

Causality and Resultantity in Language: Language in Individuals and Groups*

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1. Introduction

In the world, there are many kinds of phenomena, and people usually categorize them into by nature or by human beings themselves. This dichotomy, nature versus art, is one of the bases of how human beings construe the world. However, the dichotomy of nature and art has some problems. For instance, it is arbitrary because it just distinguishes whether human beings themselves are involved in it or not. From dogs, they would see the world through the dichotomy of dogs and others, whether dogs are involved in or not. The dichotomy of nature and art is no more objective than the dichotomy of dogs or others. How can such a problematic dichotomy be applied to linguistic research?

Based on such a background, this paper aims to propose: (i) that the distinction of causality and “resultantity” can be an alternative way to think about language, instead of the dichotomy “nature versus art,” which is based on whether human beings are involved in a phenomenon or not, and (ii) that open-system linguistics with resultantity is to consider how the behavior of each speaker interacts with the other and how the interactions are integrated into one group. Open-system linguistics is a research enterprise in which researchers assume interactions among speakers as a salient characteristic.

This paper, first, will discuss a dichotomy of "nature versus art," not being restricted to the range of the discussion in language, but other realms, such as animals and climates. Another category, "causality vs. resultantity", is also to be proposed in the same section. Second, it will be explained that causality and resultantity can be found in two linguistic research paradigm, closed-system linguistics and open-system linguistics. Finally, it will propose that open-system linguistics is to focus on the behavior of each speaker who influences group structures by them.

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2. Theoretical Background: A Dichotomy in the World

2.1. A Fallacy of the Dichotomy of "Nature versus Art"

To think about why a certain phenomenon occurs, people usually consider whether the phenomenon occurs because of nature, or human beings. This paper calls this "the dichotomy of nature versus art." As the words, "nature" and "art," express, an artificial phenomenon is derived from what human beings intend, while a natural one is derived from something else, non-human things. In a natural phenomenon, there are no interventions of human beings that intend to arrange factors of the phenomenon. In other words, if a phenomenon is natural, factors in the world spontaneously behave and interact with each other. In contrast, if a phenomenon is artificial, human beings intervene in some factors that constitute the phenomenon. In some cases, they have intentions to arrange factors of the phenomenon. The intention is one of the most important factors that distinguish artificial phenomena from natural ones.

For instance, both a cave and a house have a function as a shelter in which people can stay and avoid exposure to rain and wind. However, when it comes to how they are created, they are quite different things. On the one hand, a cave is created by natural power, such as water flowing, weathering, and erosion. On the other hand, a house is built by human beings. A house that has walls, a roof, some bedrooms can be built by only natural powers only if a vast number of miracles occur simultaneously. Even if natural materials, such as wood, are used in a house, building a house is categorized as in an artificial phenomenon. Something artificial is emphasized only because it is derived from the behavior of human beings. The dichotomy can be found in how research fields are separated. Humanities and social sciences usually study something artificial, and natural sciences study something natural in the dichotomy. In other cases, the combination of a lake and a swimming pool is one of the other examples of the dichotomy of nature versus art, in which both store water in themselves, though a lake is created by natural power while a swimming pool is created by human beings, which has a fixed size.

Categorizing phenomena with the dichotomy of nature versus art is so ubiquitous that people can find it in many ways, or even in ordinary life. For instance, the terms social science and natural science represent how human beings categorize phenomena in the world to research a certain phenomenon. The former studies artificial phenomena, while the latter studies natural phenomena. Besides, in a supermarket, the distinction between organic products and non-organic ones can be an example of the dichotomy in ordinary life. People sometimes care whether the products they buy are made only in a natural way, or not. One of the reasons why the dichotomy can be found in such ways is likely to be that it can be easily understood because

the criterion of which category a phenomenon is is just whether it is derived from humans themselves or not.

However, the dichotomy has some problems. First, assuming human beings as the center of the criterion, the dichotomy of nature versus art is an arbitrary and subjective distinction. Indeed, as mentioned above, it is easy to understand for human beings; however, only the facility to be understood cannot be grounded to make the dichotomy a rational method to study phenomena in the world. Depending on our perspectives, we may consider that human beings belong to the natural part of the world as one sort of species. If extraterrestrial things who have no knowledge about the earth came here, they would not distinguish mountains and pyramids as different things (only if they had a visual system similar to human beings). Hence, the dichotomy is to be arbitrary, and not rational.

Second, when it comes to a phenomenon for which it is not clear whether it is natural or artificial, the dichotomy does not work well. This problem is more significant than the first one because the dichotomy of nature versus art forces researchers to determine that the phenomenon in question is natural or artificial, to apply theories and rules of one side of the dichotomy to it. Language is one of the examples of such an ambiguous phenomenon, in which human beings do not make by only themselves, nor does natural power. To distinguish phenomena between nature and art one side of that is not adequate in the case of ambiguous phenomena because it is not an essential matter whether a phenomenon is caused by human beings or other things.

Ambiguous phenomena, whoever leads to it, have common characteristics: unpredictability and fixed structures without intention. Unpredictability means that no one can know what will happen in interactions among factors that lead to the phenomenon in advance. This feature is derived from the complex structure of the phenomenon. The sum of the behavior of each factor cannot be equal to the whole phenomenon itself. If it were not for human beings, a phenomenon could have unpredictability when it has complex structures with a vast number of factors. Fixed forms can be yielded from factors other than human beings. Indeed, the behavior of human beings usually creates something neatly fixed, which appears not to be done spontaneously. For the common sense of human beings, fixed structures, such as building a house as the example above, have to be created by something that is intelligent and has the intention to achieve a certain goal. However, there can be found such a fixed structure without the behavior of human beings. For example, to build their nests, ants dig holes under the ground themselves, and the nests have a complex structure.

[T]he ants in a colony, each performing its own relatively simple actions, work together to build astoundingly complex structures that are clearly of great importance for the survival of the colony as a whole. Consider, for example, their use of soil, leaves, and twigs to construct huge nests of great strength and stability, with large networks of underground passages and dry, warm, brooding chambers whose temperatures are carefully controlled by decaying nest materials and the ants' own bodies. (Mitchell, 2009).

This is not because ants are good builders, but, as a result, they yield some neatly fixed structures as if it were by human beings. This feature of ambiguous phenomena, which cannot be categorized into one side of the dichotomy, is depicted in the following: one is with an fixed structure, without intention; the other is with intention, without intended result.

In the following, this paper introduces a few types of ambiguous phenomenon. One type of examples of ambiguous phenomena is ones in which human beings intentionally do something but something else that is not intended occurs in the end. For instance, the relation between supply and demand in an economy is an ambiguous phenomenon. The more consumers want a product, the more expensive the price of the product becomes, and vice versa. In this circumstance, consumers just want some products, or just buy them, and do not intend to make the price higher or lower. Despite their intentions, which is the factor that makes a phenomenon artificial, their behavior as a group leads to a phenomenon that is not intended in the end, which seems to be natural. This economic phenomenon, for instance, can be observed in foreign exchange, in which rates of currencies consistently change every day.

Even if human beings are not involved in a phenomenon, in some cases, it can be regarded as another type of an ambiguous phenomenon, which is neither caused by human beings nor by only natural existence that has no intention to do something. Animals are an example that engages in this type of ambiguous phenomenon. For example, bees move fast, like dancing, in figure eight. It is thought to be a communication to tell others what direction and how far flowers are in the size of the circle and its speed (Suzuki, 1973). The behaviors of bees is not the same type of either natural phenomena or artificial phenomena because they have intentions to behave in certain ways, such as to dance, and they are not human beings. The former deviates from the characteristics of artificial phenomena; the latter deviates from the ones of natural phenomena. Thus, the examples above can be also regarded as ambiguous phenomena.

All examples of ambiguous phenomena above are caused by living organisms, which have, or appear to have, intentions to achieve a certain goal. However, even if living organisms are not involved in a phenomenon, it can be found that an fixed structure emerges without

intentions. For example, hurricanes are spiral movements of the air with a difference of air pressure around itself and Coriolis force, which is caused by the rotation of the earth. Nothing like the intention of organisms exists in the occurrence of a hurricane, but it has a neatly fixed spiral structure, as though someone's intention were likely to intervene.

The following section, it will describe how ambiguous phenomena are treated in previous studies. Keller (1994) claims that the dichotomy of nature versus art has to add a phenomenon in which human beings have an intention to do something, but, as they are interacting with each other in a group, an unintentional result will occur. He called this type of phenomenon "phenomenon of the third kind."

2.2. Phenomena of the Third Kind (Keller, 1994)

Rudi Keller, a German linguist, discussed the dichotomy of nature and art and proposed the alternative distinction, in which phenomena in the world are categorized into three kinds.

- 1 There are things that are not the goal of human intentions and that are (therefore also) not the results of human actions (upright walk, the language of the bees, the weather, the Alps).
- 2 There are things which are the results of human actions and the goal of their intentions (Westminster Abbey, a cake, Esperanto).
- 3 There are things which are the result of human actions but not the goal of their intentions (inflation, the makeshift path across the lawn, our language). (Keller, 1994, p. 55).

Among these three, the third one is what is mentioned as an ambiguous phenomenon in the previous section, called "phenomenon of the third kind."

His way of distinction of phenomena is derived from the following procedure. First, he thought that it can be man-made because it is (A) "the result of human actions", or (B) "came into existence as a result of human intentions" (Keller, 1994, p. 54). From this, he demonstrated how the dichotomy of nature and art is yielded, and how a phenomenon of the third kind can be led logically.

These arguments do not, however, put the two parties in contradiction! Both are right, because the two positions are compatible. The supposed contradiction only came about because one party was forced to draw the inadmissible inference from non-B to non-A, and the other party was forced to draw the inadmissible inference from A to B. Differently expressed: since they tacitly assumed that A is equivalent to B, they were forced to accept the dichotomy (-A & -B)/(A & B). Everything which is not natural has to be artificial. From the fact that B implies A, but A does not imply B, it follows that the 'classical' dichotomy has to be replaced by a

trichotomy, because $B \cdot A$ is equivalent to $\neg(A \& B)$. Hence three possibilities remain: $(\neg A \& \neg B)/(A \& B)/(A \& \neg B)$ (Keller, 1994, p. 55).

The three kinds of phenomena are described in the figure below. An artificial phenomenon encompasses the second kind, an artificial one, and the third kind, an ambiguous one.

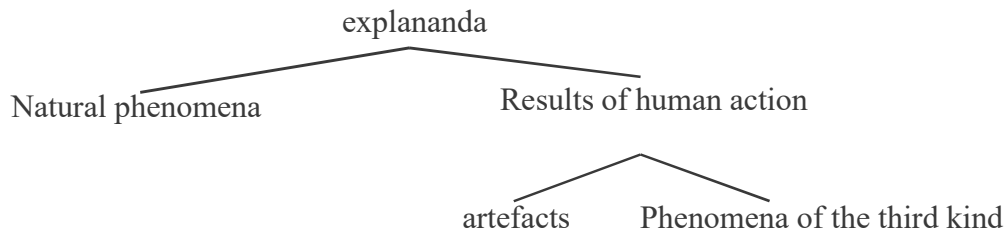


Figure 1: Phenomena of the Third Kind (Keller, 1994, p. 56)

2.3. Expanding a “Phenomenon of the Third Kind”

A phenomenon of the third kind is effective when people think about ambiguous phenomena by human beings, such as languages, economic behavior, and traffic jams. However, the idea of a phenomenon of the third kind is still inside the “prison” of the dichotomy of nature versus art, because it arbitrarily distinguishes phenomena by human beings from ones by natural power. Remaining in the dichotomy, a phenomenon of the third kind has the same problems that are mentioned above: the arbitrariness of the criterion and the mandatory distinction into the categories.

First, a phenomenon of the third kind can be regarded as one type of artificial phenomenon. This distinction is based on the dichotomy of nature versus art, whose criterion is arbitrary and subjective, not rational and objective. As previously mentioned, from the perspective of someone who has no knowledge about the earth and human beings, such as extraterrestrial beings, there might be no distinction between everything on the earth.

Second, a phenomenon of the third kind is restricted only by human beings. Ambiguous phenomena in which organisms other than human beings are involved have to be removed from it. However, as is discussed in the previous section, whichever human beings or other organisms lead to a phenomenon, there is no difference between them because of their unpredictability and fixed structures without intentions. Unless researchers attempt to specifically focus on what human beings do in a phenomenon, whether human beings are involved in it or not will not matter.

It is not essentially important what leads to a phenomenon, but how complexly the factors in a phenomenon are interacting. This paper argues that it is this complexity of a phenomenon that is the key to establishing an alternative perspective on ambiguous phenomena. The word, complex, in this context, has a specific meaning. This means that, in an ambiguous phenomenon, factors behave simply in themselves, but interact complexly when it becomes a group, which leads to something more than the sum of its factors' behavior. For instance, an engine of an airplane has a complicated structure with many small parts in it, but its function is straightforward and predictable, which means not a complex system (Mufwene et al, 2017). On the other hand, a traffic jam is derived from a driver's braking with the intention not to crash the other car in front; however, this slowing speed makes drivers following the car brake, too, not to crash, which afterward makes the velocity of cars zero. This is a phenomenon in which simple behavior, braking, leads to more than the sum of the simple behavior, a traffic jam. This idea is from a "complex system". This is "a system in which large networks of components with no central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing, and adaptation via learning or evolution" (Mitchell, 2009, p. 13). To escape the dichotomy of nature and art, this paper uses such an idea and establishes an alternative perspective to phenomena in the world: causality and "resultantity".

2.4. Alternative Distinction: Causality and Resultantity

As is mentioned in the previous section, what this paper attempts to propose is that, instead of the dichotomy of nature and art, there is an alternative distinction of phenomena according to which the criterion is how complex it is, and that phenomena which are not complex are ruled by causality, in which a cause always leads to a certain result; complex ones come to exist by another type of relation between cause and result, in which a cause does not necessarily lead to a certain result. This paper calls the second kind of causality "resultantity."

Causality is defined as a relationship in which a cause necessarily leads to a certain phenomenon. In this sense, a cause and a phenomenon are firmly tied together. In causality, a definite factor, or factors, is exploited as an explanation of a phenomenon. Moreover, people can predict what will happen in the future from such a factor, or factors. Natural scientific phenomena which can be illustrated in a formula can be an example of causality. For example, on Earth, a thing always falls the ground because a very massive thing, such as the Earth, has gravity. In this case, the cause corresponds to gravity, and the effect corresponds to the

phenomenon of falling. Gravity necessarily makes a thing fall, which represents a relation of causality.

On the other hand, the term, resultancy, is defined as a relationship to illustrate the processes of a phenomenon that does not attribute a definite cause, but a vast number of factors to the occurrence of the phenomenon. However, the factors are too many to be identified, at least by the current technologies, and dealt with in the same way as is done for causality. Moreover, why the set of factors deal with a certain phenomenon is dependent on another set of many factors, which is also dependent on other factors, and this loop will never end. Thus, the term, resultancy, means that a phenomenon cannot be known to what result the causes lead unless observers have watched the result. Resultancy means that a phenomenon that consequently emerges is not necessarily attributed to a certain cause, but many factors are determined by coincidence. For example, when a leaf on the branch falls off the tree, it will be swayed by winds or bumped by a bird until it touches the ground, so that it is difficult to catch the leaf in the air. However, what determines the behavior of the leaf cannot be identified by a certain factor, but by a vast number of factors, such as wind, a bird and the position of the branch, each of which also has the factors that provoke it, such as temperature that will influence wind, and this relation will eternally continue.

To make it clear what causality and resultancy are, the comparison between them is described in the following. First, while under causality the relation between each factor is independent of other relations, under resultancy the relations among factors themselves are interacting with each other. Gravity can make causality only if the force is independent of other forces, such as wind, animals, magnetic power. When they are assumed with gravity, it would lead to resultancy.

Another is that causality is cause-oriented and resultancy is result-oriented, as their names suggest. Under causality, a cause always precedes the result, because the phenomenon is caused by a certain cause. However, under resultancy, a reason why a certain phenomenon happens cannot be identified, or it can be only presumed through analyses of the phenomenon after completion of the phenomenon. In the case of a falling leaf, mentioned the previous part of this section, people can predict a leaf will fall because of gravity. However, it cannot be predicted at which point on the ground the leaf will touch. The only thing people can do is to presume, not identify, why the leaf falls at that point from the result. While causality can assume a cause, such as gravity, that always leads to a certain effect, such as falling, resultancy has only a

result without a definite cause, but with a vast number of factors all of which cannot be recognized.

Third, what causality illustrates can be described as laws, while what resultancy illustrates can be described as conventions. Under causality, because a cause always precedes a result, it is necessarily predictable that a certain cause will lead to a certain result. This relation can be regarded as a law. On the other hand, under resultancy, there is no such an relation between a cause and effect as causality. Instead, people can think about what will happen to their experiences or an inductive conclusion. This is not an absolute way to predict as causality does but a reliable way which people use in ordinary life. For instance, people believe that they can safely walk across the crosswalk on the green signal because the signal on the road is red and cars ought to stop. However, this is not a rule that can never violated, so pedestrians have to walk with the danger of being run over. In this paper, such a condition is called convention as an antonym of law, mentioned above. These features of both relations, causality and resultancy, can be respectively summarized by the following auxiliaries: “must” and “should”. In the case of a falling leaf, it can be said that gravity “must” make the leaf fall, and wind, a bird, and other factors “be likely to” make the leaf sway and determine the point on the ground at which the leaf touches. This paper assumes that a language in ordinary life is one of the products of resultancy. The differences between causality and resultancy are described in the table below.

Table 1: Causality and Resultancy

Causality	Resultancy
Independent	Interactive
Cause-oriented	Result-oriented
Laws	Conventions
It “must” ...	It “is likely to” ...

The important thing is that causality and resultancy are not exclusive to each other. From the definitions of the two terms, it can be found that phenomena of resultancy have a vast number of phenomena of causality in itself. Seeing each relation of factors of a phenomenon of resultancy by abstracting only the behavior of factors that is to be considered, it is a causal relationship between a cause and its result. Components of resultancy are causality. What makes a phenomenon resultant is complex interactions among the factors, which emerge some behavior more than the sum of the factors’ behavior. The next chapter will be discussed how

the idea of causality and resultativity corresponds to linguistic research and how can be applied to it.

3. Causality and Resultativity in a language

In short, causality and resultativity corresponds to two paradigms of linguistic research, respectively, closed-system linguistics and open-system linguistics. The former sees language as a closed-system, which is static and unchangeable; the latter regards language as an open-system, which is dynamic and changeable. The following sections will introduce in detail and discuss how causality and resultativity can be found in each paradigm.

3.1. Language as a Closed-System

The term “closed-system linguistics” is an antonym of the term “open-system linguistics” which was introduced by Norimitsu Tosu, a Japanese linguist, to describe a research enterprise, including linguistic anthropology, sociolinguistics, and cognitive linguistics, that has developed from other disciplines and assumes connections to fields outside of language (Tosu, 2008). This thought derives from the idea that a language is a set of dynamic processes made by many factors. In contrast, closed-system linguistics is defined in this paper as a broad research enterprise of linguistics, in which the researcher assumes that a language is an autonomous system, or “closed” from outside of a language. The researchers of closed-system linguistics usually assume idealized language that is not polluted with external factors, such as contexts, cultures, and implicatures. It is generative grammar that mainly constitutes closed-system linguistics and other research fields that derive from generative grammar also belong to closed-system linguistics.

The following parts, it will extract some significant aspects of closed-system linguistics: a limit of human being’s language, idealized language, and grammar as a rule. These features of closed-system linguistics tell us that it assumes causality in language.

Closed-system linguistics seeks the borderline distinguishing possible or impossible for a language, which can be also said to determine the scope of possible actions that a human brain can perform. Chomsky assumes the purpose of generative grammar is to discover and illustrate the natures of an entity that is possible as a language of human beings (Newmeyer, 1986). As this statement is mentioned, closed-system linguists might not be interested in how speakers behave in conversations in ordinary life, but in what makes it possible for speakers to speak a

language, which can be said to be a more abstract and basic level of discussion. The assumption of generative grammar is that a language is a deductive system that is generated by operating a set of rules, from which it can be seen that the language researchers assume is not necessary to exist, but it is adequate to be predicted from the rules. This attitude to a language can be described in the word, “idealized.”

Closed-system linguistics, mainly generative grammar, assumes an idealized language to research. As written in the previous section, the word “idealized” means that it is not necessary to be actual. Moreover, what “idealized” also means is an untouched and pure state of a language, which can be described as before a language is exposed or uttered. Generative linguists sometimes assume pure speakers, called idealized speakers, who always speak grammatically and do not make mistakes. Sometimes, the idealized speaker that is assumed by a researcher is the researcher him/herself. It means that, in closed-system linguistics, there are no “other” speakers, but only the idealized speaker. Because an idealized speaker has to generate an idealized language that is grammatically pure or obeying every rule the researchers assume, the idealized speaker must not have interaction with any other thing. An idealized speaker exists alone in the world, or in an idealized world in which other speakers are eliminated.

Closed-system linguistics has its main interest in formal aspects of language, especially syntax. The way to regard grammar is that “the fully adequate grammar must assign to each of an infinite range of sentences a structural description indicates how this sentence is understood by the ideal speaker- hearer” (Chomsky, 1965, pp. 4-5). This assumption of grammar can be described as “law” because to explain all phenomena requires a tight and firm connection between a factor that causes and a certain phenomenon. The word, “law”, is a general word, which is used in several cases, such as the law of relativity. However, in closed-system linguistics, this word has a specific meaning, rather than the meaning in which it is used in a general context. It is defined as something absolute that can always lead to a certain result from a certain cause. Because of this definition, a law has to be distinguished from a “convention,” which will be discussed in the following section. For instance, strictly speaking, traffic rules can be violated, such as ignoring traffic signals. This kind of rule is categorized as a convention. On the other hand, the law of universal gravitation, discovered by Isaac Newton, is an absolute rule, at least around the Earth. Therefore, what closed-system linguistics attempts to discover is grammar as law.

3.2. Language as an Open-System

Open-system linguistics is defined in this paper as a broad research enterprise of linguistics in which the researchers consider that a language is open to the world, and a set of dynamic processes are made by many factors. One of the typical members of this broad research enterprise is cognitive linguistics. Moreover, one of the most recent areas of research from the point of view of interactions is open-system linguistics. It shows that grammar, which has always been considered as a topic that is restricted in a speaker's mind, not open to something social, is created through social processes. Yoshikawa (2017) claims that grammar derives from social pressure speakers make by using particular forms many times, rather than from innate knowledge in one's brain. This framework is called "sociosyntax." The attempt of sociosyntax has a hope that provides a new perspective with linguistic research by synthesizing the knowledge of theoretical linguistics, such as generative grammar and cognitive linguistics, which have involved in syntax and construction, and of sociolinguistics and linguistic anthropology, which have researched actual uses of a language and contexts of the uses (Yoshikawa, 2015). Social pressure means interactions between individuals and society. Individuals have only collections of expressions and performing systems; what correctly "drives" the performing systems is social pressure, which can be described as the force that makes people "speak as the others do" (Yoshikawa, 2010). Therefore, the behaviors of individuals compel someone else to behave as they do.

The following will introduce the features of open-system linguistics: the prerequisite of interaction and language as a convention. Open-system linguistics assumes that interactions play a salient role in a language. The usage-based model, which cognitive grammar proposes, prerequisites interaction with other speakers. It assumes that many speakers are important because this facet is one of the very things that distinguish open-system linguistics from closed-system linguistics, which assumes no relations to another speaker. Interaction, of course, always presupposes that there is more than one person. Thus, in open-system linguistics, not only a language in an individual but also a language in a collection of speakers have to be considered to describe behaviors of an interactive language.

A language observed through experiences and interactions can be described with the adjective "conventional because a language that open-system linguistics assumes is not governed by laws as grammar is in closed-system linguistics, but by less restrictive rules. In this paper, a "convention" is defined as a rule that has the power to force someone to do something but that is not inviolable. If a rule is conventional, people can assume another way

of not following it, while if a rule is a law, the only thing people can do is to obey it, and even to assume another way cannot be done. As is mentioned in the previous section, a convention is a rule that orders someone not to do something but can be violated; on the other hand, law is a rule that cannot be violated.

3.3. Causality and Resultantity in Language

From the comparison of closed-system linguistics and open-system linguistics, it can be found that the former has causality in its structure; the latter has resultantity. Grammar as law assumes that once an input is applied to the rules, it necessarily leads to a certain output, which causality represents. On the other hand, language as convention in open-system linguistics regards an input as not a trigger of one certain result, but a factors of a phenomenon which complexly interacts with others to form a structure more than the sum of its factors, which represents resultantity. Thus, the relation of causality describes the language of closed-system linguistics and that of resultantity describes the language of open-system linguistics.

Besides, it is existence of others that makes a phenomenon resultant. The distinction between causality and resultantity is based on the existence of others. In open-system linguistics, as is discussed above, it prerequisites interactions among speakers, which implies that there are always other speakers, whereas, in closed-system linguistics, it does not assume any speakers except the idealized speaker in the research. The existence of several speakers grows interactions in a phenomenon into something more complex because the way how speaker A speaks is dependent on others, such as speaker B and speaker C, while speaker B is also dependent on the way how others speak, including speaker A. Each speaker is dependent on the way how others speak to use a language to make themselves understood. From the resultant point of view on language, a speaker's behavior would lead to change the others' behavior, whereas the speaker's behavior could be caused by another speaker's behavior, and that might be derived from others', and this relation will go on. Thus, the existence of others yields complexity in the language of open-system linguistics, which is described as resultantity.

Based on the idea above, open-system linguistics with resultantity, it can be said that open-system linguistics needs to focus on how each speaker behaves in a group. However, the current open-system linguistics especially studies only the individual speakers, not focusing on behavior in a group. The next chapter will be discussed the perspective of individuals in a group in open-system linguistics.

4. Language in Individuals and Groups

If there were resultativity in the language of open-system linguistics with the existence of others, it would be necessary to study not only knowledge of individual speakers, but also how such knowledge interacts between each speaker and what effects it leads to in the whole group. From resultativity, the factors in a phenomenon interact with each other and provoke the behavior of a group more than the sum of them, which can be regarded as a kind of complex systems. Open-system linguistics requires studying from the perspective of resultativity on language, that is, what the relation between linguistic knowledge of individual speakers and that of a group is.

Some recent linguistic studies are interested in such a topic, namely, how linguistic knowledge of individual speakers and that of a group are related. Dąbrowska (2020) illustrated that not all Polish speakers use the genitive case of masculine nouns in the typical way when they apply to nonce nouns. In the research, a participant is told nonce names of several objects and substances, and plays hiding games with another participant. The task is to hide the referent of the nonce name and ask, “Nie ma NOUN”, “The NOUN is gone” in English, to another. The result is that. She concludes that:

[O]nly a minority speakers have (implicit) knowledge of the underlying linguistic generalization; yet in normal language production and comprehension, speakers behave as if they knew the rule... It is the “sensitive” speakers who introduce and maintain the pattern, while others approximate their behaviour without actually sharing the underlying rule. (Dąbrowska, 2020, p. 224).

As such, there can be found a gap between what individual speakers do and what a group of them does.

In other research fields, there is research that focuses on how individuals' behavior is observed in a group. Watts (2011) focuses on this sort of ambiguous phenomenon. He experiments with how the popularity of songs is determined among listeners, and whether social factors, such as the number of listeners of the song, influence the popularity. In the experiment, he prepared nine web sites in which subjects can download and listen to songs. One of them did not display the number of how many people download each song, while the others showed the number of downloads. The former is the group without a social factor; the latter is the one with a social factor. The websites are arranged so that those who are classified into the eight groups displaying the number of downloads of each song can see only the number of the group in which they are. Subjects are randomly divided into nine groups and download

the songs which they like to listen to. As a result, each group has different songs as the most popular song, which is downloaded most in a group. This study shows that behavior in a group is determined by the accumulation of what each individual does. This idea appears to be applied to research of open-system linguistics, which has to consider resultancy in language.

5. Conclusion

This paper has pointed out that the dichotomy of nature and art is not sufficient to consider a phenomenon that is not clear on which side it is, so an alternative distinction of phenomena, causality and resultancy, is proposed. The alternative distinction is based on the relation between a cause and its result. In causality, a cause always leads to a certain result, while in resultancy a result cannot be explained with a certain cause but a vast number of factors are involved in it, which makes the phenomenon unpredictable. In linguistic research fields, closed-system linguistics assumes causality in language, whereas open-system linguistics assumes resultancy in language. In the end, this paper has discussed the necessity for open-system linguistics to focus on how individual speakers' behavior influences the behavior of a group. Through such a point of view, researchers could show how language is produced by complex interactions among speakers. This perspective will be able to be developed with research on complex systems.

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