Kurt Gödel and the constructive Mathematics of A.A. Markov

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1.

I would like to dedicate this article to the memory of Dr. Oswald Demuth (12.9.1936 – 15.9.1988). Oswald was an excellent Mathematician and a dear friend of mine. I miss him so badly.

2.

The Russian School of constructive Mathematics was founded by A.A. Markov, Jr. (1903-1979) in the late 40-ies - early 50-ies [1]. In private conversations Markov used to state that he nurtured a type of constructive convictions for a very long time, long before the Second World War. This is an interesting fact if one considers that this was the time when Markov worked very actively in various areas of classical Mathematics and achieved first-rate results. Perhaps it is worth mentioning that Markov was a scientist with a very wide area of interest. In his freshman years he published works in Chemistry and he graduated from Leningrad University (1924) with a major in Physics. Besides Mathematics, he published works in theoretical Physics, Celestial Mechanics, Theory of Plasticity (cf., e.g., Markov and Nagorny [1988: introduction by Nagorny]; this monograph (originally in Russian, 1984) was completed and published by N.M. Nagorny after Markov's death). It is almost inevitable that a scientist of such universality arrives to philosophical and foundational issues. I believe that the explicitly "constructive" period of Markov's activities began with his work on Thue's Problem which had stood open since 1914. Thue's Problem was solved independently by A.A. Markov (Jr.) and E. Post in 1947. Markov began to develop his concept of so called *normal algorithms* as a tool to present his results on Thue Problem. Markov's publications on normal algorithms appeared as early as 1951 (Markov [1960; an English translation]). In 1954 Markov published his famous monograph

[1] This article is written for the Gödel '96 Proceedings. It was not and will not be published anywehere else in any form.