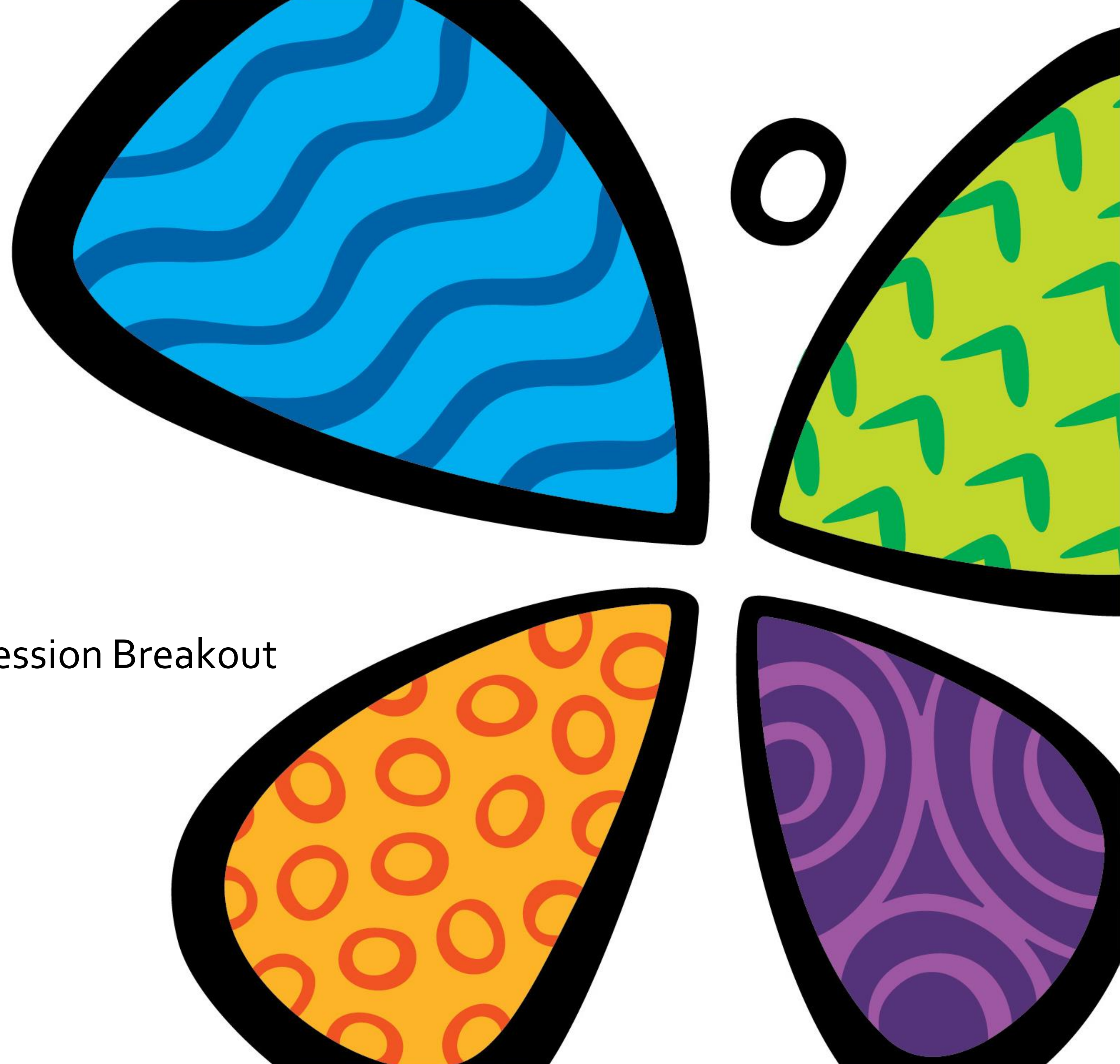# Systems Thinking

All Children Thrive Winter Learning Session Breakout
December 6, 2023

Carley Riley
Tanvi Shah
Chris Alexander

Breakout Session Objectives

- Introduce the concept of **systems thinking vs traditional thinking** in solving wicked problems and learn how to identify each kind of thinking.

- Appreciate the **need for different perspectives when creating solutions** to systems problems and identify ways to engage them.

- **Apply systems thinking** in tackling real wicked problems and support others in doing it too.

What is a Wicked Problem?

❖ A **wicked problem** is a <u>social or cultural</u> problem that's <u>difficult or impossible to solve</u>—normally because of its <u>complex and interconnected nature</u>

❖ Wicked problems lack clarity in both their aims and solutions, and are subject to real-world constraints, which hinder attempts to find a solution (i.e., **policy resistance**)

Problems are never completely solved

Every problem is unique

Can take a *long* time to evaluate solutions

There is no clear problem defintion

Wicked Problems

Are multi-causal multi-scalar & inter-connected

Solutions are not right/ wrong, but better/worse

Multiple stakeholders with conflict-ing agendas

Every solu-tion ramifies throughout the system

Every wicked problem is connected to others

Straddle organizational & disciplinary boundaries

Based upon Rittel and Webber (1973)

What is a System?

- "A system is defined as a regularly interacting or interdependent group of items forming a unified whole." (Merriam-Webster's online dictionary, n.d.)

- "A system is a set of elements or parts that is coherently organized and **interconnected** in a pattern or structure that produces a characteristic set of behaviors, often classifies as its **'function' or 'purpose'**." (Meadows, 2008)

A System must consist of:

Elements or Parts

Interconnectedness & Interactions

Function or Purpose
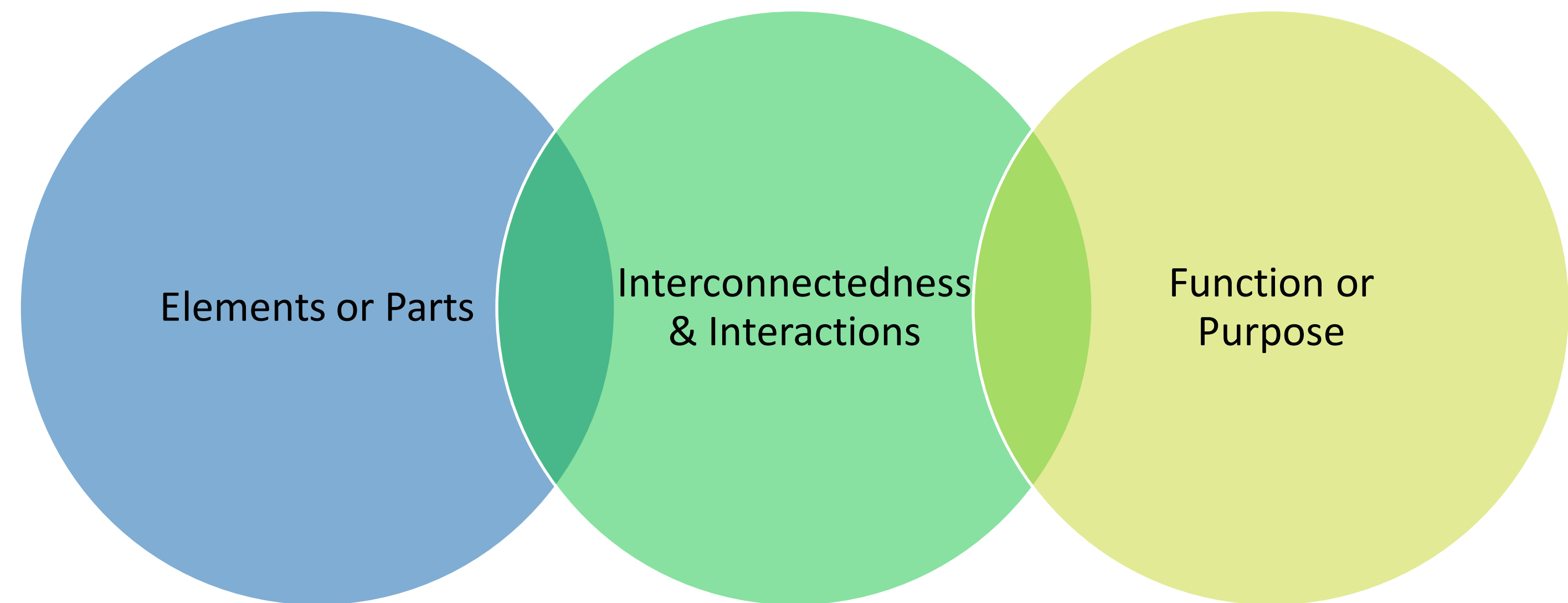
Examples:
- City
- Corporation
- Football team
- School
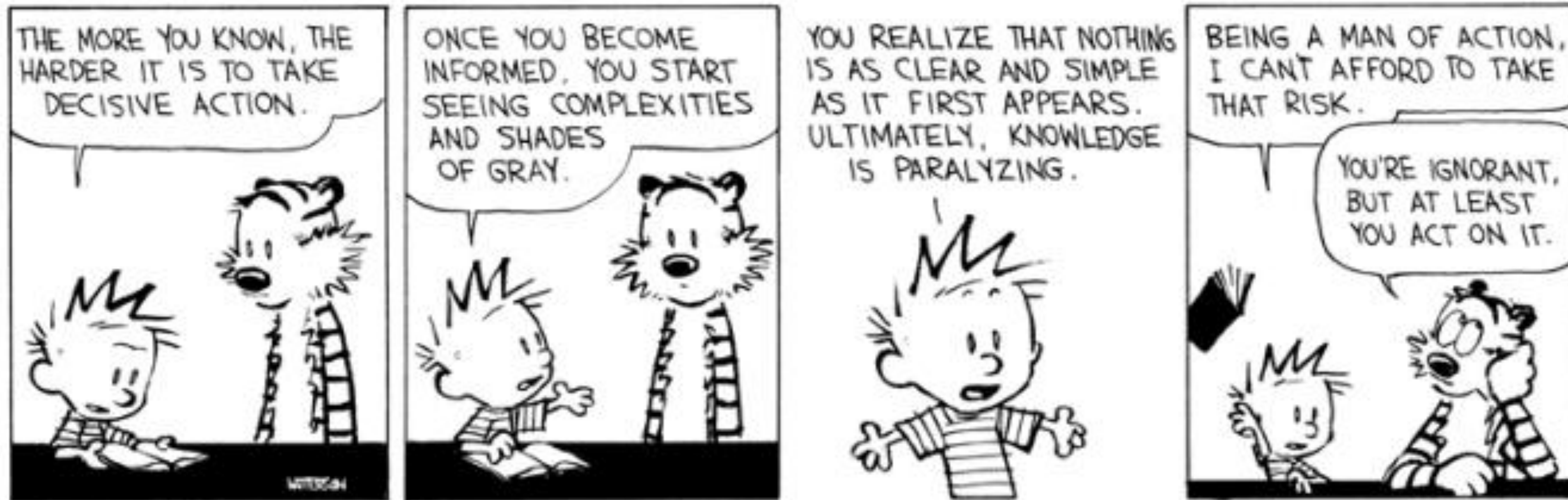
- The problem is not understood until after the formulation of a solution.

- Wicked problems have no stopping rule.

- Solutions to a wicked problem are not right or wrong.

- Every wicked problem is essentially novel and unique.

- Every solution to a wicked problem is a 'one shot operation.'

- Wicked problems have no given alternative solutions.

Conklin, Jeffrey (2006). Dialogue mapping : building shared understanding of wicked problems. Chichester, England: Wiley Publishing. ISBN 0-470-01768-6

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What is Systems Thinking?

- Coined by Barry Richmond in 1987

- Systems thinking is a discipline for **seeing wholes** and a **framework for seeing interrelationships** rather than things, for seeing **patterns of change** rather than static snapshots." (Senge, 1990)

- Systems thinking is the ability to represent and assess **dynamic complexity** (e.g., behavior that arises from the interaction of a system's agents over time), both textually and graphically." (Sweeney & Sterman, 2000)

- "Systems thinking is a set of synergistic **analytic skills** used to improve the capability of **identifying and understanding systems, predicting their behaviors**, and **devising modifications** to them in order to produce **desired effects**. These skills work together as a system." (Arnold & Wade, 2015)
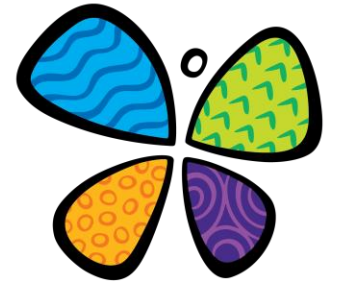
Traditional Thinking vs Systems Thinking
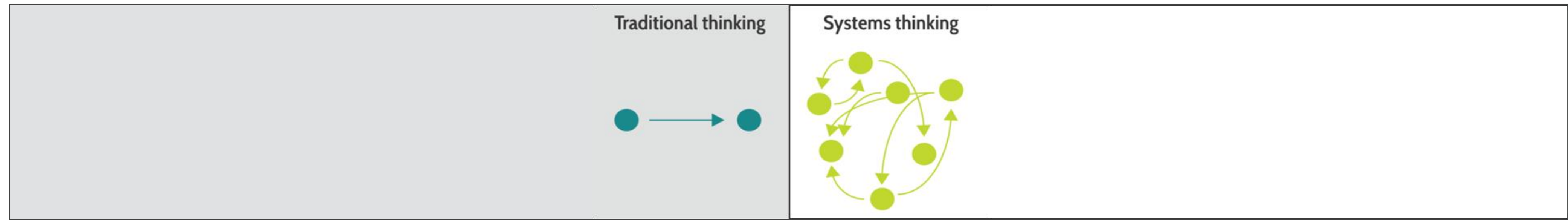
Traditional Thinking	Systems Thinking
There is a **direct connection** between the symptoms of a problem and their underlying causes.	System performance is largely determined by interdependencies among elements that are **indirect, circular, and non-obvious**.
To optimize the whole, we must optimize the **parts**.	To optimize the whole, we must improve **relationships among parts**.
Practices and policies designed to achieve **short-term** success will ensure long-term success.	Most quick fixes have **unintended consequences** – they make no difference or make matters worse in the long run.
We need a **detailed plan** to change the system.	We need **shared mental models** & our "true north / shared purpose."
We need to break the whole into **component pieces**.	We need to be concerned with **the whole**.
We will improve the system by **many independent initiatives** simultaneously to improve the parts.	We will improve the system by identifying a few key interdependencies with **greatest leverage** on system-wide performance and then coordinating improvement efforts there.
It is important to understand **how something works** the way it does.	It is important to understand **why things work** the way they do.

Why Systems Thinking?

Helps **broaden our thinking** and understand the problem in new and different ways

Recognizes there are **no perfect solutions**

Helps make **informed choices**

Tells **compelling and complete stories** to describe how a system works

When to Use Systems Thinking?

Wicked Problems that are ideal for a systems thinking intervention have the following characteristics:

- The issue is **important**.

- The problem is **chronic,** not a one-time event.

- The problem is **familiar** and has a known history.

- People have **unsuccessfully tried to solve** the problem before.

Getting started with Systems Thinking

What we think we need:

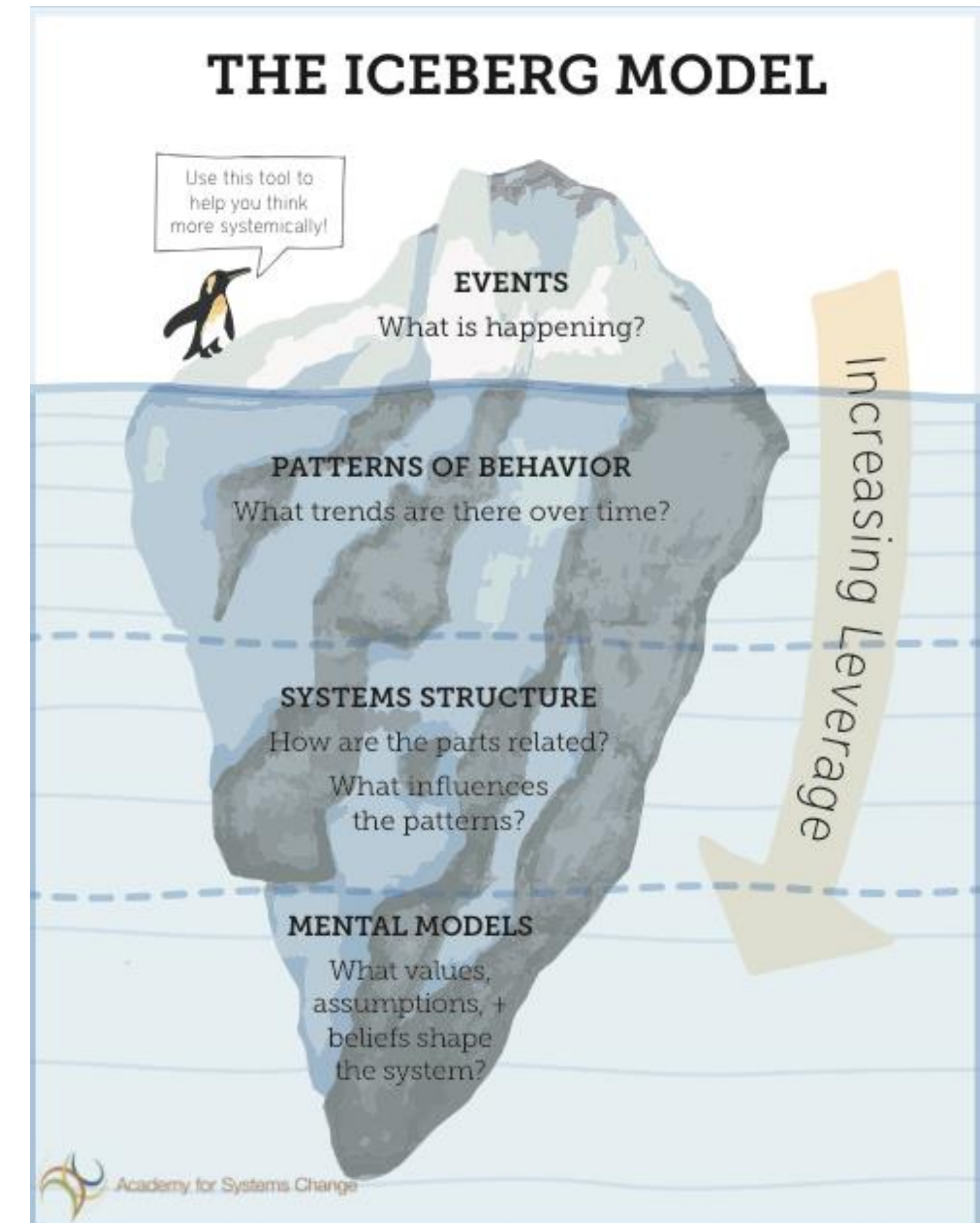*A perfect, detailed map*

What we actually need:

Our True North
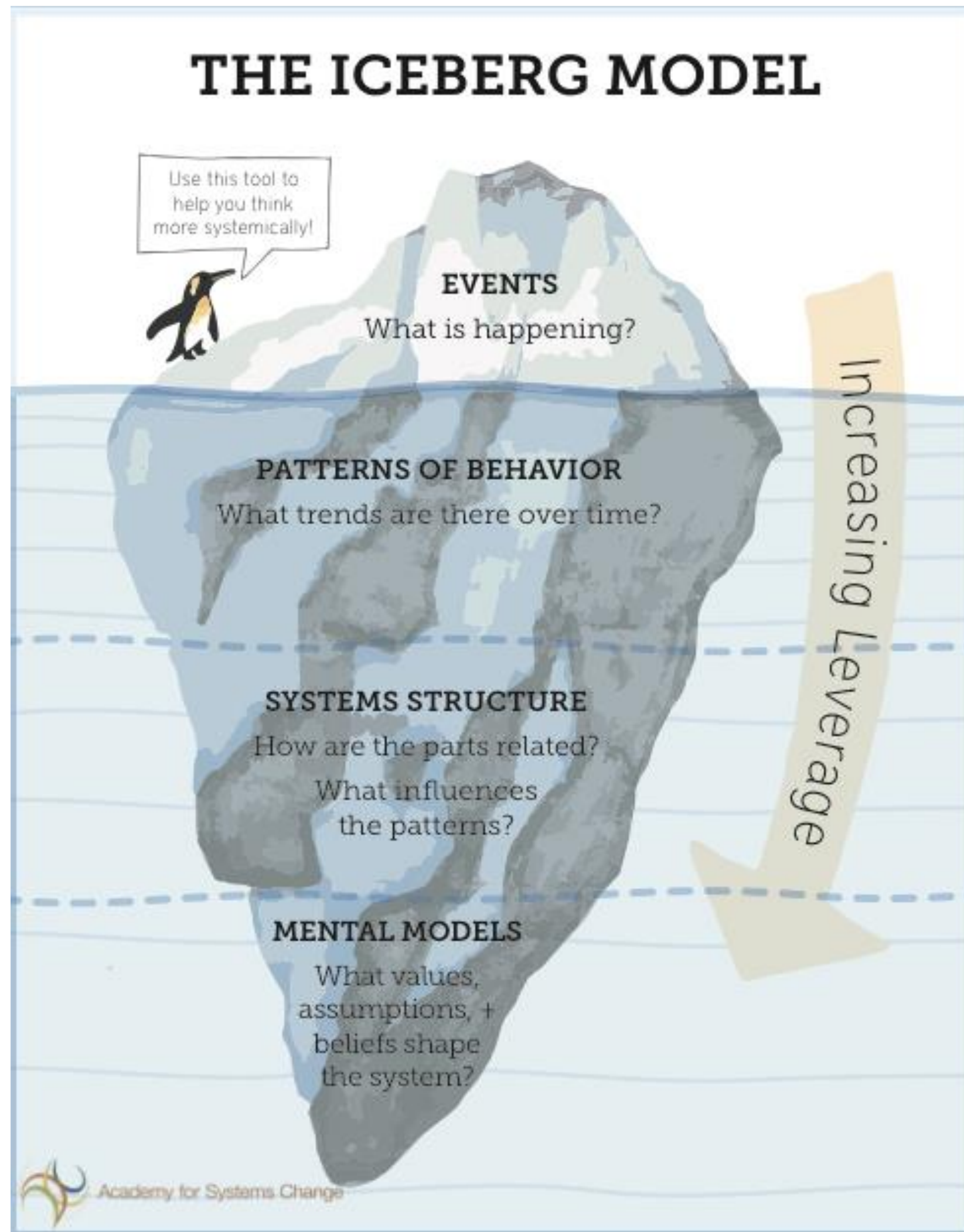*"A Shared Vision"*

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How to Start Using Systems Thinking?

✓ Avoid assigning blame

✓ Focus on the problem - "What is it about the problem that we don't understand?"

✓ Emphasize the iceberg phenomenon

✓ Get different perspectives to make sure that all viewpoints are represented

✓ Solutions are accepted by the people who need to implement them

THE ICEBERG MODEL

Use this tool to help you think more systemically!
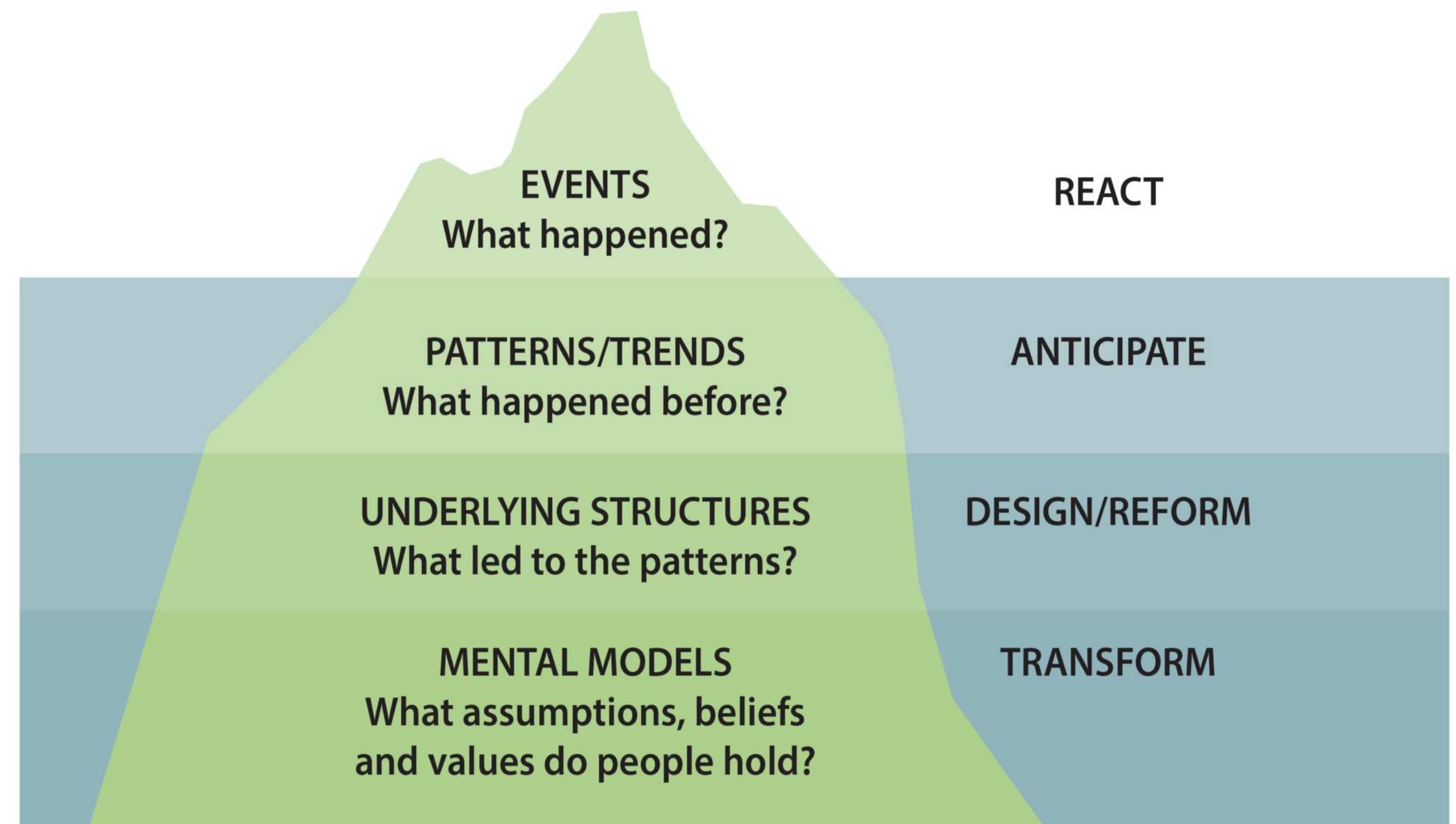
EVENTS
What is happening?

PATTERNS OF BEHAVIOR
What trends are there over time?

SYSTEMS STRUCTURE
How are the parts related?
What influences the patterns?

MENTAL MODELS
What values, assumptions, + beliefs shape the system?

Increasing Leverage

Academy for Systems Change

Iceberg Model

SYSTEMS THINKING MODEL
(GOODMAN, 2002)

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Table Activity 1. Read the Problem Statement for your table and work together to fill in the table

Event	What is the event happening?
Patterns/Behaviors	What patterns or trends have occurred over time for the event to happen?
Systems Structure	What led to the patterns? How are the parts related? What influences the patterns?
Mental Models	What values, beliefs, and assumptions shape the system?

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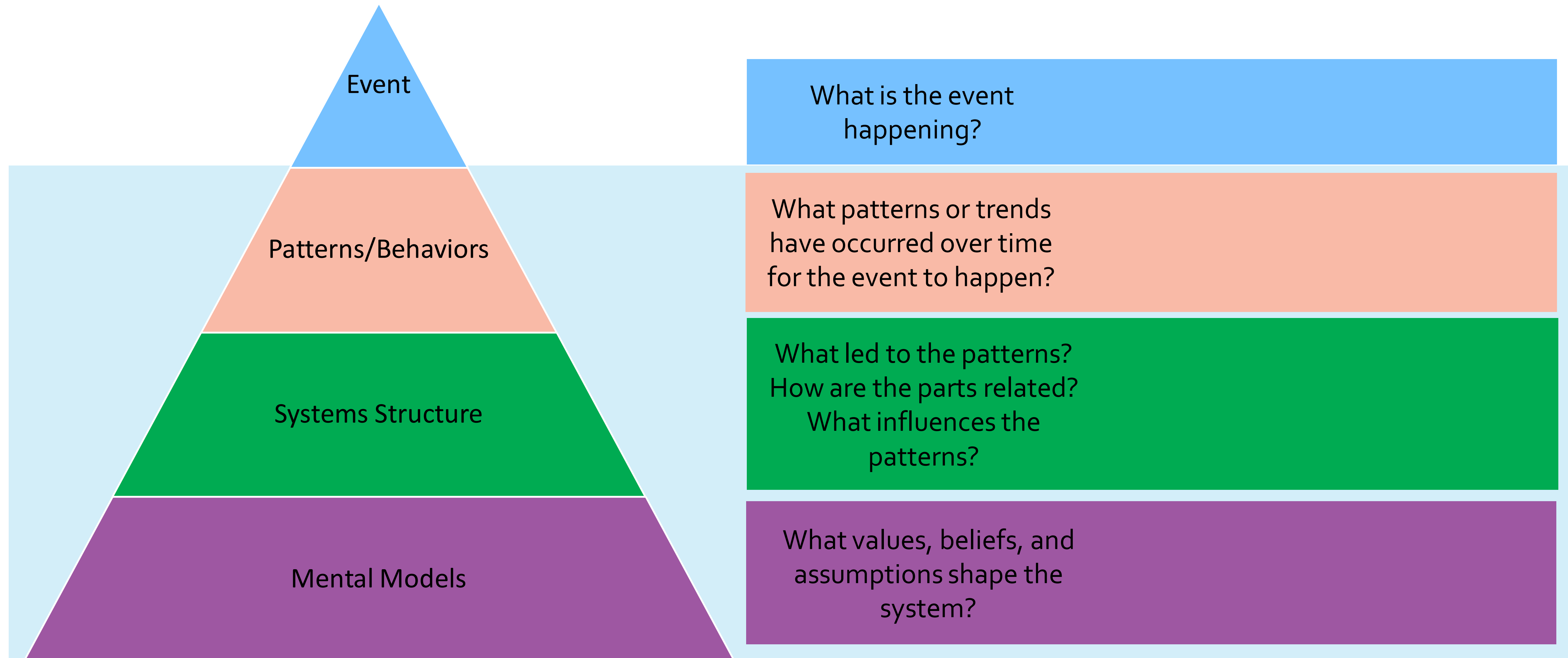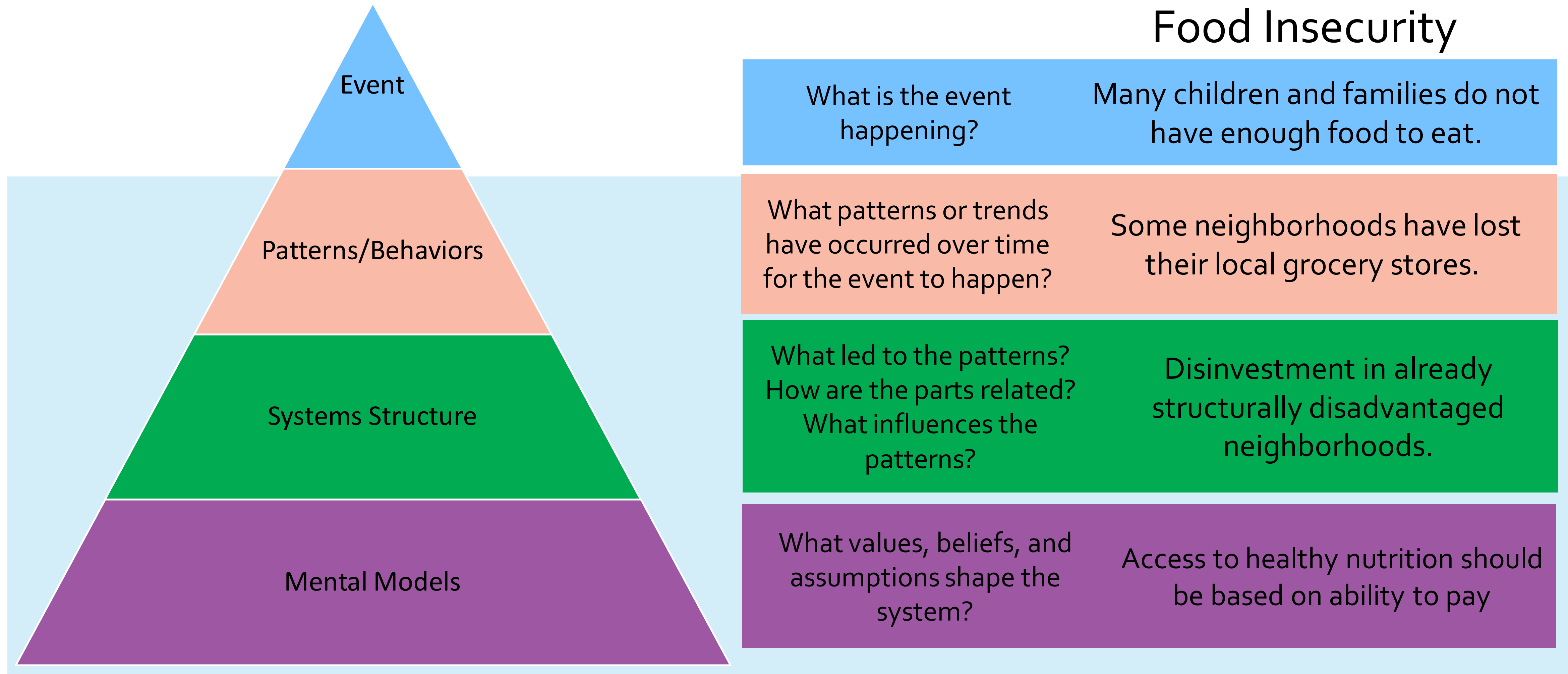# **Table Activity 1.** Read the Problem Statement for your table and work together to fill in the table

Food Insecurity

Level	Question	Food Insecurity
Event	What is the event happening?	Many children and families do not have enough food to eat.
Patterns/Behaviors	What patterns or trends have occurred over time for the event to happen?	Some neighborhoods have lost their local grocery stores.
Systems Structure	What led to the patterns? How are the parts related? What influences the patterns?	Disinvestment in already structurally disadvantaged neighborhoods.
Mental Models	What values, beliefs, and assumptions shape the system?	Access to healthy nutrition should be based on ability to pay

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The Six Blind Men and an Elephant

➢ A holistic view

➢ "The behavior of a system cannot be known by just knowing the elements of the system" - Meadows (2008), p7
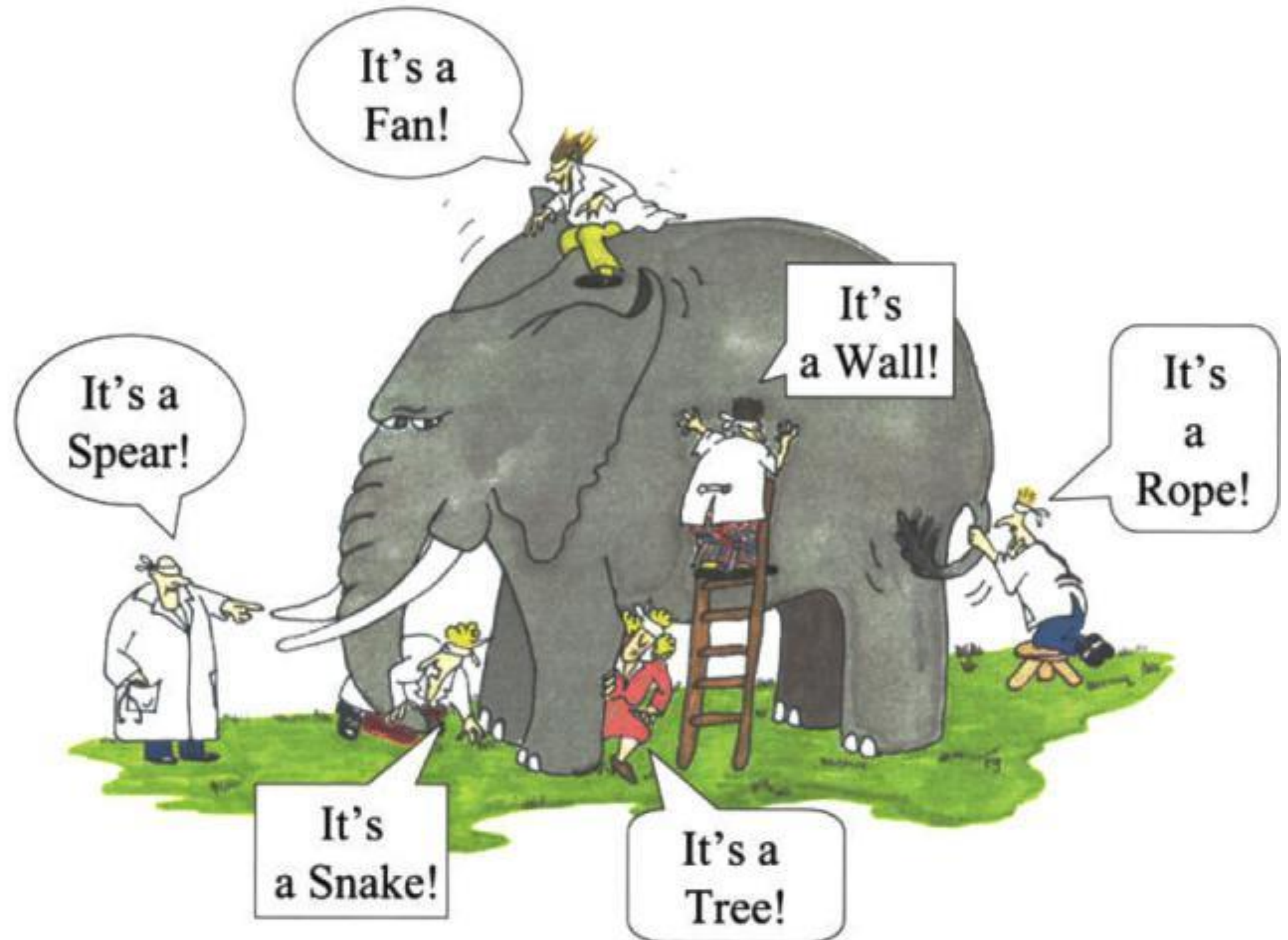
Table Activity 2. Identify all the key people whose perspective would be helpful to fully understand your table's Problem Statement.
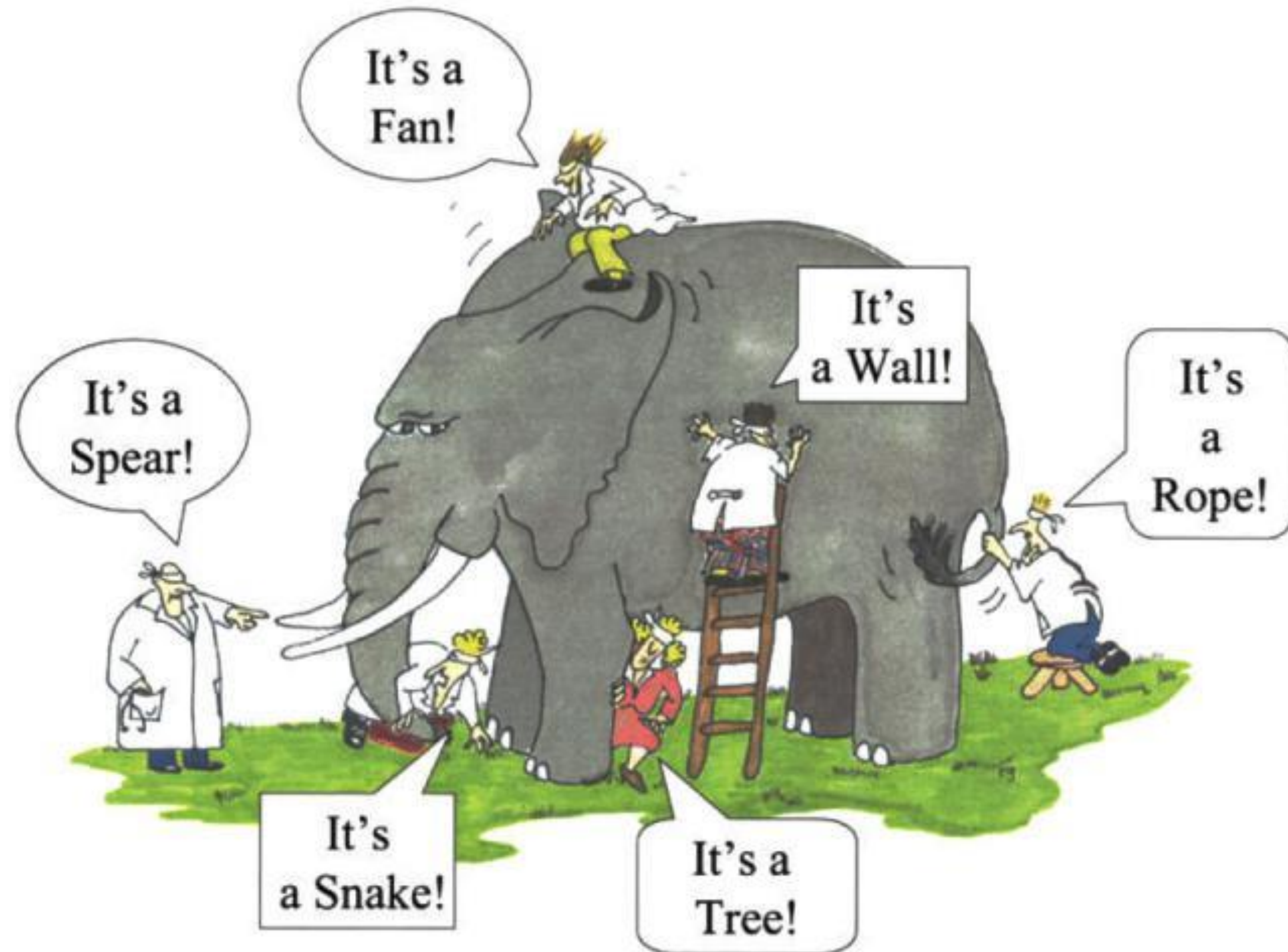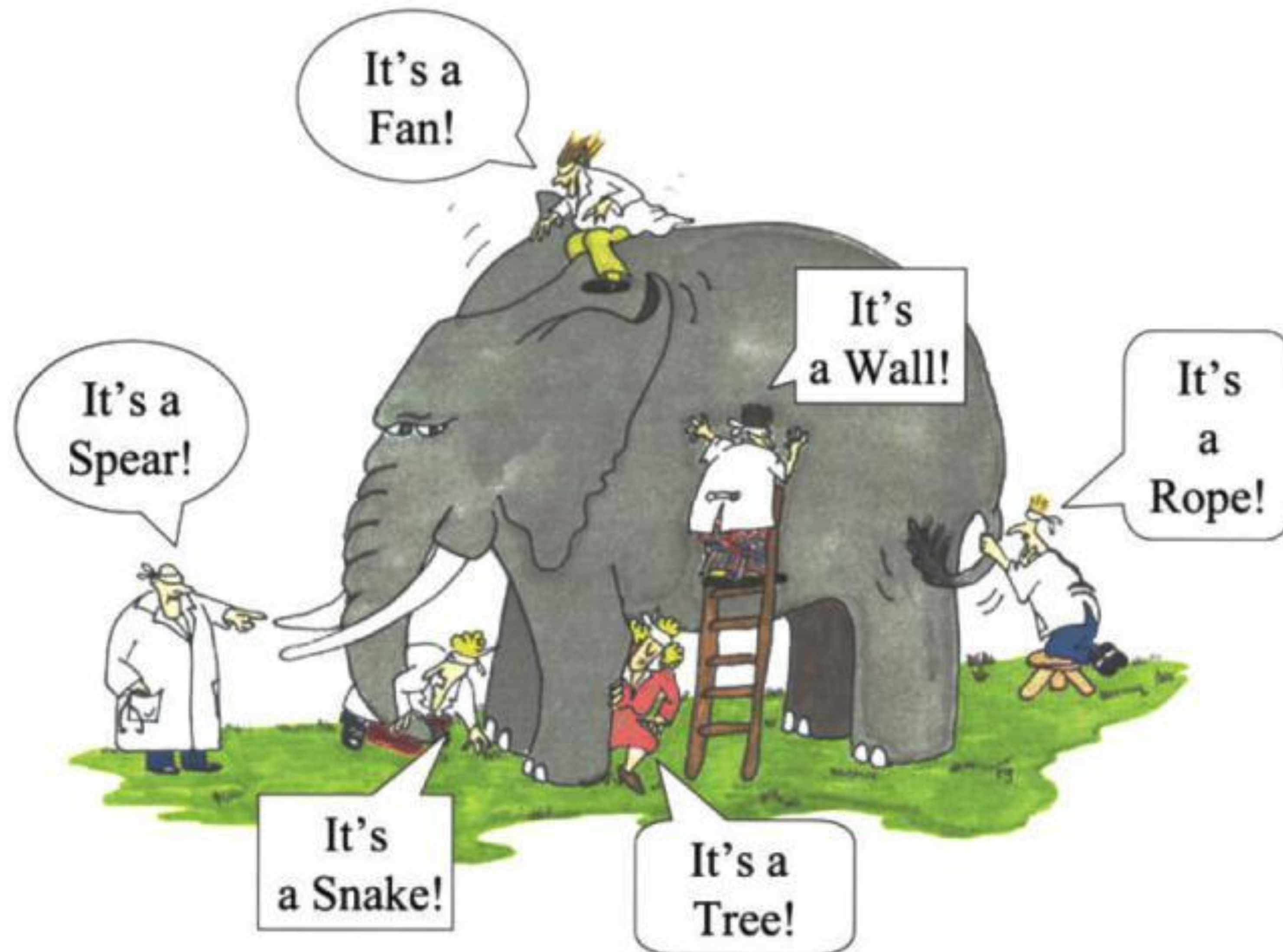
Table Activity 2. Identify all the key people whose perspective would be helpful to fully understand your table's Problem Statement.

Food Insecurity
- People who are experiencing food insecurity
- People living in neighborhoods with high rates of food insecurity
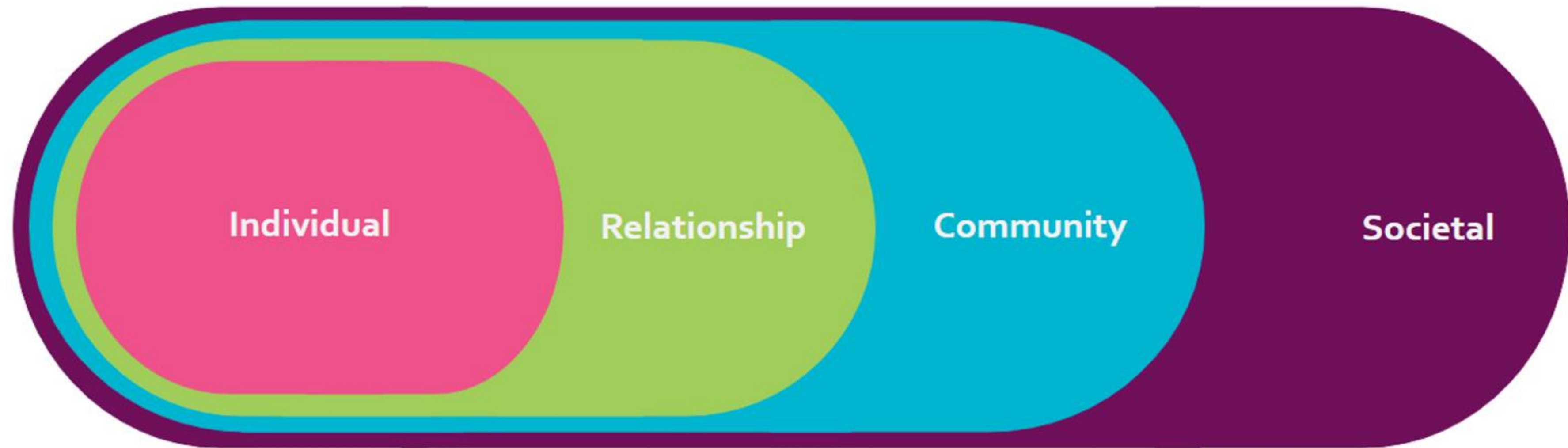- People who work in emergency food organizations
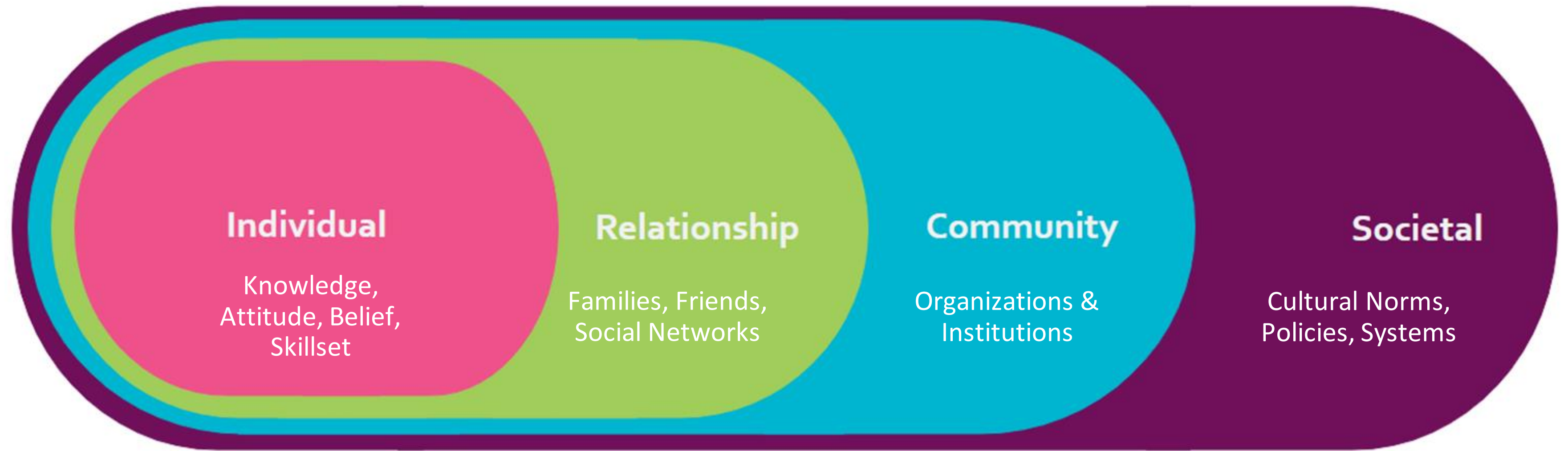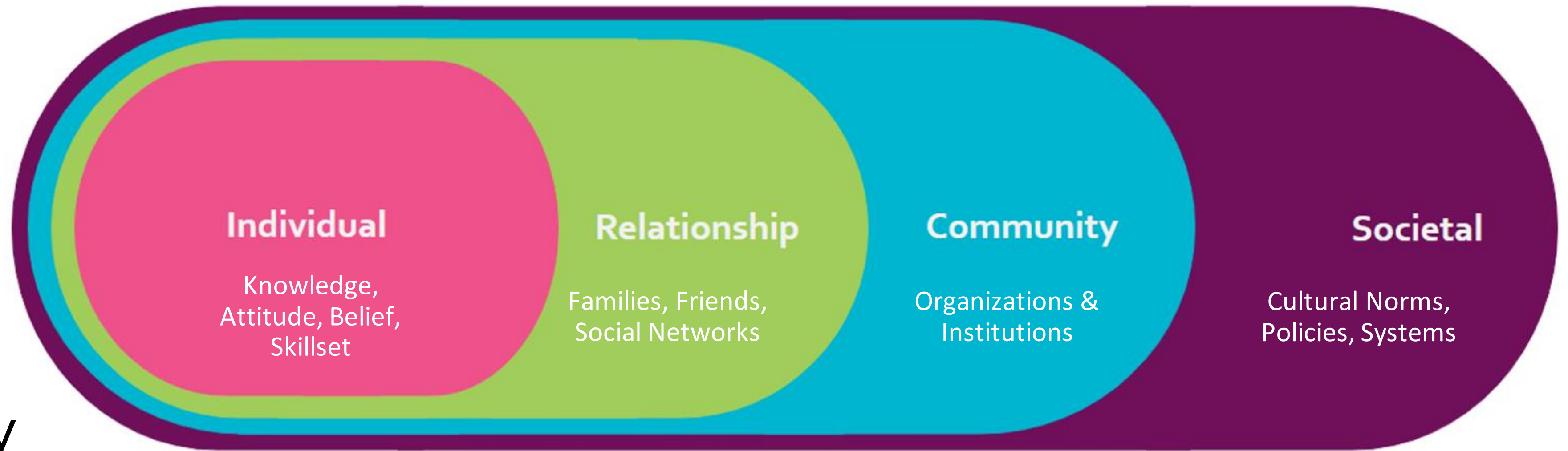
Socio-Ecological Framework

Table Activity 3

Individual — Knowledge, Attitude, Belief, Skillset

Relationship — Families, Friends, Social Networks

Community — Organizations & Institutions

Societal — Cultural Norms, Policies, Systems

	Individual	Relationship	Community	Societal
Who or What appears at each level of the system? (People, Practices, Programs, Policies)				

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Table Activity 3

Food Insecurity

	Individual	Relationship	Community	Societal
				Knowledge, Attitude, Belief, Skillset / Families, Friends, Social Networks / Organizations & Institutions / Cultural Norms, Policies, Systems	

	Individual	Relationship	Community	Societal
Who or What appears at each level of the system? (People, Practices, Programs, Policies)	Child experiencing hunger	Family under stress and feeling shame	Local food pantry	SNAP benefit policies

ANSWERS

SIMPLE BUT WRONG

COMPLEX BUT RIGHT

WILEYINK@EARTHLINK.NET

GOCOMICS.COM/NONSEQUITUR

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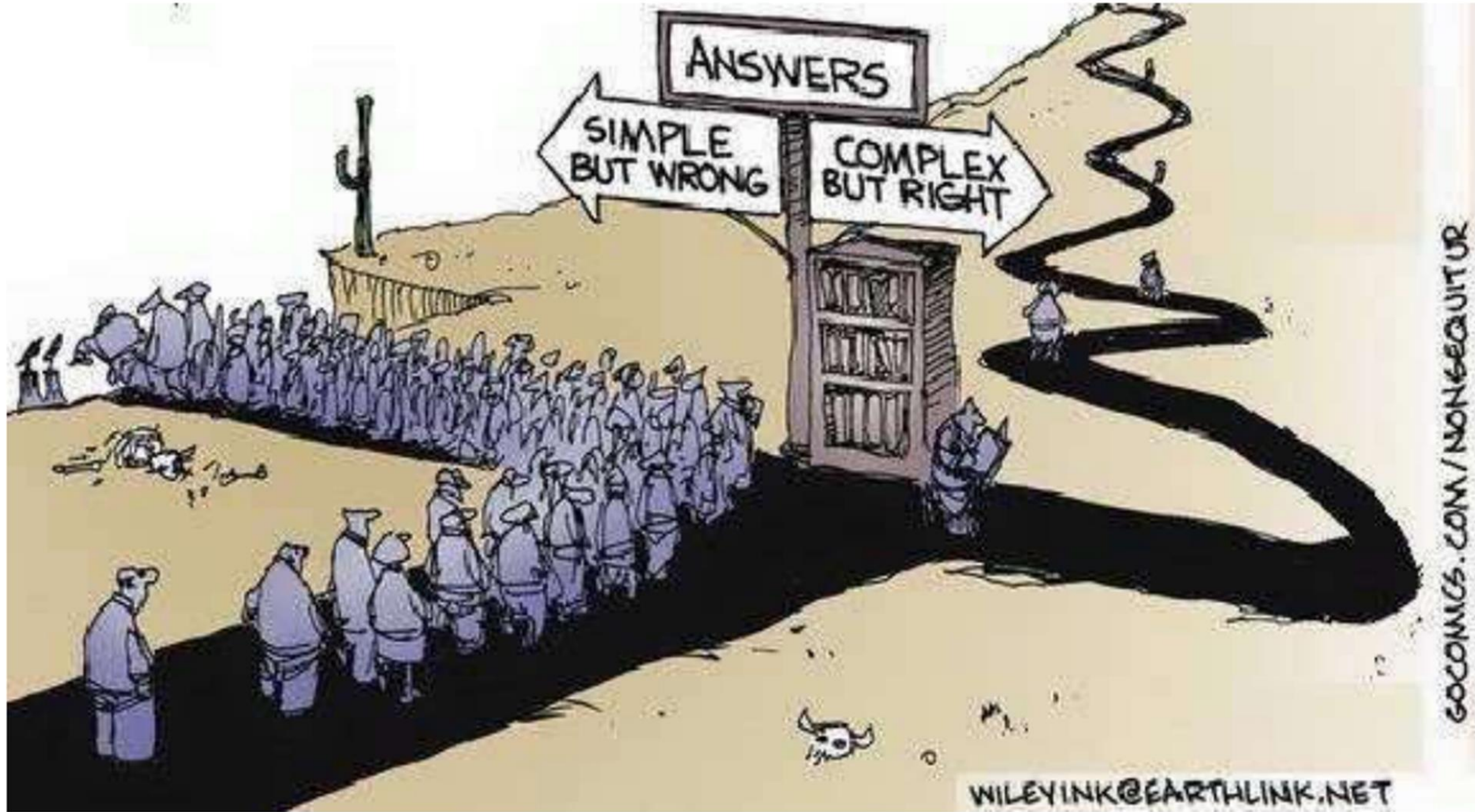
thank you
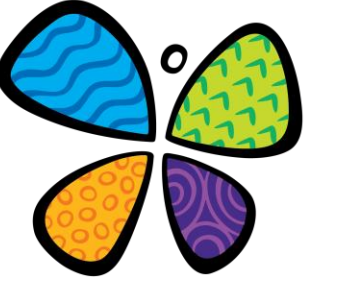
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Problem Statement 1: Food Insecurity

Historically, 3 in 10 adults living in Cincinnati have reported food insecurity. However, food insecurity in the Cincinnati region has increased by 60% since the onset of the COVID-19 pandemic, with fresh food like produce, dairy, and meat among those most difficult to find and afford in food deserts like Avondale.

There is geographic segregation, with some neighborhoods having more families facing food insecurity. From our own survey work, we have observed rates of food insecurity ranging from 75-100% for households with children in our most disadvantaged neighborhoods.

Problem Statement 2: Chronic Absenteeism

The Ohio Department of Education defines chronic absenteeism as missing 10% of instructional time for any reason – excused or unexcused.

Statewide, chronic absenteeism nearly doubled from about 16% before the pandemic to 30% in the 2021-2022 school year and remained high at 27% for the last school year. Chronic absenteeism, locally, mirrors these high numbers.

This negatively impacts student engagement and learning at schools.

Problem Statement 3: Black Youth Suicide

Suicide was the third leading cause of death among African Americans 10 to 24 years old.

Youth suicides, those below the age of 24, rose 47% between 2007 and 2019. Suicides among youth aged 14 and younger increased 300% during the same time. Black children under 13 years are two times more likely to die by suicide compared their white peers.

Suicide rates among Black youth and Black adults in Ohio have been rising in the last two decades to some of the highest rates of any group in the country.

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