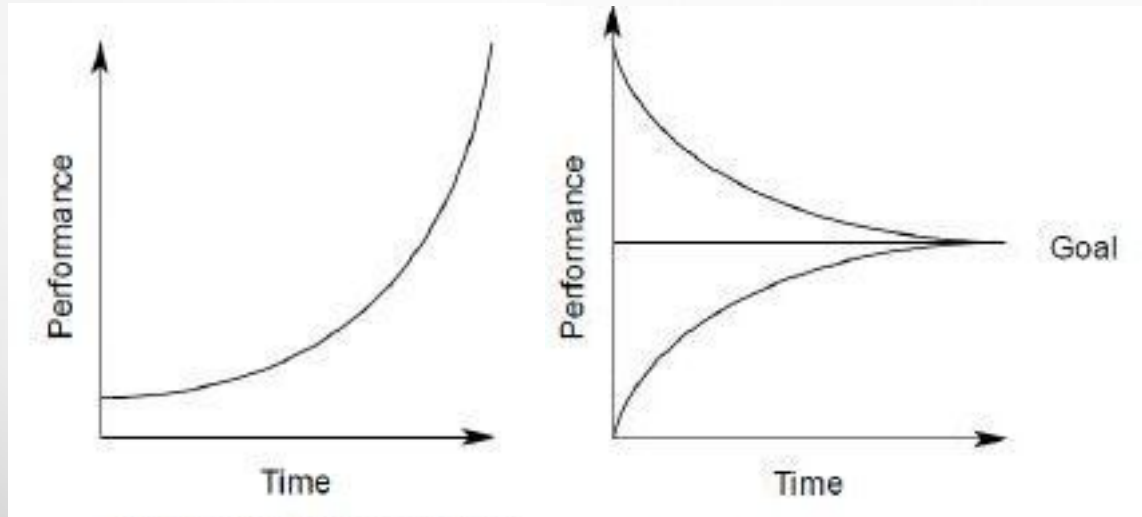
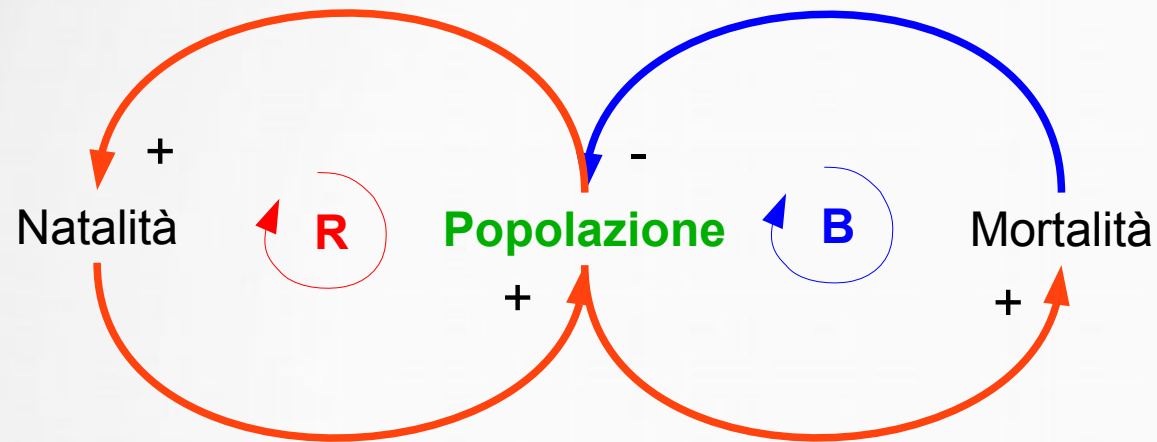


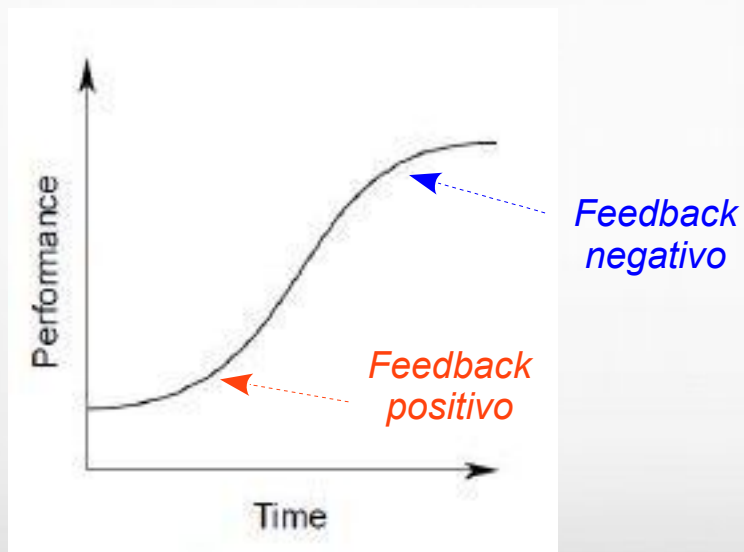
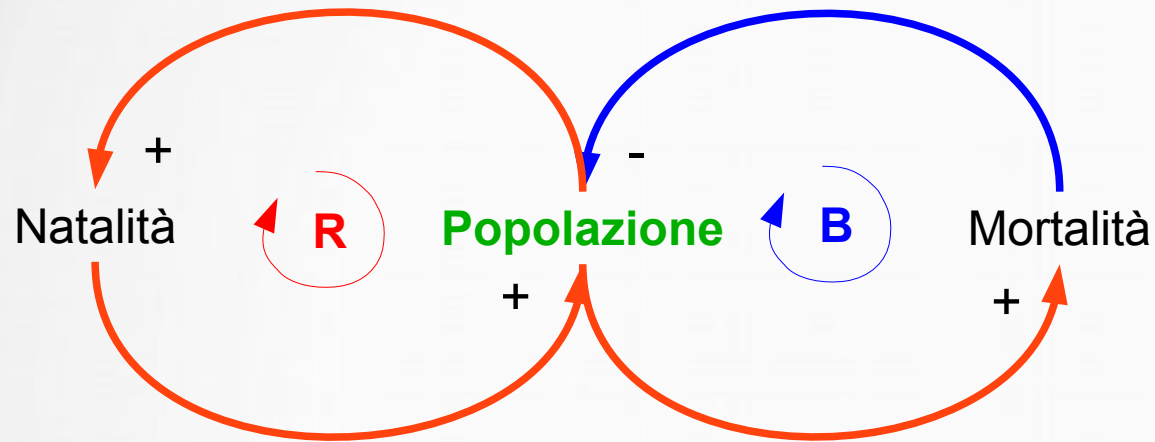
Positive & negative feedback loop

- Interazione di due cicli di feedback



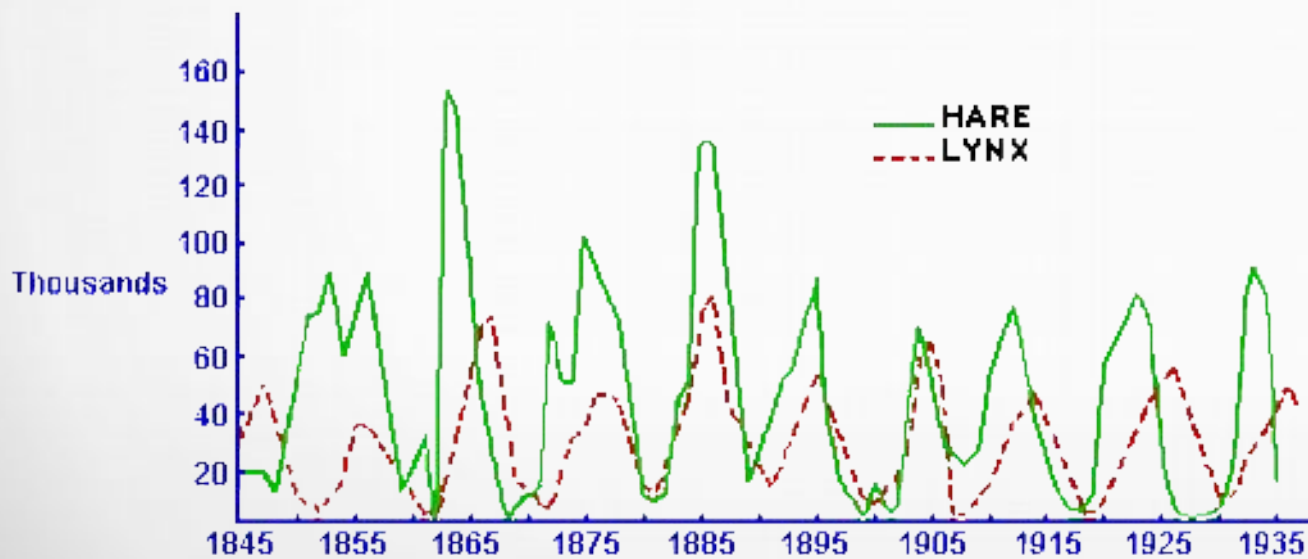
Positive & negative feedback loop

- Curva di crescita logistica (*S shaped*)



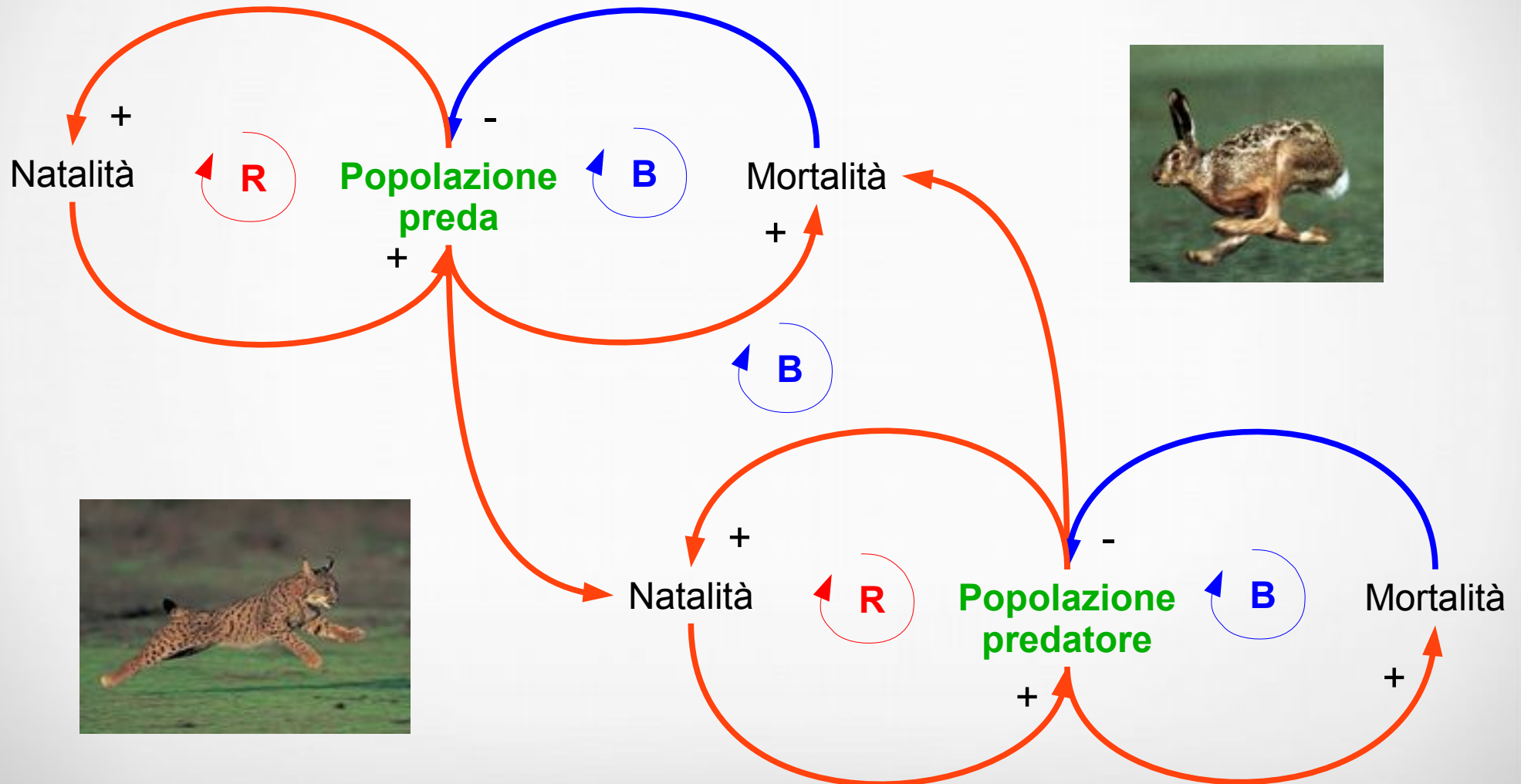
Positive & negative feedback loop

- In natura permettono la coesistenza e la coevoluzione delle specie
- Es. equilibrio dinamico **preda-predatore**



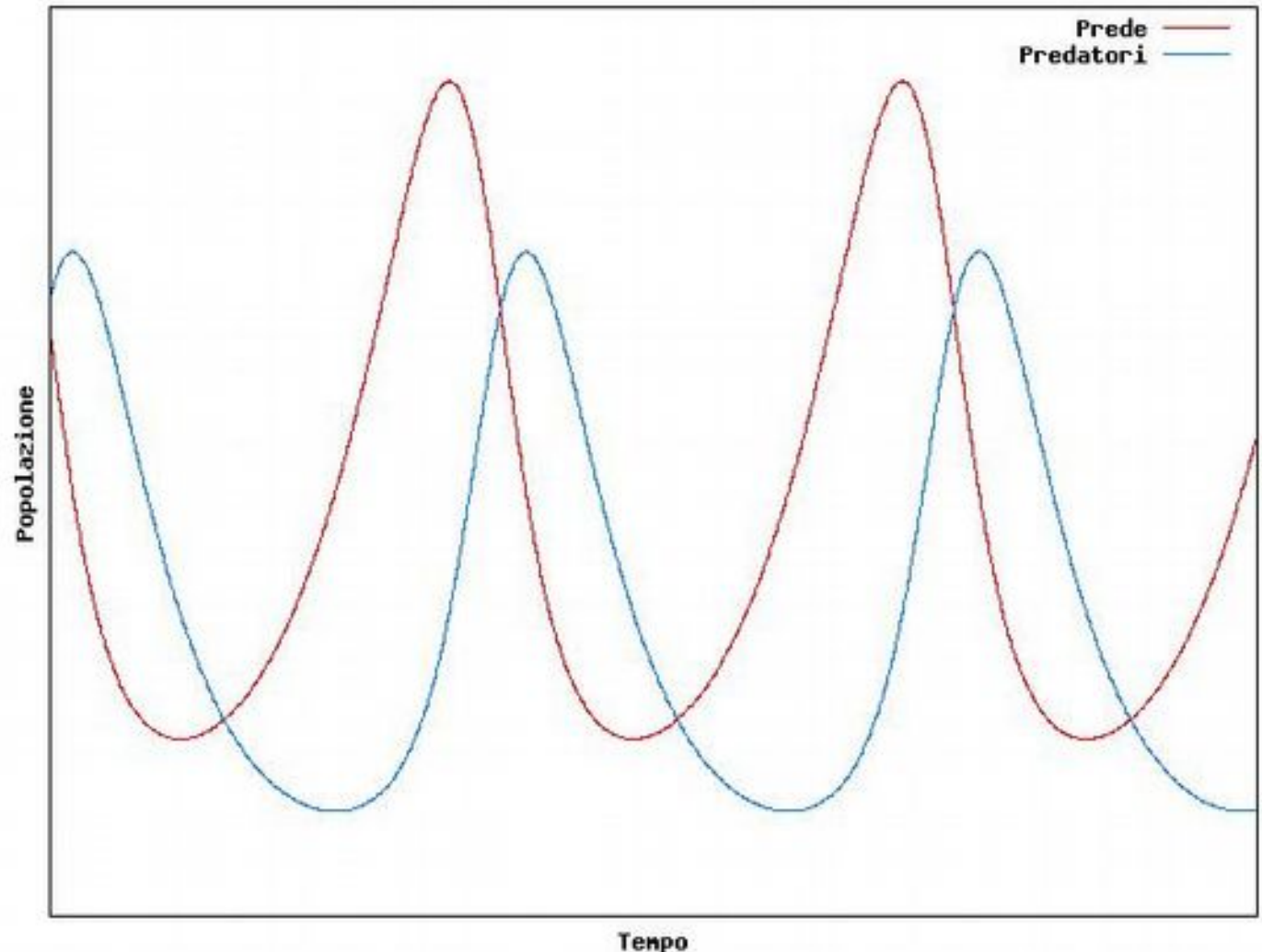
Positive & negative feedback loop

- Interazione di più cicli di feedback



Positive & negative feedback loop

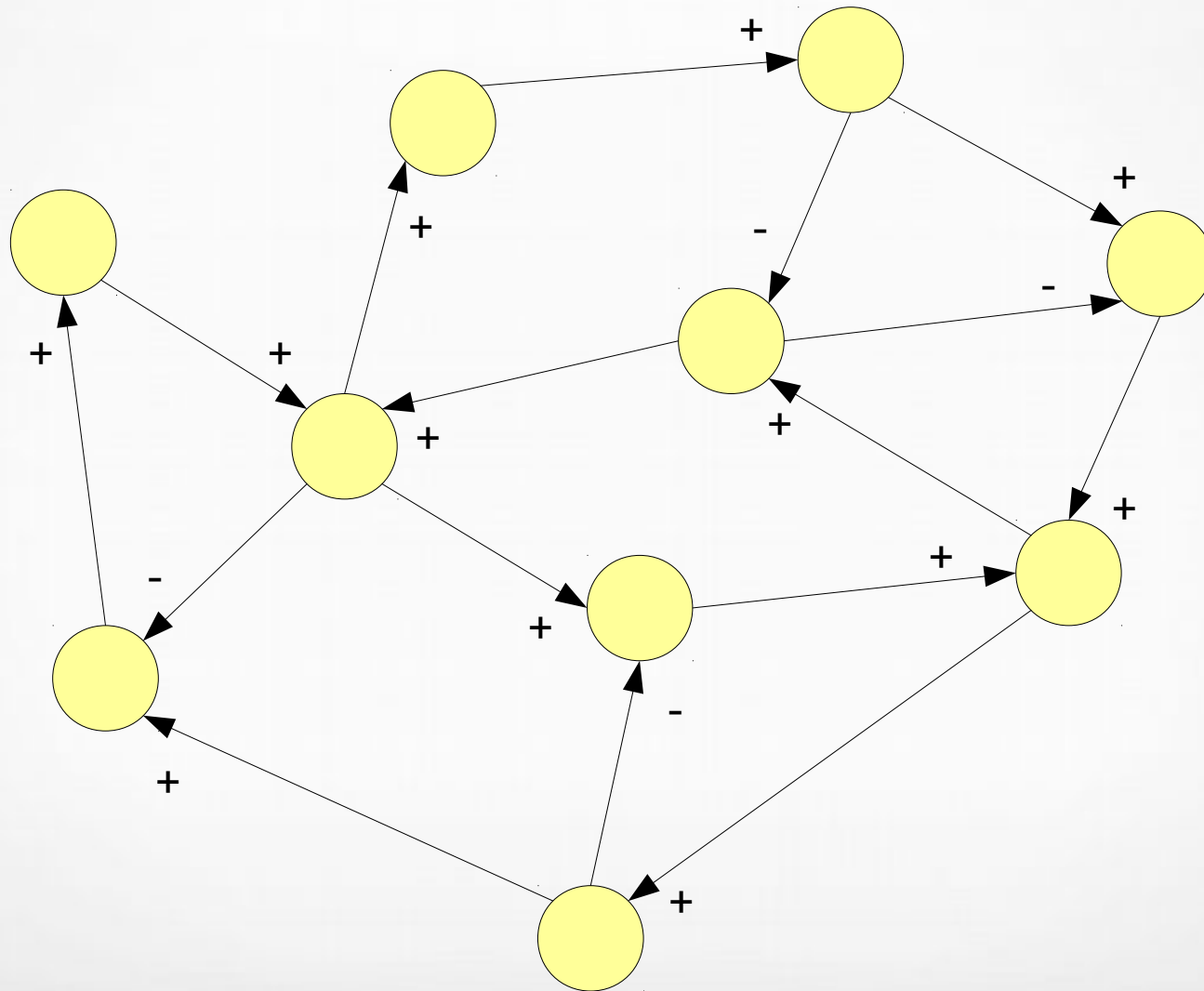
- Le popolazioni dei predatori e delle prede oscillano insieme intorno ai punti di equilibrio (modello Lotka-Volterra, 1925).



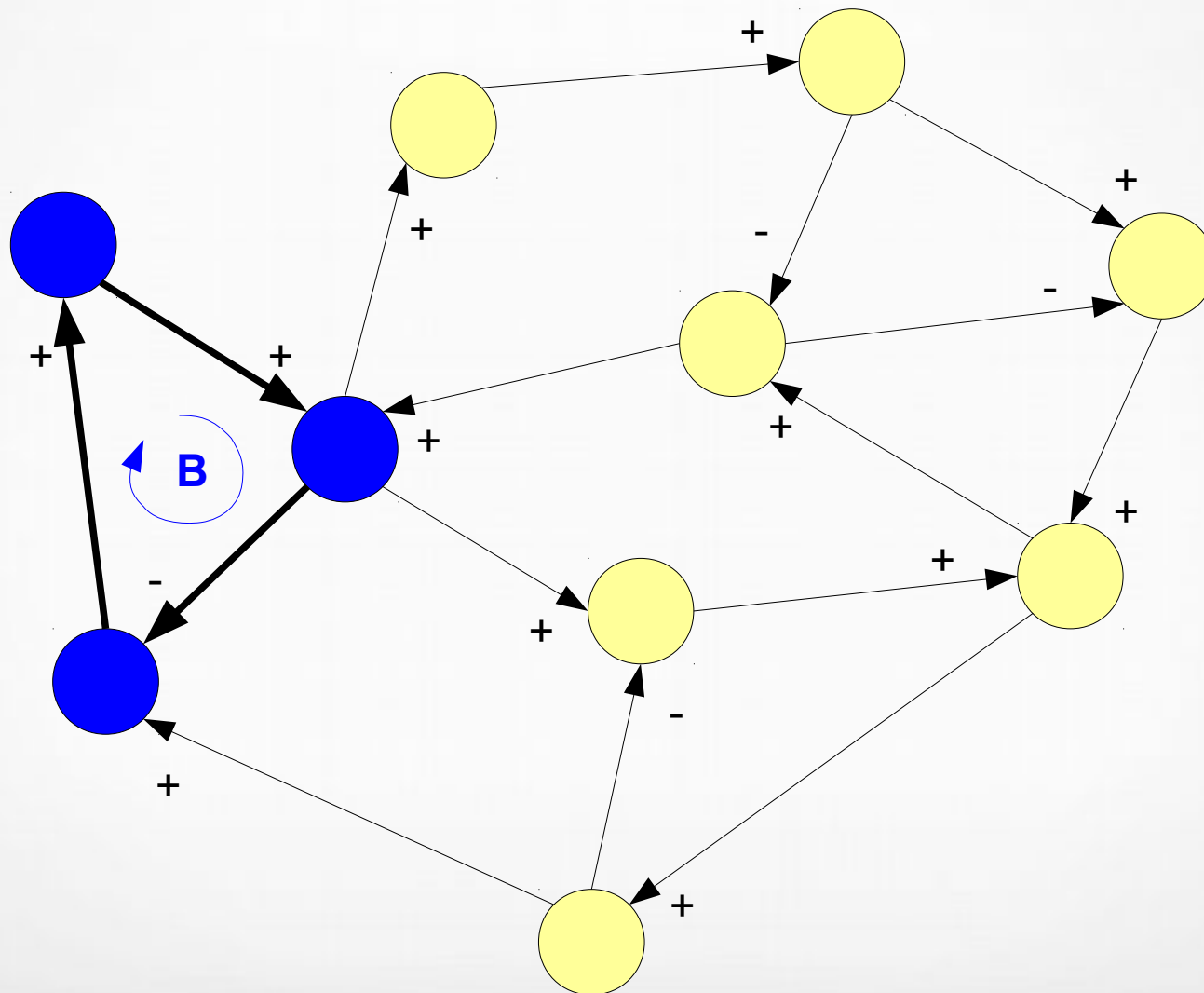
Sistemi complessi reali

- Le componenti di un sistema complesso interagiscono **localmente** tra loro formando una **RETE** di **interazioni non lineari**
- All'interno della rete, si intrecciano
 - processi di **feedback negativo**
 - processi di **feedback positivo**

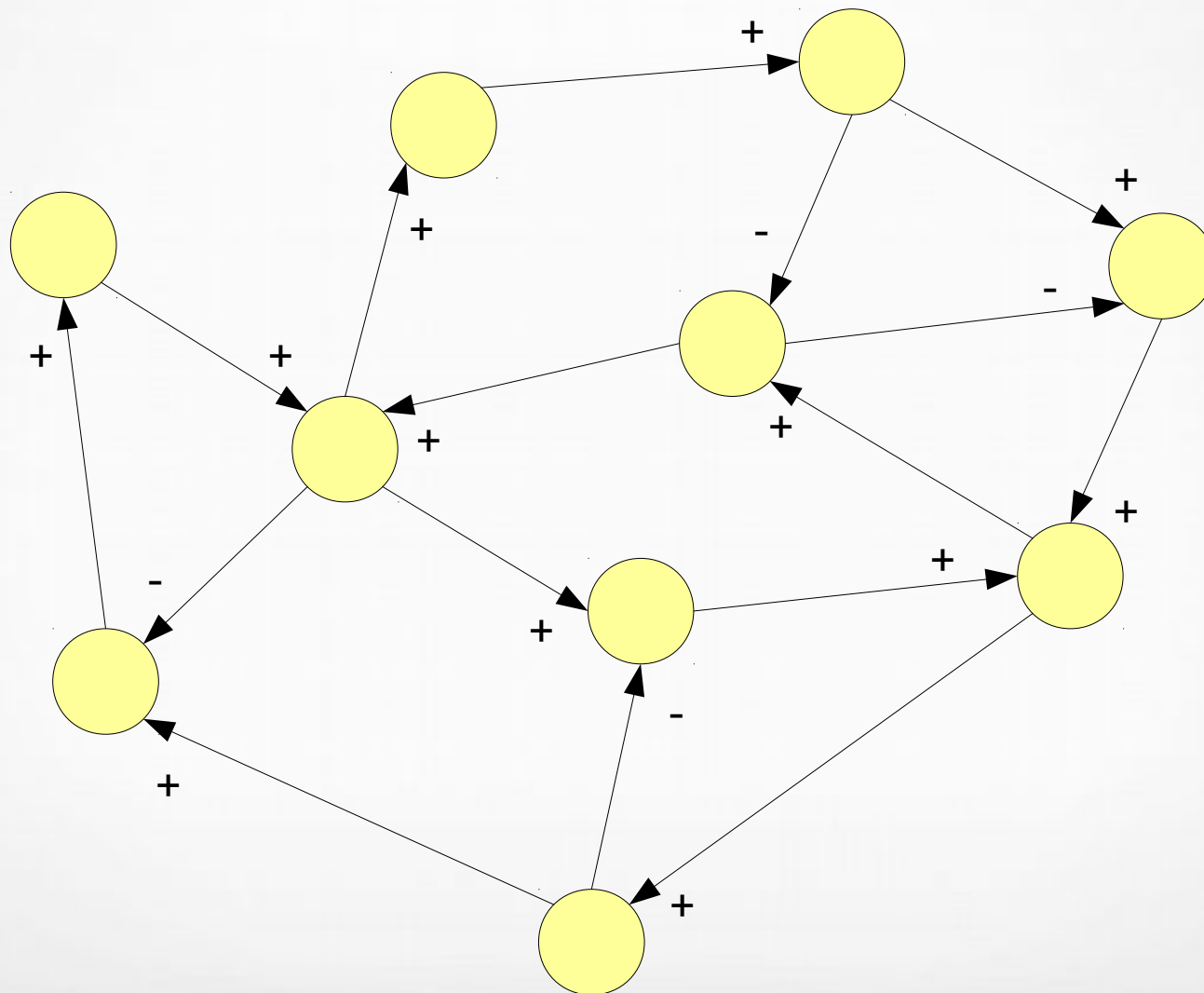
Sistemi complessi reali



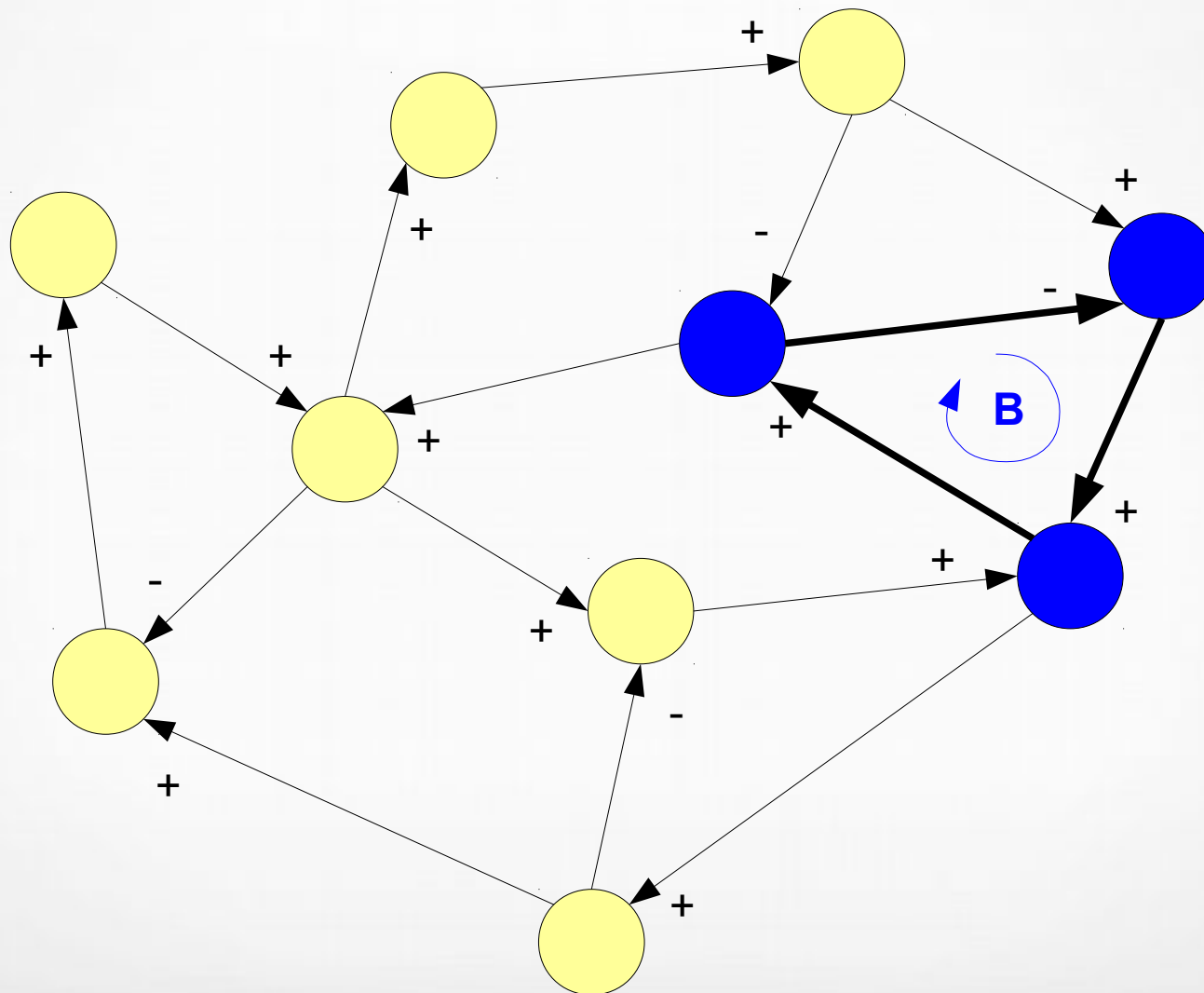
Sistemi complessi reali



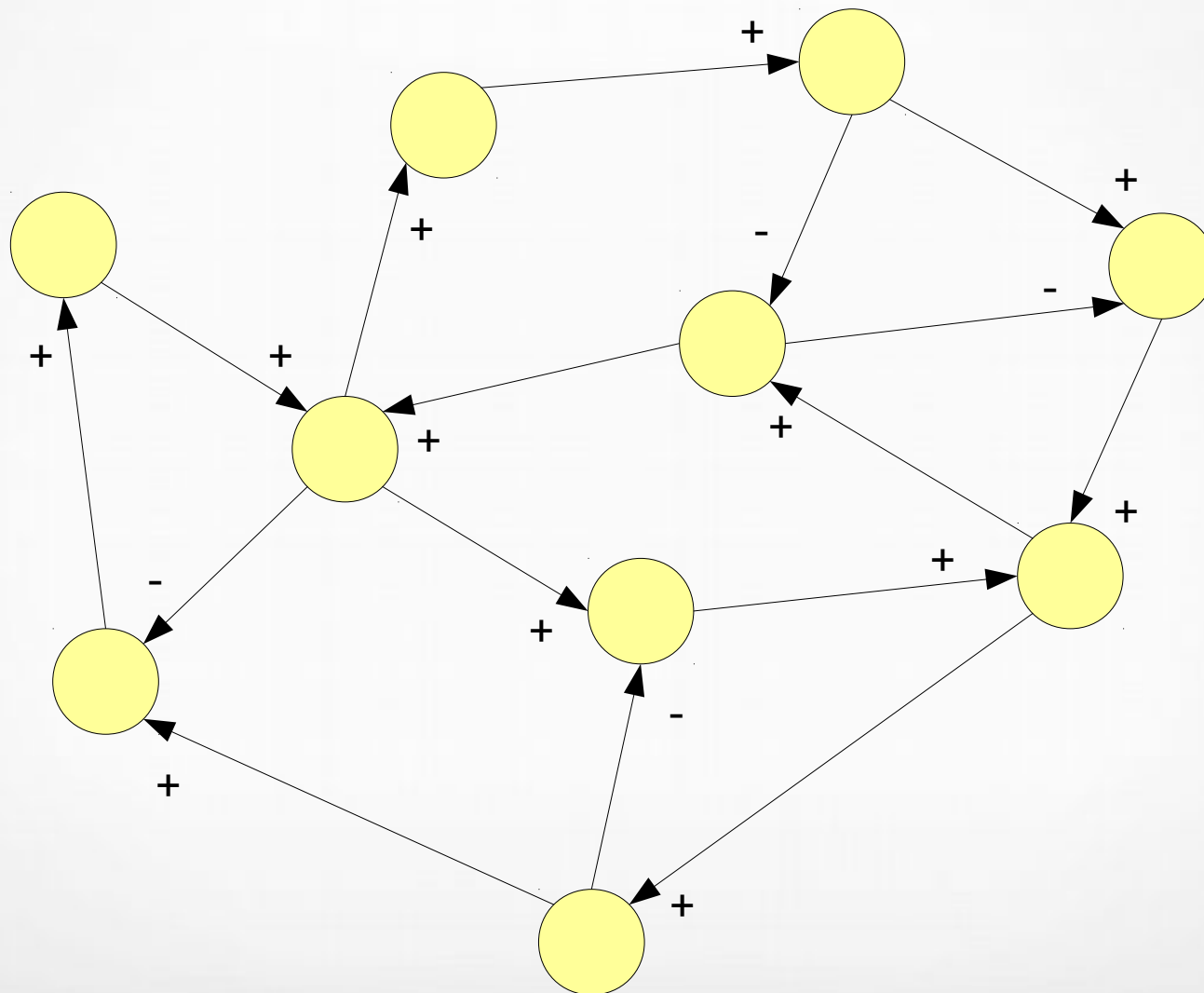
Sistemi complessi reali



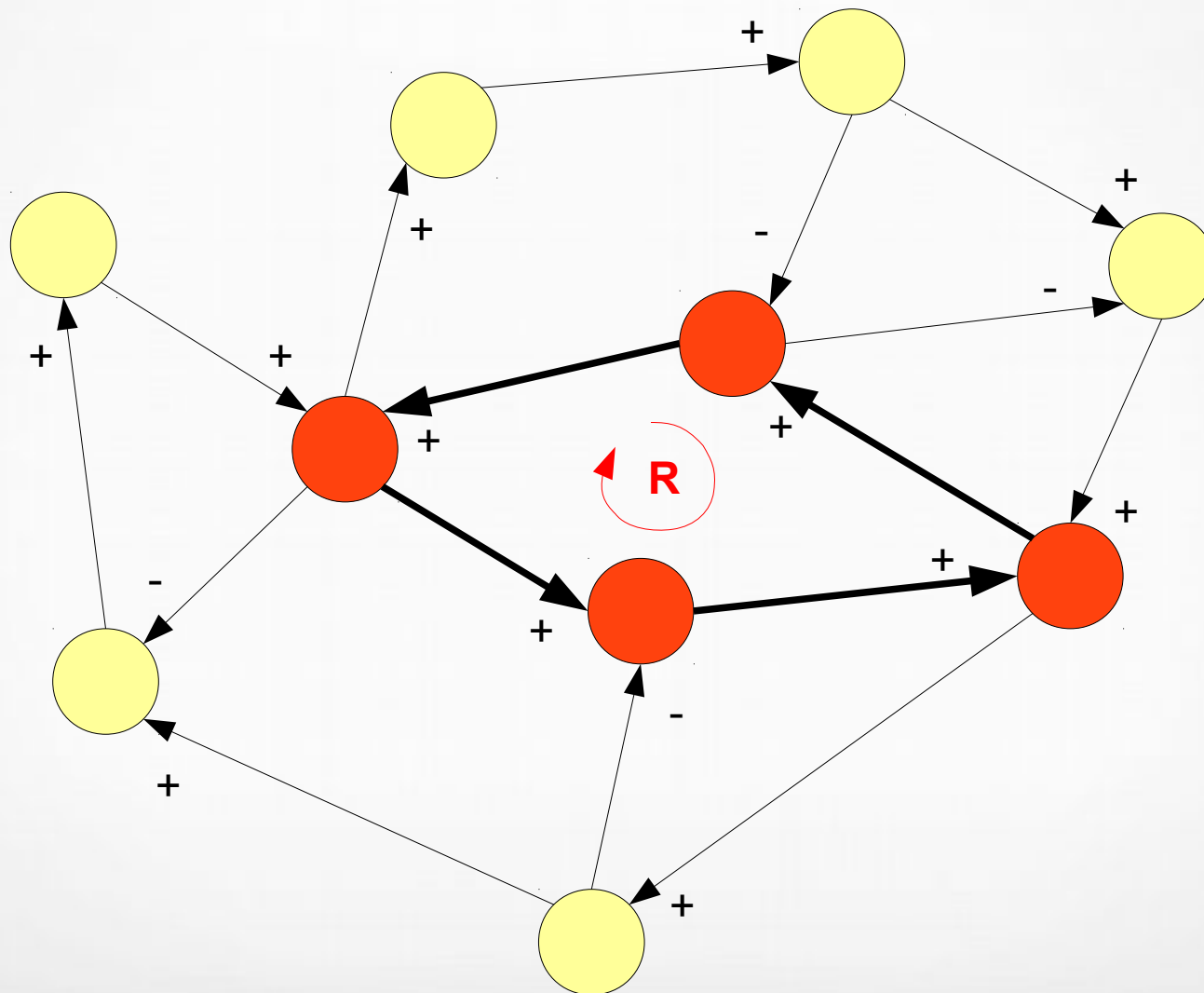
Sistemi complessi reali



Sistemi complessi reali



Sistemi complessi reali



Sistemi complessi reali

- Nei sistemi complessi reali la potenza esplosiva del feedback positivo si intreccia alla ricerca di equilibrio del feedback negativo, producendo comportamenti complessi davvero straordinari ...

