

D-007

A Trial Study of Changing Two Objects – Reconsidering Object Part 7 –

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1. Preface

My purpose is to make a new formal theory or logic to innovate the world using TRIZ [5][6]. The requirements on the ideal theory of recognition and changing of the world are to handle every object to be recognized and to operate it in every possible types of changing object in every applying area including technology and institution. [1][2][3] The previous paper [2][3] showed the structure of changing one Object. This paper is a trial study of the changing two Objects.

2. Object, Structure of Object, Qualitative Change of Object [1][2][3]

Object is everything to be recognized which

consists of System Object and Process Object corresponding to “being” and “movement” respectively.

To recognize something in the real world is simply to recognize Object and the relations between Objects. An assemblage of Object expresses an Object World corresponding to the real world.

Object is an assemblage of many attributes (in broad sense) which consists of attributes (in narrow sense) and inner structure. Attributes (in narrow sense) play a role of function to the outside shown in Fig.1. Change of attributes in narrow sense can change Object qualitatively. And also change of inner structure can change Object qualitatively.

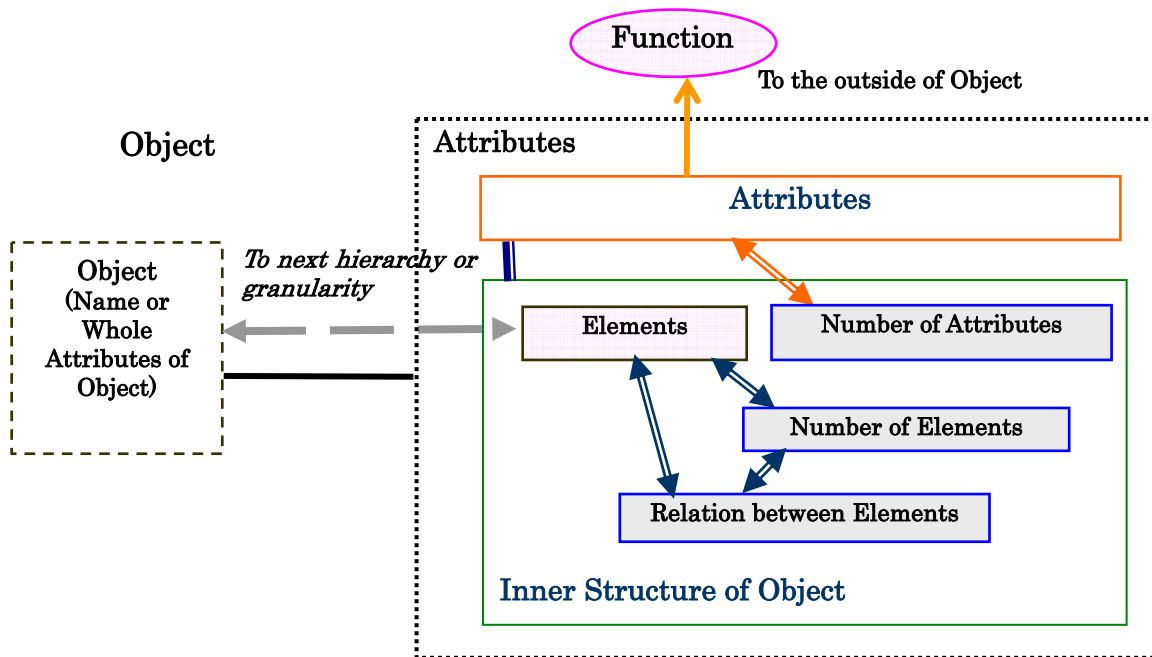


Fig.1 Structure of Object [3] (rewritten)

3. Structure of Changing Objects

Among other creatures human being is characterized as having the indirect way of recognition and operation via medium. Mankind is the existence that has been accumulating these

media. Thus until now we have had the vast accumulated indirect media called “culture” that is born by the technical means and common concept in the area of technology and institution respectively. [1]

Generating object is realized by the principle of intermediary which means to appear on the stage of Object World or by changing inner structure of Object to generate a new Object.

Example of the principle of intermediary is shown in Fig.2.

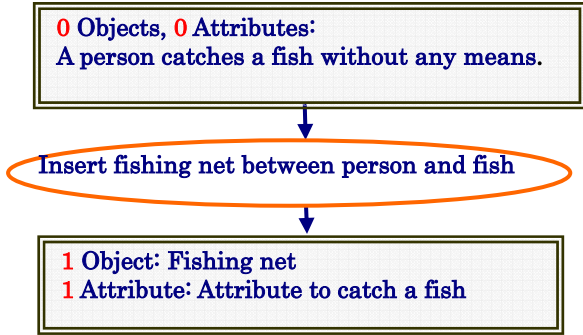


Fig.2 Example of the Principle of Intermediary

The principle of segmentation consists of segmentation of attributes and that of Object. The principle of merging consists of merging of attributes and that of Object.

Except these basic principles of changing number of attributes or Objects, there are many principles of changing attributes of Object. These principles are a part of the 40 principles in TRIZ. [5]

The history of human being is the accumulations of changing Objects. The basic element of these accumulations in human history is changing number of objects which consists of generation of a Object, segmentation of the Object into two Objects and merging them into one. In this elemental process we may see segmentation of attributes proceeds segmentation of Object at finer granularity. Or we may see merging of Object proceeds merging of attributes at finer granularity. This is shown in Fig.3. This is the simplified history of human being from the viewpoint of Object.

Changing Object consists of changing number of Objects including change zero to one and one to zero, changing number of attributes and changing attributes of Objects itself.

The previous paper [2][3] explained the form of changing Object within one Object. This form plays a part in the whole structure of changing Objects within two Objects in Fig. 1. But the previous papers did not tell how to change two Objects.

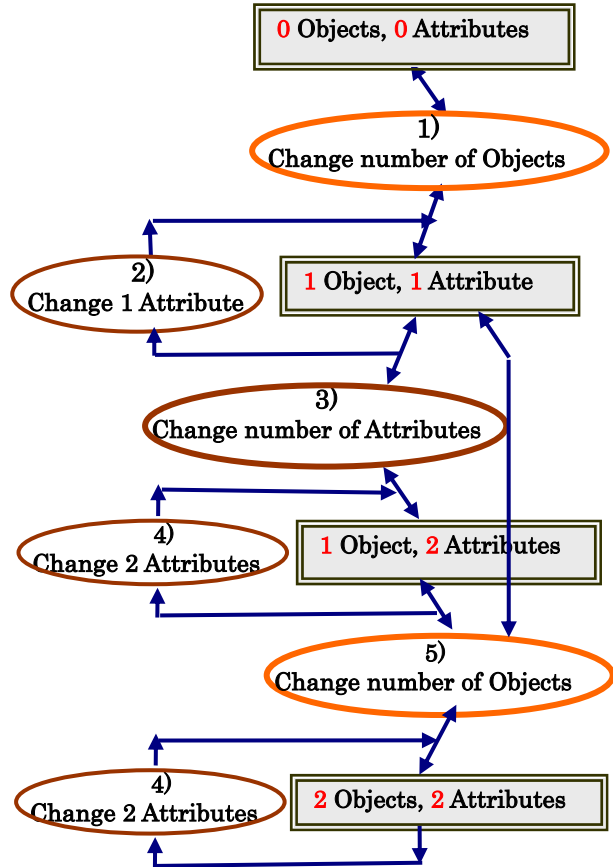


Fig.3 Structure of Changing Objects within Two Attributes and Two Objects

4. Structure of Changing Objects within Two Objects

So we want a form of changing Objects within two attributes and Objects. Here I try to enumerate several **types of changing Object within two attributes and two Objects**. This is a mixture of intentional change which I call Resolving Differences [3], unintentional change and autonomous change including contradiction in the area of technology and institution.

1) Change number of Objects: zero to one, one to zero

11) Birth of Object (by the principle of intermediary)

12) Deleting Object

2) Movement of one attribute

21) Movement without changing attribute

22) Not qualitative change of attribute

23) Qualitative change of attribute

- 231) Extinguish attribute
- 232) Transform to another attribute

3) Change number of Attributes: one to two, two to one**31) Segmentation into two attributes** (by the principle of segmentation)

311) Segmentation into two attributes by bringing in a new usage of Object different from a existing usage.

E.g. Adding exchange to useful thing having an attribute of usefulness can bring in a new attribute. [4]

312) Segmentation into two attributes by changing inner structure of Object

32) Merging into one attribute (by the principle of merging).**4) Movement of two attributes**

If there is no interaction between two attributes, we can treat this as changing one attribute.

41) Movement without changing attributes.

411) Movement that is not contradiction without changing attributes

412) Movement of contradiction without changing attributes: **Type 1 allowing contradiction to go on**

E.g. “It is a contradiction to depict one body as constantly falling towards another, and as, at the same time, constantly flying away from it. The ellipse is a form of motion which, while allowing this contradiction to go on, at the same time reconciles it” [4]

42) Movement with “not qualitative” change of attributes to meet each proper value

421) Movement that is not contradiction with “not qualitative” change of attributes to meet each proper value

E.g. Solving “technical or physical contradiction” in TRIZ [5]

422) Movement of contradiction with “not qualitative” change of attributes to meet each proper value: **Type 2 allowing contradiction to go on**

E.g. Solving “technical or physical contradiction” in TRIZ

43) Movement with qualitative change of attributes

431) Movement that is not contradiction with

qualitative change of attributes to meet each proper value
E.g. Solving “technical or physical contradiction” in TRIZ

432) Movement of contradiction with qualitative change of attributes

4321) Movement to transform attributes: Type 3 allowing contradiction to go on

E.g. Through early stage of exchange commodity the concept of exchange value emerged little by little. [4]

4322) Movement of contradiction with qualitative change of attributes to meet each proper value: **Type 2 allowing contradiction to go on**

E.g. Solving “technical or physical contradiction” in TRIZ

5) Change number of Objects: one to two, two to one**51) Segmentation of Object into two Objects** (by the principle of segmentation): **Type 4 allowing contradiction to go on.**

E.g. The differentiation of commodities into commodities and money [4]

52) Merging into one Object (by the principle of merging): This may be movement to delete contradiction.

5. An Example of Movement of Commodity

An example of movement of commodity that is a story of the birth of money is as follows. [4]

First stage

311) Segmentation into two attributes by bringing in a new usage of Object different from a usual usage.

E.g. One day without institution of money. A person has a useful thing. He or she wants to exchange this to another useful thing. Adding exchange as institutional activity not technical activity to useful thing having an attribute of usefulness can bring in a new attribute to be exchangeable. [4]

Second stage

4322) Movement to transform attributes

E.g. Through early stage of exchange useful thing, the concept of exchange-value emerged little by little. At the same time useful thing become commodity little by little. [4]

Third stage

51) Segmentation of Object into two Objects

E.g. The differentiation of commodities into commodities and money

“We saw in a former chapter that the exchange of commodities implies contradictory and mutually exclusive conditions. The differentiation of commodities into commodities and money does not sweep away these inconsistencies, but develops a *modus vivendi*, a form in which they can exist side by side.” [4]

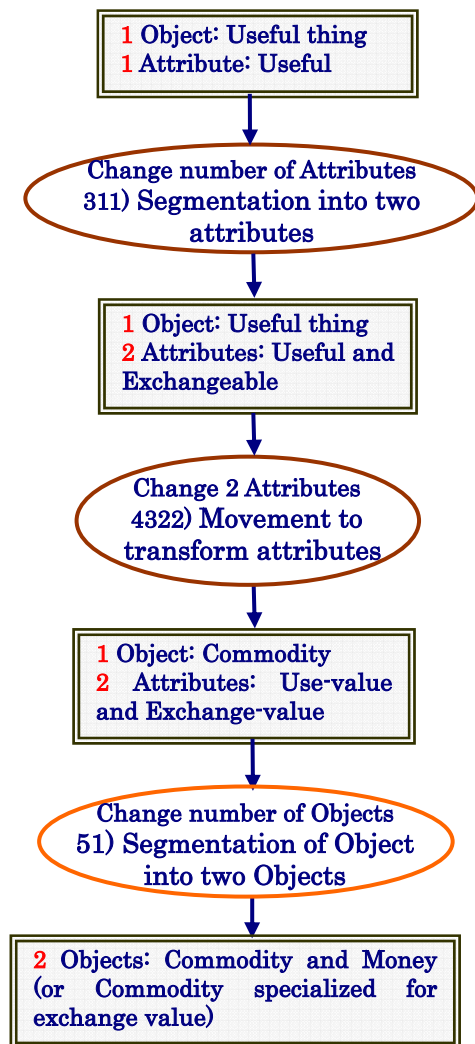


Fig.4 Example of Commodity [4]

6. Conclusion

Following the previous papers I showed the form of changing Objects within two attributes and Objects which is one of the elements of accumulations in simplified human history. This is a mixture of intentional change, unintentional change and autonomous change including contradiction and also a mixture of technology and institution which will be separated in further study.

I express my deep thanks to NAKAGAWA Toru and Ellen DOMB who read my previous paper [3] in The Third TRIZ Symposium in Japan and their sending me heartfelt comments which have been very encouraging.

References

My previous papers on TRIZ as [1][2][3] can be read in

“TRIZ home page in Japan” as

“A Collection of Papers Written by Toshio Takahara (2003-2007)” in Japanese and English thanks to Prof. NAKAGAWA.

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[5] <http://www.triz-journal.com/>

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