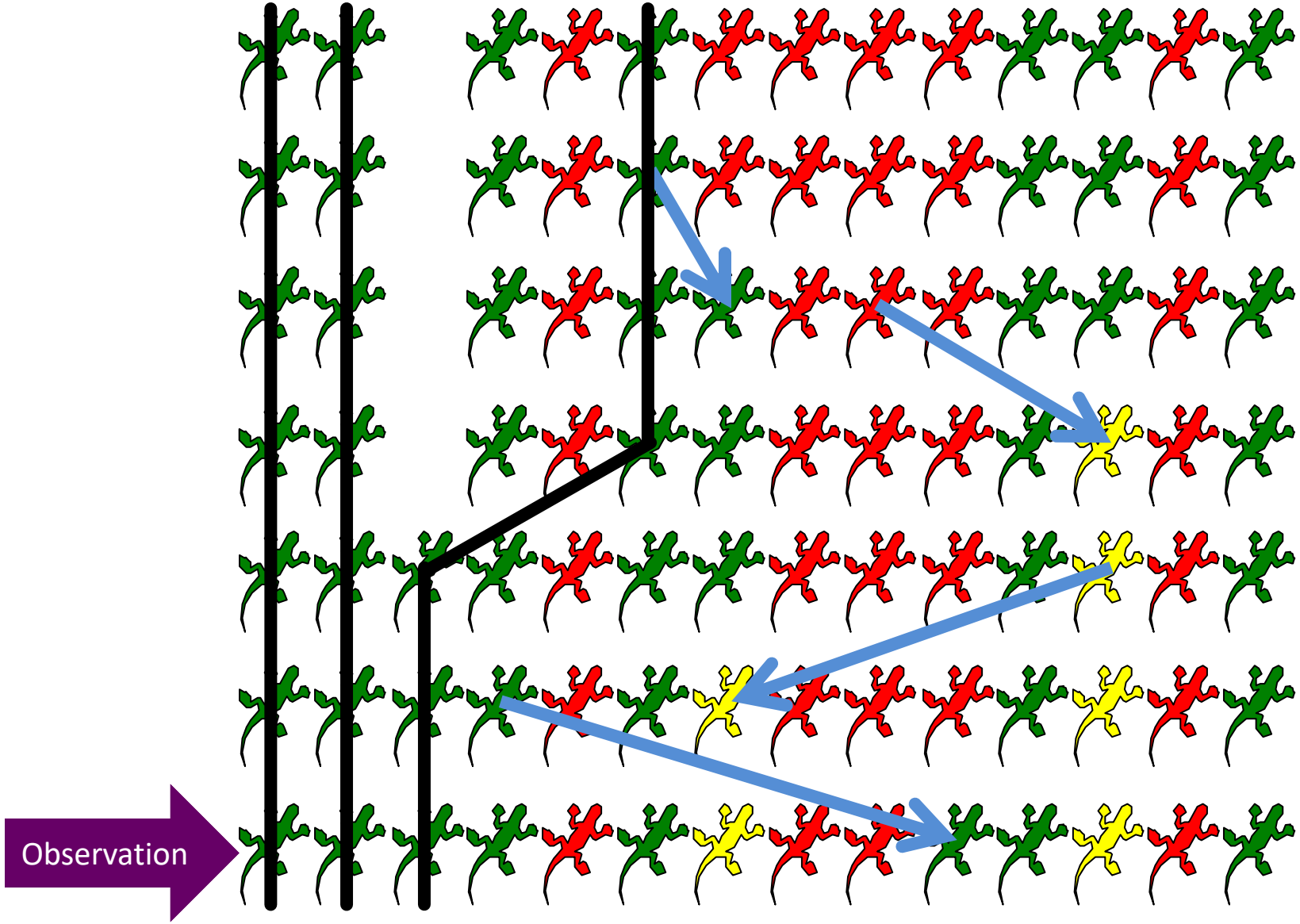


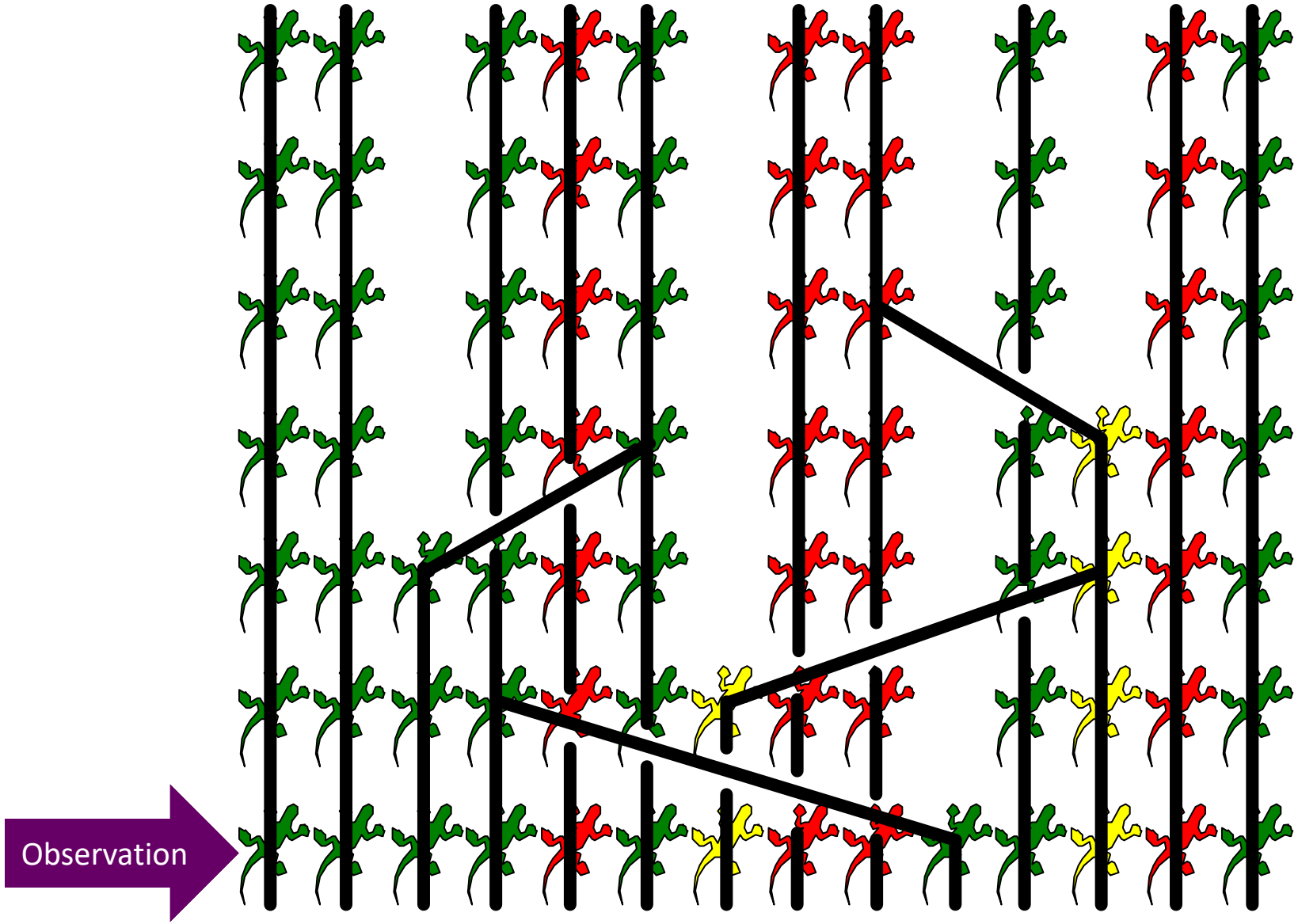


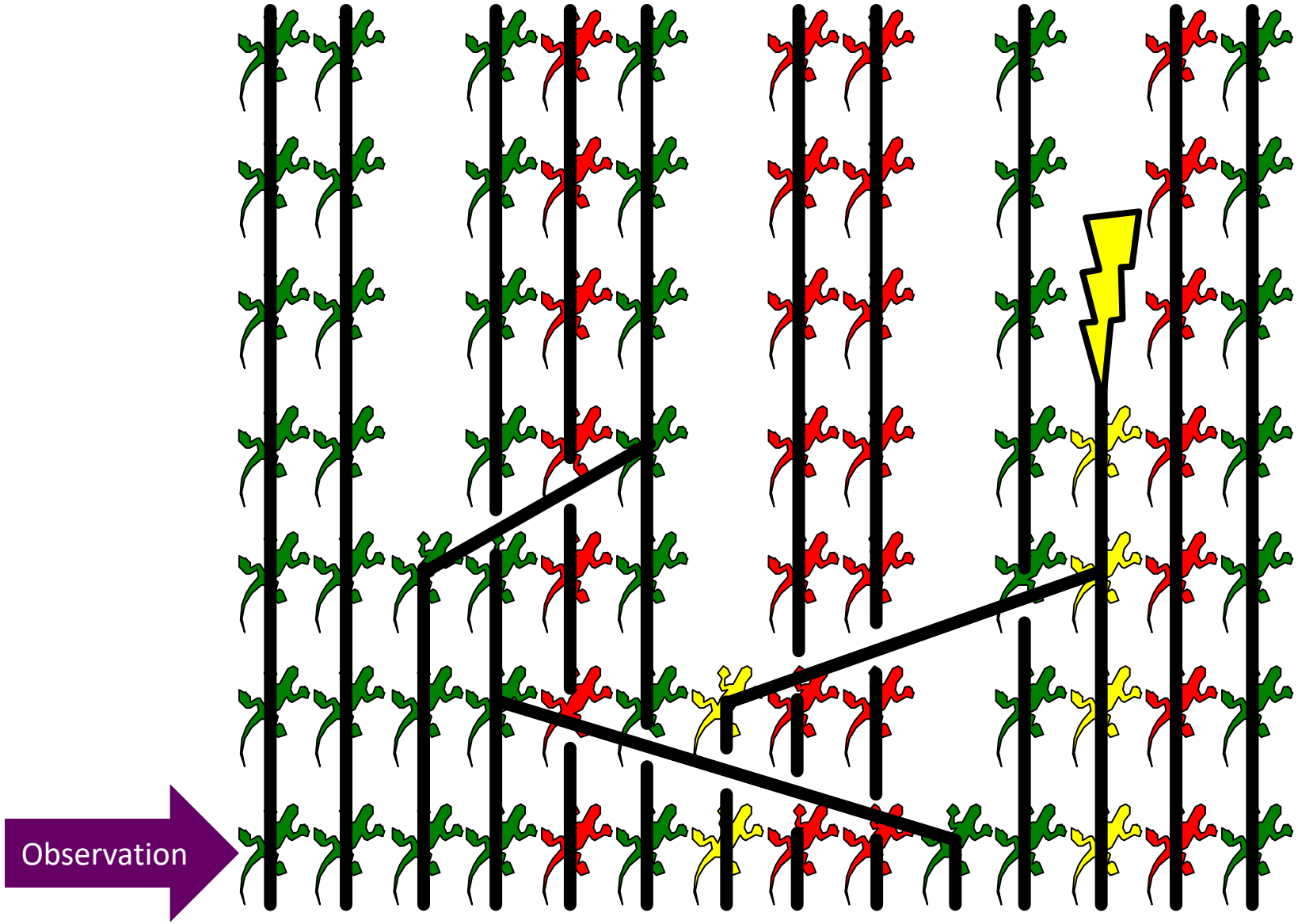

Observation

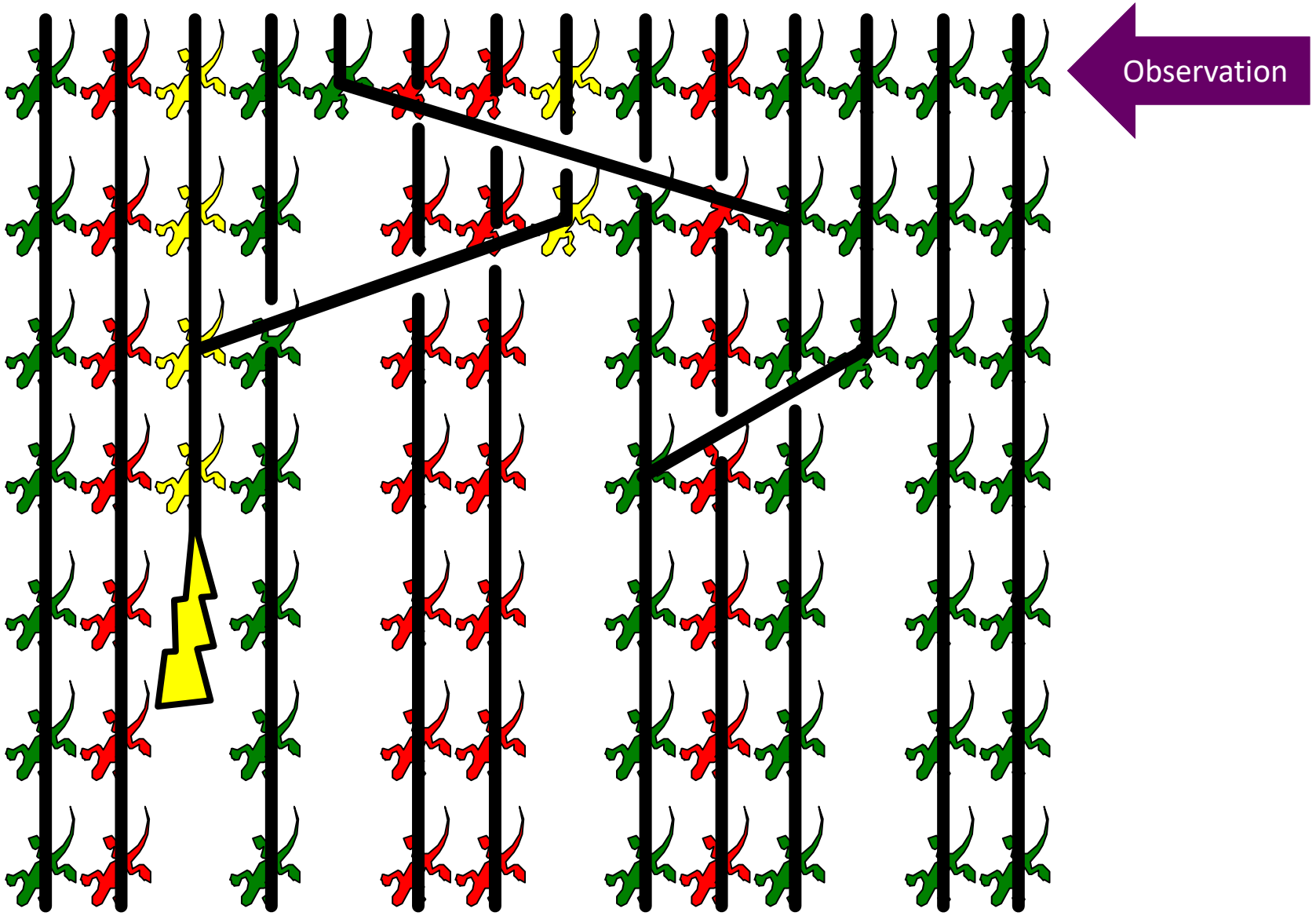

Observation

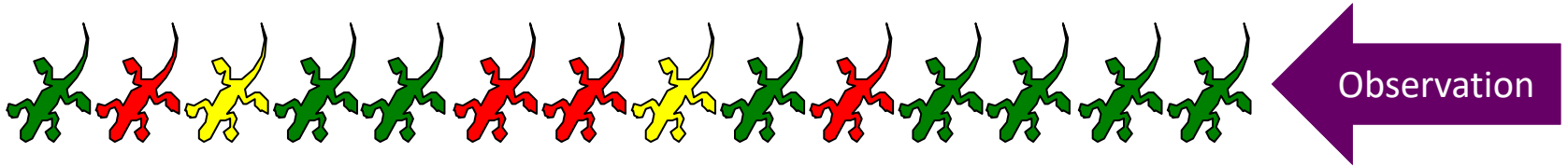

Observation

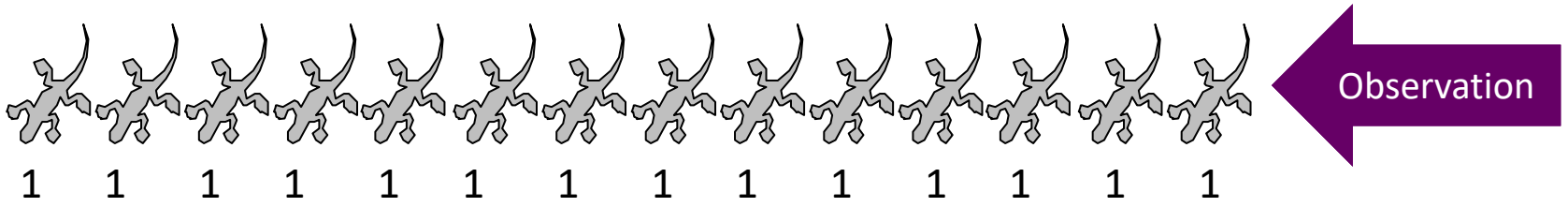

Observation

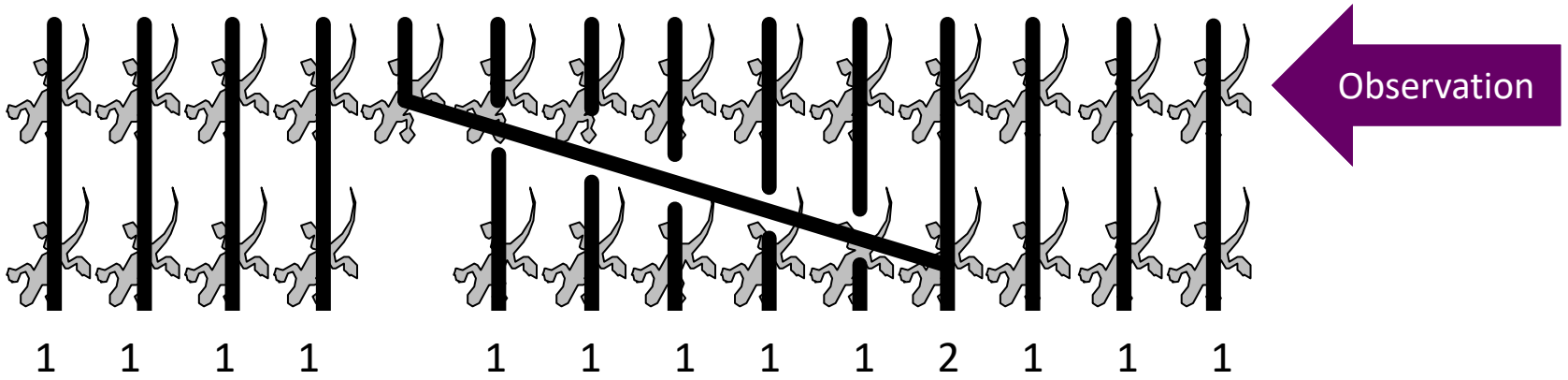

Observation

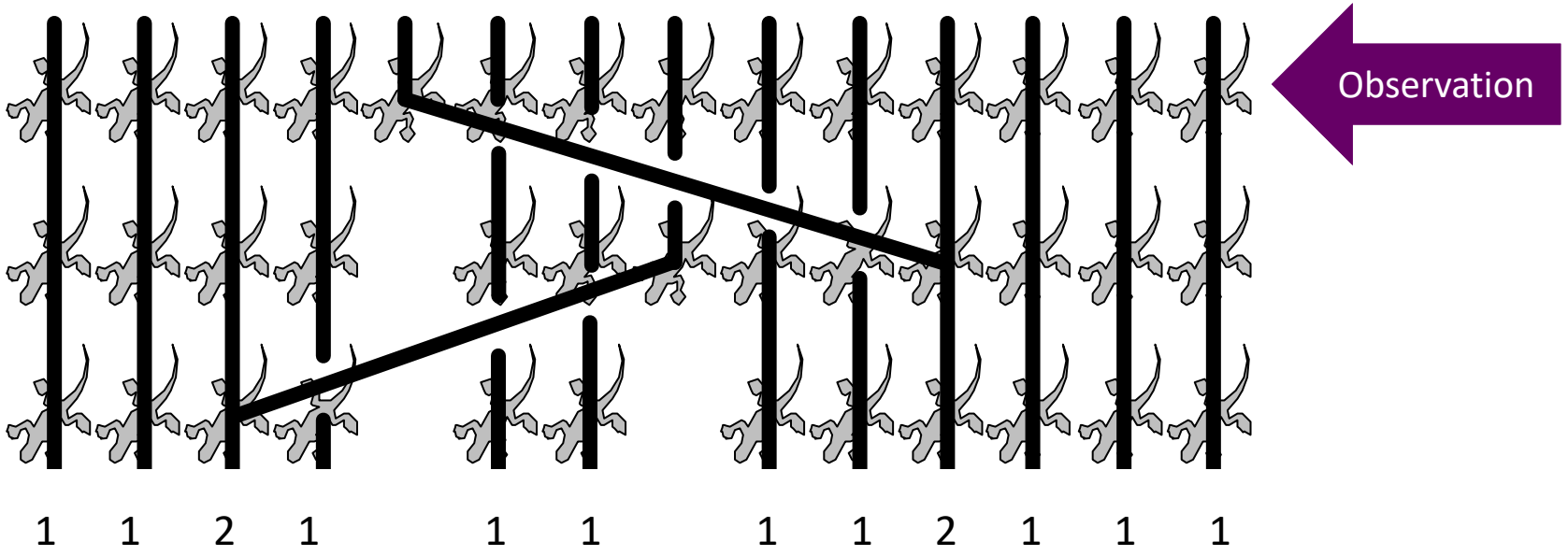

Observation

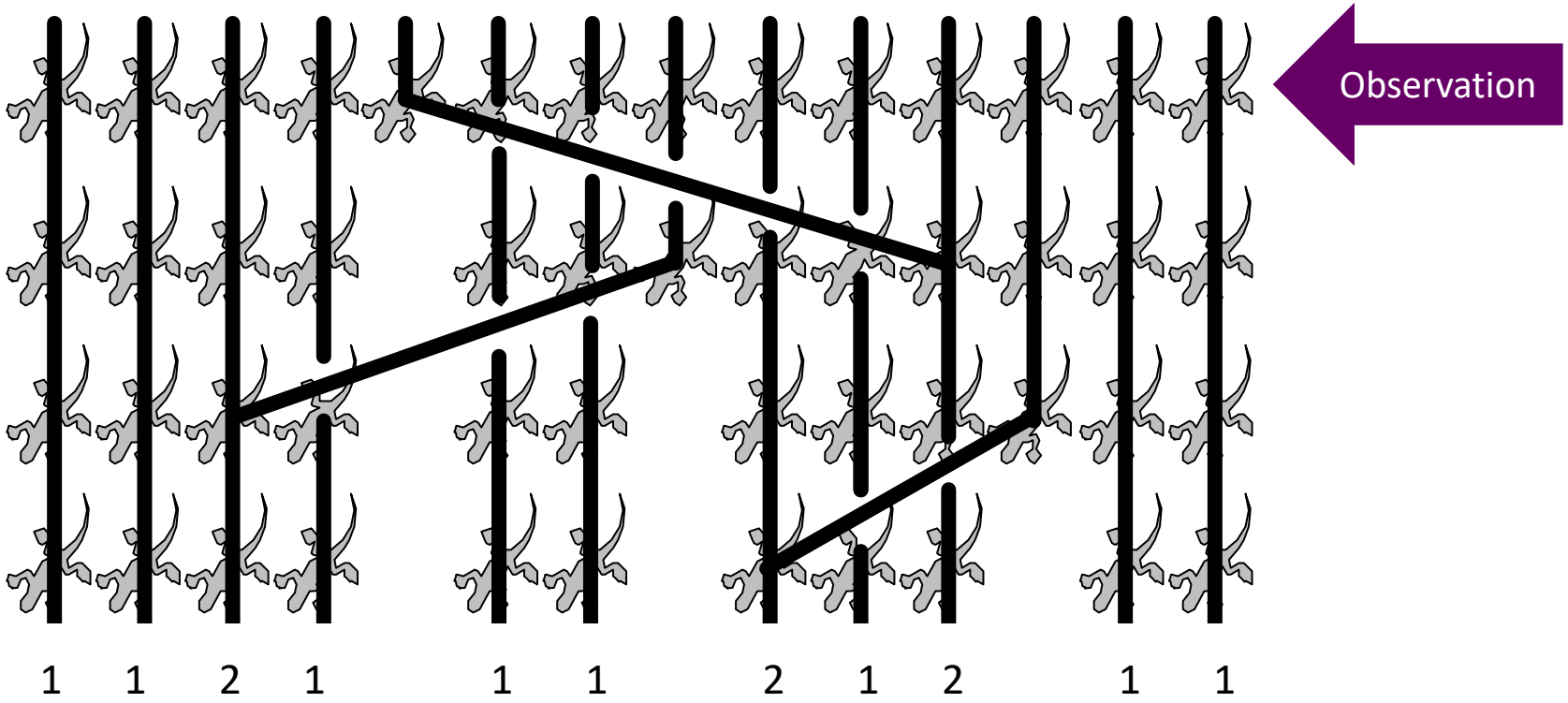

Observation

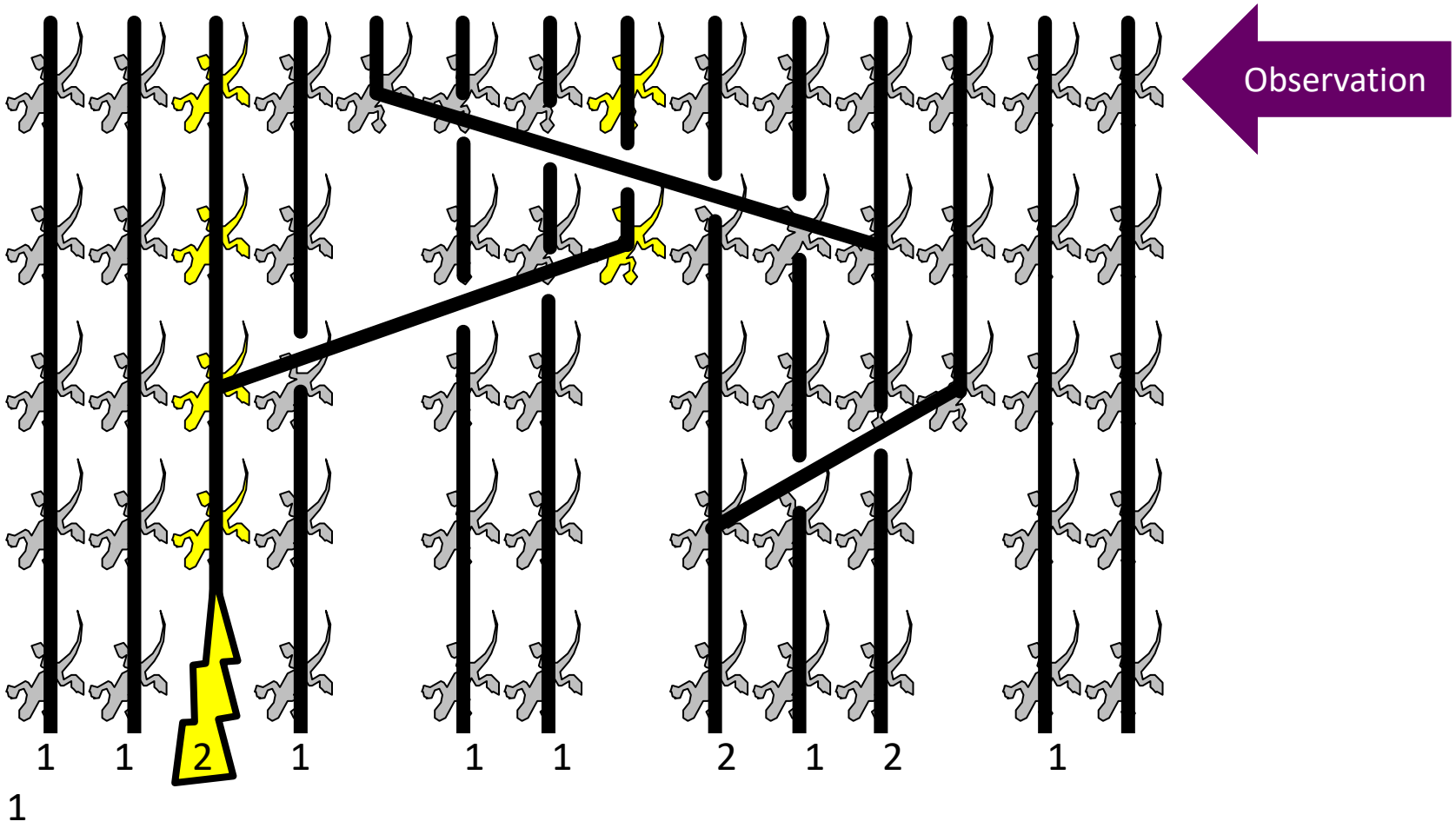

Observation

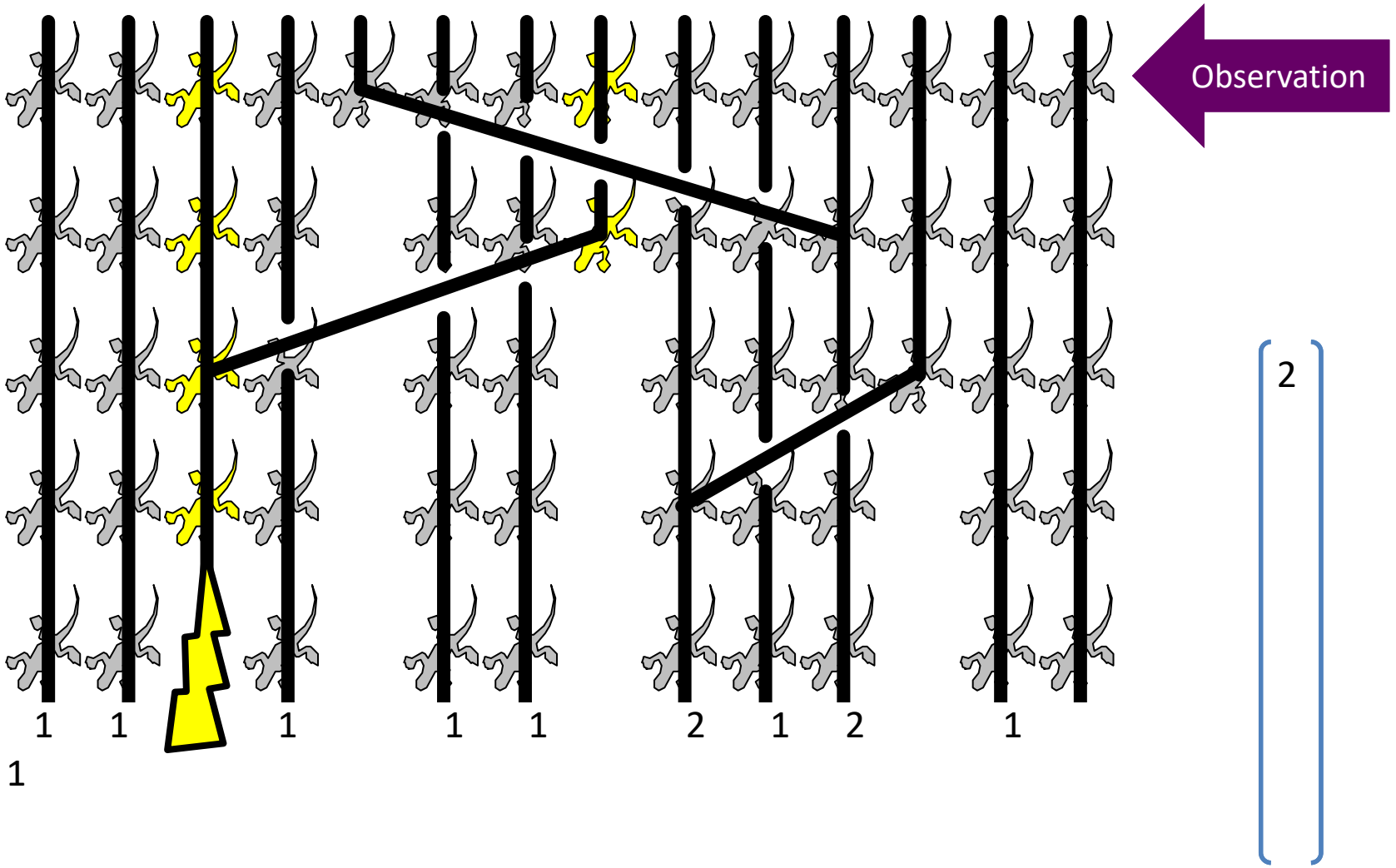

Observation
1 1 1 1 1 1 1 1 1 1 1 1 1 1

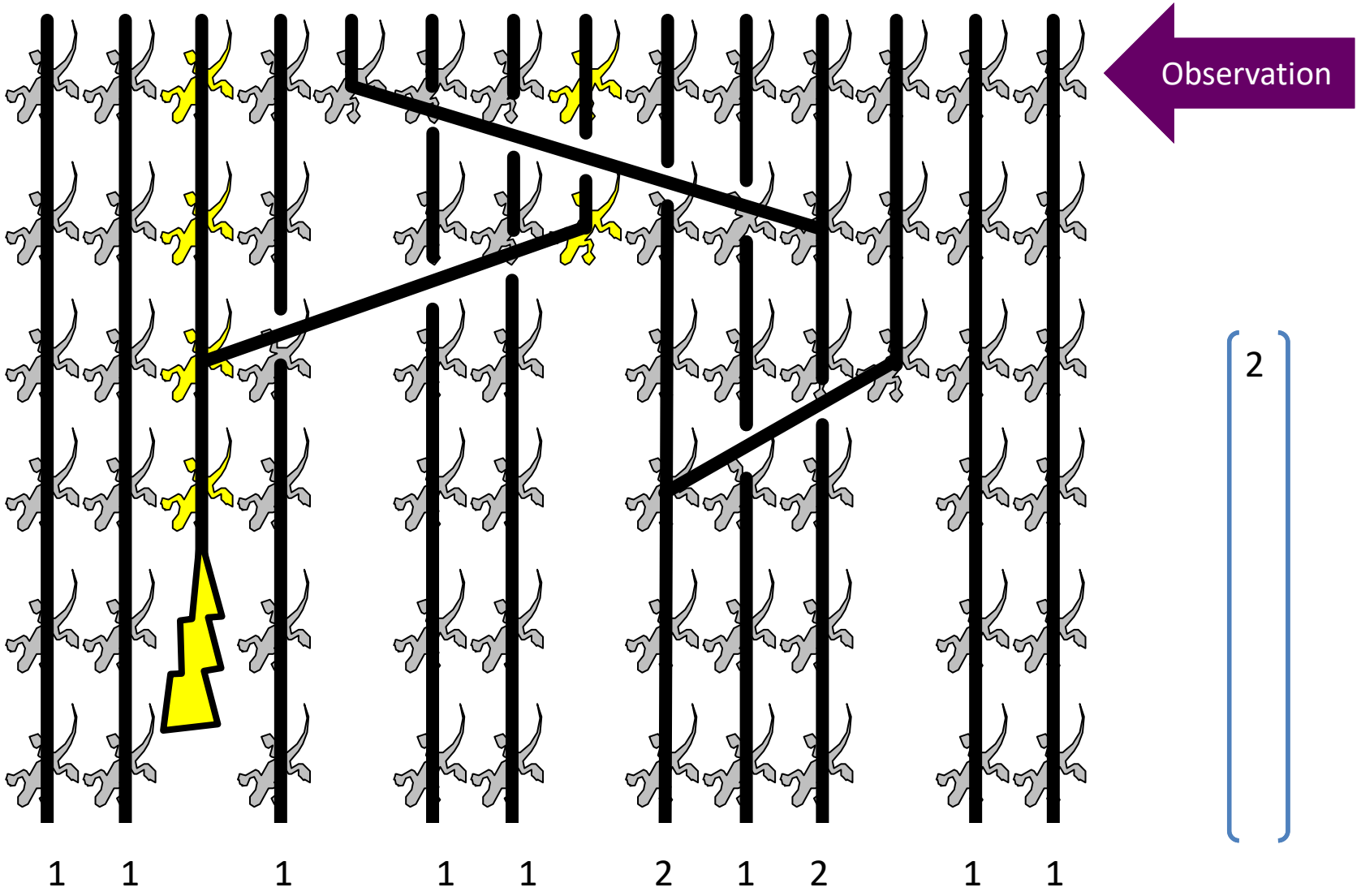

Observation
1 1 1 1 1 1 1 1 1 2 1 1 1

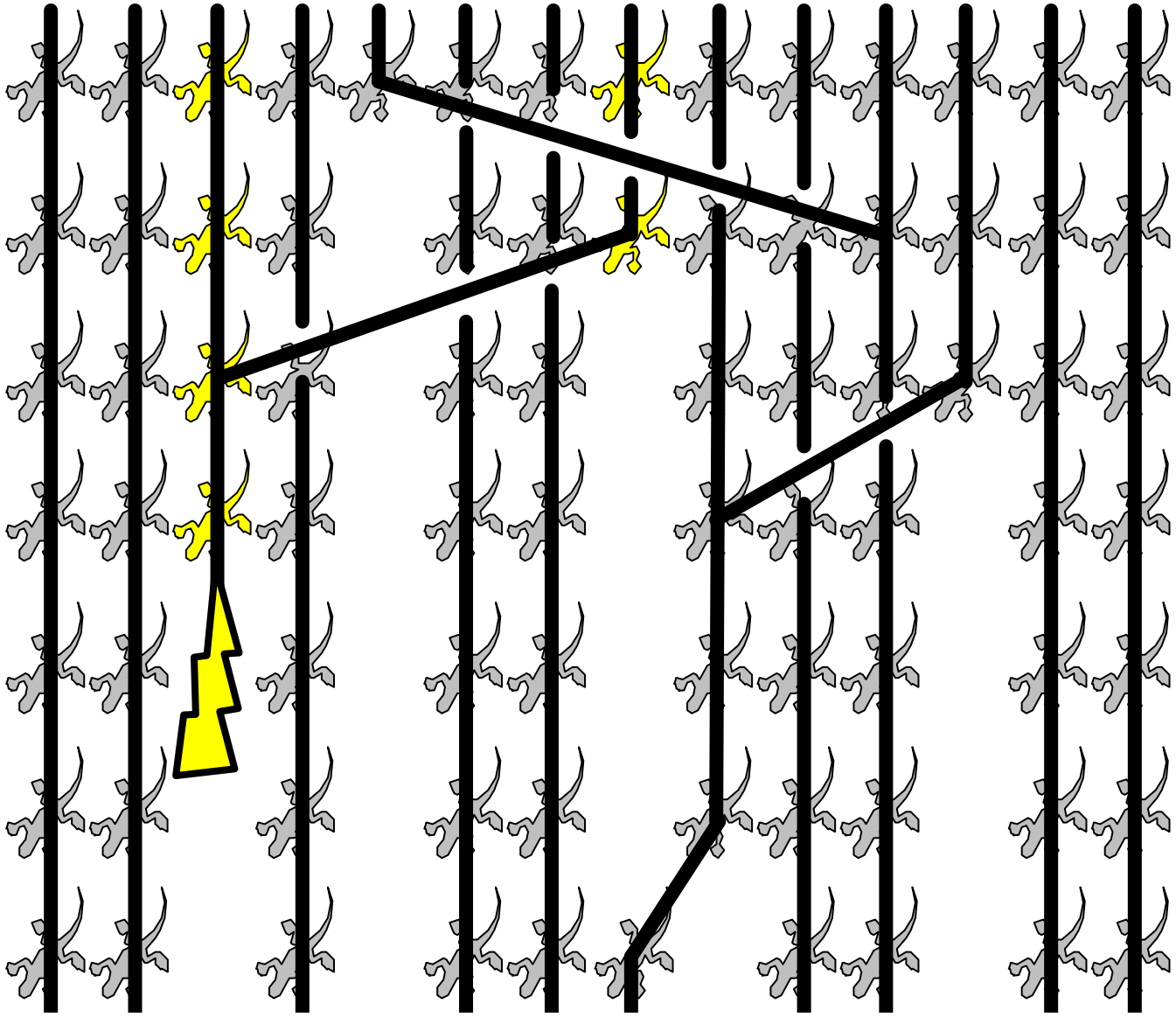

Observation
1 1 2 1 1 1 1 1 2 1 1 1


Observation
1 1 2 1 1 1 2 1 2 1 1


Observation
1 1 2 1 1 1 2 1 2 1
1


Observation
1 1 1 1 1 2 1 2 1
1
2

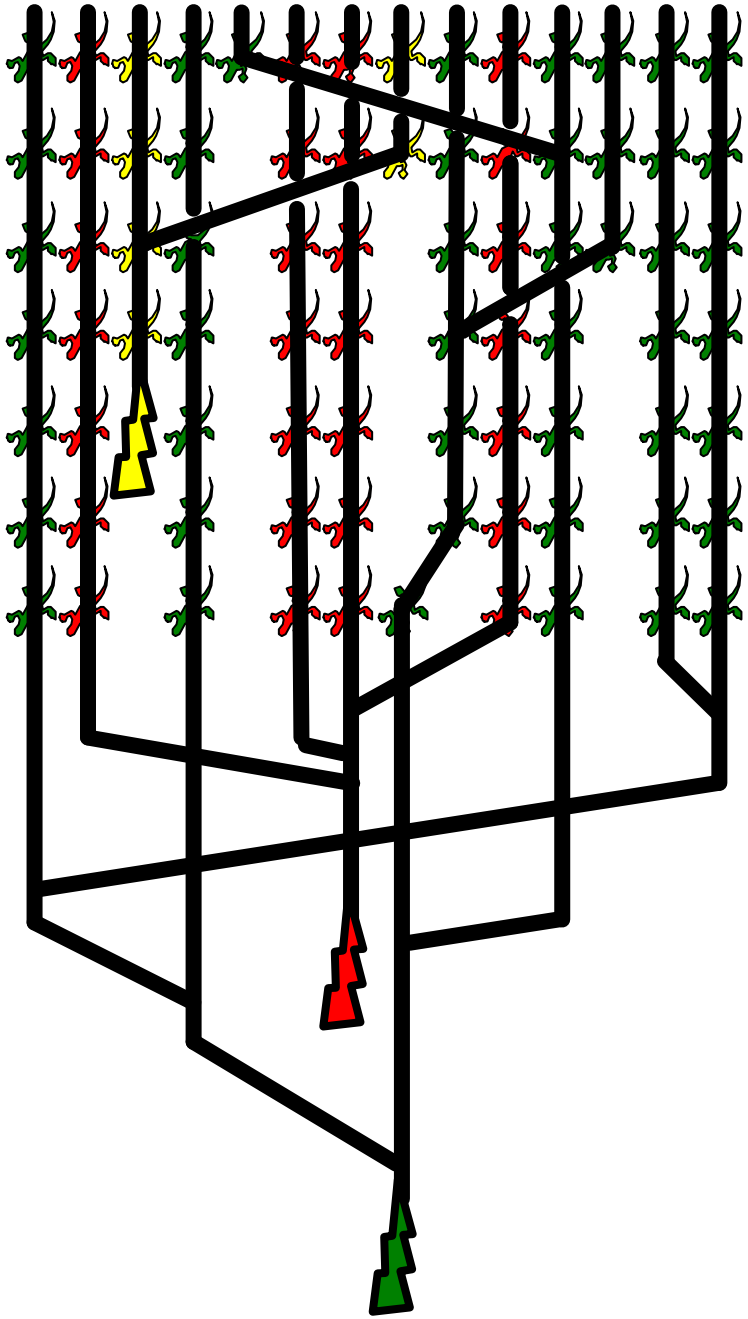

Observation
2
1 1 1 1 1 2 1 2 1 1



Observation

2

1 1 1 1 1 2 1 2 1 1

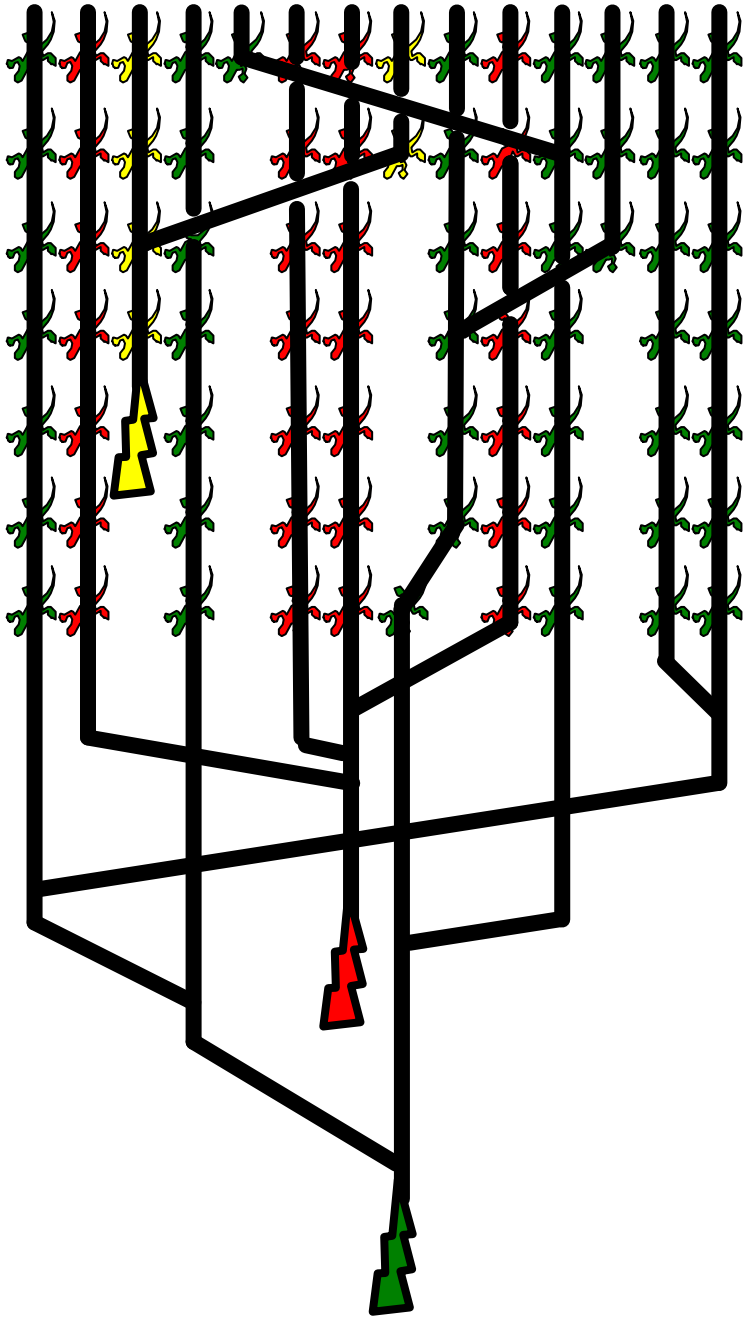


Observation

2

4

8



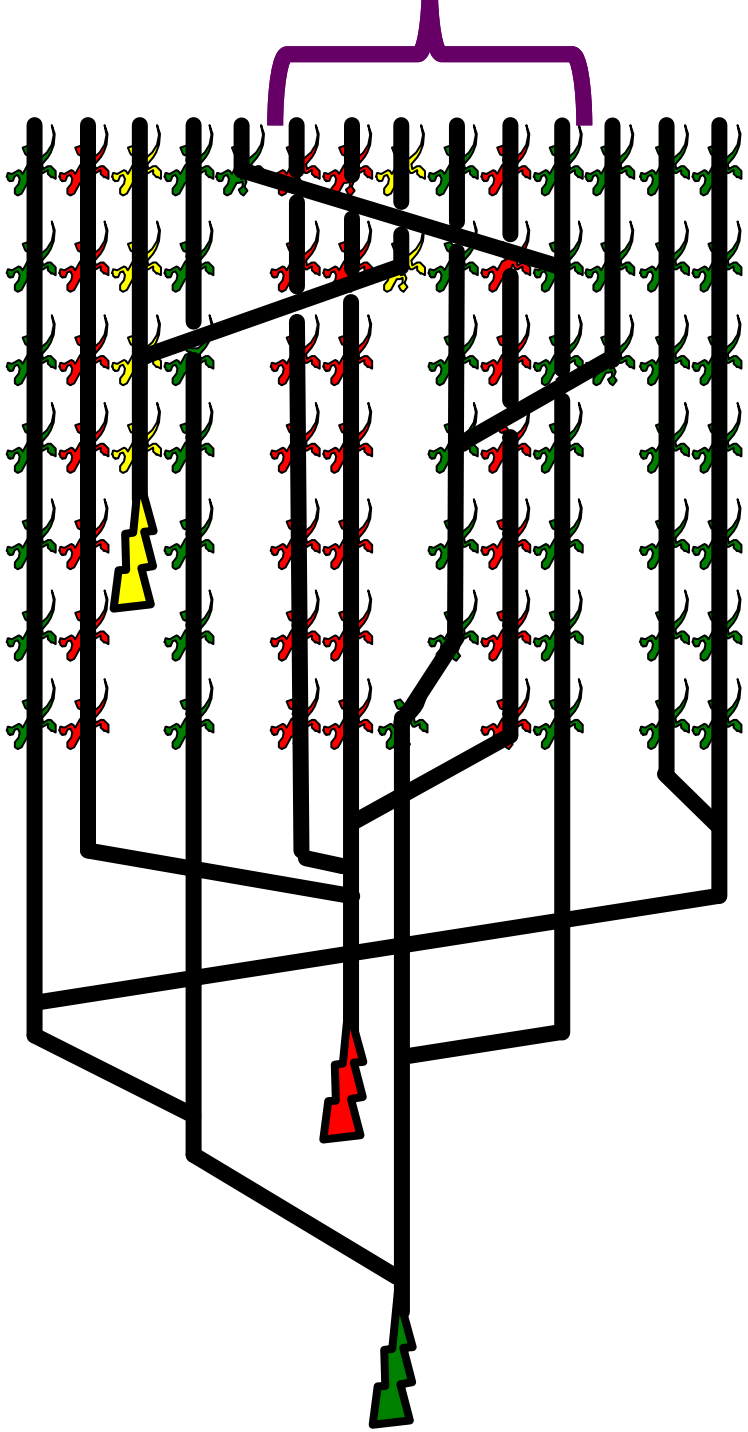
Observation

2

5

7

Total 14



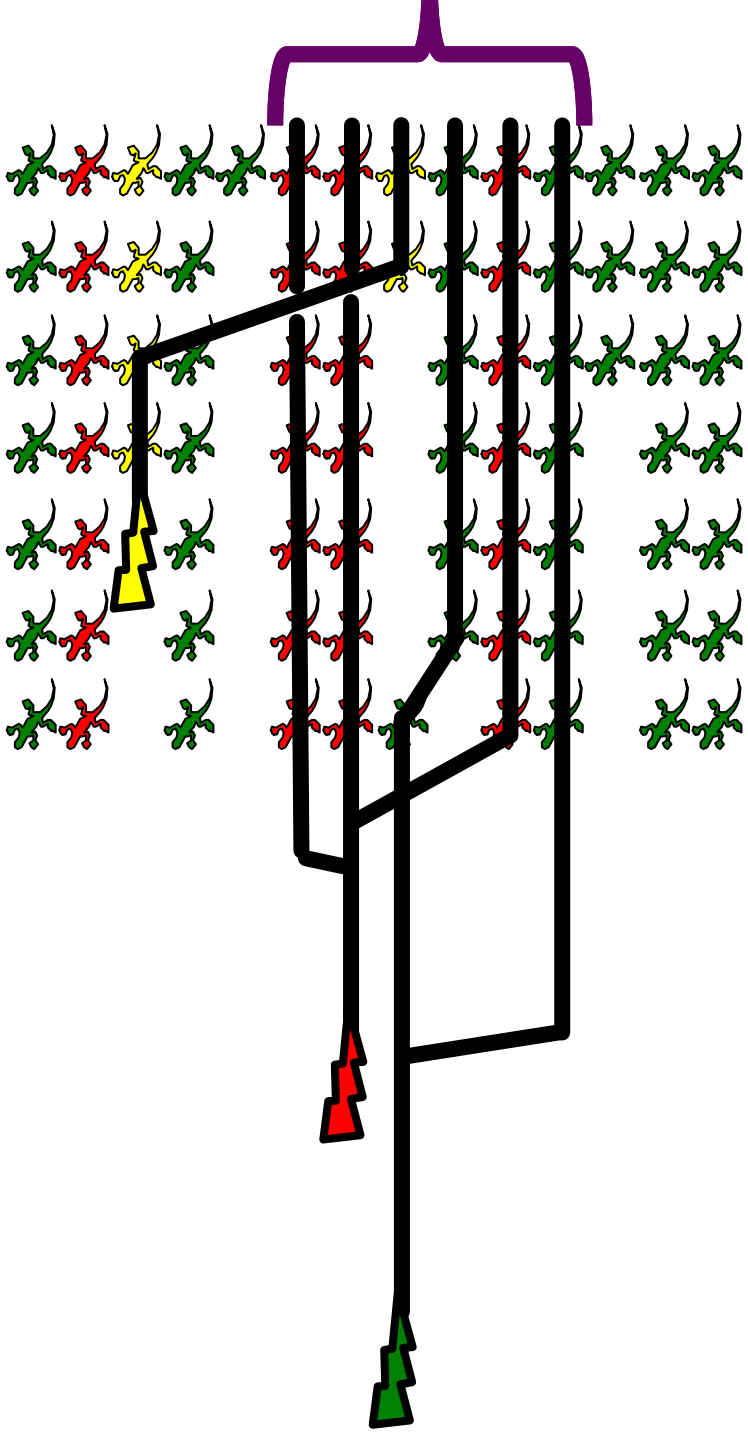
Observation

2

5

7

Total 14



Observation

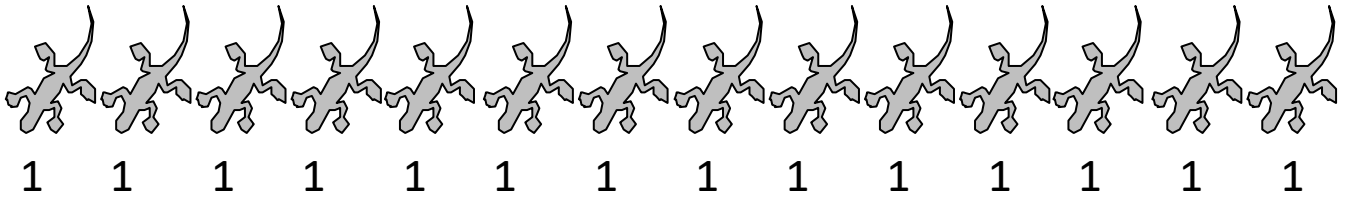
2

5

7

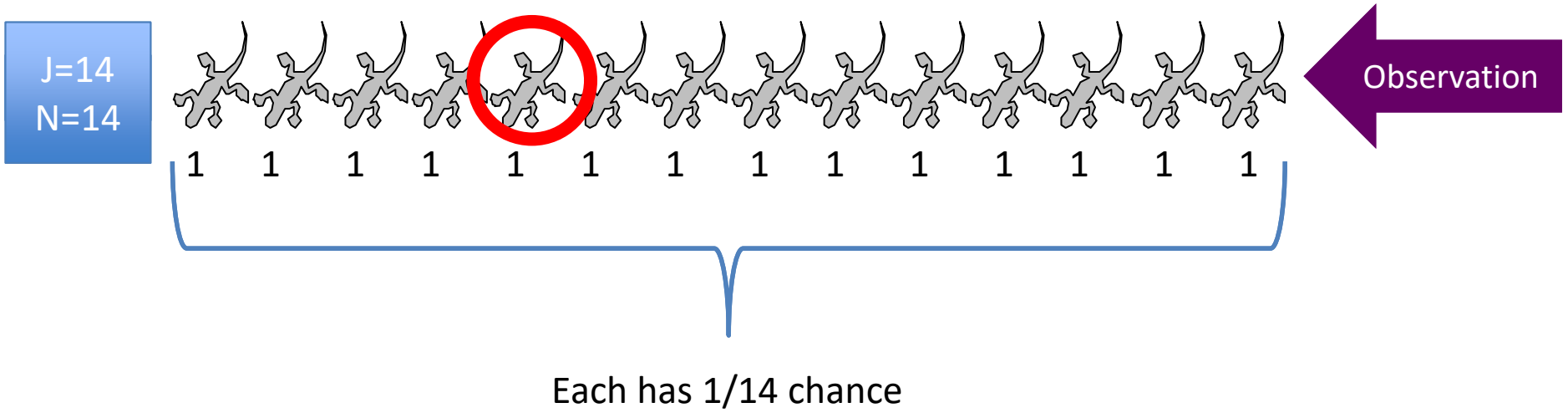
Total 14

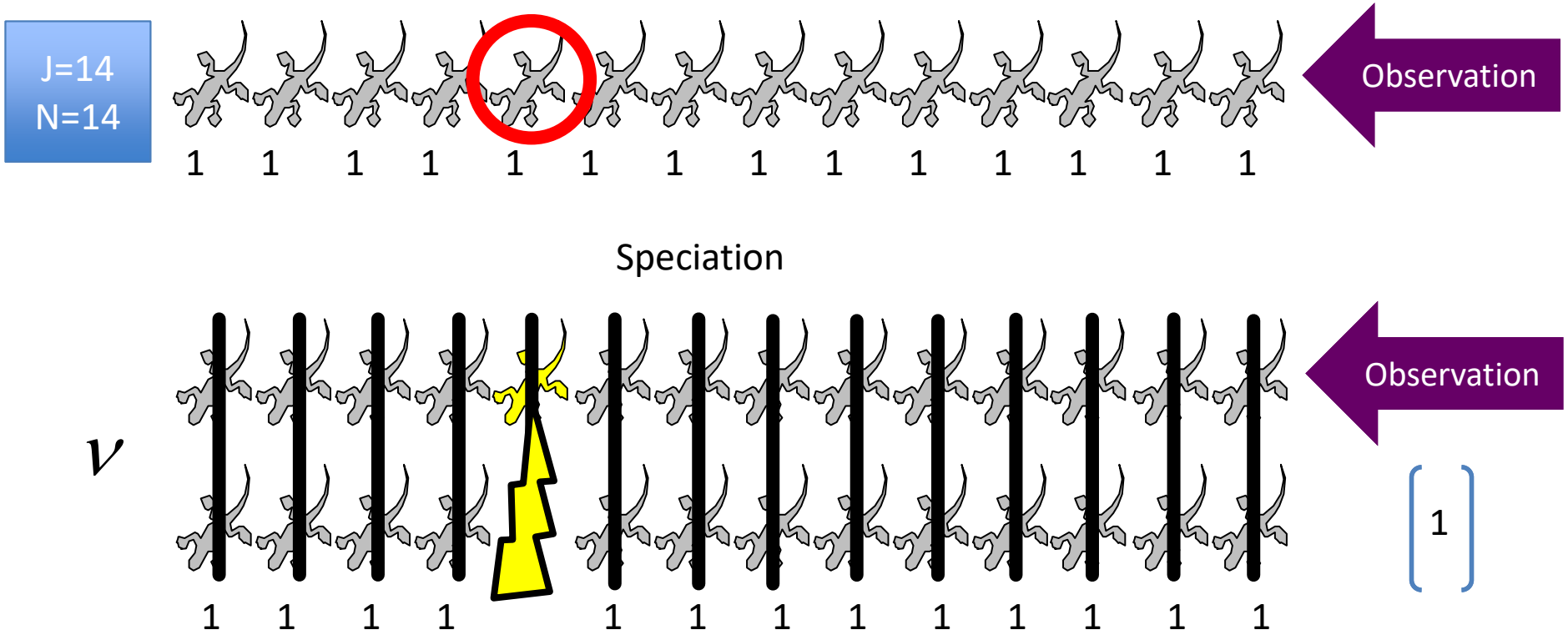
J=14
N=14

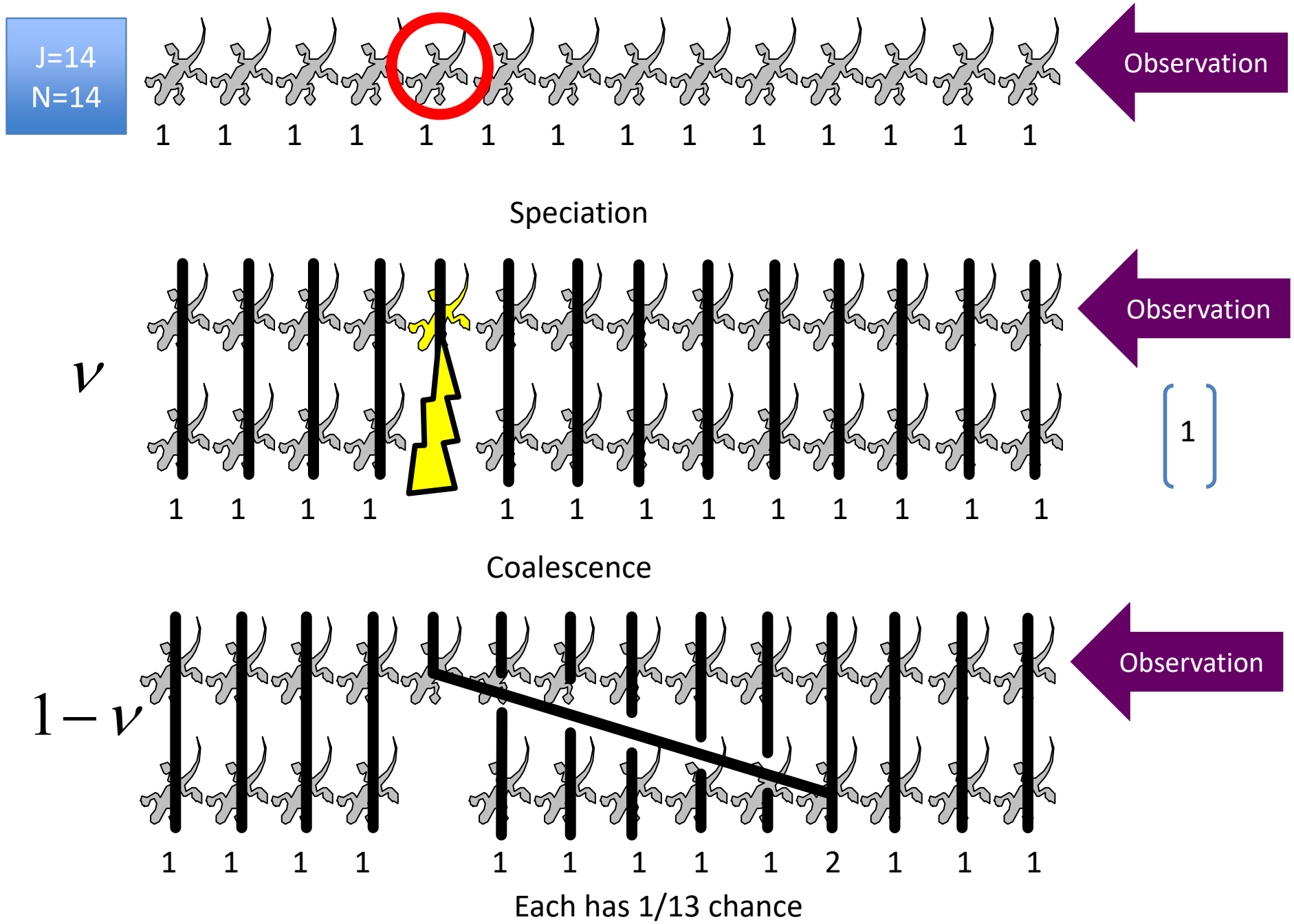


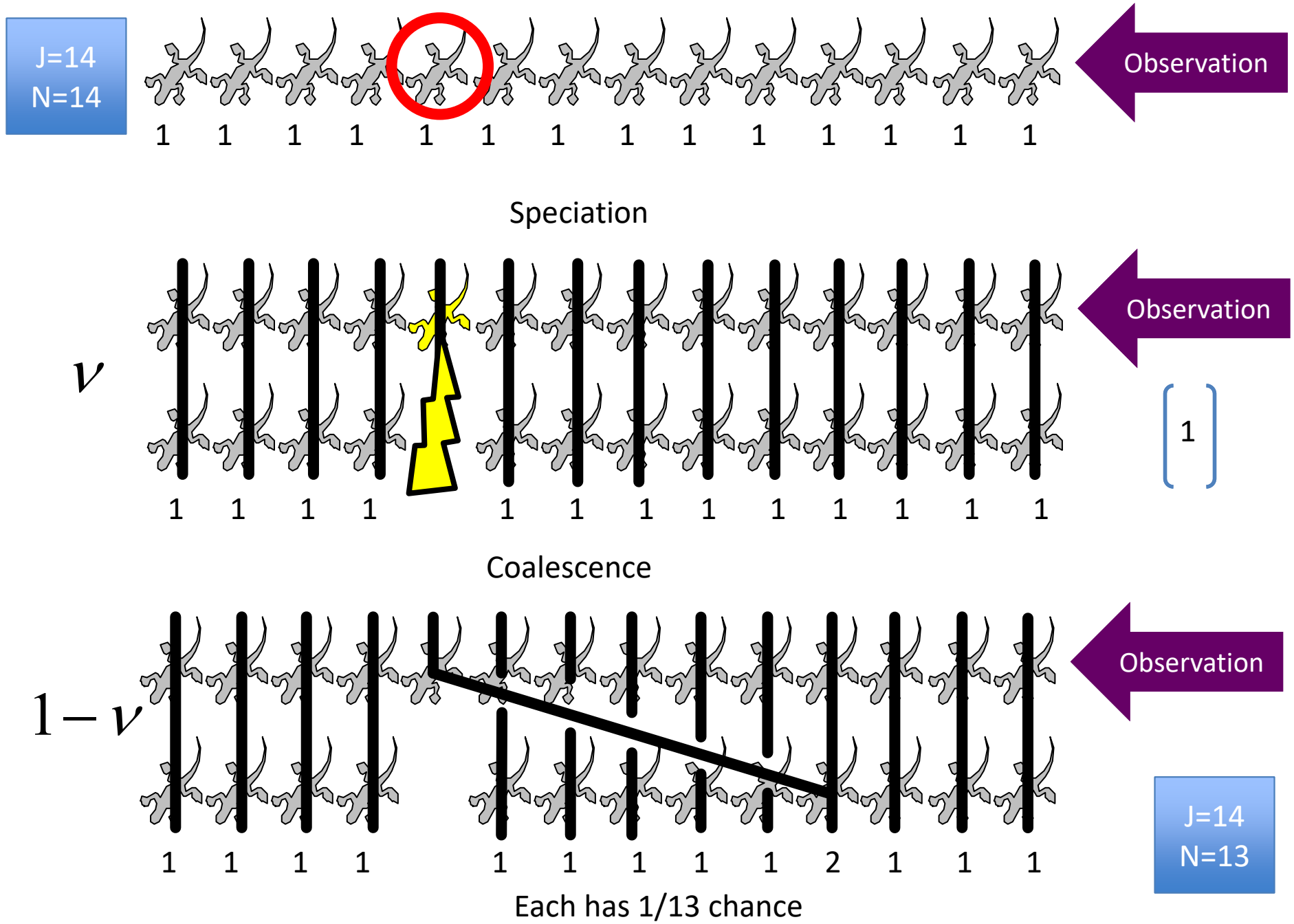
1 1 1 1 1 1 1 1 1 1 1 1 1 1

Observation


J=14
N=14
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
Each has 1/14 chance


J=14
N=14
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
Speciation
ν
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
1

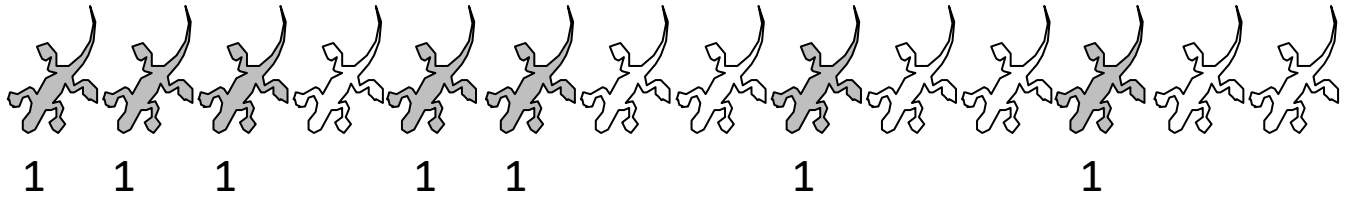

J=14
N=14
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
Speciation
ν
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
1
Coalescence
$1-\nu$
1 1 1 1 1 1 1 1 1 2 1 1 1
Observation
Each has 1/13 chance


J=14
N=14
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
Speciation
ν
1 1 1 1 1 1 1 1 1 1 1 1 1 1
Observation
1
Coalescence
$1-\nu$
1 1 1 1 1 1 1 1 1 2 1 1 1
Observation
J=14
N=13
Each has 1/13 chance

J=14
N=7

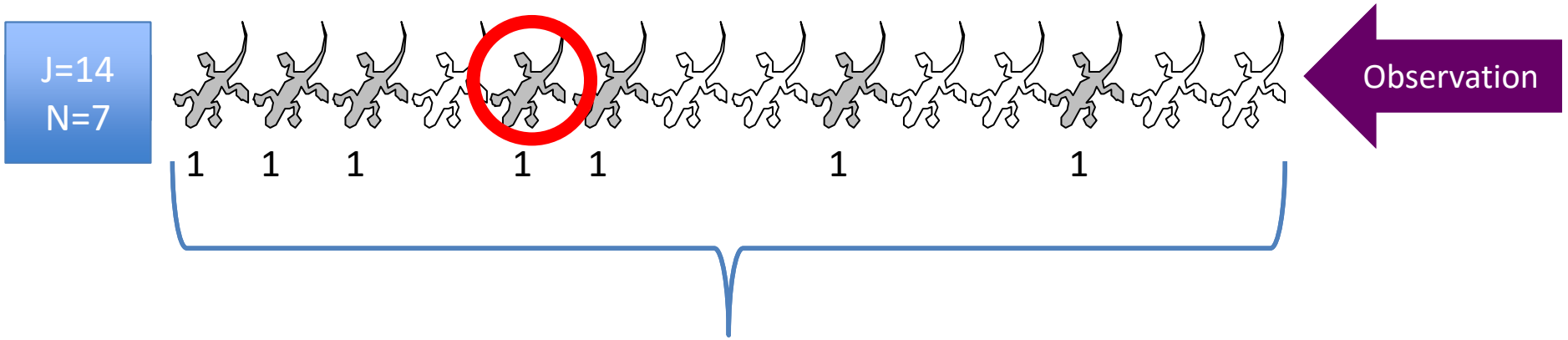
Observation

J=14
N=7



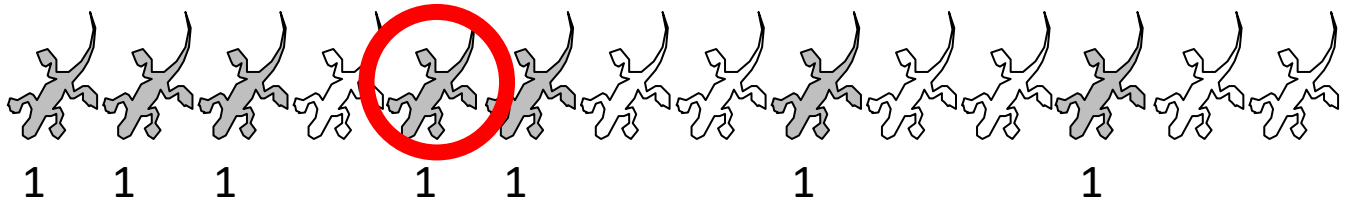
1 1 1 1 1 1 1

Observation



Each has 1/7 chance

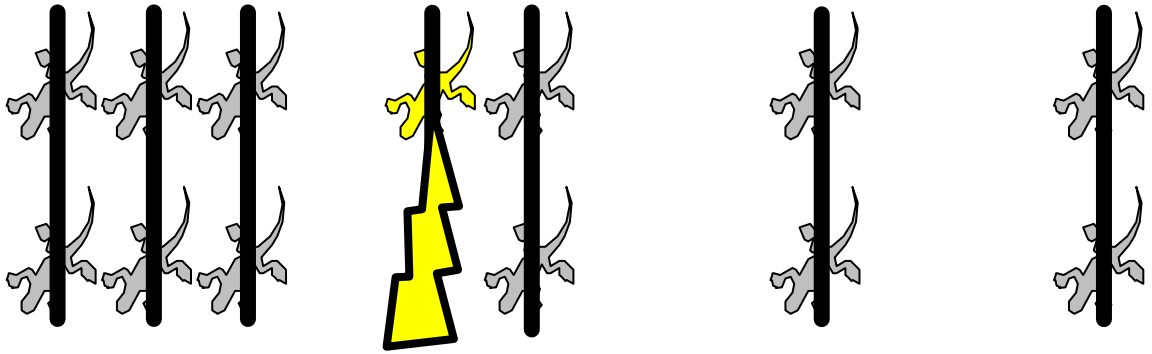
J=14
N=7



Observation

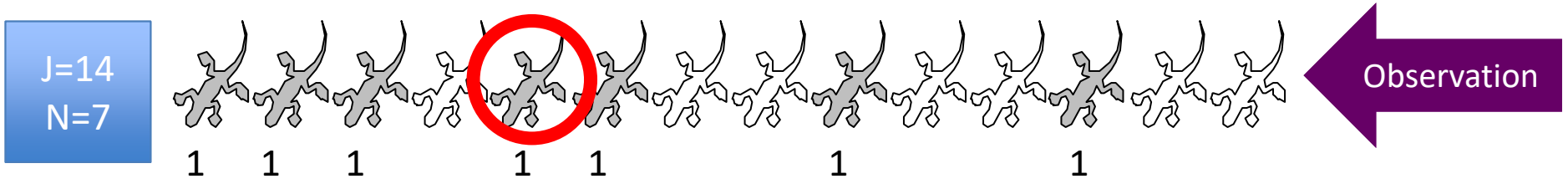
Speciation

ν



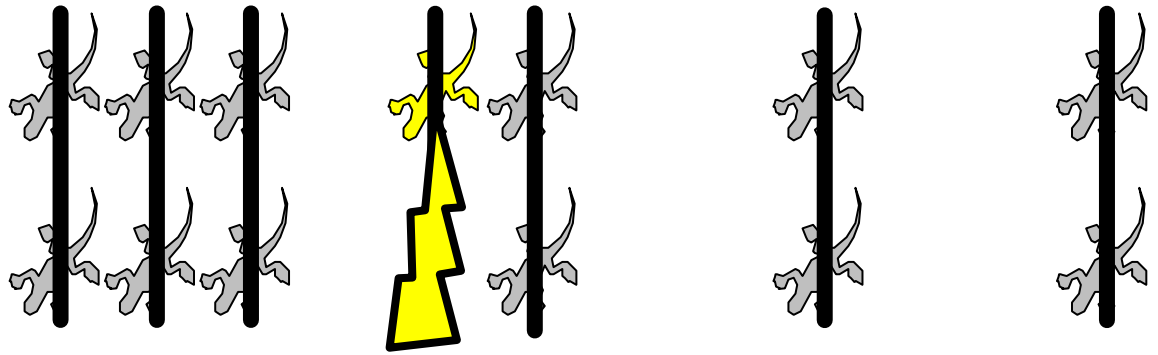
Observation

1



Speciation

ν



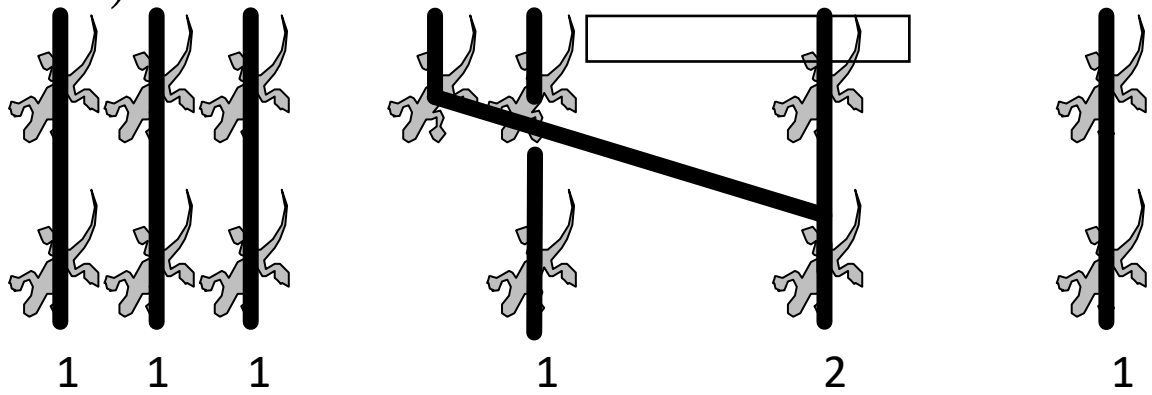
Observation

1

$$\frac{N-1}{J-1}(1-\nu)$$

<- probabilities

Coalescence



Observation

Each has 1/6 chance

Advantages of coalescence

- Always at equilibrium
- Much faster
- Sampling based

Disadvantages of coalescence

- Not ideal for time series
- Complex to program
- Fewer ways in which model can be changed