The General Introduction of Einstein meets Magritte*

Diederik Aerts,

Center Leo Apostel,
Brussels Free University,
Brussels, Belgium.

The series of books 'Einstein meets Magritte' presented here originates from an international interdisciplinary conference with the same title, which took place in Brussels in spring 1995. On the eve of the third millennium, we assembled scientists and artists to reflect together on the deep nature of reality and the knowledge and skill humankind has gathered in this field. We had decided to call this meeting 'Einstein meets Magritte' because we believed that meaningful keys could be found at the place where the two meet. It is the way of the world that have made Einstein and Magritte into icons of our culture. The purpose of the conference was to reflect and debate without fear on the most profound and timeless questions.

On one of those evenings, when the talks and discussions were long and exhausting and the press were doing all they could to get Albert Einstein and René Magritte in front of the microphones and cameras, a few of my most loyal aides and myself succeeded in getting them safely and quietly to a taxi, which then carried us off into the Brussels night. We got out at Manneken Pis, since that was on Einstein's list, and we concealed ourselves among the many tourists who were coming and going, expressing their wonder in every language under the sun at the famous little statue. And one of us was taking pictures: Einstein and Magritte leaning against the railings, with us beside them, and one more, arm in arm, and then another in case the first was no good, when suddenly I felt a heavy slap on my shoulder:

*Published as: Aerts, D., 1999, "The general introduction of Einstein meets Magritte", in *Einstein meets Magritte: An Interdisciplinary Reflection*, eds. Aerts, D., Broekaert, J. and Mathijs, E., Kluwer Academic, Dordrecht.

"How you doing, mate?"

It was Jacky and his inseparable girlfriends Nicole and Sylvie, and everyone embraced everyone else. I introduced Albert and René, and interest was immediately shown, and I had my heart in my mouth, because Jacky was a painter, poet and urban philosopher. We walked together through the alleys of Brussels in dismal Belgian rain, over cobblestones that glistened in the street lamps.

When we had provided for the inner man with 'Rabbit in Beer' and 'Mussels with fries', and finally a 'Dame Blanche' topped with warm chocolate sauce as apotheosis, Jacky enticed us to his house in the Rue Haute where we threw ourselves into deep, soft armchairs. Albert and René were offered the best places and as always Jacky told the story of his life and discussed his rightness, as he did repeatedly, with a confidence and suppleness that distinguished him so sharply from modern science. Albert listened enthralled and René was fascinated, and once more my heart was in my mouth, but Nicole winked reassuringly, and Sylvie brought us snacks on cushions of Brussels lace and sweet white wine in tall, old-fashioned crystal glasses.

The topic of discussion for the evening turned out to be 'the doubts of modern science'. In science there is not a single hypothesis for which one cannot find two groups of hard-working scientists, one of which can 'prove' a hypothesis while the other can 'prove' its negation. And the more fundamental and important the question is, the more clearly the situation turns out like this.

"It's crazy," maintained Jacky, "In fact science states that one doesn't know anything anymore."

"That's right," said Albert, "Truth is not a simple concept, and I believe that the history of science makes it clear how often erroneous hypotheses have been believed over the centuries."

"A good thing too," replied René, "Things can only happen as a result of the movement brought about by that constant doubt."

Meanwhile Sylvie came to join us and handed round pictures of the exhibitions of Jacky's paintings and poems. Jacky suddenly got very excited, as if something had inspired him, and he leapt up and vanished into his studio. A few minutes later he returned with his palette and brush poised. Before I could stop him he had started painting violently right at the spot where Albert and René were sitting. A large, gossamer-thin piece of Brussels lace gradually took shape and Albert and René vanished. Fortunately, my young assistants, Jacky's girlfriends and myself got away with just a few vicious daubs of paint in the face.

The series of eight volumes introduced here are not just the results of

the conference, as would be the case with a record of the proceedings. The authors were invited to write with the events at the conference in the back of their mind, so that the books would form a second phase in the process of thought set in motion at the conference. A second phase more clearly crystallised than the self-organising forum that arose during the conference, but one which focuses on the same timeless questions and problems.

The whole ensemble was already streamlined at the conference into a number of main topics named after the colours of the rainbow - red, orange, yellow, green, blue, indigo and violet, as well as white, the synthesis of all colours. This order was maintained and led to eight separate books in the series.

Volume 1: Science, nature, human action and society: an interdisciplinary reflection: the white book of Einstein meets Magritte.

The white book contains more fully developed versions of the contributions made by the keynote speakers at the conference. So this white book covers various scientific topics. In his article, 'Basically, it's purely academic', John Ziman asks himself what 'basic research' really is in today's world. In his contribution, 'The manifest image and the scientific image', Bas Van Fraassen analyses the considerable differences between the theoretical scientific description of the world and the way it appears to us. He argues that most formulations of this problem may themselves be tendentious metaphysics, full of false contrasts, and that insistence on a radical separation between science and what we have apart from science, and on the impossibility of accommodating science without surrender, may be a way of either idolising or demonising science rather than understanding it. In the 'Microdynamics of incommensurability: philosophy of science meets science studies', Barbara Hernnstein-Smith examines the bemusing but instructive logical, rhetorical and cognitive dynamics of contemporary theoretical controversy about science. In his contribution 'Subjects, objects, data and values', Robert Pirsig proposes a radical integration of science and value that does no harm to either. It is argued that values can exist as a part of scientific data, but outside any subject or object. This argument opens a door to a 'metaphysics of value' that provides a fundamentally different but not unscientific way of understanding the world. Ilya Prigogine discusses in 'Einstein and Magritte: a study of creativity', the global transformation of a classical science which was based on certainties into a new science that takes possibilities as its basic concepts. Constantin Piron demonstrates in his contribution 'Quanta and relativity: two failed revolutions' that none of the two great revolutions in physics, quantum mechanics and relativity

theory, have actually been digested by the physics community. He claims that the vast majority of physicists still cling to the idea of a non-existent void full of little particles, in the spirit of Leibnitz or Descartes. Rom Harré reflects on the significance of the theory of relativity. In his article 'The redundancy of spacetime: relativity from Cusa to Einstein', he defends the hypothesis that relativity theory is best interpreted as a grammar for coordinating narratives told by different observers. In his contribution 'The stuff the world is made of: physics and reality', Diederik Aerts analyses the consequences of the recent advances in quantum mechanics, theoretically as well as experimentally, for the nature of reality. He analyses the deep conceptual paradoxes in the light of these recent data and tries to picture a coherent model of the world. In his contribution 'Dasein's brain: phenomenology meets cognitive science', Francisco Varela puts forward the hypothesis that the relation between brain processes and living human experience is the really hard problem of consciousness. He argues that science needs to be complemented by a deep scientific investigation of experience itself to move this major question beyond the sterile oppositions of dualism and reductionism. In his contribution 'What creativity in art and science tell us about how the brain must work' William Calvin defends the prospects for a mental Darwinism that operates on the milliseconds to minutes time scale, forming novel ideas and sentences never previously expressed. Adolf Grunbaum in his article 'The hermeneutic versus the scientific conception of psychoanalysis: an unsuccessful effort to chart a via media for the human sciences' argues that the so called 'hermeneutic' reconstruction of psychoanalytic theory and therapy proposed by Karl Jaspers, Paul Ricoeur and Jurgen Habermas fails multiply as a channel and alleged prototype for the study of human nature. In his article 'Immortality, biology and computers', Zygmunt Bauman analyses the shift that postmodern society has provoked regarding the concept of immortality. He points out that strategies of collective and individual immortality have shifted from the modern deconstruction of death to a postmodern deconstruction of immortality, and points out that the possible consequences of this process need to be taken into consideration. Brian Arthur, in his article 'The end of certainty in economics', points out that our economy is very non-classical, meaning that it is based on essentially self-referential systems of beliefs about future economic conditions. He argues that our economy is inherently complex, subjective, ever-changing, and to an unavoidable degree ill-defined.

Volume 2: Science and Art: the red book of Einstein meets Magritte

An then Magritte comes in. Many obvious differences exist between science

and art. But the *Science and Art* volume of this series addresses not only these differences but also the possibilities of crossing several of the gaps between science and art. Several contributions deal with sociological and philosophical elaborations of the similarities and differences between science and art, while others approach science from an artistic point of view and art from a scientific point of view. The volume also considers several approaches that attempt to go beyond the classical dichotomy between the two activities. In a special section, attention is paid to the particular role played by perception in both science and art as a regulator of human understanding. Together, these contributions strive for an intensive interaction between science and art, and to a consideration of them as converging rather than diverging. It is to be hoped that both science and art will benefit from this attempt.

Volume 3: Science, technology and social change: the orange book of Einstein meets Magritte

The major subject of the orange book is that society as a whole is changing, due to changes in technology, economy and the changing strategies and discourses of social scientists. The collected articles in the orange stream discuss a range of specific societal problems related to the subject of social change, the topics of the articles range from the scale of for instance sociology of health and psychohistory to more specific social problems like for instance anorexia nervosa, art academies and the information superhighway. Although the authors approach different subject matters from dissimilar perspectives and work with various methods, all the papers are related to the theme of science, technology and social change. In the orange book the reader will find a lot of arguments and hints pertaining to questions like: To what exactly will this social change lead in the 21st century? What kind of society lies ahead? She/he will be confronted to a plethora of enriching conceptions of the relationships between social sciences and social changes.

Volume 4: Worldviews and the problem of synthesis: the yellow book of Einstein meets Magritte

A rapidly evolving world is seen to entail ideological, social, political, cultural and scientific fragmentation. Many cultures, subcultures and cultural fragments state their views assertively, while science progresses in increasingly narrowly defined areas of inquiry, widening not only the chasm between specialists and the layman, but also preventing specialists from having an overall view of their discipline. What are the motive forces behind this process of fragmentation, what are its effects? Are they truly inhospitable to

the idea of synthesis, or do they call out, more urgently than ever before, for new forms of synthesis? What conditions would have to be met by contemporary synthesis? These and related questions will be addressed in the yellow book of Einstein meets Magritte.

Volume 5: A World in Transition; Humankind and Nature: the green book of Einstein meets Magritte

'A World in Transition. Humankind and Nature' is appropriately entitled after its aim for an intrinsic property of reality: change. Of major concern, in this era of transformation, is the extensive and profound interaction of humankind with nature. The global scaled, social and technological project of humankind definitely involves a myriad of changes of the ecosphere. This book developes, from the call for an interdisciplinary synthesis and respect for plurality, acknowledging the evolving scientific truth, the need for an integrated but inevitably provisional world view. Contributors from different parts of the world focus on four modes of change: i) Social change and the individual condition, ii) Complex evolution and fundamental emergent transformations, iii) Ecological transformation and responsibility inquiries, iv) The economic-ecological and socio-technical equilibria. Primarily reflecting on the deep transformations of humankind and on the relationship between humans and nature it adresses major points of contemporary concern.

Volume 6: Metadebates: The blue book of Einstein meets Magritte

This book provides a meta-disciplinary reflection on science, nature, human action and society. It pertains to a dialogue between scientists, sociologists of science, historians and philosophers of science. It covers several topics: (1) the relation between science and philosophy, (2) new approaches to cognitive science, (3) reflections on classical thinking and contemporary science, (4) empirical epistemology, (5) epistemology of quantum mechanics. Indeed, quantum mechanics is a discipline which deserves and receives special attention here, for it still is a fascinating and intriguing discipline from a historiographical and philosophical point of view. This book does not only contain articles on a general level, it also provides new insights and bold, even provocative theories on the meta-level. That way, the reader gets acquainted with 'science in the making', sitting in the front row.

Volume 7: Quantum structures and the nature of reality: The indigo book of Einstein meets Magritte

This book refers to the satellite symposium that was organised by the International Quantum Structure Association (IQSA) at Einstein meets

Magritte. The IQSA is a society for the advancement and dissemination of theories about structures based on quantum mechanics in their physical, mathematical, philosophical, applied and interdisciplinary aspects. The book contains several contributions presenting different fields of research in quantum structures. A great effort has been made to present some of the more technical aspects of quantum structures for a wide audience. Some parts of the articles are explanatory, sketching the historical development of research into quantum structures, while other parts make an effort to analyse the way the study of quantum structures has contributed to an understanding of the nature of our reality.

Volume 8: The evolution of complexity: The violet book of Einstein meets Magritte

The violet book collects the contributions that consider theories of evolution and self-organisation, on the one hand, and systems theory and cybernetics, on the other hand. Both can add to the development of an integrated world view. The basic idea is that evolution leads to the spontaneous emergence of systems of higher and higher complexity or "intelligence": from elementary particles, via atoms, molecules, living cells, multicellular organisms, plants, and animals to human beings, culture and society. This perspective makes it possible to unify knowledge from presently separate disciplines: physics, chemistry, biology, psychology, sociology, etc. The volume thus wishes to revive the transdisciplinary tradition of general systems theory by integrating the recently developed insights of the "complex adaptive systems" approach, pioneered among others by the Santa Fe Institute.

Even these books only signify a single phase in the ever-recurring process of thought and creation regarding the basic questions on the reality that surrounds us and our place in it.

Brussels,
July 17 1998.