



Joseph Omoregbe

# Fundamental Issues in the Philosophy of Science

A Philosophical Critique of Science  
and the Social Sciences

The monograph is in two parts. In the first part the author examines the nature of science, its methodology, its limitations, and its application in technology. The author describes science as a "two-edged sword" which can be used for human welfare and for human destruction, especially through its "misapplication" in the manufacture of weapons of mass destruction. The author argues that it was the Humanities that gave birth to science, and stresses the need for the Humanities to "humanize" and "tame" Science and technology, otherwise they would "grow wild" and turn out to be mankind's instruments of self- destruction and collective suicide. The author argues that science is based on metaphysics, a fact which (he maintains) is supported by modern quantum physics with its discovery of the sub-atomic particles which, by their nature, are immaterial elements. Thus modern quantum physics, he argues, supports the idealist view of the world, and the idealist contention that the primary category of the material world is spirit, not matter. In the second part the author examines the nature and methodology of the social sciences



**Joseph Omoregbe**

Born in 1944, Joseph I. Omoregbe was educated at Gregorian University (Rome), Lateran University (Rome), and Catholic University of Louvain (Belgium). He holds three doctorate degrees in Philosophy, Religious Studies and Theology. He has taught Religious Studies and Philosophy in Universities in Nigeria, Swaziland and currently in Lesotho.



9 783639 324228

978-3-639-32422-8

---

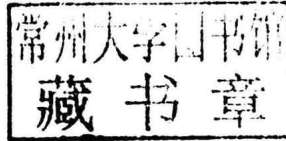
Joseph Omoregbe

Issues in A

Joseph Omorogbe

# Fundamental Issues in the Philosophy of Science

A Philosophical Critique of Science and the  
Social Sciences



VDM Verlag Dr. Müller

## **Impressum/Imprint (nur für Deutschland/ only for Germany)**

Bibliografische Information der Deutschen Nationalbibliothek: Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

Alle in diesem Buch genannten Marken und Produktnamen unterliegen warenzeichen-, marken- oder patentrechtlichem Schutz bzw. sind Warenzeichen oder eingetragene Warenzeichen der jeweiligen Inhaber. Die Wiedergabe von Marken, Produktnamen, Gebrauchsnamen, Handelsnamen, Warenbezeichnungen u.s.w. in diesem Werk berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, dass solche Namen im Sinne der Warenzeichen- und Markenschutzgesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften.

Coverbild: [www.ingimage.com](http://www.ingimage.com)

Verlag: VDM Verlag Dr. Müller GmbH & Co. KG  
Dudweiler Landstr. 99, 66123 Saarbrücken, Deutschland  
Telefon +49 681 9100-698, Telefax +49 681 9100-988  
Email: [info@vdm-verlag.de](mailto:info@vdm-verlag.de)

Herstellung in Deutschland:  
Schaltungsdienst Lange o.H.G., Berlin  
Books on Demand GmbH, Norderstedt  
Reha GmbH, Saarbrücken  
Amazon Distribution GmbH, Leipzig  
**ISBN: 978-3-639-32422-8**

## **Imprint (only for USA, GB)**

Bibliographic information published by the Deutsche Nationalbibliothek: The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Any brand names and product names mentioned in this book are subject to trademark, brand or patent protection and are trademarks or registered trademarks of their respective holders. The use of brand names, product names, common names, trade names, product descriptions etc. even without a particular marking in this works is in no way to be construed to mean that such names may be regarded as unrestricted in respect of trademark and brand protection legislation and could thus be used by anyone.

Cover image: [www.ingimage.com](http://www.ingimage.com)

Publisher: VDM Verlag Dr. Müller GmbH & Co. KG  
Dudweiler Landstr. 99, 66123 Saarbrücken, Germany  
Phone +49 681 9100-698, Fax +49 681 9100-988  
Email: [info@vdm-publishing.com](mailto:info@vdm-publishing.com)

Printed in the U.S.A.  
Printed in the U.K. by (see last page)  
**ISBN: 978-3-639-32422-8**

Copyright © 2011 by the author and VDM Verlag Dr. Müller GmbH & Co. KG  
and licensors  
All rights reserved. Saarbrücken 2011

**Joseph Omoregbe**

**Fundamental Issues in the Philosophy of Science**



## TABLE OF CONTENTS

Introduction	
(a) The nature of science	4
(b) The origin of science	6
(c) The aim of science	6
(d) Applied science	8
Chapter One: Science in retrospect: A brief history of Western Science	10
(i) Science in Ancient Greece	10
(ii) The contribution of the Arabs	12
(iii) Science in Medieval Europe	13
(iv) Science in the 17 <sup>th</sup> century	15
(v) Science in the 18 <sup>th</sup> and 19 <sup>th</sup> centuries	18
(vi) Science in the 20 <sup>th</sup> century	20
(vii) Technology in the 20 <sup>th</sup> century	22
Chapter Two: The Issue of Scientific Methodology	24
(i) Karl Popper and the problem of Induction	25
(ii) Thomas Kuhn	30
(iii) Lakatos and FEYERABEND	33
chapter Three: The Metaphysical Foundation of Science	35
The Metaphysical nature of the sub-atomic particles	38
Chapter Four: The Humanization of Science by the Humanities	41
(i) Subjectivity in Science	42
(ii) The limitation of Science	44
(iii) The Problem of Evil	47
(iv) The Humanities to the Rescue	50
Chapter Five:: The concept of Nature and the Christian view of Science	52
(i) The concept of Nature	56
(ii) The Christian view of Modern Science and Technology	59
Chapter Six: The Endangered Planet	59
(i) Global Warming and Climatic Change	60



(ii) Where did we go wrong?	61
(iii) The Way Out	63
Chapter Seven: The greatest Challenge Facing the Humanities	65
(i) No human society without the Humanities	66
(ii) The contribution of the Humanities to the growth of Western Science	68
PART TWO: philosophy of the social sciences	72
Introduction: The Nature of the Social Sciences	173
Chapter One: The Issue of the Methodology of the Social Sciences	75
Chapter Two: The Intercultural Issue	81
Chapter Three: Institutions and Individuals	84
Chapter Four :: The Social Nature of People's' A attitudes	87
Chapter Five :: Truth and Value	89
Conclusion: How Reliable are the Findings of the Social Sciences?	92
References	93-101

## TABLE OF CONTENTS

Introduction	
(a) The nature of science	4
(b) The origin of science	6
(c) The aim of science	6
(d) Applied science	8
Chapter One: Science in retrospect: A brief history of Western Science	10
(i) Science in Ancient Greece	10
(ii) The contribution of the Arabs	12
(iii) Science in Medieval Europe	13
(iv) Science in the 17 <sup>th</sup> century	15
(v) Since in the 18 <sup>th</sup> and 19 <sup>th</sup> centuries	18
(vi) Science in the 20 <sup>th</sup> century	20
(vii) Technology in the 20 <sup>th</sup> century	22
Chapter Two: The Issue of Scientific Methodology	24
(i) Karl Popper and the problem of Induction	25
(ii) Thomas Kuhn	30
(iii) Lakatos and FEYERABEND	33
chapter Three: The Metaphysical Foundation of Science	35
The Metaphysical nature of the sub-atomic particles	38
Chapter Four: The Humanization of Science by the Humanities	41
(i) Subjectivity in Science	42
(ii) The limitation of Science	44
(iii) The Problem of Evil	47
(iv) The Humanities to the Rescue	50
Chapter Five:: The concept of Nature and the Christian view of Science	52
(i) The concept of Nature	56
(ii) The Christian view of Modern Science and Technology	59
Chapter Six: The Endangered Planet	59
(i) Global Warming and Climatic Change	60

(ii) Where did we go wrong?	61
(iii) The Way Out	63
Chapter Seven: The greatest Challenge Facing the Humanities	65
(i) No human society without the Humanities	66
(ii) The contribution of the Humanities to the growth of Western Science	68
PART TWO: philosophy of the social sciences	72
Introduction: The Nature of the Social Sciences	173
Chapter One: The Issue of the Methodology of the Social Sciences	75
Chapter Two: The Intercultural Issue	81
Chapter Three: Institutions and Individuals	84
Chapter Four : : The Social Nature of People's' A attitudes	87
Chapter Five :: Truth and Value	89
Conclusion: How Reliable are the Findings of the Social Sciences?	92
References	93-101

*PART ONE*

FUNDAMENTAL ISSUES IN THE

PHILOSOPHY OF SCIENCE

# INTRODUCTION

## a) The Nature of Science

The word “science” can be understood in two ways, namely, in the broad sense and in the strict sense. The former means any body of systematized knowledge, acquired according to certain basic principles, as opposed to knowledge acquired by chance. In this broad sense every academic discipline is a science. For example, history is a science, linguistics is a science, religion is a science, philosophy is a science, and law is a science.

It is in this sense that we can talk of the scientific study of history, the scientific study of religion, the scientific study of languages, etc. It is still in this broad sense of the word “science” that we talk of the “social sciences”. Thus, in the broad sense, sociology is a science, politics is a science, economics, anthropology, mass communication, psychology are all sciences. Thus in the broad sense of the word “science” the humanities are sciences.

However, in the strict sense, the word “science” is restricted to the physical and natural sciences such as physics, chemistry, biology, physiology, biochemistry, micro-biology, astronomy, geophysics, etc. They are sometimes referred to as the “pure” sciences.<sup>1</sup>

They are studies of the natural phenomena, that is, the study of the way natural objects normally behave, the regularity with which things occur in nature, the laws that govern their movements or behaviour. In this sense, science is the systematic and empirical study of nature with a view to knowing more about how things happen in the world, how natural objects behave in the world and the laws that govern them. Thus, science provides us with knowledge about the world (physics, chemistry, astronomy, geology, etc), and even about ourselves, especially our bodies, the state of the organs in our bodies and how they function (biology, physiology, genetics, cell science, neurology, etc). The knowledge provided by science is objective, empirical and verifiable. This means that it is not a question of somebody’s personal opinion or belief. How the knowledge was acquired, the method used, the process of its acquisition, are all open, for everybody to check, to see whether it is really true or not. There is no secret in science, in terms of its methods, procedures, or conclusions. It enables us to make predictions about natural events that will happen in the future. The knowledge acquired in science is practically certain and reliable, though not absolutely certain. We say it is practically certain not absolutely certain because the principles on which science is based are not absolutely certain. They are not absolutely certain principles, but principles of probability<sup>2</sup>, that is, principles which work in most cases, but do sometimes fail. The reason why the principles of

science are principles of probability, and not absolutely certain is that they are derived through the method of induction- the basic method of science. Induction can only yield principles of probability and not absolutely certain principles because it is itself based on assumptions and probabilities. David Hume and Karl Popper have shown the inherent weakness of induction. But we cannot go into that in this introduction.<sup>3</sup> Karl Popper for example, tells us that “science is not founded on solid rock”, that it uses the method of trial and error, “conjectures and refutations”.

We have said that the knowledge which science provides us about the world and about ourselves is objective and empirical. This means that science does not provide us with knowledge about any supra-empirical aspect of the world or ourselves. For example it cannot tell us whether or not there is God, whether or not there is a soul or spirit in man, etc. Science does not deal with such matters because they are not empirical, therefore they cannot be investigated by science. They are outside the scope of scientific method, scientific investigation, and scientific knowledge.

## **b) The Origin of Science.**

Science in the Western world began in the 6<sup>th</sup> century B.C. with the early Greek philosophers, popularly known as the pre-Socratic philosophers, or the Ionian philosophers.<sup>4</sup> Indeed science was part of philosophy until the Renaissance period in the 14<sup>th</sup> century A.D. The first philosopher in the Western world, Thales, was also the first scientist. He predicted an eclipse of the sun. His pupil, Anaximander, was the first evolutionist scientist in the Western world. He held that all living things originated from the sea and began to develop in the course of time into various forms by means of adaptation to their environment. He held that man evolved from the animals. He also held that the earth was not flat but like a cylinder in shape. He is known to have made the first map.

Pythagoras was a great scientist and mathematician, the greatest mathematician in the Ancient world. Even today we still talk about the Pythagorean Theorem in mathematics. Empedocles, another pre-Socratic philosopher, discovered the four elements (earth, air, fire and water) and held that all things were composed of those four elements. Democritus, the first known atomist held that an atom was the smallest unit of matter, and that everything in the universe was composed of atoms. Aristotle (384-322 B.C.) was a physicist, a biologist, a political scientist, a psychologist and a philosopher. He was a living encyclopaedia of his day, and the greatest scientist in Ancient Greece. In fact, Western Science did not advance in any remarkable way beyond where Aristotle left it until the renaissance period (14<sup>th</sup> -16<sup>th</sup> centuries A.D.)

## **c) The Aim of Science.**

What is the aim of science? What is its purpose? In other words, what are scientists looking for? Scholars do not agree on this issue: There are basically two schools of thought about it.<sup>5</sup> Some scholars maintain that the aim of science is to understand nature, to increase our knowledge of the world in which we live. One of the scholars who hold this view is Nicholas Maxwell. According to him “the aim of science is simply to discover more and more about the world, or about the phenomena under investigation, whatever the world or the phenomena under investigation, whatever the world or the phenomena may turn out to be like.”<sup>6</sup> The other school of thought however maintains that the aim of science is to improve the living conditions of men, to solve some practical problems facing men. Among the scholars that hold this view is John Dewey, the pragmatic philosopher who developed the version of pragmatism known as Instrumentalism. He maintains that all the thoughts and activities of men are responses to some practical problems they encounter in their environments. Everything (including scientific research) starts from the sphere of nature which

presents men with practical problems. Men then try to solve these problems by changing the situations of their environments. Thus all human thought and activities are instrumental, and they are aimed at solving practical problems posed by the natural environment in which man lives. Any search for knowledge, any scientific inquiry, is aimed at solving some practical problems arising from the environment. "There is no inquiry that does not involve the making of some change in environmental conditions" says John Dewey.<sup>7</sup> Thus, according to this school of thought the aim of science is not just to increase man's knowledge of nature or to understand the world in which we live but to solve some practical problems confronting man and improve his condition of life. Why do we want to increase our knowledge of the world in which we live? Is it just knowledge for its own sake, or knowledge for improving human welfare? This school of thought holds that the knowledge that science seeks is for the improvement of man's conditions of life and not just knowledge for its own sake.

It is necessary at this point to distinguish between science proper and technology. The view that the aim of science is human welfare seems to ascribe to science what should be more appropriately ascribed to technology. We shall say more about this very soon when we come to the section on technology. What the scientist is interested in, which he aims at, is to explain why certain things happen in nature the way they do. He tries to understand why natural phenomena behave the way they do, and under what conditions they do so. His aim is to discover the laws of nature which govern natural objects, making them behave the way they do. He is not thinking of human welfare or the conditions of human life. He is observing nature and trying to understand and explain how nature works, the laws (natural laws) that govern the behaviour of things in nature. An understanding of this will enable him to make predictions about natural phenomena that will occur in the future, e.g. eclipse of the sun, comets, and even earthquakes. So, the direct aim of science proper (pure science) is not human welfare, but to understand nature and explain how it works and why certain things happen in nature.



#### **d) Applied Science.**

Technology is applied science. It is, in other words, the application of the findings of science to improve the conditions of human life. It is this application that results in inventions to improve human welfare in various sectors of human life. Thus disciplines like Engineering, Medicine, Information Technology, Electronics, Architecture, etc are applied sciences. It is clear that the aim of technology (applied science) is human welfare, that is, the improvement of man's conditions of life. The advancement in technology in the 20<sup>th</sup> century has been tremendous, with startling results. It is not possible to mention all the areas of breakthrough in technology in the 20<sup>th</sup> century, particularly in the areas of transportation, communication, medicine, architecture, agriculture, industry, energy, military technology, computer, space shuttles, bio-technology, or genetic engineering etc".<sup>8</sup> The alarming rate of the development of technology in the 20<sup>th</sup> century and its startling achievements in almost every sector of human life show both the strength and the weakness of technology, its successes and failures, its usefulness to mankind as well as the danger it poses to human existence on earth. The ambivalent nature of technology has become clear in our own time. For technology is like a two-edged sword which can be used to cut both ways. It can be used to build or to destroy, to improve human welfare (which it is intended for) or to do incalculable damage to mankind, to protect, to save, as well as to kill.

The good that technology has done to mankind in every aspect of human life through modern inventions is so obvious that nobody can deny it, nor is there anybody living in the civilised world today who has not benefited from it. For example, in the areas of transportation, communication, medicine, agriculture, architecture, energy, electricity, human comfort etc, almost everybody anywhere in the world has benefited. It is undeniable that technology has done a lot of good to mankind. It has improved man's conditions of life by making the necessities of life (food, shelter, clothing, good health, transportation, communication etc) more easily available. It is well known, for example, that food is very cheap in the United States of America, thanks to their advanced agricultural technology. Technologically advanced countries enjoy uninterrupted supply of clean water and light, comfortable and fast means of transportation and communication, decent houses, efficient health care, and so on. In short technology has made life comfortable for them. This explains why there is such a tendency of mass exodus of people from developing countries to developed countries. This has prompted developed countries to employ very stringent measures to check the trend. The difference between comfortable life in the developed countries and by contrast the hardship in developing countries is in the level of technology. Thus it is indisputably clear that the aim of technology is human welfare and its success in this direction has been tremendous, in making human life comfortable.