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Статья рассматривает некоторые понятия, используемые в методах научного исследования. Особое внимание уделяется терминам метод, система, анализ и синтез. Приводятся разные значения этих понятий в различных контекстах. Также автор обнаруживает сходство между аналитическим методом исследования и индуктивным и синтетическим методом и дедуктивным.

Ключевые слова: метод, система, анализ, синтез, индуктивный метод, дедуктивный метод, научное исследование

When one learns how to do something, for example, how to swim, how can he or she do it? One can learn how to swim in accordance with some rules and this will represent a methodological type of learning. However, one can learn swimming without any rules — this is a representation of non-methodological type of learning. What is the fastest way to reach the goal?

When one thinks, he or she again can contemplate on a definite order or randomly. For instance, one can search for a reason counter intuitively or one can apply a method of similarities or a method of differences. Which thinking will be more productive — random or methodological? The one that applies a method, presumably.

What is a method? A method is an order of assertion placement which fosters achievement of a definite objective.

A system is a set of logically interrelated elements which comprise a unity. The question arises whether assertions can logically be connected into a unity? The answer is positive. In this case they build up a system of assertions. And the system of assertions constructs science. Therefore, science is a system of factual or probable assertions.

Science discovers new patterns and systematizes already known ones in order to create a more

convenient way of narration and application. Two methods serve science, i.e. analytical and synthesizing ones.

Analysis and synthesis

It is suggested to revise certain points while dealing with the two methods. It is always the relationship of subordination when one asks on the relationship of a particular assertion to a general one or inference to the foundation or effect to the cause. And for the particular assertion we search for the general one, similarly as we do when we search for a reason when we deal with the effect or result. On the other hand, for a known reason we look for the effect it causes and also for the known principles we may look for particular inferences from these principles. Therefore, depending on what we are looking for, two different processes may happen.

If we go from the reason to the effect, from the principle to the conclusion, then this path is called a progressive one or a synthetic one. The question may rise on why this way is called to be progressive? In nature the cause precedes the effect. With regard to that there is the name progressive way because it complies with the real order of things happening. The reverse path, i.e. from the effect to the reason, from the particular conclusions to the principles, is called regressive or analytical one.

In many cases the words analysis and synthesis are interpreted in a different way. Particularly, the word analysis is understood as a method of decomposition of the whole into its parts and the word synthesis — as a reverse method of combining the whole from its parts or elements. In such discourse more often these words — analysis and synthesis are used meaning the chemical processes. In order to make the terms «analysis» and 'synthesis' clear in the process of their scientific application then the major meaning of the term analysis should be the one stated earlier, i.e. mixing particular statements into main principles and the term synthesis should be making conclusions out of main principles.

Analytical method of scientific research is used when one is looking for the reasons of existing actions. Scientists and investigators use this method when they are searching for the reasons of actions known. For instance, Sigmund Freud was seeking for the reasons of adult person conditions in the past, that is why his approach and method is called psychoanalysis.

A politician, a teacher, a legal right representative apply the synthetic way when they try to foresee the consequences of the known reasons and factors. In other words, a professor needs to apply some general scientific principles in a particular pedagogical teaching objective or a legal rights advisor needs to use general constitution principles in a particular regulatory act. In business coaching when a client is consulted, firstly, general pattern is observed. This is analysis. With reliance onto the general observation a method is chosen to be used for a particular situation. This is synthesis.

What is the relationship between an analytical and synthetic method to an induction and deduction? Analysis corresponds induction and synthesis — deduction.

The correspondence of analysis and induction may be easily illustrated in the following way. What is the goal of induction? It is the establishment of new laws, i.e. general principles. In the process of induction we follow from the particular cases to the general principles. Therefore, in the induction process we follow the regressive way. Consequently, induction matches analysis.

How does one come to a conclusion in the process of deduction? In accordance with the general principle a particular inference is made. Therefore, some relatedness between synthesis and deduction becomes clear. ■

1. Кузнецов И. Научное исследование: методика проведения и оформление / И. Кузнецов // Москва. Дашков и К. – 2006. – 460 с.

2. Микешина Л. Философия науки. Эпистемология. Методология. Культура / Л. Микешина // Москва. – 2006. – 254 с.

3. Никифоров А. Философия науки: история и методология / А. Никифоров // Москва. – 1998. – 320 с.

4. Саврушева М. Философия науки и техники: учебное пособие для магистрантов / М. Саврушева // Омск. – 2013. – 120 с.

5. Степин В., Елсуков А. Методы научного познания/ В. Степин, А. Елсуков // Минск. – 1974. – 547 с.

6. Степин В. Теоретическое знание. Структура, историческая эволюция / В. Степин // Москва. – 2000. – 184 с.

7. Степин В. Философия науки. Общие проблемы / В. Степин // Москва. – 2006. – 283 с.

8. Тихонов В. Основы научных исследований: теория и практика: учебное пособие для вузов / В. Тихонов // Москва. Гелиос АРВ. – 2006. – 352 с.

СПИСОК ЛИТЕРАТУРЫ

Кузнецов И. Научное исследование: методика проведения и оформление / И. Кузнецов // Москва. Дашков и К. – 2006. – 460 с.

Микешина Л. Философия науки. Эпистемология. Методология. Культура / Л. Микешина // Москва. – 2006. – 254 с.

Никифоров А. Философия науки: история и методология / А. Никифоров // Москва. – 1998. – 320 с.

Саврушева М. Философия науки и техники: учебное пособие для магистрантов / М. Саврушева // Омск. – 2013. – 120 с.

Степин В., Елсуков А. Методы научного познания/ В. Степин, А. Елсуков // Минск. – 1974. – 547 с.

Степин В. Теоретическое знание. Структура, историческая эволюция / В. Степин // Москва. – 2000. – 184 с.

Степин В. Философия науки. Общие проблемы / В. Степин // Москва. – 2006. – 283 с.

Тихонов В. Основы научных исследований: теория и практика: учебное пособие для вузов / В. Тихонов // Москва. Гелиос АРВ. – 2006. – 352 с.

On some scientific research terms — analysis, synthesis, system

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The article contemplates on some terms used for scientific research with a special emphasis on the terms such as method, system, analysis, and synthesis. Various meanings in different discourses are discussed for the terms analysis and synthesis as well as the relationship between the terms analysis-induction and synthesis-deduction.

Keywords: method, system, analysis, synthesis, induction, deduction, scientific research