

## Editorial\*

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*B Sury, Chief Editor*

The May issue of *Resonance* makes its appearance under rather challenging circumstances. While entire humanity is going through this destructive pandemic, it may be that some countries managed to take the right steps in time to minimize and repair the misery, while others may have exacerbated the situation by their inaction or wrong actions. Be that as it may, the academic community needs to carry on with its work. Apart from other things, we need to stem the rot of misinformation and thereby allay the fears that an uninformed person is wont to face.



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In countries with long traditions like ours, there has always been a danger of pseudoscience flourishing. Unless the scientific method percolates into the common person's way of thinking, this will remain a danger as the common person cannot easily distinguish science from pseudoscience. There are "independent researchers" everywhere who proclaim something to be true, which the general public finds easy to believe. While science is a "candle in the dark"—as Carl Sagan put it—providing a method to sift the true from the false, why does pseudoscience thrive in our milieu? The principal reason is that science is a lot of hard and sustained work and appears seldom spectacular (except to the practitioners), and pseudoscientific claims grab the attention of the lay person. While the professional scientific community may dismiss these as silly and unfounded, they can no longer be ignored. At critical times, they have come to haunt us when policies formed are sometimes centered over unscientific claims. Some years back, a country's governance denied the link between HIV and AIDS and that did lead to a lot of deaths. In the present pandemic scenario, the general public in our country is realizing that misinformation or practices recommended based on unscientific claims are not

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really effective. While this is heartening, it comes at a cost when several lives are already lost. It is, therefore, one of the most challenging (if not impossible) tasks to get the common person to think scientifically or even rationally.

*Resonance* features here the versatile mathematician John Conway, who has been described by many as a “Magical Genius”. Conway’s spectrum of interests was one of the widest one can see, and he made lasting impressions on each of them. He was one of the greatest inventors of games and, his motto seemed to be that a lot of mathematics is really revealed through such games. A popular quote by him is, “You get surreal numbers by playing games. I used to feel guilty in Cambridge that I spent all day playing games, while I was supposed to be doing mathematics. Then, when I discovered surreal numbers, I realized that playing games IS mathematics.” His “Game of Life” is known even to the proverbial layman—read Madhavan Mukund’s article here for more on this. There are two articles in this issue describing some of his contributions, and an Article-in-a-Box mentions a few other tidbits. Considering the enormous influence his work has wielded over diverse subjects, the writings here merely scratch the surface. The pandemic that we referred to in the beginning was also responsible for Conway’s death.

Here is a nice little piece of mathematics news that shows the power of what 400000 computers working together can do. One can easily write two solutions of  $x^3 + y^3 + z^3 = 3$  in integers  $x, y, z$ ; viz., 1, 1, 1 and 4, 4, -5. Whether it was even possible to check if a third solution exists became a refrain after the mathematician Mordell mentioned this in 1953. Recently, Booker and Sutherland harnessed the power of 400000 computers working in parallel on several parts of their algorithm to come up with the next larger solution

$$(569936821221962380720)^3 + (-569936821113563493509)^3 \\ + (-472715493453327032)^3 = 3.$$

Over the years, all values of  $k$  between 1 and 100 had been found, where a solution to  $x^3 + y^3 + z^3 = k$  was either shown to not exist



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or a solution had been found, but with the exception of  $k = 42$ . It is amusing to note that in *The Hitchhiker's Guide to the Galaxy* by Douglas Adams, 42 is the answer given by a supercomputer to "The Ultimate Question of Life, The Universe, and Everything." Prior to the solution for the case of  $k = 3$  mentioned above, Booker and Sutherland found the first solution to the 42 case, which is:

$$(-80538738812075974)^3 + (80435758145817515)^3 + (12602123297335631)^3.$$

Regarding the contents of this issue, there are several other articles—some by students as well—on diverse topics, which make it an interesting read.

