

The slide features two large, thick black L-shaped brackets. One is positioned in the top-left corner, and the other is in the bottom-right corner, framing the central text.

RESILIENCE THINKING

Week 5 Reading Assignment: textbook pp. 53-63

Crossing the Threshold

- Thresholds are levels in controlling variables where feedbacks to the rest of the system change – crossing points that have the potential to alter the future of many of the systems that we depend upon.
- The framework for resilience thinking is based on two ways of seeing and understanding social-ecological systems.
 - One is based on a metaphor of [adaptive cycles](#).
 - The other focuses on the likelihood of a system **crossing a threshold** and moving into a different regime.
- System as a Ball-in-the-Basin example
 - From a resilience perspective the question is how much change can occur in the basin and in the system's trajectory without the system leaving the basin

Crossing the Threshold

■ Thresholds crossed in a lake example

- When a lake receives plant nutrients, such as phosphorus, in runoff from the surrounding lake
- Phosphorus is a plant nutrient and encourages the growth of algae, which turns the clear water murky
- If the phosphorus in the lake sediments is low, it draws the phosphorus levels in the water down, and the lake has a degree of resilience
- Eutrophic/[Eutrophication](#) = (of a lake or other body of water) rich in nutrients and so supporting a dense plant population, the decomposition of which kills animal life by depriving it of oxygen

■ Slow variables

- Phosphorus levels in lake sediments
- Drivers that cause ecosystems to cross thresholds

Crossing the Threshold

- CrashCourse [Video](#): Conservation and Restoration Ecology
 - *[Superfund sites](#) are polluted locations in the US requiring long-term response to clean up hazardous material contaminations.*
- Thresholds define resilience while “engineering resilience” generally doesn’t consider these thresholds
 - *Managers and city planners talk about engineering resilience with the goal to get business going as usual after a disturbance*
- Reference the key points on resilience thinking on p. 63 in text
- Supplemental [video](#) on resilience thinking