The deep and far of science

One of the greatest challenges in science communication is to understand the significance of the phenomena being written about. While science writers are often asked how their subject impacts life and people, the simple answer when writing about basic sciences is that it's too early for that assessment. That, however, does not take away from the fact that the research in question could be groundbreaking. For cases where this answer does not suffice, here are some reasons to appreciate writing on basic science that go pasts the 'so what' reaction.

The most exciting discoveries in science are those that significantly deepen existing knowledge about familiar phenomena. There is another category of discoveries that uncovers a brick on the metaphorical wall that blocks scientists from seeing far into the unknown. All scientific research falls in between these two points. The closer the discovery is to pushing the limits of knowledge, the more its significance, and the more it is loved by science writers, for the discovery is that much easier to grapple with.

Two discoveries exemplify this point: one was the August 17, 2017 detection of the merging of two neutron stars, achieved by studying gravitational waves that the stars set off when merging. The other is the puzzle posed by the transient discovered by Stephen Smartt using the Hawaii-based ATLAS telescope, on June 16 this year. The transient was called AT2018cow and nicknamed the 'cow' because of the last three letters of its official label.

The neutron star merger was the fifth time a gravitational wave signal had been detected by observatories on earth. It was a known area, yet this was markedly different from earlier observed mergers of black holes. "The new siren sang for 100 seconds at frequencies climbing to thousands of cycles per second," said an article in *Science*. And after the collapse there was a brilliant flash of light — the kilonova — observed experimentally for the first time. This time more than the two detectors of LIGO were at work. The Pisa-based VIRGO detector had joined in, and by a process called triangulation, scientists were able to localise this event in the sky as never before.

While the window had already been opened by earlier discoveries, this event deepened existing knowledge significantly. The 'cow', on the other hand, appears to be an unknown in every sense of the word. While astronomers guess that it might be a type Ic supernova, they are not completely sure. The race is on to find out what exactly it is.

Perhaps neither of these discoveries would really touch our lives were we to insist that research always must have an immediacy or be useful. But when you contemplate how far human endeavour has reached beyond what it can perceive with bare hands and naked senses, the wonder begins.

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