

DIDACTIC IMPLICATION ON LOOKING AT ELEMENTARY MATHEMATICS FROM AN ADVANCED STANDPOINT – CHAOTIC PROPERTY OF A NEURON MODEL AS AN EXAMPLE

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Abstract

Many mathematical models are originally raised from physio-biology. Mathematicians use the term model to describe the dynamical system that exhibits biological properties among variables and parameters that are interdependent within the system, which will be analogously represented by an equation. Unfortunately, those equations representing dynamical systems are usually abstractly expressed in advanced mathematical notions that most outsiders do not easily understand. In an example of a single neuron model, we attempt to explain innovatively the mental behaviour and cognitive structure of humane thinking activities, such as pattern recognition, memory, or mental calculation, that are exhibited by the form of dynamical characteristics in terms of stability, bifurcation, or chaos. In a way that students (non-mathematics major) without relevant knowledge may be able to grasp the idea of advanced structure of dynamical systems. In this investigation, we attempt to demonstrate that advanced knowledge could be learnt through a special approach delivered by teachers who can look at the *elementary mathematics from an advanced standpoint* (EMFAS). We discuss why school teacher should pay effort to learn advanced mathematics during their preparation years of Teacher College. Possession of advanced subject knowledge is essential for teachers to interpret the taught materials, and mediate core knowledge for students' learning. When suitable approach is applied, knowledge on mathematically chaotic systems, for example, could be made understandable to non-mathematics major students. Perhaps, our example gives some hint to answer the question: *To what extent of mathematics knowledge one should possess before becoming a professional mathematics school teacher?*

Keywords: Mathematics Teachers' Knowledge, Elementary Mathematics Roman Advanced Standpoint, Dynamical Systems & Chaos.
