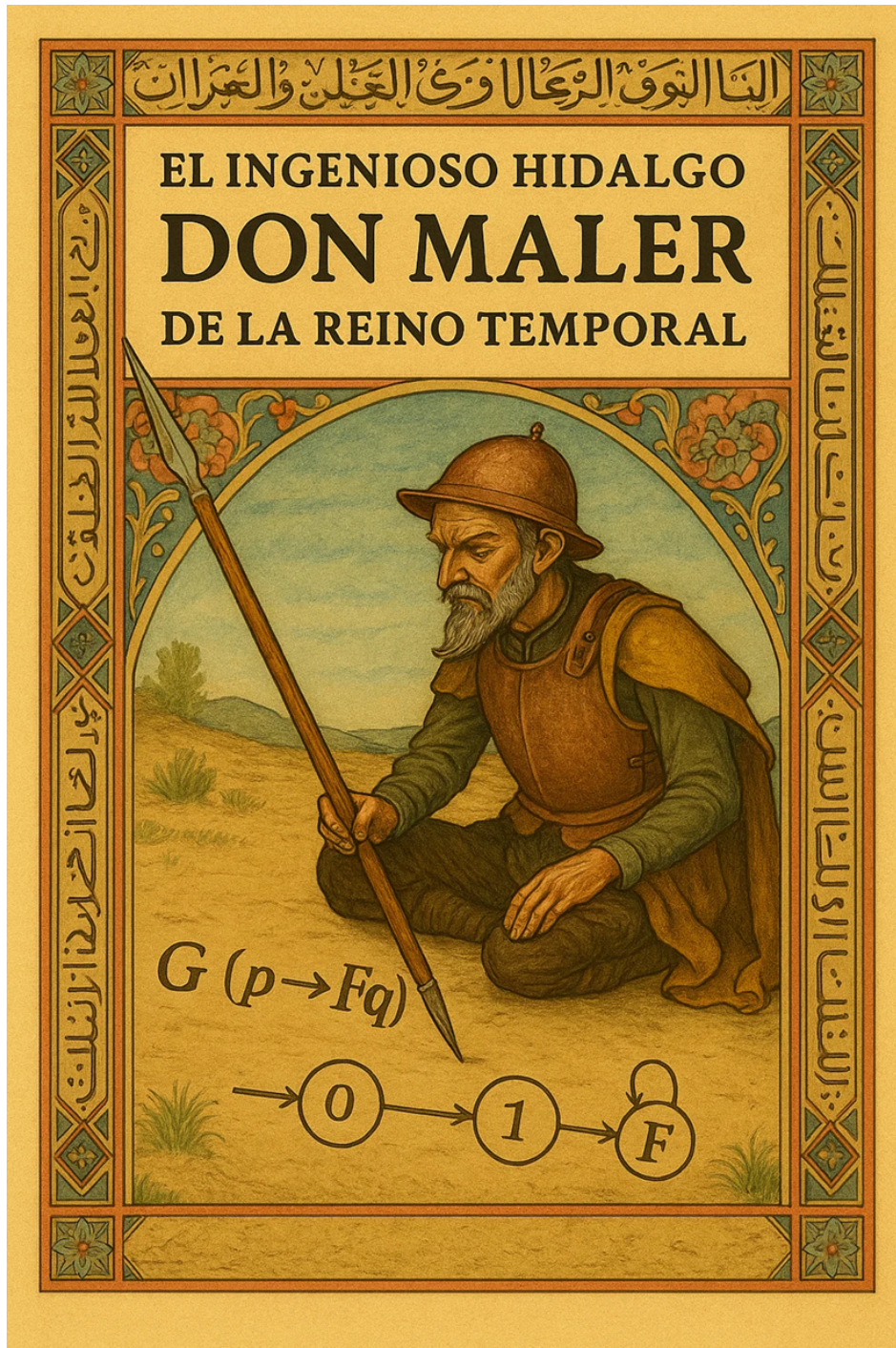


# El Ingenioso Hidalgo Don Maler de la Reino Temporal

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### **Translator's note**

There have been many fictional accounts of this distinguished gentleman widely known by the name Don Maler. Some say he is a moor, and others vehemently claim him to be European. This work is a translation of an obscure work by an oriental author on this eminent figure. This translation was needed because I found that there are no other works that state the mathematical truth about Don Maler. The names in the original work are in Arabic and I decided to retain them in the same form as it is not possible to determine the actual names.

# 1 Introduction

Traveling through distant European lands, I met two westerners, Iskandar and Yusuf, who introduced me to the recent works of Don Maler on learning from Oracles. I spent considerable time studying these works and then decided to write this history impressed by his achievements. Due to the controversy regarding his greatness, we will stick to mathematical truths that show his brilliance. We will start with the story of his encounters with Oracles.

## 1.1 Encounters with Oracles

Don Maler once embarked on a journey to determine truths about the changes observed in the physical realm. He quickly found that for complex statements containing parameters he could not ascertain their truth during his lifetime. After tireless searching he met Iskandar who helped him find a group of Oracles in Russia who can answer questions quickly but with a condition. You have to give values to these parameters and they will take care of the rest! So, he came up with the strategy of cleverly selecting numerous values of parameters and bombarding the Oracles with queries. Yusuf helped him hone his strategy. He triumphantly managed to get reasonably approximate answers to know whether his statements are true. We will now explain this in a symbolic language called temporal logic that seems to resemble Greek. Some say this language is the closest to mathematical truth which I promised. (Translation in progress ...)

## 1.2 Khatoon Huriya and the Hidden Machines

One day Don Maler was looking at the spam emails he received and suspected that there are machines called automata behind this. By just looking at the text in these emails he wanted to find out the exact composition and nature of these automata. After incessant search he met Khatoon Huriya who helped him explore ancient books by Danah Al-Amriki to get closer to the solution. In her books Danah described mysterious spells that can be invoked to slowly construct the body of an automata from the text they produce. (Translation in progress ...)

## 1.3 Ameer Tyreli and the Challenger

It is well known that Don Maler was under the tutelage of the well-respected Ameer Tyreli during his time in the Orient but I will tell a lesser known story about Ameer Tyreli. Long ago there was talk of a prodigy called Razif Al-Kanpuri who moved to the new world and discovered a new kind of automata that had real clocks and he named them Timed Automata. Soon enough, many started considering Razif as his challenger. It is also said that the reason behind Ameer moving to the new world himself is because he wanted to find Razif and defeat him in an intellectual duel to settle the debate once and for all. Don Maler was called upon by Ameer to help him prove that Temporal Logic with suitable modifications can be as powerful as Timed Automata. During these endeavours Don Maler met Yafgini bin Al-Iskander Al-Rusi and a Slavic talent named Dayan bin Niquila whom he promptly recruited. Together, they introduced Timed Regular Expressions (TRE) and Signal Temporal Logic (STL) to mount a counter-challenge. I will try to now describe how they proved mathematically that TRE are indeed as powerful as Timed Automata. (Translation in progress ...)