OTSM-TRIZ: Axioms of OTSM-TRIZ

"Jonathan Livingston" Project

© Nikolai **KHOMENKO**

E-mail: jl-project@usa.net

http://www.trizminsk.org/lab

The best – the worst

Could you propose ***at least 5*** *things that produce only*

Positive Effects and JUST POSITIVE

and

opposite, ***at least 5*** *thins that produce the only*

Negative Effects JUST NEGATIVE

E-mail: JL-project@usa.net

"Jonathan Livingston" Project -

E-mail: JL-project@usa.net

Axiom of descriptions (models)

When we think about problem solving we have to use the description or models of Elements of the world but not Elements themselves.

Conclusion for the problem solving:

- Every description has limitations and is not true.
- There are unlimited number of descriptions for every particular Element of the world.
- Every problem is just a description of a problem situation. To simplify a problem solving process we have to change the description.
- We have to develop the set of general models in order to use them for finding specific specific concept solutions for specific problems.

E-mail: JL-project@usa.net

Three types of axioms

1. Main axiom OTSM-TRIZ – Axiom of descriptions.

2. Axioms of world vision – *description of the world from OTSM-TRIZ point of view.*

3. Axioms of thinking process – *main points of thinking process description. From OTSM-TRIZ point of view.*

E-mail: JL-project@usa.net

Axiom of Process

Every element must be considered as a process

Conclusion for the problem solving:

- For the effective problem solving we have to investigate resources of time: before, during and after conflict.
- We must consider every element as a part of historical process.
- We have to investigate how features (property) of the element or its parts (subsystem) can be changed during certain period of time.

E-mail: JL-project@usa.net

Axiom of Impossibility

When we think about problem solving we have to use descriptions that look impossible at first.

Conclusion for the problem solving:

- On certain stages of the problem solving process we have to forget about real word and let go of our imagination.
- On other certain stages we have to use “Golden Fish” Method for eliminating everything that seems impossible.

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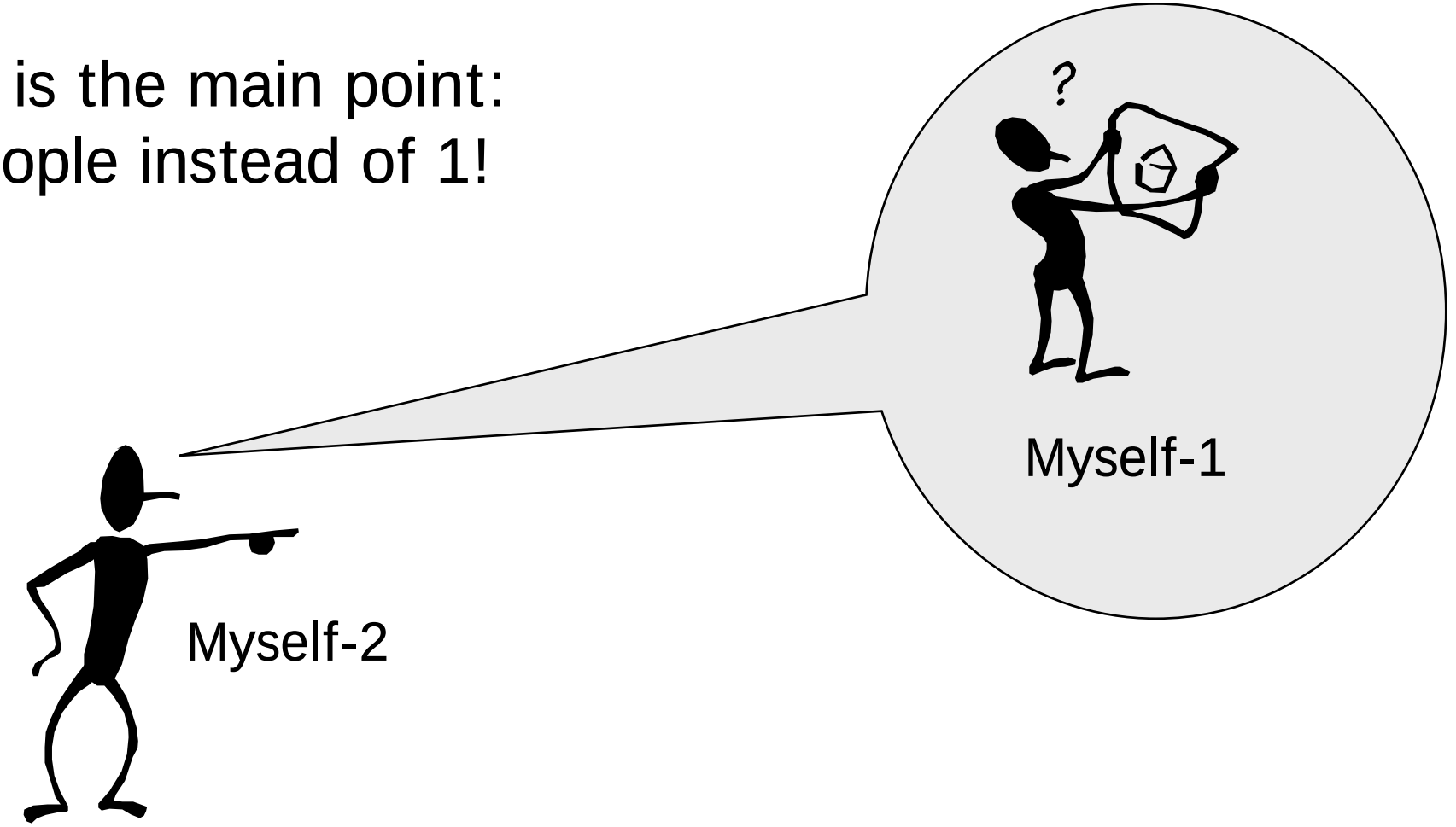
Axiom of Reflection

This is the main point:
2 people instead of 1!



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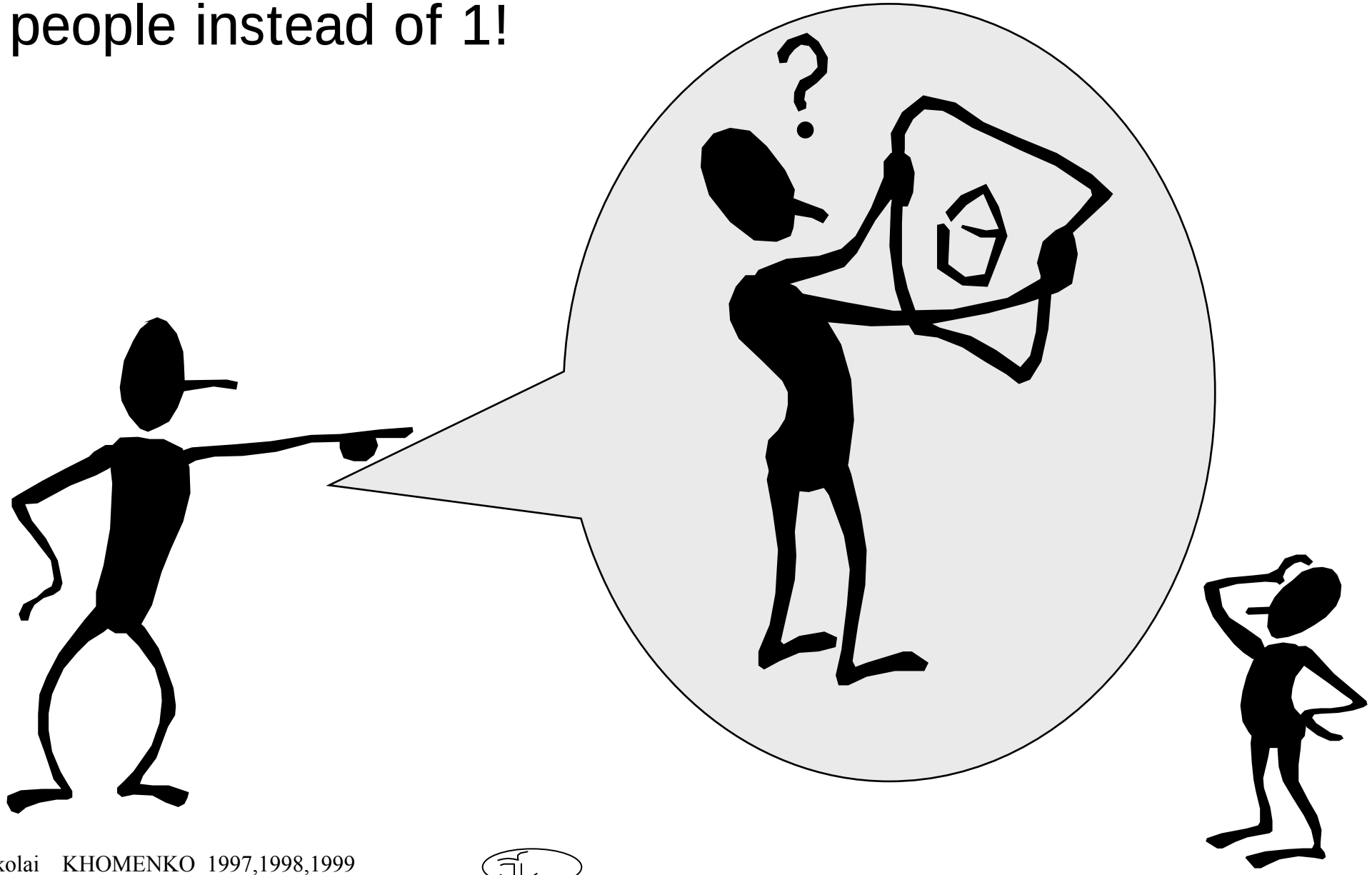
This is the main point:
3 people instead of 1!



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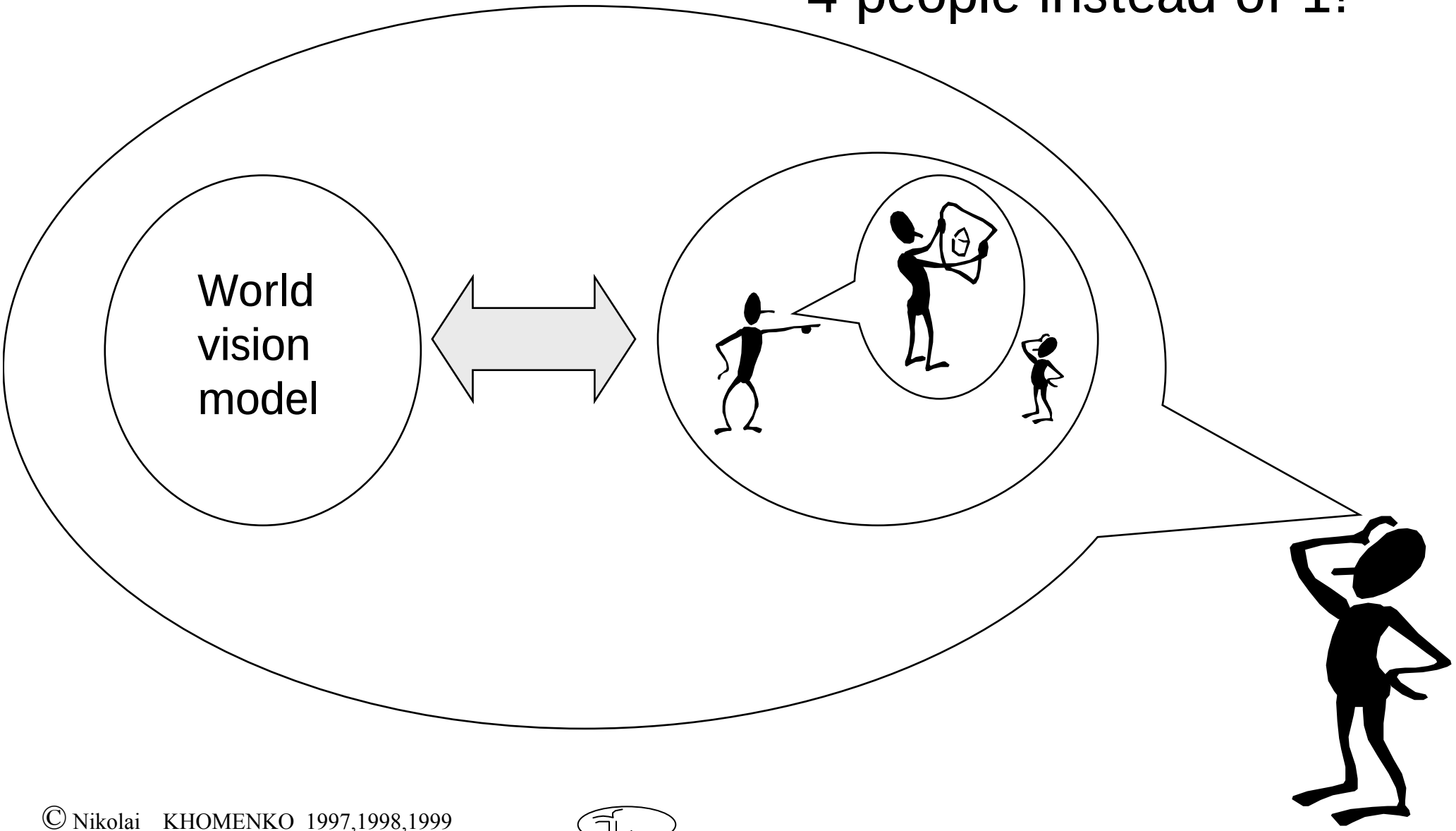
This is the main point:
4 people instead of 1!



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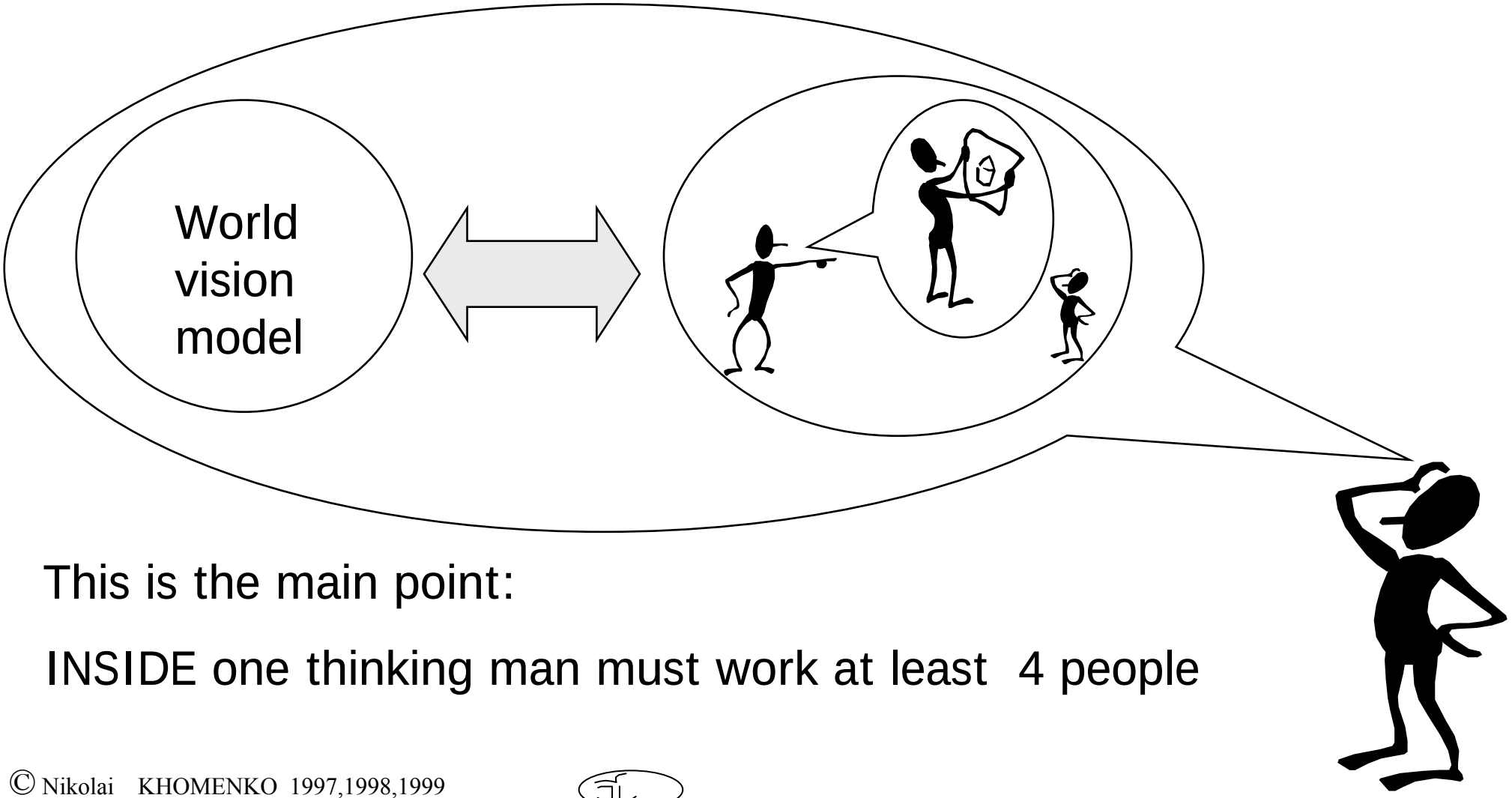
Axiom of Reflection



This is the main point:

INSIDE one thinking man must work at least 4 people

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Axiom of core of problems (1)

Problem appear as contradiction between objective laws that produced particular situation and our needs in this particular situation.

Conclusion for the problem solving:

- We have to look for those general objective laws that are cause of the particular problem.
- First of all our solution must be based on this objective laws.

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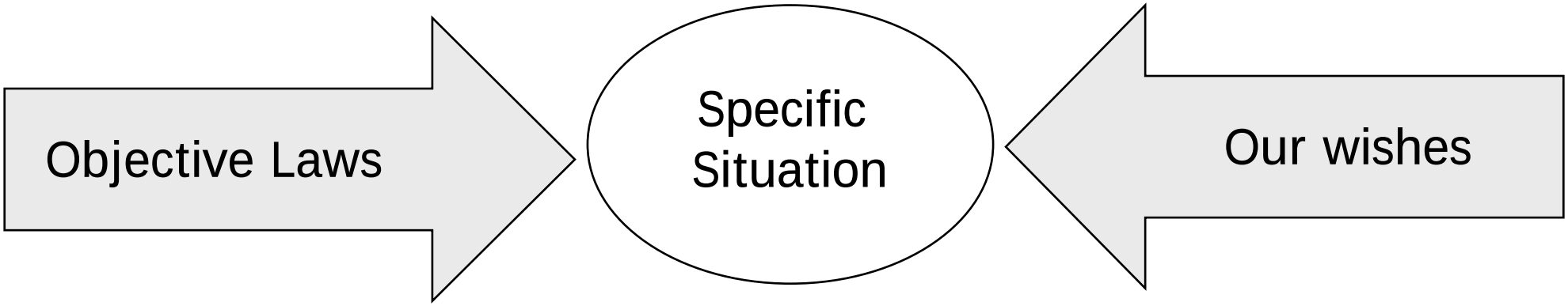
Axiom of core of a problems (2)



Contradiction

Between **our wishes** in specific situation and

Objective laws that produce this specific situation

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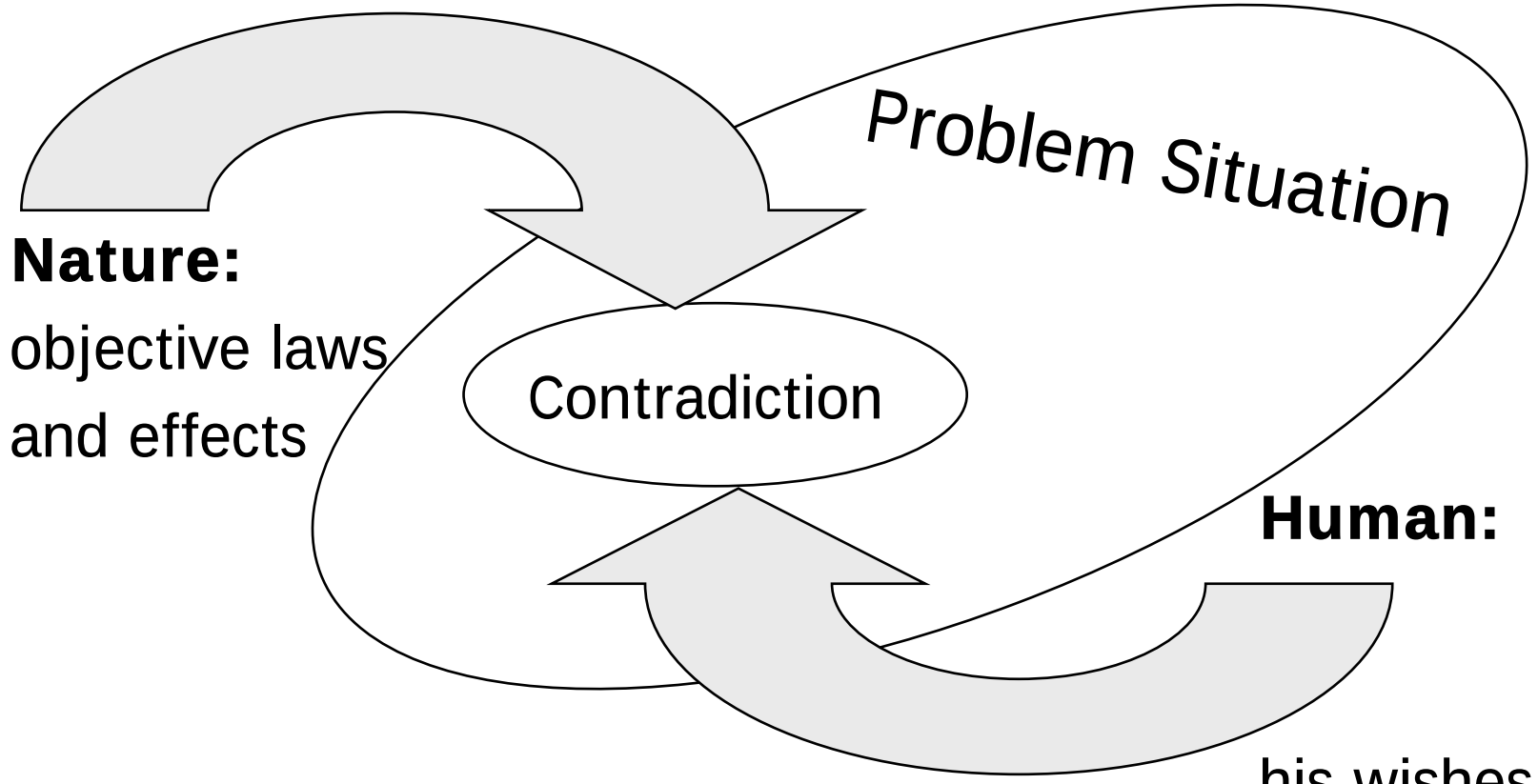
Art of Victory in problem solving: Axiom of core of a problems (3)



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Example of contradiction

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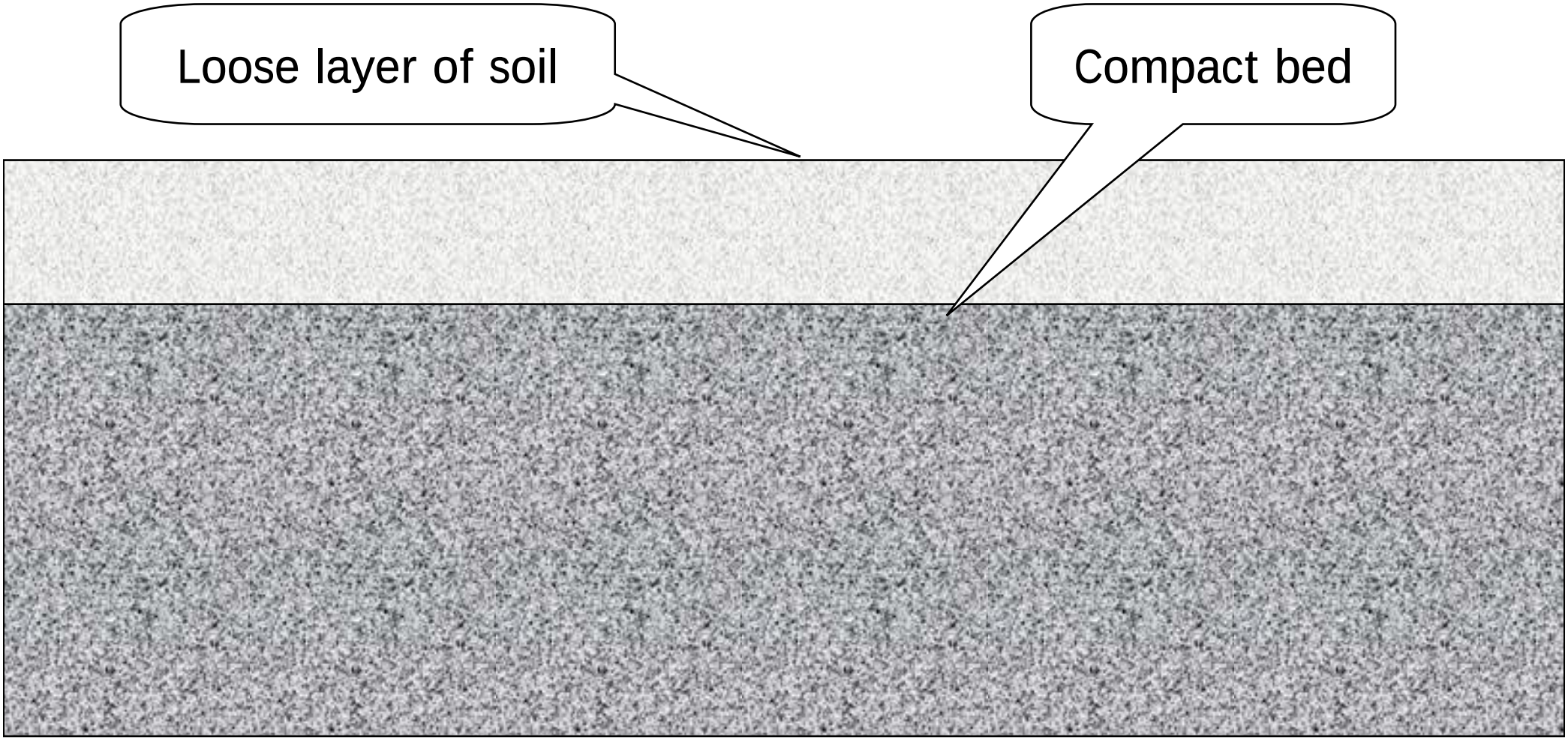
We need machine for Soil tilling



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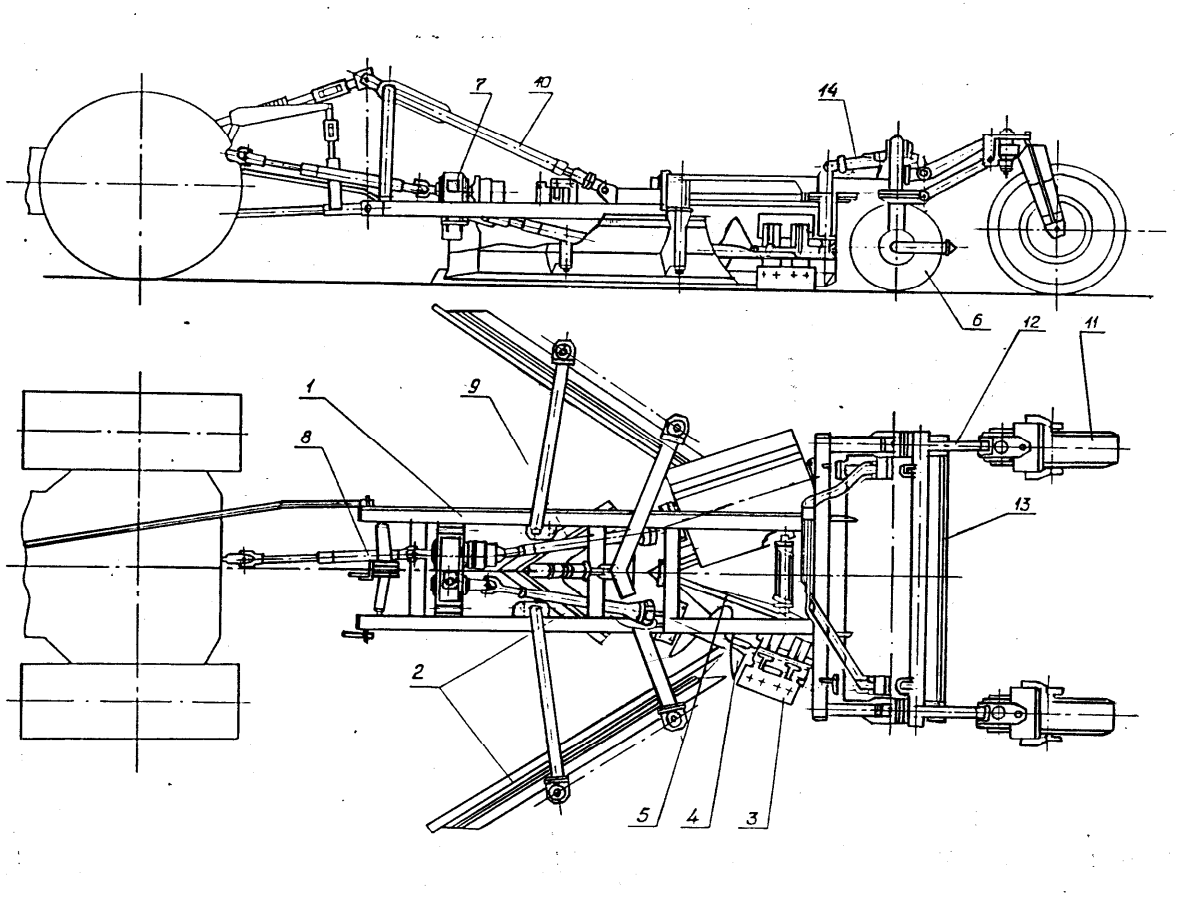
Passive-Active land Leveler

Before using TRIZ



1. Frame
2. Earthbords
3. Thrower
4. Auger
5. Soil flow divider
6. Roller
7. Gearbox
8. Drive cardan shaft
9. Active tool drive shaft
10. Arm
11. Transport run
12. Hydraulic system
13. Cover
14. Hydraulic cylinder

Machine was designed to level the field surface

Length -5200 mm

Masse-2400 kg

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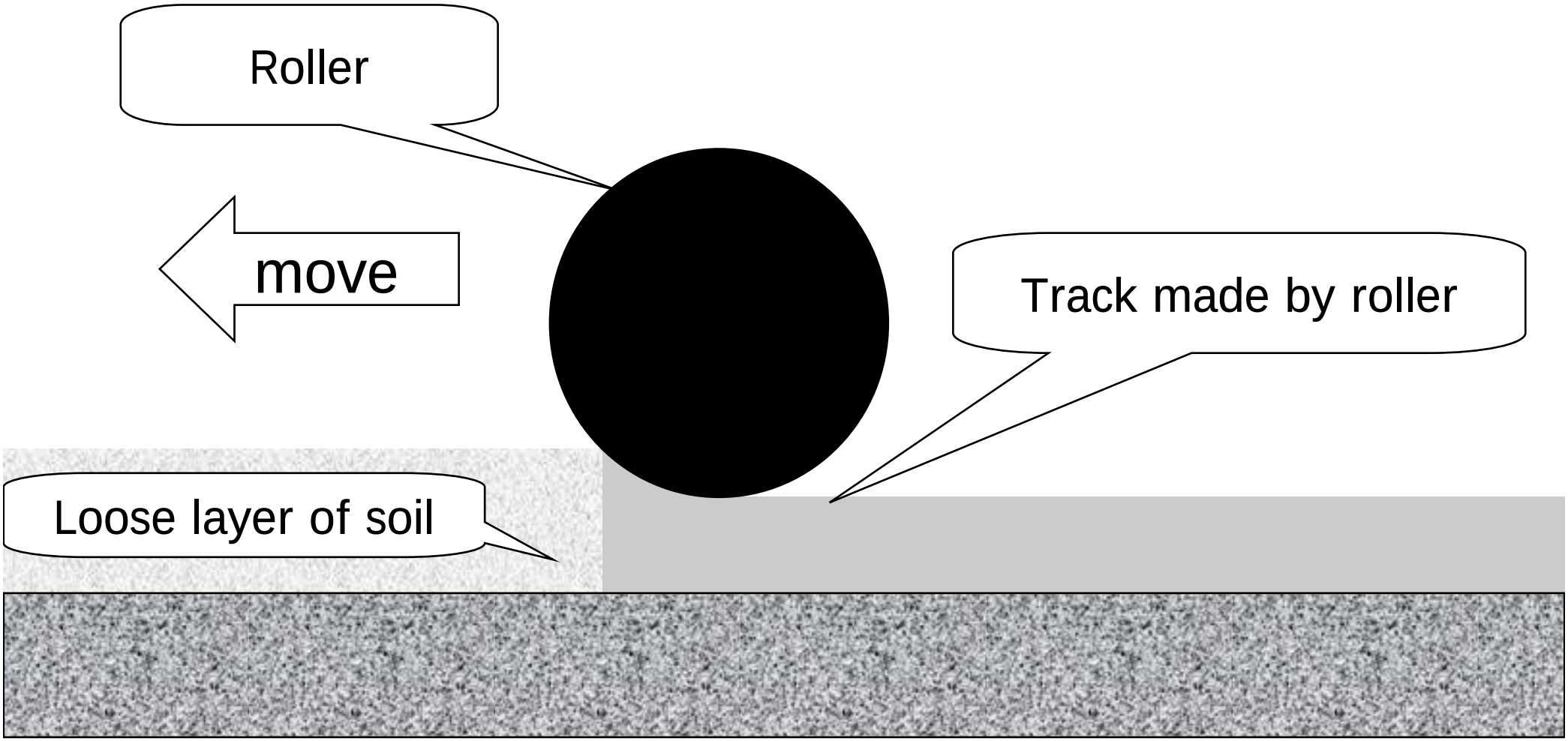
Problem of roller (1)



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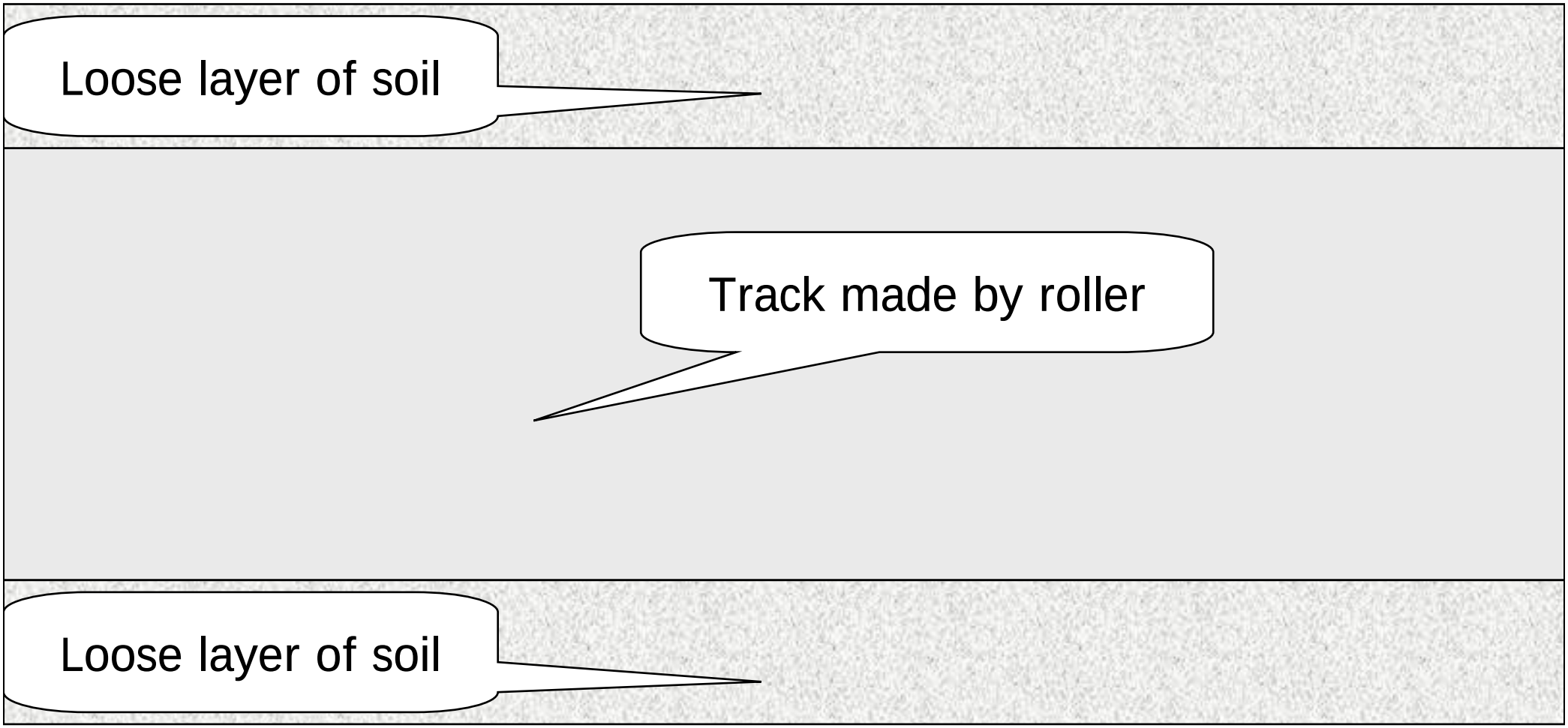
Problem of roller (2)



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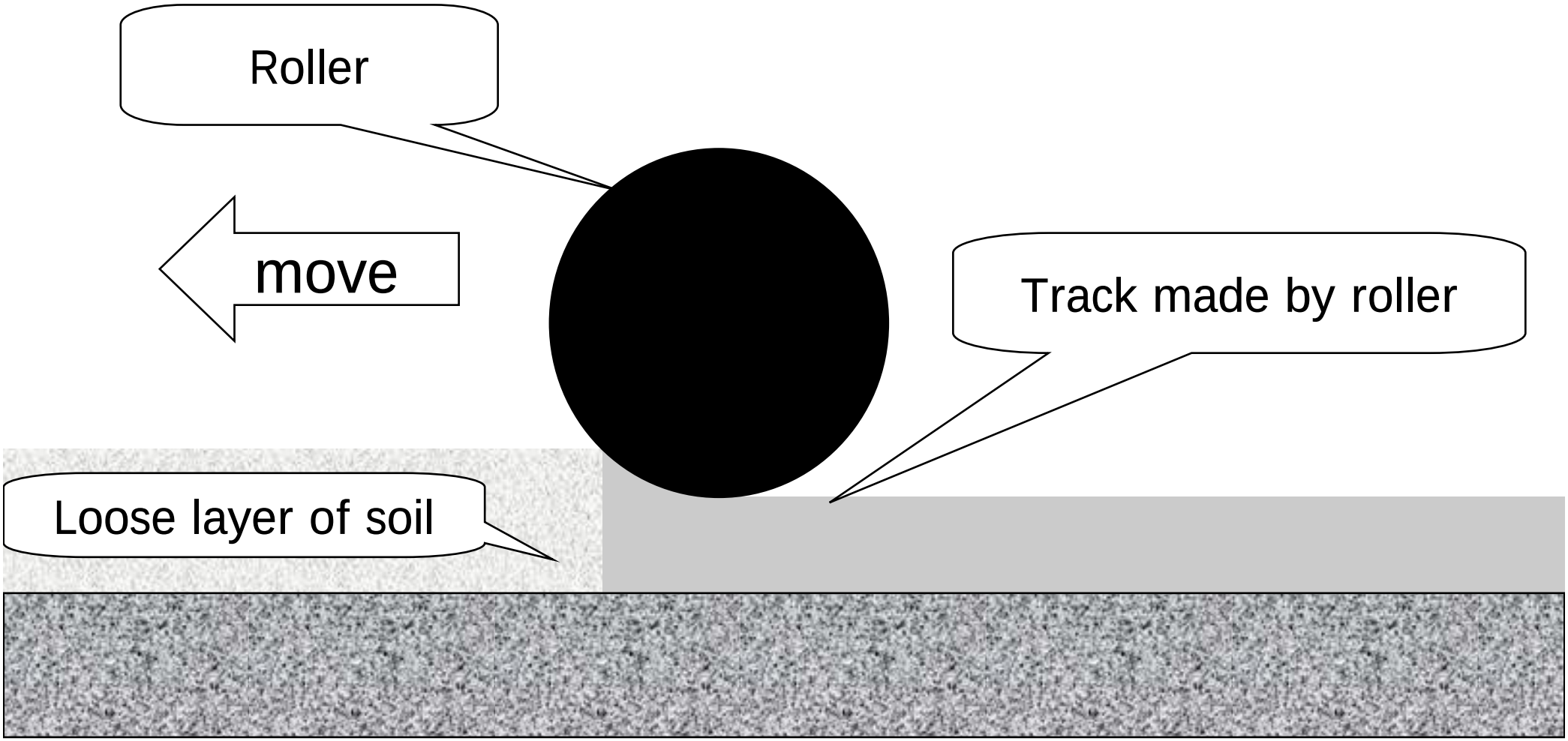
Contradiction : Roller

Must be here (Why?) and must be absent (Why?)



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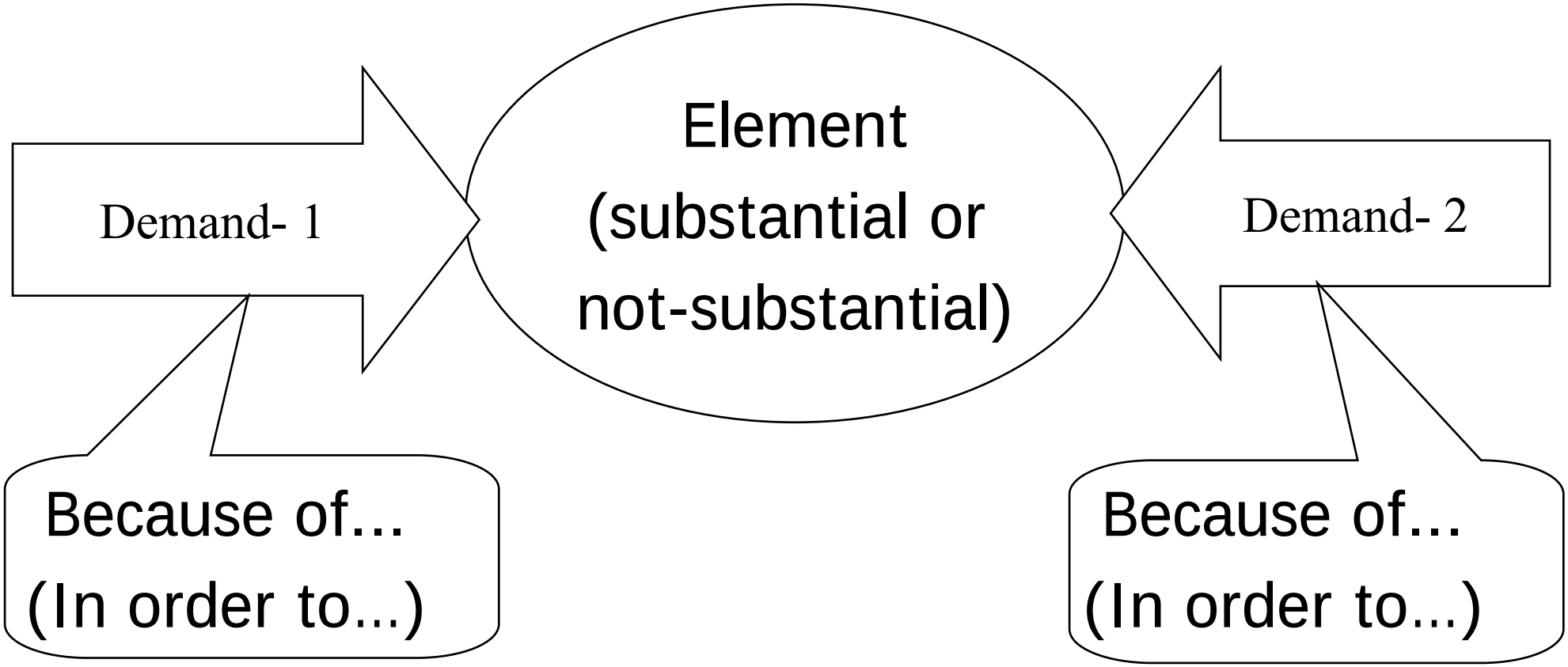
Five components of contradiction: fill in the form please….



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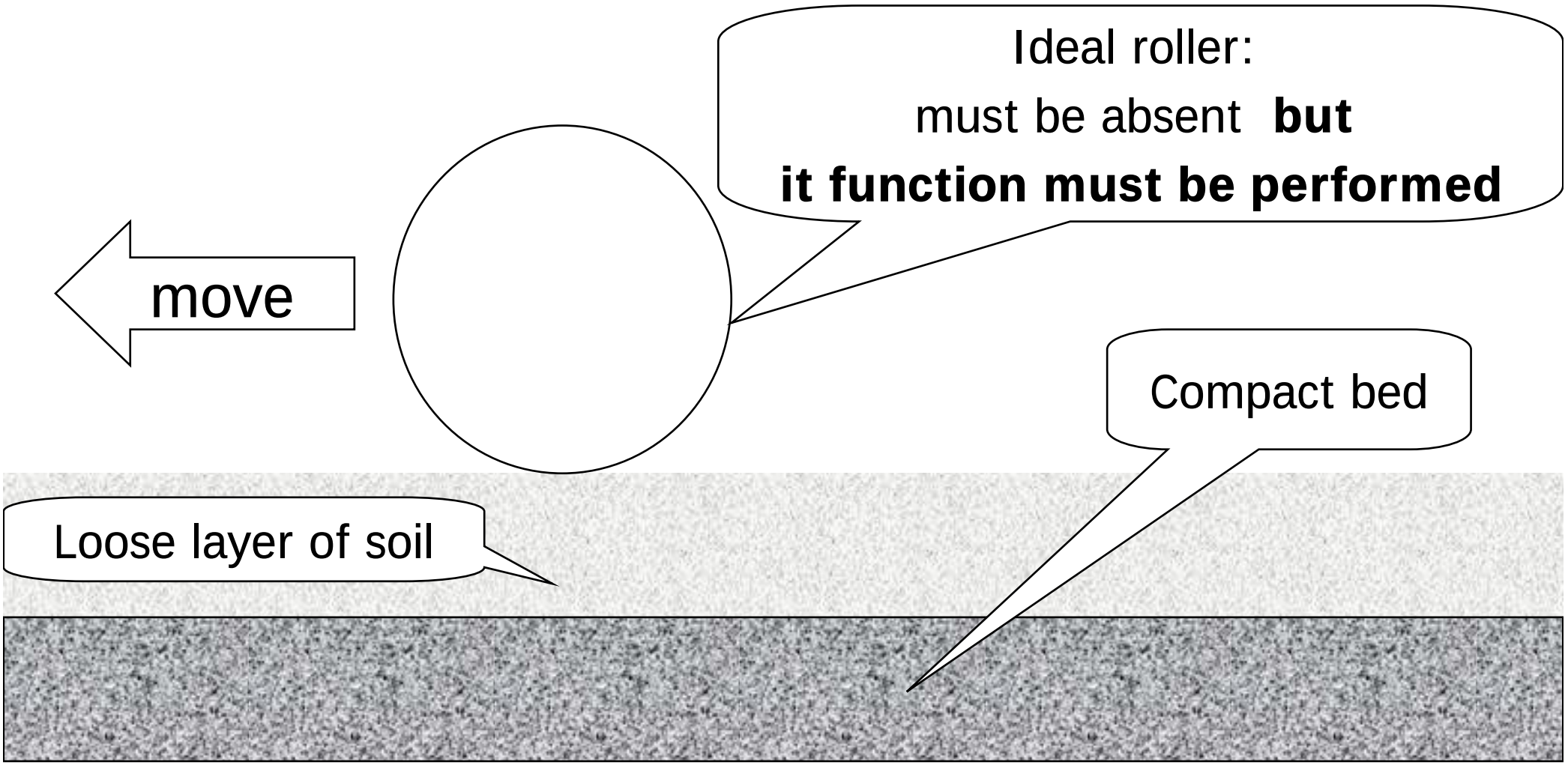
Problem of roller (3): Ideal Final Result



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And another general rule, - Idea of specific situation, - give us direction and restriction: first of all we have to use recourses that we have in the initial situation.

But we have just cylinder that rotate… It is a process….

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REFLECTION.

Now we have got from TRIZ lot of general rules for solving our specific problem. It is time to stop and summarize all of them

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It is general yet but already more specific concept solution:

We have to use rotation of our cylinder in order to make support from time to time, in order to have support in certain points but not on the all surface of soil or cylinder….

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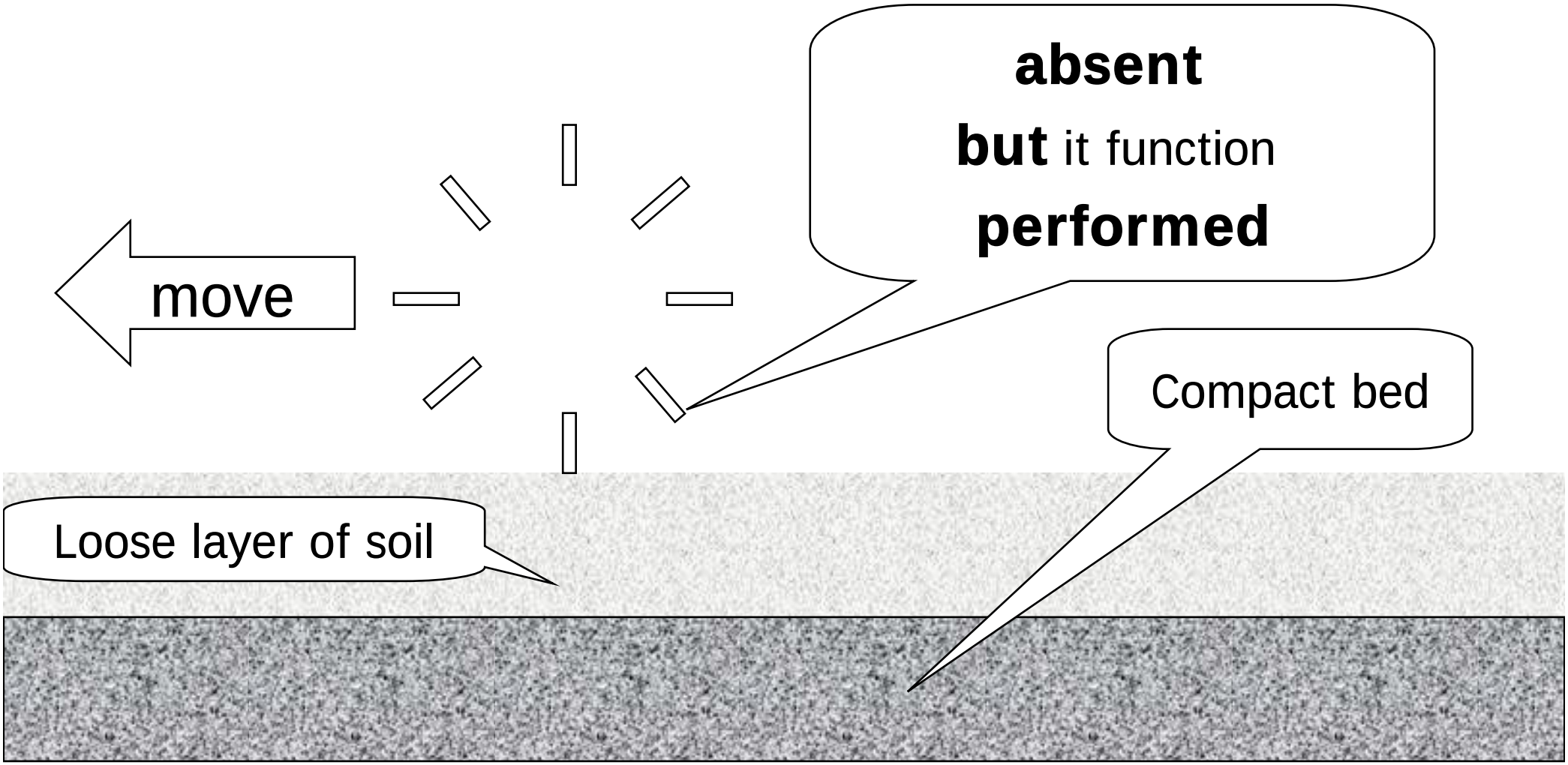
TRIZ
is a tool
for
thinking
but
not instead of thinking

G. Altshuller

Problem of roller (4)



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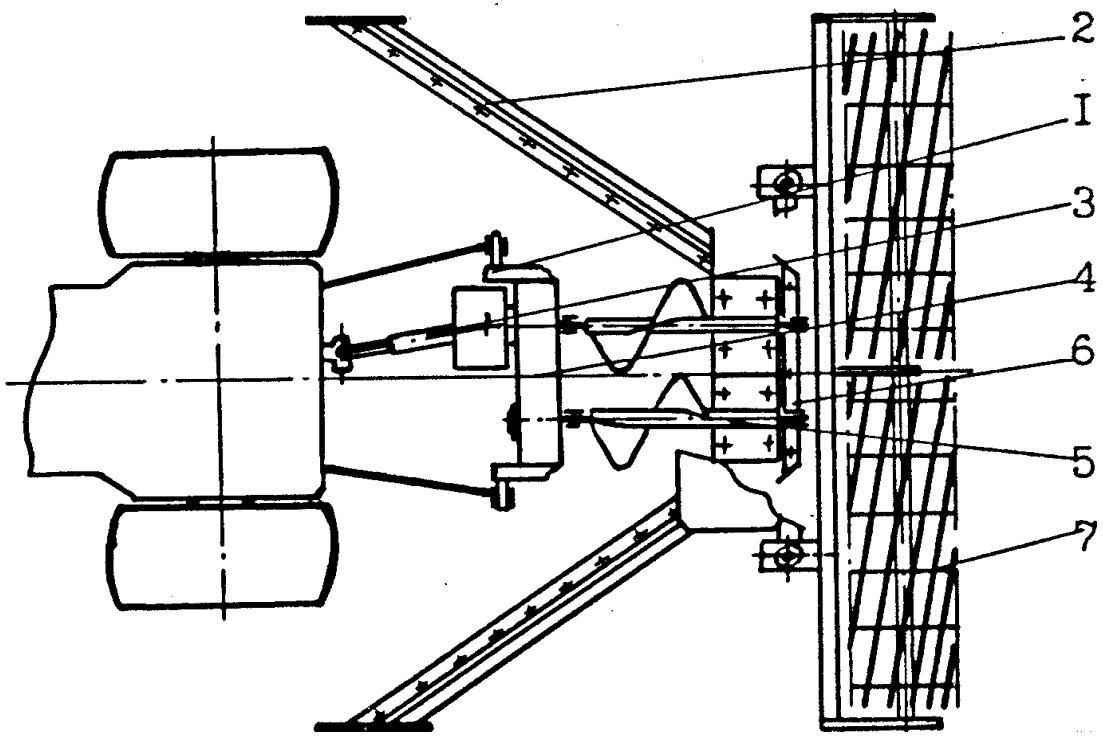
Rotor Tilling Machine

After using TRIZ



1. Frame
2. Earthbords
3. Drive cardan shaft
4. Gearbox
5. Auger and Thrower
6. Knife
7. Bladed roller

Machine was designed to form a continuous leveled compacted seed bed at the depth of seeding covered with a loose mulched layer of soil

Length -3050 mm

Masse-1450 kg

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E-mail: JL-project@usa.net

As you can see

Axioms looks like too much general rules, but they are helpful for finding specific concept solution.

E-mail: JL-project@usa.net

TRIZ is

a set of general models

we use as a system

for thinking in order to find

specific solution

for specific problem

Axiom of the world of unity

Our world is unified system that exists according to general objective laws.

Conclusion for the problem solving:

- We have to look for those general objective laws and use them for the problem solving.
- Those objective laws are the variety of general knowledge and can be used for every kind of system.
- It doesn't matter what kind of system we deal with - substantial system or non-substantial system

E-mail: JL-project@usa.net

Axiom of the world of disunity

Every system is a separate part and exists according to particular objective laws.

Conclusion for the problem solving:

- We have to look for those particular objective laws and use them for the problem solving.
- Those objective laws are the variety of particular knowledge that is used for a particular kind of system.

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Axiom of Connectedness between the world of unity and the world of disunity

General objective laws are connected with particular objective laws by resources that particular system is built of.

Conclusion for the problem solving:

- For the effective problem solving we have to investigate resources and their features .
- We have to investigate how features of the resources influence on the objective laws' interaction.

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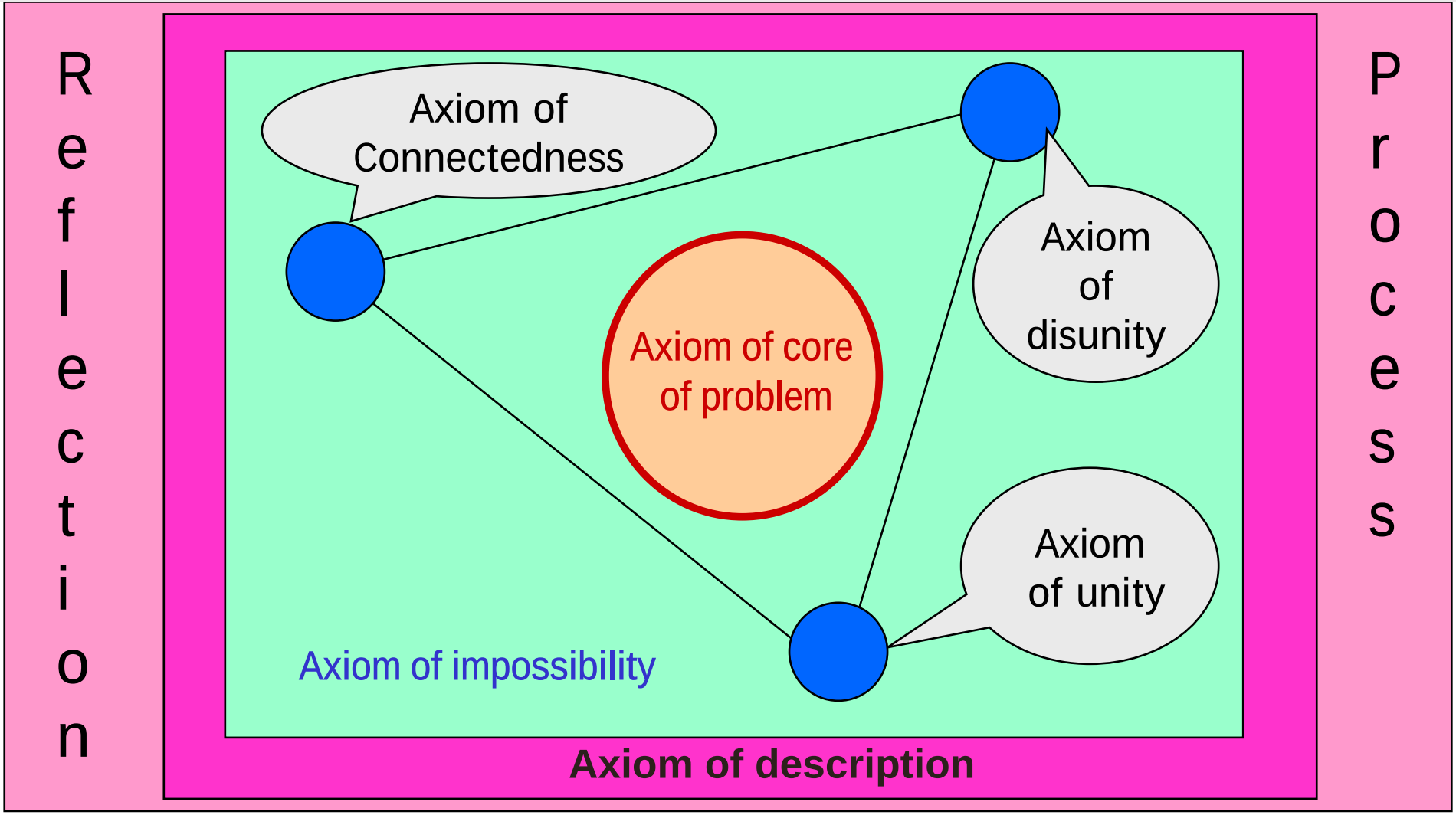
Axioms of OTSM-TRIZ



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E-mail: JL-project@usa.net

Axioms show us
limitations of the domain
where OTSM-TRIZ approach
is effective
and
give us most general rules for
case there aren't any detail rules

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E-mail: JL-project@usa.net