On the Genesis of Thought and Language

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ON THE GENESIS OF THOUGHT AND LANGUAGE

On the Emergence of Concepts and Propositions
The Nature and Structure of Human Categories
On the Impact of Culture on Thought and Language

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In lieu of a foreword

1. Illustrative examples of the problems addressed in this book

A well-known educator was once recalling an episode from his childhood when, for a long time, he had been trying without success to solve a complex math problem. An unexpected visitor—a friend of his father's and a famous mathematician—saw the boy's predicament and decided to help him. He did not try to solve the problem, however. Instead, he and the boy discussed in detail a specific simple case of the problem. After that, the educator recalls, he suddenly understood how to solve the problem generally.

I will try to follow the example of that mathematician. There are quite a few theoretical constructions in this book (see section 2). Some of them, such as the notion of category, the nature of lexical meaning, and the distinction between objects and their parts, can be illustrated by simple obvious examples. They are given below along with brief discussions. I believe that, for the reader, thinking over and solving these problems independently will be a quick introduction to the issues discussed in this book.

1.1. Categories and lexical meanings

The category "Games." In the Aristotelian tradition a category was defined as a class of objects in which each member had some objective characteristic feature that distinguished it from the members of other categories. More than fifty years ago, Ludwig Wittgenstein offered a critique of such an understanding of a category. He introduced the notion of "family resemblances" to define the category "Games" as he considered it to be non-classical, not having a unified description or clear boundaries. Analyzing the diversity of human games and their features, he wrote: "Don't say: "There must be something common, or they would not be called 'games'"—but look and see whether there is anything common to all" (Wittgenstein 1953: section 66). Furthermore, comparing different games, he demonstrated that they resemble one another in a variety of features, like relatives do in a large family.

In other words, he argued that games show "family resemblance" rather than possess a uniform characteristic feature. Wittgenstein's approach has played a crucial role in working out an alternative definition of category as a fuzzy class of objects that resemble some standard / reference, or prototypical, object from the class.

I do not share this position of Wittgenstein. I believe that the category "Games" does possess a uniform characteristic that distinguishes games from other activities. However, this is not an observable, or exogenous, characteristic like that Wittgenstein was looking for (there really isn't such a characteristic), but an endogenous, or functional, characteristic that is not accessible to external perception. We identify the members of one family not by their appearance or "family resemblance" (unrelated members can be more similar than relatives) but by endogenous (functional) characterization—the presence of kinship between them. As will be shown in the book, it is the endogenous (functional) characteristic that underlies the human concept of category. It is also important that this endogenous characteristic belongs to the basic meaning of the word. Because of this, the word *game* may be used correctly to refer to any game while it cannot be used correctly to refer to a non-game activity.

PROBLEM 1. Identify the characteristic feature of the category "Games" which strictly separates games from other, similar kinds of activity.

DISCUSSION. Evidence for the existence of such a feature is provided by the examples of incorrect uses of the word *game* to refer to some combat sports that appear at first sight to be bona fide games. Indeed, it is correct for some reason to use the word *game* to refer to football and tennis, but not to boxing and fencing; cf. the correct sentences (both in Russian and English) *Futbol / Tennis—èto igra*, *Football / Tennis is a game* and the incorrect or odd sentences **Boks / Fextovanie—èto igra*, **Boxing / Fencing is a game.*

Categories of actions "Person is walking" and "Person is running."

PROBLEM 2. Give explicit definitions of the identifying features for these categories.

DISCUSSION. In their typical manifestations walking and running are quite different, as can be seen in figure 1.

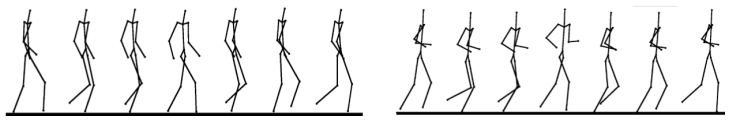

Fig. 1. Typical manifestations of walking and running

At the same time, these types of human motions may vary considerably. Roberta Golinkoff and colleagues emphasize the variety of types of running as follows: "running is running whether it is Carl Lewis circling a track or Grandma running to the telephone" (Golinkoff et al. 2002: 604).

Indeed, it is no easy task to identify the feature that distinguishes Grandma's running from fast walking. Yet native speakers do it easily and never confuse them, referring to them by the phrases in their main meanings: *Grandma is running* and *Grandma is walking*. It is hard to imagine someone moving on her feet in a manner that could be correctly referred to by both the phrases at once. Therefore, the main meanings of the Russian verbs *bežit* 'is running' and *idët* 'is walking' contain distinctive features.

Consider the well-known definitions of these verbs:

a. *Walk* 1. 'To move forward by putting one foot in front of the other' (Longman 2009: 1966);

b. *Run* 1. 'To move very quickly, by moving your legs more quickly than when you walk: He was running towards the door' (Ibid.: 1531);

c. *Čelovek X idët iz Y-a v Z* [lit., 'A man, X, is walking from Y to Z'] ≈ 'A person, X, moves over a surface from Y to Z, shifting their feet up and down and never completely losing contact with the surface crossed' (compare, by contrast, with *bežat'* 'run'—'periodically losing contact with the surface').

The seeming adequacy of these definitions reflects our familiarity with, and easy recognition of, various types of walking and running (see figure 1). Yet, obviously, the definitions (a–c) do not allow for a strict distinction between walking and running. It cannot be the feature "at a normal speed / fast" because one individual may walk faster than another individual can run. Neither can it be the feature "losing contact." Grandma may be running to the telephone without losing contact with the floor (a shuffling run). Therefore, in this case also native speakers rely on other, endogenous characteristics in referring to these types of motion.

1.2. Objects and their parts

Distinguishing objects and their parts. Discussing the problem of objects and their parts, David Marr, an AI researcher, raised some questions:

> Is a nose an object? Is a head one? Is it still one if it is attached to a body? What about a man on horseback? These questions show that the difficulties in trying

> to formulate what should be recovered as a region from an image are so great as to amount almost to philosophical problems. There is really no answer to them—all these things can be an object if you want to think of them that way, or they can be part of a larger object (quoted by Pinker 1997: 258–259).

PROBLEM 3. Demonstrate that 'part of an object' is an objective notion that does not depend on the observer's view and formulate a description that defines a part of an object.

DISCUSSION. There are some indirect data indicating that the feature in question does actually exist. In Russian, there is a nominal genitive construction, *Y X-a* 'Y of X', where *Y* is the name of a part of an object and *X* (in the genitive) is the name of the whole object: *nožka* (*Y*) *stula* (*X-a*) 'leg of the chair,' *kožura banana* 'skin of the banana'; this construction may be used correctly only if object Y (leg, skin) is part of object X (chair, banana). Therefore, the expressions *ručka dveri* 'knob of the door', *polotno dveri* 'board of the door' are correct; they mean that both the knob and the board are parts of the door. The expressions **glazok dveri* 'peephole of the door', **počtovyj jašik dveri* 'mailbox of the door' are incorrect, hence neither the peephole nor the mailbox on the door are its parts. Similarly, it is correct to say *nos čeloveka* 'nose of the person', *golova čeloveka* 'head of the person' but the expression *lošad' vsadnika* 'horse of the rider' would be correct only in a different, derivative meaning 'the horse belongs to the rider' and not in the main meaning 'the horse is part of the rider'. Such examples allow us to assume that, observing objects X and Y, a native speaker of Russian is capable of "computing" in real time whether Y is part of X. Therefore, he knows whether a particular nominal genitive construction is correct or not. It would appear that this is true about native speakers of English as well. As is shown below in subsection 1.4.7, the nominal genitive has a corresponding construction in English in the form of the *Y of X* construction (here, as before, *Y* is the name of a part of the object and *X* the name of the whole object): *roof* (*Y*) *of the house* (*X*). For example, the expressions *knob of the door*, *board of the door* are correct, while the expressions **peephole of the door*, **mailbox of the door* are at least odd if not incorrect.

The structure of parts of objects. If we divide quite familiar objects into parts, as a rule one part is singled out among all the other parts as the most important one. For example, among the parts of a chair (the back, seat, and legs) the seat is the most important part because it is the seat that provides for

the sitting posture of a person; among the parts of a lake it is water (in comparison with the shores and bottom), and among the parts of a banana it is its flesh (in comparison with the skin and fruit stem).

PROBLEM 4. What is the most important part of a cup?

CLUE. For this part, X, the expression *X of the cup* would be correct, similar to the expressions *sides of the cup* and *bottom of the cup.*

SOLUTIONS:

For Problems 1–2, see subsection 1.5.1; Problem 3—section 1.2 and subsection 1.3.5; Problem 4—subsections 1.3.6 and 1.3.7.

2. Main topics discussed in this book

This book is a translation of the supplemented text of my book *The Genesis of Thought and Language*, published in Russian in 2019 by LRC Publishing House in Moscow. In this edition, I discuss various aspects (cognitive, social, etc.) of the evolutionary-synthetic approach to the study of human concepts and their development and embodiment in language (Koshelev 2019).

It seems appropriate to list at the outset a few specific problems, solutions to which are proposed in this book:

1) How do human notions and the language of thought arise in a child? (sections 2.1–2.5);
2) Why is language acquired subsequent to thought and dependent upon it? (subsection 2.5.4);
3) Why are there any languages at all, and why are there so many? (subsection 2.6.4);
4) What is the primary function of language (this is not communication and not thought)? (subsection 2.6.3);
5) How are the basic meanings of words defined in the language of thought? (section 1.3, subsections 1.4.3 and 1.5.3);
6) How are the meanings of the subject and the predicate combined? (subsections 2.4.4 and 2.4.5);
7) How are semantic and pragmatic components of meaning differentiated? (subsection 1.5.4);
8) What is the essence of Frege's reference relation (Chomsky's problem)? (subsection 1.4.6);
9) What is the nature and structure of human categories? (section 1.5);

10) How does culture affect thought and language? (subsections 3.1.1, 3.1.2 and 3.3.9);
11) How does language contribute to the progress of society? (subsection 3.2.6);
12) What should be *Homo perfectus* so that it can solve the social problems of *Homo sapiens sapiens*? (subsection 3.2.9).

This book consists of three chapters.

Chapter One is an analytical review of the main ideas of this approach. The fundamental dichotomy "visual (exogenous) *vs.* functional (endogenous)" cognitive units is introduced; these units are used to give non-verbal definitions of mental representations of various objects, actions, and situations. In particular, definitions of such concepts as GLASS, CHAIR, BANANA, TREE, LAKE, RUN, and some others are given.

Chapter Two discusses how children form concepts, hierarchical relationships, and propositions (conceptual 'utterances'). Drawing on experimental data, I demonstrate that the initial units of the child's representation of the world are pre-conceptual cognitive units—mental representations of whole situations. In the course of two consecutive cycles in the child's cognitive development, these units transform into (a) primary notions—object and motor concepts, and (b) binary role relationships. Together these constitute the elementary language of thought that, in the process of thinking, is used to build conceptual structures—propositions. It is further demonstrated that immediately after the formation of thought the child begins to develop his native language in which object and motor concepts become initial meanings of nouns and verbs, while propositions become the meanings of the child's expressions. The chapter concludes with a discussion of the major components of this language, a contrastive analysis of the proposed approach, and Aristotle's and Chomsky's views on thought and language.

Chapter Three analyzes how a community's culture affects its language. It is demonstrated that the progress of a community, the main constituent of the civilizational component of its culture, enhances the development of the content component of language by extending the range of its lexical and grammatical meanings. In the context of this analysis, Daniel Everett's (2008) hypothesis that culture affects language structure is discussed. In the subsequent sections, models of the development of human and social activity are offered. These models comprise three components: **Activity** (main component), Thought, and Language (auxiliary components that ensure the

successful realization of activities). The models are illustrated with examples of some concrete societies. The section is concluded by a discussion of the final stage in the progressive development of society and its members.

3. Acknowledgements

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Alexey Koshelev,
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