

RGC Reference	LU302-HSS-13
<i>please insert ref. above</i>	

The Research Grants Council of Hong Kong
Prestigious Fellowship Scheme under the Humanities and Social Sciences Panel
Completion Report
(for completed projects only)

Part A: Project and Award Holder

1. Project Title

The Instrument of Science

2. Award Holder and Academic Department/Unit Involved

Name/Post	Unit/Department/Institution	Contact Information
Darrell P ROWBOTTOM/ Professor & Head	Department of Philosophy / Lingnan University	<u>Darrellrowbottom@ln.edu.hk</u> Tel: 2616 7461

Part B: The Report

5. Workplan

5.1 Workplan as per original application

(The following are the 'Objectives' stated in section 2b of the proposal)

- (1) To conduct historical research on atomism and quantum mechanics, which will inform my subsequent work on the realism issue in philosophy of science.
- (2) To complete a monograph developing and presenting a new case for instrumentalism about science – 'The Instrument of Science' – for publication with a leading academic press such as Oxford University Press or Cambridge University Press.
- (3) To produce two journal articles, based on chapters from the monograph, for publication in leading journals such as *Philosophy of Science* and *Nous*.
- (4) To present some of the resultant work at three leading international conferences in philosophy, e.g. the Annual Conference of the *British Society for the Philosophy of*

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Science and the Biannual Conference of the *Philosophy of Science Association*, and at a further conference to be held in Hong Kong.

5.3 Realisation of the workplan

(maximum 2 pages; please state how and to what extent the work as stated in the workplan has been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)

Item 1 (detailed in 5.1):

The historical research was successfully completed, and was vital for the book produced (as mentioned under the item 2 heading below). Chapters 2, 3, and 4 of this book all rest on the historical research; chapter 4, in particular, draws numerous lessons from the history of atomic physics (and related developments in spectroscopy) between 1885 and 1930.

Item 2 (detailed in 5.1):

The manuscript, of around 80,000 words, has been completed. (The book has the same title as that of the grant: 'The Instrument of Science'.) It has been submitted to Oxford University Press, who have sent it out for review. I will hear back shortly about whether they will issue a publication contract. (In the event that they don't, I will approach Cambridge University Press next.)

Item 3 (detailed in 5.1):

Two journal papers (which form the bases for chapters in the monograph) have been accepted for publication/published as a result of the grant. These are:

'Extending the Argument from Unconceived Alternatives: Observations, Models, Predictions, Explanations, Methods, Instruments, and Values', *Synthese* (In Press, DOI: 10.1007/s11229-016-1132-y)

'Scientific Progress Without Increasing Verisimilitude: In Response to Niiniluoto', *Studies in History and Philosophy of Science* 51, 100–104 (2015)

In addition, I have also produced two invited chapters for books edited by other scholars on the basis of my grant-funded research:

'On Component Forces in Physics: A Pragmatic View', in H-K. Chao and J. Reiss (eds), *Philosophy of Science in Practice: Nancy Cartwright and the Nature of Scientific Reasoning*. (New York: Springer) (In Press)*

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‘Instrumentalism’, in J. Saatsi (ed.), *The Routledge Handbook of Scientific Realism* (London: Routledge) (Forthcoming)

Item 4 (as detailed in 5.1):

As this pertains to dissemination, it is covered in 6.1 and 6.3.

6.3 Realisation of the dissemination plan
(maximum 2 pages; please state how and to what extent the output as stated in the dissemination plan has been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)

I gave the following talks (* denotes refereed, and † invited), during each of which I discussed some aspects of my work supported by the grant:

‘Explanation, Prediction, and Emergence’, *Physics and Emergence*, Durham University (2015)[†]

‘What Goes?’, *Feyerabend 2015: Forty Years ‘Against Method’*, Durham University (2015)[†]

‘On Component Forces in Physics: A Pragmatic View’, *Kinds and Quantities*, Hong Kong University (2015)[†]

‘Scientific Progress: A Pragmatic View’, University of Sussex (2015)[†]

‘Neutralism on World-Based Probabilities in Fundamental Physics’, *Propensities, Chances, and Statistics*, Institute of Philosophy, School of Advanced Studies, University of London (2015)[†]

‘Why Computer Simulations Cannot Replace Thought Experiments’, *Model-Based Reasoning in Science and Technology*, Sestri Levante (2015)^{*}

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'Scientific Progress: A Pragmatic View', University of Durham (2014)[†]

'Is There a General Account of Chemical Bonding? Intermolecular Bonding and the Casimir Effect', *Structure and Bonding in Chemistry: Foundational Questions*, University of Durham (2014)[†]

Furthermore, I discussed material from my book draft at a seminar at Durham University's CHESS (Centre for Humanities Engaging Science & Society), during my awarded stay at Durham (explained below in section 7).

Finally, one of the resultant publications forthcoming and mentioned in section 5.3, namely in *The Routledge Handbook of Scientific Realism* will play a special role in disseminating my findings widely. Such handbooks are research-level reference texts.

7. **Other impact** (*e.g. award of patents or prizes, collaboration with other research institutions, knowledge transfer, etc.*)

In connection with the research project, I was also awarded a COFUND Senior International Research Fellowship by the Institute of Advanced Study, Durham University (in conjunction with the European Union). During my time at Durham, of around two months, I was able to collaborate with several academics there. This has led to two new projects involving Durham academics – Prof. Robin Hendry and Prof. Julian Reiss, respectively – for which funding proposals have already been prepared.