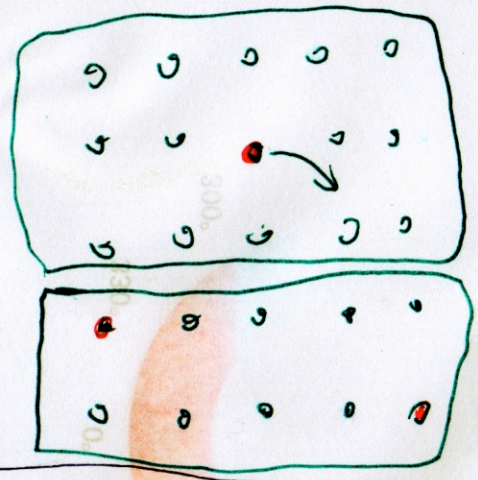

$z$ → population invest defence

$y$ → individual invest defence

Attacked < no defence — die
Have defence — survive (certain)

Uniform distribution attack?

~~Why cost $y$?~~ Independent

$$W(y,z) = (1 - c \cdot y)\left[1 - \frac{a(1-y)f(z)}{\text{ones got attacked}}\right]$$

who survives pays a cost

ones survived

The more likely to invest defence
The less likely to reproduce

③ Predator, no effect from group size?
Pathogen

Time scale
Attack needs time
pre-attack, consequance
↓ warning ↓ kill

- Short defence, one time
- Lifetime immunity
- × Short period defence

Poisson
early investment, fixed cost
all attack

② Imperfect defence
reduces attack?
reduces attack success ratio?

$$a \cdot f(z) = g(z)$$

④ $a = P(\text{group attack}) \cdot P(\text{individual})$
$a = \lambda(n)$?
$a = \downarrow(z)$?
$a = \lambda(z)$?