



Do small changes really make a difference? *(Part II)*

Like...

Recycling

Gardening

Bicycle riding.....

Systems or Holistic Thinking

Systems = “wholes”

◆ A system is a collection of related parts that interact in an organized way for a purpose.

◆ Key words:

- Related parts
- Organized
- Purpose



A system can be:

- ◆ **made up of many sub-systems (or holons)**
 - **A human body for example, is a system made up many smaller sub-systems like the heart sub-system, liver sub-system, kidney sub-system etc.**



A system can also...

- ◆ be part of a larger system (or holon).

- A human may be part of a family, community, team etc.



The earth is a **system**



A system is holistic
because it is a
Whole

1. Purposeful
2. Organized
3. Interrelated

A photograph of a chicken embryo, likely a chick, with a prominent network of red blood vessels visible on its surface. The embryo is positioned in the center of the frame, and the background is a warm, yellowish-orange color.

A chicken embryo is a system

Its **purpose** is to
continue chicken life.

It is highly **organized**,

The subsystems **are related** to each other

A chicken embryo is a whole

A small, solid blue circle located in the bottom right corner of the slide.

A House is a System or a “whole”



It has purpose

It is organized

**Its parts are
interrelated**

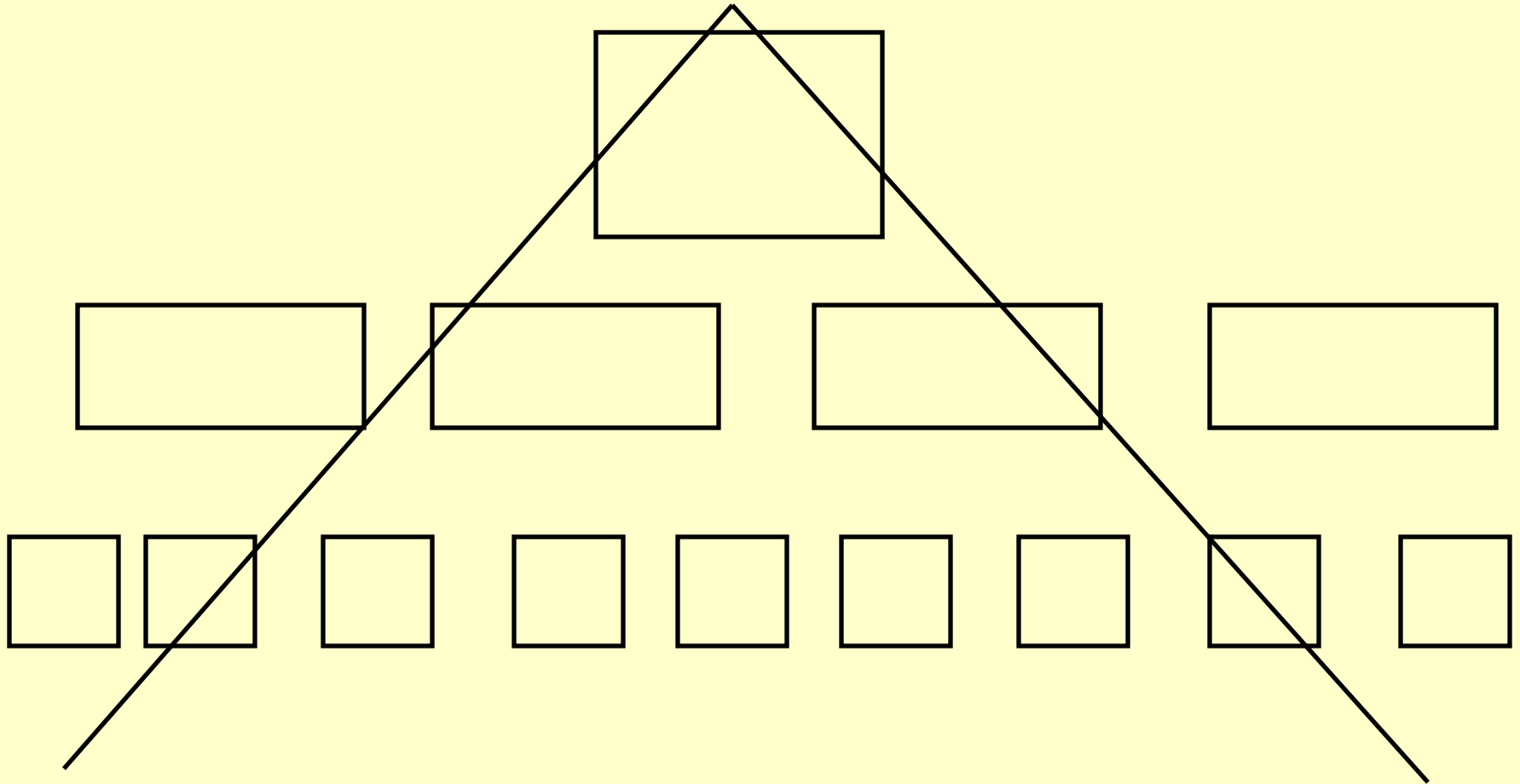
A pile of stuff is not a whole, but a “heap”



The University is a System



Our standard mental model of a university system is hierarchical



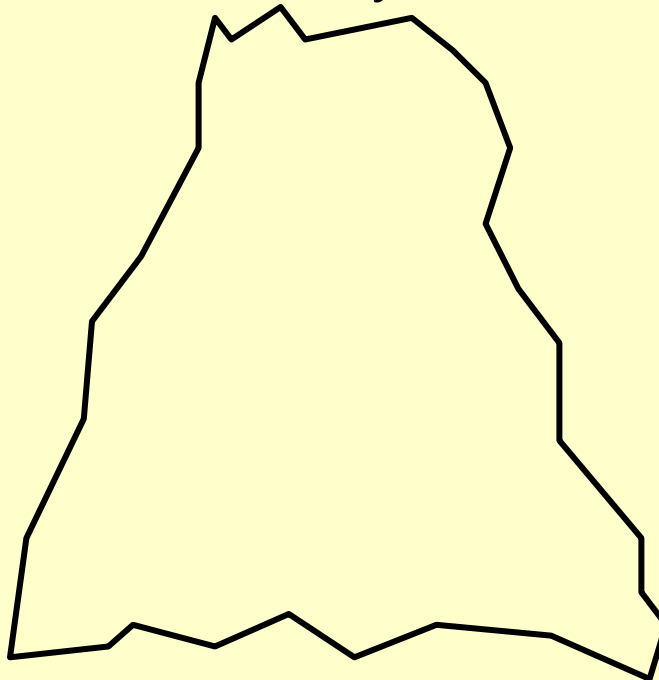
Most classrooms are an expression of this mental model



A tool to begin unraveling complexity

The “pyramid” or “iceberg” model of systemic relationships is a simple tool to begin to uncover the mental models that create the system.

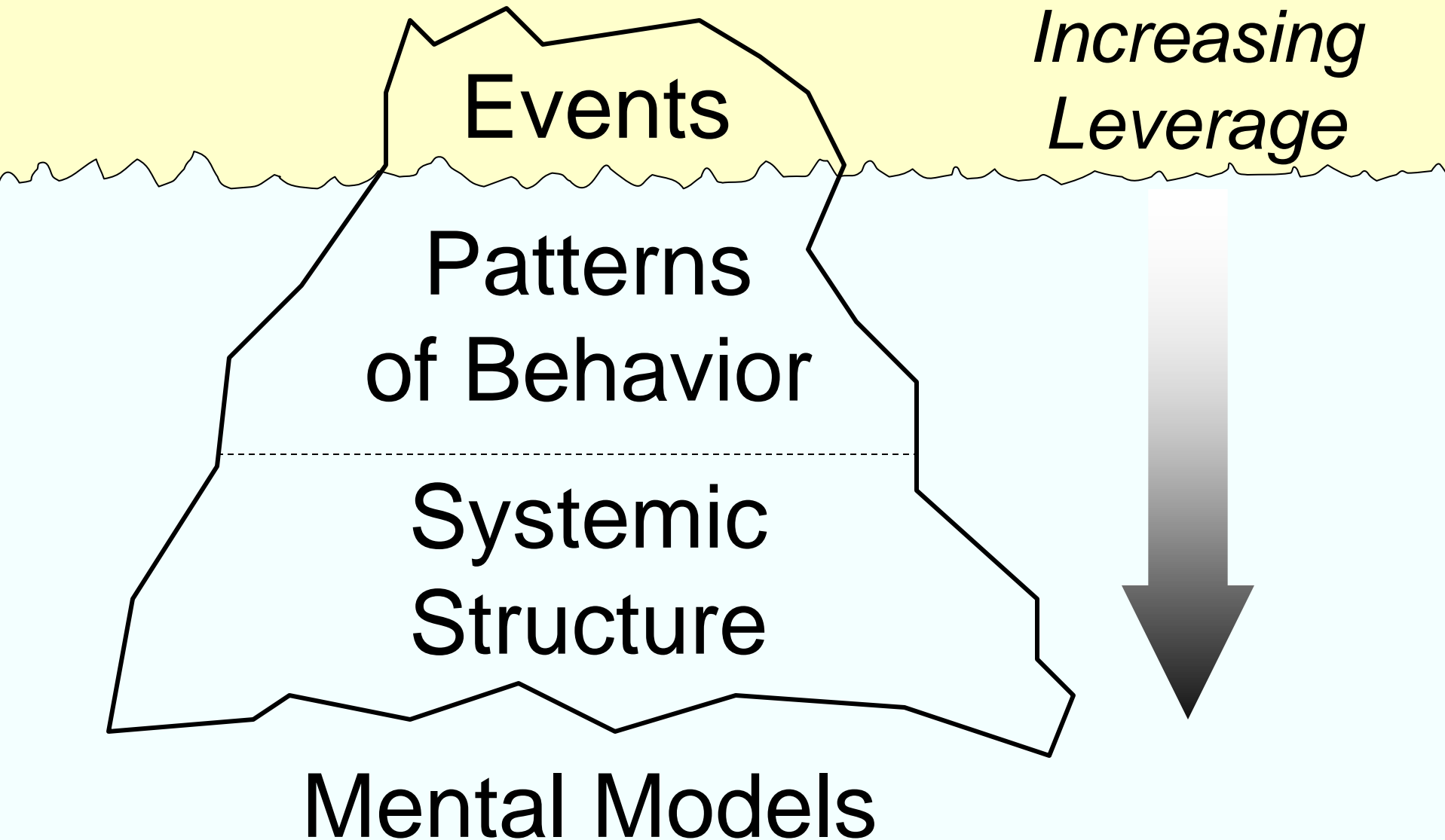
Lets look at it.....



Some Definitions

- ◆ **Events.** The things we see happening (and sometimes wonder why).
 - ◆ **Patterns of Behavior.** Consistent and regular actions or events over space and/or time.
 - ◆ **Systemic Structure.** “Permanent” relationships and flows of information between parts of the system. Such as roads, policies, laws, organizations, buildings, classroom set up.
 - ◆ **Mental Models.** The shared belief systems, ideas, assumptions and goals of a system. Usually unstated but universally understood.
-

The Iceberg



An “event”

- ◆ *A student walks into a class room and takes a seat facing the teacher who stands in the front of the room waiting patiently for everyone to be seated.*
-

A “pattern”

- ◆ *More students walk into a class room and take their seats facing the teacher who stands in the front of the room waiting patiently for everyone to be seated.*
-

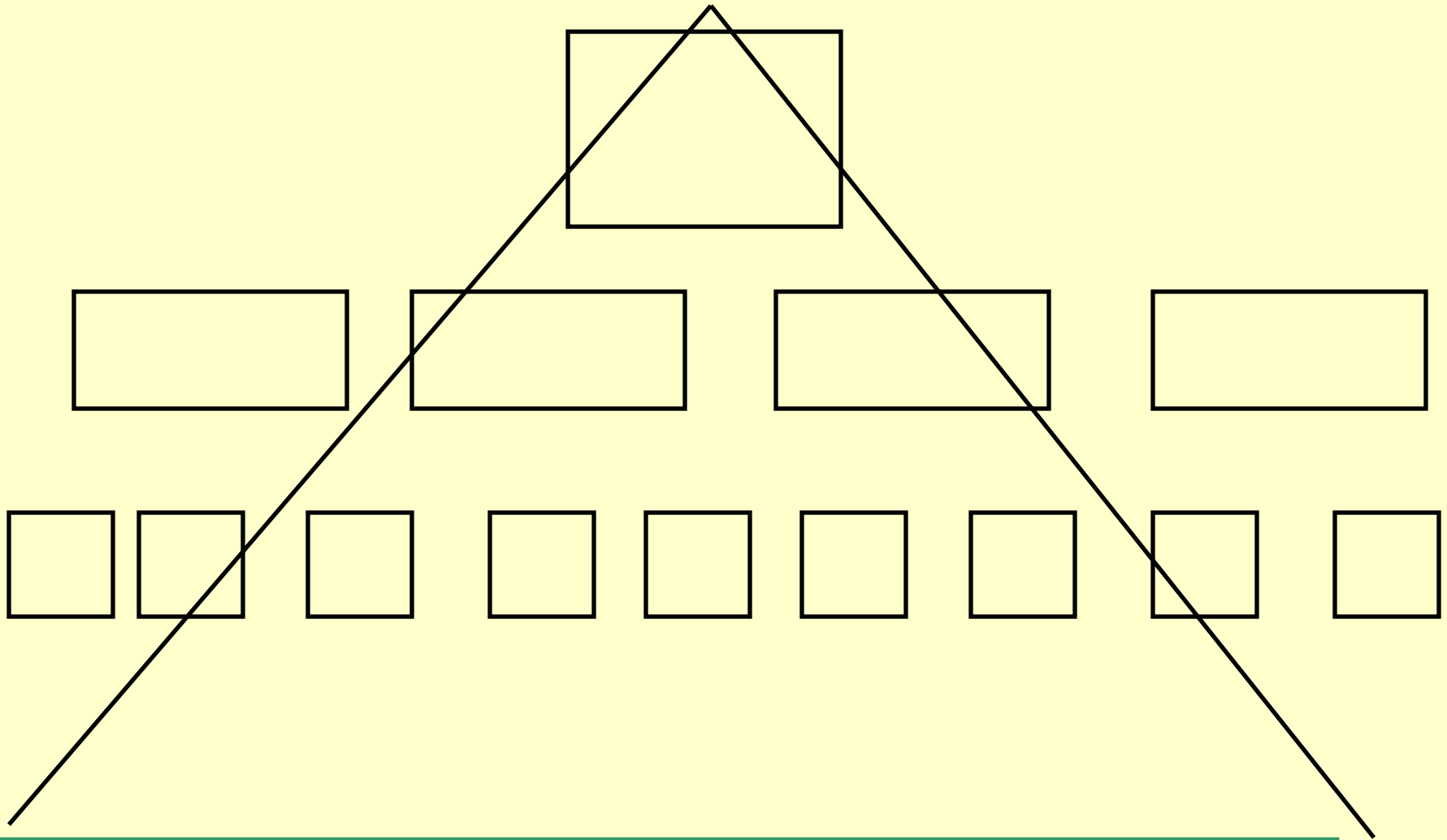
A “pattern”

- ◆ *Students for about 1000 years walk into millions of classrooms in just this way!*

A representation of structure



A systemic structure of “power-over”

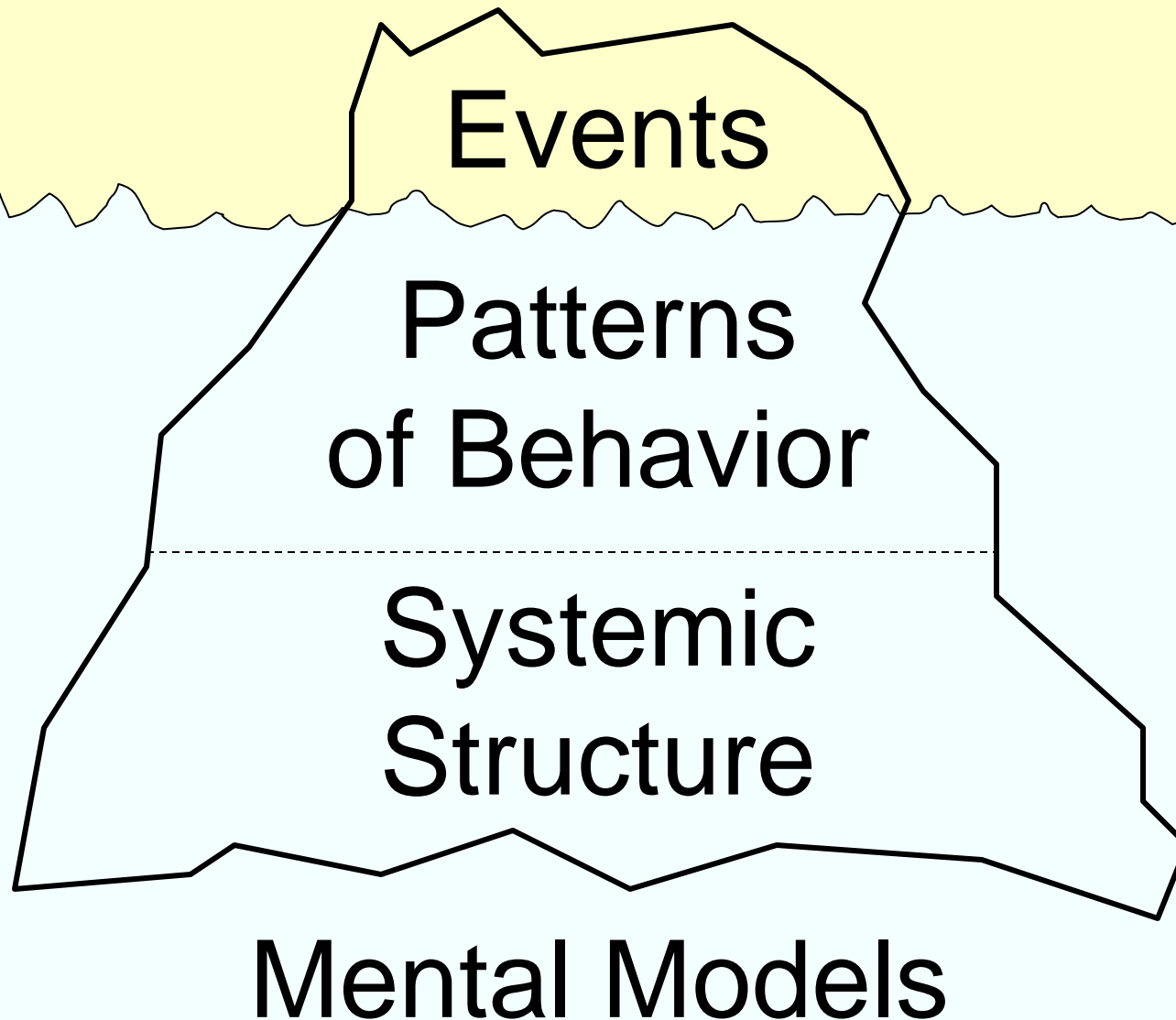


Mental models are at work here!



Can you name any?

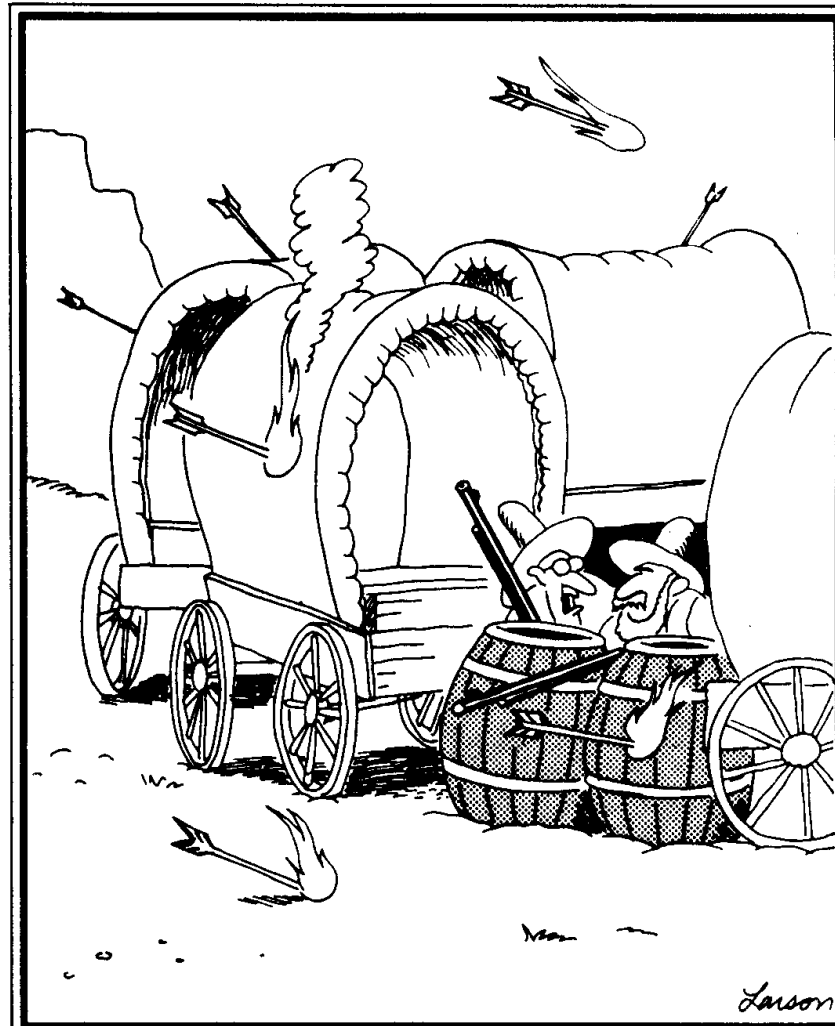
Systems thinking looks below events and patterns of behavior – finding the mental models



Systems Tools:

- ◆ Move focus away from events and patterns of behavior (which are symptoms) and toward systemic structure and the underlying mental models
-

Sometimes we get stuck in our mental models following rules that don't really exist

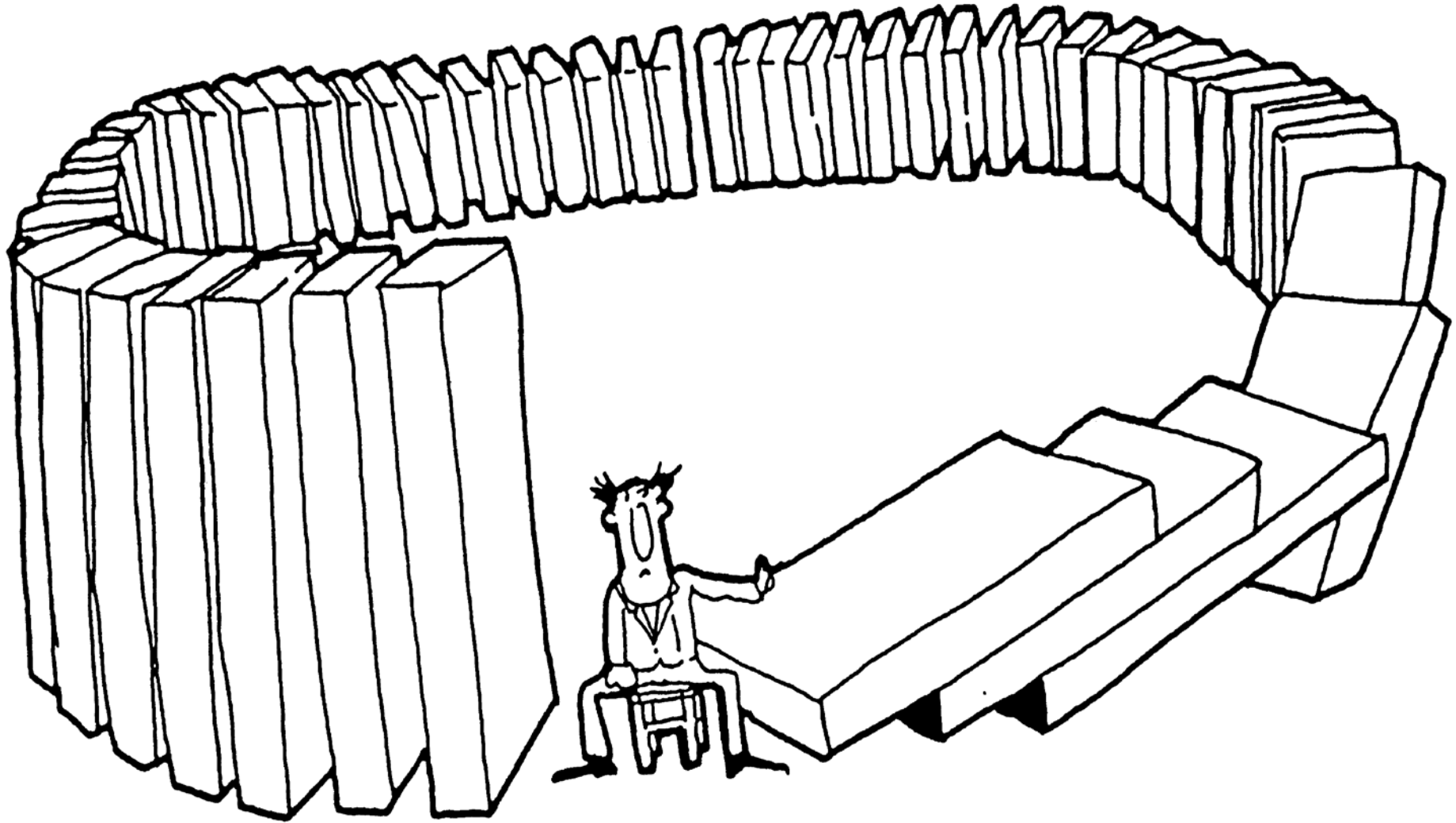


"Hey! They're lighting their arrows!...Can they *do* that?"

Systems Tools:

- ◆ Help us to see “cause and effect” over long periods of time and far away in space

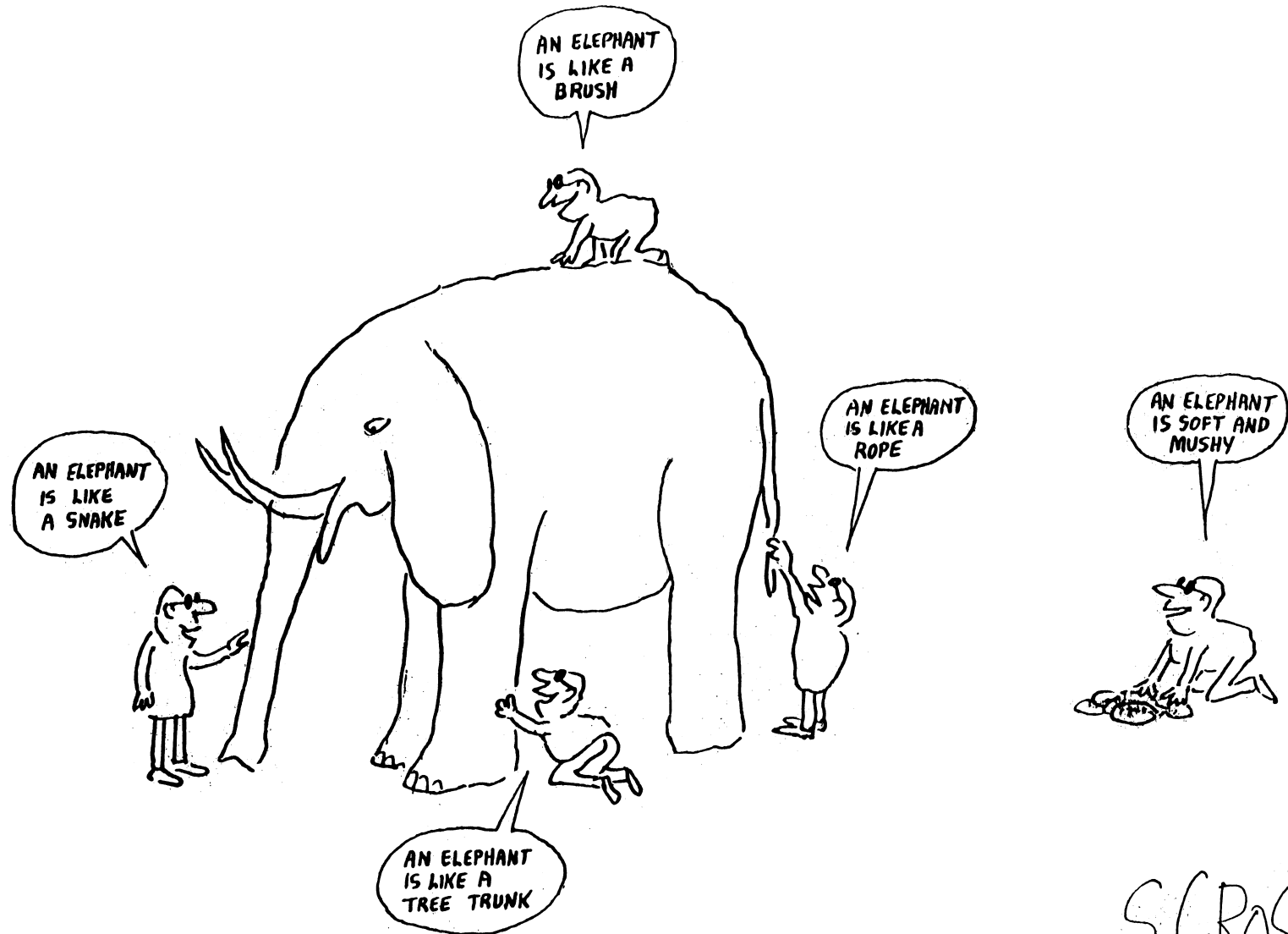
**In complex systems, cause and effect
are distant in time and space**



Systems Tools:

- ◆ Help us to see the “whole”

We sometimes fixate on our part of the system, and miss the whole

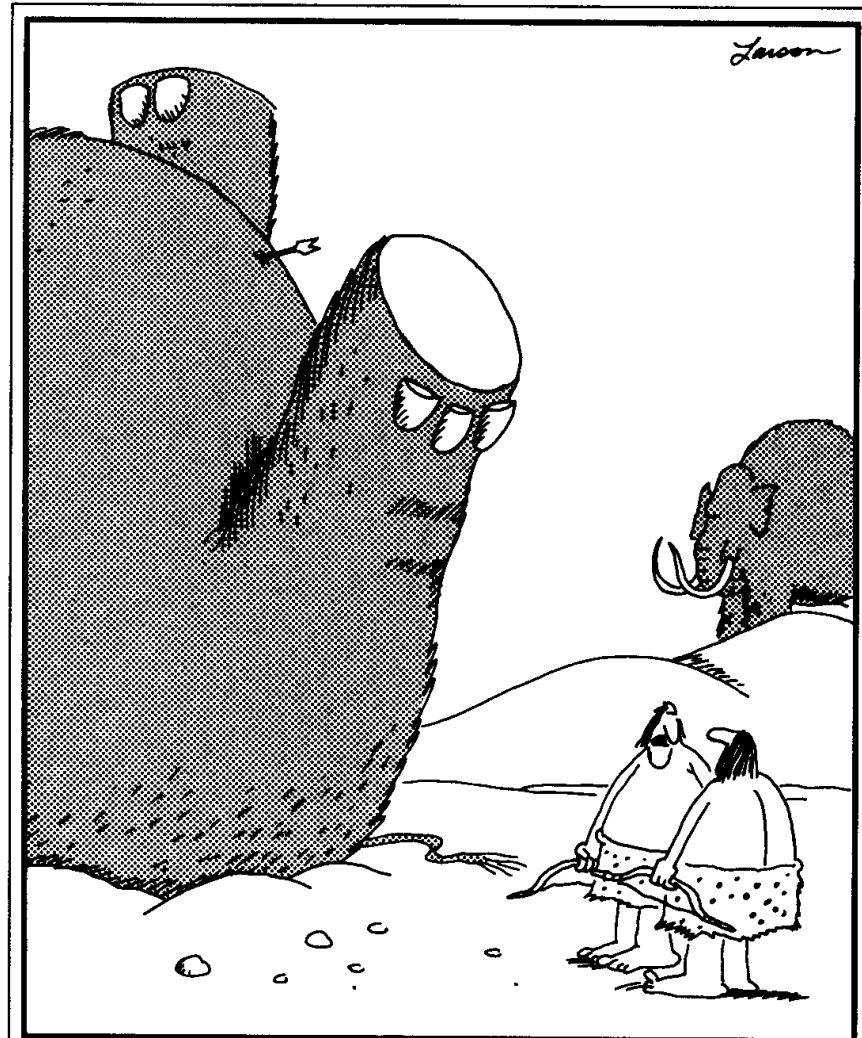


S. GROSS

Systems Tools:

- ◆ Help us to find the leverage points for systemic change.

A leverage point – where small action yields large results



"Maybe we should write that spot down."



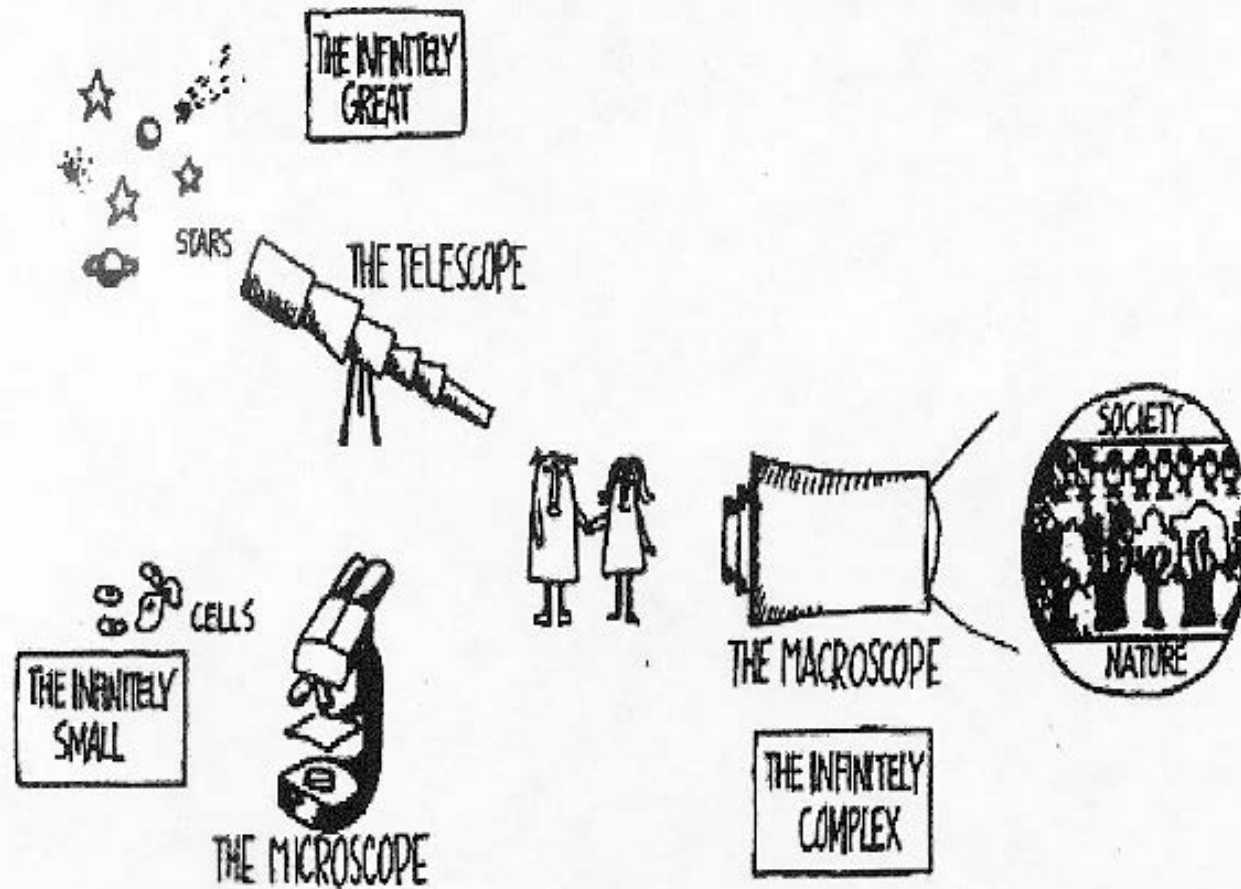
Changing Systems – We Have A Long History of NOT Finding Leverage Points

- ◆ Paving dirt roads in mountain areas leads to **decrease** in safety
 - ◆ Low tar and low nicotine cigarettes actually **increase** intake of carcinogens, CO, etc.
 - ◆ US policy of fire suppression has **increased** the size and strength forest fires in many areas
 - ◆ Buying an SUV for “safety” has made the roads less safe.
-

Systems Tools:

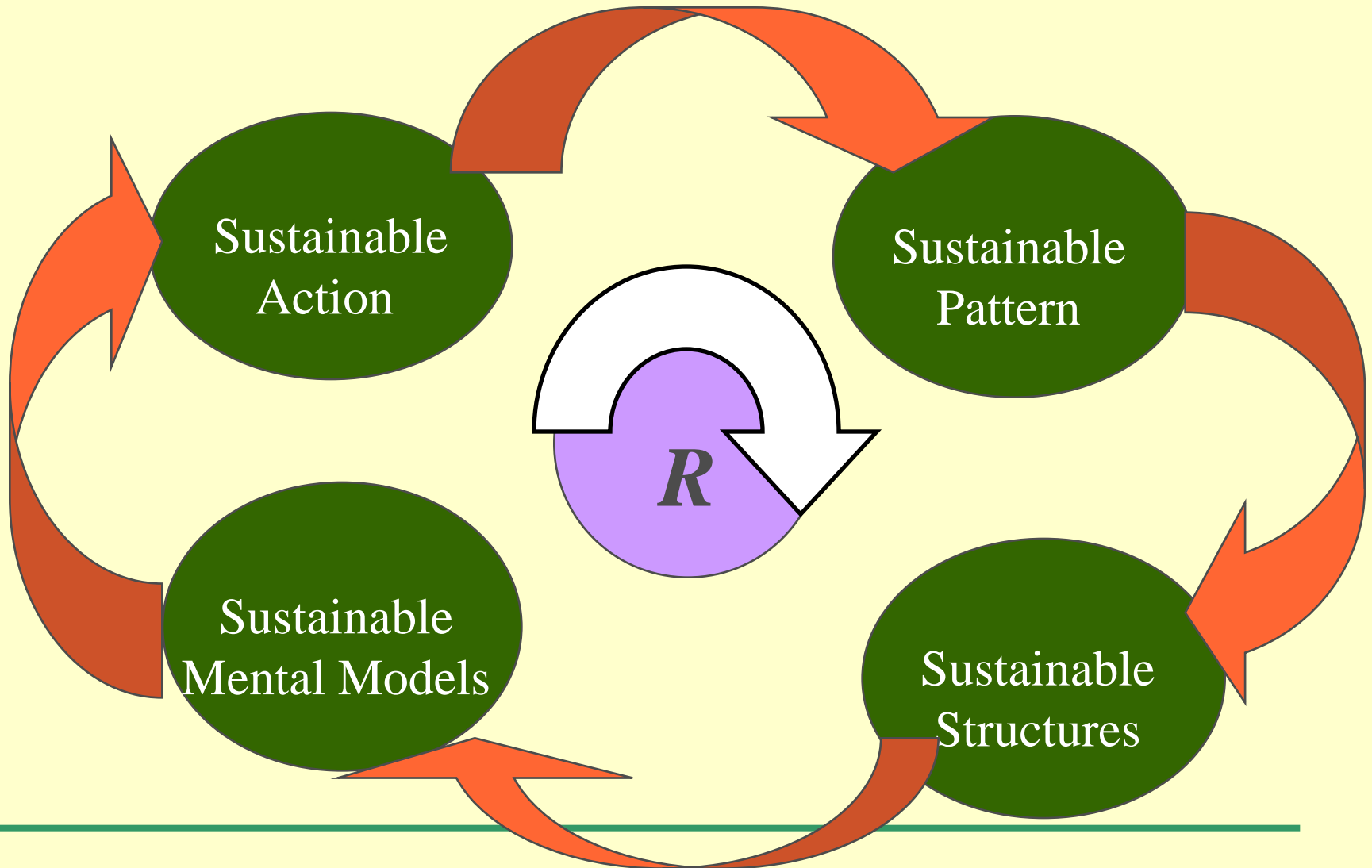
- ◆ Help us to see how our old mental models get in the way of new ideas.
-

We need new tools!

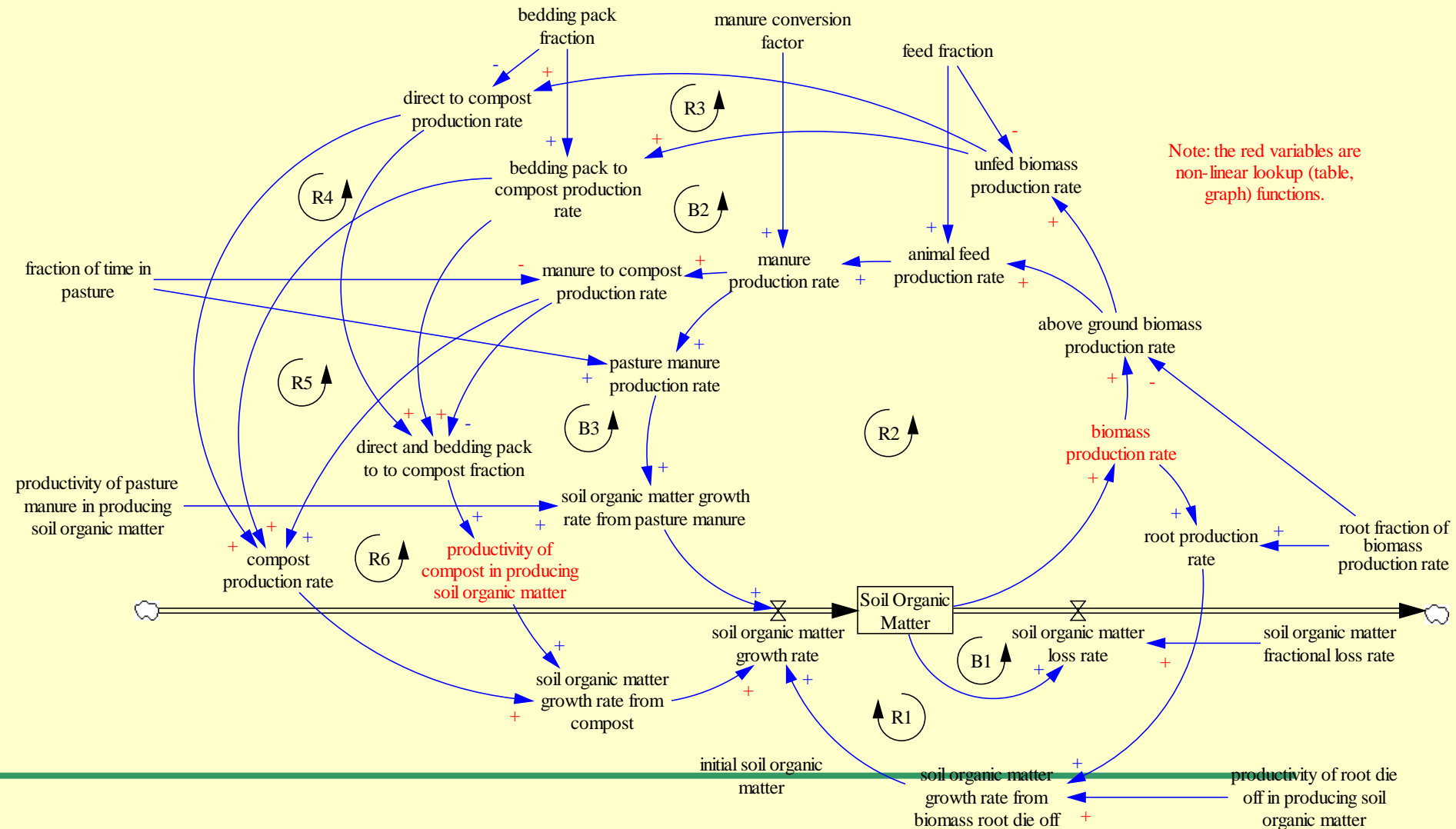




Like Causal Loop Diagrams

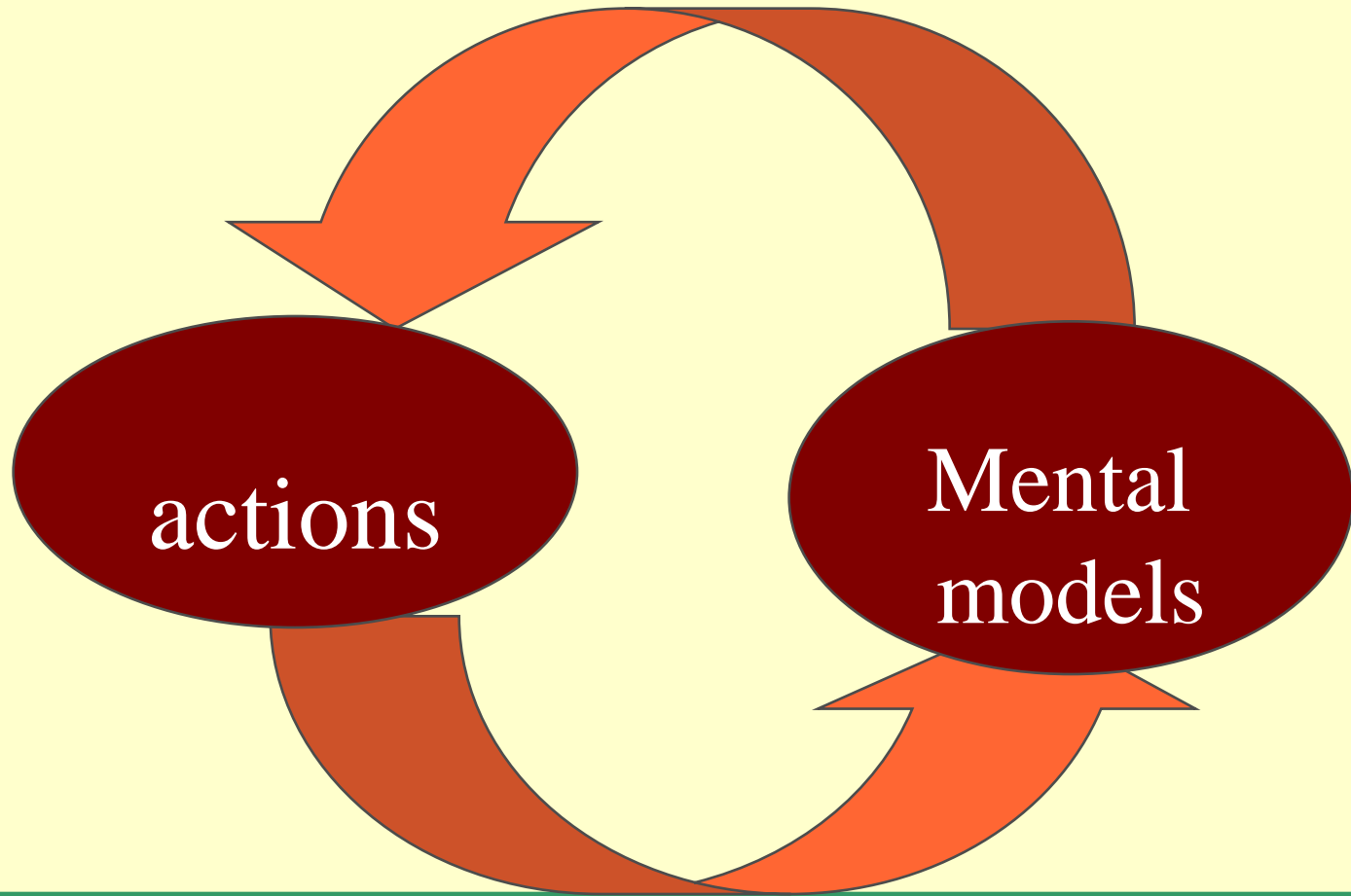


And Dynamic Systems Models





Lets look at a simple Causal Loop diagram





Water bottles that we use once will last for a thousand years

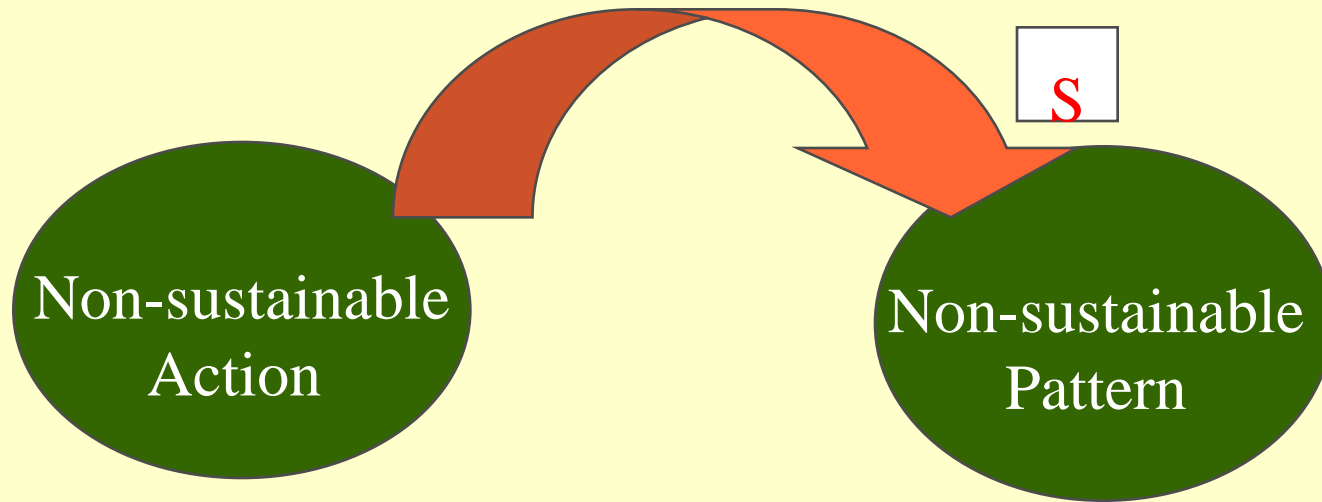


Using this once is
a
non-sustainable
action.

Right?



Non-sustainable “action”



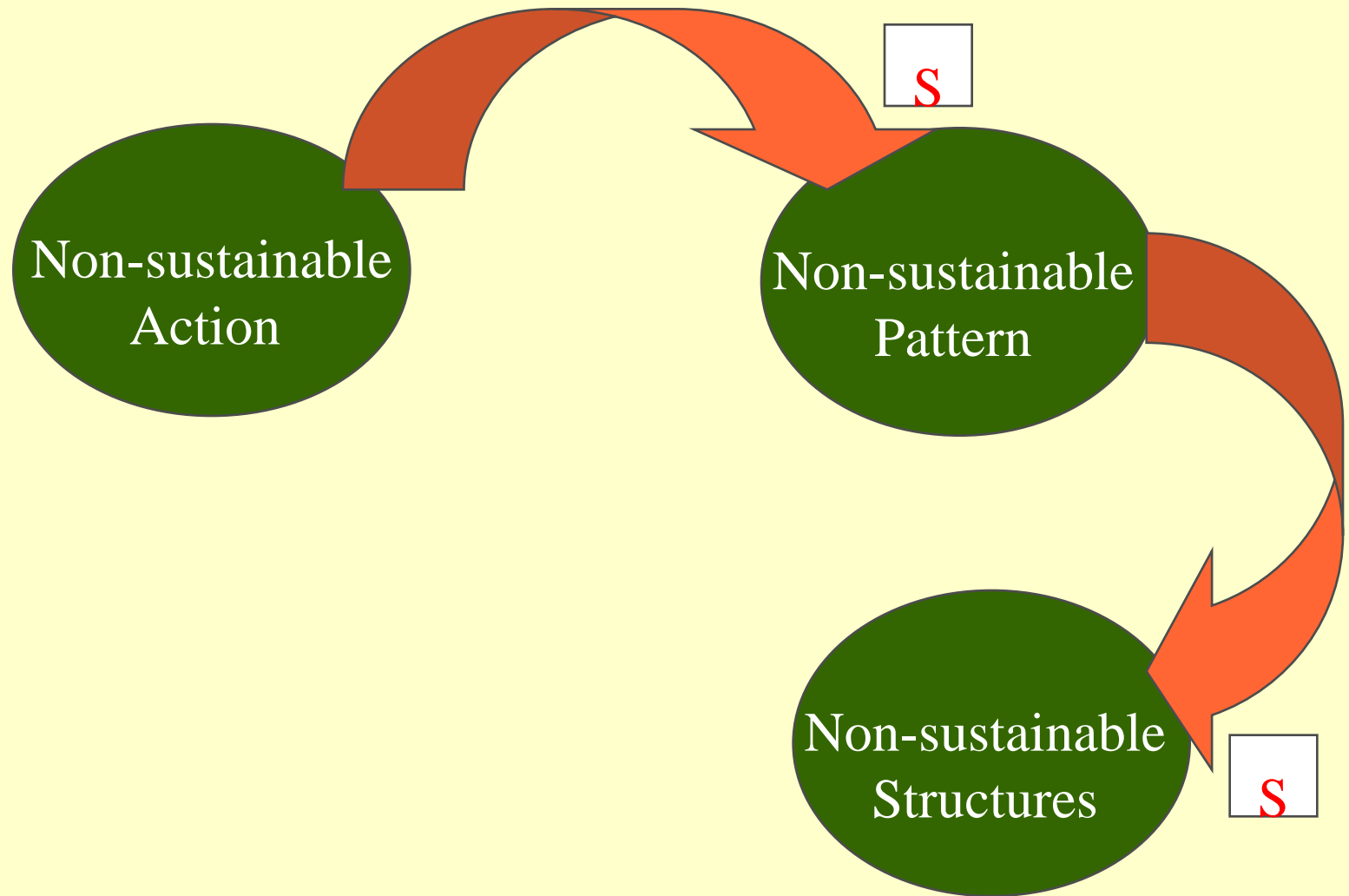
Like lots of water bottles!



**Non-sustainable
patterns**



NS Patterns Create NS Structures



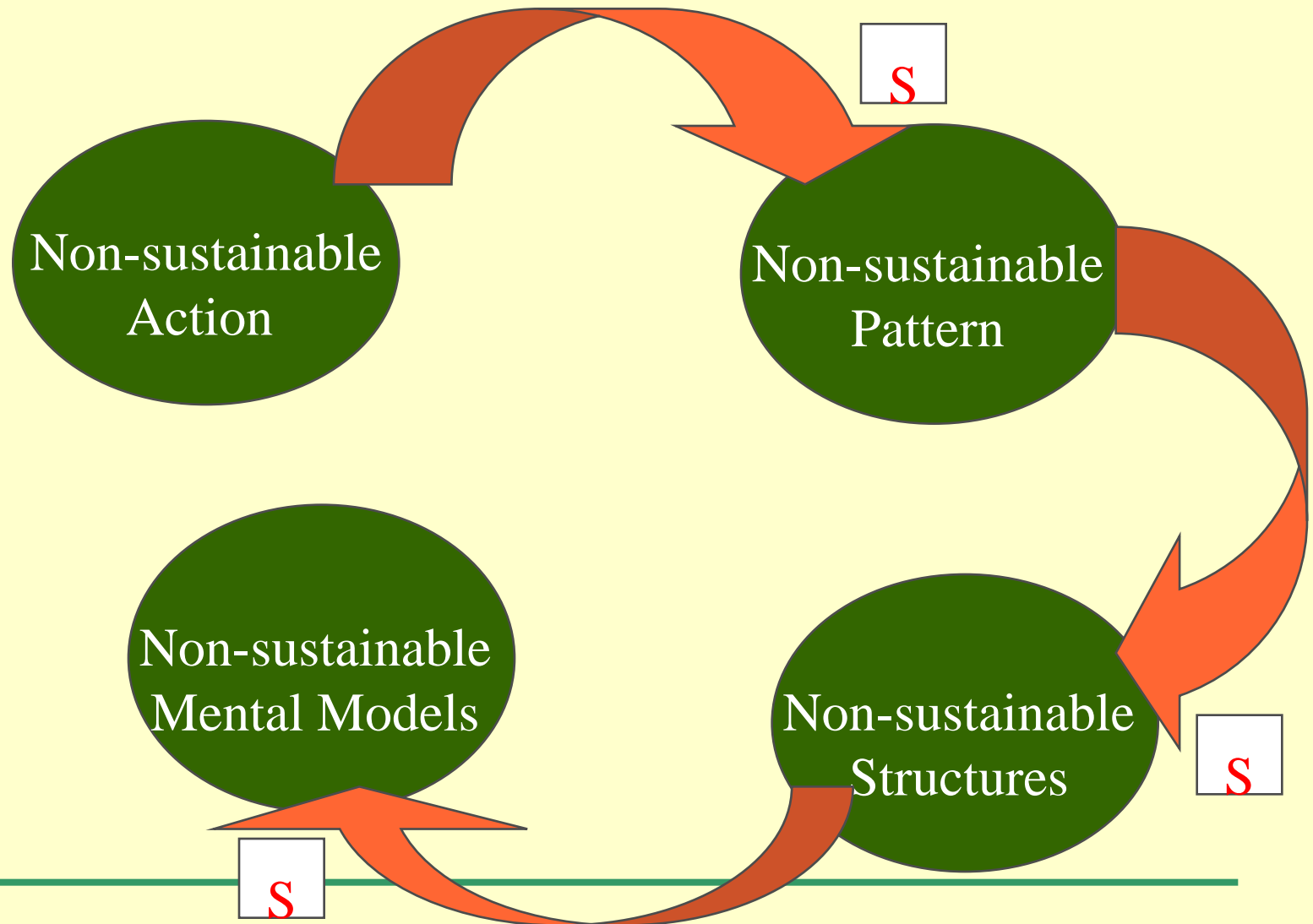
Non-sustainable structures



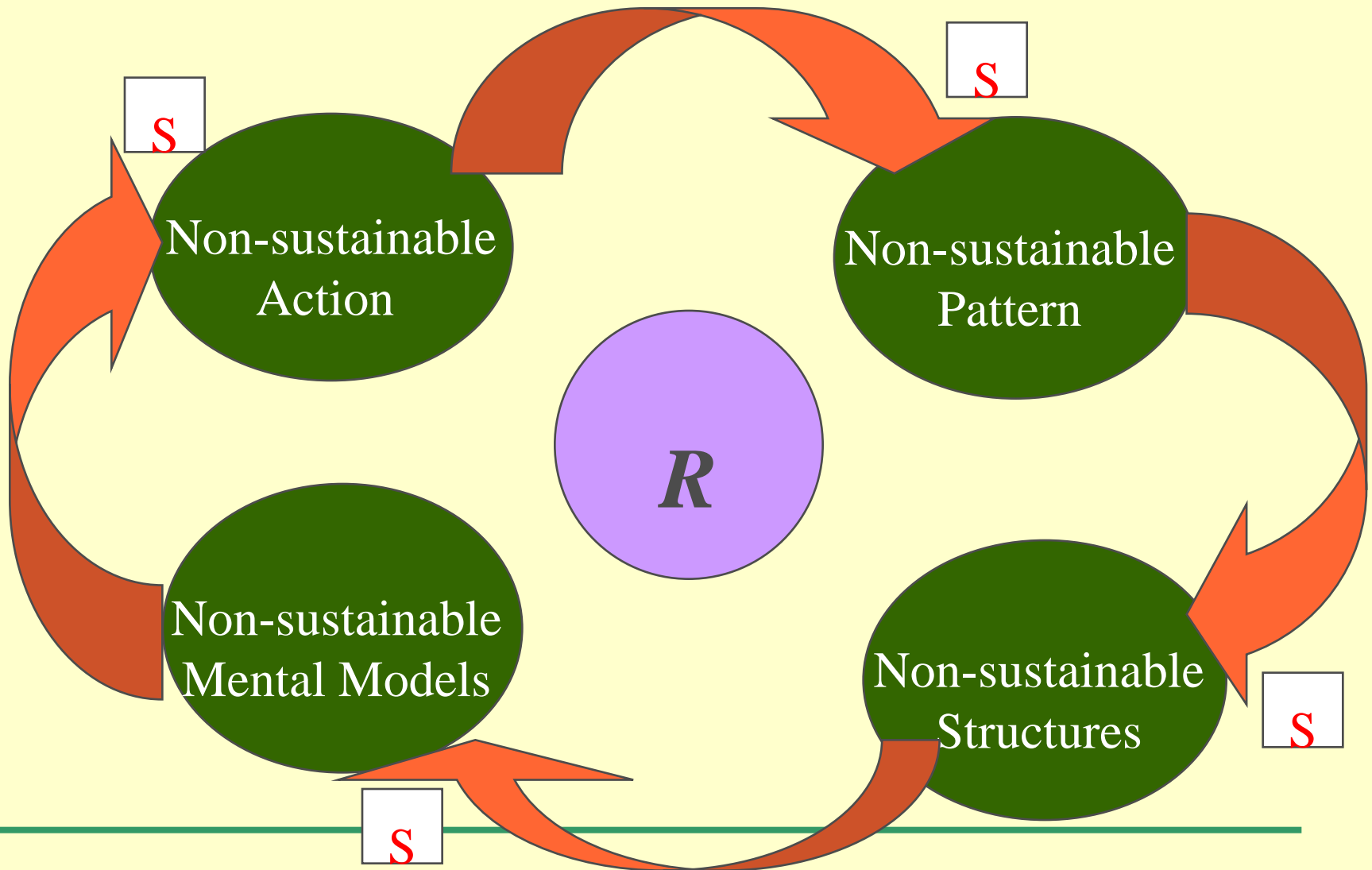
Bottled water is the fastest growing “beverage” in the U.S.



Create NS Mental Models



Which creates a very powerful Reinforcing Feedback Loop





Reinforcing feedback loops are powerful

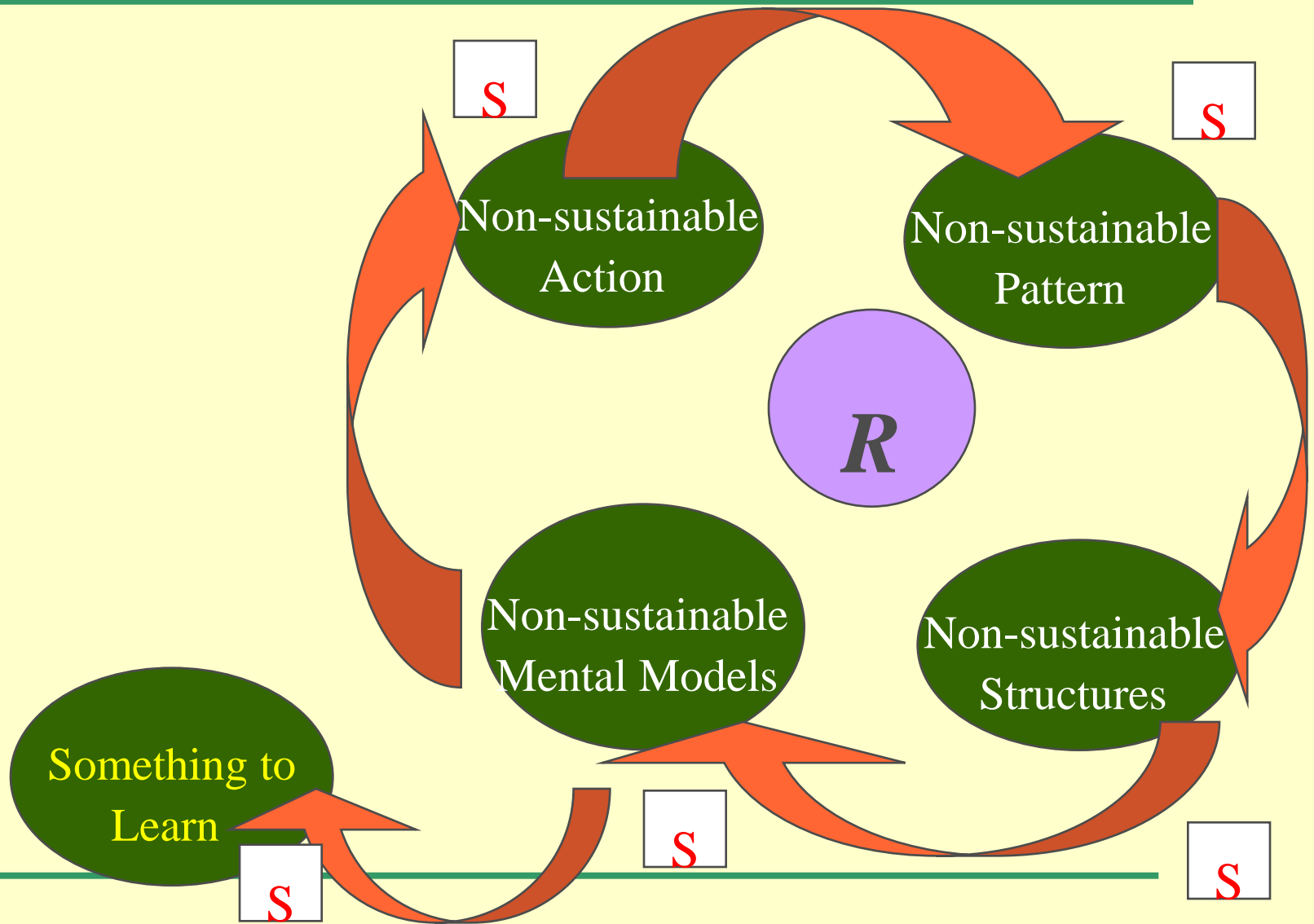
But, with these loops...



Something always happens.....

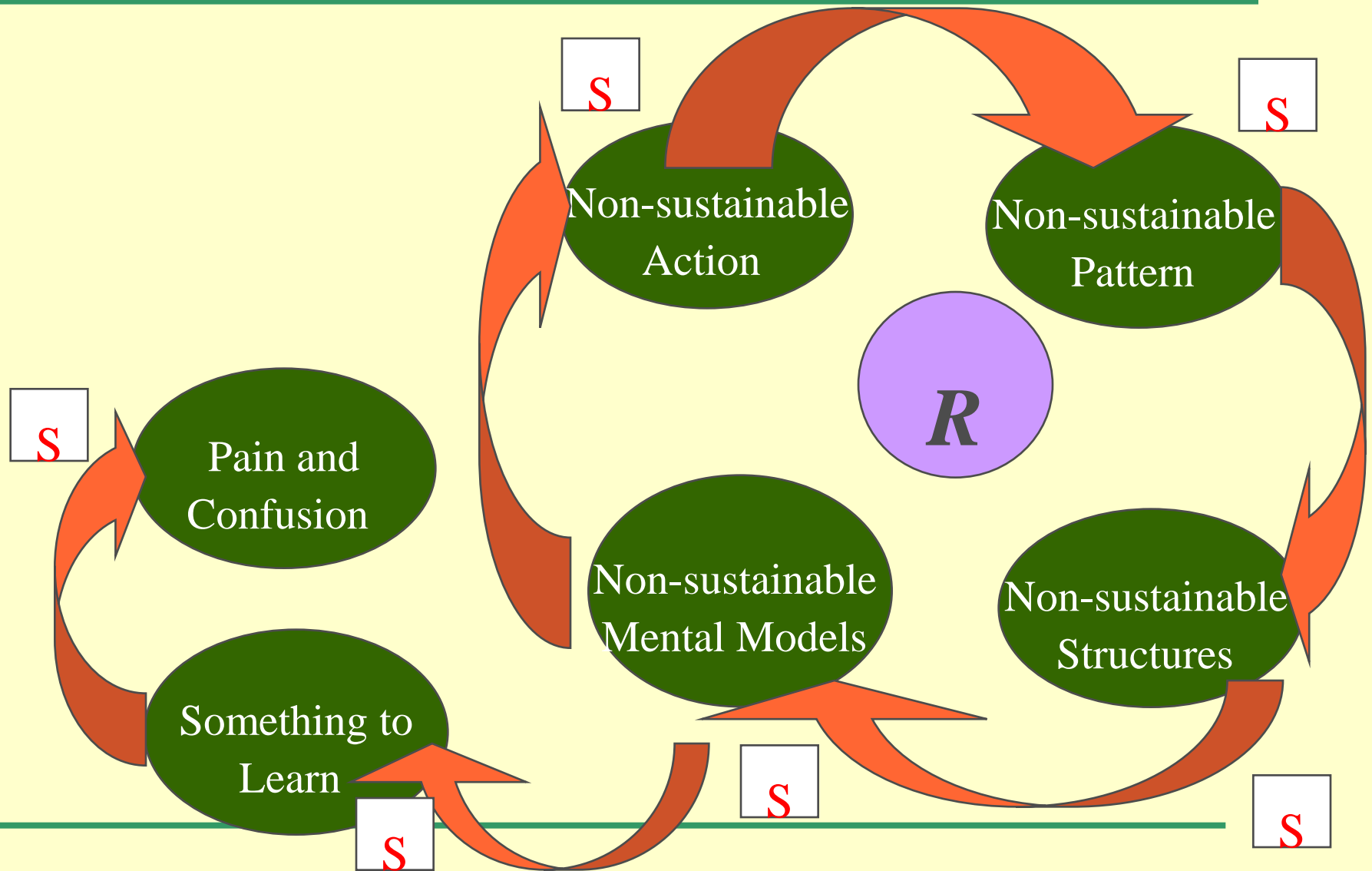


We'll call that “something to learn”



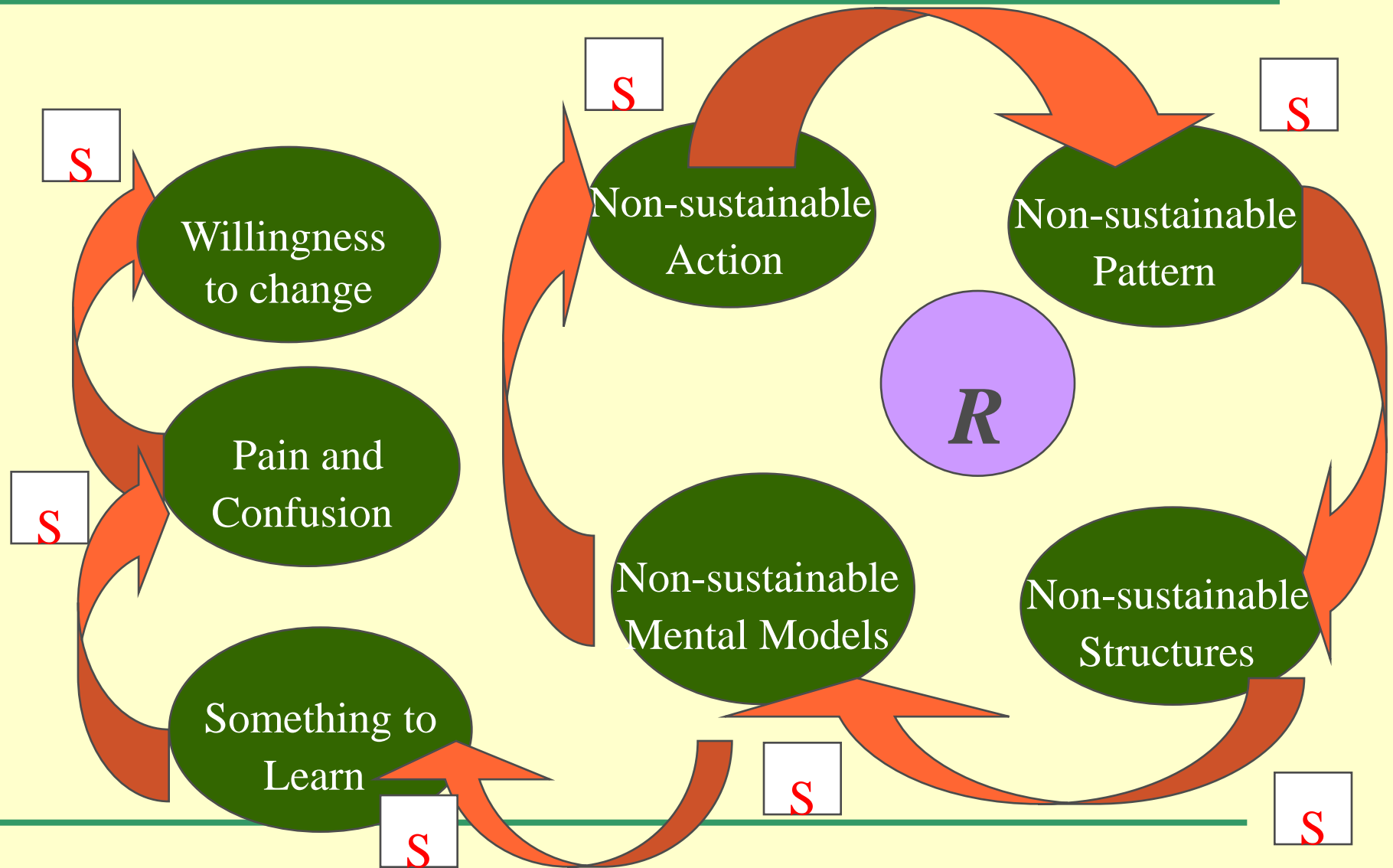


It is often painful!



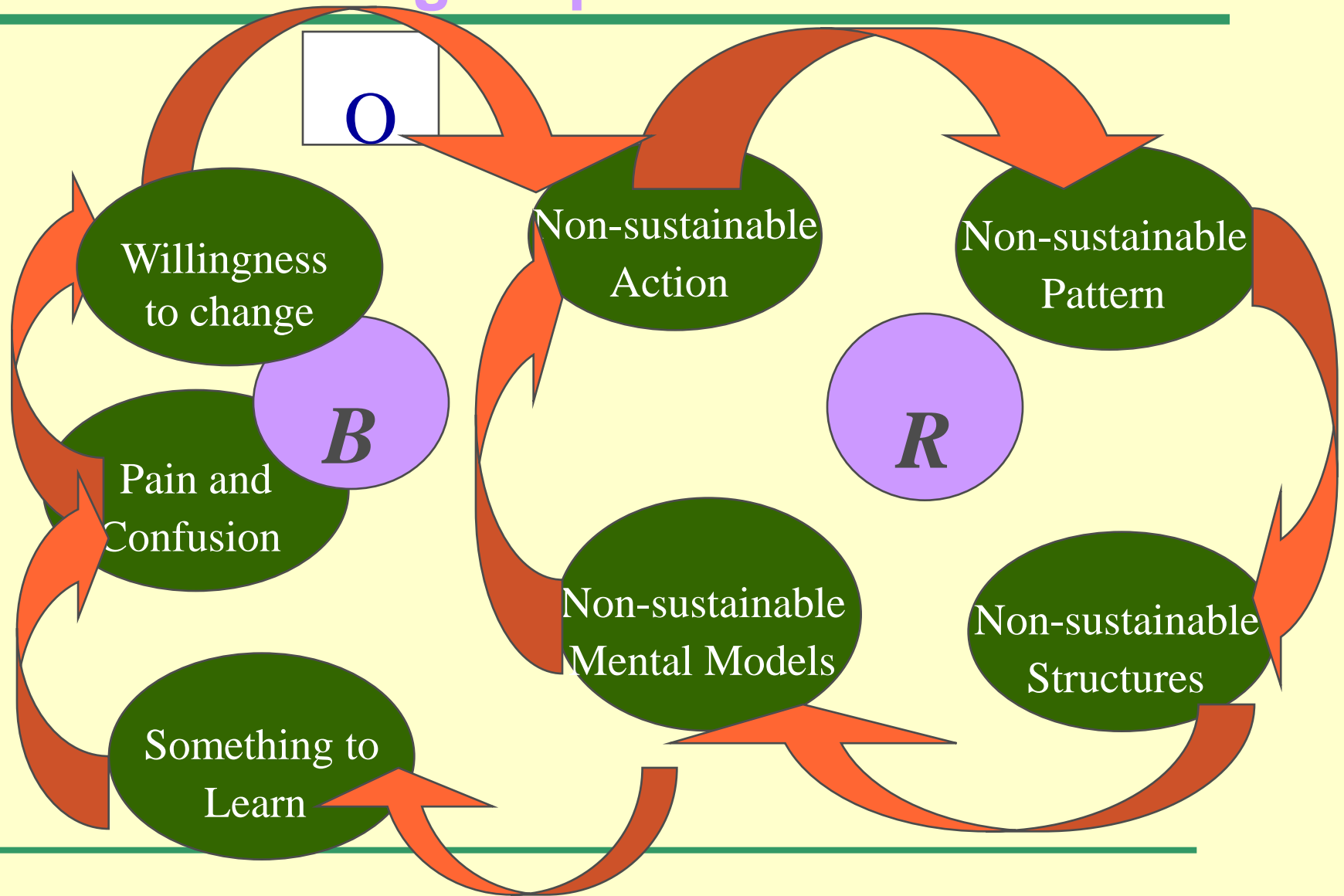


Pain is a powerful motivator



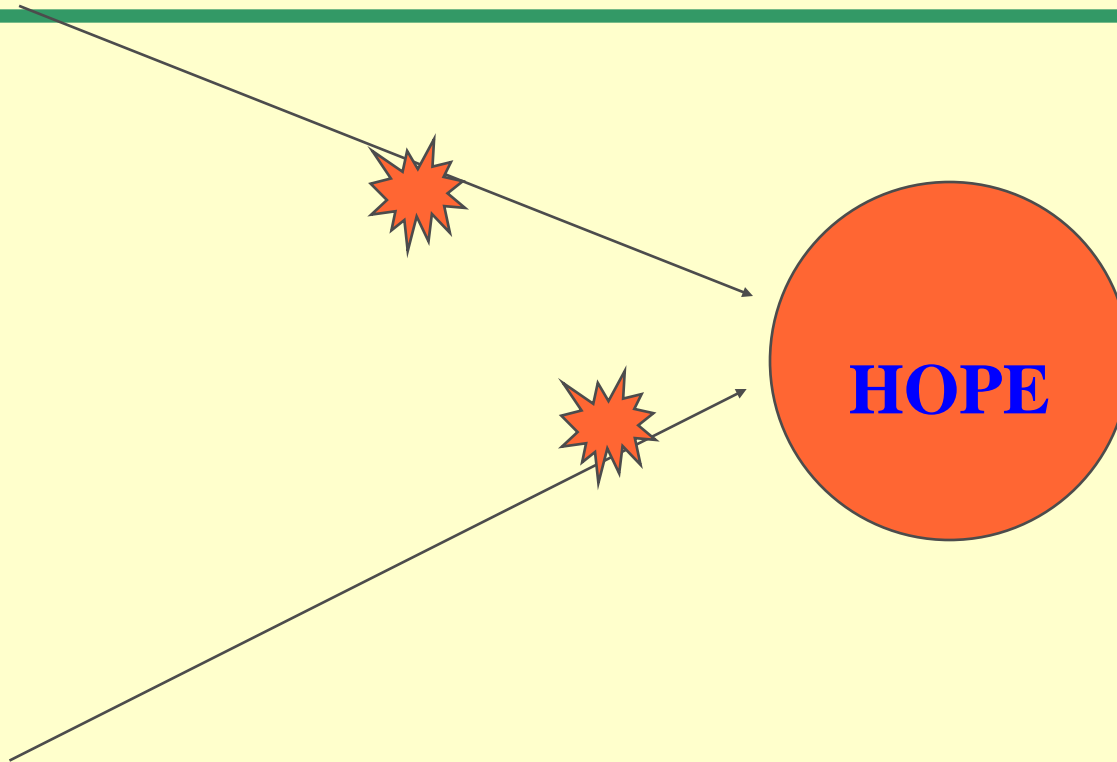


And a “balancing loop” is formed





Remember the “funnel”?



Hitting the sides, represents “pain”

Join the Great Turning

...the inevitable transition from
an industrial-growth society
to a life-sustaining society.

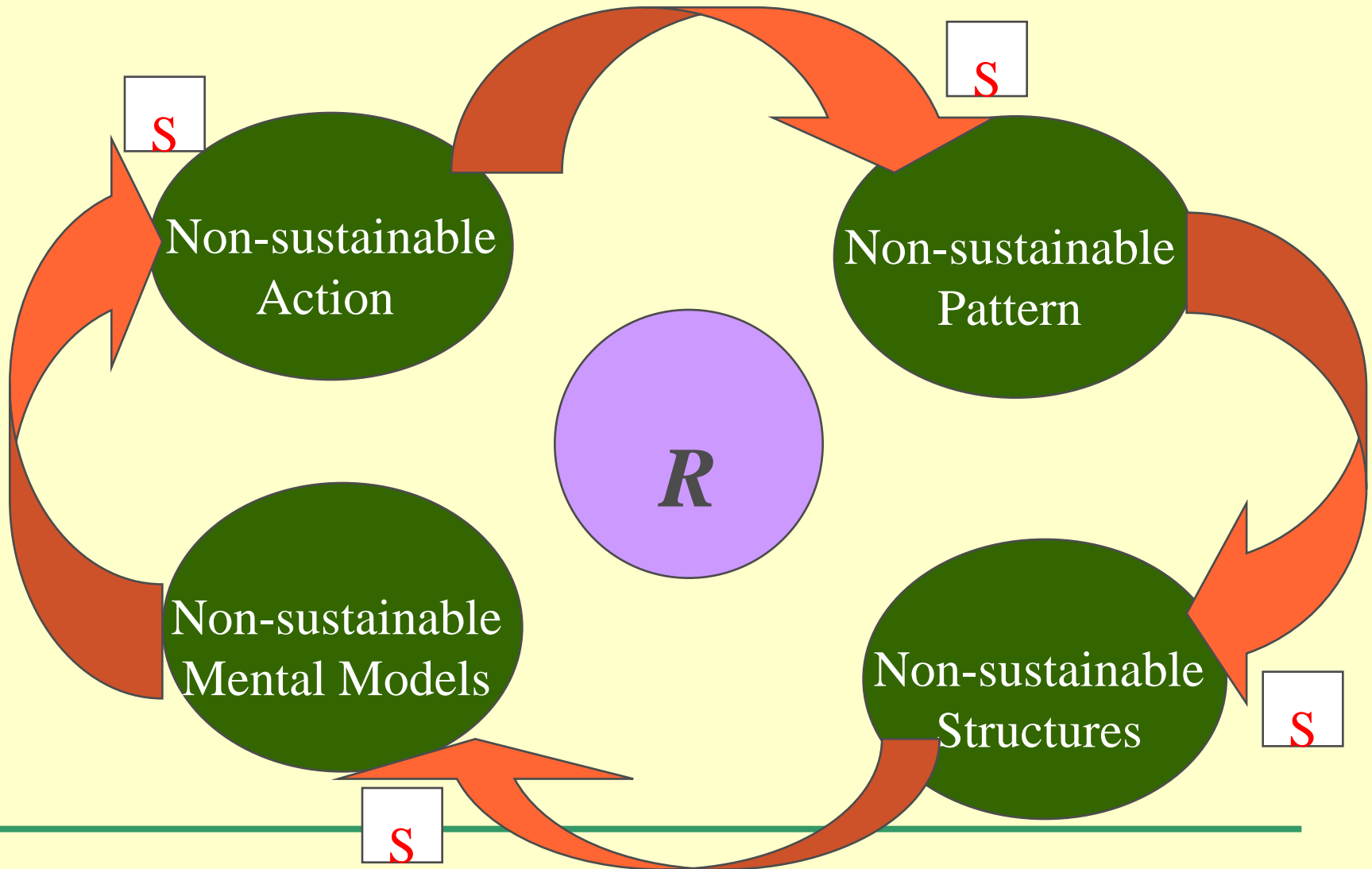


Is pain the only way to change?

Well, pain “works”

....but, maybe there is
another way?

Reinforcing Feedback Loops can run in two directions

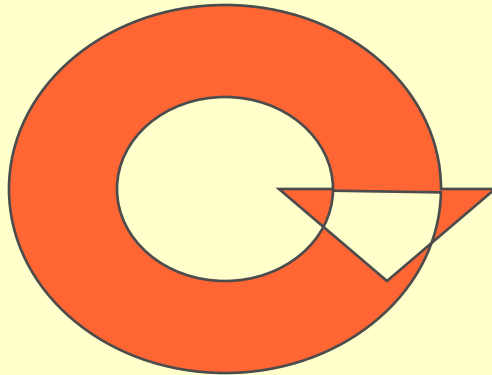


Maybe we can choose!

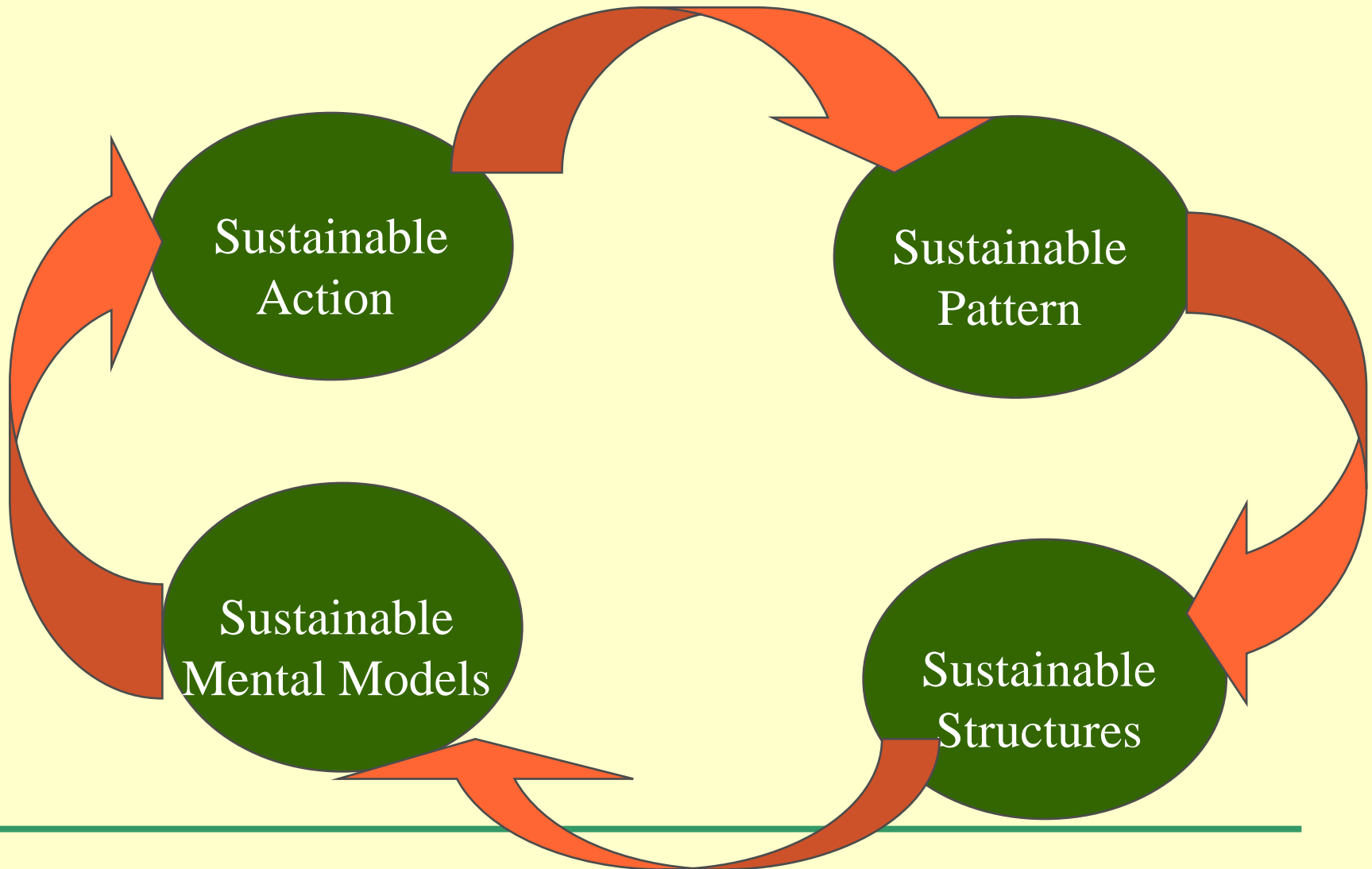
- ◆ Industrial Worldview = linear



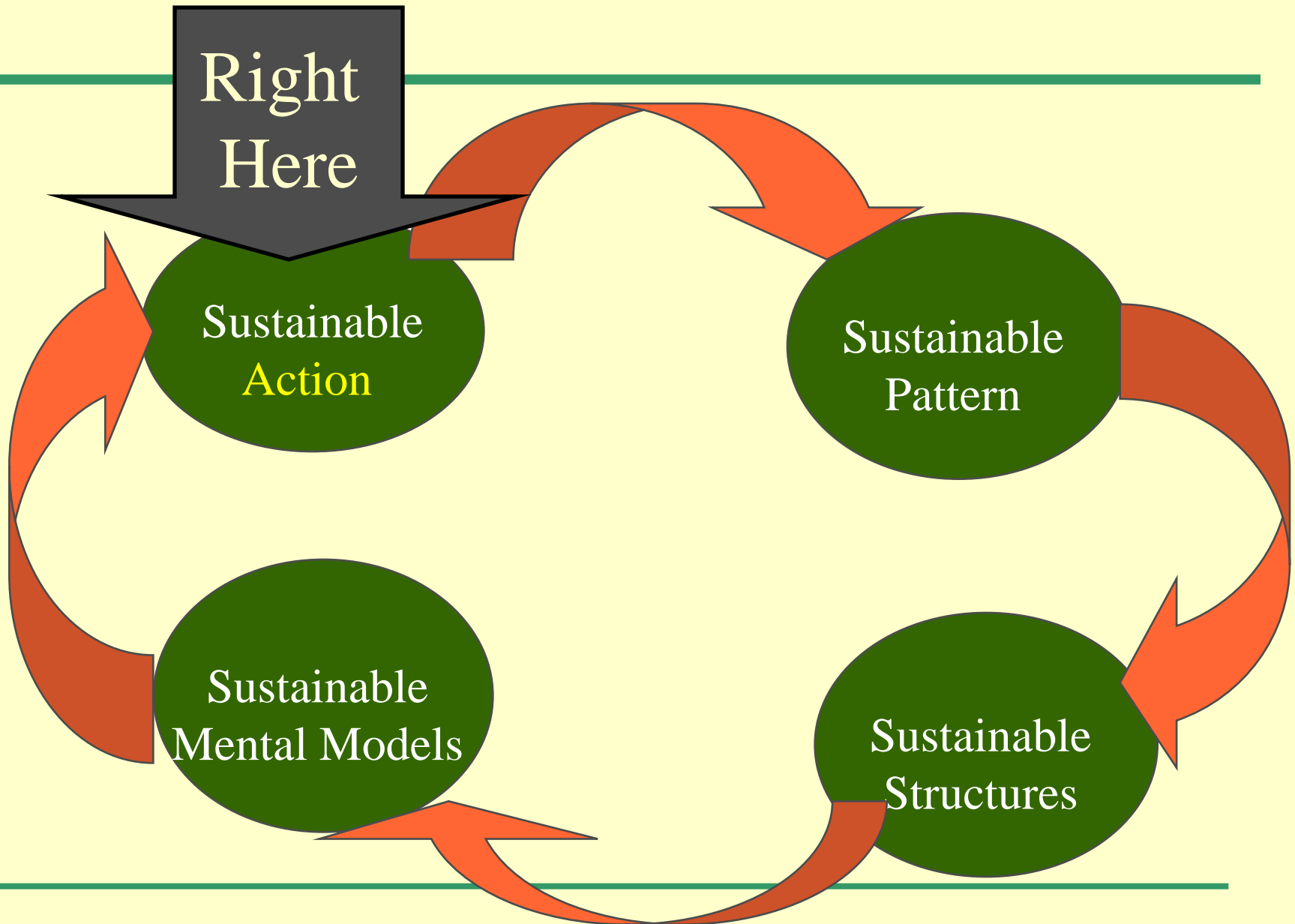
- ◆ Ecological Worldview = cyclic



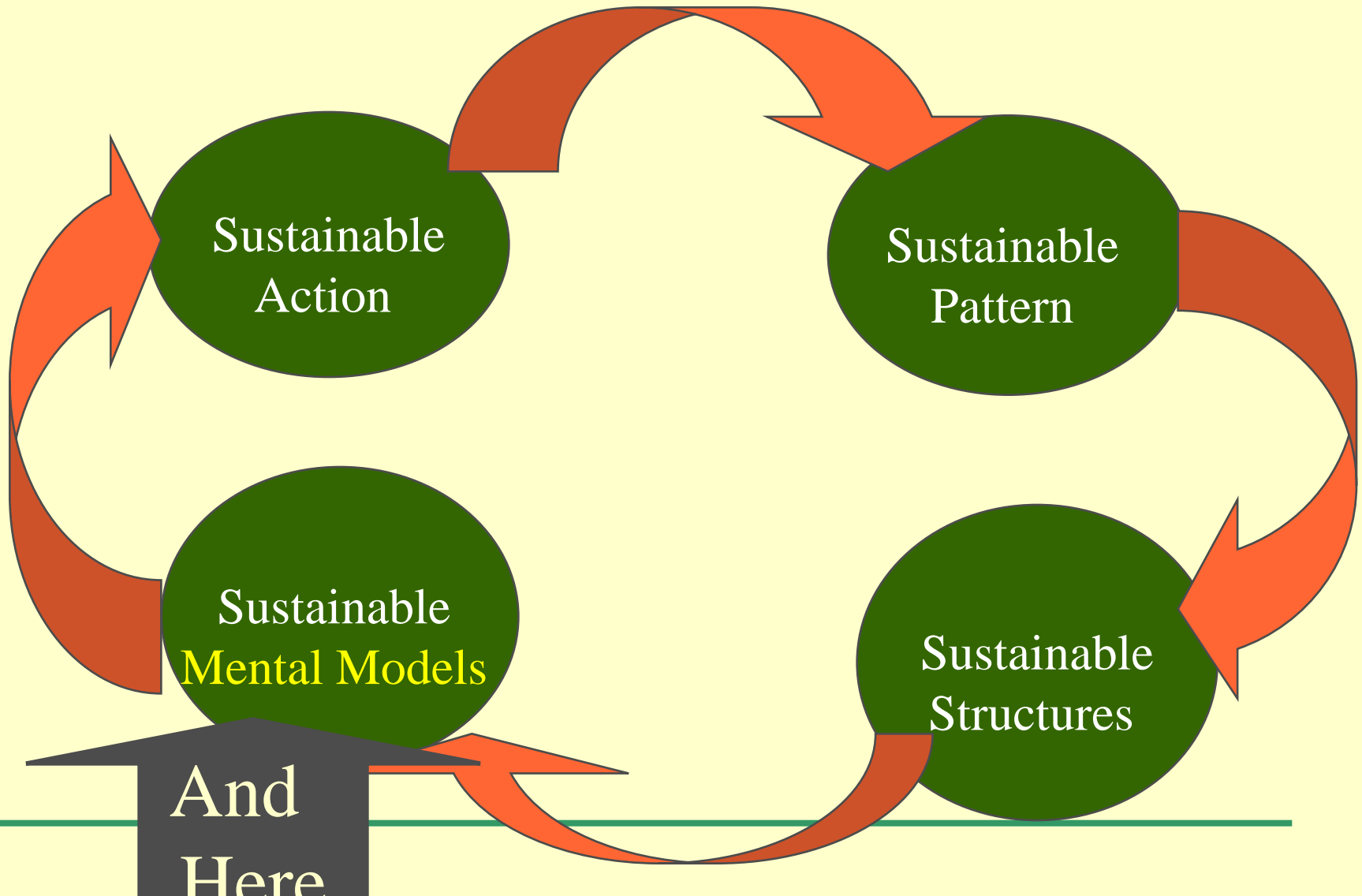
There are two places to influence this model



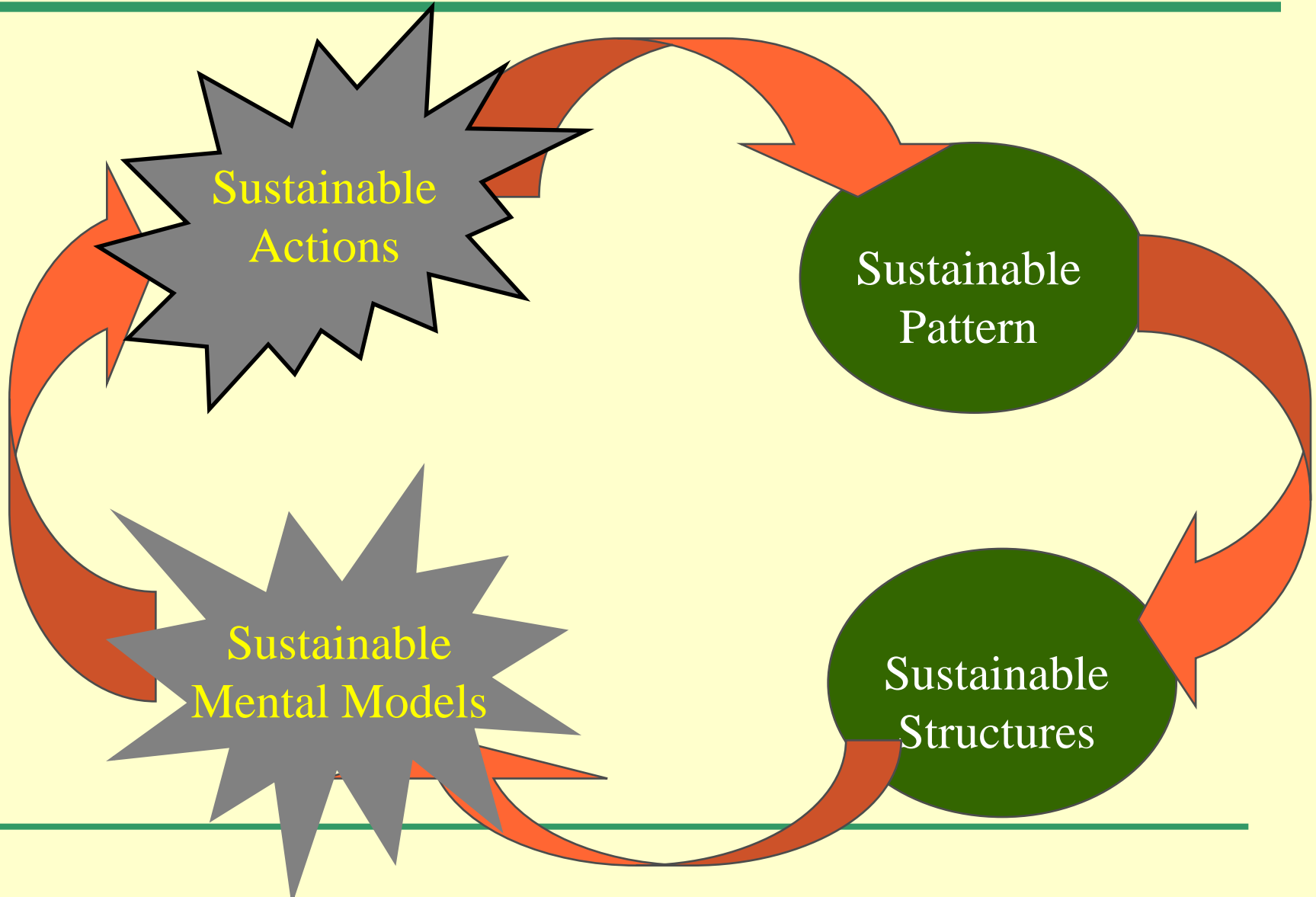
There are two places to influence this model



There are two places to influence this model

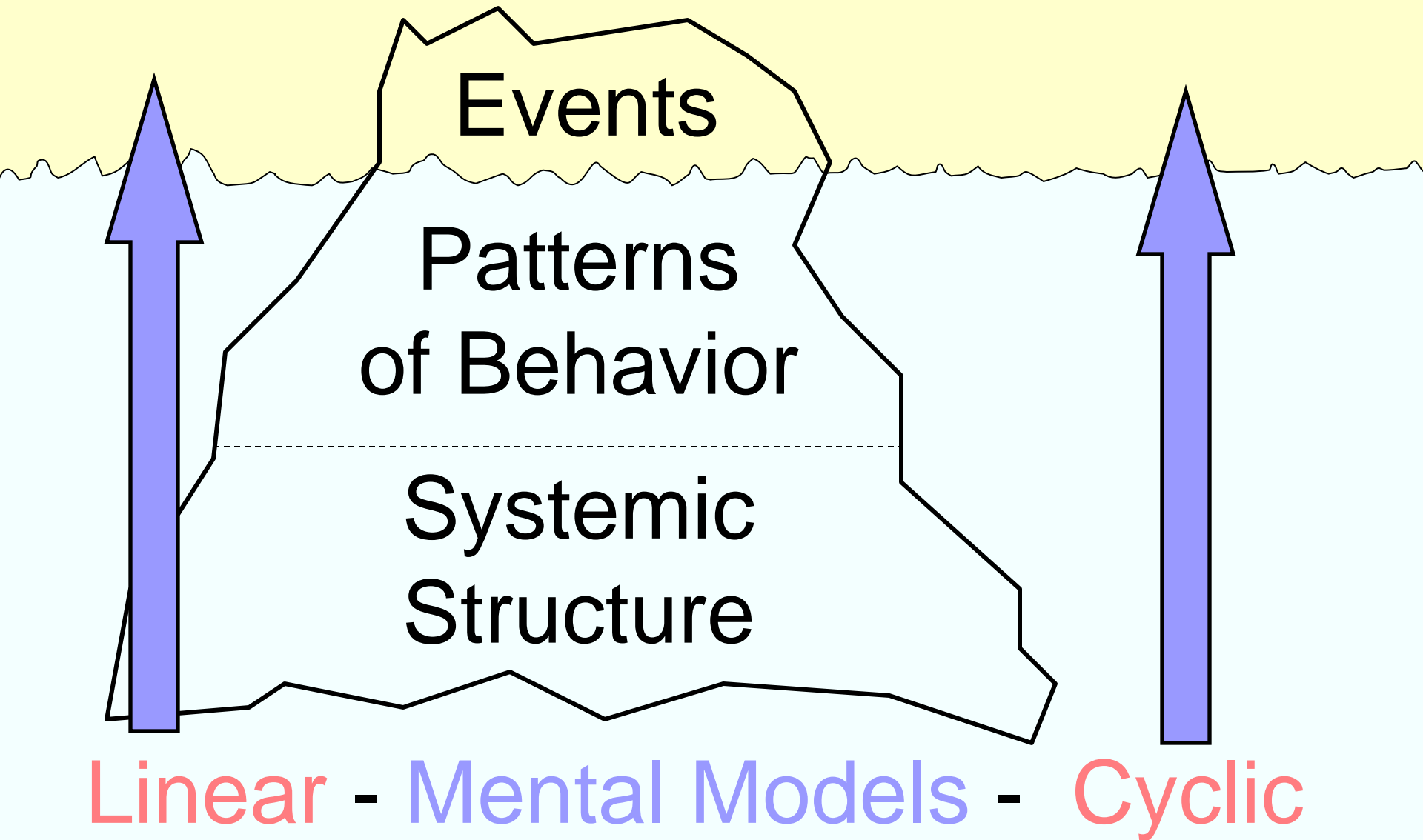


We can begin systemic change either with small actions or mental models





How might events and patterns be different with different mental models?





We have a choice!

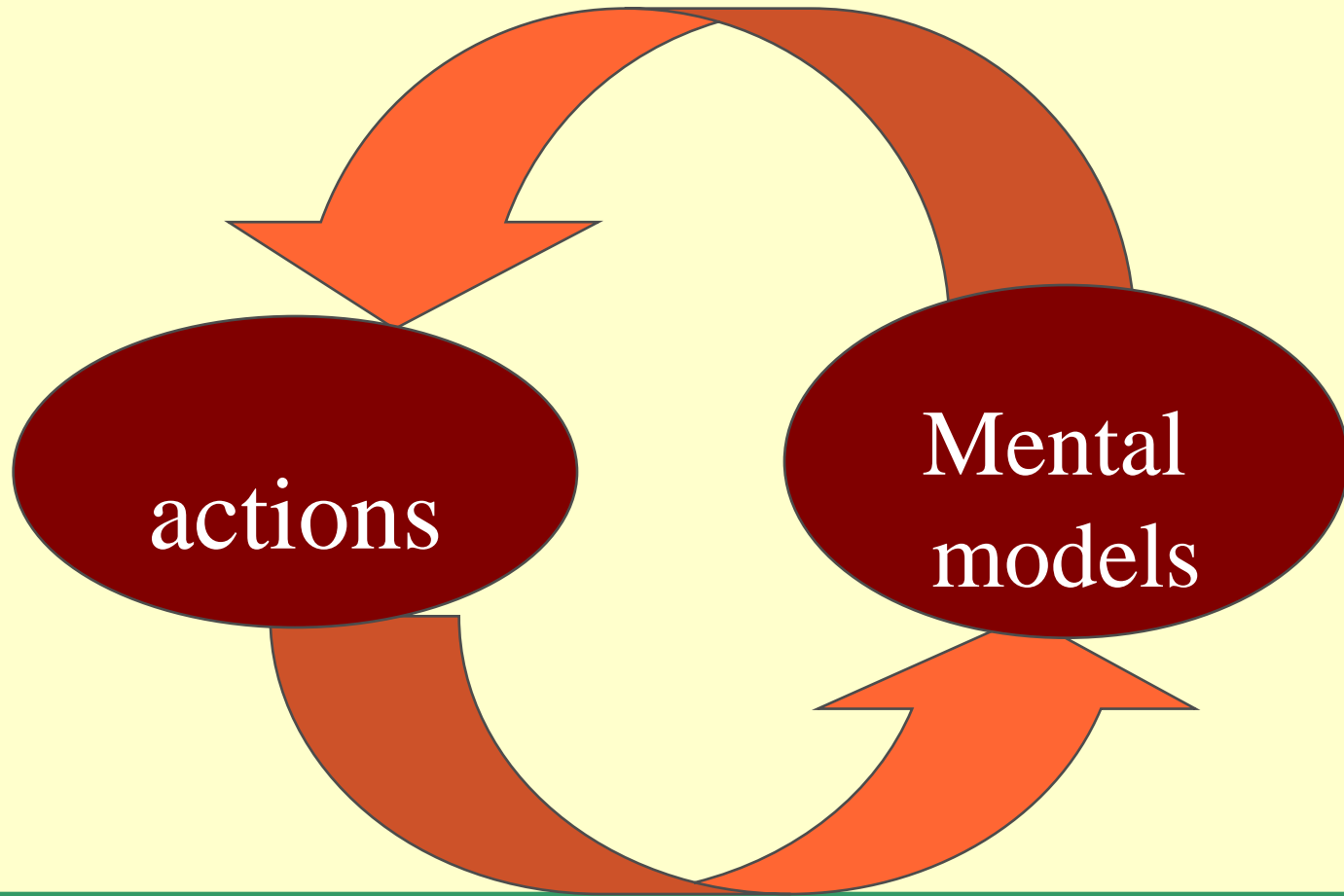
We can find this balancing loop,
through pain,

Or....

We can choose to create sustainable
reinforcing feedback loops through
voluntary small actions
and
changes in mental models....



This works, because.....



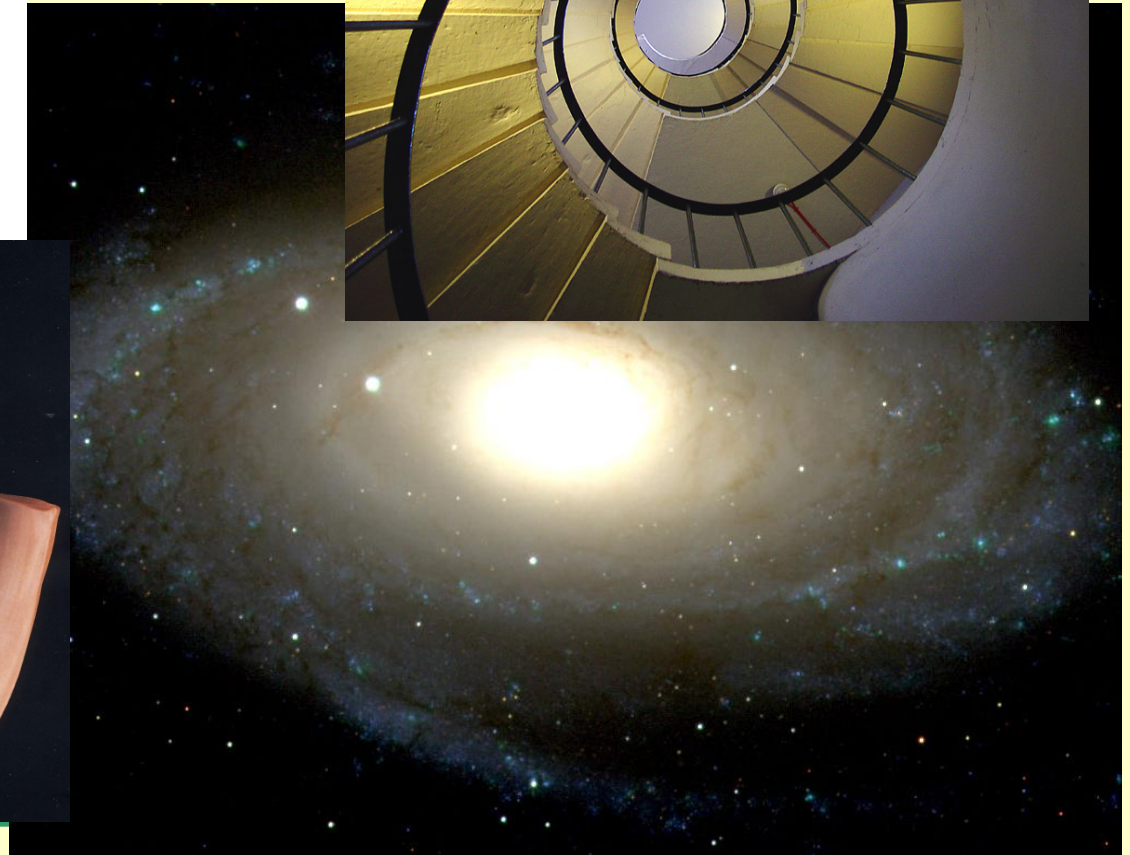
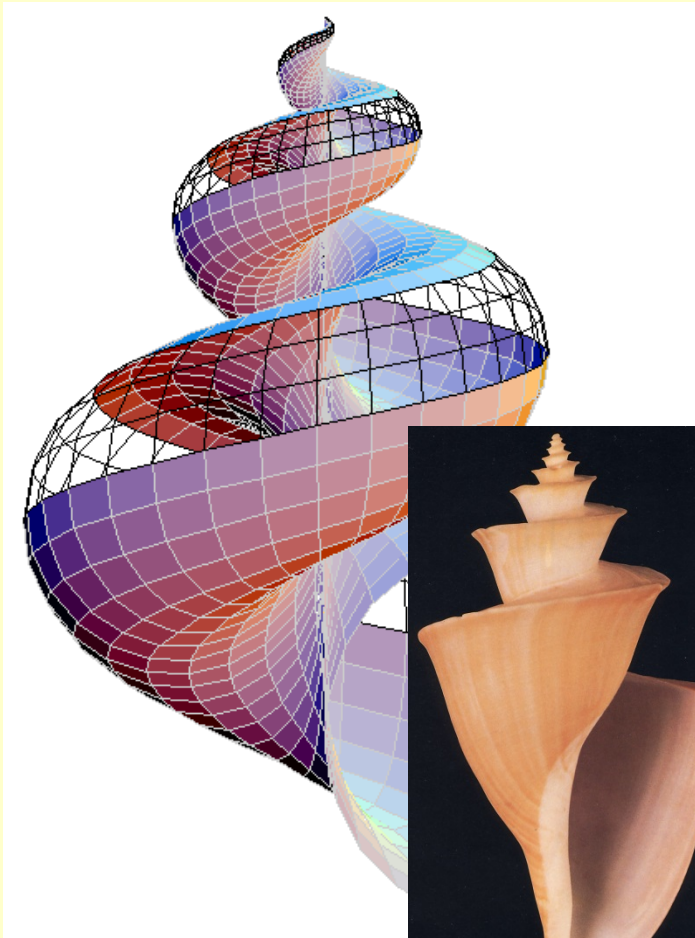
Small actions like....

.....

- *Holding the door open for someone*
- *Changing a light bulb*
- *Adding worms to your compost*
- *Smiling*
- *Making salt (April 6, 1930)*

Well, you've heard all that before...

Spirals of change begin with small acts





Change a light bulb and change the world!



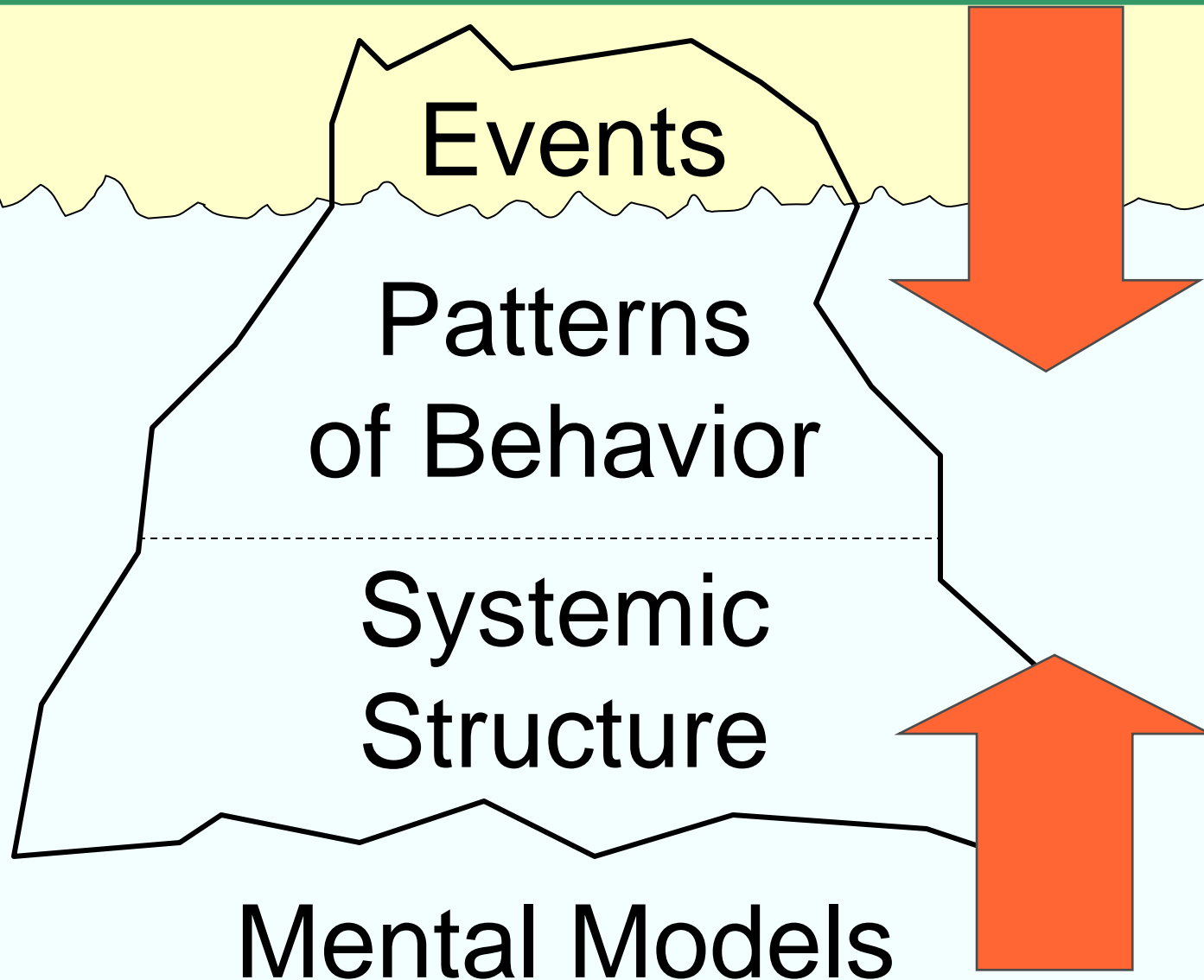
Small actions result in....





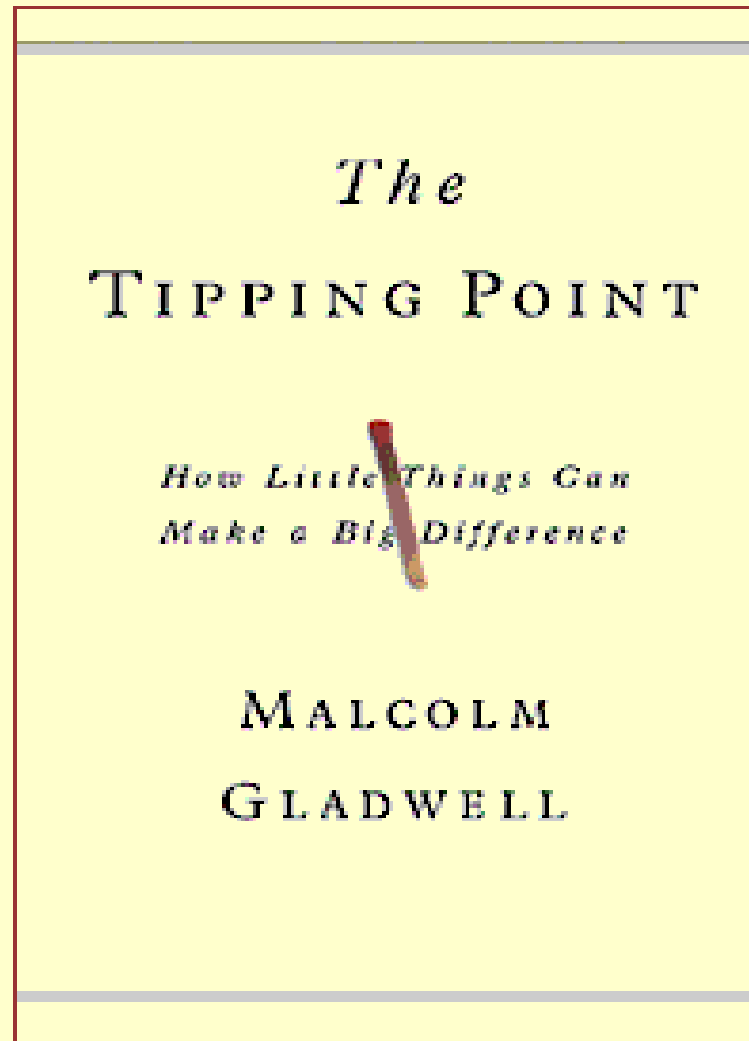
.....big shifts in consciousness..

Is there any evidence for this idea?





The Tipping Point



Hush Puppies?



◆ 1994 – 30,000 sold

◆ 1995 – 410,000

◆ 1996 – 1,720,000!



what happened?

Three Rules of the Tipping Point

1. The Law of the Few
2. The Stickiness Factor
3. The Power of Context

Something changed!

The Law of the Few (small actions)

◆ Connectors

People with a special gift of bringing the world together –
SOCIAL GLUE – SPREAD MESSAGE

◆ Mavens

They accumulate knowledge and have the social skills to start
word-of-mouth epidemics – DATA BANKS – PROVIDE THE
MESSAGE

◆ Salesmen

They persuade us

The Law of the Few

- ◆ Connectors

Paul Revere vs. William Dawes

- ◆ Word of mouth is still the most important form of human communication
 - “the pet rock”
 - Beanie Babies
 - Hello Kitty
 - What else?
-

The Stickiness Factor

- ◆ 1960's Yale tetanus shot study
 - Two brochures (high fear and low fear)
 - 1 month later – 3% got shots
 - Added map and info on when the clinic was open
 - 25% got the shot
 - No difference between hi fear and low fear

The “right” message is important!

Is the “stickiness factor” real....

Well, look at this word.....

Yawn



The Power of Context

Epidemics are sensitive to the conditions and circumstances of the times and places in which they occur

- Broken window theory
 - 1970's Stanford University "prison"
 - Questioner - Contestant
-

The Power of Context

◆ Princeton Theological Seminary Good Samaritan Study

- Who will stop?
 - Not values of students
 - Am I late?
 - Rush group – 10%
 - No rush group – 63%
-

The Rules of The Tipping Point

- Making an idea or attitude or product *tip* can be done through the influence of special kinds of people. The Law of the Few.
 - It can be done by changing the content of communication, by making a message so memorable that it sticks in someone's mind and compels them to action. The Stickiness Factor.
 - But we need to remember that small changes in conditions can be critical. Context.
-

Are there other examples?

- Rosa Parks would not go to the back of the bus
 - Fax machines (80,000 to 2 million between 1984-87)
 - *1992 – 2,154 murders in NY and in 1997 - 770 murders*
 - *Beastie Boys “Free Tibet” message helped get the Dalai Lama’s message to young people*
 - *The “unraveling” of the Soviet Union*
-

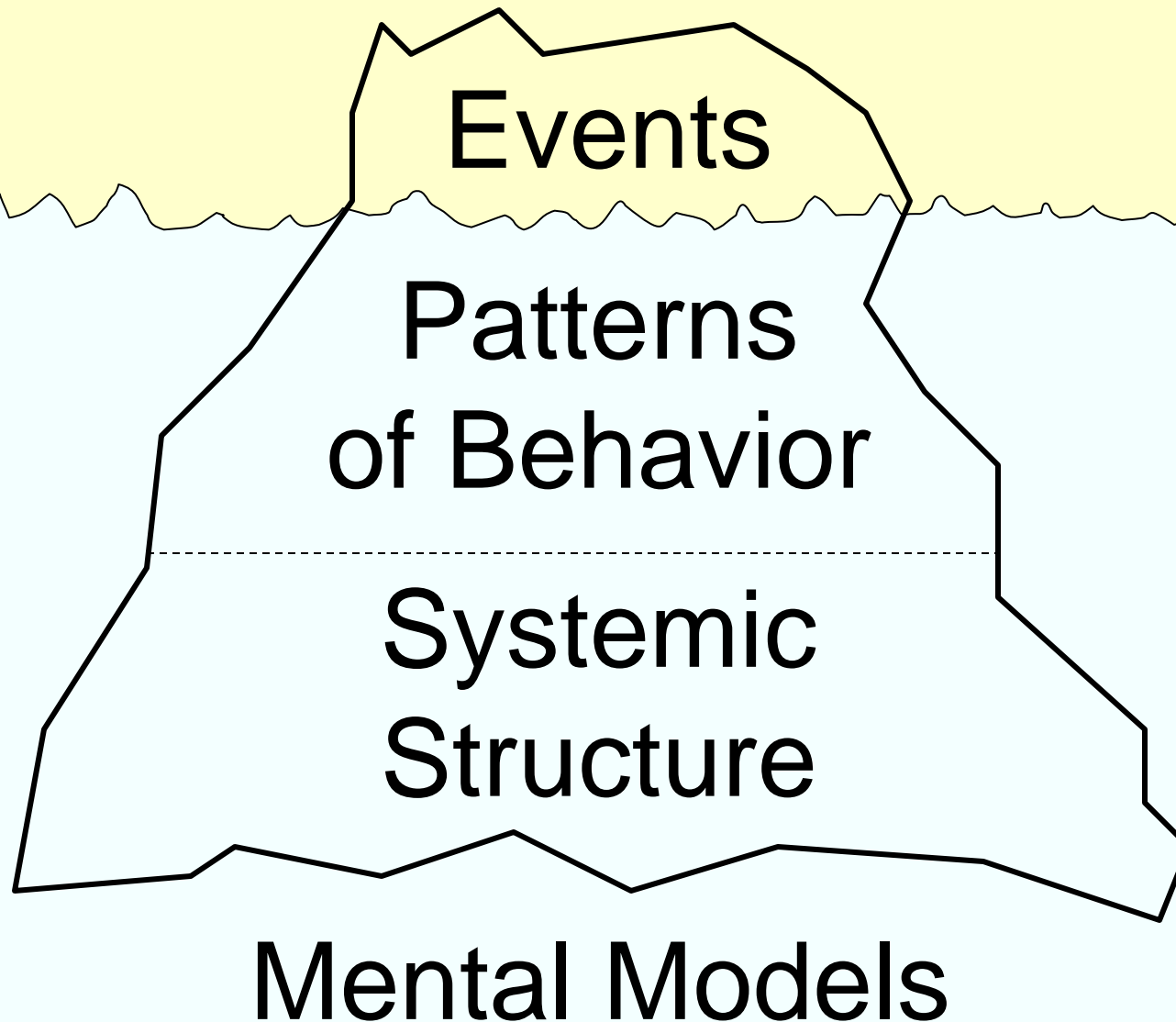
Lesson of the Tipping Point

The world does not align with our intuition. We are powerfully influenced by our surroundings, our immediate context, and the personalities of those around us.

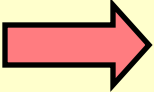
With the slightest push in just the right place, the world can be tipped.

The right “sticky” message in the right context can shift mental models - fast!

This is the power of the mental model

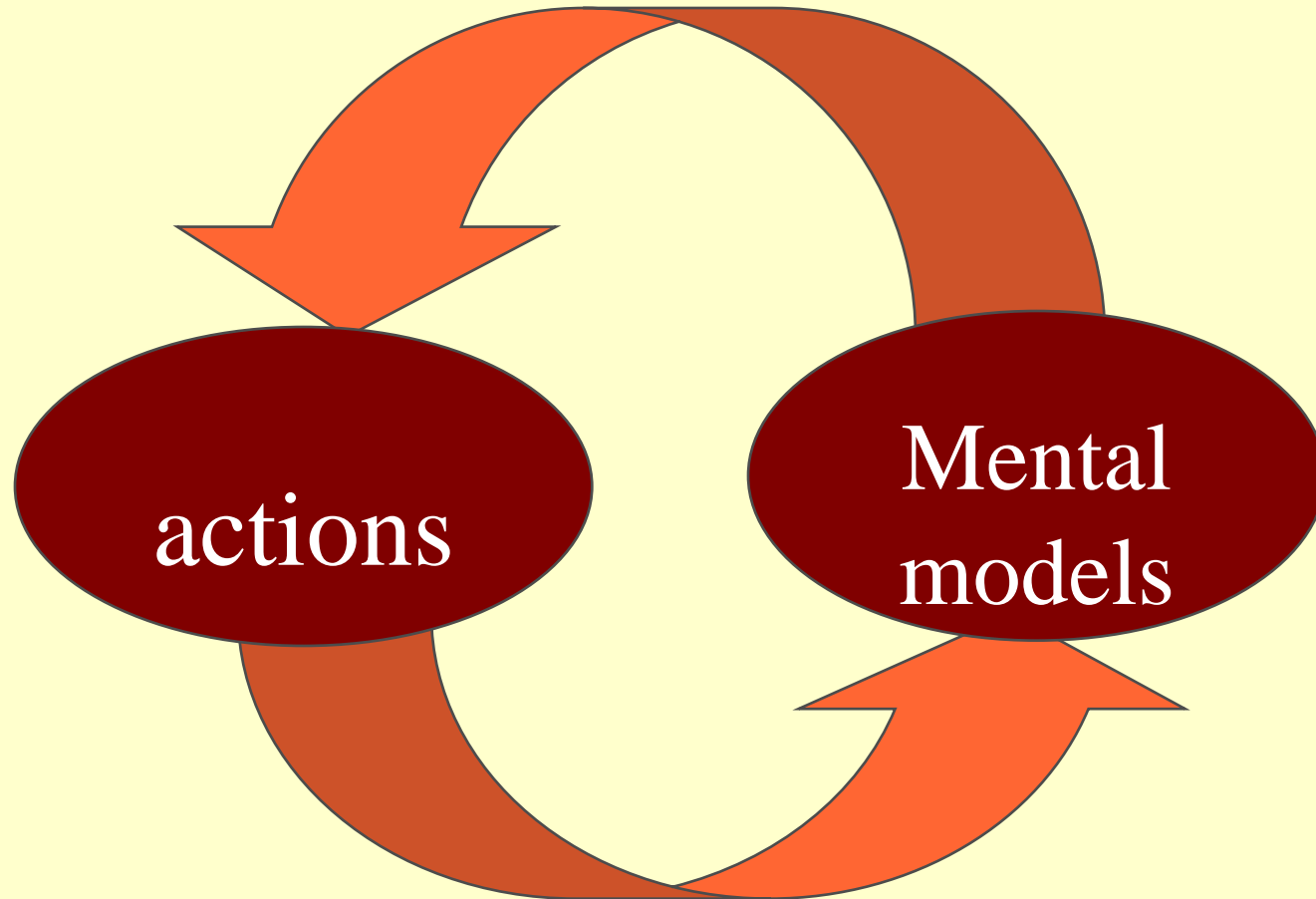


How to shift Mental Models

1. Bring attention to ways the old mental model leaves problems unsolved
 - **Point out the “anomalies” (what’s not working)**
 - **Try to do this without judgment (hey, look at that!)**
 2. Communicate an alternative mental model clearly
 - **Without an alternative, we can’t even see the problem**
 3. Solve problems by acting out of new mental model
-  **Try something new – actions matter!**
-



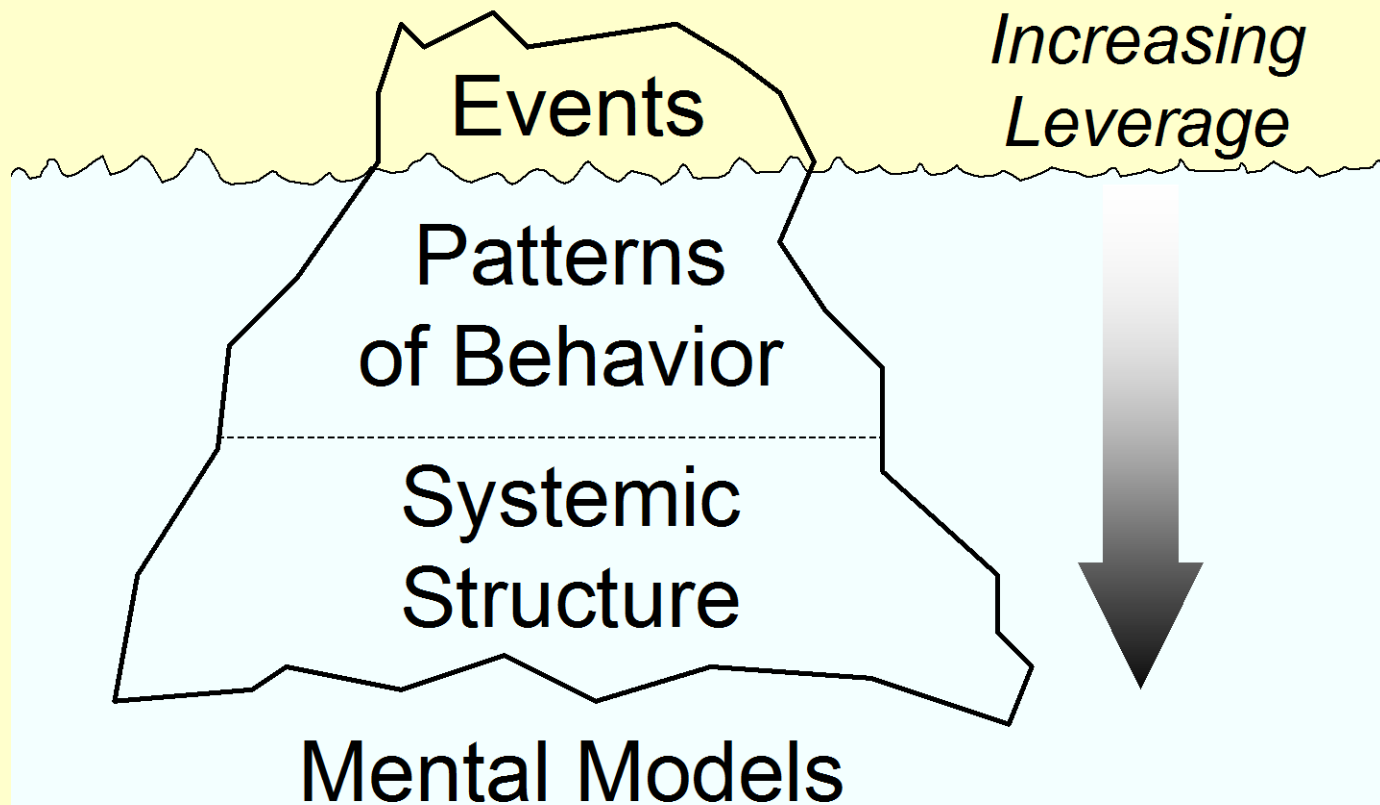
Remember.....



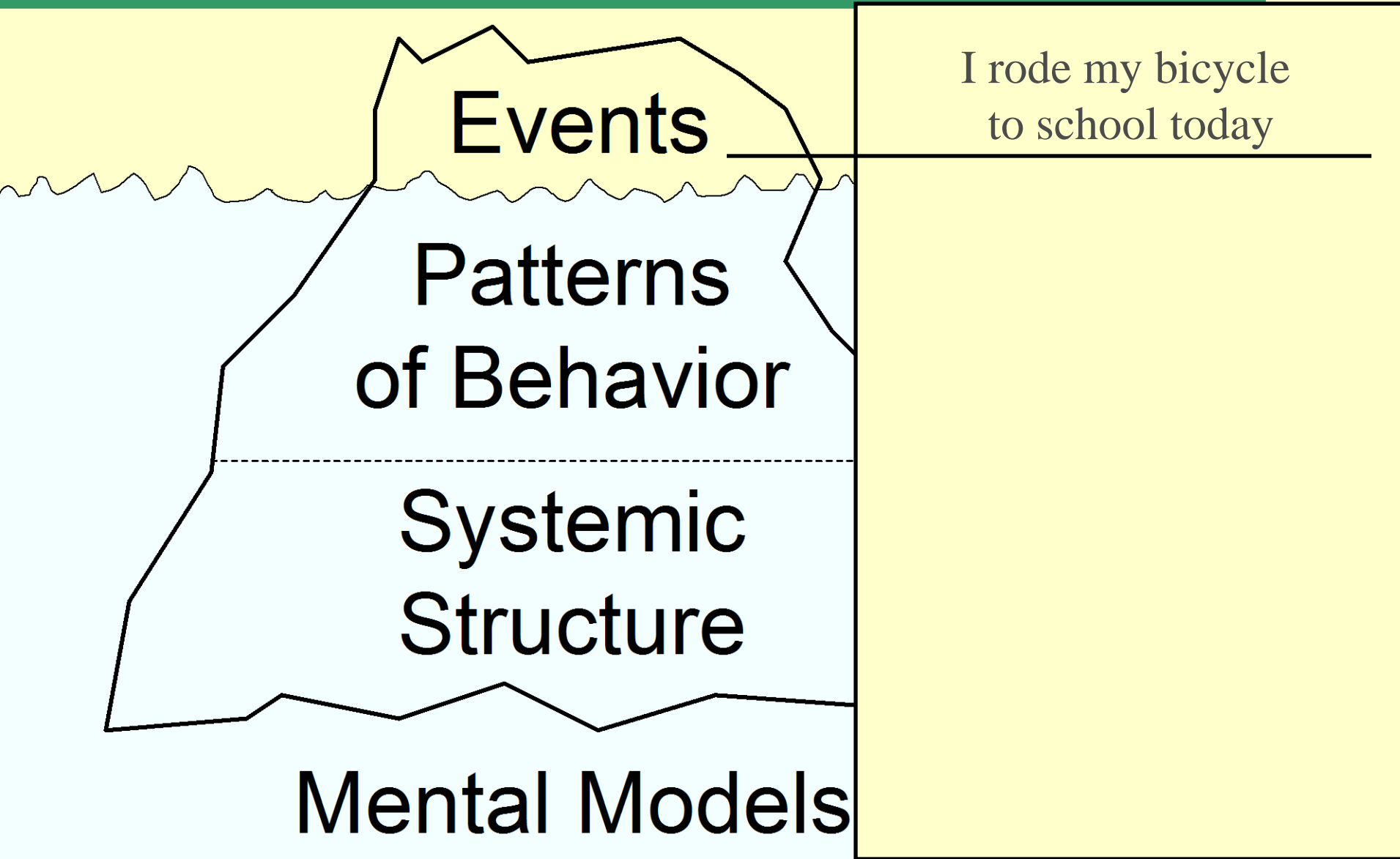
Finding the mental models is a beginning.

Homework 8 – Finding the “Mental Models”

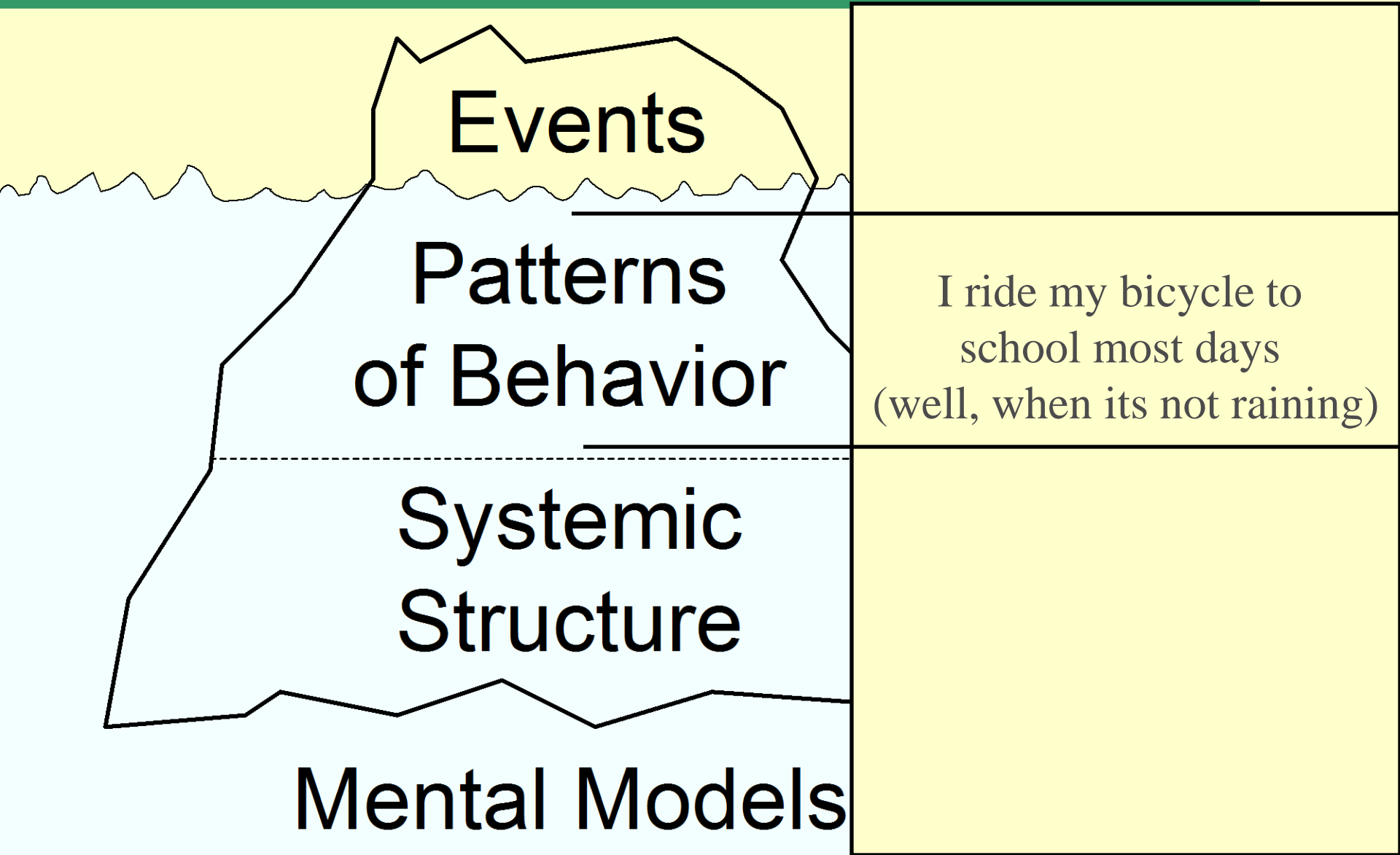
The Iceberg



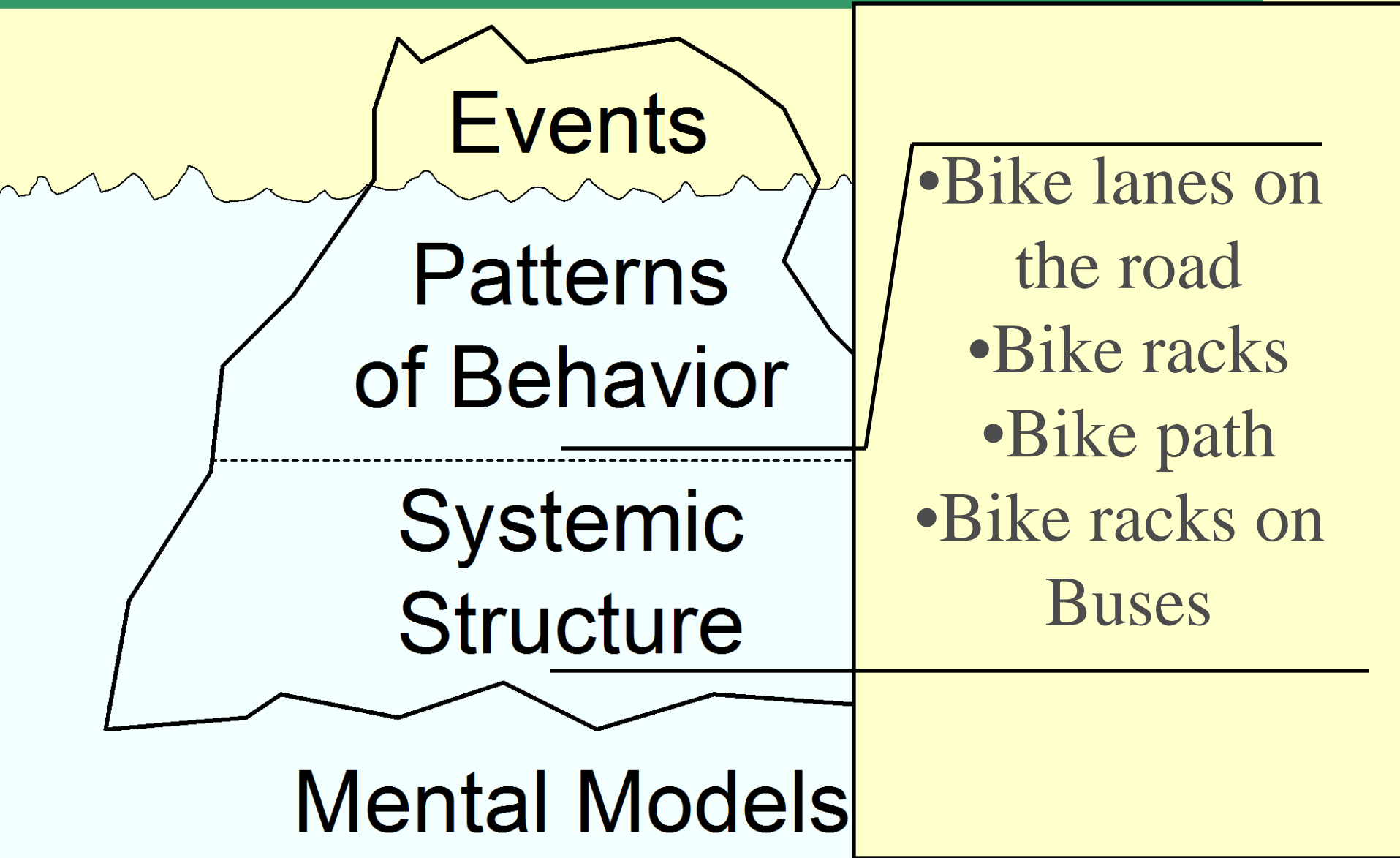
Homework 8 – *A Sustainable Behavior*



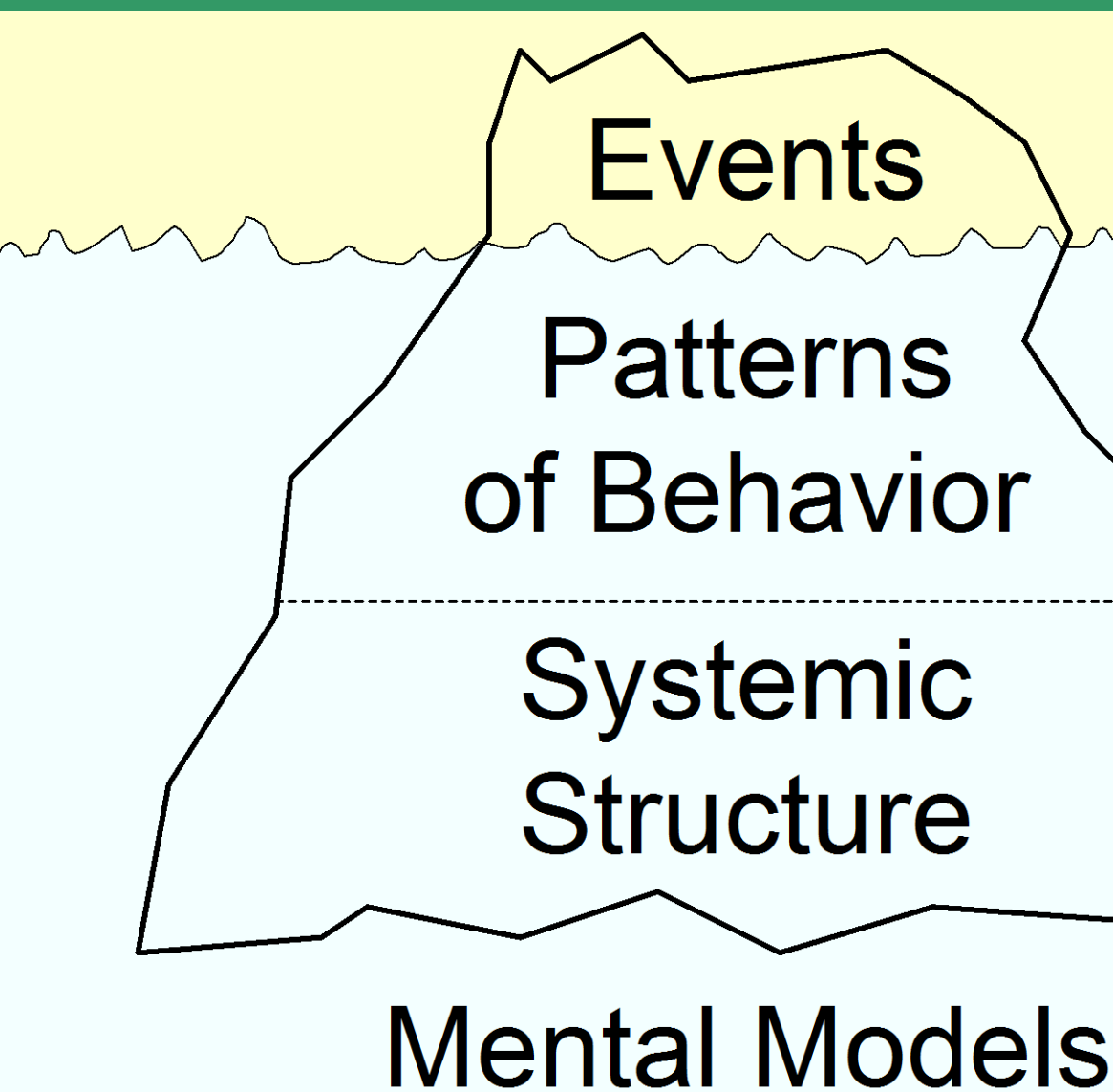
Homework 8 - *a pattern*



Homework 8 - *structures*



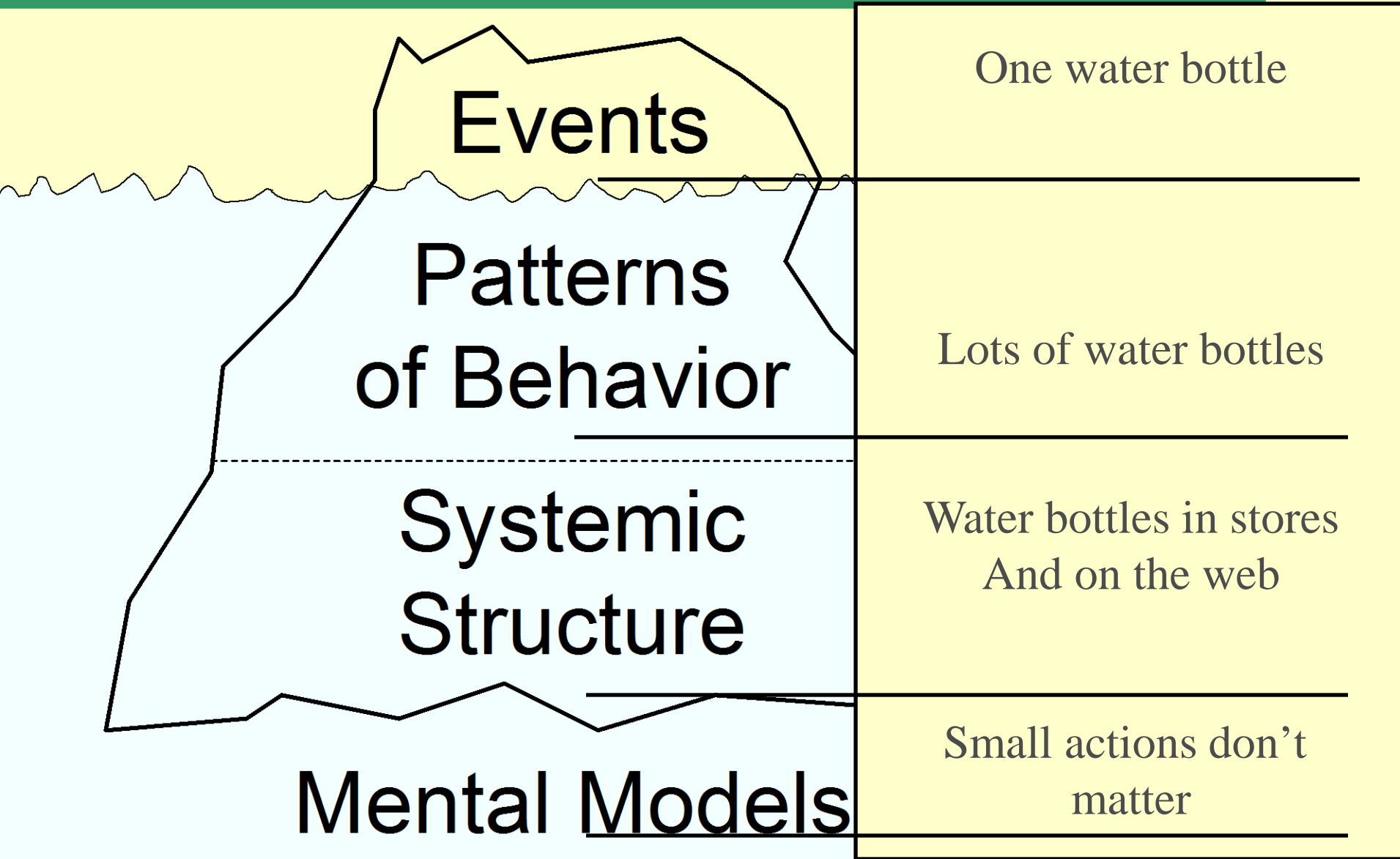
Homework 8



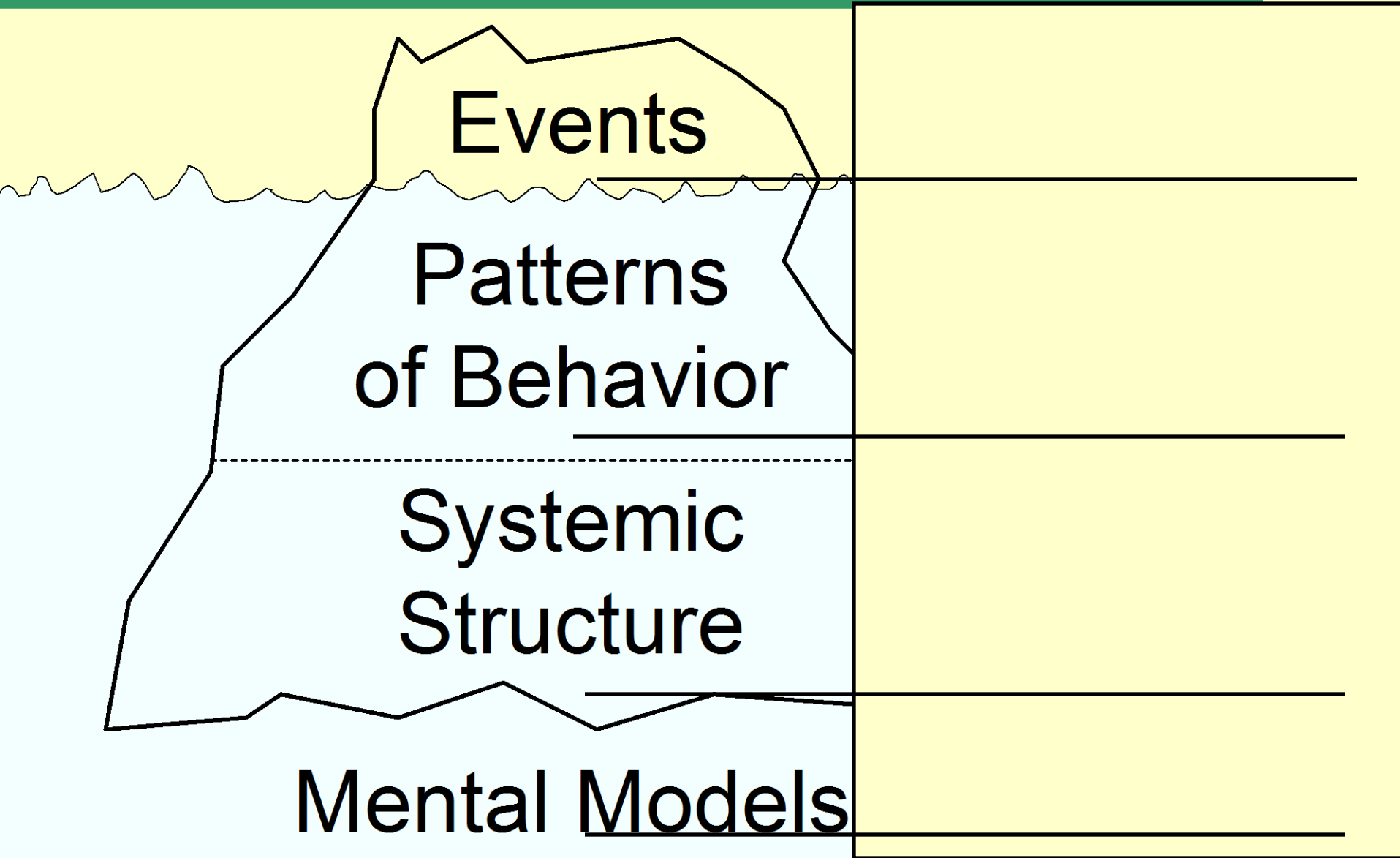
Mental Models?

- I am concerned about the environment
- My health is important to me
 - I like to save money
 - I'm a role model for younger kids

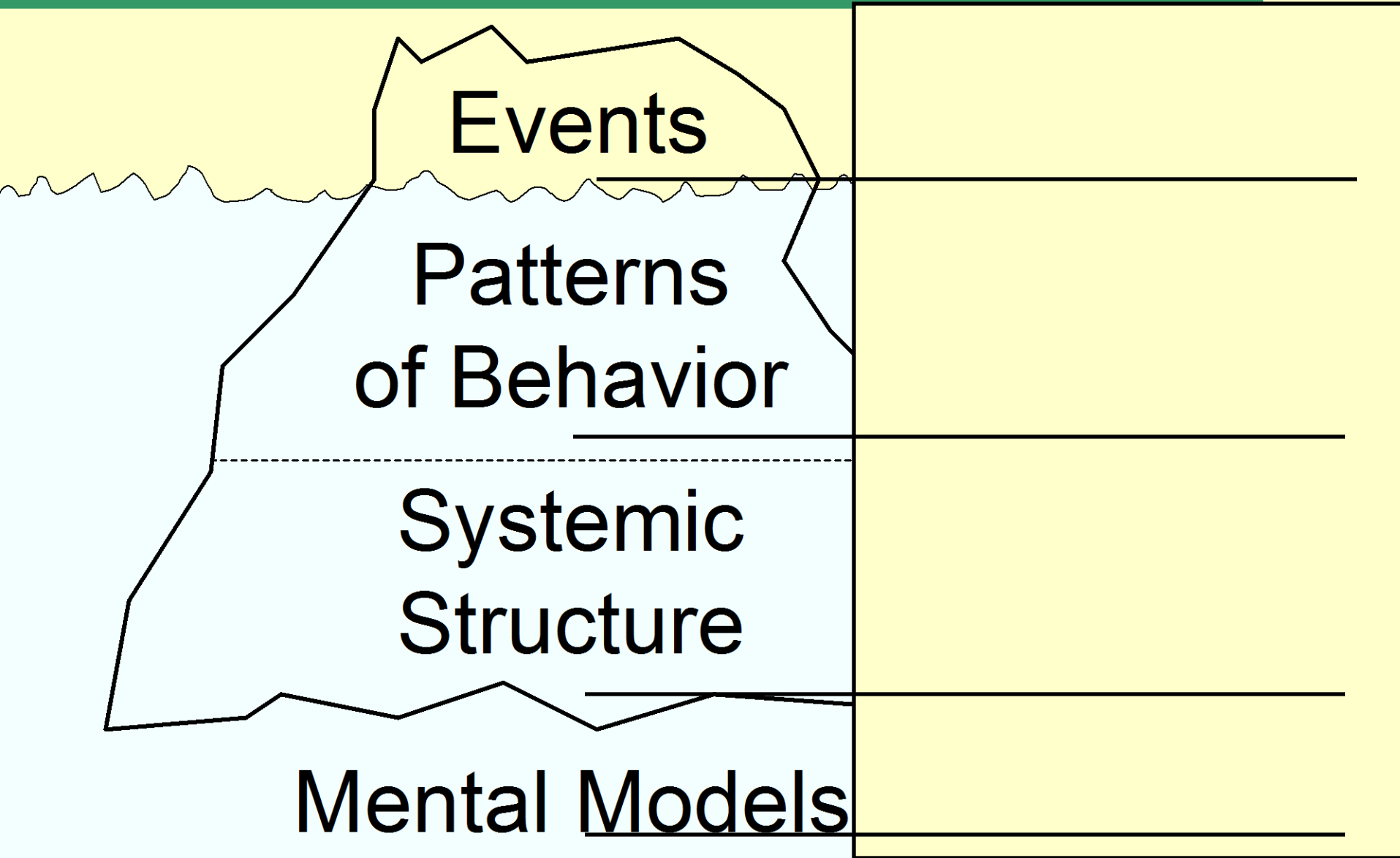
Homework 8 – Non - sustainable



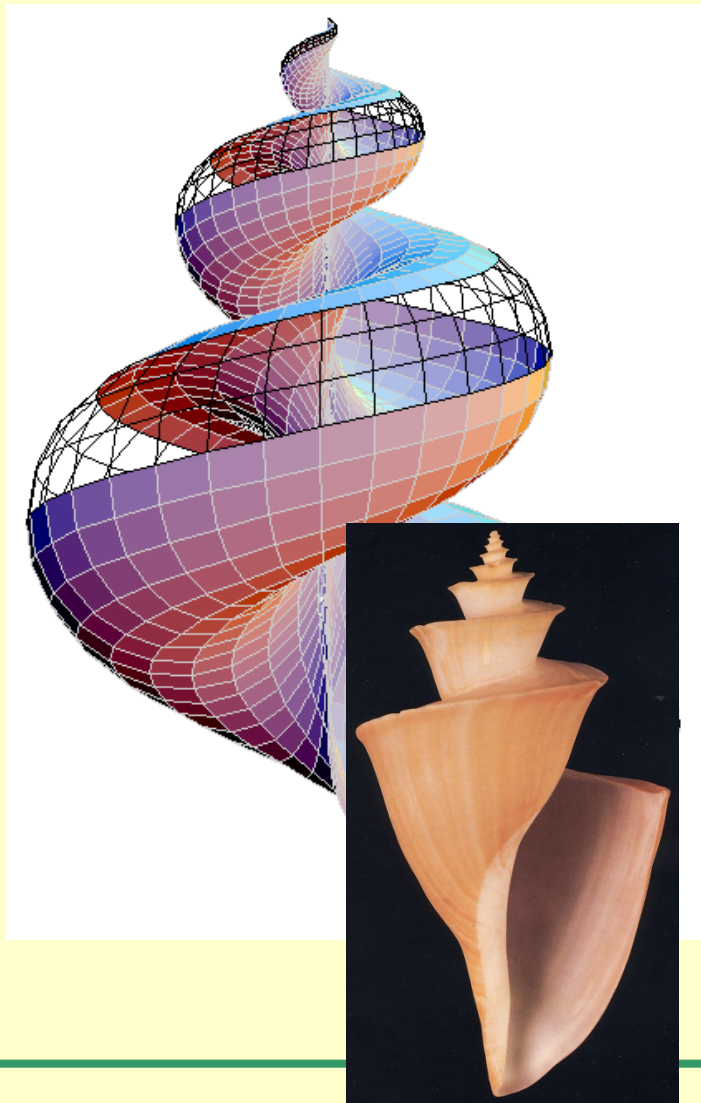
Homework 8 – Sustainable Behavior



Homework 8 – Non - sustainable



Spirals of change



Cycles of hope

Thinking in cycles & spirals



The circle of life