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LOGIC AS A SCIENCE ON THE FORMS AND LAWS OF RIGHT THINKING

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Abstract
Logic is the science of the forms and laws of correct thinking. It appeared around the 4th century BC. e. in Ancient Greece. Its creator is the famous ancient Greek philosopher and scientist Aristotle. As you can see, logic is about 2.5 thousand years old. However, it still retains its practical significance. Many of the sciences and arts of the Ancient World are gone forever and are only of “museum” significance for us, they are interesting only as ancient monuments, but some of them have survived centuries, and at the present time we continue to use them. These include the geometry of Euclid (which we study in school) and the logic of Aristotle, which is also called traditional logic. In the 19th century, symbolic (or mathematical) logic appeared and began to develop rapidly. In traditional logic, natural language (the one we speak, write, read) is used to study correct thinking, and in symbolic logic, an artificial language, or a language of symbols, similar to the language of mathematics. Symbolic logic is a rather specific and difficult science, it can be considered as a branch of mathematics and computer science. Aristotelian logic, on the contrary, being broader, is a kind of universal science: its development is equally useful and even necessary for every person, regardless of which areas of knowledge and subjects are closer to him - socially humanitarian, natural mathematical or -technical. Therefore, our book is devoted to Aristotelian, or traditional, logic.
So why do we need logic, what role does it play in our lives? Logic helps us build our thoughts correctly and express them correctly, convince other people and better understand the interlocutor, explain and defend our point of view, and avoid errors in reasoning.
Logical culture is knowledge and observance of the basic principles and requirements for the correct construction and expression of thoughts both in oral and written speech. The absence of such a culture leads to numerous and varied logical errors that clog not only scientific but also everyday thinking, prevent us from thinking, communicating, understanding each other and ourselves. The vagueness and uncertainty of thinking, its inconsistency and confusion, inconsistency and groundlessness are the direct result of the lack of the proper level of logical culture.
Each of us is well aware that the content of human thinking is infinitely diverse, because you can think (think) about anything, for example, about the structure of the world and the origin of life on Earth, about the past of mankind and its future, about books read and films watched, about today's studies and tomorrow's rest ... But the most important thing is that our thoughts arise and are built according

to the same laws, obey the same principles, fit into the same schemes or forms. Moreover, if the content of our thinking is extremely diverse, then there are very few forms in which this diversity is expressed. Logic is not interested in the content of thinking (other sciences are concerned with it), it studies only the forms of thinking; it is not interested in what we think, but in how we think, which is why it is often called formal logic . For example, if the content of the statement All mosquitoes are insects is normal, and the statement All Cheburashki are aliens is absurd, then for logic these two statements are equivalent, since it deals with forms of thinking, and the form of these statements is the same: All A is B.

As you can see, the form of thinking is a way of expressing thoughts, or a scheme for constructing them. There are three forms of thinking: concept, judgment and inference.

A concept is a form of thinking that denotes an -object or feature of an object. Examples of concepts: pencil, plant, celestial body, chemical element, courage, stupidity, negligence.

Judgment is a form of thinking that consists of concepts related to each other, and that -either affirms or denies. Examples of judgments: All planets are celestial bodies, Some schoolchildren are losers, All triangles are not squares.

Inference is a form of thinking in which a new judgment (conclusion) follows from two or more initial judgments (premises).

In logic, it is customary to place premises and output one under the other and separate output from premises (in the book this is done using the => sign).

The whole endless world of our thoughts is expressed in concepts, judgments and conclusions. These three forms of thinking will be discussed in the pages of the book.

In addition to the forms of thinking, logic also deals with the laws of thinking. The laws of thinking are such objective (i.e., existing in and of themselves and independent of our desires and preferences) principles or rules of thinking, the observance of which always leads reasoning (regardless of its content) to true conclusions, provided that the original judgments are true. There are four basic laws of thought (or laws of logic): the law of identity, the law of contradiction, the law of the excluded middle, and the law of sufficient reason. Each of them will be considered in detail after studying the forms of thinking. Violation of these laws leads to various logical errors, as a rule, to false conclusions. Sometimes the laws of logic are violated involuntarily, out of ignorance, but sometimes they do it deliberately, in order to confuse the interlocutor and prove to him some -kind of false thought. Such deliberate violations of logical laws in order to prove outwardly correct false thoughts are called sophisms .

One common sense and life experience is often enough to solve any -problems. For example, any person who is not familiar with logic can find a catch in the following reasoning:

Movement is eternal.

Going to school is movement.

=> Going to school forever.

Clearly, there is something -wrong with this argument. But what exactly? Anyone who is familiar with logic will say that in this case a mistake has been made, which is called "non-distribution of the middle term in a simple syllogism." Do not be afraid of this unfamiliar and at first glance, complex expression: in the process of further reading the book, you will see that there is nothing complicated, much less incomprehensible here.

And from two true propositions a false conclusion follows. There is also an error in this reasoning. It is

unlikely that a person not familiar with logic will be able to immediately find it. And the one who owns the logical culture will immediately establish the reason: "the expansion of a larger term in a simple syllogism." So, common sense and life experience, as a rule, is enough to navigate in various difficult situations. But if we add a logical culture to our common sense and life experience, then we will only benefit from this. Of course, logic will not solve all problems, but it can certainly help in life.

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