

TRIZ as the Way of Life?

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1. Preface: TRIZ as the Way of Life?

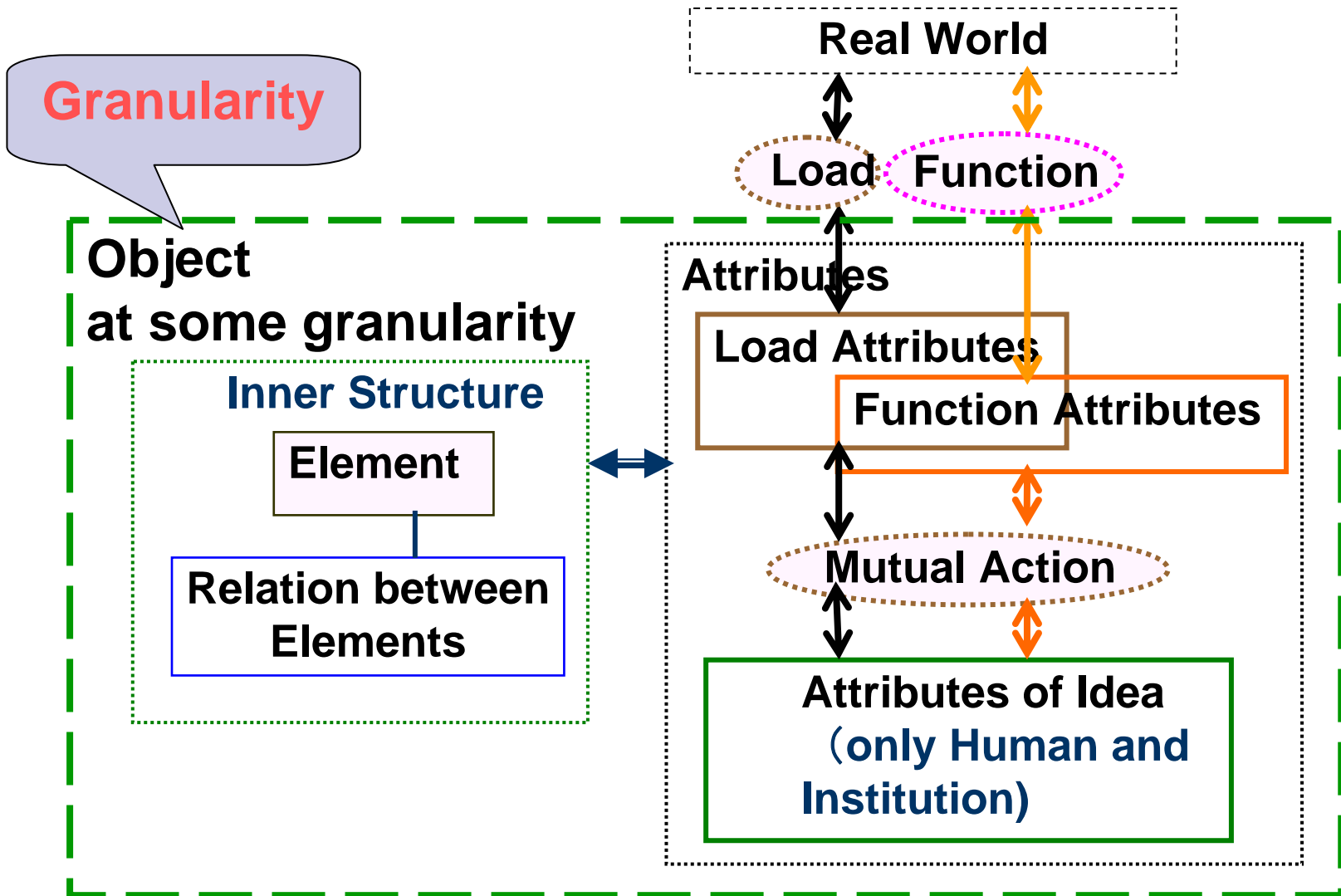
- Is TRIZ a method of technology?
- Is TRIZ a method of change?
- TRIZ is thought and method applicable to every area
- Reconsider the way of life based on Nakagawa's **Essence of TRIZ in 50 Words** [7] ; “TRIZ provides a dialectic way of thinking, i.e., to understand the problem as a system, to image the ideal solution first, and to solve contradictions.”

2. Structure of the World To Live

Object, Granularity^{[3][4]}

- What compose the world?
- Kinds of Objects which is something to be recognized
 - 1. **Matter** : System Object
 - 2. **“Idea”** : System Object
 - 21. Information of individual or common notion which is taken by physical entity
 - 22. My idea
 - 3. **Movement or Action** : Process Object
- **Granularity** = Size, magnitude or scope in space and/ or time
- **Density** = Density of inner structure, Degree of abstraction

Structure of Object



Technology and Institution Make the World

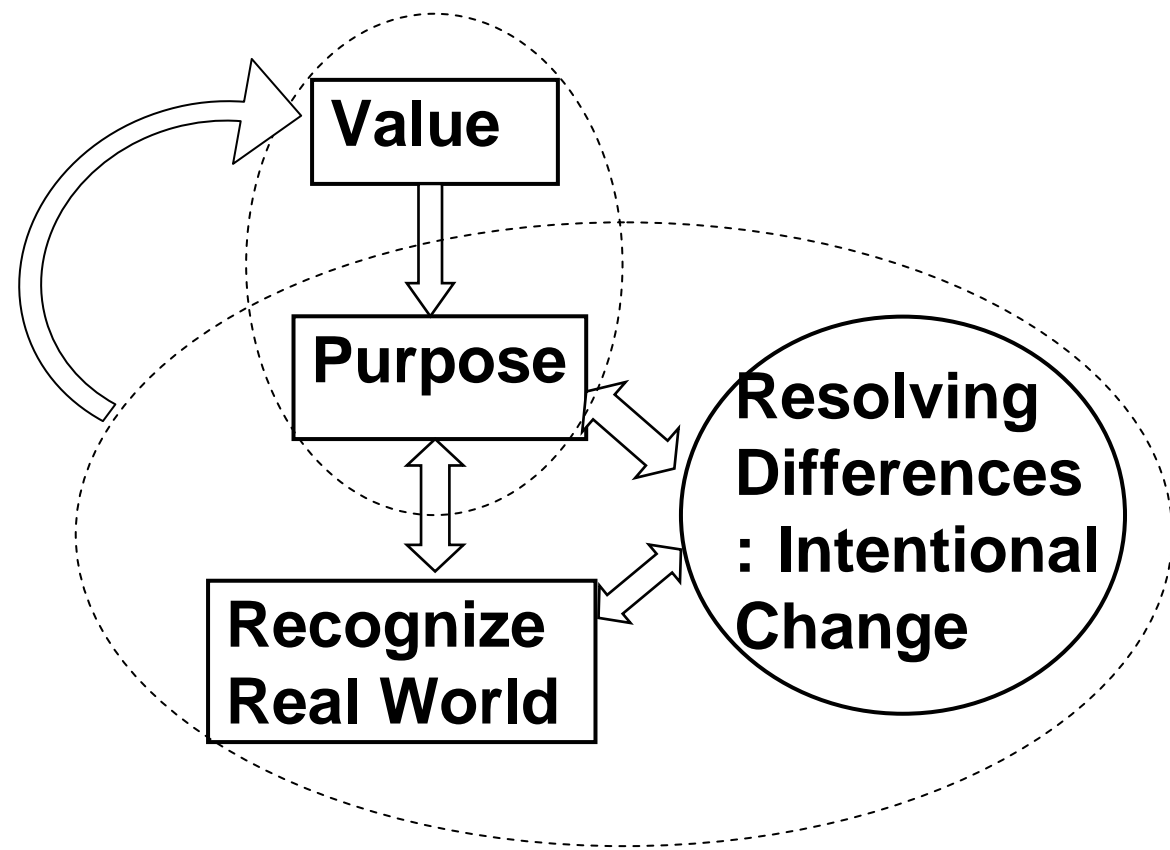
- **Technology**: Things between person and nature
- **Institution**: Common Idea between person and community
 - 1. Person and thing take common idea
 - Institution of Exchange (e.g. language, money)
 - 2. Person takes Common Idea:
 - Common Subject (e.g. thought, philosophy, religion, moral)
 - System Institution (e.g. nation, corporation, family)
 - Social Institution (e.g. law, politics, economics)

Change , Technology, Institution

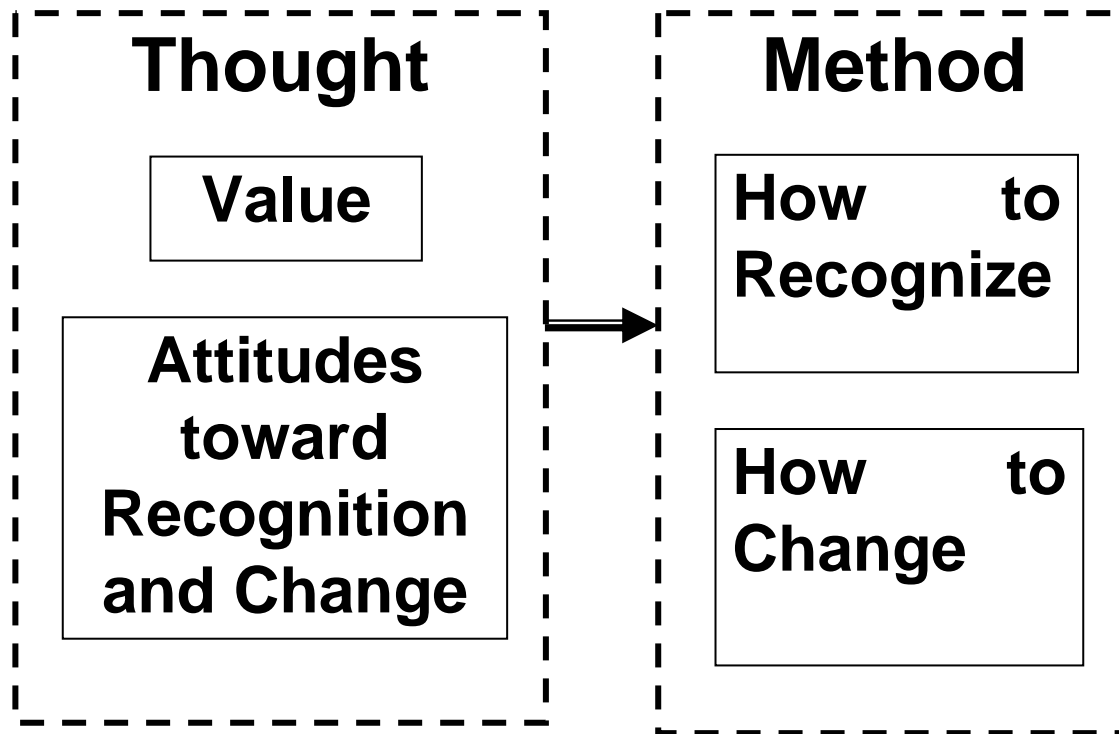
- **Change** is an assemblage of
 - intentional change (Resolving Differences)
 - unintentional change
 - autonomous change: contradiction
- **Technology** is conformed mainly to the law of movement of matter without purpose
- **Institution** is conformed to the law of movement of community to realize purposes grasped at granularity as autonomous

3. Structure of the Way of Life

Relation between Value, Purpose, Real World and Resolving Differences



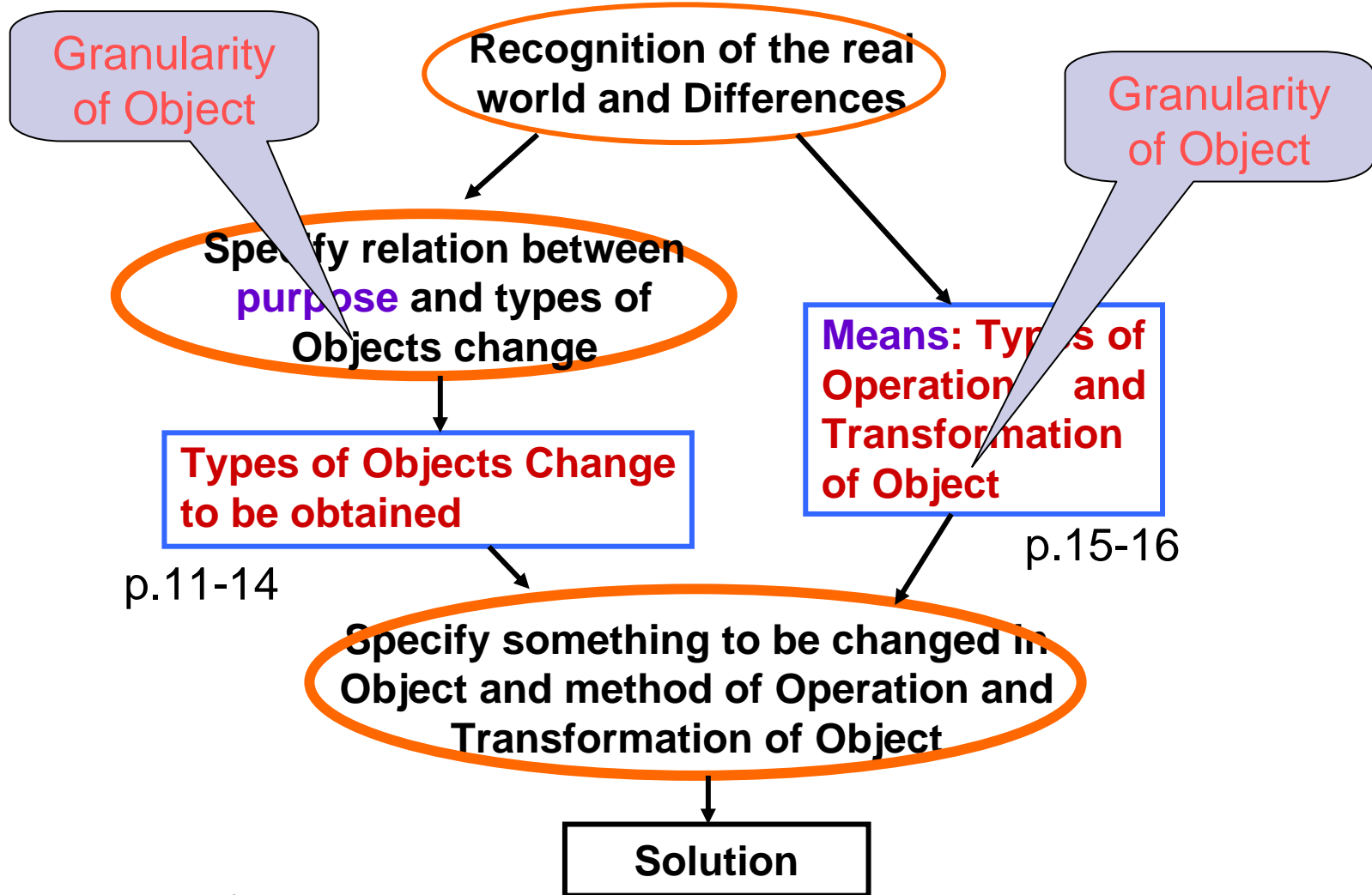
The Way of Life: Thought and method



Structure of Way of Life

- Generally (Function vs Structure), Function (Granularity of Object vs Function), Structure (Granularity of Object vs Relation or Logic between Sub-Objects)
- Visualize each action
- **Recognition**: Decide function, **Granularity of Object**, and relation between sub-Objects
- **Resolving Differences**: Decide Purposes, **Granularity of Object**, and Logic of change of sub-Objects
- Granularity of Object is most decisive

Resolving Differences



Types of Object Operation and Transformation

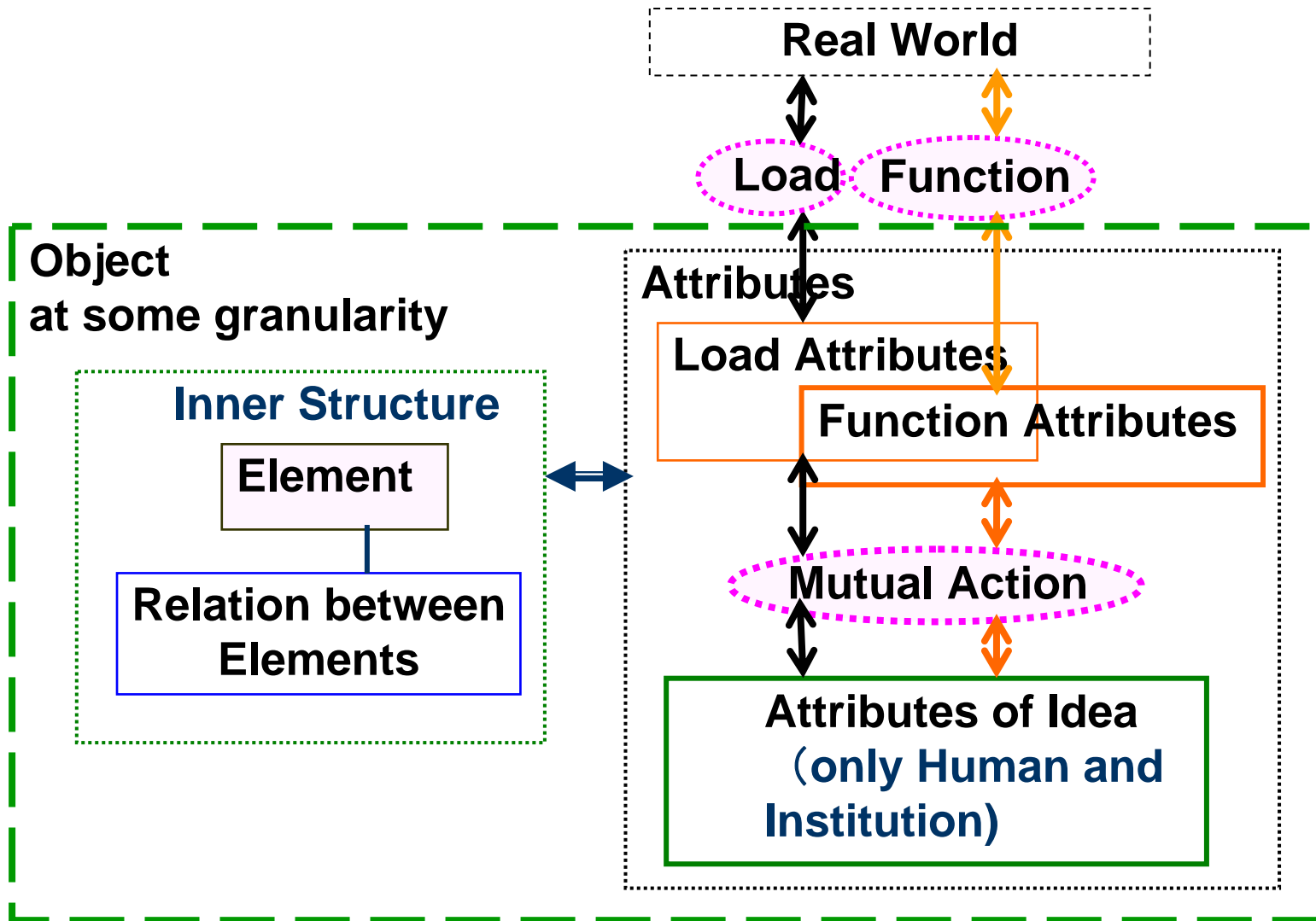
- **Object Transformation Principle D** [3] [4]

- **Change of inner structure consisting of elements and the relation between them** can change plural attributes of Object, generate new Object and delete Object itself from inside.

- (an expansion of the law of the mutual transformation of quantitative and qualitative changes)

- **Basically Principle U,P,M change attributes from outside**

Structure of Object





Object Transformation Principle U [3]

Object 1 and movement can change attributes of Object 2 or Object 2 itself.



Object Transformation Principle P [3]

Object 1 and Object 2 can change attributes of movement or movement itself.



Object Transformation Principle M

Object 1, Object 2 and movement continue to act each other.

Types of Object Operation

- **Object Operation R_[3]**: We can bring in, bring out or replace Object or its element of existing single Object or Object in “Object 1- Process Object- Object 2 model” freely regardless they are existing or not.

Types of Objects Change within Two Attributes and Objects and TRIZ 1 [4]

Types of Objects Change		Means to realize in TRIZ
1) Change number of Object 0/ 1, 1/ 0	11) Generate Object	Principle 24. Intermediary
	12) Delete Object	Principle 34. Discarding
2) Handling one attribute	211)221)231) Mutually exclusive conditions of two opposites lead to movement	“Physical Contradiction” in TRIZ: Type 1
	212)222)232) Two opposites can be separated	Separation of opposites in TRIZ: Type X
213) One value don't change	223) Not qualitative change of attributes	Many Principles in TRIZ
	23) Qualitative change of attributes 233) 2331) Delete attributes	Principle 34. Discarding
	2332) Transformation of attribute to the other attributes	(Transformation of attribute to be studied)
3) Change number of attributes 1/ 2, 2/ 1	31) One attribute to two attributes 311) Add attribute	Principle 6. Universality Principle 25. Self-service, others
	312) Segmentation of attribute	Principle 1. Segmentation
	32) Two attributes to one attribute 321) Delete one of the two	Principle 2. Taking out Principle 34. Discarding
	322) Two merge into one	Principle 5. Merging

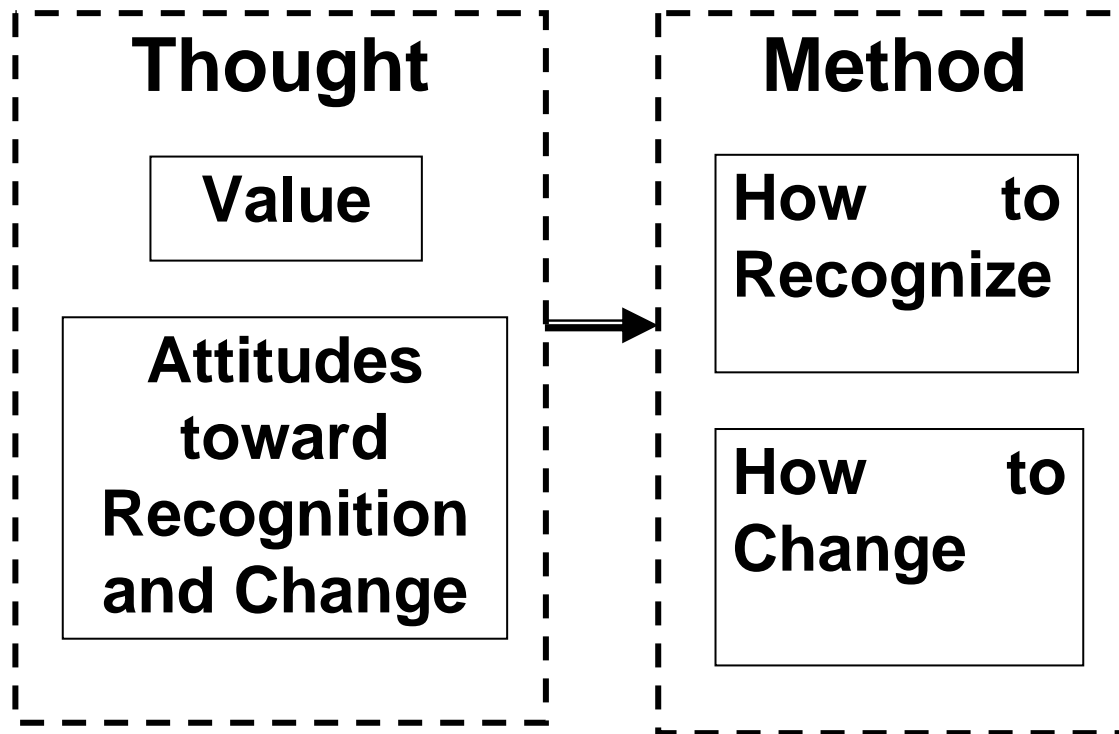
Types of Changed Object within Two Attributes and Objects and TRIZ 2 [4]

4) Handling two attributes	41) No change of attributes	Type Y
	42) Not qualitative change of attributes Meet two values of requirements simultaneously	“Technical Contradiction” in TRIZ: Type 2
	43) Qualitative change of two attributes to the other two attributes	(Transformation of two attribute to be studied): Type 3
5) Change number of Object 1/ 2, 2/ 1	51) One to two	Principle 1. Segmentation: Type 4
	52) Two to one 521) One of the two extinguishes	Principle 34. Discarding
	522) Two merge into one	Principle 5. Merging, Delete contradiction by merging opponents: type Z
6) Handling two Objects	Same as 4)	

4. Ideal Way of Life

- Ideal Way of Life is
- to be modest about fact including existing idea,
- to believe in nothing, [3]
- to seek for value and method of realizing value criticizing existing idea and
- to continue to change myself, others and outer world simultaneously.

Thought and method



41. Continuous Change

- No Perfect Recognition and No Perfect Method to Change. Therefore,
- Continuous Action or Change is important not result
- Thought that bring about Change is important
- Method that deal with Change or Movement is important

42. Criticize Existing Idea

- For Better Change,
- Continue to verify Input and Output,
- Be modest about fact including existing idea,
- Believe in nothing,
- Continue to criticize existing idea

43. Seek for Exhaustiveness of Objects and Complete Recognition

- Exhaustiveness of Objects and Objects Change: A classification into kinds of Objects and Objects Change as **Types** which cover the whole of Objects and Objects Change
- Criticize existing idea. Especially Dialectics, trend in evolution of Institution

44. Roots of Values

- **Objective Value:** Number of Life, Love, Liberty, Zero Load on Nature
 - Love is a sense of unity into history, nature, others and institution, and effort to enhance them
 - Liberty is an ability to recognize, judge and act
- **Subjective Value:** Modesty, Sincerity

5. Conclusion

- Ideal Way of Life based on fact: To be modest about fact, to believe in nothing, to continue to criticize existing idea and myself and to continue to enhance others and outer world simultaneously.
- TRIZ as the Way of Life?

References

- [3] Takahara Toshio: “A Method of Resolving Differences Based on the Concepts of Functions and Process Objects: Part 2”, The Third Japan TRIZ Symposium, <http://www.osaka-gu.ac.jp/php/nakagawa/TRIZ/eTRIZ/epapers/e2007Papers/eTakaharaTRIZSymp2007/eTakaharaTRIZSymp2007-071207.html>
- [4] Takahara Toshio: "The General Picture of TRIZ From the Viewpoint of Changing Objects — A Method of Resolving Differences Based on the Concepts of Functions and Process Objects Part 3—“, Japan TRIZ Symposium 2008 , <http://www.osaka-gu.ac.jp/php/nakagawa/TRIZ/eTRIZ/epapers/e2009Papers/eTakaharaTRIZSymp2008/eTakahara-TRIZSymp2008-090708.html>
- [7] Nakagawa Toru: “Essence of TRIZ in 50 Words”, <http://www.osaka-gu.ac.jp/php/nakagawa/TRIZ/eTRIZ/eTRIZintro.html>