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The Order of Things without the Self*

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〈목　　차〉

This study presents a structuralist account of the living-world, which aims to replace the firmly and widely accepted concept of a modern self along two related yet distinct dimensions of men: cognition and valuation. First, it shows that with a model of a parallel distributed processing, retrieval interference occurs without invoking the well concerted cognitive process called the self. Second, it shows informational influence without invoking biases in decision-making. From a Brunswikian approach, it suggests that a network with the unequal distribution of power is likely to experience group polarization. The theoretical implications of these observations are further discussed.

Ⅰ. Introduction

"*(…) If those arrangements were to disappear as they appeared, if some event of which we can at the moment do no more than sense the possibility - without knowing either what its form will be or what it promises - were to cause them to crumble, as the ground of Classical thought did, at the end of the eighteenth century, then one can certainly wager that man would be erased, like a face drawn in sand at the edge of the sea.*" (Foucault, 2002[1966]: 422).

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Modernity centers around individuality, which refuses to be melted into the air, a concept of the self that allows for an independent entity with a full capacity of utility computation. Yet, a long and recent survey of cognitive science has substantively questioned the validity of a modern self in the understanding of human behavior. This note seeks to present an alternative view, namely a structuralist account of the living-world, which aims to replace the firmly and widely accepted concept of a modern self along two related yet distinct dimensions of men: cognition and valuation.

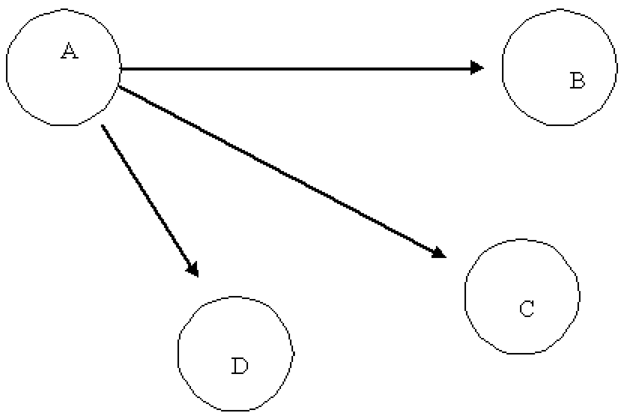
Ⅱ. Deconstructed Cognition: a PDP Perspective

Cognitive scientists have long recognized the existence of interference in tasks such as dual-task interference (Pashler, 1994), the Stroop task (Cohen et al., 1990), contextual interference (Albaret et al., 1998), phonemic confusion (Tehan & Humphreys, 1998), and competitive interference in advertising (Kent & Allen, 1994). Interference in this regard refers to the difficulty in encoding or retrieving one type of information due to the presence of another type(s) of information. The consequence of interference usually involves the slowing of response time (e.g. psychological refractory period effect) and the increase in making errors. With a model of a parallel distributed processing (PDP), I give an account to this phenomenon without invoking the well concerted cognitive process called the self. To this end, I draw on a concept of orthogonality of activation patterns. For the interest of illustration, I will limit myself to the case of interference between two different evaluative words, positive or negative.

The main argument is as follows. 1) The implicit memory task involving different valences of words would be affected by the degree of interference between words. 2) The interference in the implicit memory task may come from retrieving interference, a phenomenon that is likely to occur when the valences of two words are orthogonal to each other in the sense that a pattern of activation by one word is orthogonal to one by the other. In the sections below I will briefly describe a PDP model used in this essay and assumptions made for predictions. Then, I will propose a condition for the activation of above mentioned interference. Finally, three experiments will be contrived to test the validity of the condition for interference.

As a point of departure, a model of ACT (Anderson, 1976), a non-structuralist account of the mental process is first illustrated. An extension to the hierarchical model of memory, the ACT (adaptive control of thought) theory presumes a memory is made of the meanings, i.e. propositions. There are four basic assumptions in the ACT to describe human information processing (Medin, Ross, & Markman, 2001). First, propositions consist of concepts and relations among these concepts. For example, if mind begins with one concept (represented by node 'A' in a network) as well as three relations that originate from this concept, then this mind remembers three different propositions (see Figure 1). Second, relations or links differ in strength such that frequently retrieving and coding propositions have stronger links among them. Take the example of Figure 1, where node A is connected to three different nodes, B, C, and D through three links. The link between nodes A and B is said to be stronger if this link, and thus a proposition, is frequently retrieved to comprehend external stimuli. Third, when information is being processed, the nodes corresponding to that information are physiologically activated, and this activation spills over to other connected propositions through the links.

Each node differs in its capacity or threshold for activation. In other words, nodes and links, which are partially activated, will be not fully used in understanding external stimuli. Propositions are fully used only if their associated notes' activation is above the thresholds of these nodes. Activation that occurs from nodes – source nodes – is re-distributed to the links from these nodes such that activation is likely to spread firstly and strongly to links whose strength is the highest. Take a case in Figure 1. The amount of activation of a link from concept A to concept B is noted as $L(\text{A, B})$. When activation, say 10, starts to spread from node A, and the link strength from A to B, from A to C, and from A to D are 0.5: 0.3: 0.2, respectively, then this activation is divided while satisfying the following restrictions: $\Sigma_i L(\text{A}, i) = 10$ and $L(\text{A, B}) > L(\text{A, C}) > L(\text{A, D})$, where i = {B, C, D}. Note that the division of activation among links is not proportional to the strengths of links. Rather the division is ordinal according to the strength of links. The exact level of the division is thus indeterminate.



〈Figure 1〉 An example of mental representation: The ACT perspective

The amount of activation is a function of link strength as well as the outdegree centrality of a node that is activated (i.e., alternatively known as the fan of a node, which is the number of links that originate from a node). Put it differently, the stronger a link is, the highly activated nodes adjacent to the link are. On the other hand, the larger the outdegree of a node, the less activated is each node adjacent to the node. The latter needs more explanation. Assume that node A is connected to three different nodes through three links and node B is connected to six different nodes through six links. Suppose that the strengths of links are equal. If node A and node B are activated at the same level of 12, *L*(A, one of the three nodes) would be 4 and *L*(B, one of the six nodes) would be 2.

Lastly, the time to retrieve information from long term memory increases when a source node is connected to many other nodes to share its activation and when the strength of each link is not strong enough to convey activation from the source to the target.

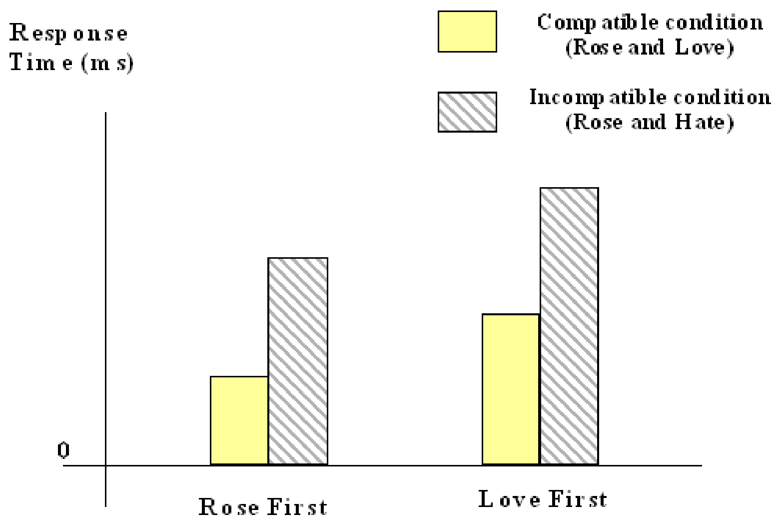
From the assumptions made above, following propositions are derived. First, node *i*, though activated, is not used if *L*(source node, *i*) is weaker than a certain threshold. Second, the time to retrieve information is increasing as the outdegree of a node increases and its link strength declines.

Partial definitions for the experiment are made as follow. First, the time to retrieve information is response time in the IAT (i.e., implicit association tets), which is a dependent variable. Second, nodes include the target categories and attitudinal categories. Third, links are stronger in compatible combinations than in incompatible combinations. Fourth, target categories have a smaller outdegree than attitudinal categories do.[1] In other words, the number of associated concepts to target categories is smaller than that of associated concepts to attitudinal categories. For example, insects are associated with negative attitude (e.g. hate) or positive attitude (e.g. love). However, attitudinal categories, e.g. love, could be associated with many other target categories. I further assume that every subject evaluates all of insects as unpleasant, while evaluating all of flowers as pleasant. Then, the design of experiments is as follows: (a) the order of the target-attitude categories (target first or attitude first), and (b) compatible or incompatible combinations. The overall pre-

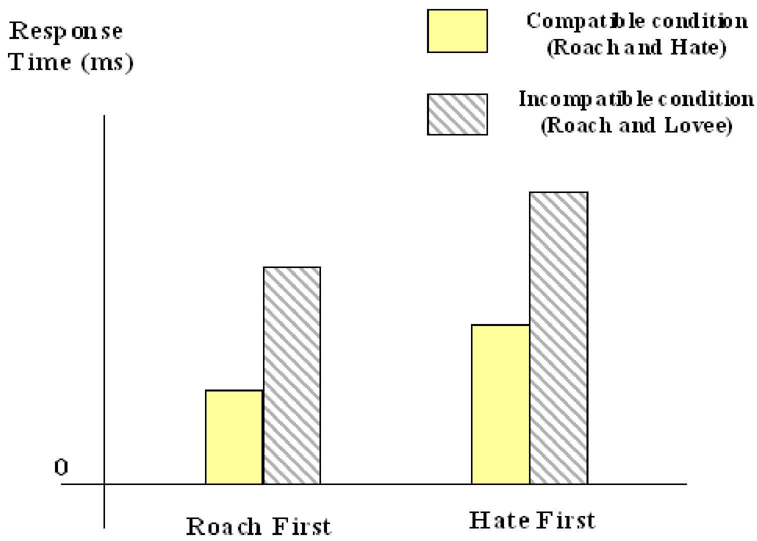
1) This partial definition is actually an additional assumption I make for the experiment. Though this assumption is not explicitly implied by APT, I include it in order to predict the difference between a vector (insects, pleasant) and the other vector (pleasant, insects).

dictions are found in Figure 2.

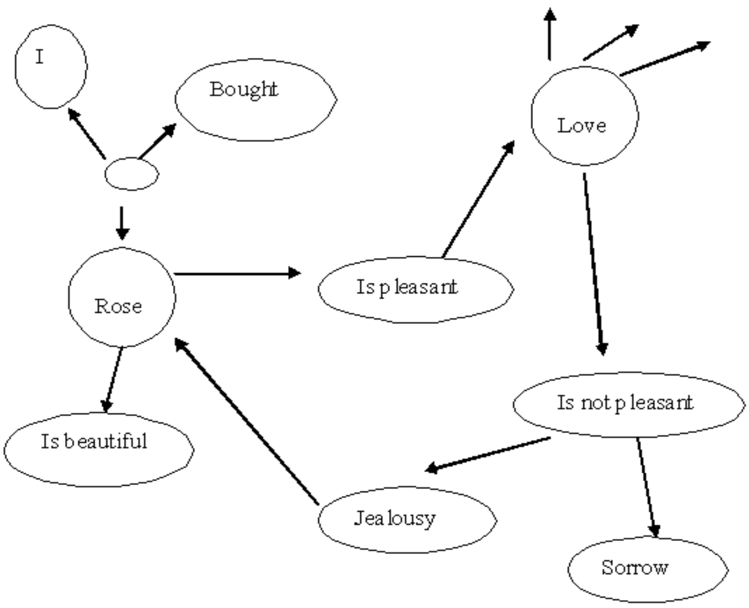
1. Rose and Love.



2. Roach and Hate.



〈Figure 2〉 Compatible versus Incompatible Combinations of Concepts



〈Figure 3〉 Love and Rose

As is shown in Figure 3, the reasons for predictions in Figure 2 are as follows. When activation spreads from rose to love, a compatible task shares the same response, i.e. *pleasant*. On the other hand, activation from love to rose may or may not share the same response, i.e. *pleasant*. Even if they share the response of *unpleasant*, the number of links between rose and love in this case is larger than that in the response of *pleasant*. Moreover, the outdegree of love is larger than that of rose since love includes 'is not pleasant' node. In addition, the link from rose to 'is pleasant' is stronger by assumption.

Therefore, activation from rose to love will be higher than from love to rose. In other words, response time will be smaller for the activation from rose to love. However, response time in the incompatible condition is always longer than in the compatible condition, irrespective of the order of categories. The same logic is applied to the roach cases.

Let me move over to the comparable structuralist model of the mental process, a model of PDP. Following Cohen, Dunbar, and McClelland (1990), this essay assumes a PDP representation of mental process. Mental representation is a system of connected modules, which are described as matrices with different connection weights. Each module consists of processing units, which are denoted as input or output vectors of a matrix. Input vectors stand for the stimulus a system receives from the external world or previous modules. Output vectors indicate a system's response to the input vectors. This could be concept generation or a force for physical movement.

Information of any type is represented as a specific pattern of activation formed by units in a module. Using the same units, a module represents different information by changing a pattern of activations. Two units are independent when they are orthogonal vectors to each other (Medin et al, 2001). Since a particular input pattern (or value) will produce a desired output pattern, the values of input units that are orthogonal to the learned values cannot result in identical output values.

An information processing occurs by sending signals from one module to another. Thus, a sequence of connected modules comprises a pathway. Two different information processes will interact if two pathways rely on the same module. Therefore, in some cases, the same processing units are used for representing different information. In other cases, the same module is used for conducting different information processes. In a sequential learning, interference can be classified into two categories, proactive interference (e.g. Dempster, 1985) and retroactive interference (e.g. Bower et al., 1994). Proactive or encoding interference and retroactive or retrieving interference.

Suppose that a system of modules receives a stimulus from outside the system. Either because of the shared processing units or because of the common module, orthogonal values of input units will create the *retrieving interference*.

First, when it comes to encoding new information, the shared processing units will successfully represent different concepts as long as input patterns for these constructs are orthogonal to another. In the framework of a PDP, learning will occur via adjustment of connection weights between input units and output units such that $V_I C = V_O$, where V_I is 1×N vector of input units, C is N×N connection weight matrix, and V_O is 1×N vector of output units. Suppose that a stimulus of rose is represented by V_I (Rose) and that a stimulus of lily is represented by V_I (Lily). Let C(Rose) be a set of connection weights to get V_O(Rose) and C(Lily) be a set of connection weights to get V_O(Lily).

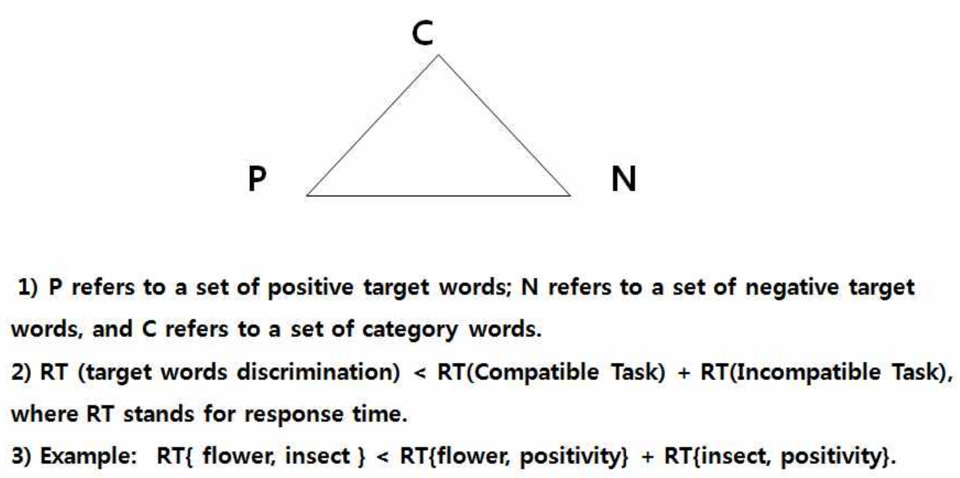
As long as V_I(Rose) and V_I(Lily) are orthogonal, two different C(Rose) and C(Lily) can be added together so that only one C(Rose or Lily) can represent both of connection weights (see Medin et al, 2001). However, if they are not orthogonal, then to add up two C(Rose) and C(Lily) will not produce desired output patterns, V_O(Rose) and V_O(Lily) respectively. Hence, orthogonality per se will not affect *encoding interference*. Rather, it will facilitate the process of encoding. For example, Pashler (1994) argues that cross talk or similarity of task may not be crucial determinant of dual task interference. Of course, this does not necessarily mean dissimilarity of tasks could explain the PRP effect. However, at least it shows that similarity of task will not matter in *retrieving information* either from short term memory or from long term memory.

Second, suppose a system learns only about C(Rose), and this module will only produce an output pattern V_O(Rose). Therefore, a new input pattern, which does not correspond to V_I(Rose), will not yield a desired output pattern before learning takes place. This is *retrieving interference* because a system tries to generate an output pattern through previously learned connection weights. This is not about changing connection weights to get a new, desired output pattern. For example, when Burt (1990) tried to explain the mechanism of the Stroop task, the role of associative priming is in strengthening the connection weights learned before, e.g. C(Rose). In other words, an associative prime is assumed to increase the level of activation of the base-word response relative to the color name. Although the level of analysis changes from within a module to between modules, Cohen, Dunbar, & McClelland (1990) argue in a similar way that 'if both processes are active, the patterns of activation that each generates at the point of intersection are dissimilar, then interference will occur within that module' (also see Tehan & Humphreys, 1998). In short, *retrieving interference* is likely to occur when two information processes are orthogonal to each other.

The following experiments of the IAT related tasks illustrate this conclusion. First, in experiment 1, subjects are asked to encode a list of words, which are shown serially. Each word is presented for a short period of time, say 6 sec. And encoding interval between different words is also short, say 3 sec. A list of words consists of orthogonal words, which are shown randomly from a set of negative words (e.g. insect words) and a set of neutral words (e.g. nonwords).[2)] After a 30 sec delay, subjects are asked to recognize a pair of words, which are shown separately before. The prediction made is that the accuracy of recognition will be lower for the groups, who are given a pair of orthogonal words than for the groups, who are given a pair of non-orthogonal words (negative pairs). This is that an orthogonal pair will instigate competing input patterns for one module or for two different information processes. As a result, retrieving interference described above will occur, leading to lower performance of the recognition task.

Second, in the IAT task with a 2 (compatible vs incompatible combination) × 2 (interference vs no interference) design, two main effects as well as one interaction effect are expected. Response time (RT) in compatible combination is much faster than in incompatible combination. Also, RT in no-interference combination is much faster than in interference combination. In addition, Compatible & No-interference combination is much faster than compatible & interference combination with respect to response time.

2) The setting of experiments presented here is a replication of Brendl, Messner, Markman (1999)'s unpublished study.



〈Figure 4〉 Experiment 3 and the triangular inequality in a metric space

Finally, if RTs in the IAT reflect relative difference in valences of words, then RTs should satisfy the triangular inequality such that a response time of a pair of target words is faster than the sum of compatible and incompatible pairs of target-category words. However, if a pair of target words is orthogonal to each other, then the triangular inequality will be violated due to retrieving interference. The reason is that RTs, which do reflect other forces than relative difference in words' valences, will not always meet the inequality in a metric space where RTs are defined. In other words, the inequality in a metric space will hold if RTs measure the differences in the valences of words. Since interference is not directly related to relative difference in valences, the presence of interference will suppress the occurrence of the inequality of RTs.

Ⅲ. Deconstructed Valuation: a Brunswikian Perspective

This section proposes a network model to show *how* the social influence process affects individual judgments of uncertain projects. In particular, this study concerns as a social influence process the group polarization effect (Brauer et al., 1995; Williams & Taormina, 1993), where individual attitudes about a given project tend to be extreme after group discussion. Using Willer (1999), this study proposes that for interactive decision-making (Heath & Gonzalez, 1995), a minimally imposed restriction, such as group structure, can yield the group polarization effect at the individual level. Specifically, it shows that the sampling bias of environment (Fiedler, 1996) underlies the effect of group structure on the individual judgments over uncertain projects. The main arguments are as follows:

First, from a Brunswikian perspective (Gigerenzer et al., 1991) the group polarization may result from the number of favorable or unfavorable arguments about an attitude, arguments that are foreign to the person and that the person encounters during the interpersonal interactions. Second, the unequal frequency of different attitudes should be socially validated before taking their effects on the group polarization. And the degree of validation, i.e., cue validity, is a function of cognitive centrality (Kameda et al., 1997). Lastly, holding constant individual heterogeneity of individuals with respect to issue related expertise and personality, the group polarization will occur whenever a group structure allows actors to receive different cognitive centralities. In other words, a group consisting of actors with the same cognitive centrality may not lead to the group polarization.

1. Group Polarization

In a small group decision-making, a person's attitude towards or preference over an object is affected by the presence of others via the social influence. A widely noted example of this social influence is the group polarization that a person's preference over an attitude object after group discussion tends to be more extreme than one before group discussion. The group polarization effect should be distinguished from what is groupthink, which refers to a risk seeking behavior after group discussion. Groupthink as a special instance, the group polarization rather indicates any situation where a person's preference conditioned upon others is not a convex combination of these individuals' preferences prior to social interaction such as group discussion (Brauer et al., 1995; Arora & Allenby, 1999).

Take for example a two-person committee of civil construction, which is about to review budget allocation for a construction project. Assume that one person prefers an option of 100 dollars to an option of 2000 dollars, whereas the other prefers an option of 2000 dollars. When two persons discuss before making a final decision, i.e., a case of interactive decision-making, the group polarization may take either of the following two forms. The first form is for a person to switch her preference and choose what the other prefers. The second form is to increase the level of confidence in one's own preference (Davies, 1997; Heath & Gonzalez, 1995).

Note that the group polarization does not necessarily refer to the final decision made by the group. Unless the final group decision is based on a weighted average of individual preferences, it may be independent from the final preference shared by the group. For example, if the majority vote is used for the group decision, a minority preference is not reflected by the group decision. A typical setting for social influence is a participation in group discussion. The exchange of opinions about an issue with others as well as the attempt to convince others of one's own opinion creates a channel for social influence, i.e., being susceptible to others' opinions.

Of course, the influence of others' opinions on a person's preference will vary with that person's individual characteristics such as expertise in the knowledge domain of an issue. Yet, the literature has shed more lights onto the role of situational factors when everyone in a group has similar expertise in an issue. These situational factors include the fractions of preferences among individuals, such as minority and majority influence, the size of group, and the type of decision rules to reach the group consensus, such as the majority vote (Davis et al., 1997; Doms & van Avermaet, 1980: Williams & Taormina, 1993).

One implicit assumption behind this literature is that a seemingly irrational behavior arises from various flaws present in individual decision-making.[3] Indeed, an actual decision maker may not have an unlimited cognitive resources and a perfect rationality in a way that the conventional economists would conceive the person. The illusion of control (especially the passive involvement case, Langer, 1975), explanation-based choice (Davies, 1997), and internalization (Kelman, 1958) are cases in point. In these cases, a person tends to have more confidence in her judgment and to develop rather an extreme attitude once she voluntarily generates a large number of arguments to explain an object.

The key to this mechanism is the internal and self generation of arguments to minimize cognitive dissonance between information from others and one's own attitude. The internal generation indicates that the mere thought of these arguments would suffice the working of this mechanism. The voluntary participation in group discussion is a conduit for a person to generate internally her own views and to get influenced by self-generated arguments. The increase in confidence after self-generation of arguments is observed even though the person's decision quality does not improve (Langer, 1975; Heath & Gonzalez, 1995).

On the contrary, a group of researchers opting for a Brunswikian perspective observe that the apparent bias in individual decision-making is a reflection of the nature of the environment surrounding the individual. Along this line, they suggest that the group polarization has much to do with *a sampling advantage* in the sense that a certain attitude has more chance to be socially circulated.

3) The literature invokes three different mechanisms such as the informational influence, diffusion of responsibility, and the social comparison in a bid to account for the role of situational factors in the group polarization (Brauer et al., 1995).

For example, much research on overconfidence asserts that this phenomenon is stable and robust, yet Gigerenzer and his colleagues (1991) show that overconfidence in the calibration questions might disappear if the questions were reframed in a frequentist's way. In a similar vein, the repeated exposure to the attitude object was reported to produce a shift in attitudes in the direction of extremity (see Brauer et al., 1995). If a certain attitude comprises disproportionately the set of opinions on a given issue, this attitude is more likely to dominate other attitudes. The simulation study by Fiedler (1996) illustrates this sampling advantage. Fiedler argued that a group polarization effect will happen whenever one of two opposing attitudes is dominant in number. He explained this process by an aggregation effect of repetitive arguments, an effect that depends on the sample size or information quantity.

Against this background, the situational factors mentioned above are succinctly reduced back into a sampling advantage: a frequency of a certain attitude or argument is influenced by the amount of information available to individuals; and the situational factors are directly related to information availability, which in turn account for the variance of a sampling advantage of different attitudes. This sampling advantage of an attitude may take either the form of an aggregation effect (Fiedler, 1996) or repeated exposure (Brauer et al., 1995), which stands in sharp contrast to an irrationality based approach to decision-making.

The difference between Brunswikian and irrationality approaches lies in whether a person responds to information from others and updates her attitude or preference by evaluating this information. The irrationality approach presumes that a person will offset inconsistent arguments coming from others by generating reasonable 'excuses' for her own attitude. In contrast, a Brunswikian approach assumes that a person 'validates' information from others, i.e., cues, and adapt her preference accordingly. Note that in a Brunswikian approach, the validities of cues, not cues per se, will determine one's confidence in opinions

(Gigerenzer et al., 1991).

As Heath and Gonzalez (1995) suggested, people are more likely to respond to information from others when they are not knowledgeable about an issue and when they believe that the information from others is valuable for their decisions. This suggests that the role of situational factors, such as the fractions of subgroups and the size of a group, would be limited when the perceived valence of information from others, i.e., cue validity, is low. In this regard, this approach characterizes the process of interactive decision-making by introducing a new factor, i.e., cue validity. Hence, the likelihood of attitude change is positively related to the validities of cues. A person does not change her attitude or opinion when validities of available cues from others are below a certain cognitive threshold of acceptance.

Cue validity will vary with the reliability of the source as well as reference class (Gigerenzer et al., 1991). Reference class refers to a class of events that a given statement is applied to, which is similar to the population in inferential statistics. A different reference class has different cues and different cue validities. Thus, the choice of a proper reference class to the problem facing a decision maker will determine the range of possible cue validities. In some cases, where there are not sufficient cues available to a given reference class, or individuals do not have a perfect information about the possible outcome states of an issue, the reliability of the source also becomes important. In interactive decision-making, people generate a reference class for an issue during the interaction with others, and frequently employ a reference class provided by others. As a result, the cue validities given a reference class cannot be separated from the credibility of the source if people are not knowledgeable about a reference class obtained from others.

One important implication of this discussion is the following: group polarization will occur when validities of cues during the social influence process are high above a certain cognitive threshold of acceptance. Put it differently, group polarization will disappear when cues generated during group discussion have low validities. For example, when people perceive the available information as not valuable for their decisions, they will either decrease their confidence in judgments using the information or generate counterexamples in favor of their initial opinions. Hence, no matter how frequent a cue or argument is encountered during the interaction with others, this cue will not have a significant effect on the changes of people's attitudes.

2. Cue Validities and Group Network Structure

From a Brunswikian perspective, the analysis of interactive decision-making, such as group polarization, calls for the understanding of the external environment surrounding decision-makers, where different cues are circulated and the validities of cues are available. As a way of characterizing the external environment, this study concerns a network structure of individuals involved in interactive decision-making, where a network structure of individuals is a pattern of interpersonal relations. In particular, this study draws on Willer (1999) and demonstrates that the network structure of individuals suffice to yield the group polarization in interactive decision-making.

If a person appears to have expertise in some knowledge domain relevant to an issue, the very perception may increase cue validities generated by the person. The literature on social networks suggests that a network structure of decision makers shapes the availability of cues and cue validities. Friedkin and Jonsen (1997) showed that if persons are subject to an identical set of interpersonal influence from others, then they will eventually develop similar opinions over an issue, irrespective of their initial dissimilar opinions. Similarly, Kameda and his colleagues (1997) posited that a member's cognitive centrality plays an important role in forming consensus among members. The cognitive centrality, measured by the degree centrality, refers to the extent to which a person shares her knowledge with others. In short, the network structure of interactions among members yields the social influence on individual decision-making via changes of cue validities of some of members.

The influence of individuals with high cognitive centrality comes not from the fact that they have much information shared with others, but from the fact that they have more chance of being validated by others. Since people can easily validate shared knowledge with their own information, a cognitively central person can be perceived credible as long as his or her knowledge is judged to be valuable. As long as a person's cognitive centrality arises normally from the network structure of individuals exchanging opinions (e.g., Ennet & Bauman, 1994), one can manipulate the perceived validities of cues circulated among individuals by imposing a specific network structure onto the interactions among individuals.

A network structure however cannot be specified without articulating the content of interactions among individuals. These contents of interactions include friendship, task-related advice, emotions, and physical products or resources. Can we define cognitive centrality on all of these interactions? Typically, cognitive centrality is a property of network structure defined on task-related advices. Yet, with the following assumption, it is also likely that cognitive centrality arises from social interactions other than task-related advices: a network centrality in a network that leads to unequal distribution of perceived power among network members will be translated into the cognitive centrality in that network.

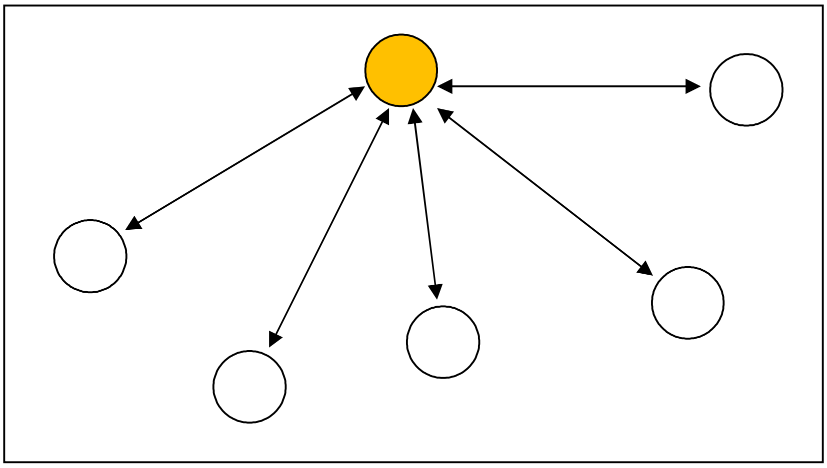
The source of a cue is judged to be reliable even though one has no way to test its credibility. For example, advice from doctors, whose knowledge is not fully shared by their patients, is regarded as reliable. Given that patients have no objective way of verifying doctors' advice, the reliability of this advice does not come from its credibility but from authority or power attached to the source. From this it follows that a network structure responsible for the unequal distribution of power among members will lead the occupants of its central position to obtain a high level of cognitive centrality.

3. Network Structure and Polarization

The role of network structure surrounding individuals is now applied to the case of group polarization. From interactive decision-making, a person combines information from others, cues, while assigning different weights, i.e., cue validities, to these cues. The preceding discussion assumes that cue validities vary with either cognitive centrality in task-related advance networks or positional centrality in other types of networks. This assumption is summarized as follows:

$$U^*_i = U_i \times \phi_i$$

where U^*_i is i's preference over an issue after group discussion, U_i is i's preference over an issue before group discussion, and ϕ_i is the effect of the social influence on individual I.



〈Figure 5〉 A group structure with exclusively connected actors (N = 5)

As in Figure 5, a network structure with the unequal distribution of power leads Φ_i to vary more than 1 or less than zero. That is, the group preference is not convex combination of individual initial preference. In contrast, a network structure with everybody linked to one another leads Φ_i to vary between zero and one.

The following experiment allows for the test of this assumption. The experiment consists of two stages. At the first stage, subjects participate in a negotiation game. Subjects are randomly assigned to a position in a pre-determined network structure. The network structure of a group is manipulated by the experimenter. To this end, each subject is located to a computer, which is separated from other computer if subjects are not adjacent to each other in the network structure of a group. That is, subjects interact with others through computer screen, and links between computers are manipulated by the experimenter according to an intended group structure. The relations are defined on resource pooling relations, in which two subjects negotiate with each other to divide a given amount of a pooled financial resource. For example, subjects are asked to divide, say, 100 wons between them. The negotiation relations are exclusively connected in the sense that each subject can make only one exchange or negotiation with another subject. Therefore, if a central subject decides to negotiate with one of N peripherals, then N-1 peripherals do not have a chance of negotiation, and thus have a payoff of zero won.

At the second stage, subjects participate in interactive decision-making, where they are asked to evaluate an uncertain business project and to assign the amount of budget for the project. The task that subjects are asked to do at the second stage is adapted from Williams and Taormina (1993). Subjects are asked to participate on the Project Budget Committee, a committee responsible for evaluating business projects. They are presented with a detailed description of a business project, including the market demand forecast and required technology and managerial skills. After group discussion among subjects, each is asked to decide the investment amount for the project. So, the task is of quantitative judgment. The dependent variable in the experiment is the investment amount decided by each subject.

4. Network without Cognition

This study seeks to explain the process of informational influence in the context of interactive decision-making. Group polarization is addressed as a specific instance of informational influence. The motivation of this study is whether to explain informational influence without invoking biases in decision-making. From a Brunswikian approach, this study begins with the observation that a network structure of individuals interacting shapes the nature of information available to each individual. In particular, this study suggests that a network with the unequal distribution of power is likely to experience group polarization.

The validity of this network-based explanation awaits empirical investigations, including an experiment provided above. Yet, the following theoretical implication merits a further discussion. A causal understanding of any phenomena requires the researcher to select one specific aspect of the reality and construct a model that represents this selected and partial reality in a testable way. A network-based understanding is in this regard one of many models that deal with a partial reality. The challenge is whether an explanation for social phenomena is practically and substantively valid without bringing in individual cognition. This section addresses this challenge by observing that a network structure could be operative independent of individual cognition; individuals may error on the wrong side of unequal social networks.

Ⅳ. Conclusion

The society has construed the living-world as a collection of persons and their environments such that physical or symbolic entities are foreign to men and that they reside in a bounded substance of volition, i.e., the self. Methodologically it has enduring impacts on the on-going research: three interrelated assumptions of the human nature, consistency, independency, and rationality. One important working hypothesis regarding the study of cognition and behavior is that there is something stable and consistent so as to allow for its systematic description. Stable and consistent traits of a person would be a case in point. For example, in probability judgment, a story with a person of stable and consistent traits actually measures what is real, not what is probable. Bruce Willis in 'Die Hard' is perceived to be realistic even though we will agree the character he played is less probable in our daily life. Hence, what is real from a reader perspective is not always what is probable in a scientific sense. Moreover, economists opt for a rather restrictive assumption that a person with stable traits, whether a leader or a follower, will make informed decision in an independent and rational manner.

A structuralist account of human behavior, including PDP and Brunswikian perspectives, avoids defending either the presence or the absence of these three properties of human behavior. Unlike behavioral economists, scholars of a structuralist approach rather leave untouched the nature of human behavior and delve into human behavior by drawing a good attention to namely social structure, a collection of both situational factors that are stable and persistent and the working of these factors that select a certain type of behavior over the others. The difference, for example, between a structural analysis of work team and a traditional analysis of leader-member exchange highlights this reasoning. While the latter is focused on the dyads of two interacting persons, the former copes explicitly with the interdependencies of multiple dyads in a team and views behavioral outcomes involving these dyads as arising endogenously from the nature of interdependencies.

It should be noted however that a structuralist account is not the only reliable way of addressing human behavior. Like any other theoretical enterprise, it is an intended yet refutable bias to unveil the phenomenon in a way that interests the researcher. At the same time it is also worthwhile to emphasize that a structuralist account is 'one' undeniable aspect of the reality that we seek to understand. As the Diamond Sutra notes, the garden is full of white snows, yet only spring knows its emptiness.

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自我에 기초하지 않은 사물의 질서*

배 종 훈**

요 약

본 논문은, 경험세계에 대한 구조주의적 설명, 특히 근대적 자아라는 개념을 대체하는 설명체계를 인지와 평가라는 상이한 그러나 상호 연관된 인성의 차원을 중심으로 살펴보고자 한다. 첫째, 인지 과정을 실체주의적으로 해석하는 대신, 즉, 자아와 같은 개념을 사용하지 않고, 평행분산처리의 모형을 중심으로 회상간섭이라는 인지적 현상을 설명하고 있다. 둘째, 개개인의 특정 대상에 대한 평가가 타인이 가지고 있는 평가와 연동되는 현상을 단순히 개인 의사결정 상의 심리적 편향으로 설명하지 않고, 에곤 브론스윅의 확률적 지능 모형에 기초하여 설명하고 있다. 구체적으로, 구성원간의 사회적 관계의 불균등이 집단수준에서의 의견쏠림 현상의 원인임을 논증하고 있다. 이와 관련된 이론적 함의를 추가로 논하고 있다.

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