Systems Thinking Principles and Archetypes for Climate Resilience and Civil Protection

8 Systems Archetypes

- **Limits to Growth**

A municipality promotes emergency preparedness workshops. Initially participation grows rapidly.Later attendance plateaus because eople lose interest, communication channels are exhausted, trust levels remain unchanged. Key lesson: growth is limited by hidden constraints.

- **Success to the Successful**

A highly active neighbourhood receives more resilience funding, more volunteers and more projects. Meanwhile less active neighbourhoods receive fewer opportunities and fall further behind. Key lesson: Ssuccess attracts more success.

- **Shifting the Burden**

Residents expect emergency services to solve every problem. Instead of preparing themselves, they rely entirely on firefighters, municipalities, national authorities. Key lesson: dependence replaces self-reliance.

- **Drifting Goals**

Originally every household should be prepared for 72 hours without external support. Over time expectations decrease: 72 hours becomes 48, 48 becomes 24, eventually no preparedness is expected. Key lesson: standards gradually decline.

- **Fixes That Fail**

After every storm, temporary flood barriers are installed. The barriers provide short-term protection but encourage further development in flood-prone areas. Future damage becomes even greater. Key lesson: short-term fixes create long-term problems.

- **Tragedy of the Commons**

During a heatwave everyone uses air conditioning simultaneously. The electrical grid becomes overloaded and outages affect the entire community. Key lesson: individual rational actions create collective problems.

- **Escalation**

Municipalities compete to provide larger compensation packages after disasters. Residents become increasingly dependent on compensation. Authorities increase spending. Expectations continue rising. Key lesson: two actors continuously reinforce each other's behaviour.

- **Growth and Underinvestment**

Climate risks increase every year. Population and infrastructure exposure increase. Investment in drainage systems, shelters and preparedness education remains too low. Eventually the system becomes overwhelmed. Key lesson: demand grows faster than capacity.

11 Systems Thinking Principles / Characteristics

- **Today's Problems Come from Yesterday's Solutions**
  Air conditioning solves heat stress today, but increases electricity demand and vulnerability during power outages and heatwaves

- **The Easy Way Out Usually Leads Back In**
  A municipality repeatedly distributes information leaflets after every flood, but never addresses the underlying flood risk.

- **Cause and Effect Are Distant in Time and Space**
  Building in flood-prone areas may seem harmless today, but the consequences appear years later during extreme rainfall events.

- **The Harder You Push, the Harder the System Pushes Back**
  Fear-based emergency campaigns create resistance, causing people to ignore preparedness messages.

- **The Cure Can Be Worse Than the Disease**
  Overly strict restrictions during emergencies may reduce trust and discourage future cooperation.

- **Small Changes Can Produce Big Results**
  A neighbourhood contact network dramatically improves support for vulnerable residents during a prolonged blackout.

- **Faster Is Slower**
  Rapid post-disaster rebuilding without planning can create new vulnerabilities and higher future costs.

- **Things Get Better Before They Get Worse**
  A new flood defence system initially reduces flood damage, encouraging more development in risky areas, which later increases overall vulnerability.

- **There Is No Either–Or**
  Dividing an Elephant in Half Does Not Produce Two Small Elephants
  Emergency planning, energy planning, health services and climate adaptation are managed separately, while citizens experience them as one interconnected system.

- **There Are No External Enemies**
  Citizens blame government for poor preparedness, while ignoring their own lack of emergency supplies or preparedness plans.