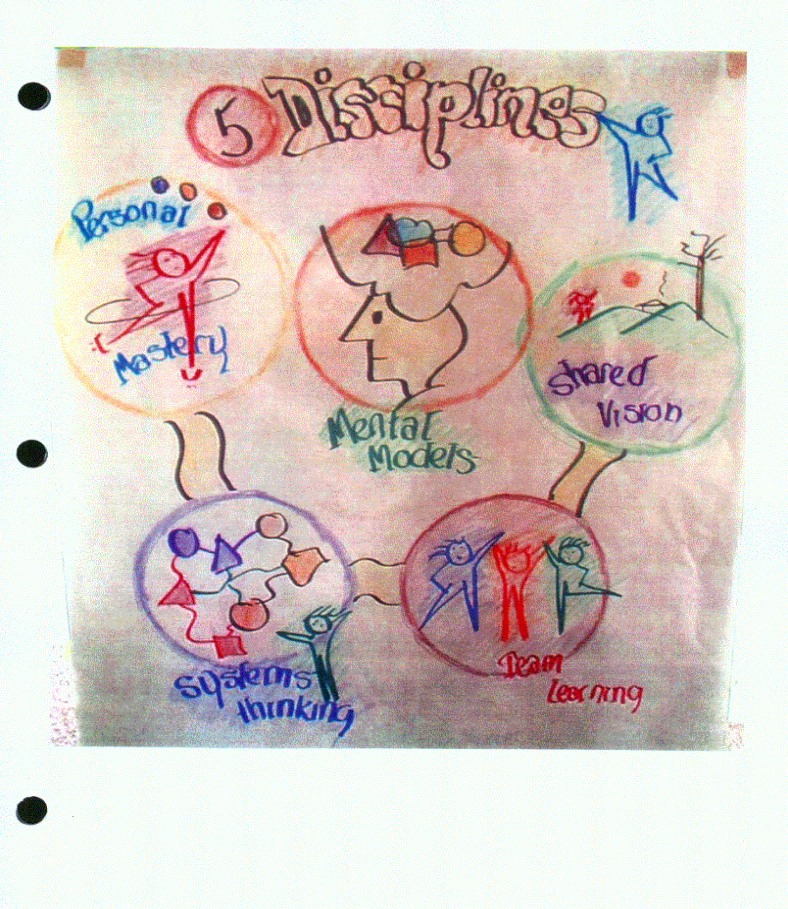
Five Disciplines

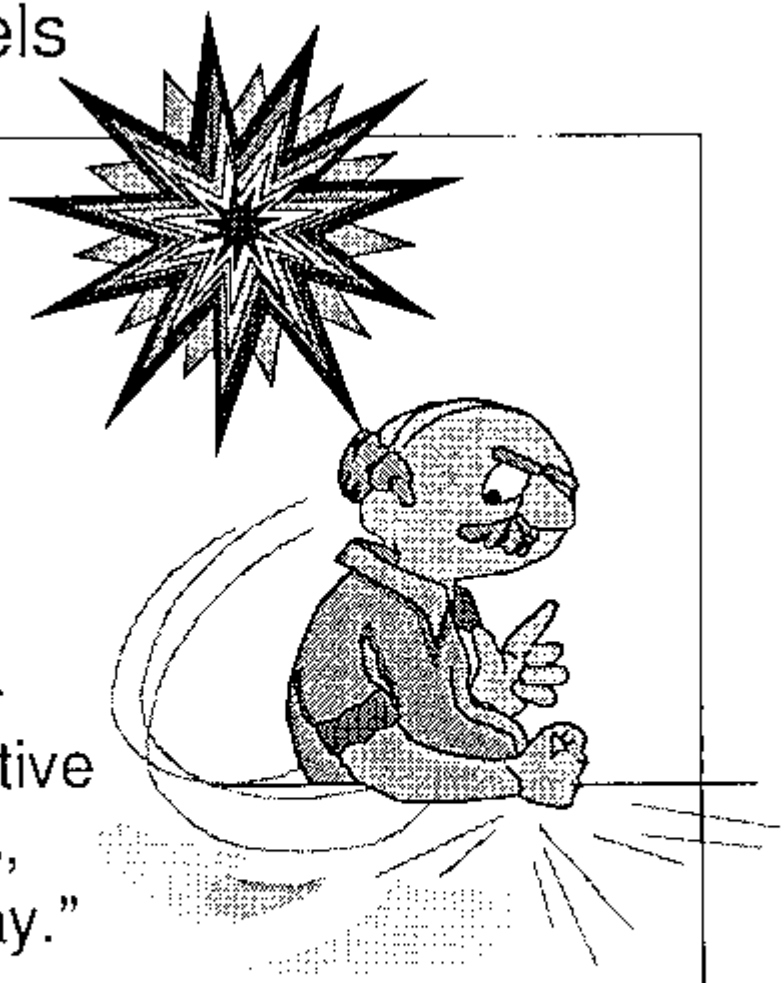


- Personal Mastery
- Mental Models
- Shared Vision
- Team Learning
- Systems Thinking

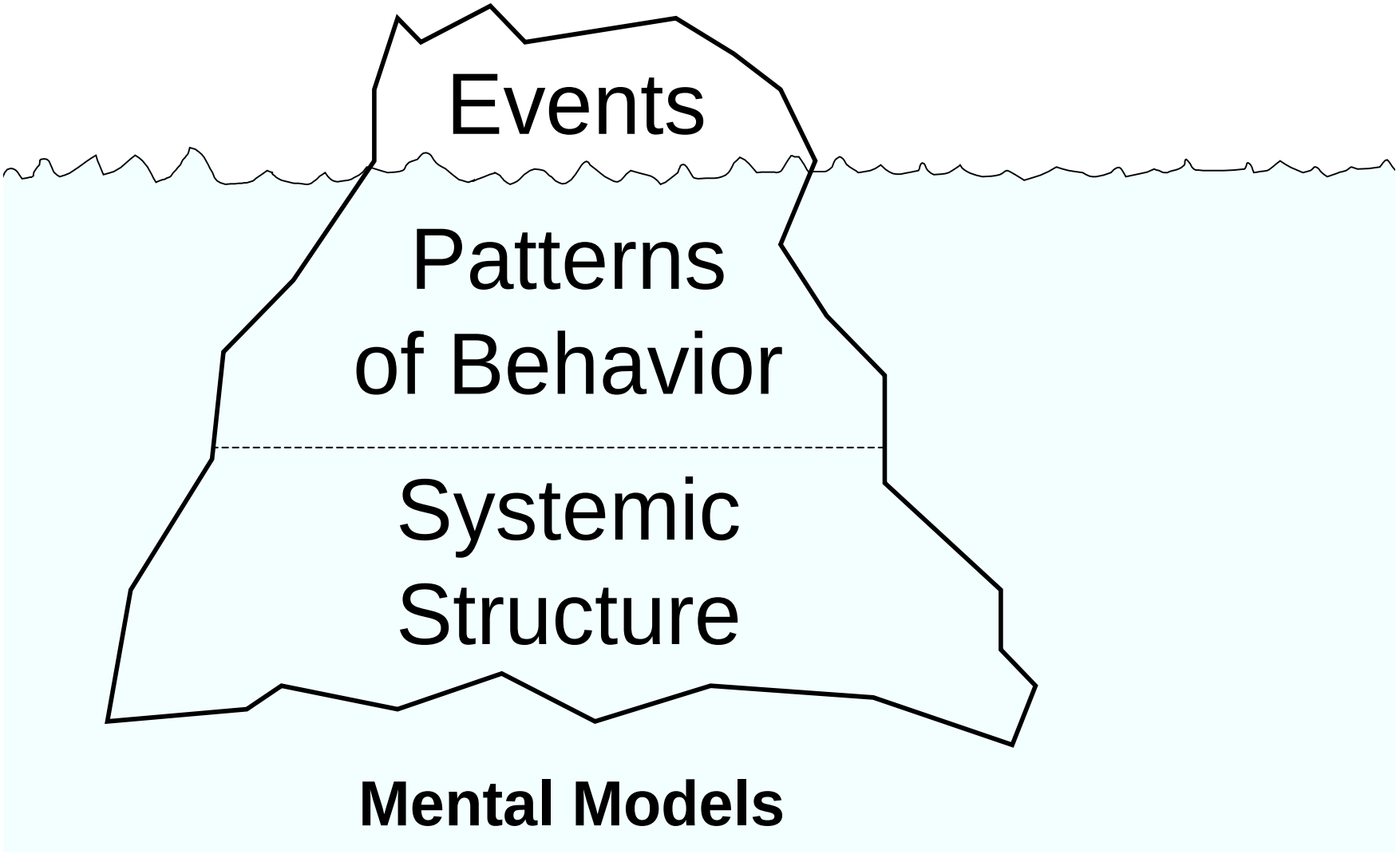
Special thanks to Carol Anderson and Hal Hamilton for many of these slides (and ideas)

Mental Models

"Mental models are the images, assumptions, and stories which we carry in our minds of ourselves, other people, institutions, and every aspect of the world. Like a pane of glass framing and subtly distorting our vision, mental models determine what we see...they are congnitive mental maps; and all of these maps, by definition, are flawed in some way."



The Iceberg

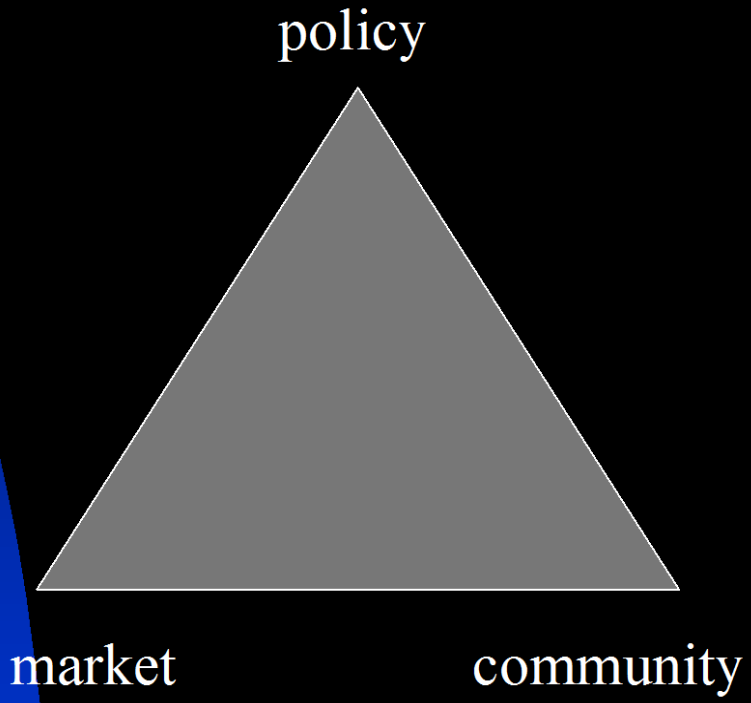

Events
Patterns
of Behavior
Systemic
Structure
Mental Models

We interpret the world through lenses formed by our assumptions

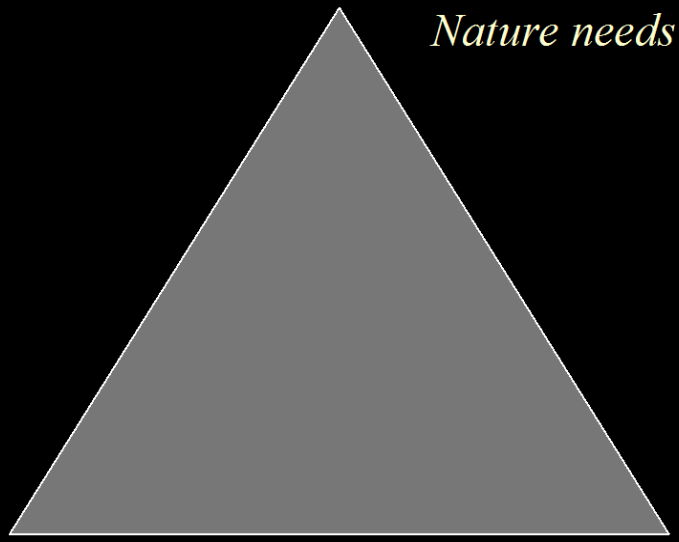
Different assumptions result in different mental models and different “truths”

Mental models of agricultural change

Where are solutions found?



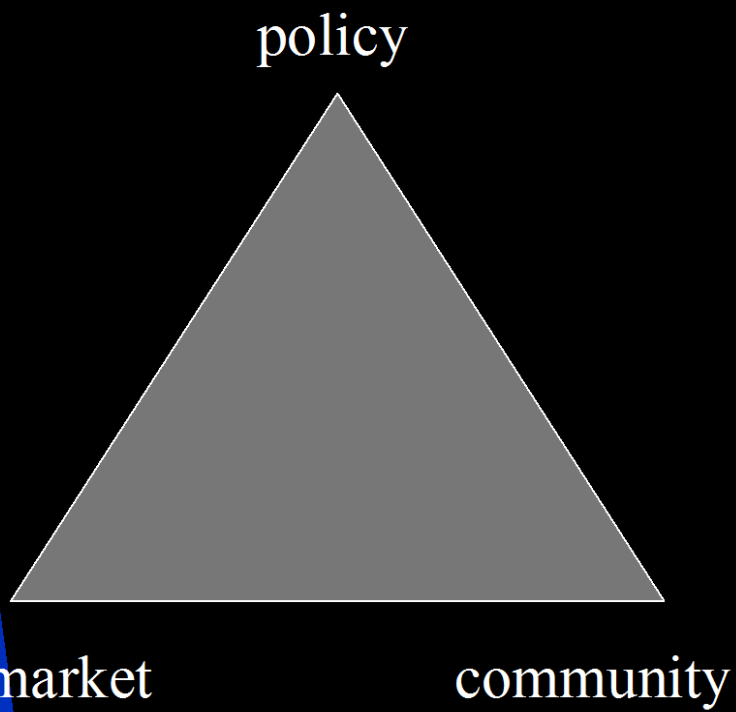
Assumptions About Nature



Solving Environmental Problems

Assumptions about Sustainability

We need better control systems and institutional arrangements to manage the globe.



We need to rebuild community life and drastically reduce human interventions in ecosystems to meet spiritual and social needs.

We need to overcome obstacles to the innovation and growth that are key to improving quality of life.

SSM: a philosophical summary

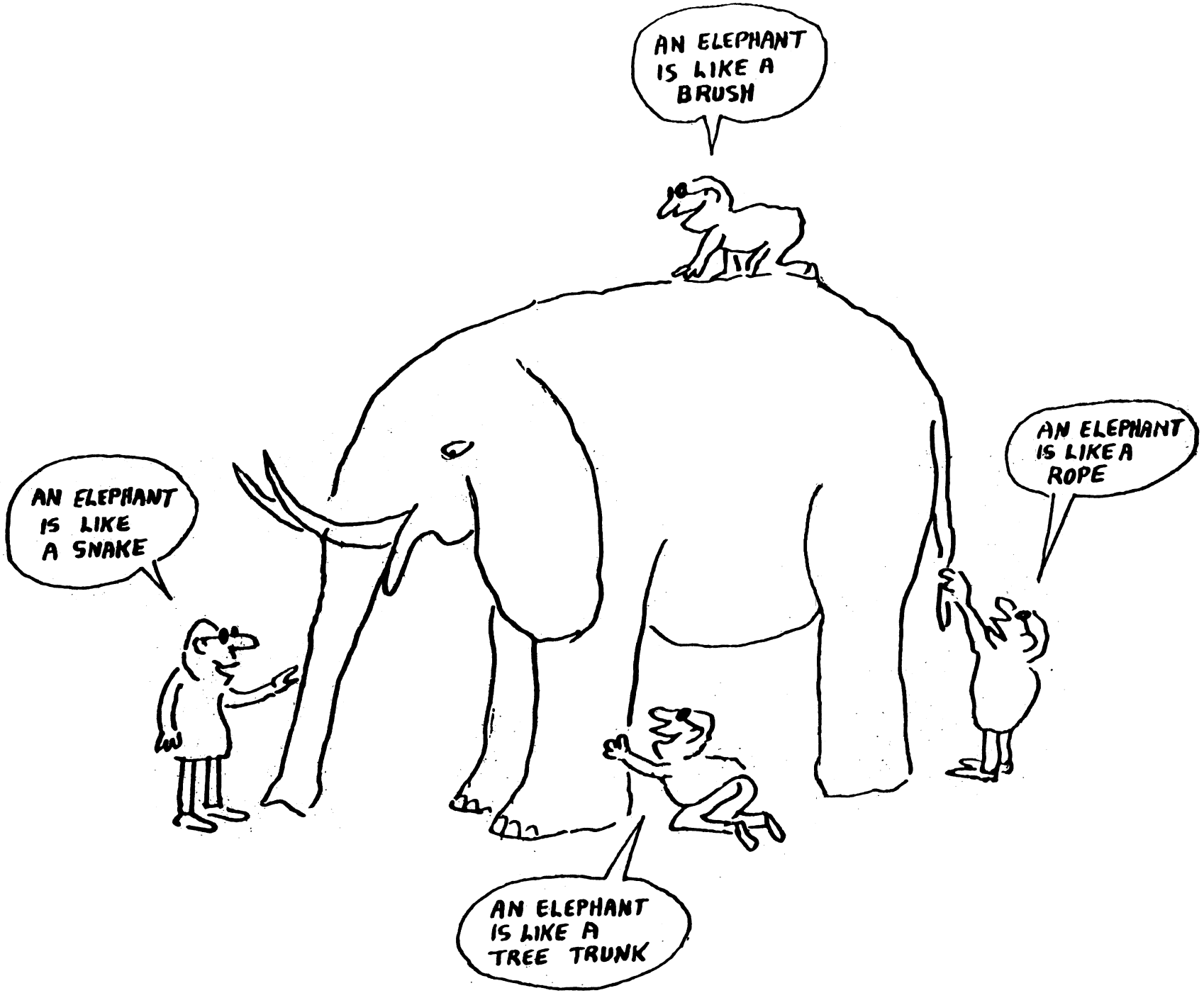
- Our descriptions and models of the world are not the world itself
- Systems thinking help us see the mental models
- The application of SSM is a process of learning how to see the underlying causes and suggesting improvements

SSM ‘Weltanschaunng’

- Our worldview influences what we see
- One man’s terrorist is another man’s freedom fighter

The Place of Weltanschauung (world view)

- SSM tries to analyze problems in terms of differing worldviews.
- These may be conflicting or incompatible.
- Worldviews need to be exposed and described to understand the system.


AN ELEPHANT IS LIKE A BRUSH
AN ELEPHANT IS LIKE A SNAKE
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AN ELEPHANT IS LIKE A TREE TRUNK

Our Minds Don’t Match Our World

- Our mental “hardware” was shaped to deal with the world of a small tribe of wandering gatherers.
- Our mental capacities will not change biologically in time to solve our problems.
- We need systems processes to aid our mental capacity

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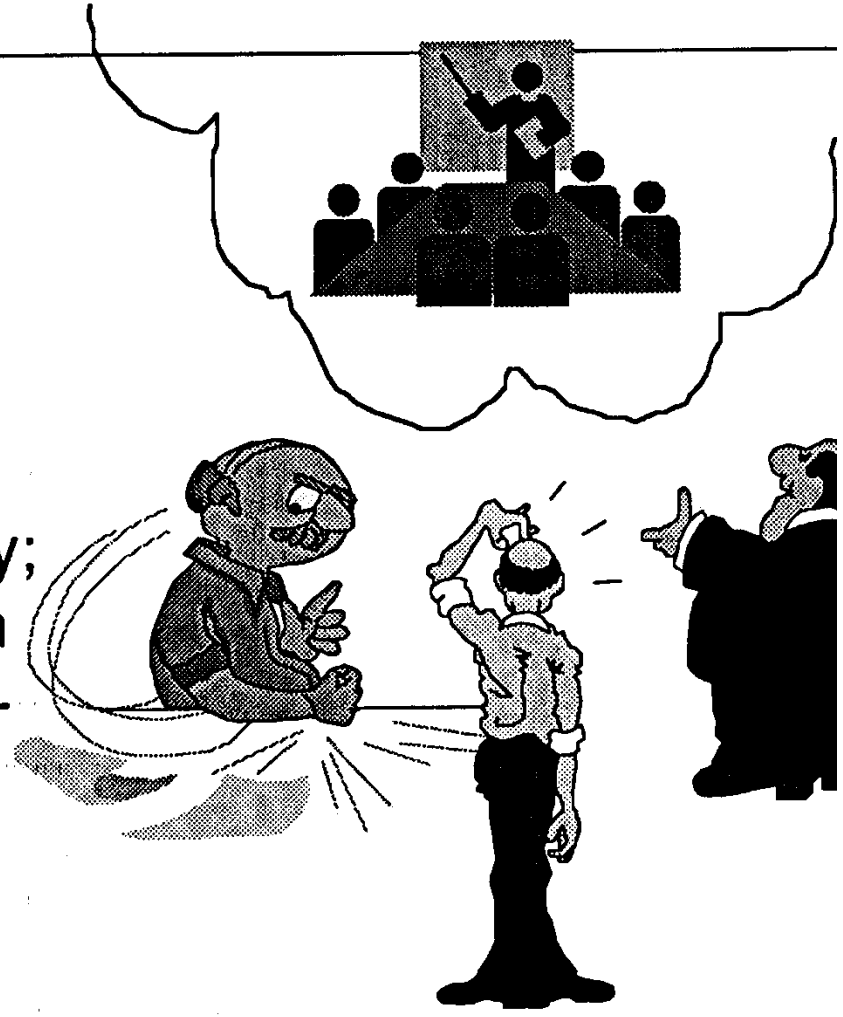
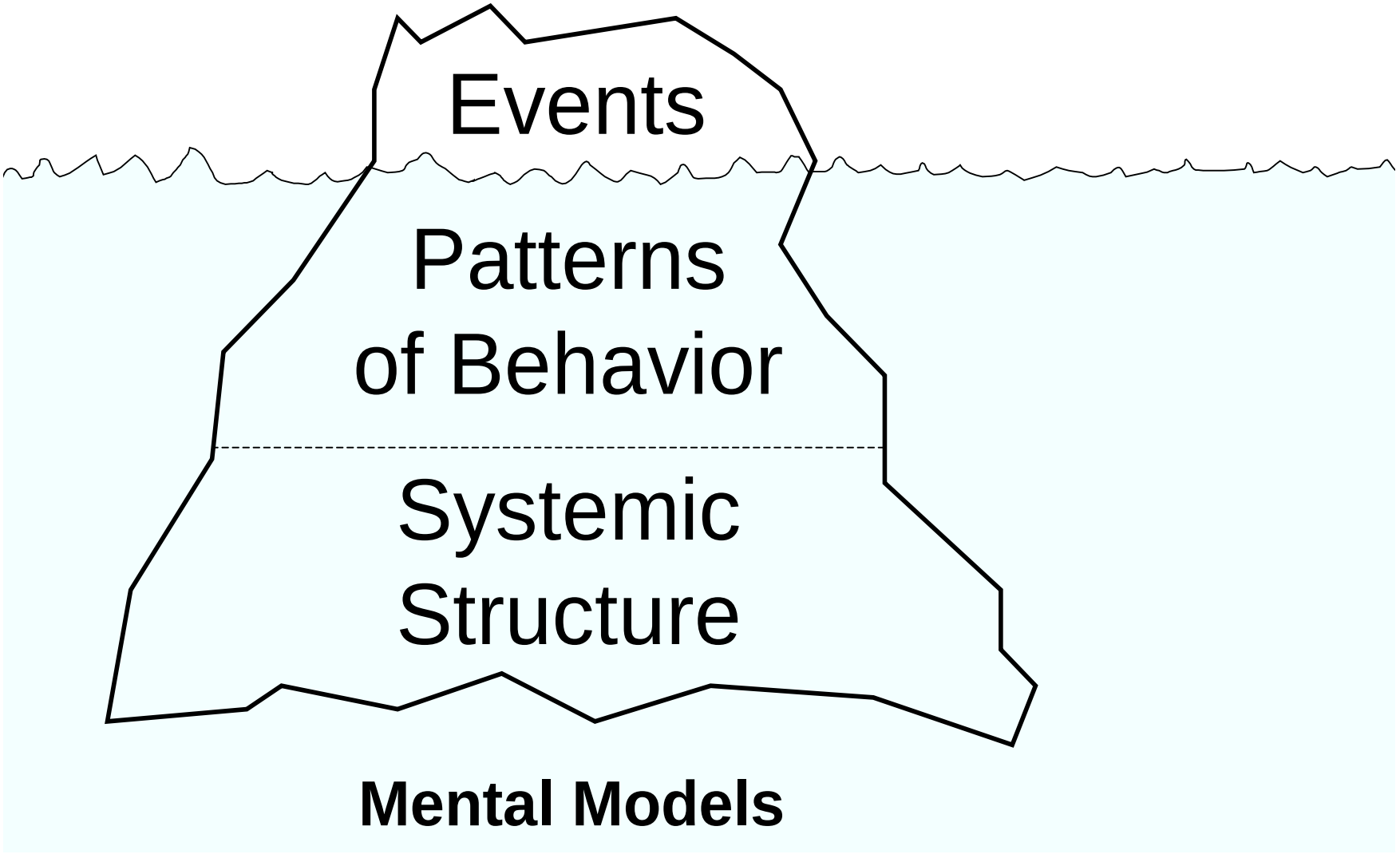
Mental Models

"Differences between mental models explain why two people can observe the same event and describe it differently; they are paying attention to different details. Mental models also shape how we act...



The Iceberg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The Ladder of Inference

"We live in a world of self-generating beliefs that remain largely untested. We adopt beliefs because they are based on conclusions, which are inferred from what we observe, plus our past experience. Our ability to achieve the results we truly desire is eroded by our feelings that:

- Our beliefs are the truth
- The truth is obvious
- Our beliefs are based on real data
- The data we select are the real data"

The Ladder of Inference

I take **Actions** based on my beliefs

I adopt **Beliefs** about the world

I draw **Conclusions**

I make **Assumptions** based on the meanings I added

I add **meanings** (cultural and personal)

I select **"data"** from what I observe

Observable "data" and experiences (as a videotape recorder might capture them)

The reflexive loop (our beliefs affect what data we select next time)

John arrives for a 9:00 meeting at 9:20

The Ladder of Inference

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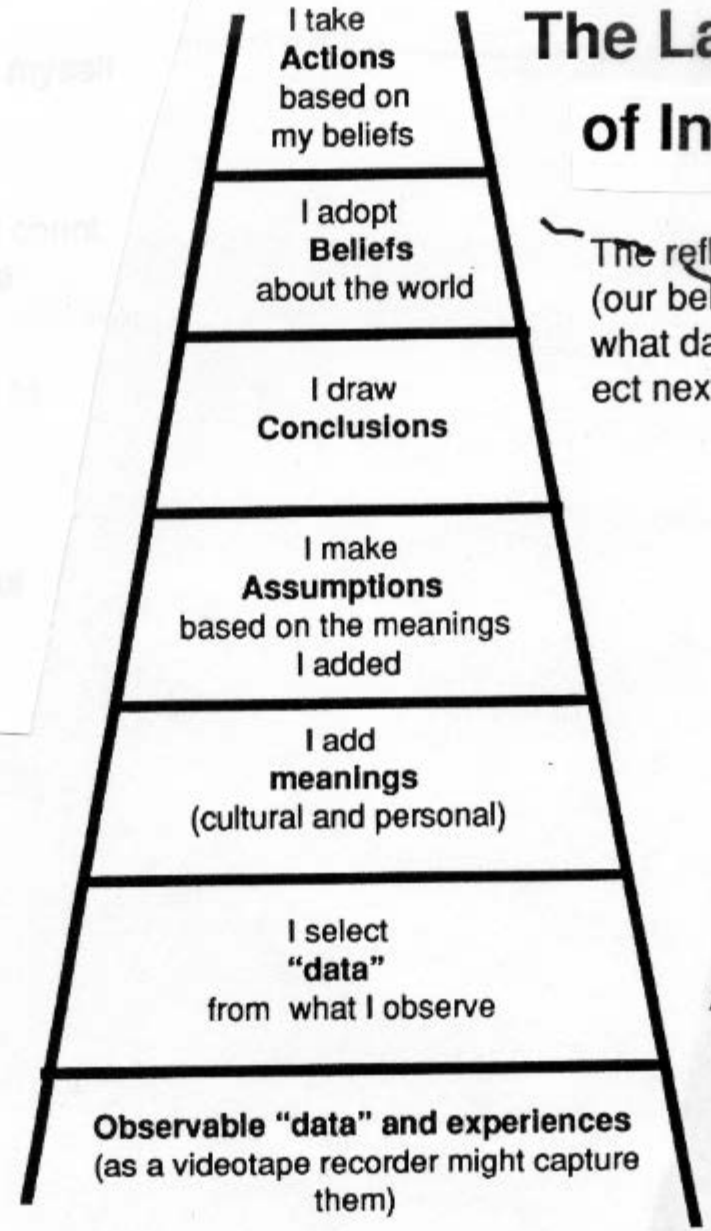
John is late

John arrives for a 9:00 meeting at 9:20

The Ladder of Inference



The reflexive loop (our beliefs affect what data we select next time)

John doesn't care

John is late

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John is not capable of running a project

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I can't trust him to do this job

John is not capable of running a project

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I add **meanings** (cultural and personal)

I select **"data"** from what I observe

Observable "data" and experiences (as a videotape recorder might capture them)

You really can't count on anyone

I can't trust him to do this job

John is not capable of running a project

John doesn't care

John is late

John arrives for a 9:00 meeting at 9:20

The reflexive loop (our beliefs affect what data we select next time)

The Ladder of Inference

I had better do it myself

I take **Actions** based on my beliefs

You really can't count on anyone

I adopt **Beliefs** about the world

I can't trust him to do this job

I draw **Conclusions**

John is not capable of running a project

I make **Assumptions** based on the meanings I added

John doesn't care

I add **meanings** (cultural and personal)

John is late

I select **"data"** from what I observe

John arrives for a 9:00 meeting at 9:20

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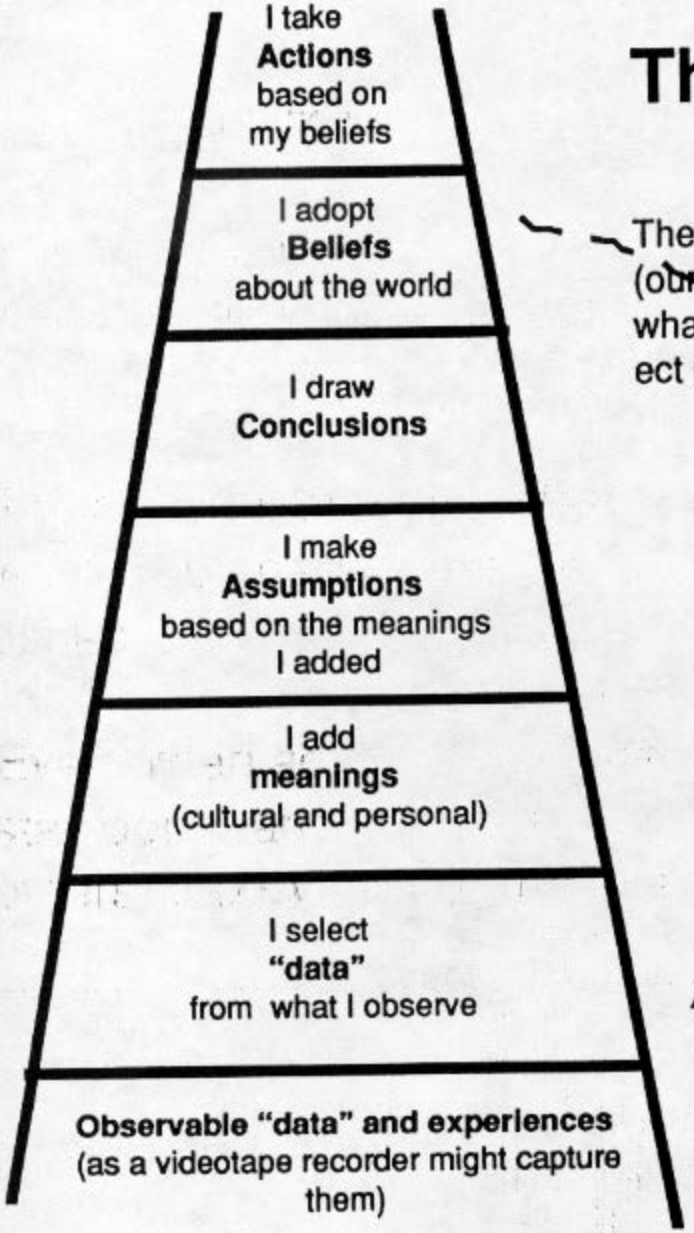
The Ladder of Inference



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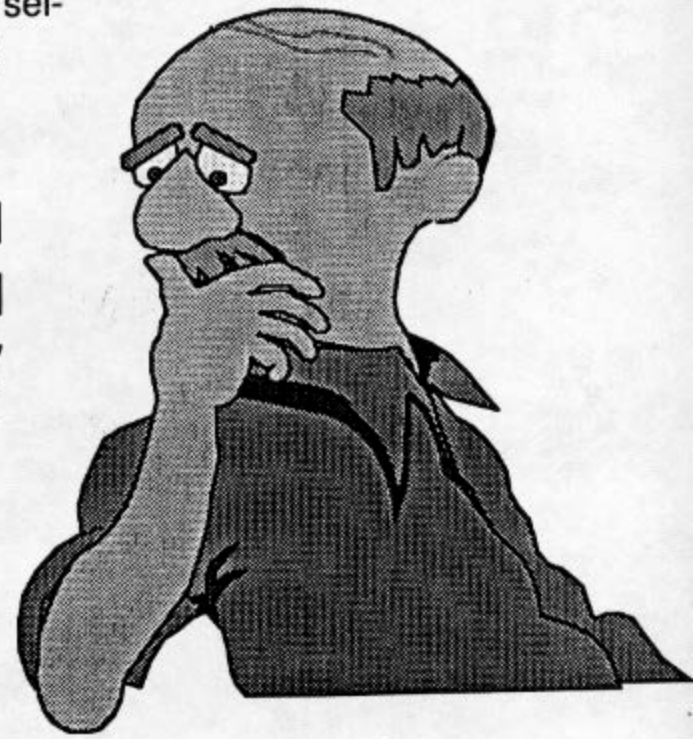


Using the Ladder of Inference

"You can't live your life without adding meaning or drawing conclusions...but you can improve your communications through reflection, and by using the ladder of inference in three ways:

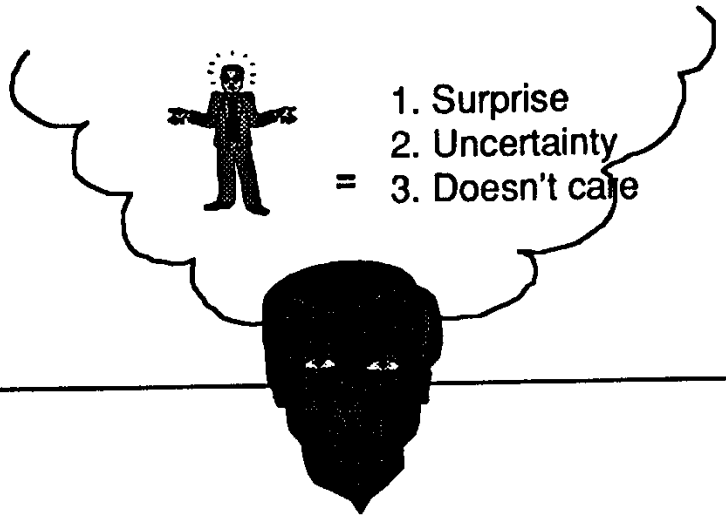
1. Becoming more aware of your own thinking and reasoning (reflection)

2. Making your thinking and reasoning more visible to others (advocacy)

3. Inquiring into others' thinking and reasoning (inquiry)"

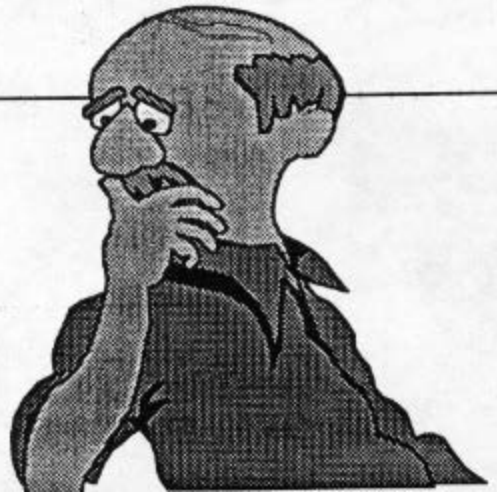
Questions That Help You Come Down the Ladder

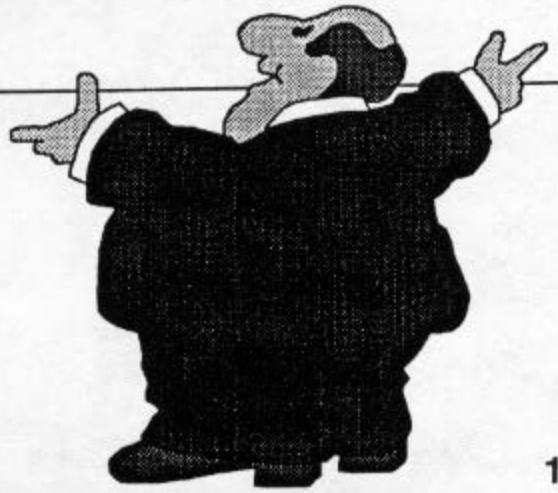
1. What are the observable data behind that statement?
2. Does everyone agree on what the data are?
3. Can you run me through your reasoning?
4. How did we get from that data to these abstract assumptions?



Ask Others to Make Their Thinking Process Visible

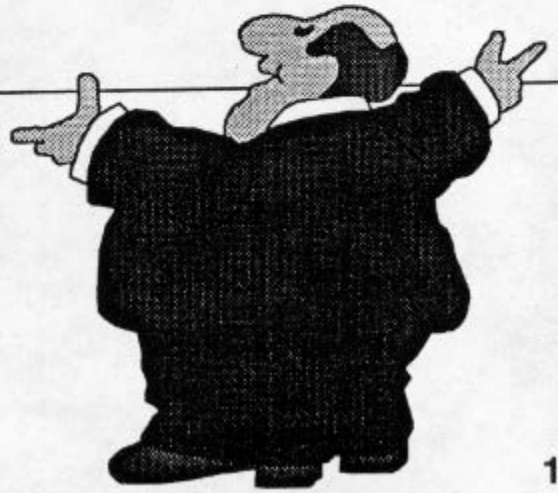
What to do	What to say
• Gently walk others down the ladder of inference and find out what data they are operating from	• *"What leads you to conclude that? What data do you have for that? What causes you to say that?*
• Draw out their reasoning -- find out **why** they are saying what they are saying	•*"How does that relate to your other concerns?*





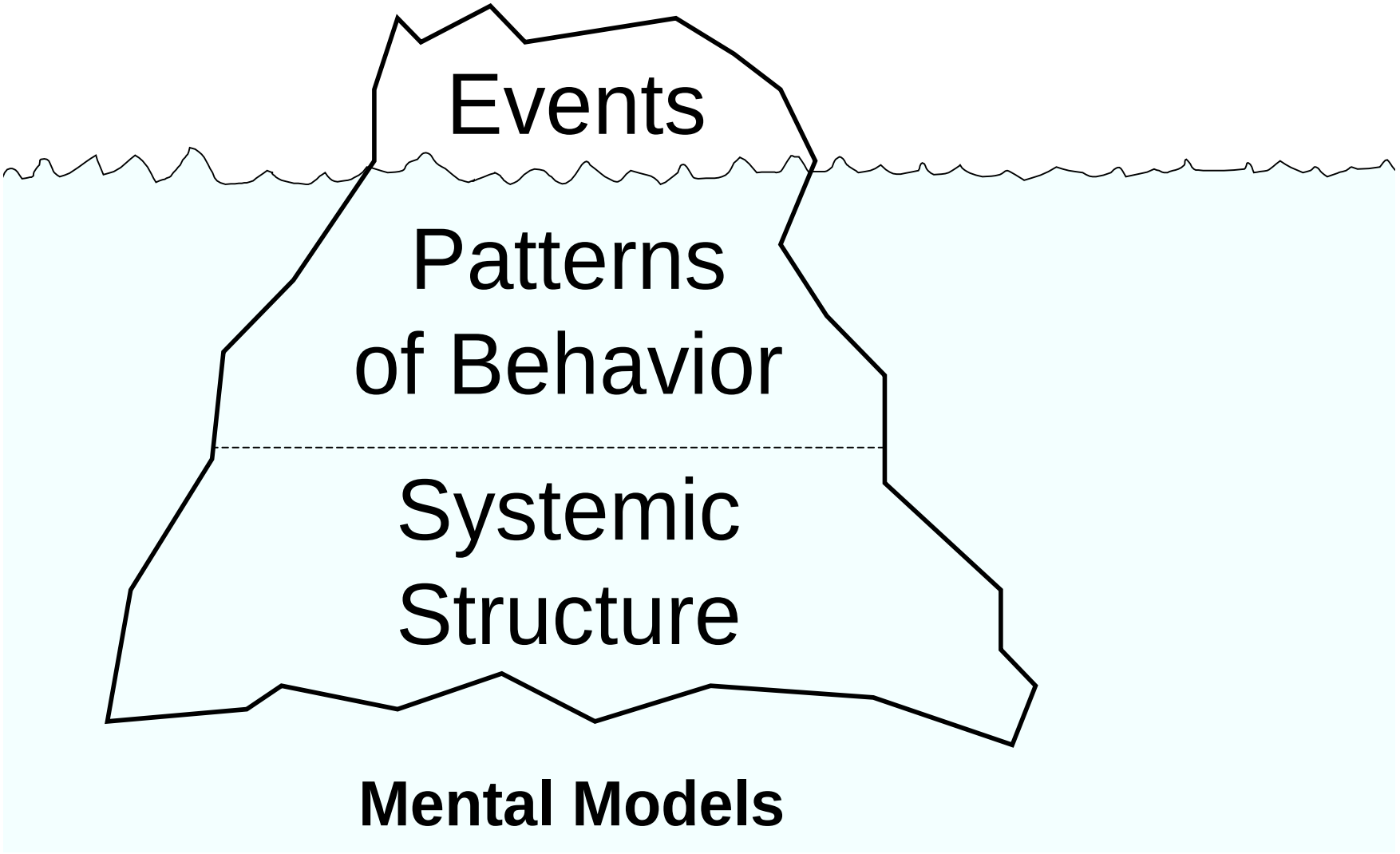
Making Your Thinking Process Visible

What to do	What to say
• State your assumptions and describe the data that led to them	• *"Here is what I think, and here is how I got there"*
• Explain your assumptions	• *"I assumed that..."*
• Make your reasoning explicit	• *"I came to this conclusion because..."*



"Because mental models are usually tacit, existing below the level of awareness, they are often untested and unexamined -- they are generally invisible -- until we look for them. The core task of this discipline is bringing mental models to the surface to explore and talk about them with minimal defensiveness."

The Iceberg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Credits

- I have borrowed almost all of the slides in this presentation from one source or another. I've modified most of them for use in my class, so I hesitate to attribute the current slide to the original source. Nevertheless, certain people and organizations deserve thanks and acknowledgement.
- They are:
  - Hal Hamilton and Phil Rice from the Sustainability Institute, VT
  - Carol Anderson, Organizational Consultant, Ann Arbor, MI
  - Dick Richardson, teacher extraordinaire, Austin, TX
  - Paul Krafel, author of "Seeing Nature", Cottonwood, CA

Thanks friends.