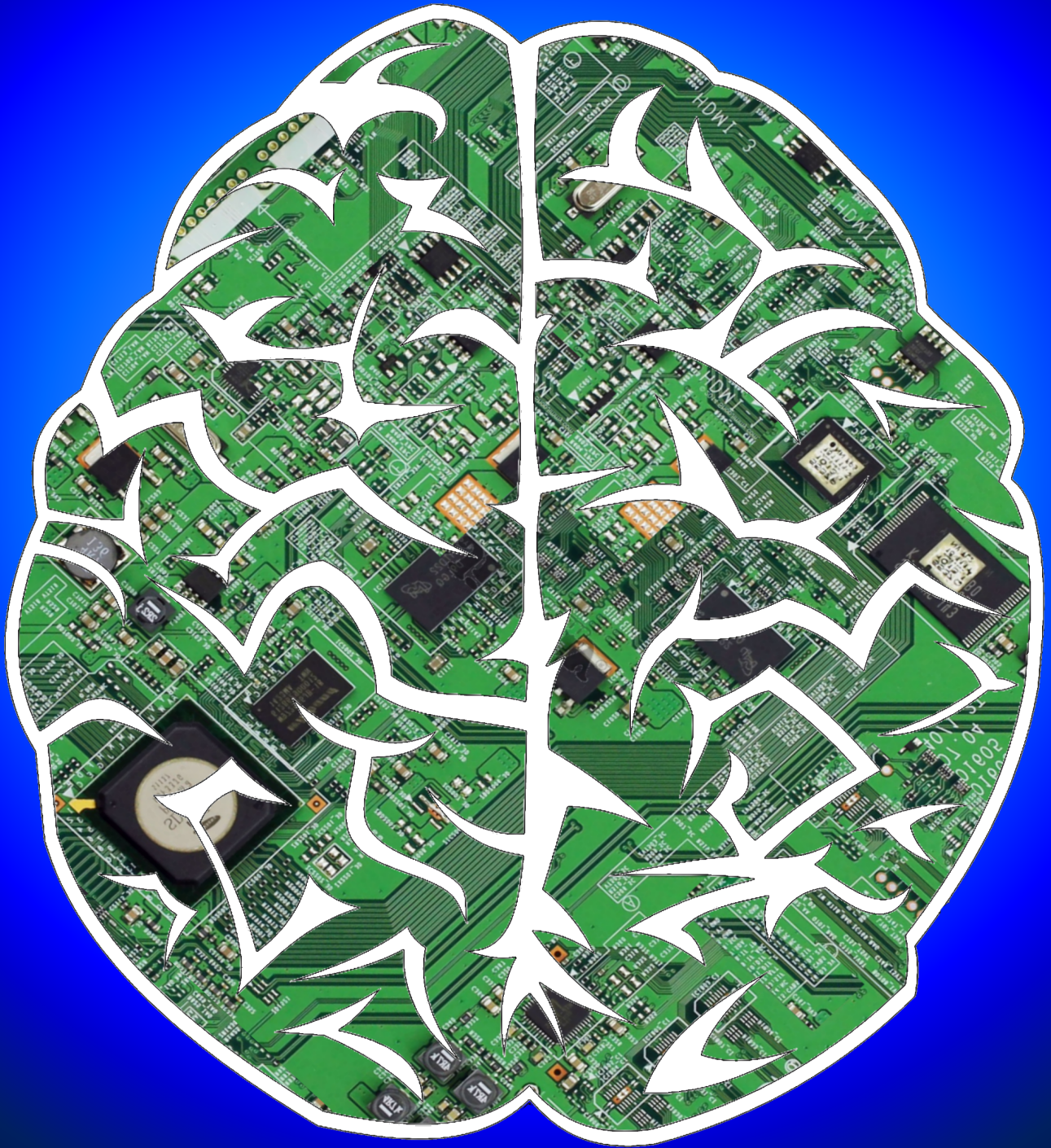


What is AI ?

And what is its relation to consciousness and life ?



by Reik Oberrath

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Reik Oberrath

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*For all scientists, technicians and software developers
who work to create strong AI or artificial life in any form.*

*Please ask yourself honestly whether you really work for the good of the mankind
or for your own interests and fascination.*

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Preface

Artificial Intelligence (or AI in short) is a frequently used term these days. It is a topic present in virtually all areas of life. Autonomous transport systems (e.g. self-propelled cars or flying volocopters), new diagnostics in medicine (e.g. image analysis for identifying diseases), new communication systems for speech recognition, translations and content filtering, robotic support systems of numerous types at home (e.g. autonomous lawnmower or intelligent fridges) and at work (e.g. talking machines that explain their domains to humans), intelligent toys and tools for learning in kindergartens, schools and universities, machines to nurse people, art creating devices (e.g. for creating poetry, images or music) or autonomous weapon systems are supposed to change the world we live in. For most application fields much information is available how AI is going to do this and what consequences this is supposed to have. However, what is AI actually? Artificial intelligence consists of two separate terms and the first one is relatively easy to explain. A paragraph of this introduction should be sufficient. The second term is much more difficult to explain and leading to a deeper understanding of it needs half of this book.

Artificial are things that do not exist naturally because they are manmade. The first artefact ever made was presumably a wood or stone tool which was shaped in a way that never would occur in nature, for instance, especially pointy sticks or extraordinarily sharp stones and simultaneously very much handy for human hands. The use of tools is generally regarded as a proof of intelligence. Even more so the building of tools. For instance, chimpanzees do prepare little sticks in a specific way in order to use it for hunting ants or termites. However, these sticks may occur in nature by chance. In contrast, a stone in the form of a hand-axe is not likely to come into existence by natural means. Our ancestors have optimized the tool making over many millennia. Today, we build simple tools to build specific tools to build highly specialized tools. With electricity completely new kinds of tools and artefacts were possible to build and with microelectronics and universal calculation machines a new era of artefacts began: the era of computers, automated data processing, robots and AI.

So, we can state that AI is an intelligence that does not exist naturally and that comes with an electronic device designed and built for a certain human purpose. In ancient times, tools were made for the need of survival in the natural habitat of human beings. In modern days, the survival due to natural dangers such as starvation appears to be eliminated in the Western Civilisation. We have replaced our natural needs by cultural needs: interests in topics such as politics, religion, science, sports and art. Correspondingly, we build tools, artefacts and AIs for these modern purposes. However, we are able to talk about intelligence and purpose, interest and need, but what do these terms actually mean? If we use these terms it should be able to explain them in a satisfying way. Otherwise it would not make sense using them, wouldn't it?

The capacities of AIs have increased amazingly in the last 10 years. This success encourages the believe that someday (possibly in near future) an AI can be produced that has consciousness. This is another term sometimes used in the context of AI. There is some mystery in this term because

consciousness appears even harder to understand and explain than intelligence. Is consciousness an attribute of life? If man constructs an AC (Artificial Consciousness) does he have created life - artificial life? So, AI has far-reaching implications and those are part of this book. Although it contains some technical details about how AI is functioning, this book is focused not on technological but rather on philosophical, ideological and societal aspects.

There are two statements which give a first nice idea about the term intelligence. Firstly, intelligence is the ability of solving problems, secondly, intelligence is clever decision making. Both the solving of problems and the making of decisions are made for specific needs, goals and purposes. Thus, to understand intelligence we should also understand those other terms. Everyone thinks to know their meanings, but nobody can really explain them precisely. Well, maybe this book can give you a deeper understanding. It starts in the first chapter with the focus on the term *purpose*.

About the author

I started studying biology at the University of Tübingen in 1990. I did my diploma in 1996 after finishing my thesis about the colour change of flowers and its interplay with insect pollinators. From 1997 until 2000 I did my Ph.D. at the University of Aachen. I specialised in macroecology and studied the interactions of plants and their animal seed dispersers. After my Ph.D., I finished my academic life.

In 2000 I started to work as software developer. Gaining expertise in the field of software development and Informatics, I applied the broad view of a macroecologist to computer systems and founded with a collaborator the knowledge base called *Clean Coding Cosmos*.

In 2015 I published the book *The Nature of LIFE* on Leanpub. With this book I firstly brought together the experience I made on both fields: biology and informatics. Ever since *The Nature of LIFE* was published, I felt that something was missing. Years later I recognized that *intelligence* is the missing piece and that this topic needs to be considered in a deeper way. Originally I planned to add new chapters for it, but finally decided that the topic *intelligence* is worth an own book. The current hype about AI resulted in the title of this book.

Having written this book, I'm still feeling that something is missing. It may be the question *What is it being human?*. Well, let's see what will come...

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