Conhecimento - O Conhecimento como prática social
Knowledge - Knowledge as social practice

The stimulus-means as interpretative actions

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The idea of the "double stimulus method" is at the core of Vygotskian theory. It manifests a triangular structure that is composed of the insertion of stimulus-means into a dichotomous relation between a stimulus-object and a response. The triangular structure makes a distinction between human beings and the other animals. It is also a unit that seizes meaning. A question emerges here. How can we extend the ideas of "the double stimulus method" and the idea of "stimulus-means?" In this paper, I would like to discuss the relation of another's voice to "I," an actor. It will be a starting point in considering the relationship of social communication to the development of "I." I will take an example of an "interpretative action" in order to examine it. An interpreter is usually known as a person who replaces one word with another word, however I use the phrase "an interpreter" to mean a commentator who directs participants. An interpretative action differs from a situated action because it refers explicitly to an action. It is a meta-action that objectifies participants' actions or utterances. From this standpoint, parents are interpreters for children; teachers are interpreters for students, and so on. An interpretative action fulfills a double function. For example, an instructor may improve a learner's performance by offering a stimulus-means. At the same time, a learner may set up his or her stimulus-means and shatter the instructional meaning. An interpreter, as a mediating actor, can connect participants each other and he or she becomes social wall to obstruct the understanding of what other participants do, verbally or non-verbally. It is simultaneously an aid and an obstacle in the relation between "I" and other participants and also in the relation between the "I" and objects.

1. Learning as mediated activity

> " It is correct that behavior is completely controlled by the series of stimuli, but the series of stimuli themselves are made by human (Vygotsky, 1930-1931/1960/1970)."

The statement depicts the fundamental character of cultural development, which is a special developmental form of human being. Vygotsky (1928/1929/1994) distinguished two lines of development: the "natural developmental line" and the "cultural developmental line". The natural line is regulated by physical law of biology. The fundamental scheme indicates that the relation between stimulus and response is not connected directly but indirectly via new stimulus.   As for the human mental functioning in problem solving process, there is a mediated means between stimulus and response; that is, the original stimulus cannot regulate the response but the new stimulus controls it (Fig.1). Vygotsky called this mediated means for "stimulus-means" in comparison with the "stimulus-object" for the original stimulus. The stimulus-means is psychological tool that Vygotsky (1930/1982/1997) named.   Language is a representative of such tools. The cultural one is controlled by socio-historical law of human society. In cultural development, human beings control its response through new stimulus, which is created by itself.   It is represented by triangle structure as figure 1. The famous example for the change of mental functioning is presented in the memory by the research group of Leont'ev (1965/1979). Vygotsky（1928/1929/1994) called this experimental method the **"functional method of double stimulation"** because there are two series of stimuli.

stimulus-means

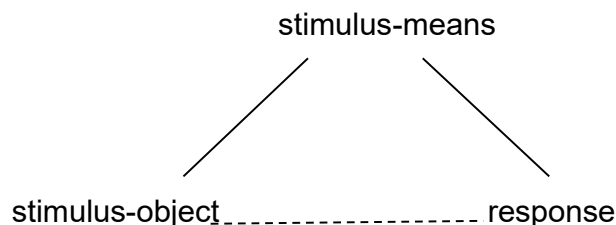stimulus-object _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ response

Fig.1: functional method of double stimulation

The cultural development is a process to construct new functional system for the subject to solve the problem in life. Thereby, to clarify the function of mediated means makes us understand cultural development. We should consider how to use the mediation means for children in child development and how to change the mental functioning for them via a usage of tool. Developmental perspective as psychological method requires us to understand the history of the successive change by introduction of new tools. Leont'ev (1956/1967) described that Vygotskian approach treats the structure which is usually seen as the premise factor, as the product of the learning. In this sense, Vygotskian approach is based on Pavlov's conditioning theory and Gestalt psychology, but Vygotsky extended the concept of the stimulus and focused the developmental process of change with introducing cultural tools.

The idea of functional method of double stimulation indicates that human being confronts the world not only with the naked body but also with carrying any artificial tools (Fig. 2).To introduce tools between subject and object in work activity is to make a specific relationship between human being and the world. Human being generates its consciousness in this activity.
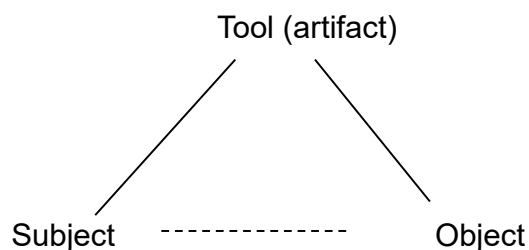

Fig.2: The triangular structure among subject, object and tool

2. Appropriation

The necessity of stimulus-means in cultural development directs us to learn the usage of tools to be a human. Leont'ev (1965/1979) insists that the main process of child development is the process of appropriation for the cultural accumulated experience as the sociohistorical inheritance.

It is a tool that we can call a condensed experience. In other words, the sociohistorical meaning is embodied in tools. Therefore, to know how to use the tool is to acquire the sociohistorical experience.

We should eat something to live and use tableware to eat. But a child can not conceive of the meaning of the tools while they are still in front of the child.   The child may knock on the table with tablespoon and the child may grasp the top of the spoon. Leont'ev (1965/1979) described that when a child uses the spoon in the beginning, his or her parents instruct the child to eat with their hands.   The learning to use a spoon is in collaboration with adults. A child should acquire the condensed abstract meaning that is included in an object in collaboration with an adult. The fact tells us that it is impossible without social communication to appropriate a tool, which takes an important role in cultural development.

We can know that there is someone behind the tool in fig. 2 so that we get a new scheme as fig.3.   When a child use a spoon, other subjects have it with him or her, or they instruct the child verbally how to eat with a spoon like " You eat well," "You should eat more," or "You are a good child." There are physical and psychological collaborations between a child and an adult.   These instructions are an evaluation for a child so that the child can know the cultural significance of the way of using a spoon as well as getting a food with a spoon.

Other subjects (S2)
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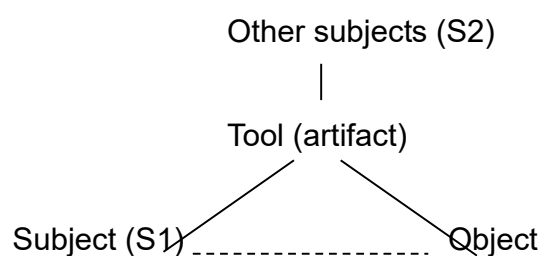Tool (artifact)

Subject (S1) _____ Object

Fig.3: subject-tool-object relation in appropriation process

As for this extension of tool mediated activity, Moll (1990) insisted interestingly that " a careful reading of Mind in Society (1978) also reveals that the zone is an important extension of Vygotsky's "functional method of double stimulation (p4)."   The zone of proximal development

is an actual collaborative unit for development and learning for a child. Moll views the zone of proximal development as socially mediated activity. My scheme in fig.3 represents a similar idea. The research unit is not the triangular relation among subject (S1), tool, and object but the triangular one among subject (S1), another subject (S2) and object. Tools mediate these three factors. In this sense, a tool reflects the relation among the three factors. Of course, there are multiple communities behind the subjects.

3. New problem

In fig.3, a tool mediates between subject (S1) and another subject (S2). The fact tells us that a tool makes an interaction between S1 and S2. At first, S1 and S2 should negotiate the way of using a tool. For example, when a child knocks a table with a spoon, his or her parent should tell the child with hands or talks that it is a tool to carry a food from a plate to his or her mouth to eat. The spoon is in a set of tableware for an adult but it may not be so for the child. The discrepancy requires an actual interaction between a child and an adult to negotiate what the spoon is.   This is a cognitive task to know what an object is. A child can find that the spoon is a kind of tableware through the negotiation.

On the other side, the negotiation about a tool relates with the way of using it. It is considered a negotiation to evaluate culturally what good usage is with the tool. A child may use a spoon willfully, but his or her parent requires the child to use it elegantly, that is a cultural valuable usage from the standpoint of the parent.   This is a social task to evaluate what is an acceptable way in the community.

The negotiation mediated with a tool imposes double tasks for participants: a **cognitive task** and **social one**. Fig.4 refers to the relationship between S1 and S2. This figure shows the complex activity system that includes two triangles such as Subject1-tool-object and Subject2-tool-object in an appropriation process. This activity system has double tasks. It is important that a tool mediates the troublesome negotiation, too. The negotiation is required for participants because they use a same tool to act on an object.

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                    Other Subjects (S2)
                            |
                            |
                      Tool (artifact)


         Subject (S1) —————————————— Object
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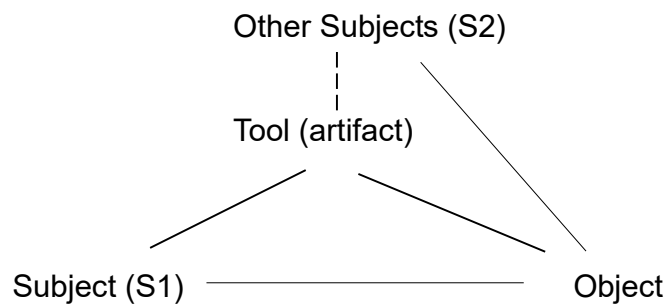
Fig.4: Double triangle relation in appropriation process

There are two kinds of tool (Vygotsky, 1930/1982/1997). One is a technological tool like a hammer. The other is a psychological tool like a sign or language. As already described, a tool mediates a negotiation about its functional meaning and makes a negotiation to evaluate the way to act with it. However, the negotiation to evaluate how to use the tool is hard for a child when it is realized with language, because word is a meta-representation for the actual meaning. Then the meaning of "act with a tool" is an object to be talked directly in conversation. When a child in his or her beginning of language acquisition negotiates with an adult who already acquired the-first-language system, the child inevitably places his or her action with a tool by means of adult's evaluation. **What happens when the first language of a child is different from that of an adult? What happens in collective instruction-learning setting, that is a classroom lesson instead of a dyadic one?** In the next section, they will be considered through one episode in a pre-classroom lesson in Japan.

4. Field Research Data

The episode presented here is on semi-instruction-learning setting among an adult and children in preschool institute which is called "hoikusen (nursery school or day care center)" in Japan. The adult is ordinarily called "sensei (teacher)" by the other teachers, parents and children. The children from zero to six years old come to the institute. The main work of the teacher is to nurture children. The other institute called as "Yochien (kindergarten)" is the first

educational experience for children in Japan. But I think there are two sources that make teachers in "Hoikuen" as being one in a kindergarten. One is that teachers in day care or nursery school should not manage one child but a group of children. Therefore, the teachers teach the children the way to participate in a group. It is a main task for children in this period to master the way to participate in group-activities. The other reason is the age. Six-year old children in the oldest aged classroom in a nursery or day care institute, go to school the next year so that teachers in the oldest classroom usually say " do well so that you will go to school next year." The teacher in this episode also said so very often. The teacher set a school-like-activity in the nursing one. The episode consists of series of IRE structure (Mehan, 1979). The teacher asked a question one child and the child may reply to the teacher. After the reply, the teacher evaluated it.

There are two tasks for children in this situation. One is to give the correct answer to the teacher and the other is to present oneself as correctly participating socially in the activity. The former is "cognitive task, " while the latter is "social task." Children should acquire "two sets of procedural knowledge simultaneously; knowledge of the academic task structure and of the social task structure (Erickson, 1982)." The academic task structure is seen as an instructional sequence to support the children's solving a cognitive task. The social participating structure governs the procedure to achieve a social task.

The episode extracted from "a short game while waiting for members on duty" which is one of routine daily programs in the nursery school. The protagonist is "AD" who came from Ukraine less than one year previous so that the teacher in my interview judged that he could not use Japanese fluently at the time. This is the first year for AD to be nurtured in this center. The goal of cognitive task for children is to talk about anything in the flower family. But AD has one more cognitive task; that is, AD should understand the teacher's utterance (question) and reply anything in Japanese. At the beginning of the game, the teacher asked a question to AD.

The focal point is the interaction sequence among the teacher, AD and OS who intrudes into the teacher-AD conversation as an interpreter. The problem here is **what characterizes the collective instruction-learning setting as when there is a child of minority language present.**

Extract: A short game of gathering flowers in word----------------------
(June: Two months passed form AD's entrance)

1 T: Hi /What shall we play while waiting for the members on duty until their coming back?/Today ('s game) is to gather a kind of family /Today ('s game) is to gather a kind of family. /What do we gather (in a word)?

2 C: Flower / Flower

3 T: Flower? The family of flower/ (Teacher went forward to AD) /Flower/ Flower that you know/ what?

4 (**AD** leaned his head to his side)

5 T: Flower/ Do you understand a flower? (with pointing to the side of a blackboard)/ Flower

6 AD: (I) understand (a flower)

7 T: Are there flowers that you know?

8 (**AD** leaned his head to his side)

9 T: What (flower) do you know?

10AD: (Whispering) ?????/ ????

11 T: (You) can't understand, can you? / (You) can't understand a name of flower, can you?

12OS: (With looking at teacher's face) (He) said 'Ume (a Japanese apricot)' now

13 T: Did (you) say 'Ume'? / Now (with pointing at AD)/ Did (you) say (it) now? / (With turning to OS) Did (he) say 'Ume'?

14 (**OS** nodded his head)

15 T: Do (you) know 'Ume'? / How about a tulip?

16 (**AD** nodded)

17 T: (With pointing at AD and looking at OS) Oh (you or he) know(s) a tulip?

Notes: Japanese word 'wakaru' corresponds to both of 'understand' and 'know' in English. The usage is almost never clearly judged to either of them by both a speaker and a hearer.

The extract is divided into two parts. Figure 5 represents the first part of the episode and Fig. 6 for the latter part. The first part is the dyadic interaction between the teacher and AD. The teacher guessed the word uttered by AD. This game assigned a child to name a flower. The

teacher used the paraphrasing strategy for AD's understanding of her question in the line (3, 5, 7, and 9). The teacher could not close the interaction with AD because she could not complete the Q-R-Ack sequence for the insufficient response of AD in the sequence. It is related to the social task. If the teacher stopped asking questions to AD and then asked the other child, the teacher would directly demonstrate AD's nonparticipation to this group activity. The second part starts from transcript line number 12. After several tries, AD said "?????/????(inarticulated)" that no one might catch exactly as Japanese words but the boy (OS) sitting near AD said that AD said one of flower name "Ume" (a Japanese apricot or plum). He interpreted AD's utterance as the meaningful word "Ume" in Japanese for a teacher. In a sense, OS relieved the teacher of completing the interaction sequence. Then, the teacher reconfirmed AD's previous utterance verbally to AD with her pointing gesture and to OS by her physical turn (13). OS nodded its head as "yes" to the teacher's reconfirmation but AD did not respond.

In this sequence, the teacher guessed the word that AD uttered with the assistance of OS. However, she did not ask about "Ume" but suggested "How about a tulip?" because AD accepted the unsuitable reply. The transition from the first part to the second one represents the change of the activity system by the new medium of "interpretative word" uttered by OS. Such an intrusion (Erickson, 1996) is often observed in a classroom lesson.
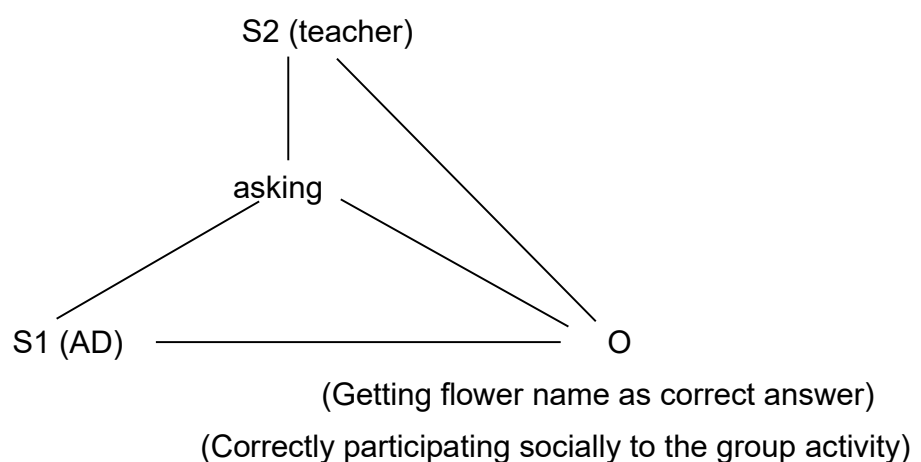

Fig.5: Asking mediating between AD and Teacher in the first part of the extracted episode
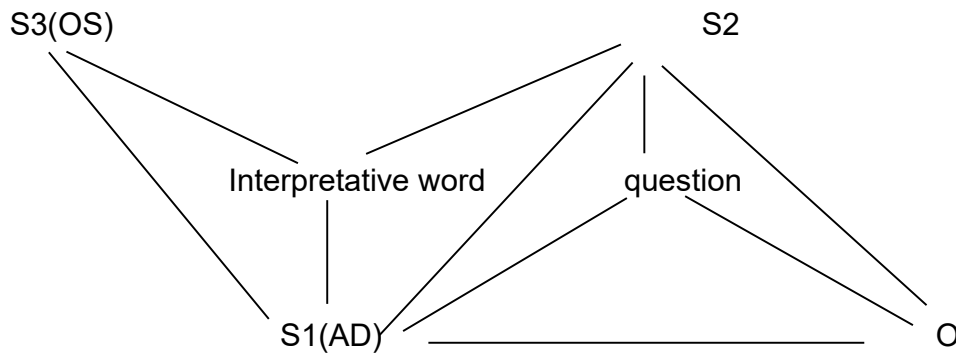
Fig.6: Interpretative action mediating between OS and Teacher in the second part of the extracted episode.

5. Discussion: reformulation of problem

What are the main characteristics in the collective instruction-learning setting with a minority language child? I pursuit the question by thinking of the following two sub-questions in correspondence to the two parts of the episode. The first part represents the dyadic interaction between the teacher and AD. The first sub-question is **"What happened in the interaction between the teacher and AD?"** The main task was a social one in the part since the teacher asked that question to AD several times. If the teacher aimed at the attainment of the academic task, the teacher may assign another child when AD could not respond appropriately to the question. But the teacher actually repeated the question five times such as the line 3, 5, 7, 9, and 11 in the transcript. The teacher did not stop the question-answer sequences in spite of AD's difficulty to reply. This fact tells us that the answer, which might be performed by AD, is a ticket to get on the train of the classroom activity. Then the teacher would make AD reply anything in appropriate way. The correct answer might not be expected in this episode. The appropriate reply, as one of social tasks would be expected there. From the standpoint of the teacher's expectance of them, AD's

reply might be inappropriate. Therefore, the teacher might be caught in a dilemma.

By the way, the question is very easy to answer for children who are native Japanese speakers. But it is difficult to answer when the teacher asks such in a lesson-like-situation. Many of children become very nervous in an individual assignment.   The situation had a low cognitive load but high load as social task for children. There was a much high burden was in both tasks for AD. The teacher's treatment of AD made AD stand out in the classroom. For example, "WAKARU (understand)?" is a meta-question for AD to assessing AD's ability.

There are many members in the classroom. OS as an interpreter is one of the members at the same table with AD. There may be many "turn sharks (Erickson, 1996)" in the sea of a collective lesson. The turn sharks suddenly bite another child who is chosen as a nominee to reply by the teacher. But OS was not a turn shark because OS did not steel the turn of AD. Fig. 7 represents the result of a turn shark's intrusion. OS took the role of interpreter between AD and teacher. We can think of the action as supportive for a collective lesson. OS would help the teacher or AD.   Objectively speaking, OS's interpreted word mediated the relationship between the teacher and AD. The word is a stimulus-means for the participants because it mediated the relationship between AD and the teacher and stimulates the product of the activity. So, **did the interpretative action by OS promote AD's tasks-achievement?** This is the second sub-question. My answer is "No."
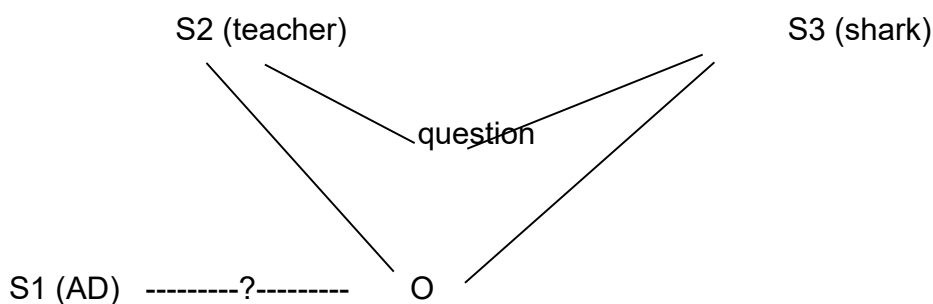

Fig. 7: The result of turn shark in success

OS interpreted AD's vague words into "Ume (Japanese apricot)." As the result, the teacher asked for a reply to OS's interpreted utterance such as "Did (you=AD) say Ume (in the line 13)?" If the teacher would accept the interpreted words from OS, AD had said " Ume" as a right answer in line 10.   If so, AD would complete the cognitive task. But the teacher actually did not accept the interpretative words so that the teacher reconfirmed the fact to OS again. In Line 13, the teacher talked to AD at first and successively said to OS to reconfirm the words while pointing at AD. OS nodded his head. But after the reply, the teacher quickly asked to AD such as "Do (you) know Ume? / How about a tulip?" There was only one breath between the two sentences. This means that the teacher did not wait for AD's response. Where did "tulip" come from? Tulip is very popular flower in Japan and the "tulip is also pronounced /Chu-ri-ppu/ in Japanese. The root word is English. It is natural to infer that the teacher was not convinced of AD's knowledge of "Ume." As a result, AD was judged not to complete the cognitive task in spite of OS' s interpretative action.

I insisted that OS's interpretative action did not promote AD's learning in the episode. The last question in this paper is **"what did AD learn as a result?"** The activity to achieve two kinds of task for AD was changed by force by means of OS's interpretative action. I thought that AD sustained a degradation (McDermott, 1993) in the process of the negotiation between OS and the teacher. OS and the teacher discussed about AD's vague words, which became a topic to talk for participants. Goodwin (1981) proposed a gaze-related rule; "A speaker should obtain the gaze of his recipient during the course of a turn at talk." In the first part of the episode, AD was a just hearer to the teacher and the teacher was a hearer to AD. They gazed at each other. But, after the interpretative action, OS acquired the position of a hearer to the teacher. The teacher told to OS at the AD's words, which was a representative of the whole AD. AD was deprived of the ability to judge the meaning of its own words. No one waited for AD to paraphrase AD's words into others by the teacher and OS. AD was not the agent but a topic for OS and the teacher during the negotiation. AD was made to trade off from its degradation with the possibility of an attainment of the cognitive task. To recover the disempowerment of AD, through the deprivation of agency may need more power to recover than AD had. There is a usual dilemma for the teacher. The teacher used classroom management techniques to ask many children by turns to replace AD's accomplishment of the social task.   The

management is one of most important social tasks for the teacher.

I don't insist that the intrusion as such an interpretative action is a bad intervention for the minority language child at any time. It has both functions; one is obstructing to participate in a classroom conversation as an active agent, the other is to connect him or her to other members in a classroom activity as the result. My points here is that a minority child's participation in a group activity with such an interpreter inevitably involves a risk to form a low self estimation. The amount of risk depends on each individual situation and cultural bounded conditions.

The degrading interaction informs a person what he or she is. The person may be afraid of saying anything in the host community's language because there is a risk of trading off the decrease of his or her feeling of ability. But to wrestle with both the cognitive task and the social task requires interaction in any language. Any person should negotiate the meaning of his or her words with the other members in language interaction, even if "the first language" is the same between interlocutors.   Language is language, but it is the most important medium to communicate in the appropriation process. If a person always anticipates getting a negative role in the group interaction, he or she would not try to participate in the language activity. If so, he or she might loose the occasion to learn both a cognitive task and a social task. Did AD get the negative "I" in the interaction when there were still only good participants to support AD's task achievement? El'konin (1960/1964) insisted that children become conscious of him or herself according to an increase of language communication with adults in the latter period of kindergarten. Consequently, the relationship between adults and children changes to the new stage, where children's desire to live with adults is replaced with the socially significant or socially well-evaluated intention. Vygotsky said that consciousness is co-cognition. What was AD conscious of, as 'I' in the interaction?

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