Introduction: two tables, two chairs, many worlds

The introduction to Arthur Eddington’s book *The Nature of the Physical World* (1935) aimed to present to the public the weird realities of particle physics. He famously referred to the two tables he was sitting at to write the notes for the lectures that constitute the bulk of the book. The first table he was referring to, being the familiar one, had all the expected attributes: it had a definite shape, colour, texture and function. It would not take a book to explain such a regular table, with its substantial qualities making it quite fit for purpose. However, the other table – the “scientific” one – could use an explanation. Contrary to the solid object perceived as the familiar table, this one had little substance as it was composed mostly of empty space criss-crossed by subatomic particles bound by energy fields. Those particles whose bulk would be negligible but whose binding energy give the sense of solidity to the familiar table, could, if suddenly released, obliterate the entire area. A rather insubstantial and strange entity that for modern physics, nevertheless, is the one that is really there. A table that was worth writing a book to explain it. A case in point to illustrate the nature of the physical world.

As I sit to write about the nature of the knowledge world, I have no quarrel with the desk I am sitting at. Not because relativity has explained the understanding of the material world. If anything, modern physics got even weirder with the advent of quantum physics. Nevertheless, modern science has learnt to move beyond the human perceptual scale and to approach the universe of the very large and the very small from a non-anthropocentric perspective.

What I need to clarify is which of two books is the one you are now reading. *A Modern Guide to Knowledge: From Knowledge Economies to Knowledge in the Anthropocene* might sound like a compilation of the better understanding regarding the nature of knowledge, its role in society and the economy, and its prospects before the climate crisis. While several chapters deal with these issues, this is not quite such a book.

This book, besides building on a vast extant literature, departs significantly from several common assumptions about the nature of knowledge and about its economic and cultural significance. Basically, the received view is an attempt to subsume knowledge processes within the wealth creation and concentration framework of industrial capitalism. As I intend to show, the true significance
of the knowledge society lies in the yet untapped potential of an alternative relation between knowledge and value – a relation not reduced to the monetization of the knowledge realm but deeply subverted by such a realm; a universe of possibilities so far excluded by the idealistic mindset of modern economic thinking, the same mindset that brought us the realities of the Anthropocene. A key contention of this book is that unless a knowledge-based value creation and distribution paradigm is globally adopted, the possibilities of an integration between a sustainable biosphere and a viable economy are rather dim. Dealing with *the nature for the knowledge world* as we enter the Anthropocene invites us to revise our ideas about nature, about knowledge and about the world.

Both modern physics and knowledge-based development are less about things and more about relations between things. This book is less about money than it is about value and meaning; less about goods and services than it is about the material–immaterial continuum; less about trade than it is about knowledge mobilization; less about intellectual property rights than it is about the commons and the universal right to know. Physicist Richard Feynman had the following to say about the most important piece of knowledge to be passed on to the next generation:

> If, in some cataclysm, all of scientific knowledge were to be destroyed, and only one sentence passed on to the next generation of creatures, what statement would contain the most information in the fewest words? I believe it is the atomic hypothesis that all things are made of atoms – little particles that move around in perpetual motion, attracting each other when they are a little distance apart, but repelling upon being squeezed into one another. In that one sentence, you will see, there is an enormous amount of information about the world, if just a little imagination and thinking are applied.2

Today, several other pieces of scientific knowledge from different disciplines might claim the right to the most relevant and concise sentence. But there is one such sentence this book is striving for. This would not be a sentence regarding any scientific discipline. In fact, it would not properly be a piece of scientific knowledge. More precisely, it would a piece of meta-knowledge, a sentence about our knowledge on knowledge.

One of the most immediate conclusions I expect all readers will reach on their own is the enormous task we have ahead in achieving an integrated theory of knowledge. Something the book does do is to compile a vast number and diversity of approaches and perspectives on aspects of human knowledge. What becomes immediately apparent is the wealth of contributions from so many different fields addressing diverse but still dispersed aspects of knowledge.
It may seem paradoxical that in the knowledge economy and society in which we live, our understanding of knowledge as an object of study is so disproportionately behind the actual role knowledge plays in our civilization. For, while the importance of knowledge in so many aspects of contemporary life is widely recognized, the relative progress in explaining and harnessing it is relatively insignificant.

It is a contention of this work that a major, if not the single most important challenge for global human civilization in the Anthropocene, is to unlock the potential of knowledge for the future of humankind if there is to be one. The urgency to reinvent the terms of relation with a more-than-human world in balance with the biosphere is already leading to the questioning of several core precepts of our economic culture and, beyond that, several received assumptions about ourselves and about the world. For that, we will need not only the best of science and the best of knowledge at large; we will also need, for the first time, to fully grasp our knowledge about knowledge. We will need to evolve into a proper knowing species – not just achieving technological prowess, but first and most important, advancing knowledge about ourselves in this world.

The term Anthropocene was coined to name the proposed geological epoch following the Holocene (Crutzen & Stoermer, 2000). It is characterized by an overwhelming impact of human activity on Earth so as to leave a distinct geo-stratigraphical record (Zalasiewicz et al., 2010, 2019). While there is an ongoing debate about the starting date of the new epoch, a favoured milestone is the Great Acceleration: the exponential surge of human impact on Earth since the mid-20th century (McNeill & Engelke, 2016; Steffen, Broadgate et al., 2015). Given the enormous significance of these realizations as well as the observed and potential consequences for the biosphere, the term has also been adopted to denote its wider economic, social and cultural implications (Castree, 2018; Clark & Szerszynski, 2020; Cohen & Colebrook, 2017; Malabou, 2017), including transformative movements within disciplines such as sociology (Dietz et al., 2020), architecture (Turpin, 2013), economics (Rees, 2020) and political science (Hickman et al., 2018; Mann & Wainwright, 2018). This book adopts this wider use of the term insofar as it conveys an essentially transdisciplinary anthropocenic turn in contemporary culture (Bhaskar et al., 2010; Carrillo, 2019b; Dürbeck & Hüpkes, 2020; Hamilton et al., 2015; Krogh, 2020; Oldfield et al., 2014).

The ending of the Holocene epoch, and with it the uniquely favourable conditions for the flourishing of human civilizations, are now giving way to the unprecedented – in human history – and largely unpredictable conditions of the Anthropocene. Virtually every aspect of human life will have to be reinvented. Two things are clear: first, that anthropogenic impacts (i.e., of human origin) on the environment are inducing a state shift in the biosphere (Barnosky et al.,
This means that the living conditions on Earth are rapidly deteriorating, and we do not know if, and at what point, we will be able to stop and hope-fully sufficiently reverse such a level of decline. Second, human civilization has a very slim chance of surviving outside this planet with the current and foreseeable state of technology, at least before critical planetary boundaries (Rockström et al., 2009) reach a point of no return. This means that at this stage of human history, the one possibility for the continuity of the species lies in being capable of understanding the nature of the climate crisis and responding effectively to it. For that, a leapfrog in how we understand and use knowledge will be required (Frank et al., 2022).

If a superior intelligence visited Earth, they would soon do the equivalent of scratching their heads in disbelief by contrasting some clever ideas and technologies that humans have produced, with the amazing inefficiency of their economic culture both in terms of value distribution and use of natural capital. Above all, they would be surprised as to why – despite the repeated signals of one historical civilization failure after another due to concentration of wealth and depletion of natural resources – humans maintained the same pattern when the crisis reached a global scale. It could not have been through lack of warnings, as major economic and cultural dysfunctionalities have been pointed out separately by prominent authors, particularly after World War II. Several tenets of the globalized economic culture such as anthropocentrism, Homo economicus, growth, scarcity, market self-regulation, pricing mechanisms, and so on have been proven untenable once the biophysical limits of the planet are considered.

This book seeks to provide an integration of such an ample set of ideas within a perspective on the knowledge economy and society that overcomes the dominant interpretation of the role of knowledge in human life. It therefore aims to provide an overview of where we are regarding the knowledge economy and society, how its current form took shape and how our understanding has evolved, from the grounds of the philosophy of knowledge, to include the current branches of the sciences of knowledge. Taking this perspective, the book also looks at the challenges of the Anthropocene and how current knowledge systems might need to change radically to meet those challenges. The book revolves around a specific understanding of knowledge-based that goes beyond the prevailing first and second generations of knowledge-based development. A third-generation understanding relies on an integrated view of value, where both tangible and intangible (or knowledge-based) social value sources are conceived and operated upon, not as separate domains, but as a natural axiological continuum: the knowledge systems framework. This is perhaps the most challenging mindset shift to achieve through these pages (Chapters 2–4).
From that relatively deeper and distinctive account, the bulk of the book provides an integration of a substantial number of epistemic, theoretical, technical and political developments in several fields of knowledge-related aspects of economy and society. Besides the specific knowledge systems framework, a major part of the intended contribution is the exploration of the convergence from multiple perspectives. The tone throughout these concept integration exercises is more monographic than analytical, moving at an introductory rather than specialist level, with the aim of showing the many interdependencies that exist across these multiple fields, rather than digging deep into the specifics of each field – a task that would be unattainable within the scope of this book and my own individual capacities. In this sense, much of the work operates as pointers and connectors, as landmarks and routes in a broader map, the core proposition being that a knowledge economy and society for the Anthropocene might be the only available way out of the composite crisis, including inequality, environmental catastrophe and a post-truth world – an economy and society where knowledge is no longer a compartmentalized and monetized area of production, but an integral part of all spheres of human life.

While this book aims to present an alternative to the dominant view of the knowledge economy and society, the end purpose looks toward a more transcendental possibility. It appears that a concealed agenda for the Anthropocene is that of an elite project where most living beings, humans included, are sacrificed to any extent necessary to create the possibility of a small group of survivors managing to negotiate the harsh environmental degradation either by developing artificial habitats on Earth or by colonies in or around the Earth, the Moon, Mars or elsewhere. The alternative pursued here is a global project where the living conditions of all members of human and non-human species alike adjust to the carrying capacity of the planet and systematically adapt until they re-establish a balance in the biosphere.

The book consists of ten chapters, besides this Introduction. Chapter 1 provides a review of the numerous fields from which our understanding of human knowledge, as an object of study in itself, has improved over the last decades. Chapter 2 carries out a critical appraisal of the economic domain as one of commoditized value and looks at the roots of alternative perspectives put forward by several analysts. Chapter 3 reinterprets economic life around an integrated value perspective, enabling human communities to focus on those aspects, both tangible and intangible, that truly matter to them.

Chapter 4 provides a more procedural look at those specific attributes of knowledge-based value systems that enable them to serve collective interests. Chapter 5 then looks at knowledge markets as forms of exchange that operate along a value-exchange continuum as well as along distinct ethical principles.

Chapter 6 provides an alternative look at the role of work in knowledge societies and how it could naturally merge with learning and leisure throughout our
entire lives. Chapter 7 will then look at a richer view of knowledge societies than the instrumental view so far promoted in seeking to maintain the received economic culture.

Chapter 8 offers a monographic review of the concept of development to meet the current disappointment with the idea of progress and looks at knowledge as a possibility to reset the sense of human improvement beyond economic growth. Chapter 9 confronts the unprecedented challenges of the Anthropocene and urges the redesign of our dysfunctional knowledge systems. Chapter 10 concludes with a plea to regard knowledge, rather than profit, as the most powerful leverage to increase the likelihood of preserving life-support systems on Earth.

An underpinning concern throughout all chapters is generating an integrated theory of knowledge that allows our species to respond intelligently to the challenges ahead. Either we conceive and implement an alternative way of life that safeguards the existential conditions of all living beings, and all required natural processes, or we are gambling with the potential disruption of the biosphere in an irreparable manner. This might be possible through an alternative economy and social organization enabled by the yet untapped potential of a knowledge-based transformation.

As the editors of Textures of the Anthropocene write in their Preface: “When humankind itself becomes a natural force, traditional methods of knowledge acquisition – the natural sciences on the one side and the humanities on the other – have reached a limit. The Anthropocene, with its increased material and immaterial interconnections and processes, therefore, requires novel approaches to the constitutive dynamics of the world” (Klingan et al., 2015, vol. 1, p. 3). The quest for alternative viable bases for designing knowledge systems that are up to the challenges ahead not only involves new and diverse contents; it also allows the exploration of this new horizon with interchangeable lenses: the monographic, the analytic and the speculative. The first lens best suits the description and chronicle style required for synthetic field reviews, serving the original purpose of informing members of the public and enabling them to make up their own mind. The second, analytical lens, adequate for empirical and theoretical accounts, provides the technical background for several perspectives, mostly stemming from knowledge systems analysis, design and implementation. Last, the more speculative essay style seems best capable of peering into potentially existentially threatening futures. Each of these styles will serve its purpose if, as Walter Benjamin (1968, p. 255) would have it, “it flashes up in a moment of danger”.

Altogether, I expect to provide three levels of service: the first is to map out the multiple and diverse contributions to the field of knowledge studies. The second is to convey the significance of a knowledge-based perspective of economy and society. The third is to look into the chal-
challenges of the Anthropocene and how these challenges could be met through a knowledge-based culture.

From this perspective, the ultimate question is: Will we know? Will we be able to make sense of and enforce the collective capabilities for opening up human futures? As said above, there seem to be two alternative agendas. One is the Promethean transhuman capitalist project based on the selective survival of a very limited number of individuals: the owners and enforcers of NBIC\(^4\) technological capabilities (Gordijn, 2006; Halal, 2021; Lewis, 2018). The second is the Epimethean post-human socioecological project aiming at redrawing the terms of relation between our species and the Earth system (Latour, 2018; Wakefield et al., 2021).

It will take an intelligent civilization to open up a future for humankind under the current Anthropocene predicament (Frank et al., 2022). The option of an artificial intelligence saving us is rather grim. The only chance we have for a viable Holocene exit and learning to survive and thrive in a far more challenging Anthropocene is to gather the best of our knowledge and make it work collectively within a more-than-human world.

NOTES

1. A proposed new geological epoch functionally and stratigraphically distinct from the Holocene, characterized by human impact of a geological scale.
3. The expression “more-than-human world”, in extensive use in climate change literature, refers to the abandonment of a human-centred worldview, an equal consideration of all beings, and new terms of relation between humans and nature.