FINANCIAL QUANTUM AND QUANTITY OF NAME

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Can the amount of money be indefinitely small? Supposing one is offered to distribute 100 Euro into three equal bank deposits. The quantity of money on each of the three accounts will equal to 33.333 . . . - with a nonterminating trail. Thus, the notion of the infinitesimal helps to determine the exact quantity of money.

However in reality there exists the limit of decrease. Real amount of money is somehow or other a SIGN, the production of which costs money. Just imagine printing a banknote the production of which costs as much as it signifies. Similarly does changing of a single figure in a computer file showing the amount of money on a bank account involve certain expenses. Then it should be admitted that the lengthening of the trail of a decimal fraction must be ceased as the bank expenses to introduce the changes will become equivalent to changeable figures. The expenditures referred to the client will not result in the money increase on his account.

The above described situation copies the peculiarities of quantum dimension where the measurement process itself leads to the change in quantitative parameter being measured. In the sphere of money calculus there appear numerical figures summing up of which cannot but lead to the actual money increase.

A hundred years ago Henri Poincare called non-Archimedean geometries which were built by Giuseppe Veronese and David Hilbert strange. Can we assert that people have got used to non-Archimedean property by now? From our point of view non-Archimedean property is understood as non-standard due to the fact that it is traditionally connected with geometric interpretation of quantity viz. with extension. Still the infinitesimal of non-standard kind is naturally discovered in the situation where a new notion serves an object for determination. We suggest calling this notion the QUANTITY OF NAME. In the given example it is vivid that the SIGN can be measured with the measure it denotes. In our opinion what it reflects is not the specific character of money, but common algebraic property of measurable quantities.

What does A=B express? We are saying that two quantities are equal, though they are ascribed different names. In mathematical sense the names seem to be unimportant, playing a service role. Well, it is really true when we speak about equaling the fragmentons situated in different points of space. Discrimination between them is done with the help of coordinates with their literal notation being really unimportant. However, we have a different situation when it comes to equaling the quantities thought to be out of any space either real or abstract one. Then the task is set in a paradoxical way. We must distinguish between the objects of equal quantity, thus the quantity is the only parameter taken into consideration while discriminating.

Discrimination between the objects can be made by putting a mark , which is measured in the same way as the quantity itself. Let's give a simplified example,- we can distinguish between two similar weights by marking one of them. But marking one of them will lead to changing its weight. So, the weight of the mark must be negligibly little. This is how we naturally formulate the algebraic conception of the infinitesimal which is not connected with geometric extension. Assuming that NAME will exist only if we can mark infinite aggregate of similar objects in such a way that summing up the quantities of names should not lead to appearance of appreciable difference in objects' quantities. Thus, summing up qualities of names must have non-Archimedean character. This is an irregularity of a different kind.

The point is not that the summing up of similar marks cannot lead to the appearance of an appreciable amount of the given quantity. The point is that to denominate the infinite aggregate of objects, it is possible to make up the corresponding infinite aggregate of names, the quantities of which - NAMES - differ from one another.

Let's suppose that there two names A and B. Quantity A is divided into N parts with quantity of B amounting to N+1. The ratio of the quantities is (N+1)/N. If N is a finite number, we can make up a number of names totaling N so that their paired ratio would be (N+1)/N. The next step is to determine the process where the number of compared names N is infinitely growing together with number N which divides the quantity of each compared name. All names are quantitatively distinctive and there are enough of them to denominate the infinite denumerable set of objects. Here according to the laws of geometric progression there are two names in the infinite aggregate with the quantities e times different, where e is a natural logarithm basis. Other aspects are viewed on the author's site: "NON-STANDARD ANALYSIS OF NON-CLASSICAL MOTION" (http://res.krasu.ru/non-standard/eng1.htm).

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