

PhD Scholarship in Literature and Data Science

Turning Science Fiction into Data Science

A World-Leading St Andrews Scholarship from St Leonard's Postgraduate College. Fully-funded award at the St Andrews Centre for Exoplanet Science.



What happens when we treat books as data? Can literary theory ever meet scientific standards? By applying a range of historical and current methods of quantitative analysis to a body of science fiction, this project will investigate claims for objectivity in literary theory. Given that science fiction has successfully predicted future scientific discoveries, the data sets created by different methods of quantitative analysis have the potential to influence not only the future of science fiction, but the course of science itself.

By combining the expertise of a literary researcher, exoplanet scientist, and computational biologist as co-supervisors, this doctoral project will be uniquely placed to discover and critique interrelationships between these disciplines. All three co-supervisors are members of the [Centre for Exoplanet Science](#); the project will focus on science fiction about exoplanets. A central question for the Centre and this project is how would human society respond to life beyond our planet? Science fiction provides a multitude of thought experiments addressing this very question, ranging in outlook from negative (for example, H.G Wells' *War of the Worlds*) to positive (for example, C. Sagan's *Contact*). Analysis of science fiction as a dataset, using computational techniques from both digital humanities and artificial intelligence, can give us hints as to a societal gestalt potentially predictive of reactions to real extraterrestrial contact.

The Russian Formalists prioritised scientific rigour and objectivity in their study of literature. They viewed literary history as an evolving system rather than a succession of individual works and their authors; they rejected interpretation in favour of analysis of form. Their publications included Tomashevskii's quantitative analysis of rhymes and syllables presented as a series of 81 graphs, and Propp's better known derivation of the 31 common plot functions present in Russian folktales. Lenin's speeches were data-mined for the recurring collocations that made them rhetorically successful. More recently, Moretti has treated the European novel as big data and applied a Darwinian evolutionary model based on the divergence of biological species and their survival through the mechanism of natural selection to literary history. In a landmark study, Spurgeon created a procedure to "assemble, sort, and examine" Shakespeare's metaphors not "to point or to illustrate any preconceived idea or thesis, but they are studied with a perfectly open mind to see what information they yield." Despite their claims of objectivity and comparison of data from different bodies of literature, these approaches were highly specific and not repeated. Even predictive statements were speculative, such as Brik's "Eugene Onegin would have been written even if there had been no Pushkin". The project will combine modern data science with literary theory to provide principled, replicable, and predictive analyses. It aims to:

1. Modify and advance Formalist methods with benefit of digital tools previously unavailable and apply to two representative science fiction corpora (for example, Russian and English), producing mineable datasets.
2. Apply machine learning to these datasets to reveal cultural markers relevant to society's imagination of and potential reaction to extraterrestrial life and develop predictive Bayesian networks capable of reflecting a corpus's attitude towards humanity's interaction with extraterrestrials (for example, by providing probability distribution over agonistic/peaceful outcome based on randomly generated scenarios).

Outcomes will include:

- Recalibration of our contemporary vision of Russian Formalism in the context of the 21st century humanities and sciences;
- New approaches to Digital Humanities;
- A roadmap for integrating current scientific research and new science fiction; and
- New methods for exoplanet scientists to communicate their findings to society.

The successful candidate will be supervised by [Dr Emily Finer](#), [Dr Christiane Helling](#), and [Dr V Anne Smith](#) and based in the [Centre for Exoplanet Science](#).

The candidate may have or be working towards a Master's degree or equivalent in Comparative Literature, Digital Humanities, English, Cultural Studies or Modern Languages, but applications from candidates qualified in other disciplines are also encouraged. For example, applicants with a background in Physics, Computer Science or Statistics with a strong interest in science fiction literature would be appropriate.

For informal queries about the project, please contact Dr Finer at ef50@st-andrews.ac.uk.

Eligibility

Geographical criteria

No restrictions.

Domicile for fee status

No restrictions.

Level of study

Postgraduate Research (Doctoral)

Year of entry

2020-2021 academic year; applicants must be able to start their degree in September 2020.

Schools

Centre for Exoplanet Science: School of Modern Languages, School of Biology and School of Physics & Astronomy

Additional criteria

Applicants must not already (i) hold a doctoral degree; or (ii) be matriculated for a doctoral degree at the University of St Andrews or another institution.

What does it cover?

Duration of award

Up to 3.5 years. The successful candidate will be expected to have completed the doctorate degree by the end of the award term. The award term excludes the continuation period and any extension periods.

Value of award

The award covers full tuition fees for the award term as well as an annual stipend payable at the standard UK Research council rate (the 2019-2020 annual rate is £15,009).

Tuition or maintenance award

Tuition and maintenance.

Doctoral Research at St Andrews

As a doctoral student at the University of St Andrews you will be part of a growing, vibrant, and intellectually stimulating postgraduate community. St Andrews is one of the leading research-intensive universities in the world and offers a postgraduate experience of remarkable richness.

St Leonard's Postgraduate College is at the heart of the postgraduate community of St Andrews. The College supports all postgraduates and aims to provide opportunities for postgraduates to come together, socially and intellectually, and make new connections.

St Leonard's Postgraduate College works closely with the Postgraduate Society which is one of the most active societies within the Students' Association. All doctoral students are automatically welcomed into the Postgraduate Society when they join the University.

In addition to the research training that doctoral students complete in their home School, doctoral students at St Andrews have access to GRADskills – a free, comprehensive training programme to support their academic, professional, and personal development.

How to apply

Apply for admission as a doctoral student – please see the advice on [applying for research degree programmes](#).

This scholarship is available for application through the Scholarships and Funding catalogue. After you have applied for admission, you will receive an email with instructions on how to access the catalogue.

Please contact us should you have any questions regarding the scholarship:
pgscholarships@st-andrews.ac.uk

When do applications open?

November 2019

Scholarship application deadline

16 January 2020

At what stage of my course application can I apply?

Please apply for the award after you have submitted your application for a place at St Andrews. You do not need to wait until you have received an offer of a place before applying for the award.

When will I hear if my application has been successful?

The outcome of your scholarship application will be available on "View my applications" in Scholarships and Funding by late January/early February 2020.