



# Spatial discontinuities and panarchy theory: for a better management of agriculture/forest interfaces

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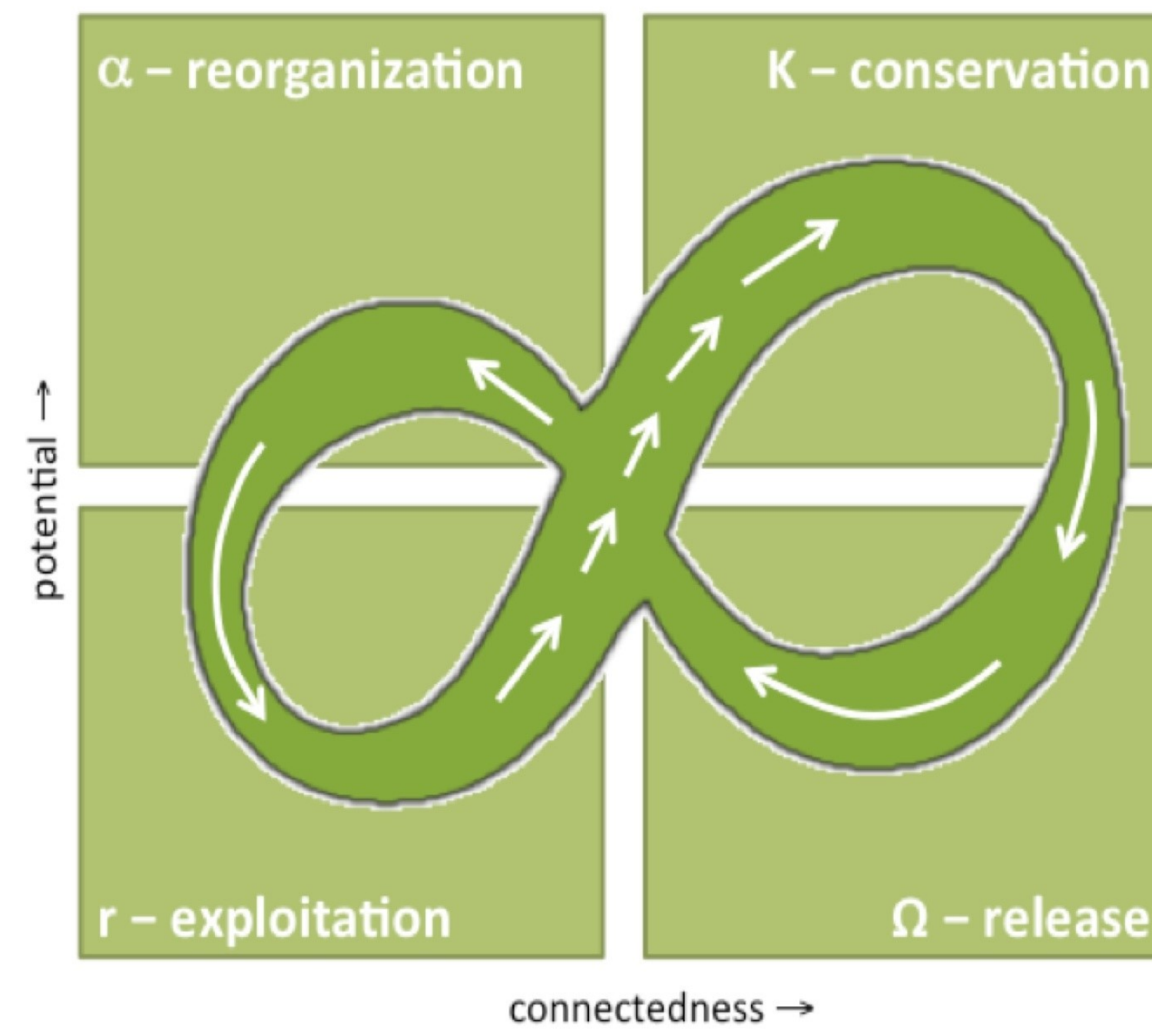


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# Spatial discontinuities and panarchy theory : for a better management of agriculture/forest interfaces

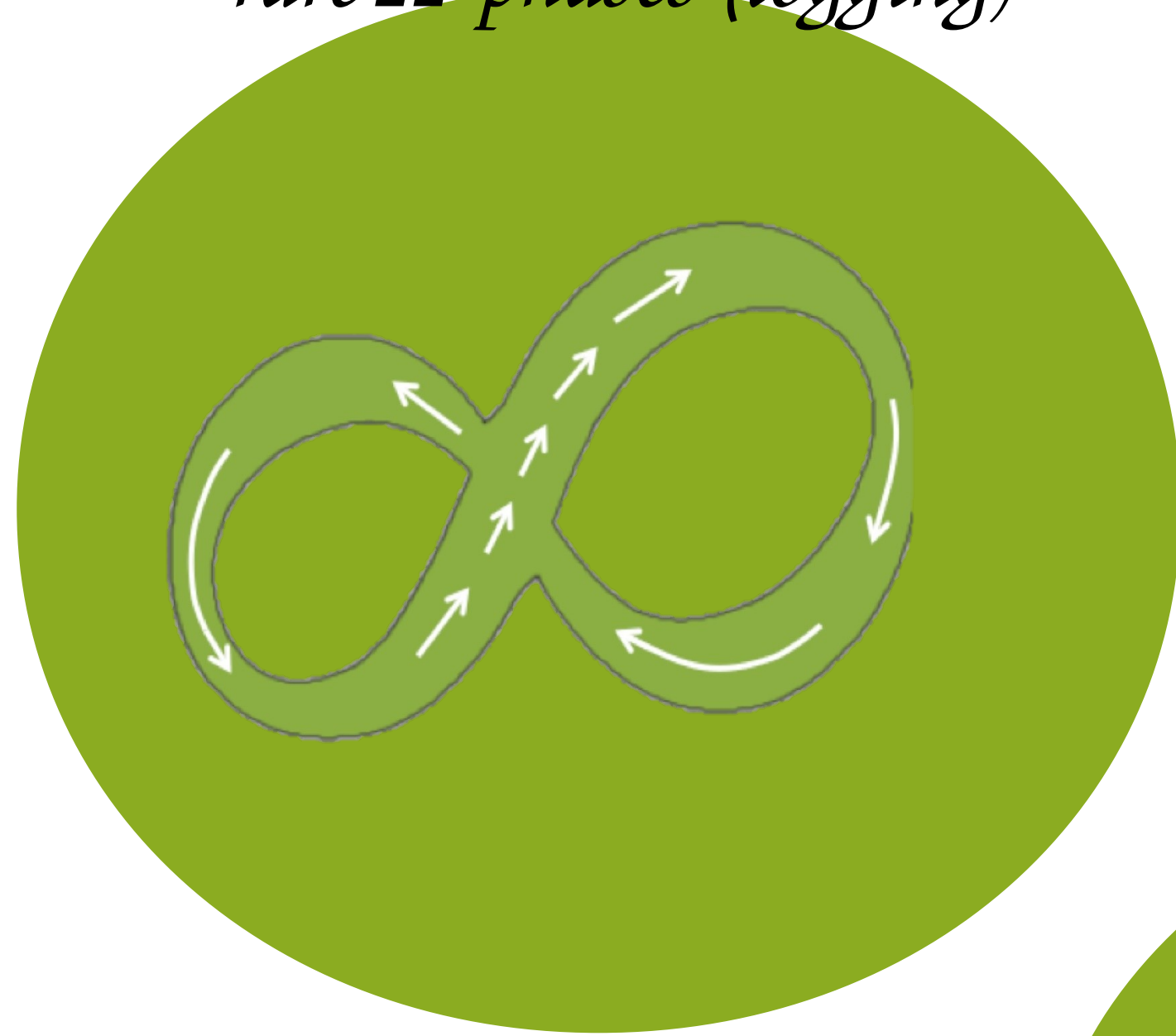
*System dynamics:  
adaptive cycle*



*Forest: slow system  
Long  $K$  phase,  
rare  $\Omega$  phases (logging)*

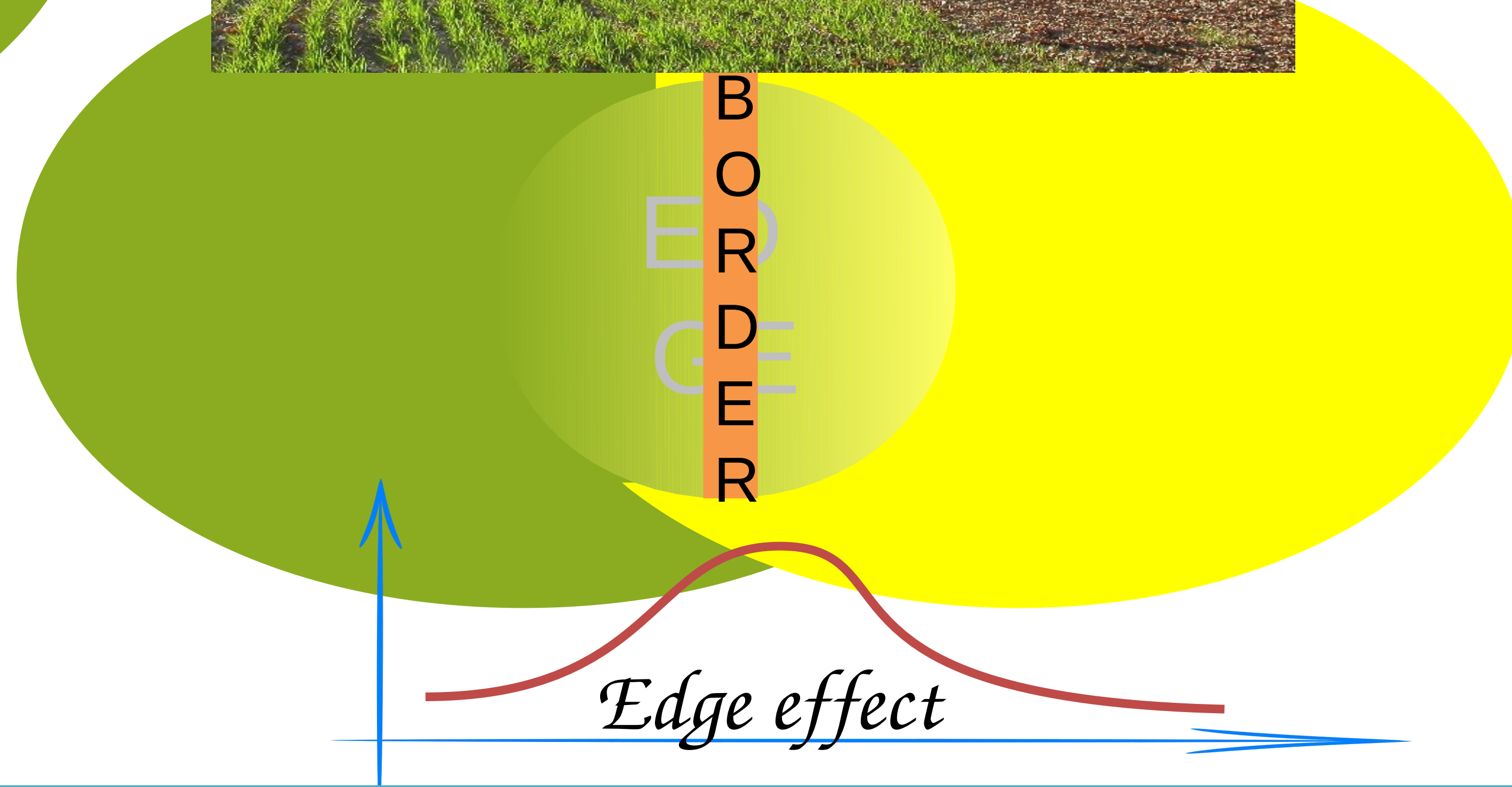


*Crop: fast system  
Short  $K$  phase,  
frequent  $\Omega$  phases (harvesting)*



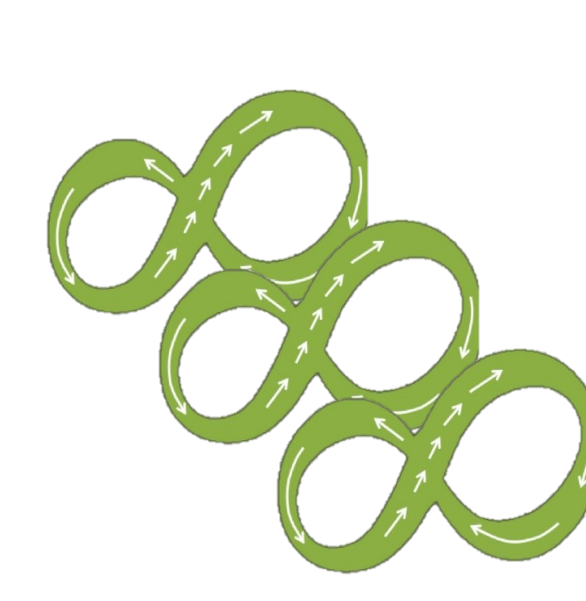
*Both habitats are influenced near  
their shared border.*

*Edge is the area of influence.*



*Biodiversity, ecosystem services,  
resource usages are modified by edge  
effects.*

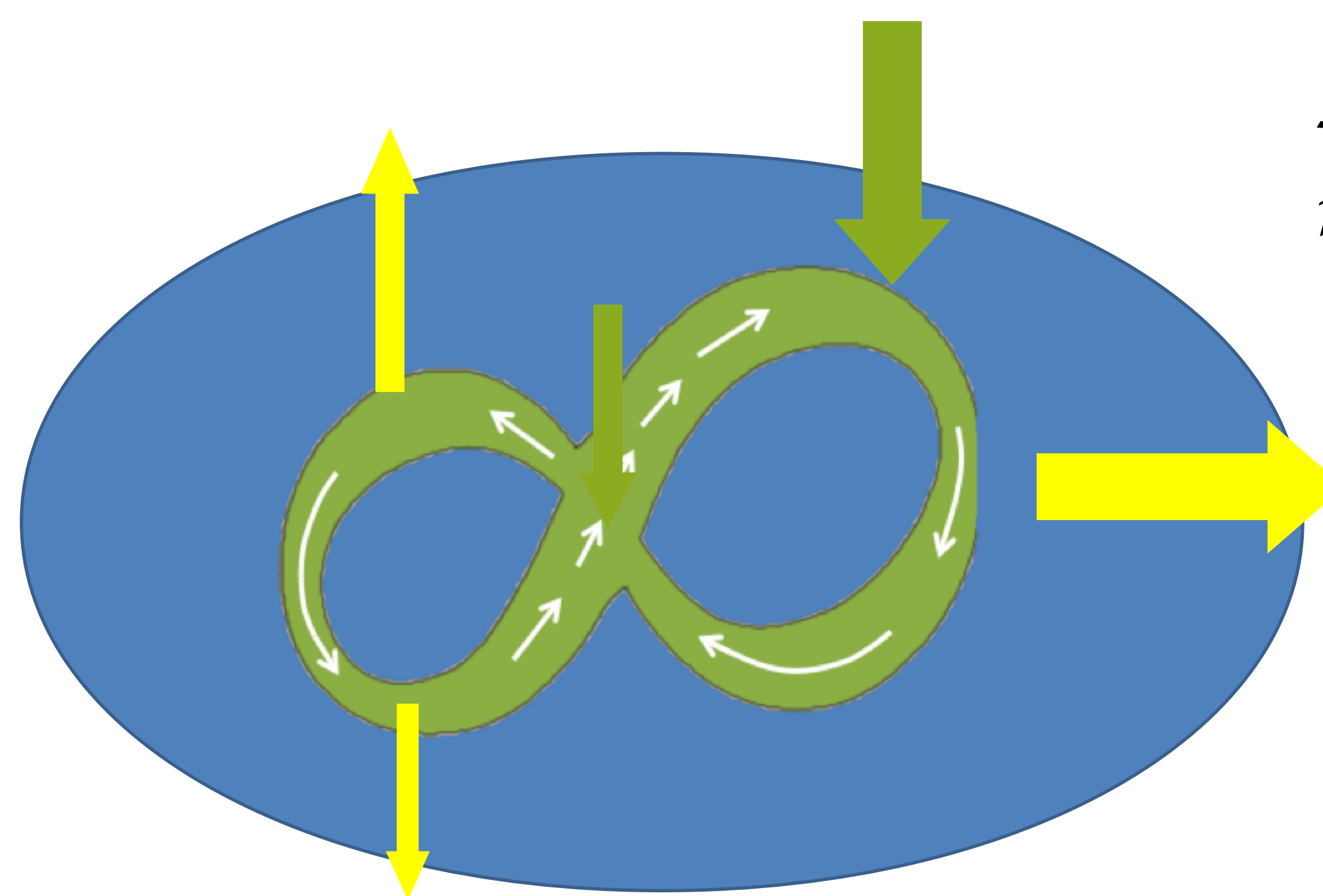
*Controlling edge effect is crucial for a  
better land management*



*How do the slow and the fast systems spatially interact ?*

*During the  $K$  phase, the connectedness of the  
system increases: it influences its outside.  
During the other phases, the system is more  
open and is influenced by its outside:*

- Strong influence may trigger  $\Omega$  phase
- Lower influences contribute to  $\alpha$  and  $r$  phases, providing novelty and resources



*Spatial interface of the complex system*

*Forest influences crop dynamics  
most of the time (long  $K$  phase).*

*Crop may influence forest  
dynamics during regeneration  
phases ( $\Omega$ ,  $\alpha$ ,  $r$ )*