Why Rules Rule Over Platonic Perfection

Terry Bollinger
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https://youtu.be/CH9KT_KnErs?lc=UgygteBsp1ksCA3lQrl4AaABAg

A Comment on the Closer To Truth post:
Sabine Hossenfelder on Physics and the Big Questions (August 9, 2022)
https://youtu.be/CH9KT_KnErs?t=15m50s

15:50 Kuhn "... [Sabine,] you equate ... Platonism where all math is real ... with ... the existence of God, in that science cannot say anything about either one." Robert Lawrence Kuhn, how much real-physics computational power, data storage, mass, and energy would be needed to instantiate the full Mandelbrot set not as a potential but as a complete, fully existent entity composed of particles and matter? Would this level of computational power be accessible to humankind or only to God?

Let's go a bit further. What is the answer to this same question for creating a genuinely perfect circle? Or line? Or point? One might respond, "Such physical models are not Platonic math since Platonic perfection exists only beyond the physical world." I agree without hesitation. But how could anyone imagine such infinitely perfect models to have anything to do with the always-finite, energy-bound physics of space and matter?

There is a more straightforward explanation for the symmetries and perfections approximated by the physical world than assuming God-like computation capacities at every point in space: Physics only has a few rules, and they are all elaborative. In other words, the standard equations of physics are more akin to cleverly iterative programs than to Platonic ideals. When funded by energy, these rules generate and approach with increasing and often exquisite approximation the forms we think of as points, lines, curves, surfaces, and volumes. Physics becomes not the interplay of two independent domains of "particles" and "spaces" but a unified game of always-dynamic boundaries between the micro (particle) and macro (space) quantum limits. These boundary rules give quantum mechanics at small scales, where Hamiltonian particle limits mostly prevail, and general relativity at vast scales, where space-like rigidity and separation help ensure the universal conservation of quantum numbers.

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