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A method of decision making for management

The technique for rationalized decision of behaviour by comparison

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In order to make an appropriate and rationalized decision of action in the management and industrial engineering field, the necessary conditions are to establish a view of value (=direction of value) and a plane of behaviour in which behavioural actions are carried out. This paper indicates:

1. An easy and quick method of establishing a direction of value and a plane of behaviour on paper.
2. The behavioural judgement/action mechanism which is caused by information of difference derived from comparison and direction of value.

1. Introduction

The purpose of this paper is to introduce an analysis of the mechanism and elements contained in a rational behavioural action to obtain something, and the several techniques which have been developed for practical use.

It can be safely said that rational management is to accomplish objective results by combining and operating various elements which are obtainable for management (elements such as people, material, money, time, technique and information), so that it can give the utmost effect.

It need scarcely be said that in order to operate these elements, to judge and make an action rationally is very important.

In order to judge and make an action rationally, this paper analytically reveals six conditions and summarizes the essential points of arranging the technique.

That is, I have (1) tried to describe in the mechanism of judgment and action being casually taken routinely, that the origin of judgment and action lies in the information of difference by comparison, then (2) explained in detail and illustrated the direction of man's value by collating his judgment and action with the information of difference, and finally (3) described the technique and the way of thinking in the case of applying the said idea to practical management.

2. Familiar example of behavioural action

Suppose there are before your eyes, two jam doughnuts which are just the same in their appearance. You would hesitate for a moment over which one you would choose. Then, in your imagination, you would make a comparison between the two as to which has the most filling and then decide. Thus you will realize that when you make some judgment or action, you do so after you have acquired some appropriate information of difference.

Namely, even if you change your way of viewing or thinking about subject matter, you will be forever hesitant to reach for either one unless you acquire the information of difference by comparison.

And at the same time, whether you choose the one with more jam or the one with less jam depends upon your direction of purpose and means (hereafter called direction of true nature or direction of value); judgment will be made after the direction of either eating more or less sweets for the sake of health has been collated with the information of difference. In other words, those who have a sweet tooth and are healthy enough to take sweets will choose the doughnut that seems to have more jam in it, and those who have no sweet tooth and ill health will choose the one that seems to have less jam in it. Thus, as you search for the mechanism of judgment and action out of the casual judgment and action you routinely make, you will realize that there must be steps of establishing the information of difference before you make judgment or action.

And also you will realize that there is no way to obtain the information of difference other than through comparison, and in order to make comparison there must be either more than two plans to be compared or one plan and a standard to be compared.

In other words, we can say that the mechanism and direction with which we routinely make common judgement and action is based on the information of difference available, and at the same time when the information of difference accords with the direction of true nature of the man who makes judgment, the direction moves in towards the same direction as the information of difference, and when the information of difference is contrary to the direction of true nature of the man who makes judgment, vice versa.

Namely, when we have something to do, in order to make it easy in terms of judgment and action, it is inevitable to try to bring at least the direction of information of difference (vector) into line with the direction of true nature of the man who makes judgment and action (vector) even if they are plus or minus, and we can have a new understanding that the information of difference which goes crosswise with the direction of true nature does not mean anything at all.

3. How to establish a purpose-means block diagram on a paper

Suppose we are required to do some task or decide to do it for ourselves and we know that if we try to grasp the content of the task to a certain degree in an abstracted expression, it is easy to judge and act properly. In the event that several of us get together, however, we find that it is not so easy to summarize the accorded opinion in this abstracted expression, even if what we have in our minds is same.

The concrete example is, when we have a meeting and do not find it easy to determine a main subject or focal point of the meeting. In such a case I would like to suggest here first of all the way which enables us to summarize various opinions and expressions very quickly, and thus leads us to find a proper expression which should be the main subject of the meeting. Then I would like to explain about the relation of true nature to judgment and action.

The steps in preparing the purpose-means block diagram

(1) At first, a subject is presented, which has been given or determined by ourselves, and which may be expressed either in a word or a phrase.

(2) Then we try to make several expressions, mainly by using a verb and a noun, and modifiers if necessary, of the most appropriate and concrete action intended in the subject in the form of, in brief, ' to do so '.

(3) Write on paper as many verbs and nouns shown in the form of ' to do so ' as possible until we can think of no more.

(4) Cut each expression from a piece of paper so that it can be independent.

(5) Put these cut-out expressions on a large paper in such order as to make ' in order to ' come before ' how to ', as follows: At fiirst, place on the desk two pieces which are chosen at random and then put them in such a way as to place ' in order to do A ', ' do B ' in an order of A up and B down. Then compare the next cut-out expression with the one which has previously been placed on the desk and decide which comes first. Keep repeating this action until all of these cut-out expressions can be placed in an orderly aud comprehensive way in the order of top-down sequence ' in order to do A, do B ', ' in order to do B, do C ' ' in order to do C, do D '...

(6) At this time, there might be a case where some expressions cannot be in the order of top-down sequence with any reason. In this case you will fit the expressions in side by side and keep them in thc order of top-down sequence with other expressions.

(7) When all of these cut-out expressions have been properly placed, take a second look to see if there is any expression missing or in need of addition and correction.

(8) Then fix them with transparcnt adhesive tape onto a large piece of paper.

(9) Observing these expressions, try to find the most appropriate expression as an expression of the subject. We usually find the appropriate expression in the middle part, which we call the sub-title. (This sub-title expression is the expression of the plane of behaviour.)

Note: Since the most important knack of the above is the repetition of the phrase of ' in brief in order to do A, do B ' ' in brief in order to do B, do C ', it is the must to stick to the rule.

The above is the way to prepare the purpose-means block diagram and the established key expression as the sub-title in the level of behavioural action to materialize the subject most appropriately.

So, if we work out a sub-title at the beginning of a meeting or at the stage (phase) where we prepare to solve the problem, we shall find the rest of the work can be carried out unbelievably faster than we expect. Since the level of expression of sub-title starts acting with both expressions that come before (upward) and after (downward) the sub-title, it will frame the key behavioural level which enables us to establish a subject effectively and efficiently. Let us call the line of these expressions arranged in this way a ' purpose-means block diagram ' or ' abstracted ladder '.

Now, the abstracted ladder regarding two people described in the example of the doughnut is shown in Figure 1 below.

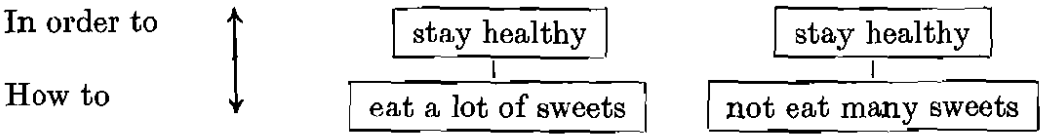

Figure 1.

When we see Figure 1, we come to realize the abstracted ladder itself is the vector which is the direction of the true nature of the man who makes judgment. In other words, giving order to the purpose and means involved in the abstracted ladder is the very expression to show the direction of value of the man who makes judgment. Then the abstracted ladder will be applied to the subject called ' to do management ' as shown in Figure 2.

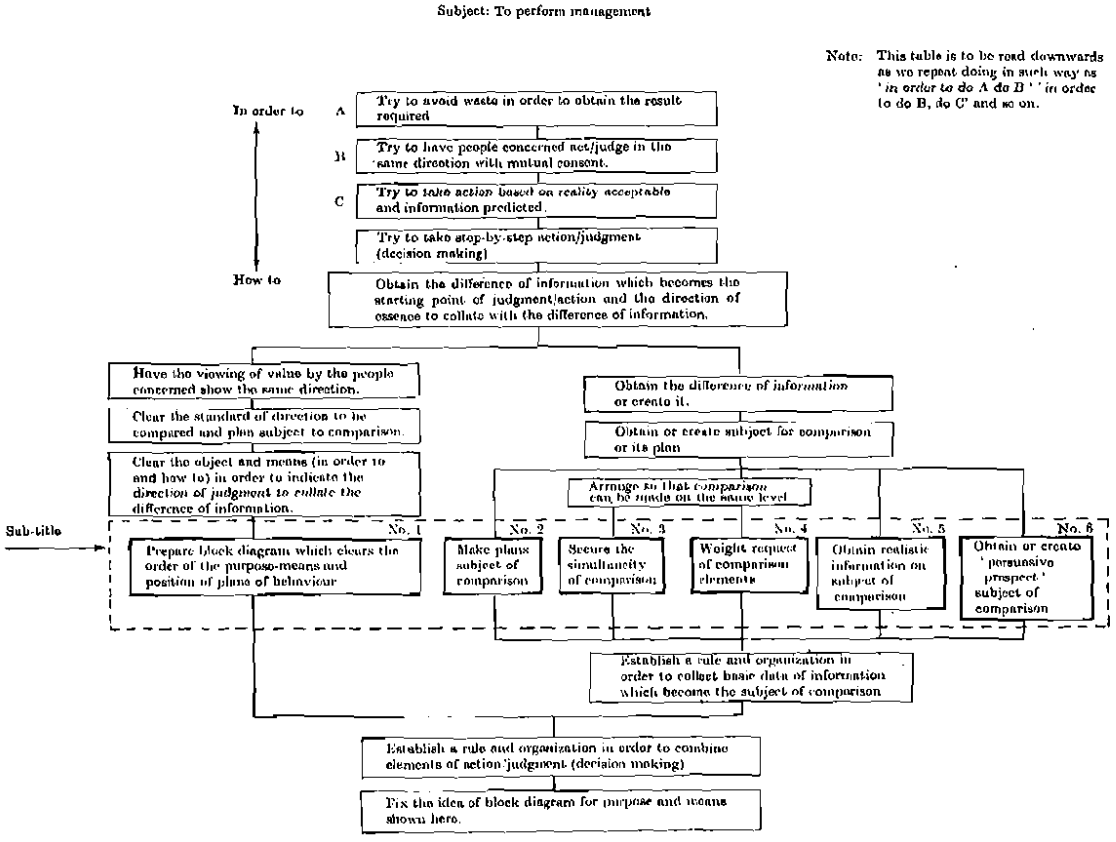

Figure 2. Purpose-means block diagram.

4. Mechanism of management and behavioural action

I have described in the previous section the way to prepare the purpose-means block diagram and the practical examples made on the theme of this paper itself have led me into preparing the purpose-means block diagram as shown in Figure 2. In this block diagram you will note that the sub-title as an abstracted ladder is shown on the level of connection between the expression of the level which emphasizes the upper abstractive side and the one which emphasizes the lower practical side, namely, the expression of the level within the frame with a heavy line is the sub-title.

By explaining the contents of the sub-title, I shall show you how judgment and action should be in management. Let me begin by explaining the block on the left side of the level of the sub-title. First of all, block No. 1 shows how to

prepare the purpose-means block diagram to clear the direction of value which has so far been explained for the subject of management. Then No. 2 to No. 6 describe the conditions for the necessary elements to make information on difference to be collated with direction of value.

That is, block No. 2 suggests that two or more plans be obtained to be compared for the information of difference by comparison, or one plan and a standard to be compared. For these two or more plans, it is absolutely necessary that both plans are possible to put into practice. Block Nos. 3 and 4 show that in order to make the comparison of two or more plans thus made or obtained at the same level, the simultaneity of comparison should be secured and the elements of comparison should be weighted. Namely, the 100 we have now are quite different from the 100 we may have next year. For instance, if we bring out the point of comparison at present in order to secure the simultaneity of comparison, and its annual interest rate is 10%, the comparison must be made on 100 and 90 for 100 next year. And as to weighting, for example when you chose a partner to marry, the elements of evaluation such as figure, cleverness, health and so forth should be made. Although the order and magnitude of this weighting differ according to different people, we replace these weightings with coefficients. And if there are two persons to choose for marriage, grading for each factor will be made first and then it will be multiplied by the coefficient of weighting, and whichever of them has gained higher points in grading will be chosen as the better partner for marriage.

Block No. 5 means obtain realistic and correct information included in the plans subject to be compared. Namely, it can be safely said that the information we obtain by seeing something or touching it directly is convincing, while the one we obtain through people has uncertainty in it. Also even in obtaining information, the one which has been obtained with an objective and the one without an objective are very different. (You will realize that in the process of obtaining this realistic information it is very effective if you collect information after the purpose-means block diagram has been prepared.) Therefore, it is suggested here that it is very important to obtain certain and realistic information.

Here, I will explain an instance of " the mechanism " of people believing the information to be true by citing a story, ' Three men could run a tiger into town ' written by Kwang Hishi, a Chinese author. One upon a time there lived in China a king called King Gi, and one day Hoe Kyo, one of his subjects, asked the king the following question: ' Supposing someone cries ' A tiger has come into the town ', would you believe it? ' ' No, I would not ', said the king. ' Then if one more person cries ' A tiger has come into the town ' what would you think? ' ' I would think there might be a tiger in the town ', said the king. 'Then again if a third one cries ' A tiger has come into the town ' what wc ıld you say ' I would say there must be a tiger in the town ', answered the king.

We can say the same thing even from the statistical point of view. While we could say the above is true, it also implies that if people who make judgment are not well equipped with their own firm judgment they are apt to be easily carried away by poor judgment.

I am going to add to the story the explanation of mechanism when we take information from a statistical point of view as follows:

Only one piece of information for only one subject gives us very thin credibility, but when there are two similar pieces of information, the information between these two can be guessed within the range of the width of errors regarding these two pieces of information, and with three similar pieces of information it can be guessed as much as the width of the errors. And these pieces of information help each other in providing high credibility. And if there are four similar pieces of information, it can be safely said that there must be more and more high credibility.

In other words, the information obtained by seeing directly and touching with our own hands, unless we are blind as referred to in the story of ' The Blind Man and the Elephant ', has the maximum credibility as it has been obtained through a great number of acts.

Block No. 6 tells about the obtaining of information for persuasive forecast. There are many cases where judgments are made based on forecasts such as ' what would happen if this was done ' or ' let us take certain steps because this is likely to happen '. I will explain this persuasive forecast in the next section, as it takes a fairly long explanation.

I shall summarize this section by stating that in order to make rational and quick judgment and action in management, we should first of all prepare several prupose-means block diagrams for many aspects and subjects to attain the objective of management, and in a case of making judgment and action it is necessary, to make it easy, to obtain or create the required contents indicated in Block No. 2 to No. 6. I shall call these elements ' the six conditions for making judgment and action '.

5. Persuasive forecast

At the end of the previous section, I explained the necessity of persuasive forecast when judgment/action and decision making are made, which should be construed as follows.

To begin with, when we think about the value in forecast or forecasting value (hereafter called forecasting value), we find that it cannot become worthwhile until we use it as a standard of judgment/action or decision making for management. And also we cannot tell if the forecasting value is correct or not until real value corresponding to its forecasting value becomes available. At the time of forecasting or at the time when judgment/action is made by using forecasting value, only God knows if the forecast is correct or not.

When we come to think this way, we find that, when we use forecasting value for judgment/action, we do not utilize it as a standard of judgment/action until we feel it may work; namely, whether the forecasting value is correct or not is the most important matter. However, at the time we make judgment/action by using it, we are not sure of it, and so we use it as a standard of judgment/action after we are convinced that its forecasting value seems to be correct or seems right by conventional experience, knowledge and the explanation of why it is so.

For example, let us think about the year 1973 when we had an oil crisis. It happened at the end of that year, but nobody would have believed it and taken any judgement/action against it if somebody had happened to say at the beginning of that year, ' We'll have an oil crisis in November this year '. If he had come up with a forecast which was convincing to people, however,

they would have taken some judgment/action against it based on his forecast at the beginning of that year.

Thus, a forecasting value, even if it may be correct in the end, will not be appreciated unless it is convincing at the time of taking judgment/action, and will be of no use at all.

The above is a brief explanation of persuasive forecasting value. The following is a brief explanation as to what kind of method can be used in order to make a matter convincing. An explanation of the acquirement of persuasiveness has already been made in the acquirement of practically correct information. One of the methods which can be used is in the mechanism of ' Three men could run a tiger into the town '. Then there is also another method where forecasting value is divided into (*a*) the portion which can never make a wrong forecast, (*b*) the portion which can make a forecast by changing its premise and (*c*) the portion which is considered as an aberration normally called ' noise ', and adds explanation to each of them. (See note on Figure 3.)

Another important thing is to protect those people who are employed in enterprises and government from loosing face when they adopt a forecasting value and fail. For example, if someone is employed in the government, he would use a forecasting value on ' the economic view by the Government for 197X ' which is decided by the Cabinet and announced by the Government at the beginning of each year to back up the budget. Namely he would use an authoritative forecasting value or take a judgment/action which keeps him on the safe side if its forecasting value is wrong.

6. Method of collecting the information of difference with ease

Now, since the essay on information of difference which becomes the basic point of judgement/action has been explained in the preceding section, a few examples of how to collect the information of difference with ease will be explained as follows.

(*a*) *Method of comparing similar articles by photograph*

In this method, a photograph of more than two articles which have a similar or the same function will be taken side by side in the same photograph from such a direction as to show well the function peculiar to them. When the photograph has been developed, we fill in with a black pen on the picture some information, such as capacity and price, which we want to compare. In this way we can obtain information of difference which is very easy to understand. There follows an example explaining the above statement in an easier way.

First, we put our right and left index fingers side by side and see with both eyes which is bigger or what difference in shape exists, then we look at them with one eye closed, and we can see more clearly the difference in the shape of both fingers than when we looked at them with both eyes open. This is the principle of the method of comparing similar articles by photograph, and the purpose of filling information directly into the picture is based on a principle of collecting information accurately.

(*b*) *Improving visibility*

When reading newspapers and books, we often cut out or reproduce important pages and file them side by side. By doing so we feel as if we have understood the matter well, which comes from the fact that we have collected similar

material carried in the newspapers and made it easy to compare them. Therefore, it is this principle that in order to make judgment/action in management easy it is good to accompany management data with visibility; that is, to arrange material so that, it can be compared at the same level, and to make it easy to compare similar matters is to increase visibility.

(c) *Carding of data subject to comparison*

This method is a conventional one, but I would like to review its principle in order to have a new understanding of it; that is, if data are kept on cards it is easy to change the order and combination of them, which eventually makes it easy to obtain information of difference by comparison and to obtain the original point for many judgments/actions and decision makings. At that time, in order to make good use of our eyes and heads, it is necessary to repeat the method of comparing two cards because it is obvious that while it is easy to get a result of comparison when comparing two cards, it is more difficult to compare three cards at a time. And if there is no difference of information between two cards this means either that information completely agrees or has no relation at all. The purpose-means block diagram on ' in order to ' and ' how to ' carried in this paper had been made by utilizing the method of comparing two sets of cards in turn and filling them in the block diagram. Better comprehension of the above mechanism will make better use of methods such as the K. J. method of carding (Kawakita, 1967) and so on.

7. Example of purpose-means block diagram

According to the logic stated in the previous section, many purpose-means block diagrams, which may be utilized in many ways for management, can be prepared. (Figure 3 is one of the examples.) In this section I would like to introduce another advantage which may be gained when a purpose-means block diagram is prepared.

The principle of preparing a purpose-means block diagram is to keep on arranging expressions on cards in one direction only, but there will be a case in which it is essential to place them on the same level otherwise they make no sense.

In case the contents contradict each other, it is suggested that they are integrated into the block right below; namely, in the process of framing up a purpose-means block diagram we can create a situation in which we are quite likely to come across such means. The exact place we can find at that time is the place of thought where we find such an integrated means as to be able to integrate the contradicting interests of labourers and employers as we see in Taylor's *Scientific Management*.

In my case, by making use of such a method as above, I have been able to come up with a method called ' steplist management ' (Esaki, 1977), which is a systematic, creative, faultless technique of management plan that can afford you easier management.

8. Significance of this method

After all, we should take a future-oriented type of management which starts from ' in order to do what ', not the one which starts from ' why? '.

I shall be happy if you realize the fact that if we make ' why? ' an offered word, we come to have a structure of conception which only goes back to the past and in some cases we take a conventional way in which we inquire who is to blame for the work done, while if we make ' in order to do what ' as an offered word and ' why? ' as an accepted word, we can, by making good use of things from the past, change the structure of conception into the one in which we conceive things for the future. It is, however, difficult to understand things with only the first words ' in order to do what ', and so if we try to cover up the expressions in between by the proposed purpose-means block diagram, we will be able to come up with a new conception and motivation.

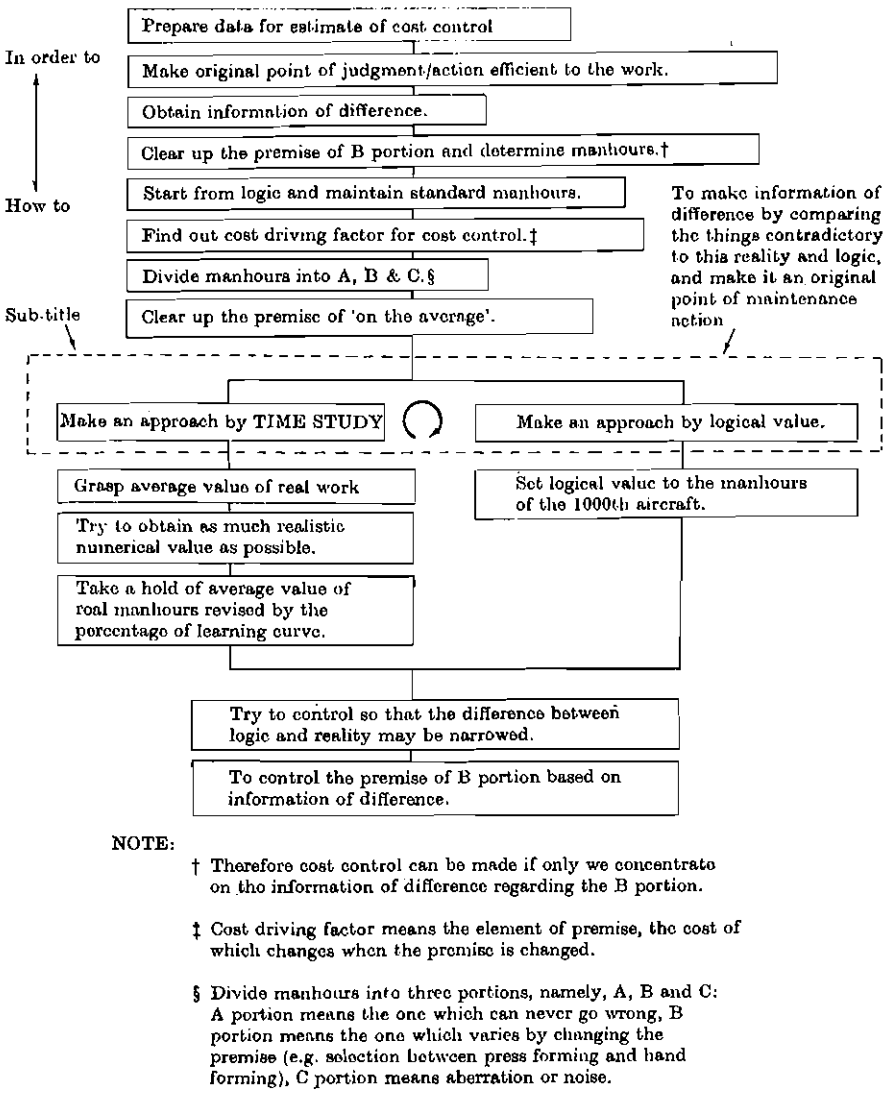

Figure 3. Maintenance of standard manhour

There is much difference between this technique and work design technique by Dr. G. Nadler, because this technique is the method of finding out and defining the plane of behaviour in which management is carried out to reach the desired result.

9. Conclusion

I have introduced to you, as above, the result of my study as to the mechanism and technique which may be a help in making judgment/action on management, but looking back at it I think I have only captured analytically the things we are doing casually in our daily life and have justified them. But again I think that to retain its content/element becomes an original point of a new technique for judgment/action. And the mechanism and principle explained here are the very mechanism and principle which have been used in the conventional techniques of IE, VA, QC, etc., and so I think they can be utilized as a supplement to these techniques and as a method to save a great deal of time being used in complicated meetings.

Finally, I would like to conclude with the hope that this paper will be the one to suggest a new point of view which combines future management science with behavioural science.

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