ANALYTICAL PHILOSOPHY: EQUILIBRIA AND UNCERTAINTIES

The philosophy of climate science, statistical mechanics, and evidence research. These are the three main research interests of one of the youngest female professors at the University of Salzburg. In 2014, Charlotte Werndl received a full professorship in the Department of Philosophy in the Faculty of Cultural and Social Studies (KGW) and is strengthening its reputation as one of the leading institutes for analytical philosophy in Europe.

Charlotte Werndl, Universitätsprofessorin für Logik und Wissenschaftstheorie.
Charlotte Werndl, Professor for Logic and Philosophy of Science.

On a graph that shows the average temperature of the earth up until 2100, the curve starts around 1850, in the pre-industrial era. The rising curve is an indication of global warming and increasing sea levels. On the basis of such climate forecasts, it will now be decided whether dams in Amsterdam that protect the city from flooding should be reinforced.

The problem with these kinds of climate projections? "We don't have any data from the pre-industrial era. These have to be constructed with the help of a model, and the graph is then fed with this information. It is clear that this entails uncertainties that can have an effect on the prognoses", explains Charlotte Werndl, Professor for Logic and Philosophy of Science. Just recently she published an article about this problem. Her interest in climate research developed through her parallel degrees in philosophy and mathematics at the University of Salzburg and her doctorate at the University of Cambridge. "The department in Salzburg has always been very internationally oriented, which prepared me very well for my time in England", says Werndl. "The kind of mathematics that I studied was exactly that which is applied in climate science." In England, she also spent four years at the London School of Economics and met with the international greats in her subject, with whom she still closely cooperates in various research scenarios.

CLIMATE, MECHANICS AND EVIDENCE

Since her appointment in Salzburg in 2014, Charlotte Werndl, together with her colleagues, has been dedicating herself to the further development of the Department of Philosophy in the KGW. From autumn 2017, a BA in Politics, Philosophy and Economics will be set up; this follows a new English-language MA in Philosophy. Three tenure-track positions have been filled with very highly qualified people, emphasizes Werndl. And in cooperation with several other departments, the internal Doctorate School PLUS (DSP) doctoral programmes 'Dynamic Mountain Environment' and 'Statistics and Applied Data Science' have been established.

Besides all of this, Werndl's own research can, of course, not be allowed to suffer, and all in all this results in a lot of work. But she is used to this from England, says Werndl, who is also the acting Head of Department. One of her specialist fields is the fundamentals of statistical mechanics. Just recently, she was able to prove under which conditions a system reaches a state of equilibrium. "A great result", enthuses the researcher. While Werndl "searches for balance" at the level of molecules and atoms and researches uncertainties in climate science at a conceptual level, her third interest is all about evidence research and the innocent-sounding question: What is evidence, and what types of evidence are there? The 35-year-old provides a simple example: "In the case of climate research, three ways to gather evidence would be through models, expert opinions, and physical insight."

Currently, Higher-Order Evidence (HOE) is a field that Werndl, together with the young researcher Dr. des. Anna-Maria Eder, is devoting herself to. An FWF (Austrian Science Fund) project submitted by Eder aims to develop a theory of the rationality of HOE using many case studies. If, for example, a doctor has slept badly and needs to operate, then he knows that he has slept badly and will double-check his actions. He is aware of his tiredness and of the principle that tiredness makes one more prone to make mistakes, and is therefore no longer absolutely certain if he is doing everything correctly. So he checks his actions more carefully. "To make the best decisions in science and medicine, for example, HOE has to be incorporated. The best decisions are based on rational opinions. How one forms such opinions in the light of HOE will be investigated in the project", explain Werndl and Eder.

Charlotte Werndl considers fundamental research of this kind to be generally very important, especially with regard to innovation: "In analytical philosophy, we are concerned with conceptual issues of science and also with the question: What can one do to make science as innovative as possible? Not surprisingly, one answer is that freedom of research is needed. One doesn't have to know from the very beginning what one is going to find. Even in quantum theory, it was initially important to understand what was happening and not to focus on the technique. What is required is the right environment for innovation, and this is what Charlotte Werndl has hopefully found in Austria.

Im Stadtzentrum: Die Philosophie der Kultur- und Gesellschaftswissenschaftlichen Fakultät, Franziskanergasse 1.
In the city centre: The Department of Philosophy at the Faculty of Cultural and Social Sciences, Franziskanergasse 1.

INFORMATION

Charlotte Werndl ist Professorin für Logik und Wissenschaftstheorie und Visiting Professor an der London School of Economics. Ihre Forschungsschwerpunkte liegen in der Philosophie der Statistik, der Philosophie der Klimawissenschaften und den Grundlagen der statistischen Mechanik. Sie hat zahlreiche Publikationen in den besten Journalen ihres Gebietes veröffentlicht und ist eine international führende Forscherin. Dies schlägt sich auch in ihrer Tätigkeit als Editor für die Journale „Philosophy of Science“ und „Review of Symbolic Logik“ nieder. Für Exzellenz in der Forschung erhielt sie 2011 den Cushing Memorial Prize in History and Philosophy of Physics.

PROJEKTNAME: HIGHER-ORDER EVIDENZ

Projektstart: 01.09.2016
Projektdauer: 36 Monate
Geförderte Projektkosten: rund 156.000 Euro
Projekteinreicherin: Dr. des. Anna-Maria Eder
(Schrödinger Fellowship)
https://annamariaasuntaeder.com

DOCTORATE SCHOOL PLUS-KOLLEGS

Dynamic Mountain Environment:
http://dsp-dynamite.sbg.ac.at
Statistics and Applied Data Science:
www.uni-salzburg.at/dsp-statistics

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INFORMATION

Charlotte Werndl is Professor for Logic and Philosophy of Science and Visiting Professor at the London School of Economics. Her research interests are in the philosophy of statistics, the philosophy of climate science and the fundamentals of statistical mechanics. She has published widely in the best journals in her field and is a leading researcher internationally. This is also reflected in her work as editor of the journals ‘Philosophy of Science’ and ‘Review of Symbolic Logic’. In 2011, Werndl received the Cushing Memorial Prize in History and Philosophy of Physics for excellence in research.

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Funded project costs: c. 156,000 Euros
Project submitter: Dr. des. Anna-Maria Eder (Schrödinger Fellowship)
https://annamariaasuntaeder.com

DOCTORATE SCHOOL PLUS-PROGRAMMES

Dynamic Mountain Environment
http://dsp-dynamite.sbg.ac.at
Statistics and Applied Data Science:
www.uni-salzburg.at/dsp-statistics

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