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“Subjective Interpretation of the Text in a Qualitative Study Is Not So ‘Subjective’.”

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[Slide 0]

Thank you chair-person for your kind introducing me.

I am an epidemiologist and biostatistician originally. Last ten years, I have thought about scientific methods of qualitative researches. So frequently quantitative researchers criticize text interpretations in qualitative researches, because they think that text interpretations are subjective and unreliable. But I think it is not so subjective, because I guess the language system in the brain must be structured systematically from viewpoints of linguistic structuralism and semantics.

Recently I have tried to explain the interpretation system in our brains. And finally, I came to the conclusion that human beings have the interpretation system in common.

I don't think I can describe it satisfactorily and completely. However, I hope my work will be able to develop the method for qualitative researches. It may just help.

[Slide 1]

Today, first, I would like to point the main issue of qualitative research, and related problems.

.Second, I will compare the methods of Quantitative and Qualitative researches in order to clear the issues of text interpretations.

Third, I would like to introduce the primary concept of structuralist philosophy of science to indicate that qualitative study must be scientific.

Forth, in order to describe the language system and structure, I will briefly explain Saussure's general linguistics and Chomsky's universal grammar.

Finally, I would like to explain the new cognitive and functional approaches to language structures.

[Slide 2]

Now, we would like to discuss the criticism to the qualitative studies by the quantitative researchers.

From the viewpoints of statistical generalization, they reject the results of qualitative study.

Because, first of all, we usually use a few cases without randomized sampling. This criticism is actually misleading. We should correct their misunderstanding.

If we try to estimate population values, we need a large number of cases by using statistical methods. Qualitative studies use this methodology.

However, in a qualitative research, we usually try to extract the important concepts related

to the subject of interest. In this case, if we can get rich and enough information about the study subject, it might be possible to extract it from only one informant theoretically. Second, the method of data analysis, that is, the text interpretation is subjective. However, I don't think subjective interpretation is unscientific, even though most of quantitative researchers criticize it.

[Slide 3]

We have two main issues in this presentation as shown.

First of all, I would like to discuss the definition of "Science" in brief. Because "Scientific evidence" depends on the definition; that is, I think what "Science" is, therefore I want to introduce the "structuralist philosophy of science" proposed by Prof. Ikeda in 1990.

Second, we will discuss the issue about the text interpretation. Frequently subjective interpretation is criticized by the quantitative researchers as well known. I will argue against this criticism by the use of concepts derived mainly from Saussure's theory of general linguistics, Chomskian paradigms, and also natural semantic metalanguage.

[Slide 4]

Ludwig Wittgenstein told about science and language in *Tractatus Logico-Philosophicus* as shown. He indicated the essence of the relationship among language, science, and world.

4.11 The totality of true propositions is the whole of natural science (or the whole corpus of natural sciences)

4.116 Everything that can be thought at all can be thought clearly. Everything that can be put into words can be put clearly.

4.1212 What can be shown, cannot be said.

5.6 The limits of my language mean the limits of my world.

7 What we cannot speak about we must pass over in silence.

Actually, whenever we want to express whatever we think about, we should use the language. Otherwise we cannot think about, we cannot express anything. It is true the limits of our languages mean the limits of our world.

[Slide 5]

Wittgenstein said, what we cannot speak about we must pass over in silence. Although he pointed out, we cannot speak about our feelings, images, thoughts, recognitions, and so on, only in Philosophy. However, in qualitative researches, we must speak about them.

We describe our feelings and thoughts about our personal experiences in various phenomena.

[Slide 6]

In order to clear the issue of text interpretation, I will compare the methods of Quantitative and Qualitative studies.

Question is, why do they think that “Text Interpretation” must be subjective, doubtful, unreliable, and unscientific? To obtain a clue about it, first, I would like to consider the quantitative methods by using an example in some imaginary situation.

[Slide 7]

Supposedly, in near future, we can buy a Robot for our studies if you can get some financial support by the government, some company, or some Institute, etc. In a randomized clinical trial about new drugs for diabetes, I can use i-Robot 5 of the Apple.

After finished the research, I give the data sheet to i-Robot. Then after watched the data, immediately, it says “New drugs are more effective than standard drugs with 5% statistically significant difference.” I think no one says that the result is your robot’s subjective judgment. Why cannot it be said so? If I computed t-test by my calculator and got the result, someone may say that your result was doubtful.

[Slide 8]

Supposedly, all of i-Robot 5 are installed Statistical Software Packages like SPSS version 100 and SAS version 77 in their electronic brains. Therefore, the calculations for the statistical analysis are already determined according to the same algorithms in their brains. In such case, we must think the result obtained by Robot is scientifically objective.

[Slide 9]

Next, I try to consider text interpretations in qualitative researches. In this case, usually we use own brains to interpret the text data for now. In comparison with Robot’s example, I think two procedures of data analyses are almost the same.

About the hardware, one is the electronic brain, and another is the human brain. About the software, one is the programs according to the algorithms of statistical calculations. And another may be neurological systems developed in the brain.

Actually, I don’t think we sufficiently know how our language system can develop in our brains. If we can find the text interpretation algorithms in common, we must make a Robot for the purpose of automatic text interpretation. If we do so, we can say that qualitative research can obtain scientific and objective results.

[Slide 10]

I would like to discuss what we need to elucidate. For text interpretation, the hardware is a human brain. Our brains must be the same in all persons in the world. In fact, there may be a little difference among people, but not so big, if we compare normal people, I think.

Software is our language system. As well known, our languages seem to be different among people in different countries. However, the basic structure of some language seems to be the same among people in certain country at least.

From this fact, I try to explain my assumption for text interpretations. That is, we have the common language structures developed in our brains. Therefore, according to the system, our text interpretations can give almost the same results, if we can find good algorithms for text interpretations. For my explanations, I will introduce the concepts of “Structuralist Philosophy of Science”.

[Slide 11]

I think it is very useful to consider the issues about the text interpretation from the viewpoint of structuralist philosophy of science. Prof. Ikeda defined that science is an attempt to explain a phenomenon with words and their relationships. The phenomenon is always variant, but the words and relationships are invariant. Hence, we can say that science is an attempt to decipher the variant in terms of the invariant.

Alternatively, science is a game to decipher what is visible in terms of what is invisible. If the word and formalism that construct scientific theories do not really exist in the external world, they must reflect patterns of human cognition and thinking. That means, there can be many different scientific theories proposed for the same phenomenon.

We should think that the usefulness and value of the scientific theory must depend on the degree of fitness to the phenomenon in question, rather than the ultimate truthfulness or correctness of the theory.

[Slide 12]

From the viewpoint of structuralist philosophy of science, there must be many different theories for the explanation about one phenomenon. Because we don't think that there is the only one true theory. Actually it is true that we can never find the truth about the causality of phenomena fundamentally.

Like physics, we use the mathematical equations for the relationships among things. For example,  $E = MC^2$ . This is a famous equation proposed by Einstein. E is Energy, M is Mass, and C is the velocity of light. By using the numerical expressions, that equation looks very concrete and quite certain. However, if another theory can fit the phenomenon more than it, old one will be replaced or modified.

We can also use qualitative theories for the internal phenomena. For example, “Meditation may reduce our stress.” We use the words for the assumption to express the relationships among concepts. Even in this case, we can also use the degree of fitness to the phenomenon as the goodness of the theory.

Of course, the degree of fitness may be evaluated in terms of words that indicate how to explain the phenomenon. From the viewpoint of structuralist philosophy of science, it is very important to assume some structures for text interpretation as scientific study.

[Slide 13]

If we try to explain some language issue, first, we should think about Saussure's work. Saussure was a famous Swiss linguist. And he had lectures about General Linguistics three times in University Geneva between 1906 and 1911.

After his death, Bally and Sechehaye, his followers, published the book about his lectures. That book impacted on structuralism and phenomenology, and so on. He is thought as the patriarch of structuralism and also scientific linguistics.

[Slide 14]

Now we should consider the "General Linguistics" by Saussure. By his theory, there are many useful concepts about our language. For example, a word consists of two sides which are not divided, namely, "signifiant" and "signifie". Signifiant is an expression by sign, and signifie is a meaning of the word. Moreover, I should indicate other useful concepts.

Even though it is well known that "Langue is arbitrary", "Langue is discriminative", and that "Langue is negative", I think following two assumptions are the most important; that is, firstl, "Langue is structured socially by Parole", and second, "Langue is structured in a brain by the repetition of parole". However, he could not explain how human beings can get the ability of speaking and thinking.

[Slide 15]

Noam Chomsky first used the deductive method in linguistics in order to explain "Language Acquisition". His hypothetical concepts impacted on not only linguistics but also cognitive science, and other sciences.

[Slide 16]

Plato's problem is the term given by Noam Chomsky to the gap between knowledge and experience. It presents the question of how we account for our knowledge when environmental conditions seem to be an insufficient source of information. It is used in linguistics to refer to the "Argument from Poverty of the Stimulus" (APS). In a more general sense, Plato's Problem refers to the problem of explaining a "lack of input".

Solving Plato's Problem involves explaining the gap between what one knows and the apparent lack of substantive input from experience, and also from the environment. This problem is, how children transition from ostensibly having no knowledge of language to having full knowledge, in what may be described as a very limited time with apparently limited input.

Plato's answer is, we are born with knowledge of language innately, because we already learned in our incarnation lives. Therefore, we can remember the knowledge by the limited stimulus.

[Slide 17]

There are several concepts important to the Chomskyan or generativist approach to linguistics. The most fundamental of these ideas is the theory of universal grammar.

A person's individual grammar that, which is unique to the person, develops from the interaction between the innate universal grammar and input from the environment, or primary linguistic data.

One of the simplest ways to approach the concept of universal grammar is to pose a hypothetical question about an aspect of language acquisition in children. The child does start with general grammatical rules that determine linguistic properties. Children come equipped with universal grammar, from which any natural human language will develop, without instruction.

[Slide 18]

If universal grammar really exists in a brain innately, we have the same hardware as our language structure for speaking, thinking, and interpreting texts in a qualitative study.

And also, we have the same software through developing generative language system from universal grammar by the environmental stimuli. Therefore, if we can use correctly such software in our brains for the text interpretations, we can get the same results extracted from texts. However, still now, unfortunately, we don't know how to use our software appropriately.

[Slide 19]

Now we try to think about some methods for slightly objective text interpretation. As we know, our languages have very different structures. But, from the view point of semantic linguistics, they have almost the same elements or components.

This slide shows some components of a sentence that Prof. Machida indicated in his book. Some sentence has all components shown in this slide, but others have only a few components. In this concept, we can use the interpretation by Grounded Theory Approach, for example.

[Slide 20]

When we deal with text data for labeling some part of texts in open coding, axial coding and so on, we can use to find the properties and dimensions of the part of texts.

For example, what is the theme, what is the subject, where is the place, moving from which place and to which place? And so on. I think it is very useful and helpful for such coding procedures.

[Slide 21]

I would like to describe another approach to explain innate language grammar. Dr. Anna Wierzbicka proposed the Natural Semantic Metalanguage.

In the Natural Semantic Metalanguage theory of language, two fundamental hypotheses are assumed.

First, every language has an irreducible core in terms of which the speakers can understand all complex thoughts and utterances.

Second, the irreducible cores of all natural languages match each others, so that we can speak, effectively, of the irreducible core of all languages, reflecting the irreducible core of human thought.

[Slide 22]

As shown here, cross-linguistic works have already found about 60 elements called conceptual primitives. In all languages, conceptual primitives can enter into the same combinations. Therefore, we can express the same meaning by the use of the same combination of the same conceptual primitives in any language.

For example, it can be expected not only that in any language, lexical exponents for the basic notions, people, thing, this, two, all, big, bad, do, see, move, happen, and can, that can be found, but also that in any language, these elements can be put together to create meaningful combinations such as the following: if you do this, something bad can happen to you. Of course, the word order may differ from language to language. But the elements, their combinations, and the meaning will be the same.

[Slide 23]

If the Natural Semantic Metalanguage theory can solve some issues of linguistics, I think we must obtain one of the powerful evidences for Universal Grammar. For the text interpretations, if our language structure in a brain can be though as common innately, and also language system can be developed as generative grammar, we must have the common hardware and also the common software for the text interpretations in our minds/brains.

But we need to find how language system develop and operate by using conceptual primitives. I think we need more concrete evidences in linguistics, and also brain sciences, and so on.

Anyway, although quantitative researchers say text interpretation is really subjective, we can say “it is not only so subjective, but also scientific”.

[Slide 24]

Thank you very much!