



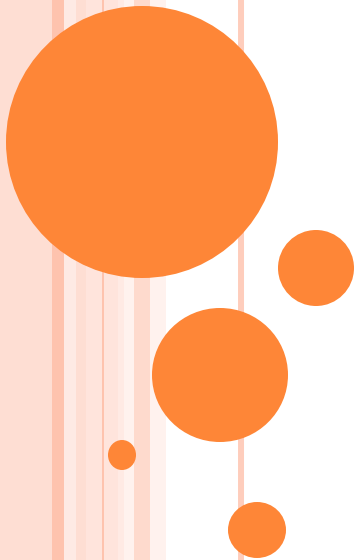
The Islamic Integration of Knowledge (IIOK) Project

IIIT- East Africa (2021)

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Transdisciplinarity as a Methodology

(Sue McGregor)



A REMINDER - DIFFERENCE BETWEEN METHODOLOGY AND METHOD

Methodology

- a branch of knowledge that deals with the general principles or axioms of the **generation of new knowledge**



Method

- Generation/production of **new data**
- Methods are the ***technical procedures and tasks*** undertaken to sample, collect and analyze data and report research results, *informed by the methodology*



Prevailing methodological approaches to conducting research include empirical, interpretive and critical (with reference to post-modernism, post structuralism, positivistic and post-positivistic, qualitative and quantitative)... .

To address the emergent, complex, wicked problems of the world, we need a new methodology to generate a new kind of knowledge:

1. What counts as **knowledge** (epistemology)
2. What counts as **reality, feeling, existence** (ontology)
3. What counts as **logic**
4. The role of **values, norms and ethics** (axiology)



EXAMPLES OF TD PROBLEMS FACED BY HUMANITY (NOW BEING CALLED “WICKED” PROBLEMS):

- Unfulfilled human potential
- Hindered freedom and injustices
- Insecurity and lack of peace
- Uneven distribution of resources
- Uneven development
- Human aggression and greed
- Abuse of personal and political power
- Disempowered citizens and communities
- Unbalanced energy flows
- Unsustainability



WICKED VERSUS TAME PROBLEMS

Tame Problems

- Easily defined and solutions tend to emerge during the problem definition process

- What solved it before should solve it again

- Solved using disciplinary knowledge and expertise

- Everyone agrees there is a solution and it is easy to reach consensus on the preferred solution

- Can usually predict the consequences of the solution(s)

- Are complex and difficult and can be technically detailed, but it is assumed that there 'is' a solution

Wicked Problems

- Difficult to define and each attempt to solve the problem causes more problems and changes the original problem

- Each problem is unique so cannot assume same solution will work again

- Solved using both disciplinary, expert knowledge and local knowledge from extended peer communities

- Seldom is there agreement on the preferred solution because different stakeholders hold wide ranging views and values; problem is solved when people run out of resources or when a *satisficing* solution is reached

- Very difficult to predict the consequences of a solution because every attempt to solve the problem has the potential to spawn new wicked problems

- Are intricately complex, ill-structured, messy issues, with multiple stakeholders; global justice and sustainability are at risk, and people and ecosystems can be harmed depending on the solution or its consequences

TRANSDISCIPLINARY KNOWLEDGE

‘Trans’ means zigzagging back and forth, moving across, going beyond, blurring boundaries, even pushing past boundaries. This is called **INTELLECTUAL BORDER-WORK**... At the *academy-civil society interface*.



MULTI- AND - INTERDISCIPLINARITY ARE NEEDED BUT ARE NOT ENOUGH

- These approaches are confined within the university setting, the academy, and privilege only disciplinary knowledge.
- They do not provide a space for minds prepared through other ways of knowing, the minds of those living with the complex problems and/or the minds which could contribute unique insights if only given a voice.
- There needs to be a *meeting of the minds* of those working within academic disciplines and those living life in civil society (NGOs, governments and businesses); this requires a new methodology.



MULTIDISCIPLINARITY

Example - Economics works behind a solid wall.

It needs help solving a problem...so it

*Opens a door in the wall to let people in.
from other disciplines:*

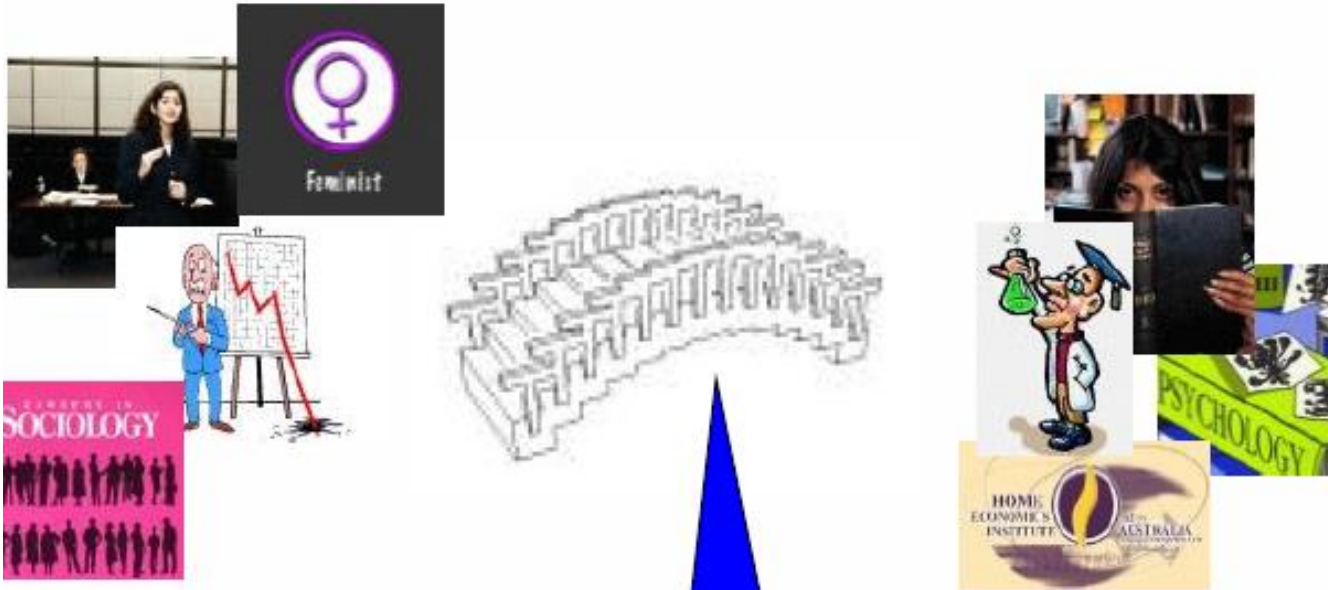


When the problem is solved, the boundaries are put back up and all the disciplines that took part in the collaboration retain their distinctiveness and go back to their offices.



Interdisciplinary Practice

Build temporary bridges between **academic disciplines** so they can talk to each other.



Assume that the space under the bridge is empty so need a way to reach each other - the bridge.



Transdisciplinary Dance Floor

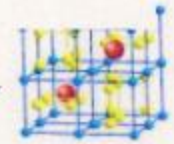


Enter dance floor
with an open mind

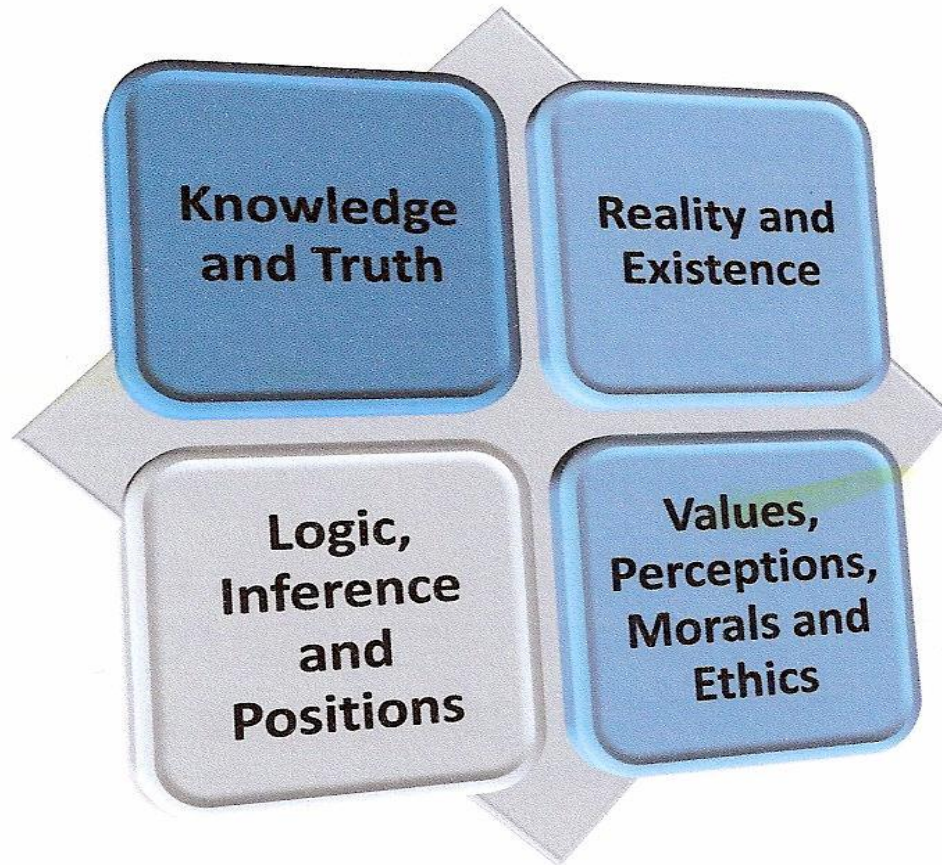
End up with new
knowledge
world view

OPEN MIND

Information (re)forms, ideas steep, new dance steps (patterns of relating to each other) emerge as thoughts are woven together

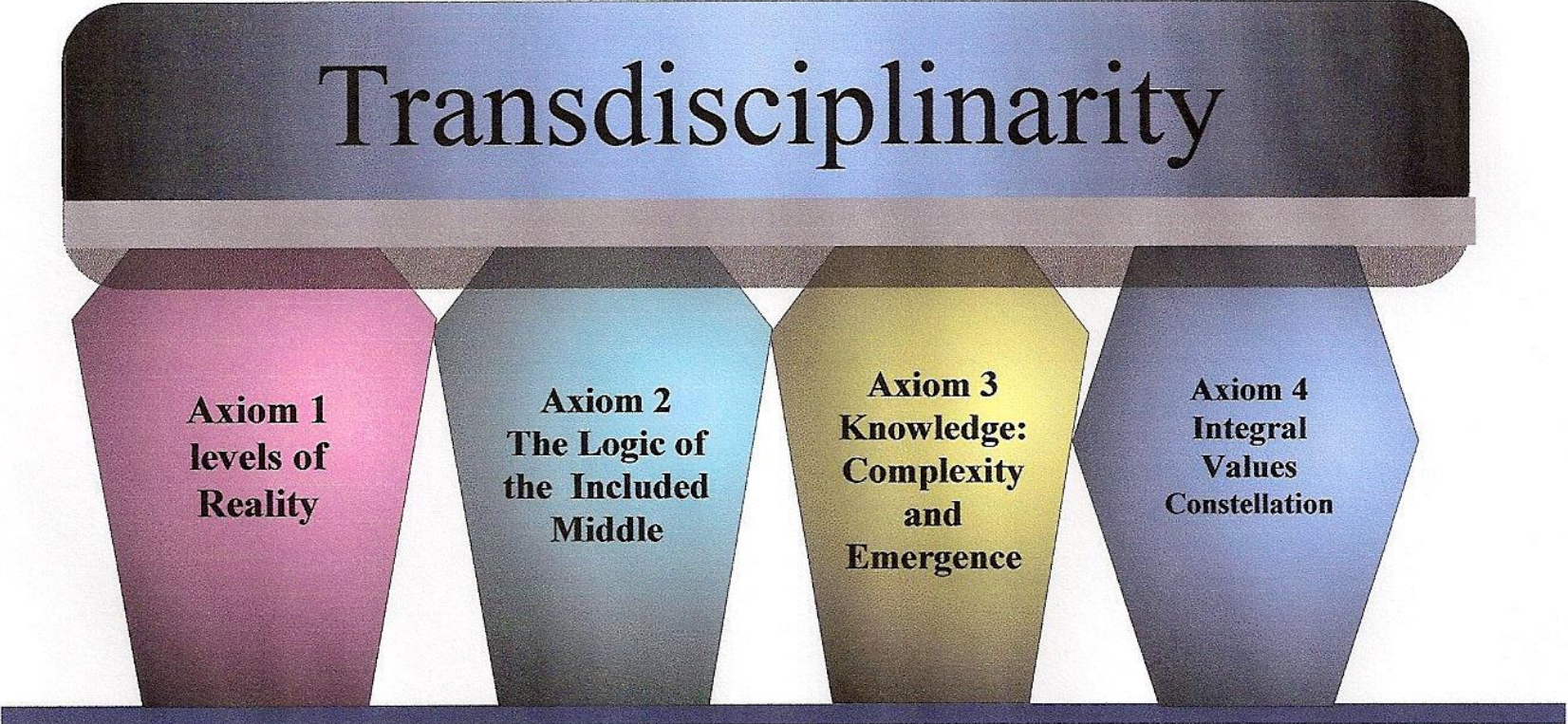


FOUR BASIC AXIOMS



Four Pillars (Axioms) of Transdisciplinary Methodology

Transdisciplinarity



The diagram illustrates the four pillars of transdisciplinary methodology. At the top, a dark blue rounded rectangle contains the word 'Transdisciplinarity'. Below it, four colorful, trapezoidal pillars support a horizontal bar. From left to right, the pillars are: a pink pillar labeled 'Axiom 1 levels of Reality', a light blue pillar labeled 'Axiom 2 The Logic of the Included Middle', a yellow-green pillar labeled 'Axiom 3 Knowledge: Complexity and Emergence', and a blue pillar labeled 'Axiom 4 Integral Values Constellation'. The entire structure is supported by a dark blue horizontal base.

Axiom 1
levels of
Reality

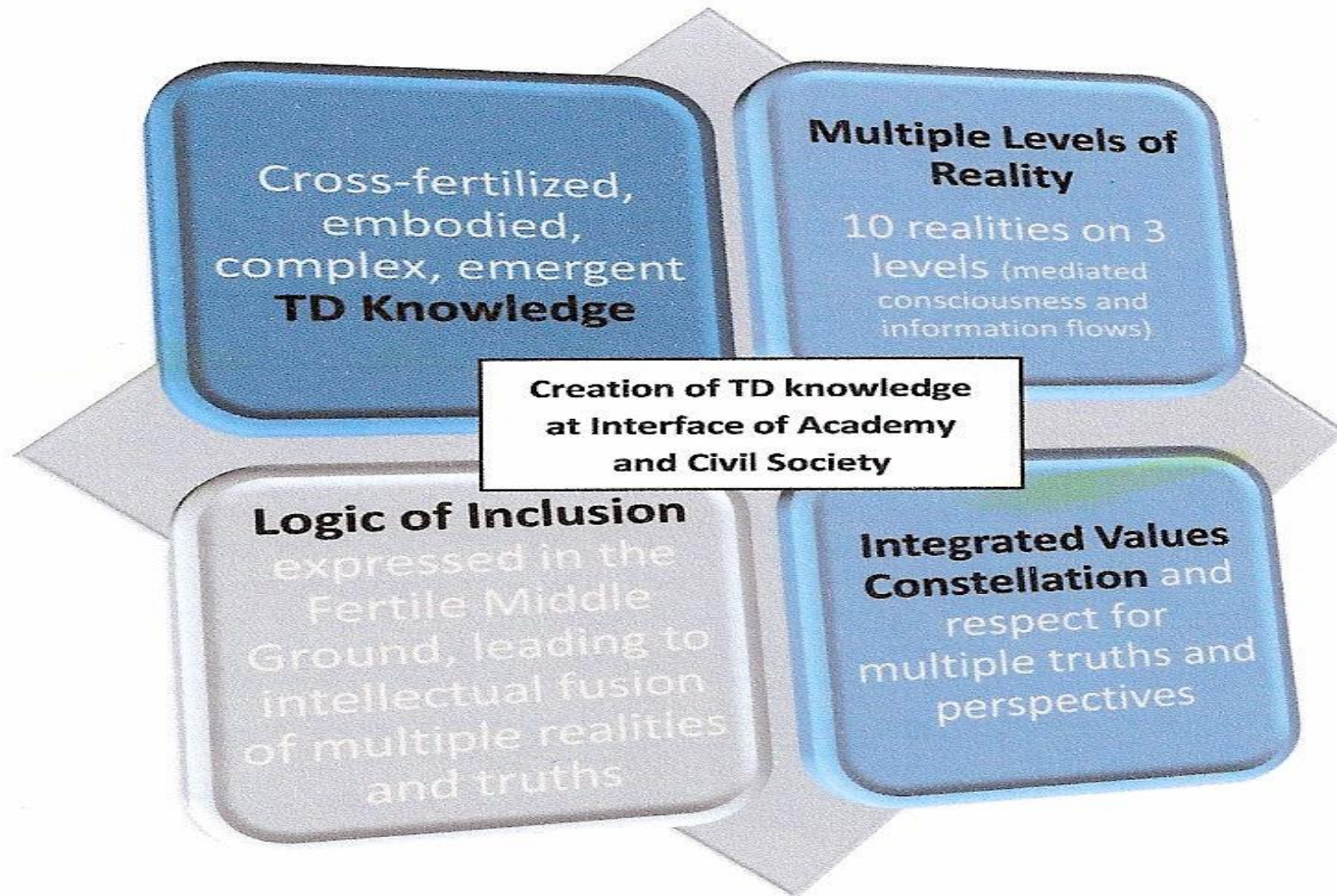
Axiom 2
The Logic of
the Included
Middle

Axiom 3
Knowledge:
Complexity
and
Emergence

Axiom 4
Integral
Values
Constellation

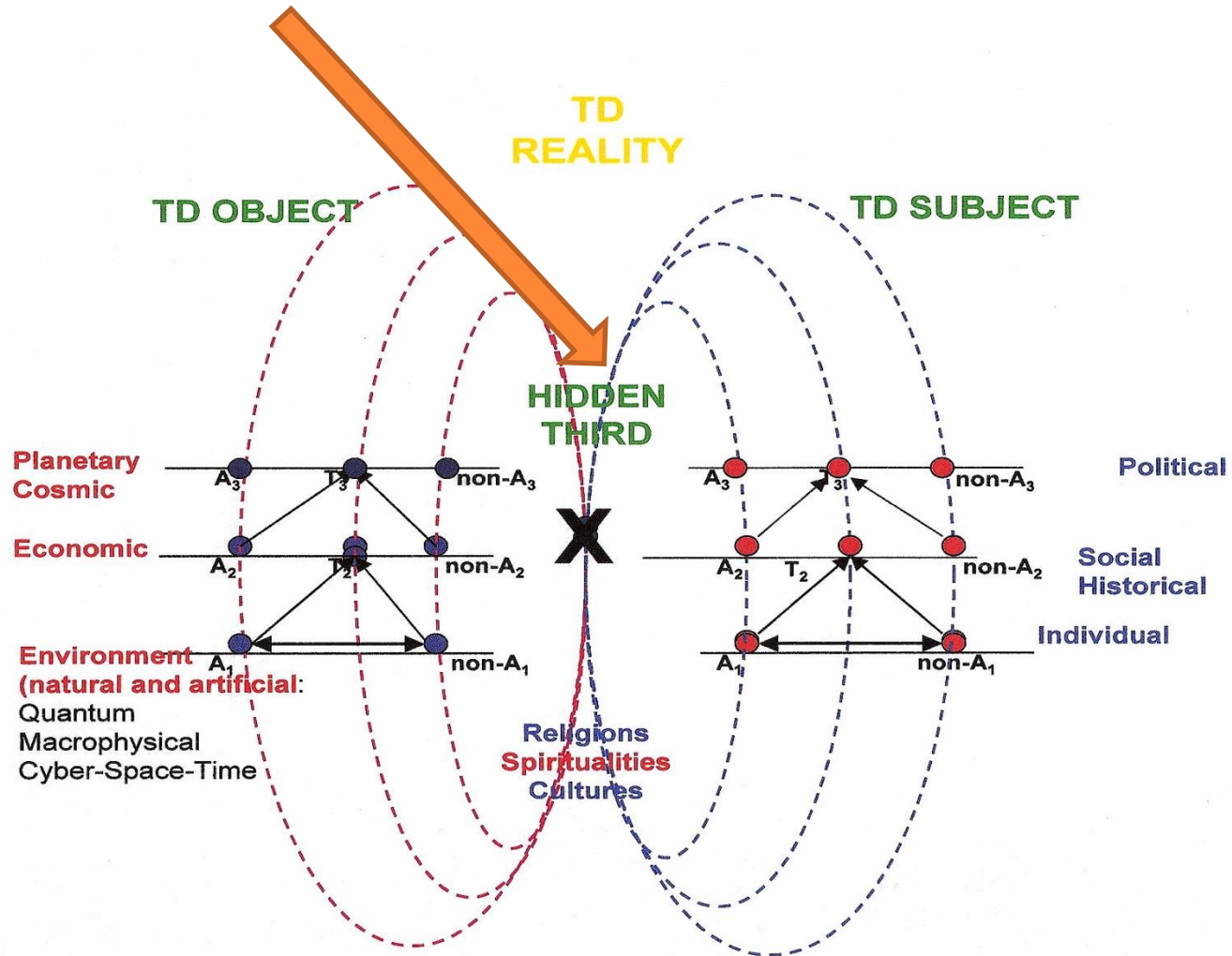


TD AXIOMS

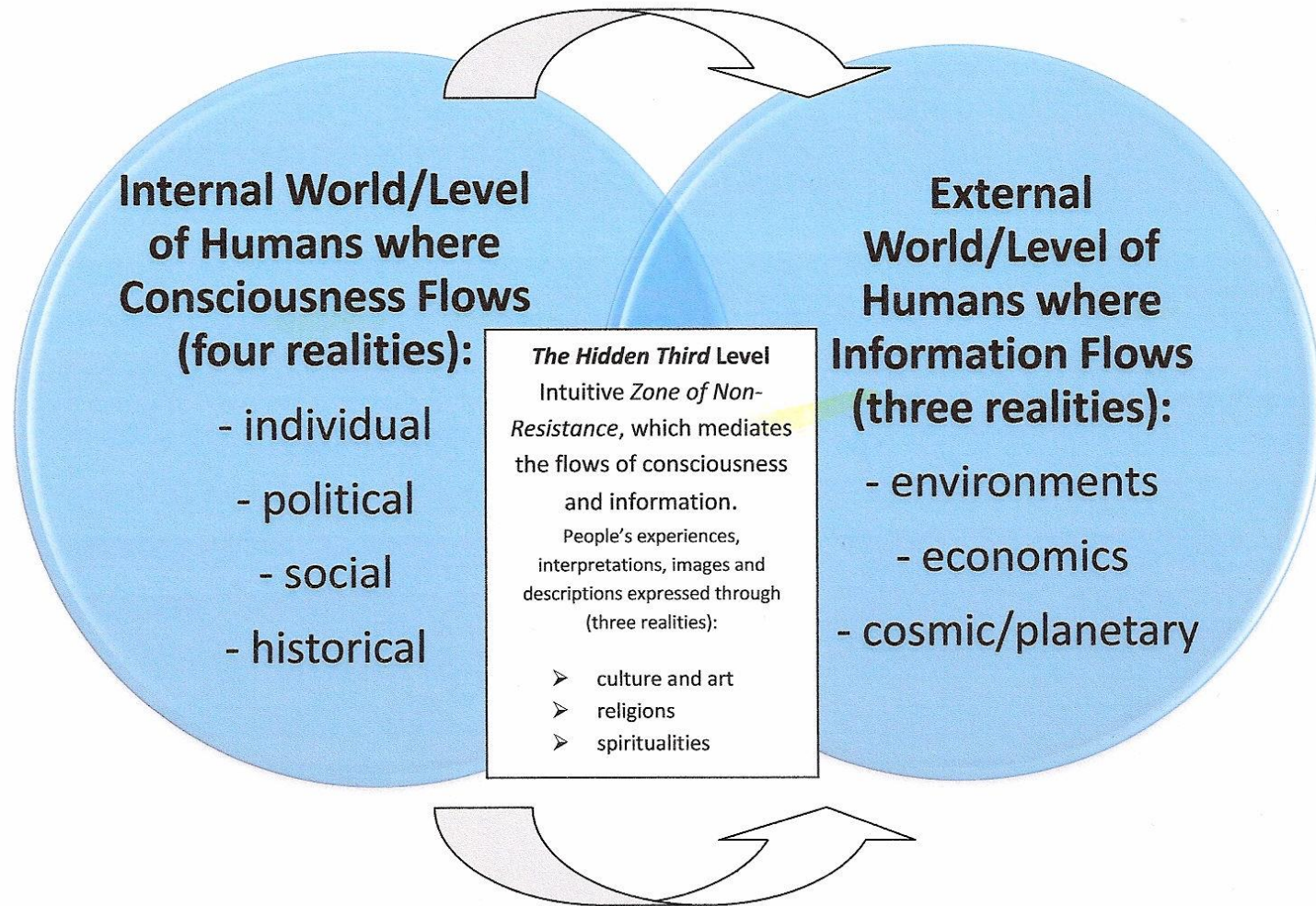


AXIOM 1- ONTOLOGY MULTIPLE LAYERS OF REALITY AND THE HIDDEN THIRD

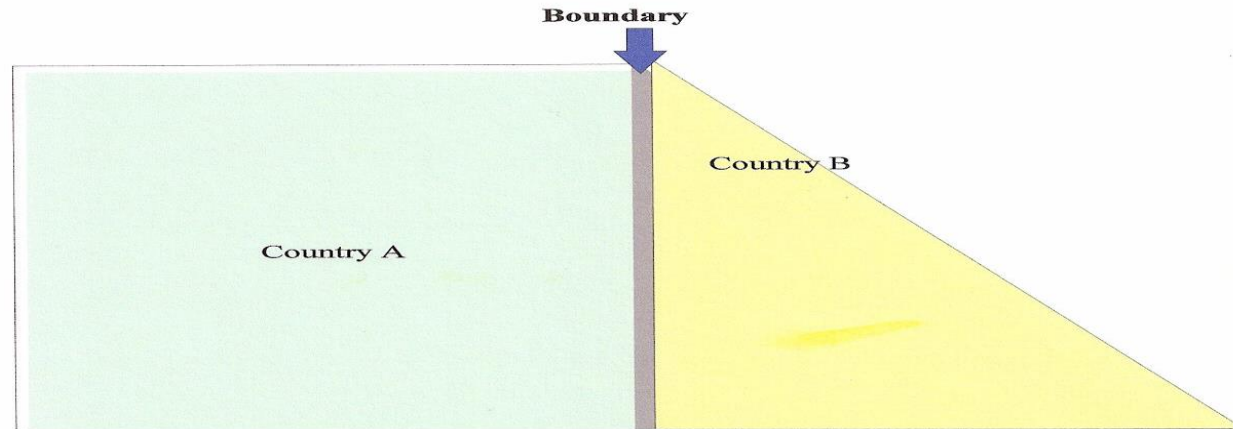
(IMAGE USED WITH PERMISSION OF BASARAB NICOLESCU)



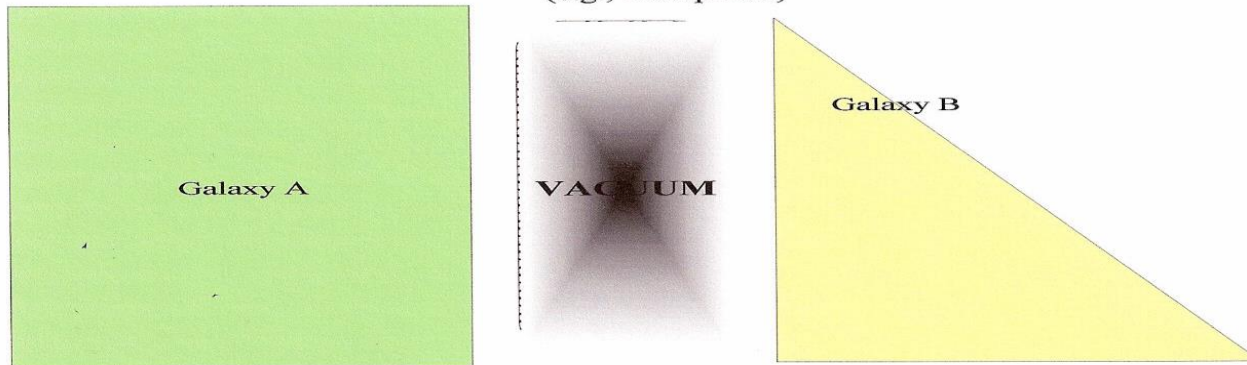
THE HIDDEN THIRD



WHERE THE HIDDEN THIRD OPERATES – IN THE QUANTUM VACUUM



Continuity Between Territories
(e.g., Disciplines)

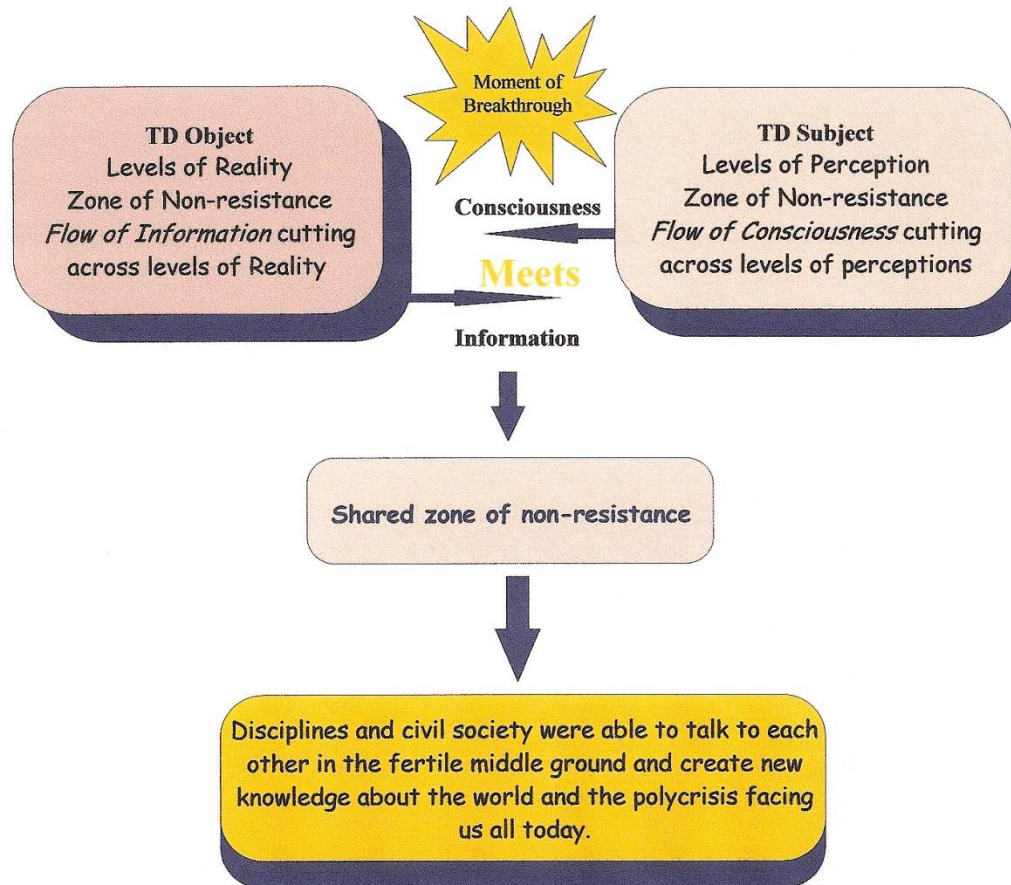


Discontinuity Between Territories
(e.g., between disciplines and between disciplines and civil society)



MEETING OF THE MINDS AND CONSCIOUSNESS

Coherence - Need breakthrough (shared zone of non-resistance) to create new TD knowledge:
Subject is able to communicate with Object (different disciplines can talk to each other!)



AXIOM 2- LOGIC

LOGIC OF THE INCLUDED MIDDLE (RIGHT IMAGE)

This axiom is concerned with the *habits of the mind* that are acceptable to use to reason and make inferences (draw conclusions) when developing arguments, taking a position, interpreting data etc.

Left image – Logic of the Excluded Middle (dead empty space)



NEWTONIAN PHYSICS OF THE EXCLUDED MIDDLE (DEAD EMPTY STATIC SPACE)



AXIOM 2 LOGIC OF THE INCLUDED MIDDLE CON'T

I use the metaphor of the lava lamp. The space between the academy and civil society is alive, dynamic, in flux, always moving – called the Fertile Middle Space (the floor of the lava lamp). There IS a middle ground!

INCLUSIVE LOGIC

Complex, emergent problem solving of wicked problems happens in the lava lamp.

Everything is in-information (including information)



ENTERING THE FERTILE GROUND OF THE INCLUDED MIDDLE, CROSSING THE ZONE OF RESISTANCE TO THE FERTILE MIDDLE SPACE



Axiom 3 – Knowledge is emergent and complex

This is a different epistemology than that used in conventional science, which assumes that only knowledge that is generated using the scientific method is valid.

TD knowledge is created by integration and cross-fertilization of insights from the *many levels of reality*, shared in the *fertile middle space* using *inclusive logic*.

I call this form of TD knowledge generation *the dance*. When people bounce off each other, energy is created –
INTELLECTUAL FUSION!

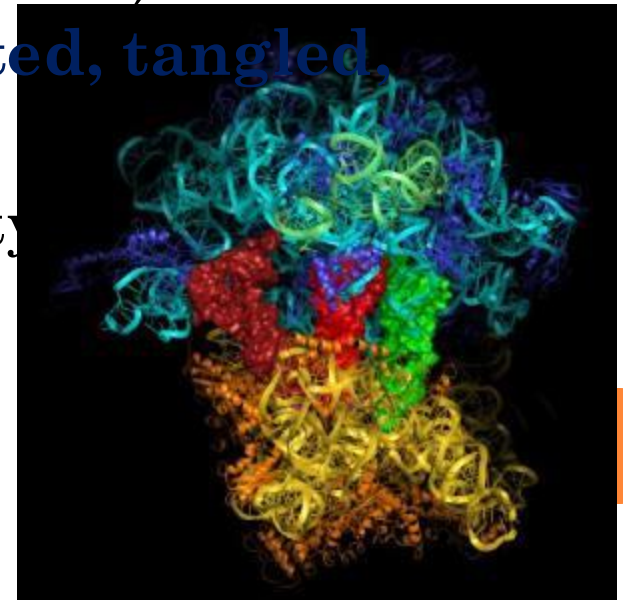


AXIOM 3 KNOWLEDGE CON'T

Remember those problems of humanity?

They cannot be solved by one discipline or one sector of society alone. They are too **complex**. *TD* deals with complex problems not complicated problems. Here's an example. Poverty (resulting from uneven distribution of resources) is complicated because it is a **knotted, tangled, detailed**

intricate issue comprising security, rights, responsibilities, justice and freedom.



AXIOM 3 KNOWLEDGE CON'T

When the TD axiom of knowledge is applied, the assumption is that poverty **ALSO** is a **complex problem**, meaning it has the additional property of *emergence*. It is one thing to untangle a complicated problem and quite another to weave the strings that emerged into a new whole, to gain a better understanding of the world.

Emerge means to *arise out of*. What emerges? Novel qualities, properties, patterns, structures, relationships, in-formation and synergy... **from the intellectual fusion**. People were able to cross the *hidden zone of resistance (the Hidden Third)* betwe the *multiple levels of realities* and be open to other people's world views and perspectives. There was a meeting of the minds, a *flow of consciousness and c in-formation*.



AXIOM 3 KNOWLEDGE CON'T

Engaging in TD knowledge generation by solving complex, wicked problems also assumes the issue is constantly changing as are the different people and their ideas (old and new) as they interact while untangling the knots and bringing new perspectives. Original perceptions about the problem (e.g., poverty) are left behind as a new fabric or weave takes place. **EVERYTHING is in flux** in the *fertile middle space* as people use *inclusive logic* to weave together insights from *multiple levels of reality and differing perspectives and value premises*. Have to respect new notions of order and chaos (see next)



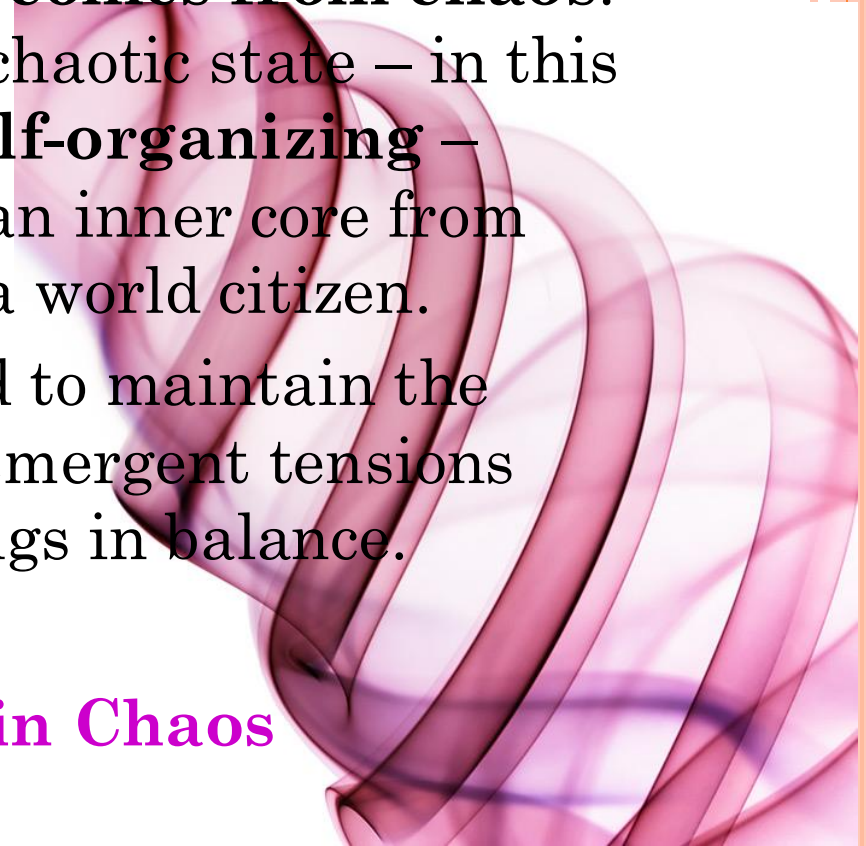
AXIOM 3 KNOWLEDGE CON'T

The TD methodology of creating knowledge assumes that chaos is a necessary place for people to live because **order comes from chaos**. New insights appear in this chaotic state – in this **vacuum**. Also, people are **self-organizing** – they are capable of creating an inner core from which they gain stability as a world citizen.

People no longer feel compelled to maintain the status quo. New respect for emergent tensions instead of trying to keep things in balance.



Order Emerging from Within Chaos



AXIOM 3 KNOWLEDGE (FINI)

The TD knowledge necessary to solve the complex, emergent, wicked problems of humanity is **ALIVE** because the problems the knowledge addresses are alive, emerging from our life world. The knowledge created together (*in the lava lamp*) becomes part of everyone involved because once it is created, it falls back down on everyone in the TD dance and becomes part of the

Embodied knowledge!!



Axiom 4 Axiology: Integral Values Constellation

The world is facing a polycrisis, a situation where there is no one, single big problem - only a series of overlapping, interconnected, complex, emergent and wicked problems.

This **complexity** infers the need for more than a single expert's solution (it warrants **multiple levels of reality, points of view, ways of knowing, diverse logics**).

Interactions amongst multiple actors, as they problem solve a polycrisis, will give rise to value conflicts and contradictions. Whether the power people generate as they work together in the **fertile middle space using inclusive logic** to solve **complex, emergent problems** is negative or positive depends upon the nature of the TD relationships.

That, in turn, is predicated on values.



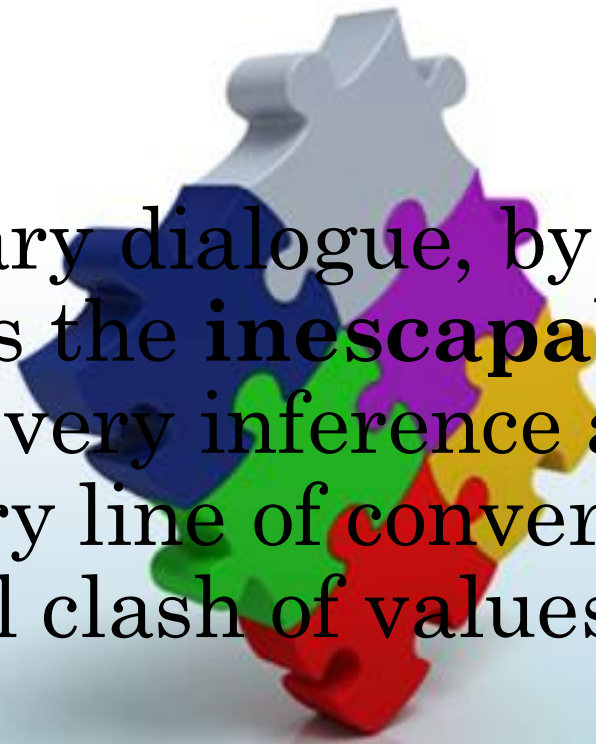
AXIOM 4 INTEGRAL VALUES CONSTELLATION

- in order to develop necessary tolerance of different viewpoints so we can stay engaged in conversations about the complex, wicked problems shaping the human condition, **we have to respect, manage and lead values**
- values are often the missing link in providing strategic solutions to key, global issues that are informed by a **collage of differing worldviews** held by individuals, cultures, nations and regional and international groups.



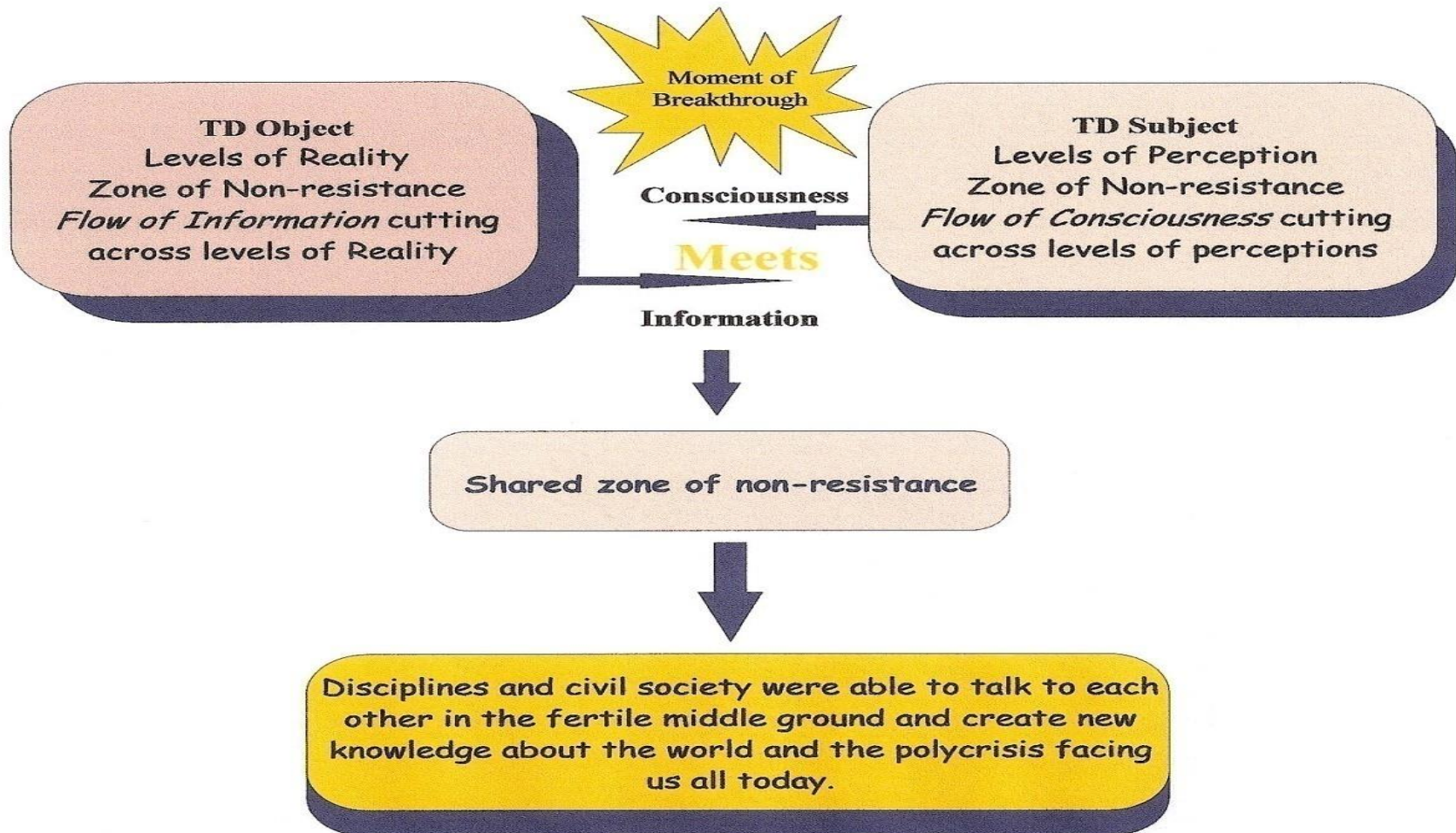
VALUES INTEGRATION

- The transdisciplinary dialogue, by its very nature, will witness the **inescapable value loading** of every inference and every opinion. Every line of conversation will face a potential clash of values, ethics and morals.
- Problem solvers especially need to reconcile the different sorts of knowledge characteristic of the disciplines in the academy with the involvement of civil society/citizens.

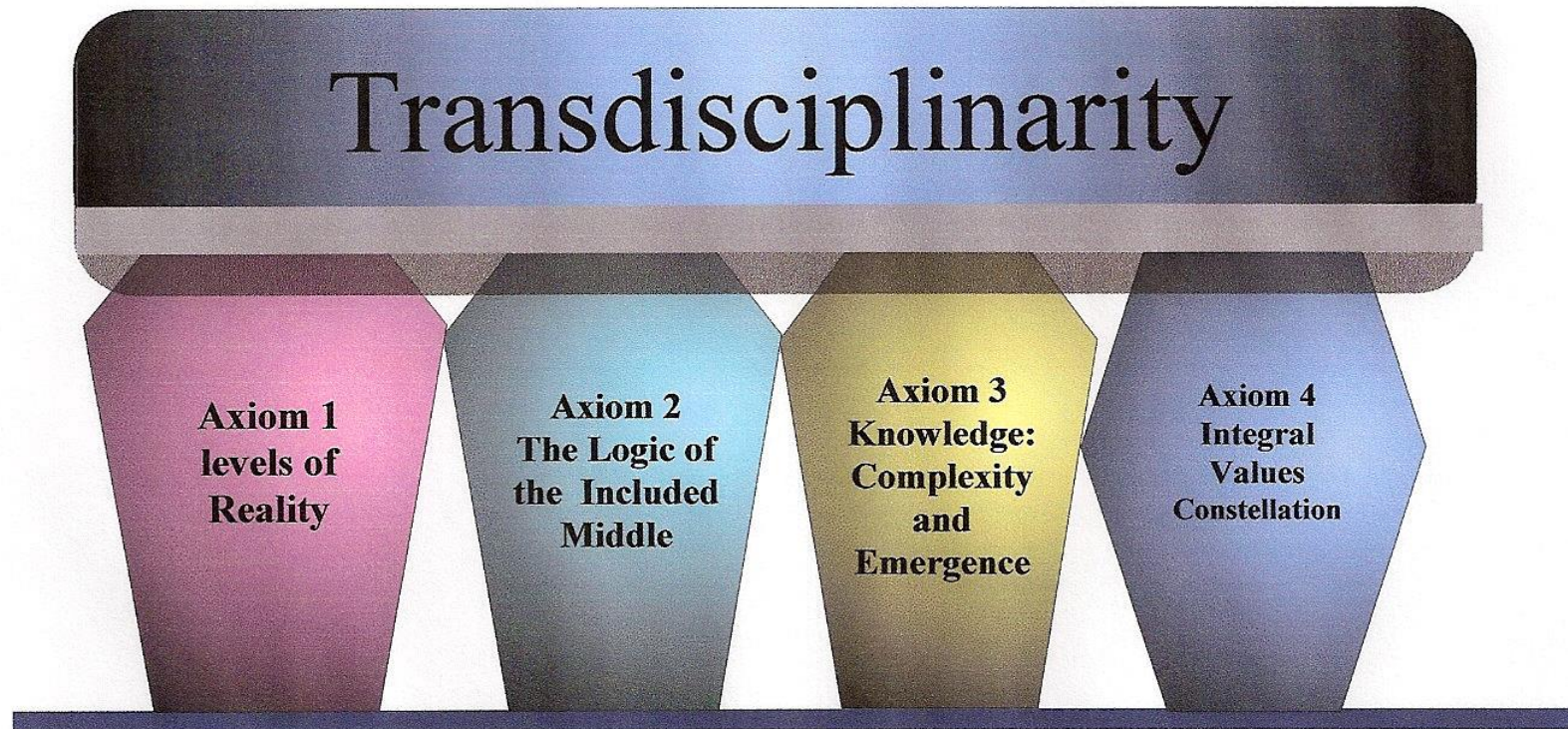


AXIOM 4 INTEGRAL VALUES CONSTELLATIONS IN ORDER TO PROBLEM SOLVE (ALSO AXIOM 1, LEVELS OF REALITY – *THE MEETING OF THE MINDS*)

Coherence - Need breakthrough (shared zone of non-resistance) to create new TD knowledge:
Subject is able to communicate with Object (different disciplines can talk to each other!)



Four Pillars (Axioms) of Transdisciplinary Methodology



**I INVITE YOU TO REMAIN OPEN TO THIS NEW APPROACH
TO CONDUCTING EDUCATIONAL RESEARCH AROUND
THE PRESSING PROBLEMS FACING HUMANITY**