

Being and becoming

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A guide to act in the theatre of existence

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Preface

As I have witnessed throughout my years people striving against the frustrations and other predicaments of life, I have often wondered whether science could help relieve the state of mind that accompanies those dissatisfactions. Science has indeed provided enormous benefit to society, from medicine to technology. We live in a world to a large extent shaped by science. But the alleviation of the distressed state of mind is more personal than that which can be provided with technology, formally or professionally. Naturally, one can always visit a psychiatrist or psychologist to deal with the life's burdens, but the majority of us do not need such professional assistance. During my career as neuroscientist and biophysicist, I have gathered an integrated view on natural phenomena which has helped me comprehend what life may be all about. This has helped me obtain a relief, liberation if you will, from the chains of our created life. I wrote this book to share with others what science is teaching us about some specific aspects in this matter. Much of the content is based in the graduate course "Integrative perspectives on consciousness and self-awareness" taught at the University of Toronto. While this is a scientific text, it is aimed at a lay audience. It is written with minimal technical jargon and references to books and scientific papers enough to satisfy the curious who want more detail. In current times, with a vast flood of scientific papers and data, it is convenient, even totally necessary, to find some order on an apparently disjoint cohort of papers from a variety of sources, trying to extract the key points. This "simplification" is one aim of this book, and my colleague and co-author Vera Nenadovic has contributed to make some specific notions more understandable to lay audiences and as well to "translate" some of the scientific findings and their "take home messages" to our current everyday living. Some parts contain particular details about experiments, but they are provided for completeness, to acknowledge the science and explore some aspects that are difficult to translate into lay terms. These more technical parts are not needed to understand the main theme. And because some of the described

scientific observations share some common ground with the teachings of philosophical and spiritual traditions, there is a part on philosophy and religion as these relate to the specific topics presented in the text.

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Introductory remarks, or why you should read this book

“El triunfo supremo de la razón [...] es poner en duda su propia validez” (The supreme triumph of reason [...] is to cast doubt on its own validity)

Miguel de Unamuno, *Del sentimiento trágico de la vida* (1954)

“Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less”

Maria Skłodowska-Curie

It seems to me most people spend considerable time seeking a sense of purpose in life and, concomitant with that, a sense of personal identity. Perhaps this is an attempt to alleviate insecurities or maybe to elevate themselves to higher grounds. In our opinion this search is a fallacy. In this book we will describe why we believe such a search is a delusion. To start, we only offer a short answer: the personal identity, the so-called self, is a perception, an illusion created by the ultimate illusionist—your embodied brain. And the purpose in life, for organisms like us who can enjoy experiences, is not much more than to precisely enjoy the experience.

The intention of this book is to inform, perhaps enlighten, readers about results in several sciences that may guide us to some sort of liberation. A relief that is needed in the current time and age when mankind has managed to create a tremendously complex life with a diverse burden of chores. A deliverance from some of the most poignant afflictions that prevent individuals from achieving the true purpose of our lives: the enjoyment of the experience in the present, not in the past or the future. Among these afflictions we find two primordial concerns: the belief and subsequent attachment to a self, and the conviction that life must have a deep purpose in which we are major players.

The scientific observations we will review, along with considerations from philosophical perspectives and religious traditions, will perchance reveal a path to liberation from the chains of the “self”, that construction which makes us so vulnerable to insults, criticisms or unmet expectations, liberation from the anguish of the potential insignificance of our lives and from the distress caused by the delusions of disappointments.

The roads to liberation will consist of observations in the natural sciences, more particularly in neuroscience but also in physics. We believe it is time that the impact of science is felt not only in the technological side – the popular perspective of the benefit of science – but also in the informational aspect, the teachings that science can offer us to improve our lives through a deeper understanding of those two major searches mentioned in this book's introductory sentence. We will also take advantage of philosophical views and the teachings of religious traditions that will support the scientific perspectives and guide us towards that desired liberation.

While this book is aimed at a lay audience, we will have to indulge in some science. Don't be intimidated, we will translate. And for readers interested in more technical details, there are specific sections and many references that can be inspected as desired. These sections or the scientific papers – there is a vast body of literature on the topics treated here and only a tiny, infinitesimal portion is presented in the reference list at the end of the text – will not be really necessary to understand the matters treated. Thus, the organization of the book aims, in its first part on neuroscience, at improving the understanding of that personal identity, that self that all people in all cultures construct – and as we shall see, other animals too. Because as it will become apparent, the self is a construction made up by the brain. We will see how the brain is the ultimate illusionist. We will see that almost everything that we term reality is made up in the space between our ears and above our eyes. The journey through neuroscientific observations will reveal how resilient this illusion of a personal identity is. In spite of it being about scientific findings, hopefully it will not be a boring trip: it will not consist of a detailed description of – to many readers – boring scientific experiments and analyses, rather the essence of the scientific results will be distilled. In fact, the trip will be quite entertaining. We shall see the immense power of brains to alter our bodies specially in pathologies like dissociative identity disorder – previously known as multiple personality disorder. We will witness how the two halves of our brain may have an independent personality, or how one can have a near-death experience – like an out-of-body experience – without actually being near death, but rather sitting comfortably in a laboratory of cognitive science. We will also meet self-aware worms and slime mould mental prodigies.

The second part of the book shows the perspective from physics, especially biophysics. It will illustrate that, as much as the appearance of the self is an inevitable occurrence in organisms like us with a complex nervous system, life too is an inevitable phenomenon on a planet with the characteristics of Earth. As in the first part, scientific observations will be summarised, while keeping them accessible; you will embark on a fascinating journey. You will learn how to perform a miracle, that is, what seems a very improbable event, and for which you need only a dual compartment box separated and some little beads. Intrigued? Discovering the science of the apparent miracle helps us comprehend the nature of phenomena and why things happen; why the ants in your garden follow that trail and not another, or why lightning may strike you but not your neighbour. You may even find out why there is something instead of nothing; this may or may not help in the final goal of mitigating life's afflictions but you can take it as a bonus question-answer for reading this book. The third part of the book will reveal how some philosophical and religious

traditions share common themes with the notions derived from the scientific approaches.

The overarching theme is encapsulated in the title of the book. It is the deep understanding that everything changes: being and becoming. “From Being to Becoming” is the title of a book by Ilya Prigogine, Nobel prize in chemistry in 1977 (*From Being to Becoming: Time and Complexity in the Physical Sciences*, W. H. Freeman & Co Ltd., 1980). His work on non-equilibrium thermodynamics paved the route for the understanding of how patterns emerge in nature and how order arises from disorder. These notions are not only pertinent to the understanding of chemistry but to many other aspects such as the description of incidents in social systems. Like the rest of natural phenomena, we are now something, and we become something else later. Everything changes, especially in the brain, as exposed in Marvin Minsky’s words, “But it makes no sense to speak of brains as though they manufacture thoughts the way factories make cars. The difference is that brains use processes that change themselves and this means we cannot separate such processes from the products they produce [...] The principal activities of brains are making changes in themselves” (Minsky, 1985). A true, in-depth understanding of this seemingly trivial fact starts the aforementioned road towards liberation. Accepting the inevitability of change, which entails accepting the inevitability of death, is a beginning of our deliverance from the grief and frustration when we witness the transience of things. Let us start exploring, in Part I, how that persistent perception termed the self is and becomes, and what this has to say about our happy or unhappy lives.