On quantum mechanics. To Jonathan Swift, Dean of St Patrick's

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On quantum mechanics. To Jonathan Swift, Dean of St Patrick's

Grégoire LACAZE

Oxford, May 22nd, 2019

Dear Jonathan Swift,

It is with great pleasure that I have finally decided to write to you about the fascinating and exhilarating adventures that Lemuel Gulliver experienced and that are recounted in *Gulliver's Travels*.

As I am a postgraduate researcher specialising in quantum mechanics at the Department of Physics (University of Oxford), Gulliver's odyssey could not fail to catch my attention and sympathy.

I am currently writing this letter from a quiet reading room located on the top floor of the Radcliffe Camera, overlooking All Souls College.

This letter is full of my dearest hopes that it will surely be received with the greatest kindness and distinction by a person of your virtue.

A thorough reading of the aforementioned book has led me to share with you some state-of-the-art physical breakthroughs that should shed a new light on this wonderful literary masterpiece.

Notwithstanding the fact that the issues of time and place seem to be of paramount importance in *Gulliver's Travels*, as most scholars have pointed out, I humbly suggest that these notions could well be addressed in a somewhat different way, thanks to the latest scientific advances, which should guarantee an everlasting posterity to this remarkable literary masterpiece.

I must confess to you that quantum mechanics has dramatically altered our own perceptions of the world and of our environment. Due to these new and stimulating perspectives that profoundly influence our understanding of the physical phenomena observed in our daily lives, the nanoscopic approach promoted by quantum scientists should urge us to rethink the conflicting duality between what our own senses tend to

perceive and what is effectively measured and monitored through a large array of sensors.

10 Indeed, what we can perceive with our own senses in our daily environment ought to be considerably reassessed when it comes to a nanoscopic level with the help of very powerful magnifying devices using the Transmission Electron Microscopy technique. Thanks to crystallography, the arrangement of atoms in molecules is no longer pure speculation or abstract theories but can be visualized in three dimensions on computer screens.

11 For various reasons I think I need not mention, I am much obliged to Erwin Schrödinger, a Nobel Prize-winning Austrian physicist who developed a number of fundamental results in the field of quantum theory. His famous thought experiment led him to question the quantum superposition implying that every quantum state can be represented as a sum of two or more other distinct states.

12 In order to illustrate what I am saying, I might allude to Gulliver's journey to Lilliput where he was to meet six-inch-high human creatures. Gulliver saw himself as a giant surrounded by human creatures he regarded as dwarves. Conversely, his voyage to Brobdingnag led him to a country in which he occupied an "inferior" position in terms of height and physical appearance.

13 For aught I know, our knowledge of the physical environment surrounding us could largely benefit from an analysis including different perspectives and not only focusing on the visible spectrum. Hence, the issues of physical dimensions and appearances of objects and human creatures should be reassessed, which should prompt us to take into account the famous principle of relativity.

14 I recommend that you peruse the interesting books written by Richard Feynman, an American theoretical physicist, whose famous works on quantum mechanics led him to gain international recognition, culminating in the Nobel Prize in Physics he received in 1965.

15 What seems rather paradoxical and problematic as far as rationality is concerned is that some physical phenomena that cannot be observed at a macroscopic level are perfectly identified at a nanoscopic level. This remark seems perfectly in keeping with the scale problem that tends to be so central in *Gulliver's Travels*.

16 The alternation of perspectives between Lilliput, where Gulliver is regarded as a giant, and Brobdingnag, where he is viewed as a dwarf, shows that his physical appearance can be perceived in opposite ways. This said, I must inform you that the stances adopted in the novel seem to be equated with the fundamental principles lying at the core of quantum mechanics.

17 The superposition of several physical states I have already alluded to should probably encourage readers to go beyond their first unconscious perceptions attached to the various countries and territories visited by Gulliver and to contemplate the surrounding world with a renewed vision. The discovery of unknown physical phenomena that seem so unlike our familiar and usual environment should not impair our understanding of complex or unstudied phenomena. On the contrary, these challenges should entice us to carry out new experiments with a view to enriching our scientific knowledge.

18 As you are usually regarded as one of the major canonical writers in the British Isles, your literary works have ensured that your name has gone down in posterity and is

now also celebrated on a more scientific ground. In "A Voyage to Laputa," you give very accurate descriptions of the Martian moons: "They have likewise discovered two lesser stars, or satellites, which revolve around Mars, whereof the innermost is distant from the centre of the primary planet exactly three of his diameters, and the outermost five; the former revolves in the space of ten hours, and the latter in twenty-one and a half; so that the squares of their periodical times are very near in the same proportion with the cubes of their distance, from the centre of Mars, which evidently shows them to be governed by the same law of gravitation that influences the other heavenly bodies."

19 I hope that you will be delighted to learn that the detailed physical description of the Martian environment has recently been hailed by the American space agency (NASA) on the Mars Exploration Program website that quotes a fragment of the excerpt above.

20 All that I have mentioned before shows the remarkable impact your literary achievements have left in English-speaking society.

21 I am firmly convinced that my letter will hold your attention and will be warmly received.

22 Your dutiful, humble and faithful admirer,

23 Dr Pamela Richardson

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