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$A$  (a finite set of agents)

$|A|$  : Net (the number of agents)

$T = \{0 \dots |A|\}$  (the thresholds values)

$d$  :  $A \rightarrow T$  (the threshold distribution)

We also have a time discrete dynamical system that describes how the number of agents that have chosen one of the no options evolves as the basis of  $d$ . This is perhaps a function of type

$$T \rightarrow T$$

or perhaps

$$(A \rightarrow \text{Bool}) \rightarrow (A \rightarrow \text{Bool})$$

It anyway has to be an endo function.

$$f \text{ endofunction} \equiv \text{dom } f = \text{cod } f$$

because it is iterated and the equilibria number of agents. Not choose one of the two options (join a not or not) ~~is~~ one the fixpoints of it.

Question: what is the type of the function (called "flow" or "iterate<sub>n</sub>") that iterates an endofunction?

$$\text{flow} : (X \rightarrow X) \rightarrow \text{Nat} \rightarrow (X \rightarrow X)$$

Question: how is flow defined?

$$\text{flow } f_0 \quad x = x$$

$$\text{flow } f_{(n+1)} \quad x = \text{flow } f_n (f x)$$

Question: what is the function flow  $f_0$ ?

Exercise: define 'flow' using function composition where

$$(f \circ g) x = f(g x)$$

Question: what is the type of 'o'?

A simple example of an endofunction on natural numbers is

$$f x = 2 * x$$

where  $a * b$  represents the product (multiplication) of  $a$  and  $b$ :

$$1 * 1 = 1$$

$$1 * 3 = 3$$

$$2 * 2 = 4$$

...

Question: what is the type of  $*$ ?

Question: Carriadas

$f : (\text{Nat} \rightarrow \text{Nat}) \rightarrow \text{Nat}$

$f \ g = ?$

what is the type of  $'g'$ ? What the type of  $'fg'$ ?

