

Science and engineering

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Sir, – What a depressingly outdated concept of the balance between science and engineering presented in the [letter](#) by Prof John Kelly (August 6th).

Throughout the leading academic centres in the US, science and engineering are interwoven, particularly in the pursuit of advances relevant to human health.

The integration of these disciplines has yielded many advances, such as the exploitation of nanotechnology to enable targeted delivery of therapeutics and the use of remote sensing devices to complement advances in genomic, proteomic, metabolomic and microbiomic technologies to parse variability in the response of patients to drugs.

Investment in fundamental science and in providing incentives to pursue interdisciplinary science has yielded these benefits, not tribal lobbying to rob science to feed engineering.

Basic research provides the discoveries that are exploited by such interdisciplinary translational science.

Rather than subscribe to outdated concepts, Minister of State for Skills, Research and Innovation Damien English wisely appears to appreciate the necessity to rebalance the portfolio of scientific investment to favour basic research, but correspondingly to promote interdisciplinary interactions among biomedical scientists, engineers, chemists and physicists to foster the discoveries that will benefit the health and wealth of the nation. – Yours, etc,

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Sir, – The recent letter by John Kelly, professor emeritus of engineering at UCD, concerning of the funding of scientific research in Ireland contained several statements that should not go unchallenged. According to Prof Kelly, “In these years, Science Foundation Ireland was prohibited by its statutes from funding applied research”. A glance at its records shows that the funding of scientific research with useful application was a priority of Science Foundation Ireland (SFI) from its inception.

Perhaps Prof Kelly meant that research in engineering received little funding from SFI in the early years – hardly surprising for a body charged with the stimulation of research in science rather than engineering.

In recent years, many Irish scientists have become concerned, not at the level of funding available for applied research in this country, but at the lack of funding for scientific research that does not have an immediate practical application.

This is seen by many as a very shortsighted approach to scientific research, given that so many of the great breakthroughs in modern technology were driven by advances in fundamental science.

Prof Kelly’s claim that “most of the important engineering innovations in the history of the world were achieved in the absence of pre-existing scientific understanding” seems rather strange, and is certainly not true of the modern era.

To pick two obvious examples, today’s digital industry (from computers to smart phones) arose from advances in our understanding of the quantum physics of semiconductors, while all of laser technology (from telecommunications to barcodes) is based on our understanding of the quantum physics of radiation.

Finally, one can only imagine what noted Irish scientists such as Robert Boyle or Rowan Hamilton would have made of Prof Kelly’s bizarre statement that “Science is a tool of engineering, with the responsibility for the study of what is, whereas engineering is the creation of what never was”. – Yours, etc,

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