WITTGENSTEIN AND BRAIN SCIENCE

UNDERSTANDING THE WORLD

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Introduction

Have you ever wondered why philosophers have debated some questions about the world for centuries? Famous examples include:¹

- Do we have free will?
- What is the nature of knowledge?
- What is time?

Other people concerned with complex problems—scientists, mathematicians, engineers, economists, psychologists, and so on—also have offered conflicting solutions for difficult problems in their areas. There is a fundamental difference, though. The discussion typically results in some consensus, and people move on.

Why is philosophy different?

Before we can answer that question, we need to consider basic results about reasoning.

Until recently, most everybody assumed that humans could think and reason in a reliable and consistent manner. For example, Plato (c. 424–c. 348 BCE) didn’t believe he was confused when he postulated that there is a world of ideas, and René Descartes (1596–1650) was convinced that his arguments about mind and body were correct. The same assumption of certainty extended to situations
where a philosopher claimed something to be undecidable or in error; for example, when Agrippa the Skeptic (1st century) declared that we must suspend judgment of validity for most theories, or when David Hume (1711–1776) asserted that other philosophers were mistaken or confused about the substance of the world. In short, it was assumed that the thinking process was done by a reliable input/output machine.\(^2\)

The concept of input/output machine is independent of the location thinking was postulated to take place: whether in the heart, the brain, the mind, or without specified location in the person.\(^3\)

Modern brain science has replaced the concept of input/output machine with a far-ranging theory of reasoning by the nervous system, which consists of the brain, the spinal cord, and the network of nerves. The network connects the brain and the spinal cord to the rest of the body, for example, to the eyes, ears, organs, muscles, blood vessels, and glands.\(^4\)

You may be surprised when we say now that some reasoning occurs partially or wholly outside the nervous system and isn’t covered by brain science. For example, such reasoning guards the body against harm caused by excessive physical effort, or it selects the optimal pace when we hike in the mountains.\(^5\)

You may wonder how we can claim this. After all, don’t we think about protecting the body and selecting the pace? Yes, we do. But how do we know whether a physical effort is damaging the body or a pace isn’t optimal? The reasoning processes that answer these questions involve parts of the body outside the nervous system and aren’t accessible to conscious inspection. If you want to see details, jump ahead to Chapters 3 and 5.

We need a general definition of the activities in the human body that accommodates these decision processes and more. To this end, we declare any process in the body that involves information acquisition and subsequent reaction in any form, to be a neuroprocess.
We use this term knowing full well that some neuroprocesses take place in part or wholly outside the nervous system.

We are aware of some of the neuroprocesses while others escape conscious attention. We call the neuroprocesses we are aware of conscious, and the rest subconscious.

How do the concepts of mind and intelligence fit into these definitions?

We consider mind to be the awareness of the conscious neuroprocesses as they take place. This implies that the mind isn’t an entity separate from the body.

We declare that intelligence is demonstrated by the neuroprocesses when they achieve their goals. The definition is consistent with the usual interpretation where we consider the fact that we speak, drive cars, invent machinery, read books, and fly to the moon to be evidence of intelligence.

The definition also covers other evidence of intelligence, for example, the situations where neuroprocesses protect the body from excessive physical effort and select the optimal pace during a hike.

The definition even declares intelligence to be present at much lower levels of the body, for example, when a neuroprocess is the defensive action of bacteria against invading viruses.

The definition of neuroprocesses doesn’t conflict with the correct claim that a person, and not the brain, thinks. After all, the definition of the neuroprocesses implies that they carry out a person’s reasoning as well as many other things.

The title of this book includes the popular term “brain science.” The technical term is “neuroscience.” We need a term that captures not just the traditional definition of brain science—or neuroscience, if you like—but also accommodates all neuroprocesses currently not included. For this, we now expand the definition of
“neuroscience” to include those missing neuroprocesses. We drop “brain science” entirely to avoid confusion.

We hope that this expansion of the term “neuroscience” doesn’t draw the ire of neuroscientists. It is consistent with the fact that many investigations of neuroscientists, for example using fMRI (functional magnetic resonance imaging), already connect the nervous system with the rest of the body.

Before we go on and look at the use of neuroprocesses in philosophy, we should clarify that the idea of neuroprocesses is not new and can be traced back to the 19th century. Of course, the terminology was different, and definitions were narrower and didn’t cover all processes of the body involving information acquisition and subsequent reaction in any form. A key figure in these early developments is Hermann von Helmholtz (1821–1894). For example, he postulated mental processes that convert visual input outside conscious control into conscious images. These processes are instances of the subconscious neuroprocesses defined here.

Let’s return to the question why the debates for some philosophical problems do not converge to a commonly accepted solution. Here is our answer.

The root cause is the erroneous viewpoint that reasoning is done as if an input/output machine was used. When instead we consider reasoning based on subconscious and conscious neuroprocesses, in many cases we can

- offer a reasonable common-sense solution, or
- demonstrate that a generally accepted solution cannot be determined at the present time and, in our opinion, will not be established in the foreseeable future.

Regardless of the outcome, we say that we have resolved the problem.
The explanation may be surprising, even startling. How is it possible that the implicit assumption of an input/output machine prevents the solution of philosophical problems, while the consideration of neuroprocesses brings clarity? We do not have a short answer and can only promise that the subsequent chapters will supply the explanation.

Let’s look at an example. You are on the beach. Somebody asks you, “Do you know where the Oyster Bar is located?” You have been there and can help. Since the walk from the beach to the restaurant is a bit complicated, you draw a map in the wet sand to explain the route. How did you come up with the idea that you can draw lines in wet sand that correspond to streets?

It’s difficult to imagine how an input/output machine could produce that idea. So where does it come from?

The philosopher Plato (c. 424–c. 348 BCE) had an answer for this difficult question. He said that there is a world of timeless, absolute, and unchangeable ideas that we do not sense and can only think about. When you draw lines that depict the streets leading to the restaurant, you use concepts of that world of ideas.

Do you really rely on that world, or is something else going on? More generally: Does the world of ideas exist?

Philosophers have debated the latter question since Plato’s times. In Chapter 8 we take it up and offer an answer that traces Plato’s concept back to the concept of input/output machine and resolves the problem using neuroprocesses.

We use two tools for our investigation.

- A comprehensive format for the conscious and subconscious neuroprocesses. We call it the neuroprocess hypothesis.
- An enhanced version of the language games that the philosopher Ludwig Wittgenstein (1889–1951) proposed for understand-
ing philosophical statements. We call that version reflected language games.

We resolve a number of long-standing questions. They include the following cases:

- What is the nature of knowledge? (Chapter 12)
- Can we ever prove a theory? (Chapter 15)
- What is time? (Chapter 19)
- What is the substance of the world? (Chapter 20)
- Do we have free will? (Chapter 25)
- Is mathematics part of the world? Is it discovered or invented? (Chapters 9 and 23)

The idea of applying science to philosophy is not new. Time and again, new insight in the sciences impacted philosophy.

For example, the non-Euclidean geometries created by mathematicians in the 19th century destroyed the prior assumption that Euclidean geometry was the unique framework for the universe. A similar change occurred in the 20th century for the concept of time when empirical and theoretical evidence proved that it isn’t an independent quantity. Indeed, it is influenced by actions and forces of the universe.

Going back further, the sciences removed angels, devils, Eden, heaven, and hell from the physical universe and sometimes argued that gods are mere bystanders or even nonentities. The world’s religions either rejected those conclusions or adapted their claims.

Can the neuroprocess hypothesis and reflected language games do more than resolve philosophical problems? Yes, indeed. Here is an example.

Robots bombard us daily, indeed almost every minute, with information and try to influence our lives. They urge us to purchase
something, to think well of or—alternately—to despise some politician, to change our life style, and so on.

The social and news media play a key role in this massive attempt to direct our lives. The tools employed here can help us identify harmful agendas hidden in supposedly benign statements.

In the best-case scenario, the tools eventually bring us to the point where we ignore the flood of manipulative drivel and come back to a simpler life.

Philosophers and scientists have explored the link between neuroscience and philosophy in two ways.

- Philosophers have relied on concepts of their field to examine results of neuroscience.
- Scientists have employed results of neuroscience to investigate philosophical claims.

The work in either direction is so extensive that we couldn’t possibly include a summary. Suffice it to say that this book is part of the second effort.

A technical comment: The Notes section contains additional explanations and discussions. During a first reading you may ignore that material without loss of continuity. Later you may want to explore the notes.

Let’s start.

What is the neuroprocess hypothesis? The first part of this book supplies the answer. It begins with a chapter about our interaction with the world.