



HAL
open science

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

Marc Deconchat

► **To cite this version:**

Marc Deconchat. Spatial discontinuities and panarchy theory: for a better management of agriculture/forest interfaces. Resilience 2017: Resilience frontiers for global sustainability, Aug 2017, Stockholm, Sweden. 1 p., 2017. <hal-02651453>

HAL Id: hal-02651453

<https://hal.science/hal-02651453v1>

Submitted on 29 May 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization



OATAO is an open access repository that collects the work of Toulouse researchers and makes it freely available over the web where possible

This is an author's version published in: <http://oatao.univ-toulouse.fr/18436>

To cite this version:

Deconchat, Marc Spatial discontinuities and panarchy theory: for a better management of agriculture/forest interfaces. (2017) In: Resilience 2017: Resilience frontiers for global sustainability, 20 August 2017 - 23 August 2017 (Stockholm, Sweden). (Unpublished)

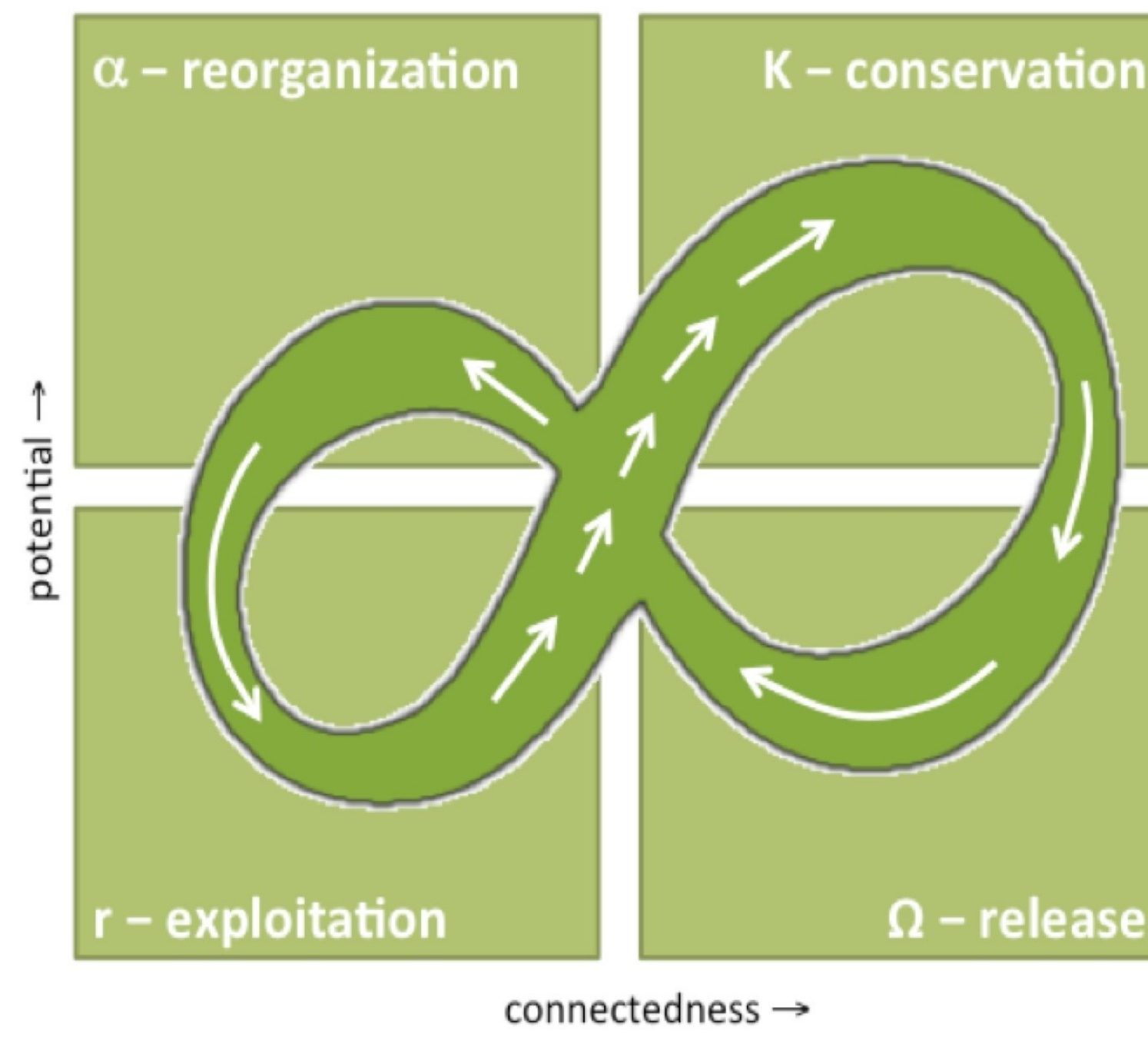
Any correspondence concerning this service should be sent to the repository administrator: tech-oatao@listes-diff.inp-toulouse.fr

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

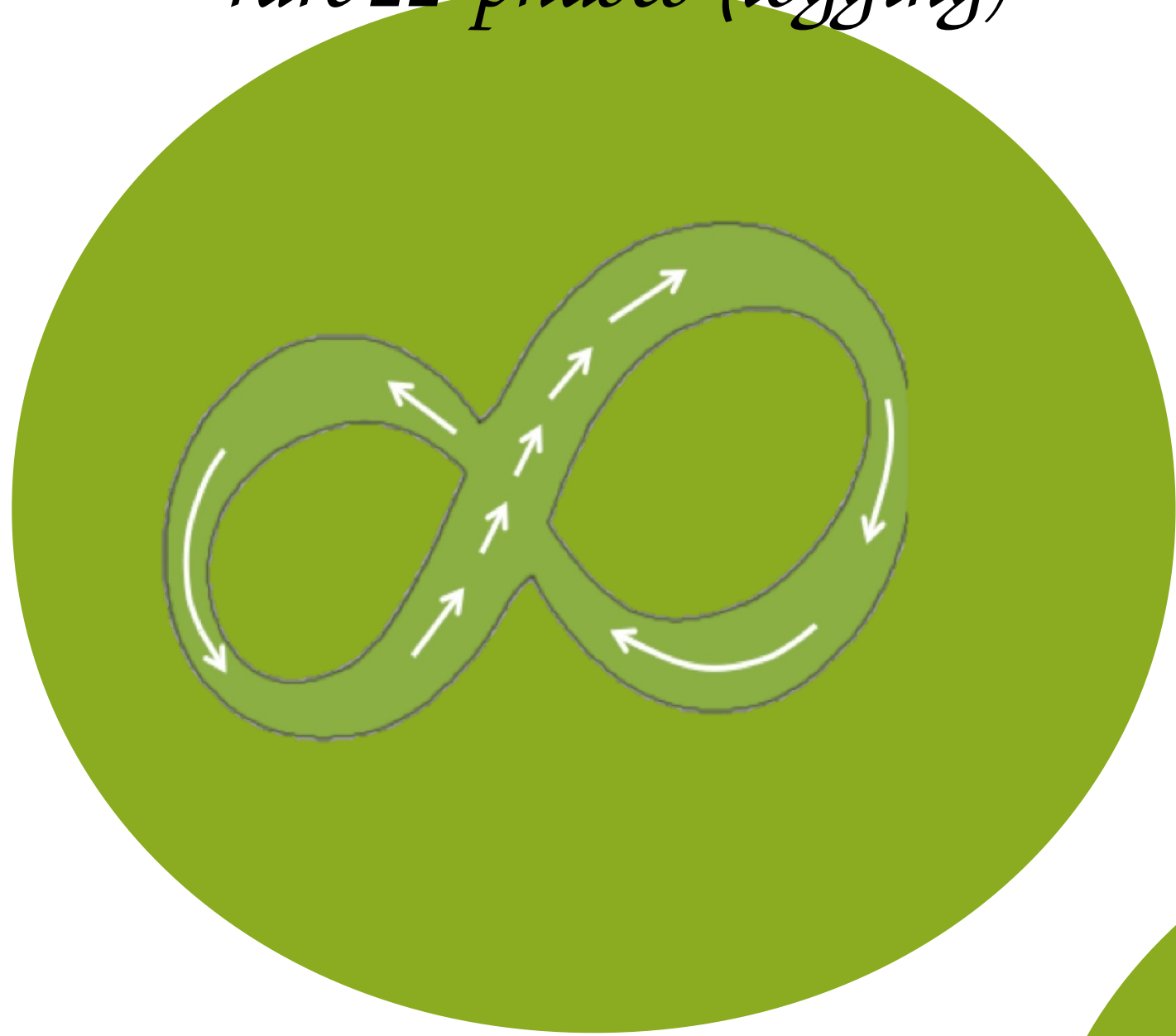
System dynamics:
adaptive cycle



Forest: slow system
Long \mathcal{K} phase,
rare Ω phases (logging)



Crop: fast system
Short \mathcal{K} phase,
frequent Ω phases (harvesting)



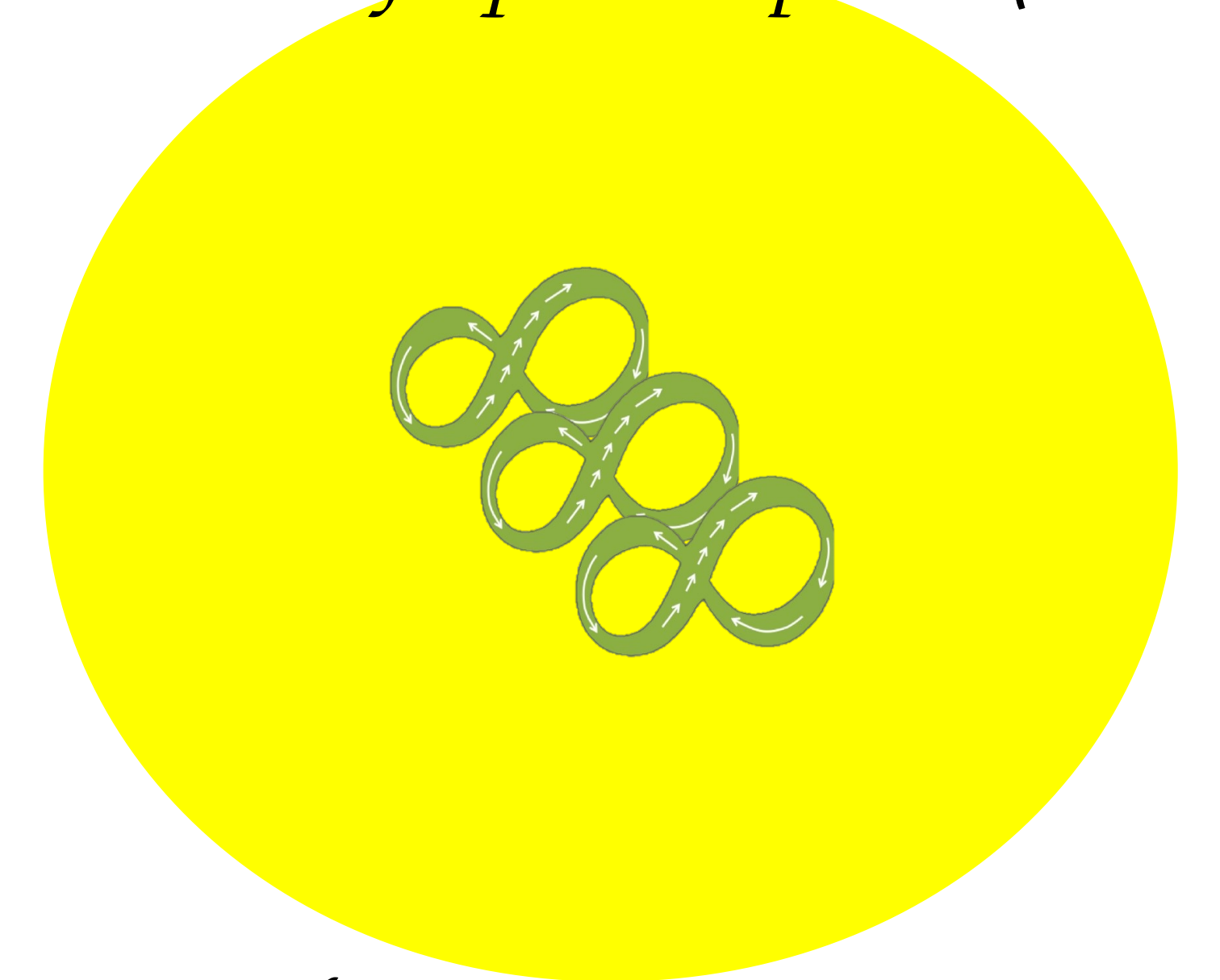
Both habitats are influenced near
their shared border.

Edge is the area of influence.



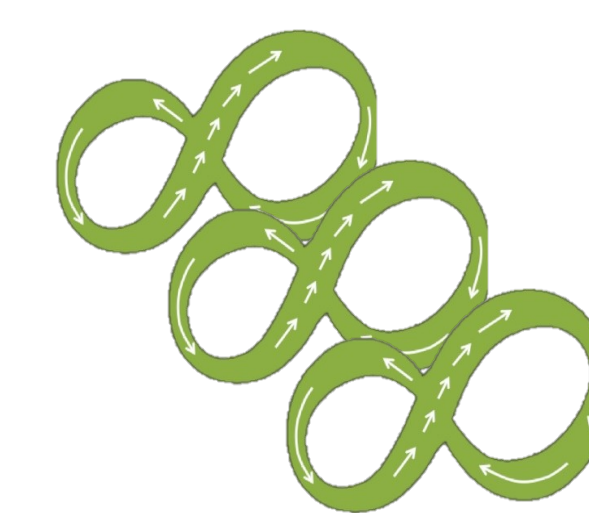
B
O
R
D
E
R

Edge effect



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

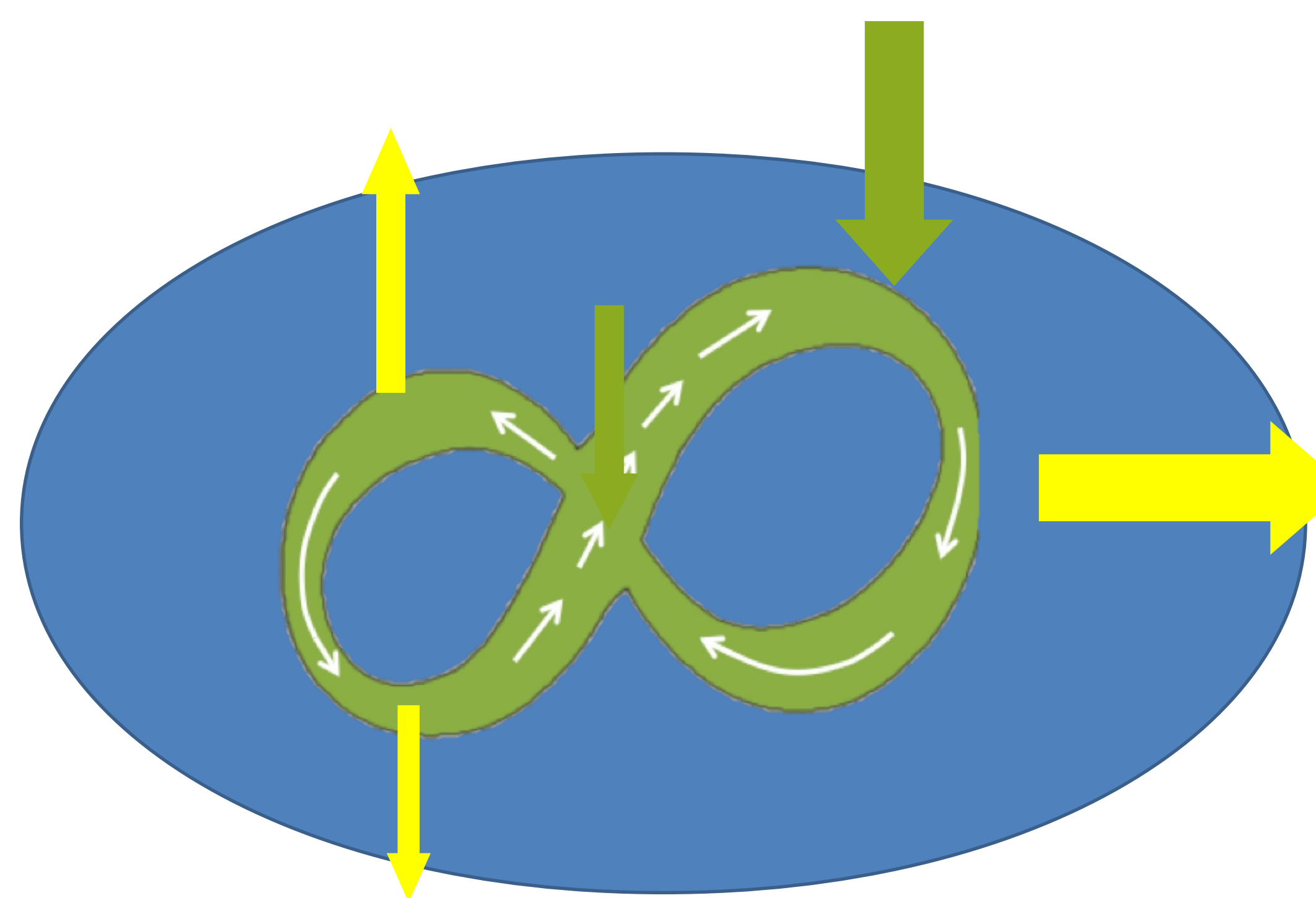
Controlling edge effect is crucial for a
better land management



How do the slow and the fast systems spatially interact ?

During the \mathcal{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 Ω phase
- Lower influences contribute to α and r
phases, providing novelty and resources



Spatial interface of the complex system

Forest influences crop dynamics
most of the time (long \mathcal{K} phase).

Crop may influence forest
dynamics during regeneration
phases (Ω , α , r)