
An investigation into the interrelation between language and thought

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Abstract

This essay investigates the ways, in which natural language influences thought. The discussion of the interrelation of language and thought has started centuries ago, involving philosophers, linguists, anthropologists and psychologists, and still goes on nowadays, being closely linked to the never-ending nature-nurture debate. It seems that there are two major positions in relation to the interconnection of language and thought: the cognitive and the communicative conceptions of language. Those, who adopt the first viewpoint, claim that language is necessary for at least some kinds of thought, or even that language is constitutively involved in the thinking process itself. On the other hand, those, who support the second view, claim that language has no direct influence on thought.

The investigation found several different theories in relation to the investigation of the influence of language on thought: the Whorfian linguistic relativity hypothesis, Bernstein's theory of restricted and elaborated codes, Vygotsky's theory of interconnection between speech and thought, etc, which all deal with how and to what extent thought is affected by the natural language. It seems, that such radical theories as the strong version of the Whorfian hypothesis and peripheralism, because of lack of empirical evidence, or strong counter-evidence, cannot be completely accepted. From theories, which were empirically supported, such as the Bernstein's theory of restricted and elaborated codes, the weaker version of the Whorfian hypothesis, it is possible to conclude that natural language influences conscious thought with respect to memory and learning, - the approach which goes in line partially with the communicative conception of language. Nevertheless, the field of investigation is open for further discussion and requires conclusive evidence in order to accept the theoretical contributions. The theory proposed by Vygotsky seems to be very promising, although it seems to be hard to determine empirically the concrete influence of language on thought.

Introduction

Can we think without language? This intriguing question has puzzled people for centuries. The issue of interrelation of language and thought, one of the most complex and fascinating within psychology, has occupied philosophers, anthropologists, linguists and psychologists¹.

This work is an attempt to investigate the issue within the discussion of interrelation between language and thought, “**In what ways does natural language determine thought?**” basing the argumentation on the theories and empirical research that either supports or refutes those theories. Generally, many psychologists argue that language may determine how we think about objects or events, while others contend that language actually determines the ideas, thoughts and perceptions themselves².

There are various much differentiated theories and hypothesis concerning the issue of interrelation between language and thought, which, according to Carruthers³, can be roughly divided into two opposite approaches. There are those who claim that natural language is involved in human thought in the way that natural language sentences are the vehicles of our thoughts – this is what is called the cognitive conception of language. Such philosophers as Leibniz (1704), Wittgenstein (1921, 1953), Dummett (1921, 1991) and others argue that as human beings are unique in the range and sophistication of the thoughts of which they are capable and human beings are also unique in possessing natural language, hence the most obvious explanation of the existence of the two unique features of human beings simultaneously is that it is natural language, which makes human thought possible. According to this viewpoint, language is a necessary condition of thought or at least some kinds of thought. Moreover many of the philosophers also support the view that language is necessary for all kinds of thought. For instance Ludwig Wittgenstein claimed that “The limits of my language mean the limits of my world”⁴, meaning that we perceive and understand the world only to the extent of our possession of language, consequently claiming that animals and pre-linguistic children lack thought. Nevertheless, it could be argued that from the fact that it is not possible to know what exactly the creature is thinking it cannot be concluded that the creature is not thinking anything. Another representative of the cognitive conception of thought in psychology, A. R. Luria⁵, described inner speech as ‘the second signaling system’, and demonstrated its role in the conscious control of motor action, in addition to its role in more intellectual forms of thought. L. S. Vygotsky strongly argued for the involvement of language and thought, argued equally strongly that language and thought have different independent roots and different modes of operation in pre-linguistic child. Skinner (1957), a representative of the behaviorist approach, saw language as learned using domain-general cognitive resources, and especially associative learning. The most radical form of cognitive conception comes from linguist

¹ In the discussion of the interconnection between natural language and thought philosophy, linguistics and psychology are very interrelated in the contributions to this particular area. Despite the fact that the essay is on psychology, it will be very important to mention linguistic and philosophical approaches, as the ideas from the two areas were also integrated and are related into psychology.

² Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, ³1999, pp. 313-328.

³ Carruthers, Peter and Boucher, Jill (Eds.). Language and Thought. Cambridge: University Press, 1998, pp. 1-18.

⁴ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, ³1999, pp. 313-328.

⁵ Later in the essay see the influential study by A. R. Luria and F. Ia. Yudovich on speech and the development of mental processes in child.

B. L. Whorf (1956) with his linguistic relativity hypothesis that caused a lot of controversy and criticism.

On the other hand there are those who claim that the only function of natural language is the communication of thought from mind to mind, the thought itself being independent of the means of its transmission – this is what is called the communicative conception of language. According to such philosophers as Locke (1690), Grice (1957, 1969), Fodor (1978) and others the function and the purpose of language is to facilitate communication, rather than to be involved in thinking. Within psychology the communicative conception of language is associated with the themes of innate mental endowment and modularity, according to which the human mind is modular in structure, being made up of a number of distinct components, which are innately configured and specialized for particular domains⁶. The support came from the work of neuropsychologists and neurosurgeons such as Broca, who demonstrated the ability to speak is dependent on a certain area of the brain⁷. Nevertheless, most psychologists, who argue that the major function of language is sub-serving communication, still accept that NLM – “natural language mediation”, the involvement of language in conscious thought⁸ – is used by all linguistically competent human beings in their learning, memory, planning, problem solving, etc.

The most radical argument for the communicative conception of language comes from a linguist – Noam Chomsky, who claimed that language is separate from thought. Hence his explanation of linguistic universals – abstract features of grammar found to be common to all natural languages – is that humans possess an innately structured language faculty – what supports the nativist view of mind. His ideas were very influential and gained a lot of support; for instance, Jerry A. Fodor (1975) – “Language of thought”⁹, Steven Pinker (1994) – “The Language Instinct”¹⁰.

In order to answer the research question, the essay presents several well-known theories that describe the influence of language on thought starting from the most radical view of B. L. Whorf and his theory of linguistic relativity, who claims that language is the major factor affecting cognition, and ending with another radical view – the position generally incorporated by the supporters of the communicative perception of language, who claim that language has only an indirect effect on thought. The conclusion answers the research question by evaluating the validity of the theories presented.

Whorf's linguistic relativity hypothesis

One of the most radical theories within the on-going debate about the interrelation of language and thought was proposed by Benjamin Lee Whorf, - the theory of linguistic relativity. He introduced two basic principles¹¹. Firstly, he favored the linguistic determinism that refers to the notion that language determines certain non-linguistic cognitive properties. Secondly, in the linguistic relativity principle he claims that the cognitive processes that are determined are different for different languages; hence the structure of the language one habitually uses influences the manner in which one understands the environment. According to Whorf's hypothesis, human

⁶ Hence language is considered to be an input and output module for central cognition.

⁷ It is now known as Broca's area.

⁸ Language in their conception is not a medium thought, but a facilitator for some forms of thought.

⁹ Fodor, Jerry A. The Language of Thought. Hassocks, Sussex, England: The Harvester Press Limited, 1976.

¹⁰ Pinker, Steven. The Language Instinct. London: Penguin Books, 1994.

¹¹ Carroll, David W. (Ed.). Psychology of Language. Pacific Grove, California: Brooks/Cole Publishing Company, 1994, pp. 371-390.

concepts and ways of thinking, and indeed much of the very structure of human mind itself, are acquired by young children from adults when they learn their native language and become inducted into the surrounding culture; these concepts and structures differing widely, depending upon the structures and conceptual resources of the natural language in question¹².

...the background linguistic system [...] is not merely a reproducing instrument for voicing ideas but rather is itself the shaper of idea, the program and guide for the individual's mental activity, for his analysis of impressions, for his synthesis of mental stock in trade¹³.

Whorf claims that the world in itself is “*a kaleidoscopic flux of impressions*”, meaning that it is the humans who are to organize it, and the function, in fact, is performed by the linguistic systems that we have:

We dissect nature along lines laid down by our native languages¹⁴.

The hypothesis of linguistic relativity emerged on the basis of his comparison of the Standard Average European languages¹⁵ with Native American languages. He was particularly interested in Hopi. In English we divide most of our words into two classes, which have different grammatical and logical properties – nouns and verbs. According to Whorf, “Our language gives us thus a bipolar vision of nature,” though nature herself is not polarized. The same is true for the Hopi language, but the significant difference is that it divides the events into nouns and verbs in terms of their durability. So, for instance ‘lightning’, ‘wave’ as events of brief duration are verbs. Moreover, for instance, in Nootka, a language of Vancouver Island, all words seem to us to be verbs, because there is no basic division into nouns and verbs in principle¹⁶. B. Whorf also presented lexical support for his theory: in the Hopi language there is only one word that denotes everything that flies (except birds) – a plane, a fly, a pilot, etc, whereas the Inuit Eskimos have about 20 different words for snow in different states (fluffy, packed, etc), and Zuni Indians do not distinguish verbally between yellow and orange¹⁷. These differences, according to Whorf, mean that people perceive world differently depending on their native natural language.

We are introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated¹⁸.

However, there is counter-evidence that questions¹⁹ the validity of the hypothesis as proposed by Whorf. According to Jackendoff (1993) the difference between Hopi and SAE were to a large

¹² Eds. Carruthers, Peter and Boucher, Jill. Language and Thought. Cambridge: University Press, 1998, pp. 1-18.

¹³ Whorf, Benjamin Lee. “Science and Linguistics” in: Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf. Cambridge, Massachusetts: The M.I.T. Press, ⁵1970, p. 212.

¹⁴ Whorf, Benjamin Lee. “Science and Linguistics” in: Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf. Cambridge, Massachusetts: The M.I.T. Press, ⁵1970, p. 213.

¹⁵ Those are English, French, Italian – Indo-European group (“those dialects cut to the same basic plan, being historically transmitted from what was long ago one speech community”, says Whorf)

¹⁶ Carroll, John B. (Ed.). Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf. Cambridge, Massachusetts: The M.I.T. Press, ⁵1970, pp. 207-219.

¹⁷ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, ³1999, pp. 313-328.

¹⁸ Whorf, Benjamin Lee. “Science and linguistics” in: Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf. Cambridge, Massachusetts: The M.I.T. Press, ⁵1970, p. 214.

extent exaggerated by Whorf. According to Pullum (1989) Inuit Eskimos do not have as many words for different kinds of snow as Whorf claimed. According to Martin (1986)²⁰, the number of words in a lexicon depends on how do you define a word – whether it is only bound morphemes that you count or every suffixed version. Therefore, he suggests that Whorf has overlooked the rich morphological system of the Eskimo language. At last, this exaggeration as well as the others could have been the result of the experimenter's confirmation bias, since he required some significant evidence to confirm his theory. Even if the criticism was not justified, were the conclusions that Whorf made justified? Can we on the basis of the findings that, for example, Inuit Eskimos linguistically distinguish between several kinds of snow mean that they indeed perceive so many varieties of snow compared to SAE speaker? Moreover, it seems that Whorf has overlooked the justification for the Whorfian language having so many words for snow – that was a necessary as a significant experience in their lives. According to Solso (1995):

*[...] The development of specific language codes [...] is dependant on cultural needs; the learning of these codes by members of a language group also involves the learning of significant values of the culture, some of which must be related to survival [...]*²¹.

The Whorfian hypothesis caused a lot of controversy. Nowadays most researchers argue one of the following positions in relation to the Sapir-Whorf hypothesis: firstly, thought is strongly influenced by language – what was favored by Whorf and his followers (so-called strong version); secondly, language has no influence on language what refers to the communicative conception of language that was briefly described in the introduction; thirdly, thought is influenced by language to a certain extent (often referred to as the weak version).

According to the weaker version of the linguistic relativity hypothesis, language serves to draw attention to differences in the environment and acts as a label to help to store these differences in memory. Therefore, it can be predicted that a label that we apply to what we perceive may distort our recall, since the label determines how we code the experiences into the memory storage. This was, in fact, supported by an experiment by Carmichael et al. (1932)²². Two groups of participants were given identical stimulus figures, but two different lists of labels that correspond to the stimulus. When asked to reproduce the stimulus figures, the distortion of the original figures was influenced by the label that was provided.

Peripheralism

John B. Watson, one of the most influential representatives of the behaviorism to psychology, suggests a different approach to the relationship between language and thought²³, though maintaining the view that language completely determines thought. Watson claimed that thought is no more than sensations produced by tiny movements of the speech apparatus, which are too small

¹⁹ Moreover, there is evidence that contradicts the Whorfian theory, as the studies of the universals – features common for all languages, but the research question (“To what extent does language determine thought?”) does not include that area.

²⁰ Carroll, David W. (Ed.). Psychology of Language. Pacific Grove, California: Brooks/Cole Publishing Company, 21994.

²¹ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, 31999, p. 318.

²² Carmichael, L. / Hogen, H. P. / Walter, A. A. “An Experimental Study of the Effect of Language on the Reproduction of Visually Perceived Form” in: Journal of Experimental Psychology. 1932, pp. 73-76.

²³ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, 31999, p. 322.

to produce sound that can be heard. The theory became known as peripheralism, and according to it thinking occurs peripherally in the voicebox, and not centrally in the brain. The theory was nevertheless questioned, if not to say refuted, in an experiment by Smith et al. (1947)²⁴, who aimed at checking whether it is possible to think without movements of the muscles. For that purpose Smith injected himself with a drug, which caused total paralysis of the skeletal muscles, meaning that respiratory paralysis also occurred²⁵. After the experiment he reported the thoughts and perceptions he had during the paralyzed state, hence showing that thinking process is not dependent on the voicebox, as Watson claimed.

Now, the explanation of the interrelation of language and thought is hardly accepted, but back in the days, when behaviorism was one of the leading approaches to the explanation of human behavior and there were no instruments to detect those movements and check the validity of the theory proposed by Watson, it was, in fact, influential.

Furthermore a study by Luria and Yudovich (1956)²⁶ suggested that language plays a rather important role in the cognitive development. They studied a pair of 5-year-old identical male twins. Through lack of motivation and encouragement, because of the self-sufficiency of the 'twin situation', playing almost exclusively together, both boys hardly acquired any language. Their usage of language was on a very primitive level without any attempt of an abstract thought, very context-bound, more like a signaling system (synpraxic speech, according to Luria). When discovered, the twins, who did not seem to be mentally retarded, turned out to be incapable of even rudimentary forms of play, since what they did was very primitive and monotonous²⁷. They were also unable to classify heterogeneous objects into groups with certain properties. During the course of the experiment the children were separated from each other, and one was provided with a special training to improve his language abilities. By the end of the ten month program both boys improved their language (the trained twin had more significant results), what was also shown by their game, which sophistication and creativity increased. The methodology of the experiment can be questioned, but the results do have some validity as to the hypothesis that language does, in fact, influence some kinds of thought²⁸. Still, as one of the criticisms of the study, it could be claimed to be ethically problematic, because it was only one of the twins that was subjected to the extra training, whereas the other one was deprived of this opportunity.

Bernstein's theory of restricted and elaborated codes

Another interesting approach to the issue of influence of language on thought comes from a sociologist Bernstein²⁹. He studied language as a social phenomenon. According to Bernstein, the relationship between the potential and the developed intelligence is mediated through language and hence is dependent on language. He distinguished between two types of language – the restricted and the elaborated codes. The restricted code was characterized as grammatically crude, repetitive, context-bound, does not allow expression of abstract or hypothetical thought, etc, whereas the

²⁴ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, ³1999, pp. 313-328.

²⁵ Smith had to breathe artificially.

²⁶ A. R. Luria and F. Ia. Yudovich. Speech and the Development of Mental Processes in Child. Oxford, England: Penguin Books, 1972.

²⁷ Their actions were such as moving and lining up objects without any attempts to construct or to plan something.

²⁸ Carruthers, Peter and Boucher, Jill (Eds.). Language and Thought. Cambridge: University Press, 1998, p. 5.

²⁹ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, ³1999, pp. 323-325.

characteristics for the second, the elaborated code, were such as grammatically more complex, longer and more sophisticated sentences, allows expression of abstract or hypothetical thought. According to Bernstein, these language codes are the major factor influencing the pattern of relationship to objects and people and the patterns of learning, which children bring with them to further on in life. Therefore the working-class children cannot fulfill their intellectual potential, because of the quality of the language, the restricted code, as opposed to the elaborated code of the middle-class children. Bernstein has shown that working class boys compared to boys from famous public schools had a significant difference between the scores they obtained in the non-verbal intelligence tests and verbal intelligence test, what according to him was caused by the restricted codes of the working-class children.

The study by Robert Hess and Virginia Shipman (1965)³⁰ provides some support for the theory proposed by Bernstein. After investigating over a hundred mothers and their 4-year-old children, they concluded that class-related differences in communication seemed to have an influence on the intellectual development of the child, stressing the importance of the quality, the meaning of mother-child communication.

The major criticism of the approach is that, according to Bernstein, the fact that a person comes from a background that provided him with only a restricted code in relation to language means that this person is not able to fully develop and become an elaborated code speaker. Consequently it might be more useful to consider restricted and elaborated language codes as two ends of one continuum³¹ (given the condition that a restricted code speaker gets a chance to improve).

It is of a crucial importance as to the implications of the theory on the educational system. If it is accepted that working class children, due to their restricted code, which limits their intellectual abilities at least in relation to verbal intelligence, than that will result in the discrimination against them within the educational system. At the same time some of the conclusions Bernstein did (difficulties with the elaborated code, concentration of the working-class children, etc) can potentially suggest some beneficial changes in education, when taking into consideration the background and its effect on the students, and supporting their development.

Vygotsky's theory of interrelation of thought and speech

Furthermore, Vygotsky proposed a theory concerning interrelation of language and thought. According to him the relationship between language and thought is very sophisticated. He claims that the genetic roots of thought and speech are different, and the interrelationship of thought and speech is ever-dynamic, undergoing various changes:

*Progress in thought and progress in speech are not parallel. Their two growth curves cross and re-cross. They may straighten out and run side by side, ever merge for a time, but they always diverge again*³².

³⁰ Hess, Robert D. and Shipman, Virginia C. "Early Experiences and Socialization of Cognitive Modes in Children" in: Child Development. 1965, pp. 869-886.

³¹ Gross, Richard. Psychology: The Science of Mind and Behavior. London: Hodder & Stoughton Educational, ³1999, pp. 323-325.

³² Vygotsky, L. S. "The Genetic Roots of Thought and Speech" in: Thought and Language. Cambridge, Massachusetts: The M.I.T. Press, ²1962, p. 33.

Nevertheless, Vygotsky does not mean that thought and language are separate, but on the contrary, he claims that the futility of earlier investigations was largely due to the fact that thought and language were assumed to be independent with verbal thought as the result of their external unification. The approach that Vygotsky proposes is based on the analysis of the phenomena not by separation and analysis of them by elements, but via analysis of units, which were chosen to be verbal thought in word meaning, which he describes as following:

*The meaning of a word represents such a close amalgam of thought and language that it is hard to tell whether it is a phenomenon of speech or a phenomenon of thought. [...] Word meaning is a phenomenon of thought only in so far as thought is embodied in speech, and of speech only in so far as speech is connected with thought and illuminated by it*³³.

By that Vygotsky emphasizes on the importance of both language and thought, and it is not possible to develop without the collaboration of both of them, what is reflected in the word meaning. Moreover, one of the most important parts of his conception of interrelation of language and thought was that a word meaning develops, it is a dynamic formation. According to Vygotsky, “*way reality is generalized and reflected in a word*” changes as the word meaning evolves, what is also dependant on the acquisition of language.

So it seems then, that Vygotsky distinguishes between two types of speech: the external – turning thought into word – and the internal speech, which turns into inward thought. The inner speech is of a special interest, and he argues that we have a unique opportunity to investigate it – via investigating the egocentric speech, because of its genetic connection with the inner speech, thus investigating the influence of language on thought. Piaget, who was the first one to pay attention to the egocentric speech, perceived it as a direct expression of the egocentrism of the child’s thought. This is one of the stages on child’s development towards socialization, during which “*autism recedes and socialization progresses, leading to the waning of egocentrism in his thinking and speech*”. Vygotsky, on the other hand, did not agree with such explanation of the functions and the fate of the egocentric speech. According to him, the function of the egocentric speech is similar to the function of the inner speech, - “*it serves mental orientation, conscious understanding*”. Moreover, he claims that the egocentric speech does not die away, as Piaget predicted, but that it evolves and develops, in the end becoming the inner speech. This approach to the relationship of language and thought stresses the interdependence of the two, language being crucially involved in the development of the cognition of a human being, and the investigation of the egocentric speech seems have some potential as to the explanation of the way in which language influences thought.

The communicative conception of language

It seems that there are several approaches in relation to the issue of the interconnection between language and thought and the influence of language on thought. Those theories, despite their differences, all accept that language is involved in human thought, being either a necessary condition for at least some kinds of thought or even being constitutively involved in the thinking process. However, another point of view exists, and it is favored by equally many philosophers, linguists and psychologists. According to them language does not have any direct executive role in

³³ Vygotsky, L. S. “Thought and Word” in: Thought and Language. Cambridge, Massachusetts: The M.I.T. Press, 1962, p. 120.

the thinking and practical reasoning of the individual subject³⁴. Nevertheless, most of the psychologists share the view that NLM³⁵, researched by Reed (1918)³⁶, is involved in human memory, learning, planning, etc. One of the representatives of this view is Fodor, who argues that³⁷, if we assume that every predicate in the natural language corresponds to a predicate in the internal code, and that a sophisticated definition might underlie a natural language concept, “*then it is quite conceivable that learning a natural language may increase the complexity of the thoughts that we can think*”. Therefore, he accepts that “*articulate organism*” may have an advantage over an “*inarticulate one*”. Moreover, he accepts the Whorfian point of view, that “*the kinds of concepts one has may be profoundly determined by the character of the natural language that one speaks*”.

Conclusion

There are different theories describing the way in which natural language affects cognition. A brief evaluation of each leads to the final conclusion. The strong version of the Whorfian hypothesis, it seems, is exaggerating the influence of language on thought, claiming that language determines the way in which we perceive the world and think, since it was not substantiated enough by supporting evidence. Peripheralism, introduced by John B. Watson, which also perceives language as completely determining thought, was more than questioned by counter-evidence, and the approach can be hardly considered as valid nowadays.

It seems that from such theories as the Bernstein’s theory of restricted and elaborated codes, the weaker version of the Whorfian hypothesis, supported by valid evidence, it is possible to conclude that language does determine thought in that language, serving to draw attention to differences in the environment, acts as a label to help to store these differences in memory. This is in line with the “natural language mediation” conception. Moreover, the extent of elaboration of language affects the ability of the individual to fulfill his intellectual potential, which is in line with the position of those representatives of communicative conception of language, who accept the influence of language on the conscious thought.

From the theories presented the investigation concludes that it can be claimed with some certainty that natural language does influence conscious thought with respect to memory and learning. Nevertheless, the field of investigation is open for further discussion and requires conclusive evidence in order to accept the theoretical contributions. The theory proposed by Vygotsky with its idea of interdependence of language and thought seems to be very promising, although it is hard to determine empirically the concrete influence of language on thought.

Word count: 3892

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³⁴ Carruthers, Peter and Boucher, Jill (Eds.). Language and Thought. Cambridge: University Press, 1998, pp. 1-18.

³⁵ NLM stands for “natural language mediation”, the involvement of language in conscious thought.

³⁶ Carruthers, Peter and Boucher, Jill (Eds.). Language and Thought. Cambridge: University Press, 1998, pp. 1-18.

³⁷ Fodor, Jerry A. The Language of Thought. Hassocks, Sussex, England: The Harvester Press Limited, 1976.

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