

ISSA Proceedings 1998 - Wittgenstein And Cognitive Psychology



Wittgenstein's philosophy of psychology has often been characterized to be behavioristic. On the other hand, the rise of cognitive psychology partly resulted from a critique of behaviorism. It seems that there is an incompatibility between Wittgenstein and cognitive psychology. The thesis that they have only hostile relationship seems to be

supported by the work of Rom Harre.**[i]** According to Harre, Wittgenstein's philosophical-psychological doctrine would refute the possibility of artificial intelligence. In this article, however, I will argue that such a thesis that there is a zero-sum game relationship between Wittgenstein and cognitive psychology has to be modified. Certainly, Harre's thesis is correct insofar as the "strong AI" is concerned. But this does not exclude a positive cooperation between Wittgenstein and cognitive psychology, if one just maintains the "weak AI." Namely, in terms of John Searle's distinction of the strong AI and the Weak AI, one can well develop a different picture of the relationship between Wittgenstein and cognitive psychology. In order to support my thesis, I will mainly focus on the clarification of the connection between Wittgenstein's conception of logical compulsion and P. N. Johnson-Laird's mental-models theory of inference. Since "thinking" is a key concept for Wittgenstein's philosophical psychology as well as for cognitive psychology, my clarification should concretely demonstrate in what way a positive dialogue between them can be possible. In particular, this should also provide a concrete example for showing how the weak AI approach can contribute to the development of philosophical psychology.

1.

In *Remarks on the Foundations of Mathematics* Wittgenstein writes, "In what sense is logical argument a compulsion? - 'After all you grant this and this; so you must also grant this!' This is the way of compelling someone. That is to say, one can in fact compel people to admit something in the way - Just as one can e.g. compel some to go over there by pointing over there with a bidding gesture of the hand." (§ 117) It is well known that here Wittgenstein tries to show that inference

is basically a kind of skill or practice. But one can also clearly see that Wittgenstein approaches the phenomenon of logical inference from a “third person” standpoint. Namely, he construes the “logical must” in terms of “order-giving.” Even in speaking of “order-obeying,” Wittgenstein does not dig out its internal structure from a “first person” standpoint. In addition, Wittgenstein is satisfied with his explanation to leave out the account of the way how these orders operate. To be sure, in terms of speech act theory, one might say that Wittgenstein traces the source of logical compulsion back to the illocutionary force. In this sense, his account of the “inexorability” of logic is purely “linguistic” in character. For Wittgenstein, a logical compulsion is in reality not merely psychological.

On the other hand, Johnson-Laird provides us with a cognitive psychology of inference.⁹ In terms of mental models, Johnson-Laird shows concretely how logical thinking in daily life proceeds. It is remarkable that Johnson-Laird’s mental-models approach reveals that people make inference without recourse to rules of logic. On the contrary, the rise of laws of logic merely results from the search for systematic principles governing validity, after people find difficulties in inference.**[ii]** That is to say, the employment of logical principle of inference is only secondary. Such a phenomenological fact shows that the authority of the laws of thought is not merely linguistic in character. Rather, the ultimate source for the laws of inference lies in the thinking-competence of the people. In this manner, Johnson-Laird’s mental-models theory of inference unfolds the working of the mechanism of our reasoning process. This also clearly demonstrates the strength of cognitive psychology.

Johnson-Laird’s result certainly has impact upon Wittgenstein’s thesis concerning the logical compulsion. However, this implies not a total negation, but rather a modification, of Wittgenstein’s position. First of all, insofar as people, in particular, children, are able to reason without recourse to any laws of inference and the rise of laws of inference merely results from the reflective control, it is impossible to construe the authority of the laws of inference purely in terms of linguistic conventions. However, regarding the employment of the logical laws in the complicated inference as well as in training courses, Wittgenstein’s explication is still valid. To be sure, in general, the logical compulsion is psychological as well as linguistic in character. Furthermore, it is true that Johnson-Laird is a fan for the strong AI. He explicitly claims, “The mind can be

modelled by a parallel automaton that contains a model of itself.”**[iii]** However, as far as his theory of mental models is concerned, Johnson-Laird makes no actual appeal to the strong AI. As a matter of fact, Johnson-Laird employs computer modelling merely in order to test the feasibility of the working hypotheses about mental models. He also stresses that “their credibility will be tested by experimental studies.”**[iv]** So, what is actually operative in his theory of mental models is only the weak AI thesis.

2.

Although Wittgenstein explicitly declares that “a machine surely cannot think” (PI, § 360), in accounting for the hardness of the logical must, he appeals to “the action of a machine.” (RFM, § 122) Indeed, he also speaks of the logical machine. In order to give warning against the following picture: “‘But I can infer any what actually does follow’ - That is to say, what the logical machine really does produce”, Wittgenstein appeals to the “ideally rigid machine.” (RFM, §119) Obviously, Wittgenstein limits himself to the level of hardware of the logical machine. Namely, he fails to realize that it is the software or program which plays the prominent role in determining the action of a logical machine. It is mainly because Wittgenstein was living in a pre-computer age. Hence, it might be unfair to charge Wittgenstein of ignoring the distinction between hardware and software. But this does not exclude the necessity for us to supplement Wittgenstein’s position. To be sure, from Wittgenstein’s negative answer to the question “Could a machine think?”, it can be clearly seen that there is an incompatibility between Wittgenstein and the strong AI. But, insofar as he does not refrain himself from appealing to the logical machine in accounting for the hardness of the logical must, one can assert that Wittgenstein has indeed already implicitly adopted the weak AI.

Certainly, with our contemporary knowledge of computer, one must add that it is the program which finally guarantees the hardness of the logical must. In any case, this should lend support to our thesis that there is a positive cooperation between Wittgenstein and the weak AI.

3.

In characterizing thinking as a kind of skill or practice, Wittgenstein primarily focuses himself to the dimension of performance. Although he admits that “there is even something in saying: he can’t think it” (RFM, § 116), he does not enter into the dimension of competence. Namely, in being concentrated on thinking as a

performance, Wittgenstein overlooks thinking as a competence. Wittgenstein explicitly claims, "The laws of logic are indeed the expression of the 'thinking habits' but also of the habit of thinking. That is to say they can be said to show: how human beings think, and also what human beings call 'thinking'." (RFM, §131) Here one can clearly see that for Wittgenstein, the laws of logic mainly serve for the performance of thinking. But in order to vindicate Wittgenstein's these that "The propositions of logic are 'laws of thought', 'because they bring out the essence of human thinking' -

to put it more correctly: because they bring out, or show, the essence, the technique, of thinking. They show what thinking is and also show kinds of thinking" (RFM, § 133), it is necessary to add that here as "laws of thought" the laws of logic are normative in character. However, even with such a granting of the normative status to the laws of logic, being the laws of thought they do not provide any descriptive information concerning the internal operation of reasoning as a cognitive process. Indeed, a satisfactory account of "what thinking is" must also include the task of unfolding of the thinking as competence. Accordingly, one might say that Wittgenstein is strong in accounting for the performative aspect of thinking, but weak in explaining the dimension of thinking as competence. In this sense, his theory of the essence of thinking is incomplete.

On the other hand, Johnson-Laird's theory of mental models provides an explanation of the functional organization of our reasoning process. In particular, this theory not only explains "how children acquire the ability to make inference," but also allows that "people are able to make valid inference, that is, they are potentially rational."**[v]** Accordingly, cognitive psychology of reasoning can well be regarded as a supplement to Wittgenstein's philosophical psychology. No one would deny Wittgenstein's thesis that "the language is itself the vehicle of thought." (PI, § 329) One might also agree with his doctrine that "Thinking is not an incorporeal process which lends life and sense to speaking, and which it would be possible to detach from speaking." (PI, § 339) According to the traditional view, "the thoughts are already there (perhaps were there in advance) and we merely look for their expression." (PI, § 335) It is the major contribution of Wittgenstein to refute such a traditional view. However, what Wittgenstein has done is only to provide us with a clarification of the ontological status of thinking. Namely, his theory is basically ontological in character. In focusing on the question of what is the being of thinking, Wittgenstein does not account for the epistemological process of thinking. That is to say, he does not clarify how people

“derive conclusion from a certain premise in a syllogism”, for example. On the other hand, Johnson-Laird points out that “The theory of mental models is intended to explain the higher process of cognition, in particular, comprehension and inference.” **[vi]** Here one can see that only by taking Johnson-Laird’s theory of mental models into consideration that a more complete account of “how human beings think” can be expected.

Regarding the question “Is thinking a kind of speaking? (PI, § 330), Wittgenstein seems to answer positively. That is the reason why his followers like Rom Harre maintain that thinking is speaking. Nevertheless, one should give warning against this position. As far as it serves to deny the thesis that “Thinking is an incorporeal process, “it is acceptable. But it cannot be extended to signify any elimination of the autonomy of thinking in favour of speaking. As Leibniz points out, “That A is the same as B means that one can be substituted for the other in any proposition without loss of truth.” **[vii]** Obviously, “John is a good speaker” is not necessarily identical with “John is a good thinker.” Moreover, we know that some famous logicians have difficulty in speech. Indeed, starting with the Leibnizian *salva veritate* principle, one can enumerate many counterexamples to the thesis that thinking is speaking.

To be sure, as far as its performance is concerned, thinking has to be incorporated into speech. However, this should not blind us to the distinction between “the ability to think” and “the ability to speak.” A playboy, who is skilful in speech, might not be able to draw conclusion correctly in a simple syllogism. This should show that thinking-competence must be distinguished from speaking-competence. It is mainly because Wittgenstein limits himself to the dimension of performance that he fails to realize such a distinction. It is only when we go beyond the dimension of performance and enter into the dimension of competence that we can realize the distinction between “the ability to think” and “the ability to speak.” In sum, in spite of the inseparability between thinking and speaking, they are essentially different kinds of competence. Such a difference points to the necessity of the introduction of an investigation of thinking-competence. The strength of cognitive psychology lies exactly in its exploration of our mental competence.

My above investigation shows that in terms of a Chomskyan distinction between performance and competence, one not only can provide appropriate topological determinations for Wittgenstein’s philosophical psychology and cognitive

psychology, respectively, but also can find a way to bridge them together. As far as the relationship between Wittgenstein and cognitive psychology is concerned, one can reach the following conclusion: There might be an either/or relationship between Wittgenstein and the strong AI – as it is demonstrated by Rom Harre, but there is a cooperative relationship between Wittgenstein and the weak AI. That is to say, there can well be a positive relationship between Wittgenstein and cognitive psychology.

NOTES

i. Cf. Harre, 1988.

ii. In brief, according to Johnson-Laird, a general procedure for making inference mainly includes the following three steps: (I) “Construct a mental model for the first premise.” (II) “Add the information in the second premise to the mental model of the first premise, taking into account the different ways in which this can be done.” (III) “Frame a conclusion to express the relation, if any, between the ‘end’ terms that holds in all the models of the premises.” (Johnson-Laird, 1983, 97-101)

iii. Johnson-Laird, 1983, 476-477.

iv. Ibid, 11

v. Ibid, 66.

vi. Ibid, 446.

vii. Leibniz, 1966, 52

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