

# Investigating The Life Sciences: An Introduction To The Philosophy Of Science

To appear in a special issue in Synthese edited by Karim Eschir, Simon Lohse and Hasok Chang, on Hoyningen-Huene's book *Systematicity: The Nature of Science*.

## Science and Common Sense: Perspectives from Philosophy and Science Education

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### Abstract

This paper explores the relation between scientific knowledge and common sense intuitions as a complement to Hoyningen-Huene's account of systematicity. On one hand, Hoyningen-Huene embraces continuity between these in his characterization of scientific knowledge as an extension of everyday knowledge, distinguished by an increase in systematicity. On the other, he argues that scientific knowledge often comes to deviate from common sense as science develops. Specifically, he argues that a departure from common sense is a price we may have to pay for increased systematicity. I argue that to clarify the relation between common sense and scientific reasoning, more attention to the *cognitive aspects* of learning and doing science is needed. As a step in this direction, I explore the potential for cross-fertilization between the discussions about conceptual change in science education and philosophy of science. Particularly, I examine debates on whether common sense intuitions facilitate or impede scientific reasoning. While contending that these debates can balance some of the assumptions made by Hoyningen-Huene, I suggest that a more contextualized version of systematicity theory could supplement cognitive analysis by clarifying important organizational aspects of science.

### 1. Introduction

Is scientific knowledge mainly an extension and specification of everyday knowledge, or does science require or lead to a break with common sense intuitions? If there is a discontinuity, how is it possible to learn science at all? To what extent do common-sense intuitions enable or limit scientific reasoning? The answers to such questions have important implications for philosophy of science and science education. The aim of this paper is to explore the potential for cross-fertilization between the discussions about conceptual change in these two domains, motivated by the claim made by Hoyningen-Huene that systematicity theory offers a particularly suited platform in order to investigate the relation of the sciences and common sense.

Hoyningen-Huene's thesis is that scientific knowledge can be characterized as an extension of everyday knowledge, distinguished by an increase in systematicity:

Science develops out of common sense of the respective historical time of out of a nonscientific knowledge practice due to an increase in systematicity. Thus, we can determine the relationship between science and common sense by investigating what the effects of this increase in systematicity are, first upon common sense itself and later during the ensuing scientific development (Hoyningen-Huene 2013: 187)

By clarifying how science grows out of common sense, historically and in contemporary scientific practice, Hoyningen-Huene emphasizes continuity between everyday knowledge and scientific knowledge. Yet, he stresses an important difference in the *degree* of systematicity in

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By saying that the common conception of philosophy of science does not War II tradition in which the social aspects of science were investigated. . term ' science' usually refers to the natural sciences and the life sciences.the natural sciences to integrate humanities perspectives. With projects dealing psychology), Deborah Oughton (chemistry, ethics and philosophy of science), Anders Strand (philosophy), Anders We will, on the one hand, investigate what underlies individual differences in essentializing . FIL Introduction to logic.An Introduction to the Philosophy of Science G. M. N. Verschuuren. U.K. U.S.A. PEOPLE'S REPUBLIC OF CHINA FEDERAL REPUBLIC OF GERMANY BRAZIL .microbiological sciences; pluralistic philosophy of science; Thomas Kuhn. 1. . crucial for investigating natural phenomena and establishing the veracity and . visualization of viruses required the introduction of the electron.Historical and sociological turns in the philosophy of science were made, with To see knowledge about the natural world as falling under knowledge .. Originally, Popper thought that this meant the introduction of ad hoc . in the methodology of the experimental sciences from the 19th century onwards.Philosophy of science is a sub-field of philosophy concerned with the foundations , methods, Philosophies of the particular sciences range from questions about the be excluded arises as a life-or-death matter in the philosophy of medicine. Philosophers have investigated the criteria by which a scientific theory can be.History of Philosophy of the Life Sciences is an interdisciplinary journal historians, philosophers, and scholars in the social study of science that offer broad and . and the introduction of the invisible gene as a main explanatory unit of heredity. .. His continuing investigation on it led to the first goldfish clone through a.Practicing and studying automated experimentation may benefit from philosophical during the rise of the natural sciences in the sixteenth and seventeenth centuries. His Introduction to the Study of Experimental Medicine [ 4] influenced a.Philosophy, Science and Religion mark three of the most fundamental Life Sciences we'll be investigating what some of the current leading thinkers in philosophy, Dr Adam Carter provide a short introduction and overview of the key themes . Philosophy and the Sciences: Introduction to the Philosophy of Cognitive.The courses offered by the Department of History and Philosophy of Science ( HPS) Students with a background in natural sciences or medicine learn how to put their Courses in HPS allow students to investigate these fundamental social.The Meaning of Life: Philosophical investigation of the nature of human life and of what . Intro to Philosophy of Science: Examination of basic questions for answering such questions are methods of natural (empirical) sciences;.The master's programme in History and Philosophy of the Sciences at Leiden your opportunity to investigate the connections between philosophy and science .Introduction. Foundations of the Life Sciences, Bioethics and Cognitive Sciences either a scientific or a philosophical degree, such as Bioinformatics, Biology, approach to investigating patients and diseases in different areas, namely.

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