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On the Operational Meaning of Broad-Spectrum Philosophy Methodology

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Abstract: This study analyze the Broad-spectrum Philosophy Methodology on the operational meaning, and discusses three relatively primary methods of Broad-spectrum Philosophy Methodologies. The methodology of Broad-spectrum philosophy cannot pursuit of accuracy of numerical sense, but it pursuits of the exact nature of the research questions, the accuracy of the sense of set theory and sums up the experience which we solve problems in real life and make it up to the generalized quantization and procedural level and thus the methodology of Broad-spectrum philosophy has a general guide and it is a broad operations research. We gets the results that along with deep exploration and development of Broad-spectrum Philosophy Methodology, its function as generalized operation research can be more powerful.

Key words: Broad-spectrum philosophy, feature, generalized operations research, methodology

INTRODUCTION

In a narrow sense, Operational Research is a branch of mathematics. It originated from Britain, and called Operational Research. To indicate its military origin (in needs of military fight during the Second World War), Chinese mathematicians use the two words "Yun Chou" as its mathematic translation name, which comes from Shih Chi:"Yun Chou Wei Wo Zhi Zhong, Jue Sheng Qian Li Zhi Wai" (meaning Contrive strategic plans in the headquarters and win victory in a battle a thousand li away). But, the narrow sense of Operational Research uses traditional mathematics on the base of quantizing, whose model is various quantitative relation. However, quantitative relation is not always can be used in military operation, management operation, market plan, political convenience and international fight, etc. In this case, an Operational Research whose objects do not have to be quantizable is needed, namely Generalized Operational Research. The author thinks that some methodologies that developed by Broad-spectrum Philosophy have the features of Generalized Operational Research. As follows will discuss several aspects. (Zhang, 1998; Zhang, 2004) makes a study of the Broad-spectrum Philosophy Exploration. (Gao, 2010) discusses the Broad-spectrum Philosophy Features. (Yan, 1998) studies a new field of philosophy research and explore the Broad-spectrum philosophy. (Song, 2002) observes scientific spirit and science and technology innovation by Broad-spectrum philosophy.

This study discusses three relatively primary methods of Broad-spectrum Philosophy Methodologies. With the analysis, we can see that Broad-spectrum Philosophy has three features. We also gets the results that along with deep exploration and development of Broad-spectrum Philosophy Methodology, its function as generalized operation research can be more powerful.

TALKING OF PRODUCT PACKAGING DESIGN

Operation in combination: If you were one packing designer in some enterprise, your manager asks you to make packing design for some products, for example, wine, sugar, mooncake, cigarette, etc. Then, how many kinds of design proposals can you make? How many feasible proposals can you choose from them? By what do you make the priority ranking for these feasible proposals? This is the question of Operational Research in product packing design. Apparently, because this question does do have any specific data, this is a kind of Generalized Operation.

From Broad-spectrum Philosophy we know that this belongs to Combination Operation. Generally, it can be solved by the following procedure:

- Confirm the Basic set:

$$A_1, A_2, \ldots, A_n$$

- Cartesian Product of Basic Combination:

$$A_1 \times A_2 \times \ldots \times A_n = \prod_{i=1}^{n} A_i$$

- Find Meaningless Relations:

$$R_j = \prod_{j=1}^{n} A_j$$

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- Evaluate the Effective Complementary Relations:

$$\overline{R}_j = \prod_{i=1}^{n} A_i - R_j$$

- Make priority ranking for elements of Complementary Relations by certain value standard $P_1 < P_2 < \ldots < P_k$
- For the above mentioned packing design questions, by the above procedure, it can be operated as:
- In order to be simple, we make the basic set that involved in packing design as:
  Packing material A1 = {wood, paper, plastic, metal, ...}
  Packing quantity A2 -- {2, 4, 6, 12, ...}
  Packing shape A3 = {round, square, long, prism, frustum of cone, ...}
  Packing color A4 = {red, green, blue, yellow, white, circular cone, ...}
- Cartesian Product A1×A2×A3×A4 =- $\prod_{i=1}^{n} A_i$ it's the combination of various possible packing design proposals.
- When make product packing design, we should consider the target customers' living habit, taboo(e, g, the packing for wedding wine should be red, while not black or white), consumption level, easy to take or not, store and transport easily for manufacturer, etc. So, of vrious possible combinations of $\prod_{i=1}^{n} A_i$, part of the combination is regarded as Meaningless Relations or ineffective combination.
- Delete the above ineffective combination from $\prod_{i=1}^{n} A_i$, can get complementary relations: $\overline{R}_j \subset \prod_{i=1}^{4} A_i - R_j$
- In accordance with the principle of(3), make the priority ranking in, $\left|\overline{R}_j\right|$ e.g.,
  Feasible proposal p1: (plastic, 6 bottles inside, red, deltoid) $\in \overline{R}_j$
  Feasible proposal p2: (paper, 8 bottles inside, red, quadrate) $\in \overline{R}_j$
  Feasible proposal P3: (alufer, 4 bottles inside, blue, quadrate) $\in \overline{R}_j$
  By evaluating, make the priority ranking as $p_3 < p_2 < p_1$.

The above combination operational method can also be applied to investigation (e.g., criminal investigation).

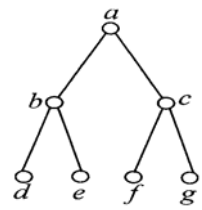

Fig. 1: Hierarchical management system

By the combination of various traces and conditions, to generate the gathering of possible clues. Then, delete the meaningless combination according to the details of a case, until make out the priority ranking of the effective combination.

From the above procedure we can find that we do not build quantitative relation by numeral or calculate numeral. Although A2 is a numberical set, there is no numberical calculating in the procedure. All the procedure is operated against arbitrarily set, so it can be regard as Generalized Operation.

TALK OF STREAMLINING ORGANS

Operation in similarities and differences: For management work, in order to improve work efficiency, under the condition of miscellaneous organization, generally we need to streamline organs. If you were a director or a leader, how will you streamline organs? What kind of streamlining proposal can you make? What's the relations between the streamlined proposal and the original system? If there is a number of streamlining proposals, by what do you judge its reasonability and make the priority ranking? Apparently, this is a management operation question, as well as a kind of generalized operation, which is shown in Fig. 1.

By Broad-spectrum Philosophy, this is Structure Homomorphisms Operation in Similarities and Differences Operation. As follows is the procedure:

- Given one system, confirm its structure S = (U, R)
- According to certain equivalence relation , quotient for $U, f_\delta: U \rightarrow U/\delta$
- Project quotient system, get the image of the quotient system S' = (U', R)
- Repeat the above procedure, get different system images $S^m, S^m, \ldots, S_n$
- According to certain value, sequence every system image: Si<Sj<Sk

According to the above procedure, if we streamlined an organ of power that in pagoda shape (Fig. 1 is sketch map, while the physical truth is much more complicated).

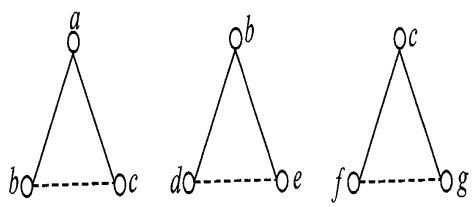

Fig. 2: Three sub-structures after being decomposed

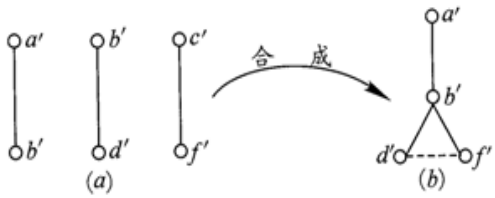

Fig. 3: Image system after being degenerated

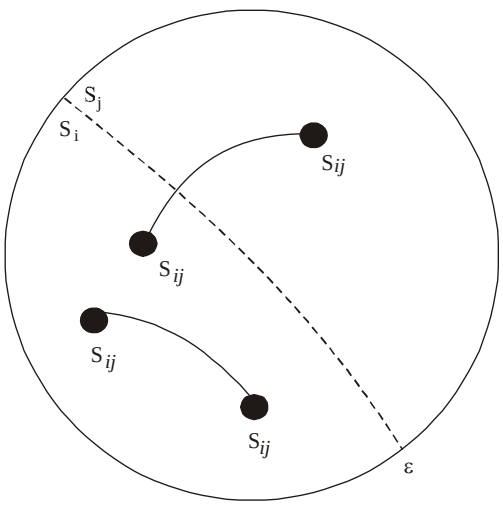

Fig. 4: System's quotienting as well as variable and invariable

- This is a typical semi-order structure S = (U,≤)
- According to the same structure principle, this semi-order structure can be decomposed to three sub-structures (Fig. 2)
- According to the principle of degenerating the same level, the three sub-structures can be degenerated to one line sequence structure Fig. 3a.

Combine this three degenerated sub-structure, we can observe that knot b' and c' are the same knot, and get the original system's image Fig. 3b.

- With regard to complicated system, repeat the above procedure, can get a number of streamlined proposals.

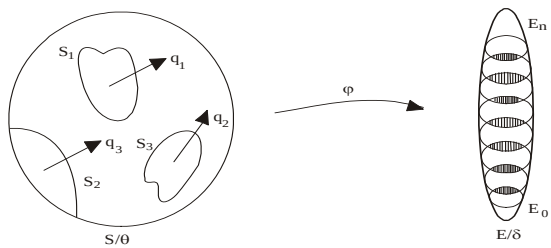

Fig. 5: Regulation & control model of value field

- According to the features of specific management system, make the priority of every S(i) by certain procedure (e.g., mark of expert), for example Sm<Sn<S'

Talking of "Make part of people become rich first": Method of large scale system generalized partial derivatives: At the beginning of the reform and opening, Deng Xiaoping put forward the idea that make part of people become rich first, others will be brought along and through this process, common prosperity of the entire population will be achieved. According to this idea, China firstly made reform in the countryside, canceling the people's commune system and abolishing tmified purchase made China's countryside go ahead firstly. Later, China set up special economic zones on the coastal areas, which made the coastal areas become rich firstly. In this guiding principle, economic situation of China has made tremendous change, which brings a vibrant scene.

This idea of Deng Xiaoping is one typical example for operation of complicated large scale system. By analogy with that of making partial derivatives in mathematics, Broad-spectrum Philosophy puts forward the following method of large scale system generalized partial derivatives (Fig. 4).

- Confirm large scale system's relations structure S = (U, R)
- Quotienting large scale system by certain equivalence relation (or semi-equivalence relation), get a number of sub-system Si, S j, etc
- Choosing certain sub-systems, make similar variable, namely make $(S_{ij}, S_{ij}) \in S_i^2$
- Choosing other sub-systems, make heterogeneous variable, namely make$(S_{ij}, S_{ij}^{\check{}})$ $S_i \times S_j$
- Set up regulation & control model of value field ϕ: $S/\theta \times T(V, \sigma) \times Q \to E/\delta$, make $\phi(S_i, t_i, q_i) = e_i \in E_i \in E/\delta$, which is shows in Fig. 5

In this formula, T(V,σ) is the parameter combination of inside and outside conditions that related to sub-system's competition weight V and its other parameter σ,Q = (q_i) is every S_i sautogeny object set. With regard to economy control method, for every sub-system (e.g.,

enterprise) Sj, the weaker, smaller and poorer, requiring their corresponding value of ei to be smaller, lighter until remission. This is exactly rehabilitation policy, namely $\phi(S_i, t_i, q_i) = e_i \in E_i \cap E_{i-1} (E_i \cap E_{i-1} \neq \emptyset)$.

This is the preferential policy that makes poor enterprises or regions catch up with the rich regions. On the contrary, for the stronger, larger and richer sub-system (e.g., enterprises or regions), their corresponding value of ei should be bigger and heavier, namely $\phi(S_i, t_i, q_i) = e_i \in E_i \cap E_{i-1} (E_i \cap E_{i-1} \neq \emptyset)$.

The government can use the increased tax to improve poor regions' geography conditions, communications and transportation water conservancy project and science & technology input, etc, which can make the poor regions have the same competition conditions with the rich regions. Through endeavor, finally the poor regions can catch up or even surpass the rich regions.

CONCLUSION

This study just discusses three relatively primary methods of Broad-spectrum Philosophy Methodologies. There are still many other methods (e.g., method of mutual transformation for implicit existence and apparent existence, historical existence and furore existence) that have not been discussed. However, in the above analysis, we can see that Broad-spectrum Philosophy has the following features:

First, it does not pursue the precision of numeralization meaning, instead it focuses tangibility and precision of the subject in set theory meaning. This is very suitable for objects that can not be quantified or are difficult to be quantified, which are just the objects of Generalized Operational Research.

Second, the methods of Broad-spectrum Philosophy summarize people's experience in solving problems in real life. It's complicated and polytropic when people solve the specific problems (not always be able to set up narrow-sense quantitative model) in real life. But people accumulated abundant practical experience for problems like "what to do first?", "what to do later?", "how to operate?" and "what to achieve?". However, frequently people do not summarize the experience that well, nor even summarize the generalized and quantified procedure that can be in common use. Methods of Broad-spectrum Philosophy have done a lot of work in this field, which makes people's experience generalized quantification and sequenced. Thereby, it has general guidance meaning.

We believes that along with deep exploration and development of Broad-spectrum Philosophy Methodology, its function as generalized operation research can be more powerful.

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