# The Formal Systems

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**Abstract**

A Formal System is something created that allow you to answer some questions or to solve some problems. A Classic Formal System (Strongly Deterministic Formal Systems) is a system in which the answer to any question we can get a finite number of steps. In the article we consider some properties of the Formal Systems.

## § 1. Introduction

We understand that Formal System in a narrow sense is something created that allow you to answer some questions. We understand that Formal System broadly is something created that allow you to solve some problems.

The concepts and practice of the Formal Systems is also the Formal System, that is, at least allow you to answer some questions.

While we abstract from matter how correct are answers to the questions and how adequate solutions to problems within those or other Formal Systems. We are interested in how and why they occur, how they relate reality and with each other and of course examples too.

We will start with examples.

We will conduct a thought experiment. We will ask ordinary person and child to draw a human. Maybe we will get two figures. We assume that we have two pictures. We suppose that we have never seen a man. Of course, we are people and we know it look like a man. But for the purity of the experiment, we imagine that it does not know. It is very difficult, but we will try very hard.

We look at these pictures as a certain formal system that answer the question of what a person like.

First we take the picture of the child. Man is something, with a large ball-shaped protuberance on top, with two spikes at the bottom and the one spice on each side. Man has also a second rectangular body with a rectangular hole inside, triangular top and rectangular outgrowth from which a gas is released.

We take the second picture of the ordinary man. We see that one person's body looks like on the body with the first picture, but it is more detailed image. The second body is absent.

The question is: what looks like a man?

The first formal system (picture): human has two bodies.

The second formal system (picture): human has one body.

We have a contradiction. What to do?

We consider these two formal system as one.

The third formal system (two picture): human has one body with rounded outgrowth on top (we consider as standard) and may optionally have one additional non-standard body.

We receive three formal systems.

We divide all formal systems into two great classes.

The first class consists Strongly Deterministic Formal Systems (Classic Formal Systems). The second class consists other Formal Systems.

## § 2. Classic Formal Systems

We define Classic Formal System as Strongly Deterministic Formal System. Classic Formal System (Strongly Deterministic Formal Systems) are the systems in which the answer to any question we can get a finite number of steps. We assume that there are some questions for which we assume to get answer. The remaining questions we consider unsolvable within the our Formal System.

Just as we understand the Strongly Deterministic Formal Systems in the broadest sense (as problem solving).

We can give examples of classical formal systems: mathematics (logic, algebra, geometry, the theory of algorithms and so on), physics (theory of Newton, theory of Einstein, quantum theory and so on), medicine, religions, state as a system of laws.

Why there are classical formal systems? A person needs to solve problems. A person needs answer questions. A person can only do so in a finite number of steps because a person is limited in time and space.

How does a classic formal system? If classic formal system is the result of the work of another classical formal system, then it is just a continuation of it and part of it. Therefor, new formal system may only appear as a result of the society evolution (such as state) or as a result of non-classical formal systems (for example, as a result of scientific creativity).

Whether real spaces are strongly determined? Some real spaces like strong determined. Material world is an example. It corresponds to physics (such as Newton's theory). The opposite example is the human consciousness. We can describe some properties of consciousness as determinate. For example, a computing function, i.e. ability to computing.

## § 3. Contradictions

Conflicts may arise between the classic formal system and the reality. Those,formal system is contrary to the real space, i.e. answer to questions are contrary to reality or problem solving process does not lead to the solution of problem. How can we resolve this contradiction? The only way to have a change of a formal system. Can you solve this update in the existing classical formal system? No. As we learned earlier, the update within the classical system is impossible.

How we can solve this problem? We can make the system a bit non-classical. Examples: We see positivism in physics. Each hypothesis is acceptable as long as we have not denied on practice. This idea is not deterministic.

Elements of democracy and renewal of power in the state.

A creative approach to zero in science. Naturally, there is no guarantee of success.

A man who does not ventured nothing gained. A man who risks the risks drink water only.

Conflicts may arise between the two classic formal systems. One system answer "yes", the other can answer "no".

Example: "whether there is consciousness?". Psychology have said "yes". Physics in the best case can answer "do not know", i.e. this question is unsolvable.

There are conflicts of answers between physics and religion. Is there a God? Religion responds "yes". Physics responds that the existence of God does not result from physical formulas. If physics is mainly complete then God does not exist.

How can we resolve this conflict? As well as the formal systems with pictures. We can consider physics and religion as one system. With point of view of new formal system we have the answers: "God may be exist", "the hypothesis of the existence of God has the right to exist is not denied in practice".

It is a formal solution of contradictions by using Formal Systems.

## License agreement



## Literature

[1] D. Hilbert, P. Bernays, Foundations of Mathematics, 1982, NAUKA.