Ramón Llull's Thinking Machine

Toward the end of the thirteenth century, Ramón Llull (Raimundo Lulio or Raymond Lully) invented the thinking machine. Four hundred years later, Athanasius Kircher, his reader and commentator, invented the magic lantern. The first invention is recorded in a work entitled *Ars magna generalis;* the second, in an equally inaccessible opus called *Ars magna lucis et umbrae*. The names of both inventions are generous. In reality, in mere lucid reality, the magic lantern is not magical, nor is the mechanism devised by Ramón Llull capable of thinking a single thought, however rudimentary or fallacious. To put it another way: measured against its objective, judged by its inventor's illustrious goal, the thinking machine does not work. For us, that fact is of secondary importance. The perpetual motion machines depicted in sketches that confer their mystery upon the pages of the most effusive encyclopedias don't work either, nor do the metaphysical and theological theories that customarily declare who we are and what manner of thing the world is. Their public and well-known futility does not diminish their interest. This may (I believe) also be the case with the useless thinking machine.

The Invention of the Machine

We do not and will never know (it would be risky to await a revelation from the all-knowing machine) how it first came into being. Happily, one of the engravings in the famous Mainz edition (1721–42) affords us room for conjecture. While it is true that Salzinger, the edition's editor, considers this model to be a simplification of another, more complex one, I prefer to think of it as the modest precursor of the others. Let us examine this ancestor (fig. 1). It is a schema or diagram of the attributes of God. The letter A, at the center, signifies the Lord. Along the circumference, the letter B stands
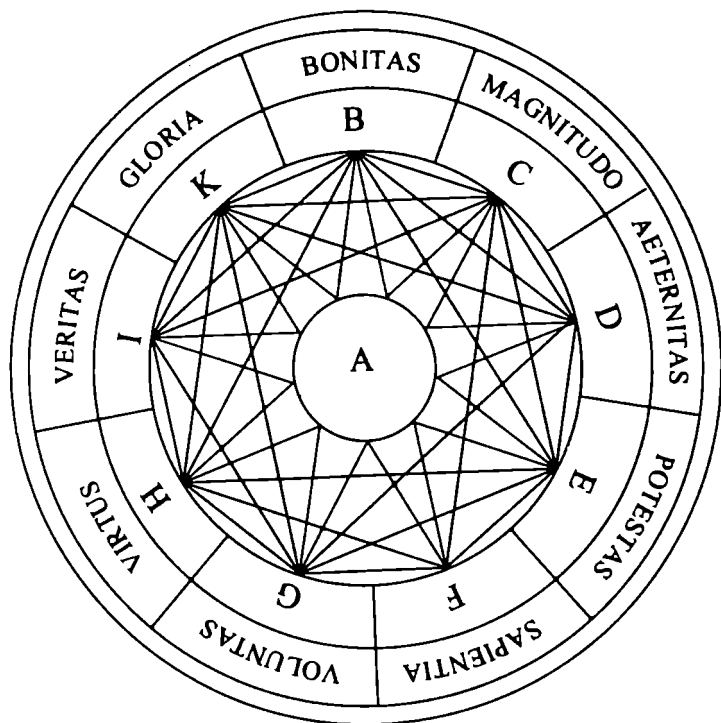
FIGURE 1: *Diagram of divine attributes*

for goodness, C for greatness, D for eternity, E for power, F for wisdom, G for volition, H for virtue, I for truth, and K for glory. The nine letters are equidistant from the center, and each is joined to all the others by chords or diagonal lines. The first of these features means that all of these attributes are inherent; the second, that they are systematically interrelated in such a way as to affirm, with impeccable orthodoxy, that glory is eternal or that eternity is glorious; that power is true, glorious, good, great, eternal, power-ful, wise, free, and virtuous, or benevolently great, greatly eternal, eternally powerful, powerfully wise, wisely free, freely virtuous, virtuously truthful, etc., etc.

I want my readers to grasp the full magnitude of this etcetera. Suffice it to say that it embraces a number of combinations far greater than this page can record. The fact that they are all entirely futile—the fact that, for us, to say that glory is eternal is as rigorously null and void as to say that eternity is glorious—is of only secondary interest. This motionless diagram, with its nine capital letters distributed among nine compartments and linked by a

star and some polygons, is already a thinking machine. It was natural for its inventor—a man, we must not forget, of the thirteenth century—to feed it with a subject matter that now strikes us as unrewarding. We now know that the concepts of goodness, greatness, wisdom, power, and glory are incapable of engendering an appreciable revelation. We (who are basically no less naive than Llull) would load the machine differently, no doubt with the words *Entropy, Time, Electrons, Potential Energy, Fourth Dimension, Relativity, Protons, Einstein.* Or with *Surplus Value, Proletariat, Capitalism, Class Struggle, Dialectical Materialism, Engels.*

The Three Disks

If a mere circle subdivided into nine compartments can give rise to so many combinations, what wonders may we expect from three concentric, manually revolving disks made of wood or metal, each with fifteen or twenty compartments? This thought occurred to the remote Ramón Llull on his red and zenithal island of Mallorca, and he designed his guileless machine. The circumstances and objectives of this machine (fig. 2) no longer interest us, but its guiding principle—the methodical application of chance to the resolution of a problem—still does.

In the preamble to this article, I said that the thinking machine does not work. I have slandered it: *elle ne fonctionne que trop,* it works all too well. Let us select a problem at random: the elucidation of the "true" color of a tiger. I give each of Llull's letters the value of a color, I spin the disks, and I decipher that the capricious tiger is blue, yellow, black, white, green, purple, orange, and grey, or yellowishly blue, blackly blue, whitely blue, greenly blue, purplishly blue, bluely blue, etc. Adherents of the *Ars magna* remained undaunted in the face of this torrential ambiguity; they recommended the simultaneous deployment of many combinatory machines, which (according to them) would gradually orient and rectify themselves through "multiplications" and "eliminations." For a long while, many people believed that the certain revelation of all the world's enigmas lay in the patient manipulation of these disks.
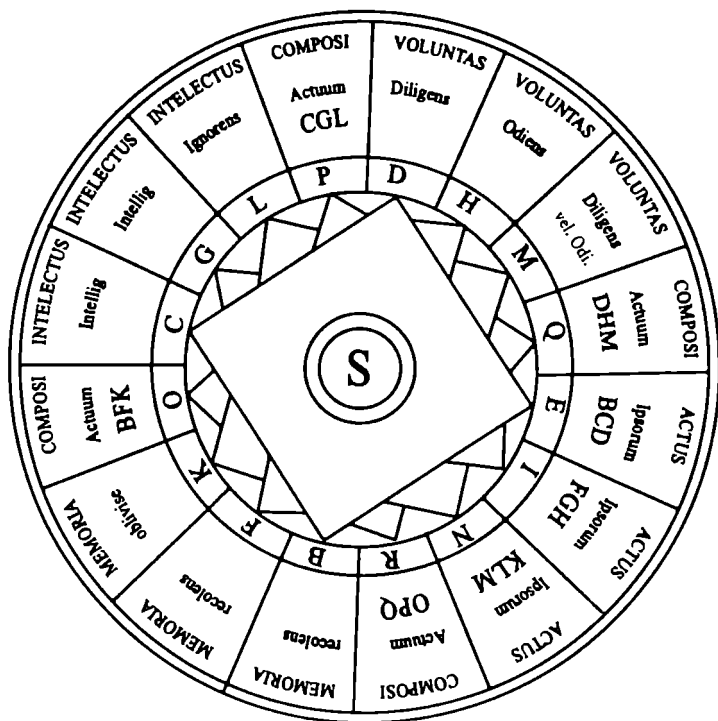
FIGURE 2: *Ramón Llull's thinking machine*

Gulliver and His Machine

My readers may perhaps recall that Swift ridicules the thinking machine in the third part of *Gulliver's Travels*. He proposes or describes another, more complex machine, in which human intervention plays a far lesser role.

This machine, Captain Gulliver relates, is a wooden frame filled with cubes the size of dice joined by slender wires. Words are written on all six sides of the cubes. Iron handles are attached around the edges of the frame. When the handles are moved, the cubes turn over; at each turn of the handle, the words and their order change. The cubes are then attentively perused, and if two or three form a sentence or part of a sentence, the students copy it out in a notebook. "The professor," Gulliver adds impassively, "shewed me several Volumes in large folio, already collected, of broken Sentences, which he intended to piece together; and out of those rich Materials to give the World a compleat Body of all Arts and Sciences. . . ."

A Final Defense

As an instrument of philosophical investigation, the thinking machine is absurd. It would not be absurd, however, as a literary and poetic device. (Discerningly, Fritz Mauthner notes—*Wörterbuch der Philosophie* I, 284— that a rhyming dictionary is a kind of thinking machine.) The poet who requires an adjective to modify "tiger" proceeds in a manner identical to the machine. He tries them out until he finds one that is sufficiently startling. "Black tiger" could be a tiger in the night; "red tiger," all tigers, for its connotation of blood.

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