ISSN 1798-4769
Journal of Language Teaching and Research, Vol. 1, No. 4, pp. 488-491, July 2010

doi:10.4304/jltr.1.4.488-491

On Paul Grice's Treatment of Logic

Mian Wang
English Department, Xi'an University of Technology, Xi'an, China
Email: wangmian_00@126.com

***Abstract*—To demonstrate the principles of human thoughts, logic is regarded to, necessarily, be able to explain the meaning conveyed by language since language is the carrier of human thoughts. This study would explore Grice's treatment of logic, highlight several problems of his theory and compare his approach with Adams's probability logic.**

***Index Terms*—Grice, language, logic, formal logic, comparison**

I. Introduction

Logic is believed to be the description of human thoughts, while language is regarded as expression of human thoughts. Thus it is believed that there must be some corresponding relationship between logic and language. In order to find feasible logical rules, logicians have devised different approaches, among which formal logic is the most traditional and influential one, although it has been arousing disputes.

Formal logic has the advantages of being precise, simple, general and powerful of inference from a small number of rules. But it is so far from full explanation of ordinary language that many people refuse to accept it, since in formal logic given conditions can exclusively lead to only one definite outcome, which seems to turn a blind eye to the diversity of human language meaning. Thus some logicians hold that there must be a system of ordinary logic that is more feasible to daily language than formal logic. But no system of ordinary logic has been established.

Grice is one of the formalists as called by himself (1989: 21). He regards it a "common mistake" to think that there is a gap between propositional logic and ordinary logic (1989: 24). He holds that the weirdness of the propositions which are logically true is caused by pragmatic factors.

This study would look into Grice's treatment of logic, highlight several problems of his theory and compare his approach with Adams's probability logic.

II. Grice's Treatment of Logic

In order to prove that formal logic is reasonable and worth preserving, Grice put forward the theory of implicature, in which divided meaning of ordinary language into two parts: what is said and what is implicated. At the level of what is said ordinary language obey the rules of formal logic. In other words, ordinary language is identical to formal logic with respect to what is said. While at the level of what is implicated ordinary language differs from formal logic. For instance:

(1) Marry got married & she had a baby.

(2) Marry got married and she had a baby.

These two sentences say the same, but implicated the different. Sentence (2) implicated that there is a temporal relationship between the facts of Mary's getting married and having a baby, while sentence (1) does not.

Grice attributes this kind of difference to pragmatic factors. He argued that conversations are characterized by cooperative efforts; and each participant recognizes in them a common purpose or set of purposes, or at least a mutually accepted direction; since human would be rational (1989: 26). People would cooperate to move towards the purpose no matter whether it is fixed from the start or evolves during the exchange. The purpose and the efforts people made during this process of exchange weave what is said and what is implicated into together to make ordinary language differ from formal logic. The rules observed to make such cooperative efforts are generalized by Grice, who named them Cooperative Principle (CP).

By the theory of implicature, Grice seems to explain the difference between ordinary language and formal logic successfully. The relationship between ordinary language and formal logic is clearly stated; therefore, formal logic gains a proper status in ordinary language understanding and is accepted by more and more people because of its power in explaining language meaning together with the theory of implicature.

III. Problems of Grice's Approach

Grice's principles are simple, general, and reasonable, thus seems easy to be handled. But there still are some problems of that approach.

A. Complicated Inference Process

Although the theory seems to be simple that ordinary language meaning equals formal logical meaning + implicated meaning, the inference process should be complicated. According to Grice, our understanding process of uttered sentences should be as follows:

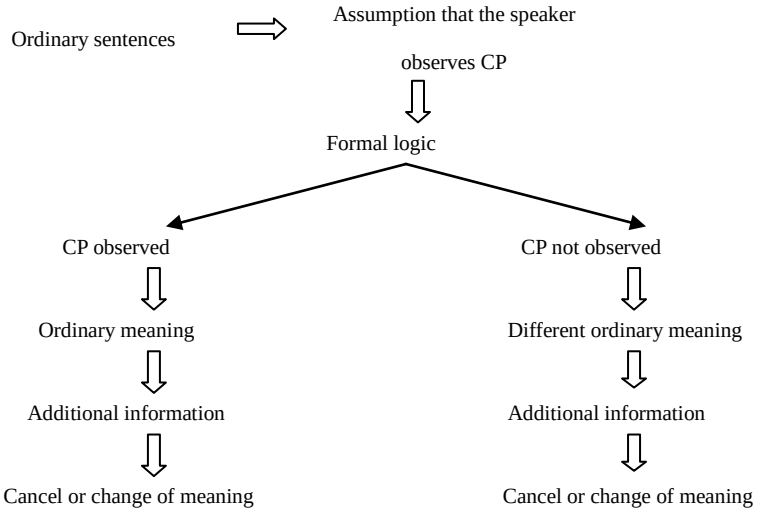

Fig.1 Understanding process of uttered sentences

As we can see from the above figure, we have to follow so many steps to understand what we have heard. What's more, the steps should be much more if the inference process of formal logic is complicated. Since there are different maxims under different principles, it may take us even more time to judge whether any maxims is violated one by one.

Obviously, this approach can not be validated through any practical way, this complex way of meaning processing seems to be unacceptable, especially the formal logical inference process, which we have not been aware of during conversations.

B. No Joints of Formal Logic and Implicature

The systems of formal logic and implicature are both independent and complete ones with their own rules and maxims. There is not any corresponding relationship between them or any rules function to bridge them either. For example (Prof. Lin Yunqing's courseware):

Grice's account:

(1) 'Bush is the president of USA.' is true.

(2) 'If my legs hurt, then Bush is the president of USA' is logically true.

(3) But sentence (2) sounds weird and pragmatically we prefer not to say it, because of maxim of quantity (i) and maxim of quality (ii).

This explanation seems to joint formal logic and ordinary language perfectly. But the problem is how we join them together. When a living sentence cannot be explained by formal logic, the maxims of CP does work; but how many or what kind of such sentences can be properly explained by maxim of quantity (i) or and maxim of quality (ii)? Do they be chosen by intuition or just commonsense?

The condition is similar, when we are going to say something. How do we choose one or more maxims to adjust a sentence we have thought about in formal logic into ordinary language? Should we try the maxims one by one? I believe there must be some principles or rules to guide the choices of proper maxims, if Grice's theory really works.

Therefore, these two so called complementary theories are like two halves of a piece of paper; although the total of them is definitely a whole piece of paper, they cannot match each other if we want to make them the original piece of paper again. Even if they can match perfectly, their matching is suspicious since their indentations are vague.

C. No Criterions for the Maxims

There is no practical criterion to judge whether an uttered sentence violate a particular maxim. Admittedly, as observed, most of us obey the maxims of CP in daily communication, but how can we be aware that a certain maxim is violated by the speaker or even what kind of implication is conveyed by such kind of violation? For example: how many words or how much information conveyed can be regarded as too informative? Sometimes only one word is too many.

These judgments are still made by commonsense. There should be some rules obeyed by human beings consciously or unconsciously, unless it is an inborn faculty of human to make such judgments. However, the fact is that the

implications conveyed by the violations are always misunderstood or ignored by us in communication, especially for the Maxims of Quality, it is really difficult for listeners to decide whether the speaker observes the maxims or not. Thus the judgments of violations are obviously not inborn, which is also perfectly proved by successful liars.

Then the criterions that make clear to what degree should one sentence be considered a violation need to be stated in the theory.

What's more, whether the implications expressed by violations of a certain maxim are random or not should be explored as well, since a complete and feasible theory cannot have its conclusions random or determined by commonsense.

D. Suspicion of the Existence of the Maxims

CP are assumptions which have not undergone any systematic tests to prove its existence. Although most of us obey the maxims in most daily communication, exceptions still exists. They are originally summed up from experience, its existence is suspicious since the human experience cannot be totally examined, and there is no practical way to test the assumptions with all human language. Formal logic is provable in its own system by certain calculation rule, while maxims of CP are improvable; hence an unreliable complementary theory.

E. Relationship between Formal Logic and Grice's Theory

I doubt whether the relationship between formal logic and Grice's theory is a complementary one or not, for their purposes diverge. Formal logic is to judge whether a proposition is true or not, while Grice's theory is to explain the understandability of ordinary language. We can consider that Grice put forward his theory to convert the formal logically calculated language into ordinary language by adding pragmatic elements through his maxims. Thus Grice may regard being logically true and being ordinarily understandable are identical by pragmatic processing, which sounds like the process of adding salt to water makes salty water. But the water without salt should also be drinkable. Similarly, sentences without any contexts should be understandable as well. But the situation of formal logic is that many logically true propositions are strange to speak or hear without pragmatic adjustment or with practical environment.

There are also examples that are logically true but pragmatically wrong; and they cannot be explained by his maxims. For instance:

Suppose: If Mary gets married and has a child, then her father will be happy.

Then: If Mary has a child and gets married, then her father will be happy.

According to the truth-functional account, if we believe the former, we should believe the latter. But we believe the former, not the latter.

Grice may explain that the latter is pragmatically inappropriate, but actually, we ordinarily believe that the latter is wrong, which is conflicting with formal logic.

Therefore it cannot be simply determined that the relationship between them is a complementary one. It is more like the relationship between a kind of liquid material and a filter. Numerous sentences are logically true through logical calculation, among which some are ordinarily understandable while others are weird. Grice's theory is a large filter, through which pragmatically appropriate ones are kept to aid human communications. But unfortunately, the eyes of the filter to some extent are vague, thus unexplainable weird sentences always escape.

IV. ADAM'S LOGIC

Adams's logic is also a calculating logic as propositional logic; it is a modified version or extended version of propositional logic called probability logic.

Adams defines validity in conditional logic in terms of Probability Preservation Principle: if an argument is valid, then the improbabilities of the conclusion cannot exceed the sum of the improbabilities of the premises. In other words, "if A then B" means that given that A is true, the possibility of B's being true is high. The rules are as follows:

$$Pr(\sim A) = 1 - Pr(A)$$

$$Pr(A\&B) \leq \min\{Pr(A), Pr(B)\}$$

$$Pr(A \vee B) \geq \max\{Pr(A), Pr(B)\}$$

$$Pr(A \vee B) = Pr(A) + Pr(B) - Pr(A\&B)$$

$$Pr(B/A) = Pr(A\&B)/Pr(A)$$

His logic is still designed to calculate the validity of the propositions as Grice's. It seems to be more reasonable than formal logic in that it can conform to the uncertainty of ordinary language since not all speakers are absolutely positive or negative about what they are saying.

With some sentences this theory seems to work perfectly. For example: (1) He is either at home or at school. (2) If he is not at home, he is at school. In sentence (1), the possibilities of his being at home and at school are relatively high; while in sentence (2) the possibility of his being at school is the highest given that he is not at school. But in this sense,

the words expressing uncertainty in languages such as possible, probable, and so on should be of no use and should be abandoned, for the propositions with lower probabilities are considered to be false while the ones with higher probabilities are true. Therefore the sentence "If he was there last night, he probably committed the crime." has the same meaning with "If he was there last night, he is the criminal". Here comes out a ridiculous result that a suspect should be a criminal.

Such numerous exceptions of this theory prove that this logic is as neither powerful nor feasible as it appears.

V. Comparison between the Two Approaches

When comparing Adams' logic with Grice's, differences and similarities can be drawn. They both preserve formal logic and attempt to explain the variety of ordinary language. But their differences are significant. Grice distinguishes the processes of logical thought and actual speaking, while Adams makes it a whole; and Adams' rules are much less and simple. Therefore, Adams' logic seems to be more scientific, simple, precise and direct for the mathematical elements in it; while Grice's looks totally experiential.

However, when we take a further look at the theories, the results turned to be different that Adams' theory is less powerful and less reasonable. Adams' logic has fewer rules, which seems to be simple. But it is really difficult for us to calculate the truthfulness or falseness of a proposition according to his rules since on most occasions possibilities cannot be precisely calculated. For example:

A: Where is Tom?

B: I don't know. Ur…He may be at home.

Speaker B is obviously not sure about his guess that Tom is at home. He cannot tell us how much the probability Tom's being at home would take. If we gather all the conditions and possibilities related to the question and scientifically calculated the probably to prove that what speaker B said is true, that would be a rather complicated and possibly a job in vain. If we just try to guess the probability, by common sense, Adams' logic loses its merits of being scientific and precise. Thus it is not as simple and scientific as it seems to be.

The other demerit of Adams's logic is the power of explanation comparing with Grice's. There are much more exceptions of probability logic; and these exceptions are more obvious. Although Grice's language model of formal logic + pragmatic elements is doubtful in that the two steps exist or not, Adams' logic can be rejected that we never be conscious of any process of probability calculation. At least Grice's CP is accepted for most of us obey it in spite that we do not know whether the logical processing of thoughts really exists or not.

To conclude, Grice's theory is more feasible, reasonable, and powerful than Adams', although there is still room for improvement.

References

[1] Chen, Zhian. & Ma, Junjun. (2006). Rationality: The Core of Grice's Philosophy. *Modern Foreign Languages,* 03, 257-264.
[2] Grice, P. (1989). Studies in the Way of Words. London: Harvard University Press.
[3] Grice, P. (2001). Aspects of Reason.Oxford: Clarendon Press.
[4] Lemmon, E. J. (1993). Beginning Logic. Suffolk: St. Edmundsbury Press.
[5] Lin, Yinqing. (2007). Paul Grice, Philosophor and Linguist. *Modern Foreign Languages*, 01, 105-107.
[6] Neal, S. (1992). Paul Grice and the philosophy oflanguage. *Linguistics and Philosophy*, 15, 509-59.

Mian Wang was born in Henan, China in 1982. She received her M.A. degree in linguistics from Beijing Normal University, China in 2009.

She is currently a teaching assistant in the School of Humanities and Foreign Languages, Xi'an University of technology, Xi'an, China. Her research interests include sociolinguistics and language philosophy.