

Science, Fiction and Curriculum Innovation

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Abstract. The academic world is now becoming so specialized that the advantages of a cross disciplinary education are being lost in the tidal wave of scholarship concentrating upon narrow subject fields whilst displacing the values of connected disciplines from the sciences and humanities. The almost rigorous segregation of science and the arts at degree level is being felt not only within academia, but within society. The more a subject is concentrated, the less profound and applicable it appears to the public who should ultimately be the beneficiaries of such knowledge. In order to achieve a form of parity through which our modern world can be examined, the University of Glamorgan has introduced an innovative degree course aimed at developing a multidisciplinary knowledge of science and the arts via an exploration of the science, history, philosophy, religious, artistic, literary, cultural and social endeavours of the fields of astronomy and fantastic literature.

1. Context

The BSc in Science and Science Fiction emerged out of an initiative led by the University of Glamorgan, in partnership with community groups, schools and other higher education institutions (HEIs) in South Wales. This has come to be known as the Community University of the Valleys, and was cited by a British Govt Report as an example of good practice in increasing access and widening participation within Higher Education in the UK. Courses are offered within local learning centres located at community venues, and where possible a new curriculum has been offered to a wide range of learners. They include disadvantaged youth, as well as those who have retired or who have been made redundant after many years of employment.

One of the new community of the valleys courses which proved to be a success was entitled "Life in the Universe", and through studying this module over 200 learners became very interested in the subject area of Astronomy. In many cases these individuals had no formal qualifications in science related subjects, and yet they demonstrated understanding and pronounced interest in aspects of science. It became apparent that these community students had interpreted a wide range of science fiction texts. They had used knowledge sources that reach beyond the more conventional and obvious source literature of "books"; extending into the critical reading of film, magazines, fanzines, and video games.

The community experience led to the creation of an entire course in astronomy which is now contained within the University of Glamorgan's curriculum portfolio. Detail of our innovative astronomy programme has been reported to several international conferences.

2. Aim of the Degree

The aim of the "Science and Science Fiction" degree award is to produce graduates who not only have a dynamic and pluralistic understanding of the nature and evolution of science, but can also critically develop and communicate ideas about science and its cultural context. Science fiction is the vehicle for our exploration of the relationship between science and culture.

The award provides the students with the conceptual and methodological frameworks necessary to achieve these aims. These frameworks include science: its methodology, philosophy and sociology, and critical theories from media and cultural studies.

3. Degree Structure and Cognate Strands

The award encompasses two cognate strands: the science strand, and the science fiction strand. The students are provided with the necessary research tools, frameworks and methodologies to enable them to construct differing interpretations, paradigms and perspectives on the nature of the subjects under study.

The award represents a unique mixture of skills since it brings together science and the humanities therefore challenging the "two culture" myth. It is hoped that graduates will possess flexible and practical abilities to respond to a dynamic and evolving cultural working environment where artistic creativity and science often meet.

3.1. Science Strand

The modules chosen for this strand are drawn from the physical sciences, particularly astronomy. There is an appropriate rationale for this choice. As well as being a fascinating and challenging study in its own right, astronomy can also be used to teach the principles of the nature and philosophy of science.

Furthermore, our account of the physical sciences is pluralistic, and that is probably its most important innovation. We recognise that the scientific revolutions have influenced, or have been influenced by, conceptual changes in cosmology, chemistry, biology, physics, philosophy, and religion. Specialised accounts are perhaps inhibited from analysing the nature of these links and their influence upon the growth of human knowledge and endeavour. Indeed, pursuit of this pluralism has led to a second innovation - our modules repeatedly cross the institutionalised boundaries which separate "science" from "history" or "philosophy".

Our astronomy programme provides multidisciplinary modules, based on the physical sciences, but using an innovative syllabus balanced between the scientific and historic/cultural aspects of each topic. The modules are open to students of all disciplines. The programme explores the development of scientific

ideas and beliefs through the use of social and historical frameworks, thereby lending clarity to the nature and evolution of scientific concepts and methods, whilst also embracing the wider cultural influences and impact.

Students also have access to the University's Robotic Telescope and Observatory, linked to giant robotic telescopes in both Hawaii and Australia (Faulkes).

3.2. Science Fiction Strand

The aim of this strand is to present a critical perspective on the creation, development and cultural context of science fiction, by providing the students with an imaginative opportunity for analysis using contrasting frameworks.

Science fiction has been variously defined - there probably exist as many definitions as there are science fiction authors according to Brian Aldiss. A typical example is that of Rose (1981) who stated: *"Instead of thinking of science fiction as a thing, an object to be described, it is perhaps more useful to think of it as a tradition, an evolving complex of themes, attitudes and formal strategies that, taken together, constitute a general set of expectations"*

Even though students will be discouraged from the naive notion of science fiction as simply reflecting science, our emphasis shall be on the relationship between science, science fiction and society. Science fiction questions science, examines individuals and communities often in terms of technological systems, and those systems and technologies in terms of identity and consciousness. For example, Merrill (1971) defines the heart of science fiction as: *"the mode which makes use of the traditional 'scientific method' (observation, hypothesis, experimentation) to examine some postulated approximation of reality, by introducing a given set of changes - imaginary or inventive - into the common background of 'known facts', creating an environment in which the responses and perceptions of the characters will reveal something about the inventions, the characters, or both."*

Moskowitz (1957) suggests a definition that is useful because of its varied conception of science, a conception which was not always as broad nor as acceptable to practitioners and readers of science fiction as it is today: *"science fiction is . . . identifiable by the fact that it eases the 'willing suspension of disbelief' on the part of its (audience) by utilising an atmosphere of scientific credibility for its imaginative speculations in physical science, space, time, social science, and philosophy."*

Russ (1995) holds that science fiction *"attempts to assimilate imaginatively scientific knowledge about reality and the scientific method, as distinct from the merely practical changes sciences has made in our lives"*. Parrinder (1997) suggests *"up to the present, SF has continued to be moulded and shaped by scientific thought, even in its moments of rebellion against it"*.

In short, science fiction has been used as a way of imagining the relationship between technology, science and society, both as an inspirational source guiding the direction of scientific development and a way of popularising and disseminating scientific ideas. It is the contention of our degree award that a student with a socio-scientifically informed criticism would find the extrapolations of SF more intriguing, rewarding and challenging.

As a consequence, the criteria for selecting works is not solely on literary merit, but rather the ways in which works articulate this relationship between

scientific thought and society. Author Thomas Disch, writing about this marriage of art, science and society made the point that: “A new harmony is sometimes achieved, a coming together of invention and awareness. Not only are the (metaphorical) figures and the landscape resonantly congruent with each other, but now there is a sense of greater understanding (of our world).” (Disch 1973)

3.3. Cultural Analysis of SF

Traditionally, works of, and awards in, science fiction have been legitimised within a literary tradition, i.e., the creation of canonical works, and an evaluation of works in terms of their contribution to the development of a humanistic aesthetic. However, for all of its imagination and innovation, science fiction would have remained the province of a limited readership had it not been for the expansion of the genre to the visual media.

Consequently, within the award, literature is not prioritised; common materials also involve SF works from television, film and other media. Nor are literary techniques especially used to analyse these materials. As Russ (1995) points out: “criticism of science fiction cannot possibly look like the criticism we are used to. It will - perforce - employ an aesthetic in which the elegance, rigorousness, and systematic coherence of explicit ideas is of great importance. It will therefore appear to stray into all sorts of extra-literary fields: metaphysics, politics, philosophy, physics, biology, psychology, topology, mathematics, history and so on.”

And Russ (1995) again: “(medievalists) enjoy ... (SF) ... much more than do students of later literary periods. So, in fact do city planners, architects, archaeologists, engineers, rock musicians, anthropologists, and nearly everyone except most English professors.”

Therefore, our degree award focuses on the concept of fiction as an “invented idea or statement or narrative; an imaginary thing” and as “the act or process of inventing imaginary things, or a conventionally accepted falsehood.” The award addresses science in a number of ways:

- physical limits of realising imagined scientific invention;
- connections between fact and fictional work; this leads to deeper questions about science’s dependence on narrative to support/justify scientific thought and activity;
- possibilities of achieving a mimetic relationship between reality and representation.

3.4. The Student Experience

A common feature of the taught modules is the multidisciplinary approach. The modules, which comprise the science fiction strand, are delivered through the use of staff teaching teams. In this way, the students experience a variety of viewpoints from contributing fields personified by informed experts from those fields. It is hoped that the use of such staff teams help present the broadest possible selection from the genre, producing intellectual versatility in our graduates and encouraging them to approach SF from a range of different theoretical viewpoints.

4. Conclusion

On the eve of the millennium, *The Times* asked a number of prominent scientists to identify major issues in science leading into the C21st. Professor Susan Greenfield, of Oxford University, and the first female head of the Royal Institution suggested *the scientific breakthrough of the C21st would be: "The engagement of the public in science and the expression of scientific ideas in a way they can understand and contribute to"*

We believe science fiction can be used to help demystify science, highlight its social and cultural context, and act as a bridge to public consciousness, providing an opportunity to tackle pseudoscience head-on.

Finally in this way we shall also address issues relating to the status of science itself. Why is science often considered culturally inferior to the arts? Why is science rarely appreciated as a cultural activity at all? If science is to be restored to its rightful place in our cultural heritage then science fiction can help to play an important part in bringing science "...out of the laboratory and into the culture."

References

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