One World!

Why the rise and fall of great powers must come to an end

Gero Jenner

Jenner's discussions of fundamental political, ecological, socio-economic, and cultural questions, prompted by current events but never limited to them, are among the most stimulating contributions to clear and well-formulated historical sociology currently available in the German-speaking world. *Karl Acham, professor of sociology Graz*

At last I've had a chance to read your sweeping, trenchant, and extraordinarily erudite manuscript. It's rife with integrative insight about science and the human condition and coins a wonderful term – holodoxy - that gives a name and legitimacy to the vital discipline of whole-system studies now emerging. The appreciation of indeterminate bifurcation in social evolution - "different solutions to the same problem" - is an important contribution that invites thinking about different solutions, or scenarios, for the global future. Also, the compelling case for "universal consciousness," the basis for a common human project going forward, could not be more timely in our divided world. Without doubt, the book will launch readers into a panoramic view of where we've been and where we are, and a richer understanding of what we face and what we can do. *Paul Raskin, author of Earthland*

In his large-scale socio-historical overview, Jenner shows that the transition to the post-fossil Era will force a break with past national antagonism. Together we will end the destruction of life's foundations or together we will destroy the globe and ourselves. An analysis full of surprising insights and outlooks. *Ernst von Weizsäcker, environmental scientist*

I have read with the greatest interest and also admiration your book Homo Faber /title was changed/. I fully agree with your conclusion. Mankind will survive only if it understands itself as a unity. Your excellent book will help to change collective consciousness. *Jean Ziegler, sociologist and author*

I enjoyed reading the chapters from page 1 to page 118. Based on your in-depth knowledge of ethnology, philosophy and psychology, you have convincingly explained how human development very probably proceeded and how Faber conceptualized his world. In addition, there are your important remarks on 'universal conscience', which is actually found in all world views and religions in some way ... From the chapter 'The Fossil Revolution' onwards, I do not agree with your explanation of the causes of the modern development of human societies. I am firmly convinced - and I have come to this conclusion over many years - that it is not the 'fossil revolution' that is the 'cause' of modern industrial and social

development, but the ‘empirical-analytical and mathematical-formalized **method** of science, which was discovered on the threshold between the 16th and 17th centuries by personalities such as Gilbert, Galileo, Kepler, Newton and Francis Bacon. *Rolf Kreibich, former president of Freie Universität Berlin*

I respond to this critical objection in the chapter ‘The transition from a moral to a scientific world view’ (p. 145)*. Prof Kreibich is, of course, right: the suddenly wide-open cornucopia of fossil energy should not, of course, be seen as the* ***cause*** *of industrial revolution*.

This work has undergone several transformations. Initially, I wanted to publish it under the title *Sapiens Whereto? – What Holodoxy Tells Us About the Future of Man and Society*. This version I had submitted to the commentators mentioned above. My acquaintance with Ray Dalio's important work *The Changing World Order – Why Nations Succeed and Fail* then inspired me to choose the title *Crisis and Global Realignment – The End of the Rise and Fall of Great Powers).* In the end, I decided on the current title because it succinctly expresses the book's intention.

Introduction

The twelve main theses

1 ***Universal conscience*** *can be traced from hunter-gatherers to the present day* (p. 37, 55, 115). Peace in human coexistence has always been seen as the ultimate and highest goal.

2 *The origin of social peace is, however, the same as that of war.* While the **establishment of binding rules** makes people predictable to each other, the differences between these rules in each culture inevitably lead to mutual unpredictability and result in wars: there is an internal (brotherly) morality and an external (enemy) morality (p. 11, 23, 37). Which means that two conflicting tendencies — on the one hand toward larger units, on the other toward separatist division — are always coexistent (see p. 137: Unity versus separation). From a global historical perspective, the former does, however, outweigh the latter to such an extent that one may speak of a *quasi-law*. Only the completion of this development, the unification into "One World," can and will remove the destructive opposition between brotherly and enemy morality (p. 137).

3 *The two driving forces of history are* ***universal conscience*** *and the* ***serendipity of inventions****, which break down and reshape social structures*. The four turning points in history: Homo Loquens (the acquisition of language), Homo Domesticus (agriculture), Homo Technologicus (industrial revolution), and Homo Deus sive Diabolus (post-fossil civilization) have all emerged from unpredictable inventions (p. 14, 19, 29, 67). The first was an invention of evolution, the other three were inventions of man himself.

4 *About twelve thousand years ago, with the second turning point, the* ***agrarian dependency formula*** *came into effect, leading to the subjugation and exploitation of the food-producing majority (at least 80% of the population) in all mass cultures*. Only small garden cultures were a notable exception to this sinister rule (p. 50) *The liberation of the food-producing majority from its quasi-slavery after the Industrial Revolution would not have been possible without the use* of ***fossil fuels*** (p. 29, 63).

5 **Capitalism** is usually seen as an essential feature of the new era that began with the Industrial Revolution (p. 69). However, from a holodox perspective, the economic and technical reorganization triggered by this revolution is only one single aspect within a more general "***privatization of power****" that affects all areas of life and, in politics, has for the first time made genuine democracy possible for entire populations and both genders* (p. 69).

6 *The much-maligned* ***competition*** *is a prerequisite for equality of opportunity*. Hierarchical societies and dictatorships tend to suppress competition. But only *controlled competition* serves humanity (p. 67). Anarchic competition — **the race between nations** for greater economic and military power — abolishes all rules and could well lead to the self-destruction of mankind (p. 102).

7 Long before Marx, the Enlightenment called for a *classless society*, as it wanted to abolish all hereditary privileges and replace them entirely with individual knowledge and skills. In a just society, **personal abilities** should determine the rank (material rewards and immaterial prestige) of individual citizens (p. 58, 73). This does, however, result in an irreconcilable contradiction. From the outset, democratic states have had an undemocratic principle embedded within them — in the form of their economic foundation: the manufacturing industry (p. 81).

8 *Even in functioning democracies, above-average ownership of money or scarce goods (raw materials, etc.) continues to exert an influence on social status that may be quite independent of knowledge and skills* (p. 98).[1] *Thus, the* ***mechanism of interest*** *favors the rich and super-rich, regardless of their own performance, to such an extent that it results in a constant flow of money from the bottom to the top* (p. 98, 165). Even through conscious redistribution in the opposite direction, democracies cannot prevent wealth from mechanically multiplying. But the interest system cannot be abolished while the **race between nations** continues. This will only be possible in "One World."

9 *Universal conscience demands a* ***just state,*** *where the differences in material rewards and immaterial prestige of citizens are based on generally accepted standards, i.e., on qualifications through knowledge and skills* (p. 9, 139).

10 Science and technology are immensely effective instruments for controlling nature, but *they threaten to become ends in themselves, serving humanity as much as they harm it*. The spiral of increasing complexity in the technical foundations of modern societies is turning the world into a Tower of Babel by producing more and more mutually incomprehensible sublanguages (p. 197). And still much more ominous: our supposed mastery of nature could very well turn into its ecological and nuclear destruction. The prevailing **race between nations** does not allow for a separation of beneficial and harmful effects. From a *holodox perspective*, this is only possible in "One World."

11 Science and technology are trans-moral and trans-aesthetic (p. 21, 29, 90). However, it is shared moral values that make people predictable to one another and enable them to form communities. Otherwise, they disintegrate into subcultures that fight each other. A distorted worldview ignores this central point (p. 139, 153, 172).

12 *The state is a **moral purpose** with technical means* (p. 84). Before the transition from the pre-industrial moral worldview to the modern scientific one, this was taken for granted everywhere in the world (p. 139, 141). But the **race between nations** has elevated the means (even apocalyptic end-time weapons and technology-induced environmental pollution) to ends in themselves, *as individual states derive advantages from them* (p. 149, 151, 155, 157, 159). Only "One World" can effectively combat this perversion. Only a world government can eliminate national egoism and help universal conscience to finally prevail (p. 169).

What we know and what we cannot know

> Looking back on history is like "grounding" your view of the future. *Herfried Münkler*

A thousand years ago, it would have been impossible to predict the future of humanity and society. But even a hundred years ago, it would have been a futile endeavor - the options for different paths of development were simply too diverse. This has changed radically since the second half of the last century. Only a few options remain. We must choose between them because some of them threaten to lead into disaster.

I would like to ... Stop! This opening might make some readers pause. In a book that deals scientifically with the past and present, it is not customary to put one's own ego in the foreground. On the contrary, a

venerable scientific tradition of objective reporting requires that one's own ego be completely hidden behind the facts. A concerned reader might therefore ask: Why does the author deviate from this tried-and-tested formula right at the beginning of his remarks? Why does he start off by expressing his own preferences?

My answer is as simple as it is decisive. This book is not just about facts, i.e., what we know about the past and the present or, in the best case, what we could possibly know. Facts are there—and they are irrevocable. We can only deny them or deliberately distort them through fakes or misrepresentation. But like any author who writes about people and society, I am ultimately always concerned with what is becoming and what is yet to be shaped. It is about the future as we first imagine it based on the knowledge we have gained from the past – because we have no other knowledge – and then want to realize it. We have no knowledge of the future itself. There is nothing there but our will, because the future of the individual human being, like that of humanity as a whole, is never recognizable as a fact before our eyes. We are the actors who shape it in the first place with our intentions and purposes.

This is why the author would be guilty of dishonesty if he concealed his own ego in his words about the future. No one can honestly claim to have certain knowledge of the future. Ultimately, everyone is merely expressing their own desires and preferences. They tell us what they think the future might look like or what it must look like to be acceptable to future generations, perhaps even to enable their children and grandchildren to survive at all. However, if there are only a few options, as claimed in the introductory sentences, then the future is less unknown than it might seem at first glance.

The future is by no means generally and fundamentally unpredictable. The natural sciences are known to be in a far better position than the human sciences. Since the time of the Babylonians, there has been knowledge about the future that is valid for the coming millennia and apparently indisputable. Since that time, humans have been able to predict lunar eclipses and star constellations for cosmic cycles without any reference to personal beliefs. It therefore makes no sense for a researcher to mention their own person. In scientific texts, it is rightly frowned upon to do so. Nature does not conform to human desires and wishes; the course of the stars does not conform to human values, moral principles, and our plans for the future. The laws of nature have been in force since the beginning, and some of them will remain in force until the end of time.

Everyone knows from their own experience that our knowledge of humans in this respect differs significantly from our knowledge of inanimate nature. With a probability of around 99%, physics predicts that the sun

will burn out in five billion years. But which country will rule the globe in two hundred years, and whether those that exist today will even still exist then—no one has yet been able to predict this, and it seems impossible. However, we are not alone in groping in the dark when it comes to the future of humanity. To a certain extent, this even applies to the past. The natural sciences have no qualms about illuminating the past back to the beginning of space and time, i.e., to the so-called "Big Bang." All areas of nature appear to them to be equal. For a researcher, there is no moral difference between studying the Milky Way, Sagittarius, or the much more distant Magellanic Cloud. When it comes to the past of humans and society, however, special efforts are required to let only the facts speak and not one's own desires and wishes, one's own (pre)judgments, preferences, or inner resistance. When Germans talk about the unfortunate thirteen years during which Hitler defiled their history, many of them find it impossible to talk about the fact—for example, the extermination of their fellow human beings—with the same indifference with which they talk about solar or lunar eclipses. When it comes to our common future, it is no longer possible for us to stick to the facts, precisely because the facts do not yet exist. It is our will that must bring them into being (see p. 153: *Subjective will, objective laws*).

Fair enough, an uncommitted reader might object. But doesn't that mean that we are advocating a fundamental renunciation? If everyone expressing an opinion about the future of humanity is merely offering their own opinion, an opinion that is as arbitrary as any other, what is the point of discussing the future at all? The question seems entirely justified. Some scientists probably have an immediate answer to this question. It makes no sense, they will say. We search in vain for laws such as those revealed to us by nature in the human realm. No objective statements about the future of humanity are possible – statements that are independent of the author's personal wishes and fears.

If the scientist were right in his objection, then the author would be the first to recommend to even the most receptive reader that they put this book aside, like all others on the subject. We should not waste our time reading opinions that everyone can have and everyone can reject. Knowledge is an extremely valuable and, moreover, reproducible treasure; opinions are arbitrary and do not lead us any further.

Such a perspective based on the natural sciences is in truth untenable. Most people, for example, want peace and abhor war. It is true that our knowledge of human beings and society is not based on laws. Human freedom eludes a legal mechanism based on the abolition of all freedom. The moon cannot decide when and whether it will eclipse the sun. However, a person at the head of a state can very well decide whether to issue

an order to destroy his fellow human beings or whether to sign a peace treaty. Desires and wishes determine the future of a society, but they are guided by collective experience from its respective past. The knowledge of the past never allows for exact predictions, such as those made in the natural sciences about future supernovae or solar eclipses over thousands or even millions of years. In this respect, all predictions are far less reliable than in the sciences of inanimate nature, but they are nevertheless possible – and they are even more so today because the future holds only a few options open to us humans on this planet. I would like to illustrate this fundamental statement right at the outset with a very convincing example: the remarkable book *Why Nations Succeed and Fail*.

This work by a well-known American investor and billionaire is so remarkable because it highlights both the possibilities and the limits of predicting human behavior. The topic addressed by the author is by no means new. In England, Adam Smith and, after him, David Ricardo had already asked why their country—Great Britain, which was then rapidly emerging as a major power—had managed to successfully outpace all its rivals. In Germany, none other than Max Weber also took up this question, bringing ideological factors into play alongside economic ones. Finally, the American historian Paul Kennedy addressed the same question in a work with an almost identical title, and Daron Acemoglu, like Adam Smith before him, asked about the economic prerequisites. But these are just a few of a whole host of names, each of whom has made some contribution to this topic.

Ray Dalio's merit lies in understanding the rise and fall of great powers as a kind of natural process and analyzing it in detail. He distinguishes between the rise, peak, and decline of great nations, dividing each of these three phases into two stages. The peak of greatest power is followed by a decline, which is usually gradual at first but often ends abruptly in a military collapse. Based on his own experience as an investor and financial expert, Dalio provides us with a quantitatively rigorous analysis of the financial and economic shifts that occur during these three phases and six stages in both the real and financial economies. Even at the peak of power, experts trained in finance can recognize the seeds of later power loss. It is always a high level of debt that gives the leading state the greatest advantages for a long time, but in fact lays the foundation for its inevitable decline. Without saying so himself, Dalio describes the rise and fall of great powers according to the pattern of a classic Greek tragedy. Just when the hero believes his victory is assured for all time, the gods have already decided his downfall.

I only got my hands on Dalio's great book after I had already completed the first version of this work, entitled *Sapiens Whereto? What Holodoxy*

– the study of the whole – tells us about humans and their future. After reading it, it became clear to me that the rise and fall of great powers, or "the race of nations", as I have always called this historical movement, is nothing more than a relatively brief stage in world history. Dalio has masterfully described a phenomenon that has been valid for the past five hundred years. In his studies, he focused primarily on two former and one current world empire: the rise and fall of the Netherlands and the British Empire on the one hand, and of course that of his own country, the United States of America, on the other.

Ultimately, the author is concerned with his own country. After all, all historiographies should serve the present. They teach the lessons that the past offers to overcome the present. For an American, it takes courage to confront his fellow citizens with such an unwelcome truth as the decline of their own nation, especially since the author insists that the laws of rise and decline are "universal" and "timeless." This can and should mean, of course, that they apply without exception, including to the United States. Dalio is as certain of the decline of his own country as he is of the historical decline of the Netherlands or the former British Empire. Wise policies may delay it, but universally and timelessly valid laws allow for no more than a postponement.

In this work, even before I became acquainted with this important author, I had held a view that contradicted this conclusion: the rise and fall of great nations is a historically unique phenomenon. Until 500 years ago, the phenomenon as described by Dalio did not exist, and in the 21st century it must not exist, otherwise humanity will destroy its own foundations – and itself.

Tidal Shift: The end of the rise and fall of great powers

> When things start to go truly wrong, empires regularly unravel with unholy speed: just a year for Portugal, two years for the Soviet Union, eight years for France, eleven years for the Ottomans, seventeen years for Great Britain, and, in all likelihood, just twenty-seven years for the United States, counting from the crucial year 2003 … The American Century, proclaimed so triumphantly at the start of World War II, may already be tattered and fading by 2025 and … could be over by 2030 *Alfred W. McCoy*

Regarding Dalio's book *Why Nations Succeed and Fail*, I draw a conclusion of crucial importance. The curve of rise and fall of great powers discovered by Dalio is neither "timeless" nor "universal." We know that during the longest period of human history, in the age of hunters and gatherers, there were no empires, let alone large ones. Therefore, they could neither rise nor fall. It is true that after the transition to a settled way of life in the

third millennium BC, large empires emerged for the first time, which rose, declined, or even disappeared from history altogether. Think of the Assyrian Empire, for example. But until five hundred years ago, there was no sign of a race between nations anywhere on the globe. Oceans, mountains, and deserts, the basic features of geography, reliably ensured that great empires such as the Egypt of the pharaohs, China, India, and the Incas in the New World were able to develop undisturbed for hundreds, and in some cases thousands, of years. *The mere idea of competing with and against other nations beyond their borders was unheard of at that time.*[2]

I therefore speak of a break with the past that began with the advent of the capitalist economy in Europe five hundred years ago. The race between nations and, accompanying it, the rise and fall of great powers has only taken place in the quasi-legal and mechanical manner described by Dalio since that time. But the past is only of secondary importance. We look back to history for the only reason to learn how to come to terms with the present time or the future. And this leads us to a second insight. Not only can we—with a few exceptions—only speak of the cyclical rise and fall of great powers at a very late stage, but it also turns out that it will no longer exist in the familiar form in the future. We ourselves have created the conditions that make the simple baton change from one superpower to the next no longer possible. Paradoxically, I can cite Dalio himself as a witness to this momentous assertion. In a rather casual remark in his book, he not only relativizes his analysis based on supposedly timeless and universally valid laws but simply refutes it. He says: "So my view is that inventiveness and increases in living standards will probably get a lot better a lot faster—*if humanity doesn't kill itself first*."

I find this casually uttered sentence deeply troubling. To introduce such an apocalyptic option as something that must always be reckoned with, without giving it any further thought, seems to me to be an unforgivable act of flippancy. If it is true that, for the first time in history, humanity could destroy itself at any moment due to its scientific and technological capabilities, shouldn't this monstrosity be the starting point for all further considerations? Can we even ask such a question casually, as if it were a bad joke that unfortunately cannot be avoided, but still a joke that we dismiss with a shrug?

My concern in this work is to take this monstrosity seriously. Since the second half of the twentieth century, humanity has created more than just the conditions for a turning point; it has created a crisis, i.e., a situation with a potentially fatal outcome if it does not respond in time. Yes, there is the rise and fall of great powers, and it largely follows the laws described by Ray Dalio. But if it continues as it has for the past five hundred

years, then not only will the leading power be replaced—which is still the United States—but a new cycle will not simply be set in motion, i.e., the further rise of the new superpower China. No, then – and this is precisely what I want to show in this book – the race between nations will end in a race to the death and mutual destruction.
In this context, a further book deserves special mention, which I also only got hold of after completing the present one: *Welt in Aufruhr* (World in Turmoil) by Herfried Münkler. The author describes and evaluates the multipolar order of the major powers as it is likely to exist during the first half of the 21st century, but without the US as a hegemon capable of guaranteeing peace through its superior power. "Multipolar systems with a hegemon usually exhibit great internal stability and have a strong disposition toward peace between states, while in multipolar systems without a hegemon — i.e., those in which the hegemonic position is contested, and no one holds it permanently — the relationship between the various power poles must be rebalanced again and again." The coming period will be much more prone to conflict because the US is no longer able or willing to continue to act as the world's policeman. "In the US, the question arises as to why it should take on the tasks of the international community and bear the associated costs, only to reap criticism and opposition, even terrorist attacks ..." The new order is fundamentally unstable. That is the starting point and the conclusion of Münkler's book.

How does a shift unfold?

Man is a zoon politikon, a political animal, according to Aristotle. He can only live and survive permanently with and among his own kind. Everything good, but also almost all the suffering he experiences, is bestowed on him by his fellows. Every human being experiences this truth at the very beginning of his or her existence, namely in the smallest cell of society: in the family. A happy childhood forms the basis for all further mental and emotional growth and well-being – a truth confirmed by actual experience since human existence several million years earlier and by scientific insights presented a century ago by Sigmund Freud. But even a happy childhood does not guarantee a life free of conflicts. After learning from his parents, the most important mental and physical survival skills, the adolescent must separate from the family by the end of his second decade at the latest and mature into an independent individual. This emancipation from one of the closest relationships of dependency represents a first major conflict but it is inevitable and pre-programmed in the genes. The first of three relationships of dependency should and must be resolved.

During this transition, a second dependency comes into force. Now society is asserting itself over the individual. From now on, individuals must prove themselves within the group—at work, at university, etc.—and within the larger community of the state. Here the individual enjoys only a few rights, while he must bow to a great many duties. If he has just freed himself – usually not without conflict and sometimes even suffering – from the dependency that was total during the first years of life, he must now learn to accept that society creates dependencies of the most diverse kinds. Unless disintegrating in civil wars and end in chaos, no society exists without lots of laws, which the individual must strictly obey. Thus, every person inevitably moves from an original, biologically predetermined dependency to another dependency, *which each society creates in its own way*, namely through man-made customs, laws, norms, rules of conduct, etc. The unwritten laws of custom can demand just as much subjugation from him as the written laws of a constitution.

The rearing and education of the individual in a family appears to be quite similar since the beginning of history, but the second circle of dependency reveals the most astonishing differences, because each community shapes its members in its own way. Early on, people looked over the fence and were amazed to discover that their fellow human beings on the other side of the border obeyed different laws and followed different ideals. The ancient military state of Sparta, where ninety percent of the population had to work as slaves to feed themselves and the upper ten percent of their masters, had prescribed completely different laws than Athens, which largely imported its food from overseas and paid for it with luxury goods. Athens also could not do without slaves, but in far smaller numbers and they were treated better.

These fundamental differences did not go unnoticed. In *The Republic* none other than Plato pondered what the order of a perfect community should look like if it were to serve as a model for lasting justice. Instead of being corrupted by the selfishness of individuals or the self-interest of groups, reason alone should determine impartial guidelines. Plato had the history of ancient Greece in mind, with its constant revolts. The monarchy was followed by an aristocratic order, which in turn could transition into the rule of the people, into democracy. However, it was also possible to descend into the rule of the worst – into ochlocracy. With his writing about the state, Plato wanted to put an end to these constant up-and-downs, these unending political upheavals that regularly degenerated into bloody civil wars. Apart from similar theoretical efforts at about the same time during the "Warring States" in China, this was one of the first attempts to theoretically establish the order of an ideal state through reason.[3]

The strangers from across the border

The two dependencies I just described – the biological one within the family and the subsequent one within a group, a nation or a state – never formed a closed horizon. There is a third circle of dependency, which could easily turn into a great danger and challenge even for the first humans. Any small hordes of hunter-gatherers might encounter other hordes on their way. That could become a harrowing and perilous experience as those strangers often spoke a different or even incomprehensible language, they could have a different way of interacting with each other or obey rules that were in stark contrast to those of their own group.

Such an experience must have been deeply traumatic, *as it made mutual behavior unpredictable*. A lucky coincidence could bring about peace and agreement, perhaps even a merger into a larger group. However, an unfortunate coincidence – mere fear of those strangers – could just as easily lead to drawing weapons and treating the other as prey. The fact that cannibalism was once widespread throughout the entire world suggests that fellow humans were quite often considered a different kind of prey. Thus, from the very beginning of history, humans were confronted with a state of lawlessness when encountering strangers, that is, with an anarchy for which, by definition, no rules apply.

Anarchy and lawlessness are still the salient feature of the third circle of dependence, *as it now exists between independent states*. At no time in history has there ever been a binding world order that brought this third area of dependence under rules and laws. The mere idea of a world government remains a vision that most people reject as utopian. Inevitably, this has led to the fact that the clash of great powers usually proceeds in the same manner as just described for hunters and gatherers. Under favorable circumstances, they agree on mutual tolerance and submit to the rules of the most powerful state in the trade of goods and other relations, but this submission is only temporary. Under unfavorable circumstances, wars can break out at any time, which often ended in the destruction and even the extermination of opponents. Thus, the third circle of dependence in interstate relations remains a festering wound to this day.[4]

People become aware of this danger whenever an Alpha State that has previously been dominant in military and economic terms begins to lose its power. Ray Dalio sees his own country, the United States, going through a third phase after its rise and peak, namely decline, which in turn is divided into two stages, five and six. Stage five characterizes the current state of the US. Dalio describes it as follows.

The US is in a phase of stage 5, when there are very bad financial conditions and intense conflict … while ... it still has other major strengths (...

technology and the military), which are, however, also declining in relative terms. Classically, this phase occurs after periods of large spending and debt excesses and the widening of wealth and political disparities, and before revolutions and civil wars occur ... A classic sign of stage 5 ... is that the government has high deficits that create more debt to sell than buyers other than the government's central bank are willing to buy ... /Then/ government debt and deficits rise, and central banks usually print more money ... These countries must /also/ increasingly compete with cheaper countries that are at an earlier stage of development ... I refer to countries in this phase as "clearly declining countries."

At around the same time as the American top investor Ray Dalio, the German political scientist Ulrich Menzel comes to a similar conclusion. *From the perspective of hegemony theory, we find ourselves ... in the critical phase of hegemonic transition, in which the old leading power (the US) is less and less willing and able to play its order-establishing leadership role, and the potential new leading power (China) is not yet willing to do so because it still lacks the necessary foundation. Therefore, the anarchy between states is returning during the transition phase ... The US faces the dilemma of a loss of position or status. As long as it had a strong position in terms of high international /economic/ competitiveness, it not only pursued a liberal economic policy for itself but also ensured that the liberal world order was restored, as it had existed until the First World War. This provided ... them with the status of the leading* power.

However, this liberal economic policy has eroded the US's industrial base and enabled cut-throat competition from Asian and European countries.[5] As free riders of the international order provided and guaranteed by US military power, they have been able to devote all their energy to strengthening their economy without having to pay for that order.[6] For the United States, this results in a hopeless dilemma. *If the US now reacts with protectionism to maintain its position as an economic power, and /on top of that/ with isolationism to reduce the costs of its international commitments, then it will lose its status as a leading power*.

The decline is evident in the figures. *In terms of global military spending, the US /now/ accounts for only 38 percent, while China, as the second largest military power, already accounts for 14 percent. The times when the US accounted for half or even more of global military spending, the best indicator of hegemony, are irrevocably over ... The latest estimates assume that China will have overtaken the USA in economic output around 2028* (Menzel 2023, 2024).

We see that a leading power temporarily transforms the anarchy that fundamentally prevails between sovereign states into a new world order. However, leading powers are bound to gradually lose strength — the seeds

of which are already sown in their rise (see p. 201: *Global reserve currency*) – and anarchy then gains ground again because none of the rising nations has the strength necessary to establish a new global order. So the cycle of rise and fall will continue in the old manner – as it has for five hundred years. This is precisely the assumption that Dalio makes. Usually, a war between the rising power and the declining power decides who is strong enough to give the world a new order. The next war – because the United States will certainly not cede its supremacy to China peacefully – will then be the Third World War, not only incredibly more terrible than the Second, which devastated Europe for thirty years between 1914 and 1945, but also, according to Albert Einstein's fears, probably the last war ever. The threat of anarchy in the third circle of dependency, the race between nations, has almost always been resolved by war until now. It lies at the root of today's crisis.

But why is this crisis different from all previous ones? Why can the rise and fall of great nations no longer take place in the manner described by Dalio as a mere passing of the baton? The explanation for this is quite simple. *It is based on the rapid growth of knowledge and skills since the beginning of the Industrial Revolution*. This growth has now turned global and explosive. To quote Herfried Münkler, our increasingly smaller world has undergone a "shrinking of space and time." Modern technology has brought all nations so close together that true isolation is no longer possible. Anarchy therefore takes on an entirely new meaning. Looking back, the anarchy that prevailed among the roaming hordes of hunters and gatherers seems harmless when compared to its effects on relations between the US, Russia, China, and Europe. At a time when one superpower can only be defeated by another by using nuclear weapons, the consequences are obvious. The United States will certainly not accept without the greatest resistance that China imposes a new order on the world and that the existing Pax Americana gives way to a new Pax Sinica.

But even if we assume the unlikely scenario that the power shift between the superpowers will take place without a world war, the question remains whether anarchy will then be overcome for all time or whether human history will continue as Dalio or Menzel tacitly assume—namely, without a permanent order ever emerging in the third sphere of intergovernmental dependence as it is a matter of course within every state community?

I believe that, in view of weapons whose use could destroy all higher life on the planet forever, this question should concern us more than any other – and it will concern us in this book. However, it can only be answered if we also ask about the factor that has repeatedly shaken the power

structures throughout history, leading to a chain of wars that continues unbroken to this day.

The force that generates the most dangerous shift

> Innovation and inventiveness are clearly the most powerful determinants of a country's conditions. *Ray Dalio*

Up to this point, we have considered the individual as a zoon politikon in his three relationships of dependency: in the family, in the state and in the interstate structure. Even if he can realize his ambitions, perhaps even his luck, on the first two levels, the third level can destroy all ambitions and luck in one fell swoop – history teaches this in thousands of incidents. The stranger, who lives by a different set of rules and is just as willing to defend them as we are ours, then becomes an implacable enemy. To this day, the unpredictable threat from outside has never been eliminated, because anarchy between states has at best been temporarily mitigated by treaties. But with the decline of the United States, we are once again living in a time of increasingly anarchic transition. On a globe that has become small and narrow, mistrust and hostility are being further fueled by left-wing and right-wing populists with incitement and hatred. Currently, this is happening primarily through Putin's totalitarian Russia,[7] North Korea, and Iran, but to varying degrees, populists and nationalism are stirring everywhere around the globe.

Viewed in such a perspective, the individual person appears as a helpless sufferer and potential victim. He is the one who remains constantly exposed to such attacks from outside, even if he is lucky enough to live in a state with exemplary institutions. But this perspective does not tell the whole truth. We have undertaken a synchronic analysis of the three relationships of dependency, but we have ignored the diachronic level. This is a serious omission, as the diachronic level shows the individual in a completely different role, *namely as the actual cause of all development and the resulting imbalances*. Our knowledge of nature and our technical skills never arise collectively, they invariably do so in the minds of single individuals. "Development" is driven by individual inventors, tinkerers and engineers. It is their inventions that often radically transform the collective lot. Inventions can mean the greatest blessing or the greatest conceivable disaster.

However, the greatest and first tidal shift in human history is not based on "invention," i.e., a conscious act of humans, but on a transformation of which they themselves were the unconscious object, namely the development of language, which is the actual characteristic that gives them a

position of superiority over all other beings. However, we know virtually nothing about the course of this first prehistoric great shift. We can only talk in abstract terms about the enormous advantages it brought to the "naked ape," who only then became "Homo sapiens," through the multiplication of knowledge and skills.

It was only in the three subsequent tidal shifts that humans took their destiny into their own hands, with agriculture undoubtedly being the greatest invention before the Industrial Revolution. It put an end to the lives of people as hunters and gatherers because from then on they produced their own food through their own labor instead of just harvesting it through hunting and gathering. This world-historical transition is exemplary for both the good and the harm that can come from technical inventions. The obvious good lay in the fact that, with the help of agriculture, humans overcame a crisis that had already passed its peak with the extermination of large prey animals. The further proliferation of the human species was now severely limited. However, this was overcome in spectacular fashion with the invention of agriculture, as it became possible to produce many times more food in a historically very short time. But the calamity that resulted from this first break with tradition manifested itself just as quickly. Equality of people - the prevailing rule among hunters and gatherers – came, as we shall see, to a definite end in all *mass societies*. Up to ninety percent of the rural population were forced into an often slave-like existence to feed and serve a small, privileged class at the top. This was a "rentier economy" based on unearned income, where the ruled were forced by the rulers, with the threat or actual use of violence, to provide their dues and services.[8] Only a few and very small communities were able to escape this drudgery in the so-called "garden cultures". Thus, an invention that was beneficial on the one hand, as it allowed for an extraordinary increase in population and laid the foundation for all higher cultural development, became a curse for the overwhelming majority for last ten thousand years. Rent-based economies, in which a small class directs the wealth of an entire country into the hands of the privileged few, have survived to this day. Russia's oligarchic system controlled by Putin is one prominent example.[9]

After the transition to a sedentary lifestyle and before the third turning point - the Industrial Revolution towards the end of the 18th century - there were lots of inventions with less explosive but nevertheless far-reaching consequences. For example, the invention of writing made permanent rule in mass societies possible in the first place, because the limited human memory could be infinitely expanded through archives, thus *enabling the ruling class to tax the masses*. Another invention — the reflex bow, which allowed up to twenty arrows to be fired per minute at a

distance of up to 150 meters, even on the backs of galloping horses – gave the Mongols a short-lived empire in the thirteenth to the first half of the fourteenth century, which, under the bloodthirsty Genghis Khan, still appeared to the world as the work of the devil, while the Pax Mongolica established after him brought peace to almost half the globe for a time. Two centuries later, it was the perfection and skillful use of firearms that gave little Europe dominion over large parts of the planet for half a millennium. If this corner of the great Eurasian continent is still one of the most materially advanced and intellectually vibrant areas of the globe today, it is because of the extraordinary increase in power that Europe owes to these and other inventions. At around the same time, some five hundred years ago, a financial revolution began in the credit system. It enabled orderly long-distance trade, but at the same time set in motion the disastrous race between nations. Without such foundations for its material power, little Europe would hardly have achieved its intellectual influence, which continues to this day. If we have to admit that hunters and gatherers could never have produced those marvels of great architecture, poetry, music, and science, which could only arise on the material basis of agriculture, then we must also admit that Europe's great thinkers would probably never have existed if it had not been for its cannons, its galleons, and its successful financial system, which gave it power over the globe for half a millennium.[10] Material development and intellectual advancement are closely linked.

However, this interconnection would only become apparent during the course of the third major historical turning point. It took a completely different invention, namely the Industrial Revolution based on the extensive use of fossil fuels, to put an end to this ten-thousand-year epoch of great cultures and even greater exploitation. The new society that emerged from this is based on “profit” that is on earnings generated by the people through their own efforts. In representative democracy, power was distributed within mass societies for the first time in history. Once again, it is a series of inventions set in motion by individuals that pushed collective development in a completely different direction.

The fate of individuals and nations is therefore not only determined by the potential anarchy of the third circle of dependency, but also by the inventiveness of individuals, which is another fundamental factor that can change the power structure within and between states in unpredictable ways at any time.

The value and danger of human inventions

> If we lost our neophilia, we would stagnate. If we lost our neophobia, we would rush headlong into disaster. *Desmond Morris*

> The Dutch invented capitalism as we know it. This was great for the Dutch and great for the world, but like most great inventions, it brought with it some potentially deadly consequences. *Ray Dalio*

In this respect, there is a clear difference between the second and third circles of dependency. No state, no society will tolerate inventions that could harm it. It judges everything new in terms of its value for its own citizens and the good of the state. In this sense, ancient China resisted innovations that replaced human labor with machines for two millennia. This was a sensible policy, as the country had always been extremely populous. People had to find work if they were to be reasonably satisfied with their lot and the government. Replacing people with machines only makes sense when labor is scarce and must be paid accordingly.

An epochal invention of the Chinese was the world's largest fleet, which set out under Zheng He at the height of the Ming Dynasty in the early 15th century, i.e. three quarters of a century before Europe's maritime explorations and conquests in Africa. The ships were superior in every respect, both quantitatively and qualitatively, to those of the Portuguese, who only appeared on the scene 60 years later. If Vasco da Gama had come across Zheng He, his galleons would not have stood a chance.

But what did the Chinese achieve with this expedition? Nothing - no conquest, no occupation of foreign countries. They only demanded that their rulers kowtow to the Chinese emperor because, according to Chinese belief, he was the Son of Heaven and ruled over all countries and their rulers. The expedition was therefore enormously costly, but the return was minimal. The largest fleet in the world at that time was therefore scrapped by imperial decree after 1433. The venture was not only extremely expensive, it had also made one class excessively wealthy. According to the Confucian worldview espoused by the country's philosophically educated literary governors, merchants and manufacturers ranked below the peasant class. Their undue enrichment disrupted the morally prescribed class order. How could anyone have guessed that only a few decades would pass before conquest-hungry and capable European powers would advance to their country, enemies that could have been safely repelled with a powerful fleet of their own? Since the beginning of Chinese history, all threats had come exclusively from horsemen from the steppes in the west and north. Even at that time, people only expected the usual danger from the steppes. China reinforced and raised the Great Wall, while destroying

its own fleet—by far the strongest in the world at the time—on the highest orders.

Interstate anarchy brings forth the most ruinous inventions

The decision to scrap what was then the strongest fleet was logical, and it made sense from the perspective of the second circle of dependency. Neglecting machines that would have deprived people of their jobs also seemed right from a domestic perspective, because a state should only invest in inventions that benefit its own citizens. No one at the time could reasonably have foreseen a danger that had never existed in the previous two thousand years. And yet it is undeniable that Europe's expansion into the Far East and China's two hundred years of humiliation were caused by a danger that came from where the Chinese least expected it, namely from the sea.

The unpredictability of the third circle of dependency, that is, the threat from outside, constitutes a self-accelerating process. Every invention that brings peoples into closer contact with each other gives rise to new inventions to deal with its consequences, thereby creating even greater unpredictability – and so forth. The Mongol horsemen had conquered half the globe by land, while the Portuguese and Spanish galleons conquered the whole globe by sea. By the fifteenth century at the latest, there were no longer any secure borders. *No state could protect itself permanently from other states – unless it increased its investments in the inventions of death, so as to counter the threat of external violence with its own violence*. Militarization of all states in the world was an inevitable consequence.

This was not always the case. Island nations, as well as those nations whose borders were sufficiently protected by seas and mountains, kept their military expenditures to a minimum or had no military force at all. Even in China, which suffered repeatedly from the incursions of barbarian hordes on horseback, the military enjoyed little prestige. The prevailing view was that human inventiveness should be limited to positive innovations that promote the prosperity of one's country.

This focus on positive inventions no longer exists; inventions related to death enjoy at least the same status — and Europe undoubtedly played a special role in this change. The borders between its many kingdoms and principalities were never secure — not in the days of ancient Greece and the Roman Empire, and certainly not since its recent rise in the second millennium AD. Every small state had to reckon with attacks from its neighbors. This inevitably meant that inventions related to death, i.e.,

weapon technology, had to be given at least as much importance as those that promoted the prosperity of the community.

Globalization, as a process that increasingly brings all states into contact with each other, is thus characterized by increasing mutual unpredictability. The anarchy between powers inevitably results in the inventions of death, with which each of them tries to protect themselves as best they can from the others.[11] Globalization can serve life if an alpha state temporarily has the power to create binding rules, but every world empire to date has collapsed due to overextension and internal decay, thereby bringing about anarchy once again, the elimination of which was its actual raison d'être. This set in motion a vicious circle that gives the third circle of dependency an ever-greater influence on human existence, even threatening its very existence for the first time in history.

The *holodox* analysis of material inventions

> The new revolution transcends the reductive and mechanistic models of old to place holism and emergence at the frontiers of contemporary theory. *Paul Raskin*
>
> For it is the relationship of the parts to each other, their interaction, that drives a certain dynamic and a development /equilibrium or its opposite/. *Maja Göpel*

Innovations have the potential to radically change people's lives for better or for worse. In the Middle Kingdom, people were just as inventive as in Europe, but they deliberately suppressed groundbreaking inventions throughout their history, such as paper money, gunpowder, labor-saving machines, the world's strongest fleet, and mass production of steel toward the end of the 11th century[12] — a full seven centuries before the English Industrial Revolution. The ruling class of literate governors trained in Confucian morality always opposed technical innovations as soon as they saw them as a threat to the existing social order.[13] Until the end of the 19th century, China accepted or absorbed virtually no outside influences. Apart from two or three incursions by barbarian steppe peoples, the most powerful country on earth for two thousand years knew and recognized only its own civilization – at least until the sixteenth century and its passing encounter with European missionaries. Even the episodes of foreign domination left little impression on its people and reigning elite, because the "barbarians" quickly assimilated, adopting Chinese culture. Like all other great cultures, the country lived *from within, from its own traditions*. It was a new and extremely painful experience for the Chinese that, after their humiliation in the 19th and the subsequent 20th century, they found themselves compelled for the first time in their history to *learn from the outside world.* At this point, the race between nations to spread across the

globe had already begun. To survive, China had to absorb all the scientific and technical developments that the strongest country on the planet imposed on the others. Initially, this was the British Empire, later followed by the United States.

Meanwhile, there is no state on earth that does not constantly have to adjust its actions in accordance or in defiance of those of other nations. Either directly or in an indirect way they dictate its behavior in security, trade and financial policy - to name only the most important fields. The ominous paradox of today's situation is that the interdependence between states is growing ever greater – but so is the danger to which they are exposed on a globe that still has no institutionalized supranational regulatory authority.

This danger is by no means averted when states reduce or even completely eliminate interdependence in certain areas. Russia and China, for example, are trying to gradually break away from the dominance of the dollar. In addition, both states are directing the flow of external data from the Internet in order to isolate their own populations from outside influences. And most importantly, they are unhesitatingly adopting all innovations from outside that enhance their defense capabilities on the one hand and the standard of living of their own citizens on the other. In this sense, they have repeatedly been accused of appropriating the intellectual property of competing nations. But this external harmonization of living conditions around the globe is countered by the deliberate creation of mental divisions: propaganda and indoctrination. Authoritarian states equip their citizens with a specific app in their minds: their respective ideology, which some of them impose by all means of coercion. Here, divisions are artificially created to further fuel the race (see p. 137: *Nature versus Culture*). Because of this programming of minds, it also seems appropriate to states to promote the inventions of death with all means, because from the perspective of imposed narratives (ideologies), the race between nations is by no means taking place between equals, but between declared enemies – often mortal enemies.

None of the rivals can prevent this from turning into a race to the death. For none of them can defend themselves against other states heating up the climate, polluting the oceans, poisoning the air, and consuming the remaining resources at an ever-faster pace. And they are powerless in the face of the truly deadly factor—all the fundamentally unpredictable innovations that are shaking up the existing balance. In a world of inter-state anarchy, none of them can prevent even more diabolical weapons from being invented, developed, and used in a crisis somewhere on earth, in North Korea or Iran, for example. We already live in a world with supersonic intercontinental missiles that can reach any point on Earth in such a

short time that the president of the attacked country does not even have time to discuss a counterstrike in a cabinet meeting.

The threat posed by other states on a globe that has no common order and must therefore live with the specter of anarchy forces us to replace the national analysis of politics and economics with another that I call "holodox," because it keeps its eye on the whole (holon), especially the third circle of interdependence, which determines human behavior at every point on earth in an increasingly intense and comprehensive manner.

The direction for a holodox analysis in this sense has already been set by Ray Dalio as well as by Herfried Münkler. In those two books, considering the whole in relation to its parts takes on a significance that it has never had before. For in an anarchic world of permanently competing states, the greatest threat comes from outside, and inventions — not only those of death, but also all those that strengthen one state, at least temporarily, at the expense of others — take on ever greater importance. We have already seen and will continue to see that inventions that give humans increased power over nature, and their fellow humans are the real driving force of history. They can significantly expand the degrees of freedom of human existence - the options for political and social order - but they can also significantly restrict them. Today, it is the sciences that are opening a potentially infinite field of constant innovation through technology. Since the end of the 18th century, competition between nations has increasingly focused on strengthening private and state research. The sciences have thus become a power that serves the good of humanity no less than the potential destruction of all life.

The role of science

In this context, a statement by the outstanding physicist Ludwig Boltzmann (1990) deserves special attention. He justified the truth of the scientific world view with its practical success. "*Not logic, not philosophy, not metaphysics decides in the last instance whether something is true or false, but action. Therefore, I do not consider the achievements of technology to be trivial waste products of science; I consider them to be logical proofs. If we had not achieved these practical achievements, we would not know how to reason. Only conclusions that have practical success are correct*" (1990).[14]

If Boltzmann is right, then today's world faces an enormous problem. The worldviews of the Indian Brahmins and the Chinese literati governors, not to mention the Catholic Church, would, according to this testimony, have an unparalleled success to show for themselves, because all three

look back on a history of more than two thousand years. By contrast, modern science, after barely three hundred years, is threatening to fail because of itself and its own creature, technology. The dual threat posed by the widespread destruction of the environment on the one hand and the insane race to develop apocalyptic weapons on the other is well known to everyone. There is no doubt that we owe both to scientific and technological "progress" . Therefore, it *seems appropriate and even necessary to reflect on* knowledge itself. But that is the task of philosophy and logic.

Until just a few decades ago, we had become accustomed to focusing solely on the enormous positive effects of progress. And there is no denying that since the European Enlightenment, experimentation and field research have expanded the human horizon infinitely. The independent questioning that this has entailed has freed many people from what Kant lamented as "self-imposed immaturity." Since then, there has been justified mistrust of all kinds of dogmatic thinking. After all, some of the greatest achievements of science have been won in the fight against dogma. Every opinion, even that of the researcher himself, needs empirical verification. Self-critical modesty seems to be what characterizes the DNA of scientists.

But today we know that modesty and criticism are not enough to protect people from self-inflicted disaster. The natural sciences deal with nature, whose laws they explore. But human morality and human sensibility for beauty are foreign to nature. The sciences of nature are, like nature itself, trans-moral and trans-aesthetic. All its laws exist independently of whether we consider them good or bad, beautiful or ugly. The sciences of man and nature, i.e., all the insights and technical devices they have given us over the past three centuries, have therefore never been able to provide us with anything more than *the instrumental means to moral and esthetic ends*. Whether we use these means correctly or incorrectly depends on our will and desires; but this eludes scientific calculation, because it is part of our freedom to transform the world into a paradise or, on the contrary, into a hell. Human will represents a moral dimension—and this exists independently of our knowledge of nature and the possibilities for its technical mastery.

Furthermore, however, the sciences were in danger from the outset of becoming a source of dogma themselves. They gave humanity a new concept of truth and at the same time a distorted worldview (see p. 172: *Distorted worldview – the religion of science*).

Inner-directed and outward-directed morality

I have not made it easy for the reader. Right at the beginning of this book, I mentioned three tidal shifts and stated that we are now facing the fourth and presumably final one, which is forcing a whole new world order upon us because the anarchy in the third circle of dependency — the race between nations — is threatening the world with self-destruction for the first time. This is the real subject of this book, but we cannot deal with it seriously without keeping an eye on the causes and consequences of such turning points.

I have highlighted the unpredictability of inventions and their radical impact on existing human societies as the triggering factor for each of the three major crises following the acquisition of language. In the age of triumphant science, the pace of technical innovation has increased to prestissimo. Seen in this light, we are living in an age of permanent revolution.

However, this introduction would be incomplete without mentioning a completely different point of view, namely the moral dimension, which exists independently of all knowledge that humans acquire about nature. Without this dimension, which is inherent in humans, human thought and action would be incomprehensible, for it is only from this dimension that they derive their meaning. For it is always moral impulses that ideologically justify - seemingly legitimize - and ultimately accelerate the race between nations. Every nation, whether China or the US, and even violent rulers such as Vladimir Putin, Kim Jong-un, Ali Khamenei, or Adolf Hitler, insists on serving the good of humanity. Likewise, it is moral reasons that motivate a leading power to replace anarchy with order (just as the state order that every nation imposes on itself is based on moral motives). And last but not least, all inventions and the modern research that aims to achieve them presuppose moral motives, if only because their financing is always justified by benefits for humanity and society. It is always about the welfare, advancement, and progress of individuals and humanity. This has been the case in all previous crises, large and small, and it will remain so in the final crisis—the transition from life-threatening inter-state anarchy to an order that encompasses and unites humanity as a whole.

But why does this last step seem so extraordinarily difficult? Why do most people refuse to even think about it and are more willing to drift into nothingness without thinking? I believe that this intuitive resistance also has moral causes, namely the contrast between internal and external morality that has existed since the beginning of human history.[15]

This contrast has determined the actions of our earliest ancestors. Internal morality gives us instructions on how to behave toward our own relatives, friends, and fellow citizens. Helpfulness, loyalty, and trust pre–

vail—even to the point of sacrificing one's own life for one's family, one's community, or one's state (as is currently the case in Ukraine). External morality, on the other hand, determines our actions toward strangers, who can always be enemies. In the best case, indifference prevails here; in the worst case, external morality demands the extermination of all those who believe differently, look different, or think differently (as Vladimir Putin is currently demanding of Russians with high cash rewards, since all Ukrainians are fascists in his eyes).

Within states, the rules of internal morality generally apply, but between states, a leading power can temporarily extend these rules to international relations. Then peace reigns and there is a willingness to treat strangers as one's own compatriots. But to this day, there is no guarantee of this peace and willingness. As soon as the leading state loses its assertiveness or credibility, anarchy can break out again at any time and external morality can destroy all humanity in mutual dealings.

Is there a universal conscience?

At this point, human will and desire come to the fore as central dimensions, because they ultimately determine how humans use their knowledge and skills — whether for their own material well-being and that of their fellow human beings, or to search for instruments of death with which to gain greater security against their enemies. If only these two existed — that is, humane interaction with our own kind in internal morality as against any degree of inhumanity in external morality, i.e., in our treatment of strangers, outsiders, those who think differently, those of other faiths, and those who look different — then we could not expect the current race between nations, which is increasingly becoming a race to the death, to ever come to an end. Mutual self-destruction would then be written into the genes of humanity. The enemy must be destroyed—and those who are different, that is those just listed, are regarded as enemies from the outset.

I consider the contrast between internal and external morality to be very important, because it has demonstrably accompanied humanity throughout its entire history. But I do not consider it exhaustive. Alongside this dichotomy, there has always been an awareness that others are also human beings, even if they have a different language and a different faith. In other words, there have always been people who did not consider the god of their tribe and people and the ideology of their own community to be the only ones possible. In advanced civilizations, this awareness of a truth common to all human beings has found its clearest expression in what is known as mysticism. Aldous Huxley rightly saw this as the only

universal religion of mankind. Mysticism is the belief in an ultimate truth that is common to all human beings and yet cannot be defined by anyone, i.e., it cannot be fixed and constricted in human terms. There have been mystical movements in Christianity as well as in Islam, in China as well as in Europe and in the New World. The conscience of internal morality, which obliges us to treat our fellow human beings humanely, and the lack of conscience of external morality, which people allow themselves to display toward strangers, mostly due to ideological programming, have therefore never exhaustively described the human conscience. In addition to internal and external morality, and transcending both, there has always been a deeper insight and attitude that I call the "universal conscience."

Why universal conscience could not prevent war

When I take the liberty of looking back at the past in Parts I to III of this book, namely at the two eras before and after the second tidal shift of sedentariness until the third shift of the Industrial Revolution, I do so solely in an effort to shed *a brighter light on the future, namely on the impending fourth great shift*. We will see that we encounter the universal conscience that must show us the way to the future already in the gray past, namely among hunters and gatherers, in what is known as totemism. Even distant history proves that the universal conscience is not merely a hypothetical concept or even a mere wishful thinking, such as the Greek god Zeus, who was invented to guarantee the order of the world by a higher authority. It is an empirical concept, whose validity is therefore based exclusively on the fact that *it describes historical reality correctly in two respects*. Firstly, it shows us that humans follow innate instincts when they seek the company of other humans wanting to live in peace with them. On the other hand, it also explains why these same innate instincts have always led humans throughout history to spread the exact opposite, namely hatred, war, and destruction.

There is no doubt that it is innate in humans – as in all other biological species – that the two sexes seek each other for reproduction and that the mother ensures the survival of the species by caring for her offspring. We speak of maternal love, which seems to be glorified by all religions. However, it is not only sexual love and maternal love that are innate, but also the need of humans as zoon politikon to communicate with their fellows . Only through *cultural knowledge* that connects them in the form of a common language and common rules and commandments (called "intersubjective reality" by Yuval Noah Harari) do humans become predictable to one another (see p. 155: *Nature versus Culture*). Such cultural knowledge

manifests itself in universal conscience since the emergence of man. It makes use of a particular language and all the rules and prohibitions followed by a community that function as indispensable prerequisites for social order and thus for peace in a group, a tribe, or a nation. Here we are dealing with evidence that has been attested throughout the entire history of Homo sapiens.

However, as a binding tool cultural knowledge only exists on this abstract level. The concrete contents of this cultural knowledge can vary greatly from one community to another (just think of the diversity of languages spoken around the globe). The intersection of all rules and prohibitions merely results in the lowest common denominator of universal conscience. This hardly takes us beyond the elementary statement that every human community strictly prohibits the arbitrary killing or harming of its members.[16]

This is the one obvious expression of universal conscience. At the same time, we understand why hatred and war – the very opposite of peaceful coexistence guaranteed by mutual predictability – are likewise empirically attested throughout human history. Since the earliest days, humans have lived geographically separated in groups, each creating *their own cultural knowledge* (their own intersubjective reality). They communicate in different languages and follow different rules and commandments. However, as soon as cultural knowledge manifests itself in different forms, it no longer serves mutual predictability but achieves the exact opposite of its original purpose: *It makes such groups unpredictable to each other* and thus gives rise to the fatal contradiction that history has witnessed for thousands of years: internal morality opposed to an external one. While the innate universal conscience unites humanity, *it is repeatedly torn apart by the concrete differences in their respective cultural knowledge.*[17]

Parts II and III look back on the ancient coexistence of, on the one hand, the universal conscience that unites human beings and, on the other hand, the ever-virulent opposition between internal and external morality — an opposition that began before the first crisis among hunters and gatherers and has intensified so much in our century that it has become on the other hand, there is the ever-virulent opposition between internal and external morality — an opposition that began before the first crisis among hunter-gatherers and has intensified so much in our century that, for the first time in the long history of our species, our own self-destruction is no longer mere fantasy.

Material conditions expand or restrict human freedom

This review opens a further perspective that is also proving to be extremely significant for the future. We will see that the respective *degrees of freedom* and thus the possibilities for the development of human potential in each epoch are both expanded and restricted by their technical prerequisites – and always in dramatic ways. The longest epoch in human history, that of hunter-gatherers, made a higher culture impossible. When people are forced to hunt and migrate in search of prey, carrying all their possessions on their backs, everything we describe with the word "culture" — i.e., fixed property in the form of architecture, furniture, gardening, and landscaping — is unthinkable. At such a stage, culture is largely limited to the development of language. The extraordinary wealth of cultural self-expression that only sedentariness makes possible for humans could not exist at this stage.

On the other hand, our early ancestors enjoyed a degree of freedom that later existed only in exceptional cases. In nomadic groups of at most three to four dozen people, everyone was dependent on others for their own survival. Under such conditions, there could be no difference between free and unfree people. Seen in this light, this first and longest epoch of human existence was perhaps also one of the happiest.

After the second great turning point, i.e., the transition to a settled lifestyle and ownership, this freedom came to an end for more than ten thousand years. All mass societies around the world were ruled and exploited by tiny minorities who often treated them like slaves. Ray Dalio expresses this fact almost correctly when he says that they were ruled by individual families. We will see that it was the new technical conditions—the invention of agriculture—that enabled a unique cultural boom throughout the world, but at the same time destroyed the fundamental freedom of human beings—their self-determination—for more than ten thousand years.

The third tidal shift, the Industrial Revolution, turned the tide once again. Whereas power in mass societies had been the monopoly of a very small elite, after an initial phase that briefly exacerbated the hardship of the working majority, there was a historically unique redistribution or, as I call it, a "privatization of power." Genuine democracies emerged in the twentieth century at the height of this development. The reason for this radical departure from a pattern that had brought more than ten thousand years of bondage lies in a radical change in the technical foundations of life. Ten thousand peasants chained to the land could easily be ruled by a mercenary army of barely more than a hundred men. Industrialization changed this fundamentally. Factory workers were mobile and could paralyze the entire state through strikes. At that time, the state was only strong

if it relinquished its previous monopoly on power and made the entire population its allies. This "privatization of power" gave rise to private capitalism and democracy.

However, that happened for a relatively short time. Once again, it was inventions that had a profound impact on social order. The automation of initially primitive and eventually complex work processes and their regulation with the help of information technology destroyed simple jobs on a massive scale. On the other hand, it created jobs that were extremely complex and therefore highly paid. These new technologies, which were only invented in the second half of the twentieth century, are causing increasing social division—on the one hand, a mass of have-nots whose work is either outsourced or extremely poorly paid, and on the other, an elite of highly paid professionals. The preceding privatization of power is gradually being dismantled, and democracy is in danger because a growing section of society is no longer indispensable to the state. Together with a rapid rise in the price of raw materials, which had previously been very cheap, this creates an explosive mixture that is further fueling the race between nations, which had already been accelerated by the fossil shift.

The end of a millennium-long trend: united humanity

Since the dawn of humanity, a process has been underway that has seen small units grow into larger ones. As humanity gained control over nature, it was able to reproduce steadily, resulting in ever larger tribes, ethnic groups, and nations that with increasing frequency got into contact with each other. At the end of this development, the third circle of dependency with its fundamental anarchy, became a source of existential threats. The result is wars, which in the worst case lead to the destruction of the defeated enemy and in the best case to the merging of the defeated into a larger entity.

This process of continuous growth into ever larger units is the outlook with which this book illuminates the future, because despite all the loudly proclaimed *cultural* differences (see p. 137: *Nature versus Culture*), humanity has already grown together into a single entity through its current *knowledge of nature*—technology and science—which is spread across the entire globe. This nature-related knowledge is increasingly pushing all remaining cultural differences into the background. Five hundred years ago, all major cultures were so different that they transported observers into completely different, unique worlds. Today, however, observers see only familiar things everywhere: highways, gas stations, railroad tracks,

skyscrapers, television towers, etc. Only the ideological apps imposed by the state in dictatorships can be radically different in their programming.

In the long run universal conscience determines the purpose and direction of human behavior. While science is trans-moral and trans-aesthetic, conscience fills precisely this gap. It makes the unification of humanity an imperative, the disregard of which threatens it with self-destruction. For the race between nations inevitably leads to a planetary explosion, a world civil war with consequences that have been described in detail by many military experts. But that means we are at the end of the rise and fall of great powers. It must not be allowed to continue.

Reflecting on the past reveals the future

Looking to the future would be like building on sand if it were not preceded by a careful analysis of the past. A holodox view of history must embed people in their historical environment. This is a holistic view that can be traced back to the 18th century. Baron de Montesquieu aimed to explain human behavior through climatic conditions. According to his view, people in tropical regions would develop different behaviors and ways of thinking than those in the far north, where they must contend with ice and snow.

Some differences imposed by the environment are indeed obvious. In the tropics, people could move about naked, while in northern latitudes, survival necessitated fur clothing. However, this viewpoint remains superficial from the start, as it explains humans through their environment, while on the contrary, *the environment must be explained through humans.* This is illustrated by the example just mentioned: fur clothing is a tool by means of which humans used to transform their environment. They made otherwise uninhabitable regions into their settlements by protecting themselves against the cold. This use of such transforming tools enabled humans, about 60,000 years ago, to spread from Africa, their presumed place of origin, to the far north of Europe.

Regarding man, holodoxy proceeds as it always does, examining the relationship of the whole to its parts and vice versa. *For humans, the whole is not solely composed of the natural environment but also the artificial one they themselves created.* In fact, the artificial, man-made environment was to play an increasingly important role. Arrows, traps, stone tools and clothing soon constitute its most significant parts. If hunter-gatherers had relied solely on their bare hands, they would have been hopelessly inferior to the major predators. Unlike apes, they could not easily climb trees. In the savannah, where prey was plentiful, wild animals would have utterly

outmatched them. Our earliest ancestors only survived thanks to the tools they created - their artificial environment. Seen in this light, labeling the human species as "Sapiens" (wise or at least intelligent) is misleading, as with sapientia alone, they could never have survived in the African savannah. They became the most successful species on the globe because they turned into Homo faber, *creators of instruments of survival*. Therefore, in this work, I will often refer to man as (Homo) Faber.

Faber, who used tools to create an artificial environment, first appeared at least a hundred thousand years ago, but it was not until the Neolithic Revolution twelve thousand years ago that he gave the surrounding nature a completely different appearance with the transition to agriculture. In fact, this epoch could already be described as the first “Anthropocene”. From Mesopotamia and Egypt to the Indus Valley and the Yellow River, and even to the New World of Mayans and Incas, fields – often stretching to the horizon – replaced swamps, forests, or savannas. A rapidly swelling population congregated in cities that entirely buried the original landscape under artificially piled stones.

But what was to change just as much as the external image of the environment man now inhabited was the relationship of the people to each other, i.e. social structure. People in agricultural mass civilizations lived and thought differently from hunter-gatherers that were now pushed to the fringes of the civilized world.[18] The unique environment they artificially constructed – the new “conditions of production”, we could say – shaped a new consciousness.

It's crucial not to confuse this social shaping with deterministic necessity, as if the altered consciousness – this new intellectual and social "superstructure" – were "determined" by environmental conditions, like a physical effect by its respective causes. The very diversity of social orders, even within agrarian civilizations, proves that humans always possessed the freedom to respond to the same conditions in quite diverse ways. The most tangible proof of this freedom is that they could replace existing (production) conditions with entirely different ones, thus creating a new artificial environment. This is what hunters and gatherers did when they became sedentary and produced their own food, thus creating humanity’s second stage of development: agrarian civilization.[19]

With the energy revolution, agrarian civilization itself switched to a new artificial environment which was within a quite short laps of time to become humanity’s third stage of development: fossil civilization. Once again, Faber fundamentally reshaped his existence. This transformation too was brought about by new inventions and tools. By the late 18th century, Faber gained access to a previously largely inaccessible treasure: energy reserves stored as coal, oil, and gas beneath the surface of the earth.

The new "fossil era" turned out to be both a climax and a terrifying disaster. It was a climax because, for the first time in twelve thousand years of agrarian civilization, the cornucopia of energy now available made it possible for most people in the world's advanced industrial nations to live not only in material security but in a historically unprecedented material luxury. Such wealth had never existed anywhere in the past twelve thousand years, except for vanishing minorities.

Yet, this is only one side of the coin. We are all aware of its dark side, for the new fossil epoch simultaneously posed the greatest threat since the beginning of history. For the first time, the extinction of the human species and the transformation of the planet into an uninhabitable place became a realistic possibility. Faber, through his new technical instruments, had created conditions capable of annihilating all life. Since the beginning of the 21st century, this awareness has come to shape human thought – and increasingly, human action. Mankind is now aware of the existential dangers it has imposed on itself.

Our transformed awareness heralds the beginning of the fourth and possibly last stage of human development, the "post-fossil" one. Unlike all previous epochs, we possess knowledge that allows us to avert the dangers we have created. We are not "determined" by the conditions in which we live. It is up to us to change them.

Using a triad of features, I want to describe the four main epochs just mentioned – first, through their respective *conditions of production*, including the immediate consequences they entail; second, through the resulting *social organization*; and third, through their *reflection in* as well as their *guidance by human thought*.

The respective conditions of production for the first three epochs are expressed through their very names: hunter-gatherer, agrarian civilization, fossil age. Immediate characteristics are the killing of living beings in the case of hunters, the cultivation of land in agrarian civilizations, and, in the fossil age, the extraction of coal, oil, and gas along with the inventions of Homo technologicus enabling their use. Only our present time, which I call the "post-fossil epoch," cannot be ranged under such a convenient concept. This is because the future is not an objective fact which we can scientifically derive from our knowledge of the past – *we are free to be its creators*.

Social organization is never 'determined' by conditions of production, although some thinkers, chiefly Karl Marx, propounded this thesis. On the other hand, history proves that it is certainly influenced by them. This holds especially true for the epoch of hunter-gatherers, as well as for the subsequent era of major agrarian civilizations.

As to the reflection on the modes of production in Faber's mind, this topic confronts us with an immensely complex phenomenon. Human thinking has never merely represented or mirrored reality. Instead, through his imagination and anticipatory thought, Faber has actively shaped it. Preferences and desires are, as we have seen, guiding forces of evolution. As shown by Monod and Popper, they are so even in the realm of subhuman life.

But preferences do not belong to the measurable entities of the physical world, that we may calculate and predict like a lunar eclipse. The ultimate goal of the sciences – prediction and the mastery of reality to which it gives rise– encounters insurmountable limits within the human sphere. Preferences and desires lead to inventions that no one had predicted as they change the living conditions to which humans must adapt. Thus, both the inventions and the resulting adaptations are fundamentally unpredictable. Throughout its historical existence, humanity has never been able to read its own future like it were written on a tablet of laws. Hunter-gatherers could not have known that their epoch would in time be followed by that of the great agrarian civilizations. Agriculturalists could not have foreseen the profound changes that would accompany the fossil age. And as to ourselves: we only know what the post-fossil epoch *should not look like*. This we do know perfectly well. Yet, the actual form it will take can only be speculated upon.

However, one constant remains, and it is of central significance. It typically does not play a role in scientific texts, even though its existence is an empirical fact. I already referred to this constant as "universal moral conscience." That this common ground, which connects all people across the four epochs, does indeed exist and that it can become a powerful force, is something that history proves to us time and again – a fact to be further discussed in the following chapters.

Technical note for readers. I have written the text in such a way that readers can choose between three different reading modes. If you are only interested in the main theses, you should stick to the main text. The main theses are significantly expanded upon in the chapters that appear at the end of the book under “Further reading.” References to these are provided in the main text where appropriate. Those who wish to explore the work in depth may also want to include the notes in their reading.

Part I – First Tidal Shift: Homo loquens (From ape to sapiens)

> By the age of two the average child can speak nearly 300 words. By three it has tripled this figure. By four it can manage nearly 1,600 and by five it has achieved 2,100. *Desmond Morris*

The transition from "naked ape" to Homo sapiens was probably the greatest step that evolution has taken in the long history of biological beings. Language enabled humans to gain primacy over all other creatures in the animal kingdom.[20] All higher organisms had long possessed an accurate perception and analysis of external reality for the purposes of survival. The lead cow (matriarch) of a herd of elephants, for example, must have an enormous memory in order to find the often quite distant watering places that enable the herd to survive in times of drought. She must have some idea that, say, this place is located under a sparsely wooded hill in the direction of the midday sun. Although she clearly retains this idea and the route in her mind's eye (otherwise she would not be able to find her way), she is unable to express these images in signs and "inform" the herd at the beginning of the migration. Instead, they must rely blindly on their knowledge, because the lead cow has no language to communicate her inner knowledge to the outside world. Like most animals, elephants have only a rudimentary language. With the help of their trunks, they can warn of danger, emit mating calls, and convey a few other signals visually with the help of their ears and trunks. Although they are capable of storing a wealth of knowledge about their environment and fellow creatures in their brains, they are unable to pass this knowledge on to others.

With the help of language, naked apes have added a further crucial dimension. Not only do they know that there is a pond or a spring four days' march away, but they can also now share this knowledge with their fellows or, if the latter already possess it, evoke it in their minds so that together they can deliberate whether or not it is worthwhile to set out on such a journey. In one fell swoop, language multiplies knowledge and skills by distributing both to any number of people, thereby enabling everyone to make informed decisions. This is its unique value for survival — the survival of Homo who by virtue of a complex language turned sapiens.

Although higher animals, just like humans, dispose of an area of the brain where the reflection of reality conveyed by the senses is stored, which I call the "structure of meaning" (whose potentially limitless elements include inanimate objects as well as living beings, changes in the weather, the seasons, etc.), they only have rudimentary acoustic or optical signs at their disposal *to create a second reflection by contrasting the*

structure of meaning with a self-created and, in this sense, subjective "structure of signs" .

It is precisely this enormous feat that the human brain has accomplished. When the "naked ape" became Sapiens, the brain was faced with a far greater task than simply mapping the surrounding reality within itself — a feat that, as just mentioned, is also accomplished by all higher animals. Language requires and occupies a new additional area of the brain in which the artificial symbolic images of the "structure of meaning" are stored, namely the new, self-created "structure of signs".[21] Between the thousands of elements stored in both structures, there must of course be "links" in both directions, so that a sign, e.g., a word, refers to the meaning it is intended to convey and, conversely, the meaning refers to the corresponding sign. The brain's reference to external reality is thus doubled, because two different cerebral zones now serve as references to external reality.

But that alone is by no means the whole story. The signs of the new sign structure and the corresponding contents of the meaning structure refer on the one hand to objective external reality and on the other hand to inner states of mind: feelings and sensations. When language completely disregards inner states of mind and depicts objective reality without moral or aesthetic value judgments, the various sciences emerge. Conversely, when inner states of mind overlay objective reality with moral and aesthetic purposes, art emerges. In both cases, language allows far more than just the representation of what exists. It additionally becomes a creative instrument for inventing and creating new realities. Science produces new, *man-made* materials and artificial artifacts (airplanes, computers, artificial intelligence, etc.). Art in the true sense of the word addresses feelings, hopes, fears, and visions by conjuring up realities that do not objectively exist like unicorns, winged lions, chariots pulled by horses gliding across the sky — not to mention all those gods of various kinds populating imaginary upper and lower worlds ...

However, we can only speculate about how this first tidal shift in human history, the greatest in the history of our species, came about. We know how animal life unfolded before it and how humans, equipped with language, subsequently began their triumphal march across the world, but we will probably never be able to reconstruct in detail how the transition from speechlessness to language took place. Linguistics can, however, describe in abstract terms the rules and conditions under which the structures of meaning abstracted from reality subsequently manifest themselves in the human brain as sign structures (see Jenner 2019 and 2020).[22]

Homo vagans et faber (hunter-gatherers)

About this earliest and longest part of human history, contemporary research has remarkable negative things to report - as well as equally remarkable positive ones. Let us begin with the alarming aspect of this millennia-spanning history.

It is by now a proven fact that our earliest ancestors were by no means characterized by exceptional peacefulness. The advance of Faber across all continents (with the exception of the two poles), which began around 60,000 years ago from Africa and concluded with the colonization of all of South America about 12,000 years ago, resembled a campaign of annihilation – initially towards other coexisting human species, which existed in at least seven different variations: *Homo neanderthalensis* in western Eurasia; *Homo erectus*, who lived in the eastern parts of Asia for more than two million years; *Homo soloensis* on Java, *Homo floresiensis*, native to the Indonesian island of Flores, a dwarf that did not grow larger than a meter and weighed only 25 kg. In Siberia, yet another human species has been discovered, *Homo denisova*, named after the cave in which it was found. Africa, likely the cradle of humanity, had produced, in addition to Sapiens, the *Homo rudolfensis* and the *Homo ergaster* – and there is no reason to believe that this list will not be expanded over time. The fact remains that Sapiens spread everywhere and eradicated all rivals.

While we have only indirect evidence of this process of displacement, it is assumed that it was violent in nature. This also results from the fact that Faber not only caused other human species to disappear, with whom interbreeding occurred only exceptionally, but that he treated the surrounding animal world just in the same way.

An early extinction of species

We humans of the 21st century lament the rapid pace of species extinction that has taken place since the Industrial Revolution, especially during the 20th century. However, thanks to the tools he created, Faber managed to eradicate native megafauna on three continents in quite a short time.

More than thirty thousand years ago, Australia and New Guinea still had giant marsupials: kangaroos and diprotodonts - counterparts to cattle and rhinoceroses - as well as pouch-bearing leopards, flightless giant birds weighing four hundred pounds, and a variety of other large animals. Since this fauna disappeared only after the arrival of Homo sapiens and climate warming can't be blamed (as similar warming events had occurred before

without comparable consequences), only one conclusion seems convincing: these species did not simply die out but were systematically eradicated by our early ancestors.

This suspicion becomes reinforced by the fact that the same process of mass extinction also occurred in both Americas, but only after Faber succeeded in reaching these continents via the still passable Bering Strait. Twelve thousand years ago, in North America, humans encountered mammoths and mastodons (giant proboscideans), as well as rodents the size of bears; there were elephants, lions, cheetahs, and large herds of camels and horses. The invaders managed to eliminate this diversity within a few thousand years. In Australia, this happened around 30,000 years ago, and in the Americas around 17,000 to 12,000 years ago. Historian Yuval Noah Harari (2011) summarizes the research results in the following concise assessment: "*Even before Sapiens planted the first field, created the first metal tool, or wrote the first text, he had not only wiped out all the other human species around him, but also 90 percent of Australia's large animals, 75 percent of the large mammals in both Americas, and about 50 percent of all the planet's large land mammals*."

Considering that European settlers in North America managed to reduce the number of bison from nearly sixty million at the end of the 18th century to 541 animals by 1889, almost wiping out the species within a few decades, it becomes clear that the difference lies not in human nature but in weaponry. Modern guns significantly reduced the time required for extermination.

Propensity to violence

Until recent historical times, things hardly changed. Up to the present, hunter-gatherers are known for their propensity for violence.[23] Recent research has shown that the Kung people of the Kalahari Desert have a higher homicide rate, proportionally, than US inner cities. Ninety percent of all hunter-gatherer groups studied so far had been involved in wars at some point, and 60 percent of them engaged in warfare at least every two years. Since these societies lack a fixed hierarchical structure, anyone could take justice into their own hands.

It is reasonable to assume that the situation was no different in prehistoric times. Thus, a blemish is cast on Faber's success even in the earliest stage of history. He not only treated animal species mercilessly but was by no means peaceful with his own kind either. To borrow from Max Weber, there existed an "ingroup morality", which usually prohibited the stronger individuals from acting arbitrarily against members of their own

group. However, alongside this humane morality existed a completely different one, an "outgroup morality" that had little or no inhibitions regarding strangers let alone differing human species. The outgroup morality dictated that other groups were competitors for resources and had to be fought - at least in times of need. It also asserted that the group's greatest success, a large and healthy offspring, depended on abundant prey. Both demands directly stemmed from the conditions of that time and both favored warlike behavior.

If we define the Anthropocene as the epoch in which a specific species, humans, began irreversibly altering their environment, we could place its beginning even earlier, namely with hunter-gatherers, and not just with the Neolithic or the Industrial Revolution. Faber's hallmark has always been that he actively intervened in his own environment.

Totemism – the earliest testimony of universal moral conscience

The annihilation of fellow creatures was prompted by the imperative of physical survival. However, in human history, there have been periods where the struggle for survival was not at the forefront, and killing was not done with a clear conscience. Hence it came to be restricted or even forbidden.

Everyone is familiar with the tales and myths from early epochs where, for instance, a bear or kangaroo god was asked for forgiveness because humans had to kill a member of their realm for sustenance. This is unmistakable proof of the fact that man was capable of empathy not only with his own kind but also with other living beings - at the beginning of his history no less than today.

The fact is, however, typically downplayed in our time. The reason seems obvious: Scientific theories are by no means immune to the influences of intellectual trends – and one such trend, up until today, has been Darwin's theory of the survival of the fittest. In the shape of Social Darwinism, it interpretates history as a continuous and inevitable struggle of eat or be eaten. The evidence of brutality displayed by our ancestors towards their fellow beings, human or animal, fits neatly into this narrative. And the factual basis too is undeniable.

Equally undeniable, however, is the presence of conflicting, opposing evidence. There are clear indications that even our earliest ancestors were never content with cruel behavior. While they were compelled to act this way in many situations for their survival or safety, the fact that they sought

justification for it proves that there has always existed an inner resistance against killing.

So-called totemism simultaneously represents an attempt at justification and an effort to transcend the unavoidable cruelty of life. Significant anthropologists, from Baldwin Spencer and Francis J. Gillen up to Émile Durkheim and Claude Lévi-Strauss, have elaborated on this matter regarding Australian aboriginal tribes. These divided society into groups (clans), each *identifying* with certain species in their habitat: a wallaby-man with wallabies, a koala-woman with koalas, an acacia-man with acacias, and so on. The crucial aspect of this earliest of all philosophical worldviews was that it delegated *responsibility* for a specific part of reality to a specific part of human society. A koala-man was not allowed to kill a koala (except in emergencies); the killing of a koala was only permitted for others – the non-koala men and women. A koala-man was also forbidden to marry a koala-woman, as this would have constituted a form of incest. Therefore, a koala-woman could only be wedded by non-koala men. This was much more than a simple give-and-take, as practiced by all societies in various forms to this day. It was a give-and-take of a far more complex nature because those seemingly primitive tribes were firmly convinced that, *through their spiritual connection with their respective totem animals, they enabled their thriving and existence in the first place.* They saw themselves as the creators, sustainers, and nurturers of their fellow creatures, which they were obligated to share with other clans for the sake of survival.

I wonder if we should not view this worldview as *the earliest philosophical attempt to justify the wrong of killing and of human interference in the orders of nature.* The hunters-gatherers of Australia were existentially dependent on consuming plants and killing animals for their survival. However, they *justified* their consumption and killing by countering it with a conceived narrative: the belief that, after all, they were the ones who enabled the flourishing of plants, animals, and even inanimate nature. Certainly, humans had no choice but to feed on other living beings; it was a constraint of physical survival they could not escape. Yet, they excused this taking by seeing themselves simultaneously as givers. Due to their spiritual power, they were responsible for the thriving and reproduction of plants and animals, which other clans could then consume with a clear conscience. In the worldview of these earliest philosophers, giving and taking were not limited to the small human community; it became a principle that spanned the entire cosmos.[24]

This significant example illustrates what this book repeatedly seeks to demonstrate and emphasize: that the social existence of humans (a part of the "superstructure," as understood by Marx) is “determined” by the

elemental conditions of life only in times of emergency. Once that is no longer the case, desires and wishes – human freedom – enable the most astonishing interactions between humans and of man with nature. In Australia, the early expansion of humans had reached its limit. Hunter-gatherers had to negotiate with their neighbors and nature in ways that contributed to a lasting equilibrium. Totemism emerged as a wise and exceedingly complex response to this challenge. The campaign of annihilation was thus halted, leading to a balance between humans and nature.

In the effort to achieve equilibrium within the realm of the living, totemism is perhaps the most remarkable example. At a higher cultural stage, we find a comparable expression of empathy in Indian civilization, where the belief in reincarnation made killing a sin, even earthworms were, according to Hindu belief, on the same journey of redemption as tigers or humans.

Prohibitions against killing certainly varied in different cultures, but in all of them, they were strongly pronounced when it came to killing fellow beings – humans. But there were corresponding inhibitions even when dealing with strangers.

Hospitality was and is an institution spread across the globe and throughout history. It explicitly pertains to strangers, not just to people within one's own group, clan, or city. No other custom reflects as clearly that our ancestors recognized humanity not merely in themselves but in the foreigner and the stranger. In some cultures, one might even speak of sanctifying guests and thereby foreigners. Just look at those myths where gods test hospitality when they appeared among humans in disguise.

Crime and conscience

When discussing hospitality, we should not ignore its opposite: xenophobia. It has an equally long history, and it is undoubtedly as deeply rooted. Addressing xenophobia seems particularly important because the existence of a universal moral conscience becomes evident even in the deliberate degradation of other human beings.

The degradation of others an indication of the presence of universal moral conscience? At first glance, this seems like a harsh self-contradiction. But we should ask: Why is no social trait so widespread to this day as the pejorative and sometimes downright scathing description of members of foreign clans, tribes, peoples, or nations? These are variably described and vilified as non-humans, inhumans, sub-humans, lesser humans, barbarians, criminals, alien species, beasts and so on? Why are “clashes of civilizations” triggered by ideological, religious, and cultural

peculiarities and recently invoked by Samuel P. Huntington, as old as humanity itself?

It seems to me that from this deliberate denigration of others we can only draw one conclusion. Throughout history, people were aware that *they should act humanely, fairly, and compassionately towards their own kind*, often even under the imperative to sacrifice themselves for the sake of their own tribe members, because with them they felt from time immemorial to be of the same essence. Hence, they needed to label those they wanted to harm, exploit, or fight as *radically different from their own group* – as non-human or subhuman, or even as "aliens" (Artfremde) as the Nazis labeled their Jewish fellow citizens.[25]

Before engaging in wars of extermination (in contrast to ritualized contests), other humans were first defamed as alien and unequal, so that the cruelties and crimes committed against them no longer counted as such – after all, they weren't perpetrated against fully-fledged humans. It is precisely this elementary and globally widespread phenomenon that seems to testify just as clearly to the existence of a universal conscience as to the ease with which people have always been able to outwit and override it.

This held true until yesterday, when the Nazis declared their Jewish fellow citizens as subhumans, and it will hold true in the future whenever a group, a government, or individuals deny the equality of their fellow humans with the intent of turning them into outlaws. It is by no means true that the Nazis did not know what they were doing. *Precisely because they knew*, they created the largest propaganda machinery of their time with the sole purpose of designating a part of the German population as subhumans. Heinrich Himmler's horrific term "decency," which he believed the SS members retained despite their blood-soaked hands, demonstrates how necessary it *was to justify mass murder to themselves and to others*.

The Nazis were concerned with justification until the end of their rule. Without their malicious and constant hatemongering, it would have been difficult for the ordinary citizen to comprehend why the Jewish neighbor he greeted daily, whom he personally esteemed as a doctor, and who often enough belonged to his circle of friends, should in truth be a person with hidden diabolical intent: a threat to the national body. The ordinary citizen did not know that *the Nazis needed such an enemy* because people are most securely controlled when united through hatred. When Hermann Rauschning asked Hitler if he believed that the Jew must be annihilated, Hitler replied, "No, then we'd have to invent him. You need a visible enemy, not just an invisible one."[26] As is known, Hitler broke with this intention after the Wannsee Conference.

The judges of the Nuremberg Trials, where the biggest Nazi criminals were brought to justice, only told the Germans after the war what they themselves had known all along. The Tribunal embodied what was their suspended conscience. Undoubtedly, it would have been better to have an *international court*, avoiding the skewed perspective that the victors seek revenge against the vanquished. However, in the absence of such an institution, the victor's justice was justified and welcome. And it remains a great historical achievement of the Americans that they were the first to establish a court to punish crimes against humanity. Likewise, it will be seen as a moral failure of the current American president that, through his constant attacks on the International Court of Justice in The Hague, he is calling this victory of universal conscience into question.

To this day, however, most historical crimes remain unpunished. If one looks at the number of victims, Stalin and Mao had many more of their fellow citizens killed than the Nazis, yet no court has ever held them accountable. On the contrary, both Russia and China are now attempting to rewrite history in their own ways. Hannah Arendt gave voice to the true, universal moral conscience when she placed left-wing and right-wing totalitarianism on the same level.

The social structure of hunting hordes

> To judge by the archaeological and anthropological evidence, democracy was the most typical political system among archaic hunter-gatherers. *Harari*

At the beginning of this chapter, I said that remarkably bad things could be reported about our earliest ancestors but equally remarkably good ones as well. I would like to turn to the latter now.

From today's perspective, the beginning of human history could almost appear idyllic. For at least fifty thousand years, Faber, i.e. humans in their present biological shape, roamed savannahs and forests in groups of ten to a maximum of one hundred and fifty companions. That great evil which would later tarnish their history so much – strict hierarchies embodying human inequality – either did not exist at that time or only existed in embryonic forms. Some even regard this early epoch as a kind of paradise and golden age of humanity. In their view, it was the later transition to a sedentary way of life that drove people out of this Garden of Eden. From then on, food was no longer provided by nature - on a richly laid table, so to speak - wherever his wanderings took him; rather, he had to obtain it by the sweat of his brow on a tiny piece of enclosed land, where he generally spent his entire existence between birth and death.

It is now an established fact that hunter-gatherers were favored in multiple ways compared to their immediate successors, the sedentary farmers. Research suggests that they devoted less time for subsistence. The few hunters and gatherers living on the globe until the twentieth century, for example in the Kalahari Desert, one of the most inhospitable areas on Earth, spent an average of only up to 45 hours per week on food procurement. In the "Lucky Latitudes," which encompass a strip of about 20 to 35 degrees north in the Old World and between 15 degrees south and 20 degrees north in the New World, gathering yielded the greatest returns. *It produced fifty calories of food for every single calorie of physical work expended* (Ian Morris). As we know, this balance has now reversed. Approximately 22,000 calories are needed to produce 100g of beef with a caloric content of 270 calories. Instead of being rewarded with fifty calories of food for a single calorie of physical work, *we now invest 81 calories of work to gain only one calorie of food!* Most of the expended calories are obtained from fossil fuels, which are used in tractors, fertilizers, etc.[27]

Scientifically proven is also the better health of our earliest ancestors compared to the farmers of the subsequent era. People with a balanced diet are less susceptible to bacterial or viral diseases such as measles, colds, tuberculosis, scarlet fever, etc. Therefore, infant mortality among our early ancestors was probably lower. But an even more significant advantage for the first humans was that they lived much less closely together and constantly changed their locations. Many diseases only emerged in the sedentary stage. For instance, the outbreak of epidemic diseases like cholera, plague, influenza, typhus, and smallpox requires a certain population density to enable the effective transmission of pathogens.[28] For large cities where people crowded together in close quarters, this density posed a significant problem until the early 20th century. They relied on continuous rural migration just to maintain their population size. Despite our exponentially increased medical knowledge and the healing methods derived from it, we are once again threatened by epidemics.[29]

Hunter-gatherers did not need to fear such evils; they were protected from them by their low population density - just like large primates living under similar conditions.[30]

Perhaps the most telling evidence comes from body size, which, around thirty thousand years ago, averaged 1.77 meters for adult men and 1.66 meters for women. After the transition to sedentism ten thousand years ago, these values had shrunk for men to an average of 1.65 meters and for women to 1.53 meters. Only in our time have the higher values been reached again. In 1960, American males reached an average height of 1.75 meters.

Equality in hunting hordes

The greatest advantage of nomadic life over all subsequent forms of existence must be inferred in an indirect way, as direct evidence can only be obtained from late successors like the before mentioned Bushmen of the Kalahari. However, it seems clear enough from external circumstances. These societies had virtually no permanent possessions, as they had to follow their prey. So, all belongings had to be carried on their shoulders (pack animals being domesticated much later). This lack of possession had specific social consequences.

As the entire subsequent history of humanity proves, *it is property ownership that leads to institutionalized human inequality*. Some people own much, others very little or nothing – this difference gives rise to most interpersonal conflicts. During the time of our earliest ancestors, everyone had the same negligible amount. If inequality based on the contrast between rich and poor is considered one of the greatest evils of humanity, then the earliest epoch of humanity was largely exempt from it.

In a nomadic horde where no one owned more than he could gather or hunt and carry on his own back, the survival of the group depended existentially on daily sharing to balance the unpredictable odds of successful gathering or hunting. *The early history of humanity was a time when equality and cooperation inevitably arose from the circumstances of life.* There is no reason for us to idealize the people of that time as morally superior to us, who even within the closest human community, namely the family, engage in property separation. *Mutual sharing and giving were the way of life they were compelled to follow due to external circumstances (modes of production)*.[31]

Yet the people of that time were no more equal in physical, psychological, and mental terms than they are today. To be sure, a sudden illness could result in any member of the group falling behind physically or mentally. On the other hand, some individuals must have stood out from their peers – either due to greater knowledge, energy, and authority or simply due to greater experience. Such differences always existed, but nomadic groups had to rely on the cooperation of everyone. This invariably resulted in the demand for equality despite all differences existing between group members. Since mental or physical advantages are only partially inherited, they are newly acquired by each generation, so that *no hereditary privileges* arise from them. From the available archaeological and anthropological evidence, it can be concluded that hunter-gatherers were typically organized democratically.[32]

Only in one respect were differences inherited, namely between man and woman. Unlike today, historian Ian Morris (2010) states in a rather

drastic way, women were mainly breeding machines. Since half of the newborn babies died in the first year (most died in the first week) and only half of the survivors reached their forties, the stability of the population depended on women *giving birth on average to five infants*. This was the only way to make sure that one generation of parents was followed by a new pair of parents. In other words, women spent a large part of their rather short lives pregnant and caring for children. We know that hunter-gatherers were on average healthier than the farmers and shepherds, who followed them, but they still did not benefit from modern medicine, mortality may have been lower, but not much lower.

Today's women can hardly imagine this permanent occupation with their offspring, and most of them would find it quite unbearable. At that time, however, it was unavoidable since breastfeeding had to be extended for as long as possible, so that subsequent pregnancies could be delayed by two or three years. In nomadic societies, this was essential because a mother could at best carry a single child in her arms during the tribe's constant displacements. When the next baby arrived before the last one was able to walk, this resulted in even greater stress for women.

As long as the survival of early hordes was precarious, since it remained unpredictable how much animal prey or plant-based food coming days would offer, the equality of rights and duties of all members of the horde was nothing less than an imperative of survival. Under conditions of scarcity, social order was indeed highly determined by the elemental conditions of life. However, life was not always "nasty, brutal, and short". There were notable exceptions to this rule, even repulsive ones, when food was plentiful. In this rare case, even among hunter-gatherers, radically different social conditions could be established with some individuals rising to the rank of aristocrats while others had to serve them as slaves. The Kwakiutl, a group of Native American tribes in the Pacific Northwest who inhabited the Canadian Vancouver Island and the adjacent mainland, provide an astonishing example of this deviation.[33] They prove to us - a proof that we encounter again and again later on - that the conditions of production merely shape man's social existence, but never determine it in the strict sense.

Part II: Second Tidal Shift: Homo domesticus (Agrarian society)

> How many Romans or Jews in the days of Tiberius could have anticipated that a splinter Jewish sect would eventually take over the Roman Empire and that the emperors would abandon Rome's old gods to worship an executed Jewish rabbi? *Harari*

We do not know whether it was the pressure of population on scarce resources that led to the epochal invention of agriculture, or whether Faber experimented out of sheer curiosity and thirst for knowledge, and, so to speak, stumbled upon outsmarting nature by no longer leaving the reproduction of plants and animals to mere chance but subjecting it to his own planning and direction. Hunter-gatherers had relied on the bounties of nature, finding their sustenance in fruits and prey that were naturally available in their environment. When there was an abundant supply of food, as in the "Lucky Latitudes," hordes could even exist in large numbers – in groups of up to a hundred or more– while in less favorable climatic and geographical regions, they existed in much smaller groups. However, even in the most favorable case, population density was minuscule compared to later stages and could not be expanded beyond a narrow limit. Things were to change dramatically due to the unexpected invention of agriculture.

The leap into this new form of existence involved the *artificial production of food* – edible plants were cultivated in a chosen territory under individual control, and animals were bred in confined spaces. From then on, Faber no longer needed to roam as a wandering nomad to find sustenance in constantly changing places; he could settle down because he cultivated and harvested food in designated locations.

Up to the present day, it is difficult to imagine a more radical transformation. Its effects on population density would soon prove breathtaking. After the so-called Neolithic Revolution, the first beginnings of which probably go back far beyond 12,000 B.C., the food supply was so greatly expanded through agriculture and animal husbandry that *after a few generations, instead of a maximum of four people, a thousand people and more were able to live on ten square kilometers*. It was the first and still the greatest upheaval in human history.

That such a radical change in the "modes of production" would have profound effects on the social structure of human societies is obvious. We understand why equality of rights and responsibilities was a principle enforced by life conditions among hunter-gatherers. Sharing of food and all other goods was a basic imperative for survival. But so was the killing of other living beings. Would both remain an imperative for the times to

come? If we want to grasp to what extent social behavior can be predicted or not, the following example may provide a clue.

Let us imagine an early Stone Age philosopher observing the first successful attempts at cultivating crops. Everything suggests that he would have predicted a paradisiacal existence for future generations. In contrast with killing prey animals, humans do not need weapons for sowing and harvesting crops and fruits. Our early philosopher might therefore have reasonably concluded that future generations would renounce all cruelty towards their fellow creatures – including other humans. Roaming hordes would no longer pursue their animal prey and confront rival hordes with armed force. On the contrary, settled farmers would soon lead lives of constant peace, free from war and aggression. In the new world of agrarian civilization, there would be no reason not to live peacefully with each other and with nature. At best, our philosopher - let's not forget that he was a hunter - would have considered the coming generations to be decadent and worthy of ridicule, because under the conditions of peace, what he admired most, namely courage and physical strength, would hardly count ...

Moreover, our Stone Age philosopher would certainly have been deeply convinced that equality among humans would continue to be the rule. Several thousand years later that is what his successor, well-known American ethnologist Marvin Harris (1990), still assumed, when putting himself in the shoes of such an early philosopher:

"*An observer viewing human life shortly after cultural takeoff would easily have concluded that our species was destined to be irredeemably egalitarian except for distinctions of sex and age. That someday the world would be divided into aristocrats and commoners, masters and slaves, billionaires and homeless beggars would have seemed wholly contrary to human nature as evidenced in the affairs of every human society then on earth.*"

In fact, this prediction of equality and peace would not be entirely wrong. Small "garden cultures" existed all around the world where the egalitarian tradition of hunter-gatherers persisted, albeit at a higher level of mastery over nature, allowing for much larger population density. If such societies lived in geographical isolation from other tribes and peoples, they could indeed lead lives as peaceful as the fictitious Stone Age philosopher had predicted.

However, remote and small agrarian garden cultures rare exceptions.[34] A historical review of the past twelve thousand years of agricultural history presents us with an entirely different picture. *It was with agriculture, animal husbandry, and property ownership that an era of constant wars and radical inequality began*. Why?

Agrarian civilization: endemic inequality

Civilization is /was!/ a parasite on the man with the hoe. *Will Durant*

Even as hunter-gatherer, Faber became the most successful species on the planet. On the one hand, he created an artificial environment using tools and, on the other hand, due to a highly developed language, groups were able to coordinate their actions.

For the emergence of larger sedentary human settlements, the mutual coordination of actions through linguistic communication was just as important as the availability of technical tools. Only through purposeful collective action were our early ancestors able to tap into the enormous food potential that irrigation and drainage of previously dry or swampy areas provided them with. The regulation of the Nile, the Indus, or the Huang He and, conversely, the drainage of marshlands in Mesopotamia required the coordinated deployment of large numbers of people for precisely specified purposes.

How the first states were founded since or even before the beginning of agriculture and animal husbandry and what they looked like remains a subject of research. In this context, only the great agrarian civilizations emerging since the fourth millennium B.C.E. are of interest, as they replaced human equality with its opposite: extreme inequality. We are faced with a crucial question: *Is this inequality as much related to the new conditions of production as was equality under the conditions of hunting and gathering?*

Whether state formation was dependent on irrigation is, of course, a different question. It seems that it does not.[35] But once successful irrigation had become a matter of life or death, guided collective action prevailed over individual choice. Decisions had to be placed in the hands of a higher authority, possessing not only the required expertise but also taking responsibility for the success of planning.

In other words, in "hydraulic cultures" (a term used in the controversial work by Karl A. Wittfogel), *equality could no longer be at the forefront; instead, the demand for expertise and centralized decision-making took precedence*. Due to the necessity of central decision-making, the great civilizations of Mesopotamia, Egypt, India, and China elevated human inequality to their operational principle. From there, this model then spread to non-hydraulic cultures in Europe, Asia, and Africa. However, it also developed in an extreme way in the New World, namely among the Maya, who can only be partially considered hydraulic cultures, and among the Incas and Aztecs, which cannot be classified among them.

The shift from human equality towards the extreme inequality of “hydraulic” cultures, where kings at the top of the state became living gods –

as in Egypt – or were regarded as god-like – as in Mesopotamia – can be explained by the new conditions of agrarian society, in three distinct ways. In contrast to a horde of a dozen hunters, the individual practically had no significance for the survival of an agrarian mass society with tens or hundreds of thousands of people. Society continued to function, even when entire segments of the population disappeared due to epidemics, wars, or other disasters. However, it could not continue to exist without the planning and regular implementation of irrigation or the defense against expected annual floods, which required centralized coordination and the coordinated deployment of thousands of men. This new existential imperative demanded a central authority possessing complex technical knowledge.

The resulting demand for trained experts was therefore the second reason why humans now came to be regarded as radically unequal. The specialist, to whom the collective owed rich harvests and thus the survival of society, suddenly became much more important than any simple worker. The latter's modest task was merely to carry out the plans of the center – that is of the king and his officials. This prioritization of experts over the mass of the population soon extended to all specialists, not just those responsible for physical survival in hydraulic cultures. The builders of pyramids and palaces, the artists who glorified the lives and history of the elite, all of them soon established a tradition of human inequality that had been unknown among hunter-gatherers.

Above all, property was to become the third cause of inequality. We saw that wealth could lead to glaring inequality even among hunter-gatherers. This was the case among the Kwakiutl, where a society of original equals had disintegrated into a handful of wealthy aristocrats and huge numbers of propertyless slaves. But now, hydraulic cultures were to produce wealth and property on a scale never known before. Since that time, there were the bitterly poor at the bottom of the state while at its peak we see dazzling wealth, concentrated alternately in the hands of an expert priesthood or in those of a secular power. Sometimes the two coincided, as in Egypt and much later in Khmer theocracy.

However, as previously emphasized, the transition to agriculture *did not inevitably* give rise to human inequality. In Austria, there are two adjacent provinces where agriculture was practiced for several thousand years: Upper Austria and the Waldviertel. To those who travel through them, even today, there is a noticeable difference in landscape and human architecture. Upper Austria was and still is a land of independent farmers. We observe the existence of prosperous farms, but hardly that of any castles and monasteries. In the Waldviertel, the opposite is equally evident. There are some magnificent castles and rich monasteries, but the

population seems to have been impoverished and powerless, as the peasantry lived in meager dwellings due to heavy dues to their lords. Secular and ecclesiastical powers ruled in both provinces, but in Upper Austria, the peasantry had managed to preserve their freedom and independence to a greater extent.

Small garden cultures once existed scattered across the world, mostly in geographically isolated settings. They resemble the first of the two models. The absence of a strong central power extracting wealth and often all rights from subjects resulted in a high degree of equality and probably much greater satisfaction among the people living there.

On the other hand, it can hardly be overlooked that *mankind owes a substantial part of its most significant inventions to hydraulic cultures and their successors*.[36] One of many examples is writing. In garden cultures, where peasants were responsible only for the land they cultivated and could work and manage on their own, no more knowledge was needed than what was passed down through oral tradition. Here, the invention of writing would have made no sense.

However, hydraulic cultures soon faced administrative tasks that could no longer be managed solely through human memory. They required written records. This was unavoidable if the central government wanted to distribute the tax burden fairly, which served both its own sustenance and that of the serfs working on its behalf. Furthermore, registering the size of property, which determined the extent of taxation, could no longer be fixed orally.

Inventions often provide answers to existing challenges that can only be overcome with their help (think of Arnold Toynbee's "Stimulus and Response"). In our time, we are experiencing similar challenges. Over the past few decades, our cities have become so vast and labyrinthine that drivers unfamiliar with them can only find through them with the help of electronic navigation devices. These devices therefore *had to be invented to fulfill immediate need*. The same happened with writing. It was introduced around 3000 BC in Sumer and Egypt due to existing pressures, around 1300 BC in China, and around 600 BC in Mexico.[37]

Different solutions to the same problem

We saw that no populous agrarian civilization dependent on mobilizing the masses for irrigation or drainage measures could do without central authority and expertise. This inevitably generated human inequality in hydraulic states, where the conditions of production clearly shaped the social structure.

On the other hand, various alternatives remained possible under such conditions. *Central authority could be hereditary or determined anew from one generation to the next*. In the first case, it was bound to solidify into lasting privileges, which could only be removed through popular uprisings or other catastrophes. In the second case, the state had to establish an education system that provided the conditions to distribute the necessary expertise to new individuals in each generation.

With one remarkable exception, all major agrarian civilizations (whether hydraulic or not) opted for the first, much simpler alternative. The outcome *was expertise and power for a minority, subservience and forced labor for a majority – with both passed down from parents to children.* Human inequality was grounded in the unpredictable chances of birth.

The most spectacular manifestation of this model was the *Indian caste society*. People were considered inherently unequal. Even if a man or woman from a certain caste was a genius, they were essentially denied the opportunity to break out of their position. However, this system, which seems extremely unjust, provided guarantees that made it tolerable for individuals, transforming it – quite unexpectedly from a theoretical point of view - into one of the most stable social systems.[38]

Among all hydraulic mass civilizations, where the planning of major collective projects has played a prominent role, *only China created conditions that partially overturned heredity and privilege*, thereby favoring greater equality among people. True, the man at the top of the state, the "Son of Heaven", was allowed to inherit his position. But the administration of China's numerous provinces was entrusted to the class of "literati," educated in writing, philosophy and morality, whose positions were largely due to personal achievement rather than birth.[39] The administration of the vast empire rested in the hands of common people, who had to pass prescribed examinations in a state education system known as the Hanlin Academy. Without such an education system that fostered personal achievement, this deviation from the norm would not have been possible.

Weapons and the agrarian dependency formula

Hydraulic mass civilizations were the most powerful, richest, and culturally advanced states of their time. No wonder that their model would influence the shape of most subsequent states, even when the hydraulic conditions necessitating regular mass mobilizations were absent.

The reason why the model of central control and inequality deriving from it managed to spread worldwide is related to a peculiar characteristic

of agrarian life. Tilling the fields requires farmers to be tied to the land for most of the year and to live scattered across the country. In other words, they were poorly organized and lacked mobility. That explains why a relatively small number of well-armed and mobile warriors had no problem subjugating the peasant population and living parasitically off their produce. "*The class struggle between people of different status (free, submissive, slave, etc.) over rights to land, labor, and surplus was a ubiquitous feature of all agrarian societies*" (Michael Mann 1986). While small garden cultures did exist around the world and could continue the egalitarian model, they were exceptions to the norm and as a rule remained culturally undeveloped.

There have only been a few regions and only short periods of time when free peasants armed themselves, as in ancient Rome and Japan, much later in the pioneer communities of peasant settlers in the United States, and to this day in Switzerland. When Rome was in the ascendant, peasants had been able to overcome their inferiority by arming their brothers and sons. Originally, the Roman army consisted of free peasants. But not even until the end of the Roman Republic could they prevent a noble class of lords from subjugating them and eventually depriving them of their rights.

Not a single major agrarian civilization exists that did not undergo a similar process. Armed mafias seized power to live off the produce of farmers. Once in power, the elite idealized their role, declaring themselves knights and nobles. This allowed them to cloak the original violence of usurpation with an aura of divine grace. "*The real history of aristocracies*," noted Dutch historian Johan Huizinga (2022), "*everywhere presents a picture in which pride goes hand in hand with impudent selfishness*." Alexis de Tocqueville (1963) puts the matter even more starkly, "*It was by means of arms that aristocracy had conquered power, and by means of arms maintained it; thus, its rule was based on military valor. Whatever made such valor conspicuous outwardly, was encouraged, and prescribed, often at the expense of reason and humanity*."

Of course, the conditions of rule were not always equally oppressive and bad. Astute statesmen were aware, of course, that a cow doesn't give milk once it's been slaughtered. Throughout history, agrarian societies oscillated between ruthless exploitation of food producers and reforms designed to maintain the loyalty of the land-bound majority. We only need to peruse Will Durant's monumental work searching for the keywords "peasant" and "serf" to track this constant flux. But the temptation to squeeze the farming population dry for short-term gain was always present, leading to a continuous cycle of mostly bloody and ruthlessly suppressed peasant uprisings.[40]

In this context, it seems legitimate to speak of a quasi-sociobiological law, a tendency that held true throughout the entire agrarian epoch from around 10,000 BCE right up to Fossil Revolution. The *agrarian dependency formula* – as I would like to call this quasi-law - states that, depending on the quality of the land, the crops grown, and the technology available, at most twenty percent of the population - usually only five to ten percent - lived at the expense of a peasant majority that made up 80 percent or often more than 90 percent.[41] For instance, in countries like Poland or Hungary, the proportion of the nobility to the total population was around ten percent by the end of the 18th century. Even in a more urbanized society like France, around 1789, ninety percent of people still lived in rural areas.[42]

This majority of oppressed farmers almost always led unfree lives, as both the nobility and clergy extracted surplus from them in the form of taxes; often farmers and laborers were held by their lords in slave-like subservience.[43] When taxes were required to be paid in money rather than goods, as was the case in developed monetary economies like ancient Rome and in Europe from the 12th century onwards, the lords were doubly empowered. The police and the military, which had to keep the farmers in servitude, could be more easily maintained with money.

In hydraulic empires, the agrarian dependency formula persisted due to the necessity of mass mobilization, whereas in Europe and beyond, extending to South and Central America, it was the temptation to live a parasitic life at the expense of the peasantry that enabled the rise of a privileged class. This phenomenon was also evident in the ancient city-states of Greece.[44] A small number of well-armed and well-organized groups at the top of the state could make an overwhelming majority of farmers work for them.

Urban centers like Athens and Corinth seemed to deviate from this classical pattern because they replaced direct military rule over the 90 percent of food producers with trade.[45] While all men in Sparta were under arms, always ready to force the subjugated Helots into labor under threat of violence, the Athenians had, in a way, *outsourced this task to foreign countries*. They delegated it to rulers in other regions, be it Thrace or Egypt, from whom they imported their food. Except in times of war, the Athenian fleet primarily served the grain trade.

The rule of a minority of rulers over a huge majority of peasants who toiled in the fields was, however, as firmly established in Athens as it was in Sparta.[46] The difference was that during times of peace the successful trading city didn't need weapons but only its economy to maintain its dominance.[47]

In a more or less pure form, the opposition between Sparta and Athens, i.e. between states where peasants formed the overwhelming majority and

trading powers that relied on food production abroad, persisted until the threshold of the Fossil Revolution. This tradition was obviously continued in Rome, where free farmers were replaced by slaves at the end of the Republic *"...whenever slave plantations spread, they replaced and impoverished the free farmers as inevitably as bad money drives out good money. The consequences for society consisted in a depopulation of the flatlands and the emergence of a parasitic proletariat in the cities, especially in Rome*" (Toynbee). However, Rome didn't just sacrifice its own farming population; the new superpower simply replaced trade with plunder: "*Rome did not become the industrial or commercial but the financial and political center of the white man's world ... it needed to produce nothing; it took the money of the rest of the world and paid for goods with it*" (Durant). Wheat, the staple food for the unemployed plebeians in the capital, was primarily imported from North Africa. The new superpower followed both examples at the same time: Sparta and Athens.

Outsourcing Athens too had its followers — centuries later. Think of the intellectually and materially flourishing Netherlands in the 17th century. Their food producing base consisted of the feudal governed farming states in Eastern Europe, which supplied the small North Sea country with wheat and other necessities.[48]

Could there be an escape from the agrarian formula?

Extreme inequality, ruthless exploitation of the majority and, in stark contrast, the luxurious life of a minuscule minority were the hallmarks of agrarian empires worldwide - even those that had no historical connections like the Inca states in South America and the Indian and Chinese empires. The lure of feeding parasitically on a largely defenseless peasant population was so tempting that it was tested again and again, at least in large empires, regardless of historical precedent.

In other words, all agrarian mass societies of the past ten thousand years have provided a minority with unearned income at the expense of a working majority. This was the case in Europe as well as in the Orient. There is no special “Oriental mode of production” , as Karl Marx had claimed. Everywhere, a privileged minority has granted itself the right, “by the grace of God,” to extract unearned income from the majority — a “rent” , as science calls it, to mark the contrast with “profit.” "*The difference between the logic of profit and the logic of rent is, in short, that in the first case income arises from entrepreneurial activity and in the second case from political control of income-generating resources ... In the first case, you must invest to remain competitive; in the second case, you*

must "invest" in the organs of power, such as the army, the police, the presidential guard, the secret services, the guardians of public morals, and, if necessary, private mercenary troops, in order to maintain control ..." Today, a rentier economy, such as that which exists in Putin's Russia, is only to a small extent based on agriculture. "*In rent-based systems ... income is generated from political control over resources that generate rents. This includes, first and foremost, land, but also the raw materials found in the ground, such as oil or gas, trade in essential goods (e.g., salt or real estate) or foreign trade ... The result is a high concentration of income among those who hold political power, while the broad masses have little more than the bare necessities to cover their living expenses*" (Menzel 2023).

On the other hand, the fact that peasant uprisings occurred regularly worldwide leading to the downfall of established rulers provides undeniable proof that *the awareness of the basic equality of humans was never lost*. At no time was it possible to definitively transform human societies into termite-like states where the rulers were even biologically distinct from their people. This transformation was prevented by universal moral conscience that rebelled against unbearable conditions time and again. Not only did fairy tales tell even the lowest among the oppressed that unpredictable fate could transform a peasant's son into a prince. Throughout history, upheavals repeatedly ensured that men from the common people rose to power.

However, such events provided yet another proof. Regardless of whether it was in China or Europe*, uprisings never led to significant changes* because the agrarian formula of dependence based on existing production conditions prevented any fundamental change. The formula ensured that after quite a short time everything returned to the way it was before. The rebellious upstart took power, shielded himself with military force against other aspirants, and then did what his predecessors had done: he and his followers lived parasitically off the majority toiling in the fields.

In Europe alone, there were hundreds of peasant uprisings and religious movements that called for justice. Protestantism gave this goal a religious expression, and the Enlightenment finally turned it into a command of pure reason. Why should a few people - the nobility and the clergy - demand all privileges for themselves? The 18th century resembled a sudden awakening — questions that people previously not dared to ask were suddenly on everyone's lips through books and the press – not only in France and beyond the 19th century.

Just think of Georg Büchner's "Hessian Messenger" , where the poet describes the situation of the peasants almost as if Hesse were a second Sparta. *The farmer walks behind the plow, but the rich man walks behind*

him and the plow and drives him and the oxen at the plow, he takes the grain leaving the stubble to the peasant ... There may be 10,000 of them /the rich/ in the Grand Duchy /Hesse/ and 700,000 of you ... 6 million guilders are paid in the Grand Duchy to a handful of people at whose mercy your life and property are left ...[49]

It is important to note that even without books and the press, such protests against the prevailing conditions had repeatedly flared up in all large agrarian societies. Universal moral conscience that allows people to distinguish between right and wrong always remained alive.

However, behind the general term "rentier economy" , which is characterized by unearned income for a minority, there are quite different historical types, of which I would like to highlight at least two. China has already been mentioned above. It was the only agrarian mass society that selected its elite (with the exception of the emperor) on the basis of a nationwide examination system and appointed them to leading positions, i.e., on the basis of performance. However, China is a notable exception in this respect; in all other mass societies, privilege was based on birth, for example in India. This country shows how a fundamental injustice can be ingeniously overcome (see p. 141: *India – Reverence for Life*).

This book repeatedly refers to a "universal conscience." I cited totemism as an example of how killing has never been easy for humans—not only the killing of members of their own species, but also of other living beings. The best proof of these inhibitions lies in the fact that humans have repeatedly sought justifications for killing or, as in India, have largely prohibited the killing of other living beings.

2,500 years before our era, we are confronted with no less explicit evidence of this conscience in Plato's Republic. There, the issue is not the killing of living beings, but social justice, which was so obviously suspended in agrarian societies. In a logically satisfying but psychologically unbearable way, Plato attempted to abolish the fundamental injustice of agrarian mass society through a new social model (see p. 143: *Plato and the Totalitarian State*).

Universal moral conscience in Christian religion

Power seeks perpetuation – in the great agrarian civilizations, this aspiration is evident from the outset. The kings of Egypt believed that even beyond death they would continue to be kings, and their subjects would remain their servile slaves. There are texts from the early Egyptian dynasties that suggest the social inequality present on Earth would persist in the heavens. An example is provided by the so-called Pyramid Texts,

inscribed on the walls of pyramids built by kings from the 5th and 6th dynasties (circa 24th to 22nd century BCE). Opposition against this doctrine was impossible so long as the art of writing remained in the hands of a small caste of experts, which itself enjoyed great privileges. Universal moral conscience could have no independent voice. The elites claimed all power not only on earth but even in heaven exclusively for themselves.

Universal moral conscience could only rebel where the central state possessed less comprehensive authority. With world-historical implications, such rebellion occurred in Buddhism five hundred years before Christ and at the turn of the era in Christianity. The founders of both religions insisted that inequality on Earth was a temporary phenomenon because before God or within the consciousness of the enlightened (buddha), all humans were equal. There were no kings and no slaves.

These two major religions, emerging on the fringes of hydraulic power structures after three thousand years, showed through their very genesis that universal moral conscience had never been extinguished. Social inequality in this world was an undeniable fact, but the comforting message they conveyed was that this inequality did not concern the essence of humanity. It could be actively overcome by individuals, as people recognize their true nature through introspection and thus realize it in the here and now, or it would be overcome in an afterlife, as the differences between low and high do not exist in the realm of God.

Christianity went further in this relativization of power than any other religion. Seen from this perspective, it gave universal moral conscience its clearest expression. The New Testament leaves no doubt that before God, there are no kings, no slaves, no differences between nations, not even between women and men. Wealth and power, which hold great significance among humans, are considered worthless in His eyes. On the contrary, the poor and powerless count more before Him than the domineering mighty or the rich. Among the many passages that unmistakably express this viewpoint, let me mention just two or three.

"*There is neither Jew nor Greek, there is neither bond nor free, there is neither male nor female: for ye are all one in Christ Jesus*" (Galatians 3:28). "*Blessed be ye poor: for yours is the kingdom of God*" (Luke 6:20). "*Blessed are ye that hunger now: for ye shall be filled*" (Luke 6:21). "*But woe unto you that are rich! for ye have received your consolation*" (Luke 6:24). "*Now when Jesus heard these things, he said unto him, Yet lackest thou one thing: sell all that thou hast, and distribute unto the poor, and thou shalt have treasure in heaven*" (Luke 18:22).

The rebellion of universal moral conscience in Christianity demonstrated both the possibility and the goal that lay before humanity: perfect equality among humans as aligned with God's will. However, it also

revealed the practical limits imposed by prevailing production conditions (in the form of the agrarian dependency formula). The Christian rebellion had to content itself with promises of the hereafter or, as in Buddhism, mere states of consciousness. Equality could not be realized in this world, while a privileged minority at the top had to be sustained by an overwhelming majority at the base. As we have seen, this was the case in all major agrarian civilizations. The rebellion of conscience, as articulated by the New Testament with unprecedented clarity, did not change existing inequality. Until the advent of a completely new epoch, the Fossil Era, which occurred nearly two thousand years later, universal moral conscience remained powerless against the constraints of circumstances. Rich and poor, power and powerlessness, remained irreconcilably opposed.

It testifies to the realism of this great uprising at the height of Roman power that Christians, from the beginning, were careful enough to draw a clear line between this world's possibilities and the promise of the hereafter. To demand equality for this world would have exposed them to annihilation. So, they emphasized that believers should hope for it only in paradise after death and up to that time accept earthly conditions as they were. Their realism went so far that in some places the existing inequality here on earth was even explicitly described as God-willed - a clear contradiction to the wording and intention of other passages.

"*Render therefore unto Caesar the things which are Caesar's; and unto God the things that are God's*" (Matthew 22:21). "*Let every soul be subject unto the higher powers. For there is no power but of God: the powers that be are ordained of God. Whosoever therefore resisteth the power, resisteth the ordinance of God: and they that resist shall receive to themselves damnation*" (Romans 13:1-2). "*Submit yourselves to every ordinance of man for the Lord's sake: whether it be to the king, as supreme; or unto governors, as unto them that are sent by him for the punishment of evildoers, and for the praise of them that do well*" (1 Peter 2:13-15).

The rebellion of universal moral conscience against human inequality, as attested by the New Testament, is a historical breakthrough. However, the contradictions that emerged during this heroic rebellion also reveal the barriers it could not overcome even in a border region of the Roman Empire – and not even when Christianity came to power after its collapse. Nevertheless, it was an enormous success ensuring that human conscience could never be silenced again. If people’s hope for equality couldn't change prevailing conditions, it could at least come true in the afterlife or in individual consciousness. The power of rulers, which until then had been boundless – particularly because, as in Egypt, writing was in the hands of specialists – was decisively relativized.

Let us resume: the conditions of production and the resulting social order rendered social equality de facto impossible – in this regard, both the Christian and the Buddhist rebellion plainly failed. It merely took place in the consciousness of believers but did not change their social position. However, apart from the intellectual ferment triggered by the relativization of wealth and power, the change in consciousness itself constituted a great achievement. It gave believers the sense of belonging to a community of enlightened. Their lives might have been harsh due to persecution, but the conviction of belonging to a spiritual elite was so powerful that it withstood persecution and death. A doctrine that does not provide its followers with any material advantages - Christians remained a persecuted and despised minority in the Roman Empire - nevertheless has great appeal when it provides its followers with such a sense of belonging. Whatever Karl Marx might have said, such movements prove that human thinking could always resist the constraints of production conditions – the latter never had absolute power.

Rebellions of universal moral conscience against the prevailing conditions of inequality did occur throughout history, but they were not recorded before the invention of writing, and they could not be recorded afterward when the art of writing was solely exercised by specialists in the service of power.

After the spirit was liberated from this bondage both in Athens and in Lumbini near the Nepalese border, and - half a millennium later - in Rome, it would take nearly two thousand years for universal moral conscience to resurface in a new way – this time without reference to an afterlife. The question of social justice was posed with unsurpassed acuity in the Enlightenment, and more clearly than ever before it was answered.

European Enlightenment

Enlightenment led to a notable intellectual evolution wherein universal moral conscience expressed itself more vocally, with greater historical acumen and profundity than in any previous epoch. If we include the 17th century, which in many aspects was even more radical than the subsequent 18th century,[50] the intellectual representatives of the Enlightenment span from Francis Bacon and Descartes to Leibniz, Voltaire, Rousseau, and Kant.

I would like to choose a presentation that is more oriented towards logic than history, by demonstrating the complex way of thinking characterizing that time by emphasizing its logical counter-positions, which I summarize in two theses, using today's terminology. The question of

justice may be illustrated through two opposite theses that lead to contradictory ethical demands.

***Thesis**:*
People are equal, so they should enjoy equal rights.

***Antithesis**:*
Each human being is genetically unique, and each possesses certain abilities in the intellectual or emotional field to a greater or lesser degree than others. This inevitably results in different rights.

From this paradox result the formidable contradictions of social constitutions. In their extremes, they range from communist fraternity, where people basically share all available goods, to the ant or bee state, where a single individual - the queen - enjoys all rights, while all others only serve or fulfill slave-like functions. The first of the two constitutional models was realized among hunter-gatherers up to the agrarian garden cultures, the second in hydraulic states. Between both extremes we find liberalism which justifies personal self-realization together with the development of different dispositions.

Thesis and antithesis are both correct. People are so like each other that a surgeon only needs to know one single specimen of man or woman to operate successfully all of them. It is the same with the psychologist. Once he has catalogued the most important mental diseases, he can heal everybody, regardless of whether they are New Zealanders, Bantus, or Russians.

But the opposite is equally true, *everything depends on the distance from which we view the object of our investigation*. When looking at blades of grass from a distance, we can hardly distinguish one from the other. But if we take a magnifying glass or even use the electron microscope, each one becomes a unique, unmistakable individual…

The decisive, quite topical and at the same time age-old question is of an altogether different kind. May any social rights be derived from the fact of fundamental equality or relative inequality? Should all people have the same amount of money and social standing because - seen from a distance - they are fundamentally equal, or should there be great differences between them in terms of possessions and social recognition because - seen from nearby - they are quite unequal? The answer to this question, so fundamental for the construction of societies, has caused the greatest conflicts in religions as well as in modern secular ideologies - up to devastating civil wars. Karl Marx had a different answer than Louis XIV or the Church. Hinduism offered a different solution than classical China.

For the philosopher, history holds only one answer to this central political paradox. All solutions offered so far necessarily spring from arbitrariness, namely man's desire to organize societies more in one direction or the other. Humans are free to steer and organize societies more in one direction or the other. With the conception of a just society, both thesis and antithesis can be reconciled, just as both can lead to inhumane conditions, as they often have. From painful historical experience, we have long learned that any societal system that seeks to enforce absolute equality incites as much resistance as any opposing system that accepts any degree of inequality. For even the latter can be maintained permanently only by force.

Examples of the instability of the two extremes are legion. We know from recent history that communism under Stalin and Mao Zedong sought to establish equality using state violence - and that it failed. Equally, we know that when neoliberalism pushes social and material inequality to fantastic heights, it faces growing resistance. U.S. society is currently in danger of breaking down as a result.[51]

European Enlightenment sought a just solution for both equality and inequality. It aimed to completely detach social status and material wealth from inherited privileges, basing both solely on individual ability. Just as it is contrary to common sense for a son or daughter to inherit their father's doctorate or professorship, it is considered equally unreasonable to inherit material privileges - such as wealth - or immaterial prestige such as social status. The Enlightenment envisioned a classless society where educational institutions ensured that all advantages passed to new minds in each generation – depending on individual knowledge and skills. *To this day, there is no other model that can boast of a higher degree of fairness*.[52]

It is furthermore a realistic model, as it does not deny human differences but explicitly uses them for the benefit of the whole. The great men of the Enlightenment never denied that people are different. Men may be small or large, musically gifted or technically skilled; there are those who like to read books and others who find them soporific.

On the other hand, societies require specific skills in accordance with their degree of development. In competition with other societies, physicists, mathematicians, and engineers may play a crucial role, while bakers, blacksmiths, or postal workers could be easily replaced, leading to the former earning higher salaries and enjoying elevated social status, while the latter are poorly compensated and overlooked. Therefore, everyone understands that certain professions and their practitioners receive special support and enhanced monetary rewards. In a classless society, however, such privileges are never inherited; instead, the relationship between

material reward and individual abilities is redefined with each new generation.[53]

The vision of a just, classless society based on personal merit emerged with Enlightenment. It was not just a timeless vision of social justice, but also one of nonviolence. The classless society of the Enlightenment did not require, as Marx was later to demand, a violent "expropriation of the expropriators," achieved on the bloody path of revolution.

Karl Marx himself has been a mouthpiece of universal moral conscience. But he and his followers never understood that political power is perfectly compatible with a classless society without hereditary privileges. This was, of course, not true of the major agrarian civilizations, where the serving majorities were always at risk of becoming classes or even castes from which there was no escape. But the new knowledge-based fossil-industrial society that in Marx' time already existed for more than half a century, was able to overcome precisely these constraints for the first time in human history as it provided the necessary conditions for the primacy of knowledge and skills over the accidents of birth. There could and would be no class of engineers, linguists, entomologists, or quantum researchers in modern society as these skills cannot be inherited but must be acquired anew by everyone through extensive education. *The assertion that a society based solely on knowledge and skills can exist without classes is therefore logically sound and to some extent, empirically proven*. Provided that all individuals gain equal access to learning institutions, such as schools and universities – thus assuming equality of opportunities concretely realized – there should be no classes in modern society. Every person in each generation is given the opportunity to achieve the exact social position that his or her education warrants.

The powerlessness of Enlightenment

From Francis Bacon to Descartes, Leibniz, Voltaire, Rousseau, up to Kant, the greatest thinkers of their time entertained lofty thoughts about the expansion of knowledge and justice. However, none of them could solve the central problem of how, under the existing conditions of production, a society could emerge in which, unlike in the past, eighty percent or more of the population would no longer have to work in the fields to produce food to support themselves and the top twenty percent, thus freeing them for other kinds of work.

None had a recipe or even an inkling of how to overcome this barrier. One of the most influential intellectuals of that era, Thomas Robert Malthus, who would significantly influence the greatest biologist of the next

century, Charles Darwin, firmly believed that these conditions would indeed never change because the increase in human population would always surpass the availability of food.

Thus, the above described quasi-law, that is the *formula of agrarian dependency,* seemed solidified for all time. If there were to be occupations beyond servile agrarian labor, then the division of society into a favored upper class and a large majority of agricultural laborers would exist for all eternity. At best, the ruling class could be determined by individual achievement, as seen in classical China, rather than through hereditary privilege. However, this would only mitigate the social consequences of the agrarian dependency formula without abolishing it.

Until the end of the 18th century, when England was in the process of finding a practical solution to this seemingly insoluble problem, nobody had any idea how or whether such a solution would ever be found. Malthus was still developing his pessimistic prophecies. In other words, no one knew, let alone predicted, that after at least twelve thousand years of agrarian civilization, a radical new epoch was just then emerging.

The thinkers of the 17th and 18th centuries gave rise to astonishing intellectual achievements. However, just as in former times, intellectual feats alone do not initiate social transformations. None of these thinkers foresaw that it was to be a series of *unforeseen and unforeseeable inventions together with the exploitation of seemingly unlimited fossil fuel resources* that would give rise to a profound transformation of society. Without this unforeseen influx of energy that nobody had anticipated, the ideas of the Enlightenment would have remained mere sparks in the heads of inspired intellectuals - much like all the earlier visions of greater social justice.

Part III – Third Tidal Shift: Homo technologicus (Fossil Revolution)

The fundamental change occurred from the 17th century onwards, initially hesitantly, but then with increasing speed. The moral understanding of the world in the agrarian era was replaced by a scientific one (see p. 162: *The transition from a moral to a scientific worldview*). The special feature of the new emerging knowledge had been anticipated by Francis Bacon. It is more than mere knowledge of nature, i.e., a purely ideal understanding of the world surrounding humans. From then on, the quest was directed toward mastering nature[54]—and this consists in the systematic transformation of matter, which, according to this understanding, is to be converted from a natural state into a state or processes desired by humans. This requires raw materials and energy, and, as we know today, it does so in unlimited quantities.

Pure thinking alone would never have been able to free mankind from that age-old dependency that had forced all major agrarian societies to have a majority produce food for themselves and for a minority so that the latter would be free to engage in other activities. In other words: without the utilization of fossil fuels and the resulting tsunami of energy, this historic liberation would have been simply impossible.

But the reverse statement is also true. This liberation would not have happened solely because of this energy cornucopia. *The two had to come together, a* ***knowledge of nature*** *systematically pursued on the one hand, and a* ***mastery of nature*** *conducted with an ever-increasing expenditure of energy on the other. Both were required to set the industrial revolution in motion and change the globe in just three centuries more than any previous historical epoch.* Obviously, the material transformation of the world is a direct and unavoidable consequence of our mastery of nature.

In fact, the expansion of scientific and technological knowledge occurred in parallel with the fossil fuel revolution and the extraordinary supply of energy that it provided. It was this supply of energy that made possible the practical application of most inventions, which then "verified" the scientific thinking behind them. As Ludwig Boltzmann had stated in an insight quoted above, the verification through practical success was necessary to give the new knowledge worldwide credibility.

The use of dormant energy

Despite the collective wisdom of enlightened philosophers and early scientists, it would not have been possible to liberate the agrarian majorities from their existing state of subjugation and subsistence if the conditions of production had not changed fundamentally toward the end of the 18th century. *Within a few decades, the exploitation of fossil reserves provided an immensely vast and ever-growing supply of energy.* What reason and conscience had hitherto demanded in vain, namely the transformation of social structures into a constitutional state in which every citizen could apply for all available jobs, was to be firmly established when the fossil revolution created the necessary conditions. It was only through and after the unexpected influx of fossil energy that for the first time since the Neolithic Revolution the theoretical demands of the French Revolution started to be implemented in mass societies. By gaining access to the coal deposits buried underground (already extracted in wood-scarce England from near the surface)[55], Europe started a radically new way of life.[56] The data on the relationship between energy and GDP leave no room for doubt.

From then on, the curve of total social product sharply surged upwards. While global GDP, converted into 1990 US dollars, was around 650 billion in the year 1800, by 1900 it had reached approximately 1.98 trillion, nearly tripling in value. By 1990, global GDP had grown to 28 trillion dollars, a *fourteen-fold increase* in less than a century (Maddison).

This development closely mirrors the exponential increase in global energy consumption (composed differently depending on the industrial phase, including water and wind power, biomass, coal, oil, natural gas, nuclear power, etc.). In the year 1800, this consumption amounted to about 400 million tons of oil equivalent. A century later, it had already risen to 1.9 billion tons, nearly five times as much. Over the next ninety years until 1990, consumption increased by *a factor of sixteen* to reach 30 billion tons (McNeill). A characteristic of exponential growth is its constant acceleration: it starts gradually and becomes faster over time. Thus, half of all fossil fuels ever used (as well as half of all fossil CO_2 ever produced) were burned (emitted) in the last 35 years.

The connection between these two exponential curves should be evident. Coal and oil would certainly not have had any substantial impact without the invention of the steam engine and later the diesel engine and the electric motor. But these machines could embark on their triumphant journey solely because humanity had ignited fossil fire. The industrial revolution and the use of fossil resources form an inseparable unit.

The sudden energy boom had spectacular social consequences as well. The eightfold population increase since the end of the 18th century would

never have occurred without this revolution. And the lot of common people would change just as fundamentally over time. *The free choice of career for all, not only for the privileged few at the top, became possible because human slaves who had previously worked in agriculture could increasingly be replaced by lifeless slaves, namely fossil-powered machines.* This trend began in the second half of the 18th century in England and then rapidly gained momentum. Around the mid-nineteenth century, twenty-five men needed a full day to harvest and thresh a ton of grain; today, a single person can do this with the help of a combine harvester in just six minutes!

The fact that it took such a huge injection of energy to awaken Europe from its slumber and catapult tiny England into the rank of a world power is now widely documented. *In 1775, India and China together accounted for two-thirds of global economic output, with Asia contributing around 80 percent*. In other words, Europe was an insignificant appendix to the Eurasian continent, with little economic significance.

But what did the situation look like in 1950, almost two centuries later? At that time, Great Britain and the United States together already generated more than half of global economic output, while China's share had dropped to a negligible five percent. The factor responsible for this historical shift in global weight was the utilization of the energy reservoir stored in the Earth's crust over millions of years: first coal then oil and gas. French historian Fernand Braudel estimated the energy output for Europe before the Industrial Revolution to be around thirteen gigawatts, derived from animal labor, watermills, and wood combustion. This value has since grown by over a hundredfold, with about 85 percent of it being of fossil origin.

The extraordinary contribution of fossil sources becomes truly evident when comparing how many people would have been needed to achieve the same output using muscle power. As calculated by another historian, Ian Morris, England's steam engines around 1870 generated the equivalent of four million horsepower, which is about the power of forty million people. *If British industry had still relied on muscle power at that time, the United Kingdom's population would have needed to be twice as large. But those additional forty million would have consumed three times the amount of the British wheat harvest for their nourishment!* Perhaps no other figures so clearly demonstrate the fundamental impact of fossil impact.

A similar development took place in the United States. Around 1900, about a quarter of all farmlands was still dedicated to feeding horses. However, by 1927, gasoline-powered tractors were already providing the same amount of energy as horses, freeing up a considerably larger area for

human sustenance.[57] The productivity gains enabled by fossil revolution soon extended to all economic activities. Rolf Kreibich (2021) summarizes the outcome of scientific and technological innovations in the 100 years between 1920 and 2020 in the following figures: productivity increases in the production sector: about 4000%; productivity increases in the service sector: about 4500%; productivity increases in agriculture: about 3500%.

Growth - that came to be the new magic formula. Without growth, the upper strata can raise their own material standard of living only at the expense of the lower - and vice versa.[58] *The fossil blessing made growth possible for both the rich and the poor* - that was the real turning point in comparison with more than ten thousand years of agricultural civilization.

On the one hand, a world-historical success for the parts - the individuals

> Standing in 1750, it would have been reasonable to believe that it was a timeless and universal truth that monarchies and landowning nobles overseeing peasants with the help of soldiers would be the governance system in the future, that agricultural land would continue to be the most important money-earning asset, that per capita incomes would grow at only around half a percent per year, and that life expectancy would remain steady at about 30 years. That was how it had always been. You would not have imagined capitalism and democracy as we now know it, let alone that there would be a United States and that it would be the leading world power. *Ray Dalio*

Equality through competition

The effects of Fossil Revolution on social structure, specifically the relationship between people, are as profound as their impact on nature. We have seen that in no epoch of human history has such a high degree of equality been achieved as in the time of hunter-gatherers. Due to the imperatives of survival in a threatening environment, our early ancestors were compelled to a significant level of equality in rights and responsibilities. On the other hand, no era in human history has disregarded equality as much as the great agrarian empires from Egypt, India, and Europe to the New World. This had clear consequences for the social structure, which, to my knowledge, have never been adequately recognized.

The pursuit of equality included competition, while the retention of inequality and privilege excluded competition.

Competition is not particularly popular in our time, often associated – at times rightfully so – with notions of social ruthlessness, hardship, and struggle.[59] In contrast, there is a modern tendency to emphasize and idealize the sense of community in earlier rural communities. This is historically misleading. To the extent that it did in fact exist in agrarian civilizations, it was rather born out of necessity. In general, peasants had no interest in competition. It usually made no sense for them as any extra effort leading to increased output would only mean higher taxes, bringing them nothing but disadvantages. Under such circumstances, personal initiative would have been counterproductive. The individual farmer could only hope to have a modicum of influence with the powerful if he united with his peers. Among farmers, competition was thus out of the question: unconditional solidarity was required when dealing with those in power. This stance was to be repeated much later in the labor movement: *Competition weakened; solidarity made strong.*

These conditions underpinned the compulsive conservatism of the lower ninety percent. If every advance in agricultural productivity only led to increased taxes for the individual food producer, progress through innovation was out of the question. The greatest protection was to fight tooth and nail against all changes.

For up to 90 percent of all people, life was not devoid of competition because they saw it as an evil in itself, but because any innovation brought them nothing but disadvantages. Everyone cowered, kept a low profile, suppressed their own and their neighbors' initiatives, and clung stubbornly to prevailing traditions as these offered the best protection against the arbitrary power of the ruling class. No wonder that all over the world the conditions of production in all great agrarian civilizations have made poverty endemic. Around 1800, as the industrial revolution was just beginning, the average income was as low as it is today in the poorest countries of the African continent (around 500 international dollars per year). Almost 95% of the population lived on less than $1.90 a day. Today, that is considered "extreme poverty."

The desire for active change invariably originated from urban minorities that faced less pressure from rulers because "citizens" were harder to monitor and more capable of building counter-pressure. Yet, even here, competition was regularly frozen by organized guilds of merchants and craft guilds. Markets were territorially divided, profits were divided among masters, journeymen, and apprentices according to specific rules.

In a society where an overwhelming majority saw no point in competition, the latter even tended to be regarded as unlawful and antisocial because it offered a few the opportunity to break out of the existing order. People generally accepted the powerful and their claims, as authority seemed to be one of the eternal and unchangeable facts of human existence; however, stark differences in wealth between citizens, that is between people like you and me, aroused envy, and aversion. Private competition as an antithesis to solidarity and subordination always aroused great distrust in agrarian cultures, especially among the lower classes. This explains while the established elite could easily take brutal action against upstarts from below.

It was only with the breakthrough of fossil fuels and changed production conditions that those material prerequisites were created *that were to break the rule of privilege through generalized competition*. As we have seen, the theoretical insight, springing from universal moral conscience, that all men are born equal in rights, had made itself heard again and again in history; in the Age of Enlightenment, it was even triumphantly proclaimed. But it was the fossil fuel revolution tapping into the huge reservoir of underground energy that made it possible to put this ideal into

practice. The hereditary nature of professions and social positions was abolished; everyone should have equal access to the various functions of a highly complex state – *a demand that could be fulfilled to a greater extent than ever before, through institutionalized competition*.

This marked a significant social change, as *cooperation and competition became the two equally important principles of modern societies*. The interplay of thousands of functions – i.e. cooperation between professions – could only be realized by making private competition its foundation.[60] This, however, required the creation of several basic institutions. To establish a society where the access to all available social positions up to positions of power was determined by individual merit, not privilege, a *system of examinations* was required, in short, a system of institutionalized competition, which put cooperation on an equitable basis. Equal opportunity, which had been realized to a certain degree in China for two thousand years, was now introduced worldwide through general education and – on a higher level – through state universities.[61] The knowledge and skills of everybody were to benefit the welfare of the whole. This led to a development that I would like to call the "*privatization of power*."

The privatization of knowledge and power

In discussions about the modern economic system, the latter's peculiarity is usually registered under the keyword "capitalism" - a system aimed at increasing private profit. However, on closer examination, the economic aspect of this development is embedded within a comprehensive transformation that began with the mercantile societies of the late Middle Ages but only reached its full realization by the end of the eighteenth century: I am referring to the *privatization of knowledge and power*.

In business, politics, in the field of theoretical as well as practical knowledge, everywhere power gradually passed into private hands. The power that was originally concentrated at the pinnacle of the state in all major agrarian civilizations, was gradually distributed among an ever-increasing number of individuals. Capitalism denotes only one – albeit a significant and crucial – dimension of this profound revolution. In the economic context, it signifies the privatization of available capital.

But the privatization of power runs much deeper; it soon extended to all aspects of social life. Since the beginning of the Industrial Revolution, the privatization of knowledge and power has become the core of a social change that seeks to achieve the original equality of people through equality of opportunity.

Has this social reconfiguration been successful? The question can be best addressed by comparing societal transformations in terms of their respective starting and provisional endpoints. What did society look like prior to this new, all-encompassing privatization?

As described in the chapter "Agrarian Civilizations," three hundred years ago (depending on soil fertility and the state of pre-industrial technology), 80 to 95 percent of people lived in rural areas. They had to produce food for themselves as well as food and services for the 5 to 20 percent at the top of the social hierarchy. Under these circumstances, there could be no question of sharing knowledge and power. *Peasants living in rural areas were devoid of power and, therefore, largely bereft of rights in the face of their lords who lived off their yields*. As a rule, they were deliberately kept in ignorance by their secular and spiritual masters. Under these circumstances, democratic participation was out of the question. Even if the technical means of information - newspapers, radios, television, social media - that first emerged with fossil revolution had already been available, they would have been of no use to the hereditary food producers.

This was true of all major agrarian civilizations. At best, the majority was granted a certain degree of local self-governance, but free choice of occupation was out of the question. Peasants were not allowed to leave their land as otherwise the food supply for the ruling elite would have been insufficient.

Under such circumstances, the privatization of power – its democratic distribution – was all but unthinkable. This applied to the whole stretch of time from the Neolithic era to the industrial revolution, at least in the major, populous agrarian civilizations. It was almost a miracle when, from time to time, the son of a farmer managed to ascend to a higher status due to exceptional talent or support (in Europe, this largely occurred through the Church). These rare exceptions were counteracted by the prevailing rule: *whoever was at the bottom was condemned, together with his children and his children's children, to remain at the bottom.*

The injustice of this situation was something that people were always aware of. Human societies never turned into termite states, where different castes are anatomically distinct. For over five thousand years, since the rise of major agrarian civilizations, the lower classes were never content with their miserable fate – they knew quite well how the upper echelons lived. Therefore, there was never a shortage of designs for a new and better order, but these were easily suppressed and rarely brought to public attention. Wishful thinking remains confined to utopia when encountering the constraints of production conditions.

The demand for liberation of talent and private initiative only had a chance of realization when, since the late 18th century, *the material conditions for such a profound transformation* were ready – the exploitation of a vast and seemingly inexhaustible reservoir of fossil energy. That was the true cause leading to the redemption of the bottom 90 percent. In due time, more people got a chance to choose activities that best aligned with their personal talents or skills acquired through education. No longer did a rigid traditional hierarchy dictate the social roles of individuals from birth to death; now, individuals – in principle, the entire population – had the opportunity to take their fate into their own hands.

The division and distribution of power – its privatization – became particularly visible in the economic sphere. In principle, everyone could now become an entrepreneur and, if they possessed the necessary skills, achieve prosperity and recognition. Hence, it is not surprising that economic transformation, right from the outset, received the most attention. Think of famous chroniclers like Adam Smith or the Marquis de Condorcet. Economic success, in other words, material wealth, would now spectacularly influence social relationships. Suddenly, industrial captains, nouveau riche merchants, or even speculators displaced the old holders of power – the aristocracy and high clergy. The economic restructuring of society since the industrial revolution was the first visible expression of a comprehensive privatization of power. Its consequences are still spectacular today, as Steven Pinker emphasizes in his book *Enlightenment Now*. "By 2008 the world's population, all 6.7 billion of them, had an average income equivalent to that of Western Europe in 1964 ... In 1800, at the dawn of the Industrial Revolution, most people everywhere were poor. The average income was equivalent to that in the poorest countries in Africa today (about $500 a year in international dollars), and almost 95 percent of the world lived in what counts today as "extreme poverty" (less than $1.90 a day) ... In the richest country two centuries ago (the Netherlands), life expectancy was just forty, and in no country was it above forty-five. Today, life expectancy in the poorest country in the world (the Central African Republic) is fifty-four, and in no country is it below forty-five."

Or rather: nationalization of the private sphere?

Anyone who sees a trend towards comprehensive privatization of power over the past two hundred years is likely to face fierce resistance. The great individualist Bertrand Russell believed he was on the trail of an incessant expansion of state power, which indeed he spent his entire life

fighting against. In his view, such a basic institution as the public school was an instrument that in the name of government massively intervened in education which previously had been a private sphere. Undoubtedly, such a state-run institution covering the entire population had not yet existed in the great agrarian civilizations. Prior to industrial revolution, all knowledge needed by the lower ninety percent of food suppliers was passed down from father to son, from mother to daughter. In the cities, the guilds of artisans and trade maintained their own, partially secret knowledge as a monopoly to set themselves apart from competitors. The nobility, where Russell himself was rooted, could afford their own tutors to educate their children. Here, the establishment of a school that was compulsory for all was perceived more as a restriction of personal freedom and privileges.

In fact, the school is probably the most important project of the Enlightenment, because people can only be equal – at least in terms of their opportunities – if everyone enjoys the same basic education in the emerging society of knowledge and skills. Compulsory schooling was and remains the most important, indeed the indispensable instrument for such equality.

But its abuse as an instrument for ideological indoctrination was a temptation that totalitarian ideologies and states could never resist. In "1984" George Orwell described this dystopia just as vividly as Aldous Huxley in "Brave New World". It is true: *the public school as an instrument of enlightenment was and is always in danger of degenerating into an instrument of brainwashing*.

And yet, Russell and his pessimistic followers overlooked one fundamental difference.

An all-powerful state that abuses the public school for its own purposes of indoctrination is committing a crime against the soul of its subjects. But the privatization of control over nature has even more far-reaching, indeed it has apocalyptic consequences as it is well on the way of making the globe uninhabitable for our species.

This asymmetry of risk is the necessary consequence of the ever-increasing competition between nation-states. The share of science education in the total curriculum must inevitably become larger if a state wants to assert itself economically, i.e. scientifically and technically, against others. Scientific and technical education forms the indispensable basis for the economic apparatus of the domination of nature, which after school takes place in private enterprises. As will be shown later, this is by far the greatest danger we are facing in the 21. century. Warners such as Bertrand Russell and George Orwell only saw the dangers that arise in totalitarian (as opposed to democratic) states from the ideological indoctrination of

youth. Only Aldous Huxley foresaw the threat posed by the privatization of scientific and technical knowledge itself.

Protests against the Privatization of Power

The economic restructuring caused by the industrial revolution provoked not only different but downright opposite reactions. Ardently supported by some, it was vehemently contested by others. Its proponents saw and still see it as liberation from the shackles imposed by the state. To this day, they advocate for a lean and minimal government. Previously, all power had been concentrated in the hands of a few who appropriated the economic surplus from the majority. Now, individuals were free to sell this surplus, turning it into a benefit to themselves and to others. Only the framework of this market exchange had to be regulated by a superior authority like the state, but the economic activity itself lay in private hands. Economic thinkers from Adam Smith to Friedrich Hayek interpreted the new economic system in this way – as liberation of the individual from state coercion. An overwhelming sense of liberation from the bonds of the past fueled the optimism of the eighteenth and nineteenth centuries.

Yet, critical voices were soon to emerge. Historians are aware that the sharpest psychological insights are often foreshadowed at the beginning of social changes. Bernard Mandeville, an English physician and writer of Dutch origin, who recorded his observations nearly a century before the industrial revolution, saw a nation's wealth as grounded in vice, or at least in the egoism of its actors. A government that makes the majority work for low wages can produce its trade goods more cheaply, be more competitive internationally and accumulate wealth faster than another that takes a more humane approach.

Unfortunately, this observation is by no means incorrect; even today, nearly two hundred years after the industrial revolution. Germany's Agenda 2010, pushed through by Chancellor Gerhard Schröder, helped the "sick man of Europe" to stand back on its feet for exactly this reason. The social system was made cheaper and made the German export industry more internationally competitive.

In any case, the close connection of capitalism, freedom, and vice has persisted since Mandeville. This narrow connection was even encapsulated into an easy formula by none other than Adam Smith. Smith insists that we should expect less from the virtues of a baker than from his egoism. "If he /the baker/ is selfish and wishes to make a high profit, he ultimately has no choice but to produce consistently good and tasty baked goods."

Here, egoism is not just tolerated as the price of freedom but is declared a positive principle.

The opponents of capitalism view this new personal freedom - which I call the privatization of power - as a rejection of the spirit of community and social justice, as well as a rejection of equality. Karl Marx championed this position with worldwide historical success. Not with logical consistency, however, because the 28-year-old Marx envisioned a classless society that presupposes unrestricted and indeed impossible freedom. According to him, this new type of society would allow each of us to "*do one thing today, another tomorrow, hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner, just as I fancy, without ever becoming a hunter, fisherman, herdsman, or critic*."

How to realize this ideal in a high-tech society that already existed during his time, Marx never explained. He is deliberately talking about hunters and fishermen, not railroad engineers, university professors or quantum physics researchers, who would have ridiculed this ideal as a childish utopia. His notion of a classless society, where everyone can switch their occupation at will, may have existed ten thousand years earlier - among hunters-gatherers (critics were undoubtedly found even then).[62]

However, Marx was more receptive to a further change in society. The freedom gained under capitalism had indeed eliminated an old ruling class - the nobility and the clergy - but had put a new one in its place: the bourgeoisie, i.e. those private forces that now placed themselves at the head of the state, sometimes through personal ability - but often only by virtue of particular ruthlessness.[63] One did not need to be a Marxist to recognize a new tendency toward the concentration of power. From Henri de Saint-Simon to Joseph Fourier, Max Weber, and Thomas Piketty, it was clear to the astute observer that a new ruling class was forming, leading to new inequality.[64]

But the tendency towards renewed class formation was by no means inevitable - a fact that Marx consistently overlooked. The Enlightenment had aimed to abolish all privileges that could not be justified by reason. A state, if it were to prosper, had to rely on the active participation of its citizens - this was a dictate of reason. It could be realized by allocating prestige and material benefits to every citizen exactly to the extent to which he increased the common good through his knowledge and skills.

In principle, this laid the foundation for a classless society, as *classes only emerge when privileges can be transferred from one generation to the next*. Marx saw this differently and thus caused immense harm. He resorted to a rather simple, if not primitive, solution. Instead of accommodating human differences he wanted to make material benefits equal for all. Everything: the means of production, the ownership of houses and

land, furniture, books etc. should belong to the state and thus to everybody. No individual should dispose of these at his own discretion.

The German thinker from Trier could not claim to be the inventor of this model. In some way or other, it had existed throughout human history, namely in the biological core of all societies: the family. Where the latter was organized in a patriarchal manner, as happened in most agrarian civilizations, it existed at least in the relationship between mother and child and among siblings. And not only there: common ownership can still be found in some religious sects today (even if only so long as these do not exceed a few dozen members for then the common ownership tends to crumble).[65]

What was possible within families and will likely always remain so, since the sharing of goods in a love-based small community appears as an ideal, has never been transposed to mass societies for more than a very short time. Love that binds a handful of people together cannot be transferred to millions of fellow citizens even within a single state. Under such conditions, strict material equality and communist sharing can only be established through terror and violence, as practiced in France by Robespierre, in Russia by Stalin, in China by Mao. Just as Karl Marx understood freedom in a way that was only possible among hunter-gatherers (hunt in the morning, fish in the afternoon ...), he also understood the relationship between humans and property only in a way practiced within families and small religious communities.

The ideal of a classless society is historically linked to the name of Karl Marx, but unjustly so. The Enlightenment thinkers had presented a feasible vision, while Marx proposed an unrealizable one. *Marx intended to achieve anarchy, the ideal of a society without rulers, through the detour of dictatorship*. The proletariat was supposed to seize power and then become the only remaining class. The realization of this program was unlikely even in Marx's time and it is entirely inconceivable today. As everyone knows, the Marxist proletariat exists in dwindling remnants only, its victory is completely impossible today. The lasting effect of Marx' social doctrine is to foster animosity between classes - especially between the working class and the bourgeoisie - when the real goal should be to prevent the emergence of classes altogether by eliminating hereditary privileges, as demanded by the Enlightenment. Marx's teachings directly led to dictatorship, while the teachings of the Enlightenment could lead either to the rule of experts – replaced with each generation - or to democracy.

Knowledge, science, and skills

Let us once more look back to the past. For the longest time in history, the highest prestige was enjoyed by people who explained the meaning of world and life. These were mainly priests and wise men (philosophoi), because such meaning lay in the decree of the gods or the eternal orders of nature, which in turn conditioned the correct moral action of man. Secular rulers could enjoy an equally high reputation only if people were sure that they acted in accordance with divine rules. Not infrequently, secular, and spiritual power coincided. Theocracies claimed to directly implement the directives of higher powers for the benefit of the ruled.[66] Marxism echoed this symbiosis by replacing the will of the gods with pseudoscience. "When Marxism of Leninist provenance came to power in Russia, it very quickly fell into the ways of Caesaropapism" (Münkler 2023).

We find this reference to morality and the will of higher powers in the three largest civilizations of Eurasia, in China as well as in India and in Europe. In India it was the Brahmins, in China the literati-governors, in Egypt the priests who enjoyed the greatest prestige. In the Christian Occident, until the French Revolution, it was the Church that not only gave people a world view and an understanding of reality but even prescribed it. Its aura of prestige and power was based not least on the fact that until modern times it was mainly priests and monks who mastered the magical art of reading and writing Until modern times, it was mainly priests and monks who mastered the magical art of reading and writing and, through organized, systematic activity, turned some monasteries into quasi-capitalist enterprises.

It is unlikely that the religiously prescribed understanding of the world and its mediators were accepted anywhere unreservedly and without contradiction. There have always been doubts and dissenting voices, but during the past ten thousand years they never achieved a lasting breakthrough. This only happened after the fossil industrial revolution. Then, however, this change occurred overnight, as it were. *Within a few generations, the people considered most competent were completely replaced*.

Now, a different kind of knowledge emerged that for the first time awakened in people the hope of not merely understanding but changing and improving this world. The new knowledge was not based on beliefs, moral convictions or philosophical principles, but *on knowledge of the regularities of nature - its so-called laws*. Nature, however, was the same across all borders, its laws could be recognized and used by all in much the same way.[67] A different breed of people now moved to the forefront: scientists and the manufacturers and inventors of technical devices - people who had been considered as little in the world of priests as craftsmen

and practically active people in general. Scientists now produced a completely new kind of literature, based predominantly or entirely on formulae, i.e. on measurements and mathematics.[68] The technicians, on the other hand, produced those new devices that correspond to these formulae. Both scientists and technicians were expected to change and improve the world in a way that was no longer credited to the administrators of superhuman knowledge.

It is no coincidence that one of the first to proclaim and propagate this new worldview in an almost clairvoyant way lived in a time of unbelief, the time of William Shakespeare, about whose godlessness Leo Tolstoy complained so much. In his unfinished utopia "Nova Atlantis", Francis Bacon (1638) formulated the vision of a *man-made new world* - no less than two hundred years before its actual genesis! - in an uncannily modern way conjuring up the coming paradise of industrial society. "*We have also engine-houses, where are prepared engines and instruments for all sorts of motions. There we imitate and practice to make swifter motions than any you have, either out of your muskets or any engine that you have… We imitate also flights of birds; we have some degrees of flying in the air. We have ships and boats for going under water, and brooking of seas; also swimming girdles and supporters. We have divers curious clocks*…"

Nova Atlantis – that is a whole new world just emerging. No longer are statues of stone or bronze erected for people who explain the meaning of life, but excellence and greatness are measured by those numerous little technical instruments they have invented. It took almost half a millennium for this new conception of meaning to be summed up and satirized by a great American economist. John Kenneth Galbraith says: "*If a man seeks to design a better mousetrap, he is the soul of enterprise*; *if he seeks to design a better society, he is a crackpot.*" So it is. The explainers of meaning were first pushed aside, finally they were considered not merely superfluous but harmful crackpots.

But Francis Bacon and even the French Revolution still had quite a hard time with these "mousetraps". Material progress through more knowledge and mastery of nature *remained a mere thought experiment* for the time being - energy sources were simply too sparse. Although there had been mills of water and wind in large parts of Europe since the beginning of the second millennium AD, with England even mining some coal above ground, these were the only sources of energy besides the ancient muscle power of man and animal. Such a meager potential was just enough to imagine another world as Bacon did – *but it was not enough to actually bring it about.*

The real breakthrough came not from these prophetic musings but from Fossil Revolution of the late eighteenth century. Bacon's prophecy finally

came true. Statues – no mere literary ones but made of bronze or stone - were erected to technicians and inventors, to basic researchers and in general to all those who referred to the new doctrine of salvation, the natural sciences. On these men – much later on women too - the highest honors were now bestowed. At the end of the 19th century, this shift in meaning was even turned into an official ritual. The Nobel Committee in Sweden does not honor philosophers and priests but primarily people who decipher the laws of nature in view of dominating the latter.

The rise of engineers and the demise of priests, philosophers and other world explainers are two sides of the same coin. Religion was soon relegated to a secondary role. This also applies to their secular offshoots, philosophy, and the humanities. Once again, I would like to quote U.S. psychologist Steven Pinker (2003). "*Philosophy*," he says, "*today gets no respect. Many scientists use the term as a synonym for effete speculation*." And elsewhere, "*Universities have disinvested in the humanities: since 1960, the proportion of faculty in liberal arts has fallen by half, salaries and working conditions have stagnated…*"

In this perspective, the designation of the new doctrine of salvation as "science" is misleading as it insists on "scire" that is on mere knowing. It would be more correct to speak of "doence" meaning an *action-creed*. For it was precisely priests and philosophers who embraced mere knowledge without aiming at changing nature. Nature appeared to them as a finished work that man should accept as God-given creation. From their point of view, it was downright blasphemous to change God's work (remember that Francis' strange doppelganger, the monk Roger Bacon, had been punished by his superiors for his experiments as late as the 13th century). By contrast, the new "doence" or action-creed aimed from the beginning beyond mere knowledge. Practical success was its highest goal, as recognized by the great Austrian physicist Ludwig Boltzmann (1990): "*I do not consider the achievements of technology as incidental byproducts of natural science; I consider them as logical proofs."*

At this point, we again encounter the privatization of knowledge and power - that is, its distribution among the population. From then on, practical success was open to everybody. Unlike the Holy Scriptures, accessible only to the initiated and literate (with its reading for one and a half thousand years expressly denied to the masses), the book of nature is open to all, everyone could read it and learn from it. *All people were now called upon to participate in the constant changing, reshaping, and revolutionizing of the physical world.* When, after the end of the 18th century, the cornucopia of fossil fuels poured first over Europe and then over more and more countries and continents, so that the newly acquired theoretical knowledge provided ever more spectacular proof of its eminent usefulness,

the exploration and mastery of nature became a collective human project that superseded all previous ones with incredible speed.

Why has the new doctrine of salvation**,** the new action-creed been so much more successful than all previous ideologies? The main reason was given by Ludwig Boltzmann. There is no need to *believe* in science - technology provides us with practical proof of the correctness of its statements. But there are two more features of almost equal importance. One is the potentially infinite extension of science. The exploration of the laws of nature and their practical application knows no limits - it can be extended to infinity, even beyond man's limited habitat right into the boundlessness of the extraterrestrial cosmos.

And a further feature: the new method can be adopted by all traditional cultures and even by deadly hostile ideologies. For science presupposes neither aesthetic nor moral criteria. *By its very nature, the exploration of nature is extra-moral and trans-aesthetic*, therefore it effortlessly overcomes all existing cultural barriers. Mongolian shamans, Indian gurus, the followers of ISIS and the Witnesses of Jehovah have no inhibition to use modern gadgets like cell phones, computers – and of course – the newest and most deadly bombs.

Democracy – a reversible progress

> Whereas democracies assume that everyone is fallible, in totalitarian regimes the fundamental assumption is that the ruling party or the supreme leader is always right. Harari

> What defines a system as 'democratic' is only that its centre doesn't have unlimited authority and that the system possesses robust mechanisms to correct the centre's mistakes. Harari

The sciences of nature are fundamentally accessible to all humans. Knowledge is not inherited; it must be acquired through individual effort. In this regard, science and enlightenment were inherently democratic from the beginning. However, democracy as a political form of governance does not necessarily arise from the demands of enlightenment. If knowledge and skills are to replace privileges, we may well argue that the leadership of the state should be in no other hands than those of educated experts. Given this premise, it is by no means surprising that leading figures of the European Enlightenment, such as Montesquieu, Locke, Voltaire, Hume, Rousseau, or Kant, widely differed as to their opinions on this matter. For instance Rousseau: his "volonté générale" was never more than an intellectual construct, only to be found in the real world when the masses are incited by demagogues. And let's not forget: more than two

thousand years earlier, none other than Plato had expressed the opinion that the governance of a state should be in the hands of the knowledgeable — the philosophers as he called them. In doing so, he was inspired by Sparta, a military dictatorship.

The demand for democracy did not seem to logically derive from philosophical premises or the principles of enlightenment. Governing a state requires knowledge and experience – much more than overseeing an individual enterprise, like a foundry, bakery, or shoemaker's workshop. There, nobody would think of entrusting leadership to somebody without experience. So, why should all individuals in a state have an equal say when it comes to decide matters of good governance? Why should all people be equally eligible as candidates for the highest positions of power - for example president and prime minister - even if they have no idea of the tasks that await them? Does such an understanding of democracy align with the goals of European Enlightenment?

The question is even more relevant because the most important institution of democratic states is almost immune against democratic influence. *In the most advanced states, modern industrial enterprises were only exceptionally organized democratically* - at times this was the case in the former Yugoslavia and during the first post-war decades in Japan. The aversion to democracy in business had a sound reason, for this central institution of the Western world and beyond *owes its extraordinary success precisely to its non-democratic structure*. In efficiency-driven institutions, what matters is expertise and the ability to use it rationally to achieve planned goals. *The industrial enterprise, as the economic powerhouse of all modern states, is a consciously anti-democratic, hierarchically devised organization, which by its very omnipresence presents an alternative model to political democracy.*

Hardly anyone protests this anti-democratic stance, as it appears to be reasonable and even indispensable. It is generally accepted as a matter of course that in a rationally managed company, the voice of a layperson without specialist knowledge should not carry the same weight as that of a trained expert. However, this truth does not apply to the economy as a whole, but specifically to manufacturing companies. Trade, with its offshoot advertising, requires little specialist knowledge, but all the more the ability to persuade, manipulate, and exert psychological influence. As a former real estate agent, the current president of the United States is known to come not from the manufacturing sector, but from trade.

The central importance of specialist knowledge for the manufacturing industry leads to the further insight that, at best, the traditional family business is a carefully managed autocracy that acts in the interests of its employees; at worst, it is a dictatorship that wears people down. The

modern joint-stock corporation is no exception to this rule. Being mostly controlled by shareholders, that hardly makes it a healthier place for employees, as it generally aims to serve the interests of investors. And the effects of such an undemocratic organizational structure extend still further. Those who resist the directives of corporate management may not be sent to Siberia, imprisoned, or outright killed, as is the norm in political dictatorships. Corporations have a simpler solution: *dissenters or the inept are simply fired*. The principle, however, remains the same. Like in a political dictatorship, the dissident is excluded from the ranks of recognized group members. Amazon, Google, Microsoft, Volkswagen, etc. are undemocratically structured. This is not criticism, but a necessity. It is the responsibility of a higher authority, the state, to ensure that their activities serve not only private interests, but always the common good as well – or at least that they do not conflict with it.

But why democracy, after all?

> Between 2007 and 2014, China crisscrossed its own countryside with 9,000 miles of new high-speed rail, more than the rest of the world combined. *Alfred W. McCoy*
>
> Their /the Chinese/ system of governance is more like what is typical in big companies…, so they wonder why it is hard for Americans and other Westerners to understand the rationale for the Chinese system ... *Ray Dalio*

The Enlightenment insisted on expertise and competence, and this program was faithfully adopted by business. So why do we need political democracy at all, *if the core organizational structure, even of democratic states, is and will certainly persist in being anti-democratic given that its extraordinary efficiency is owed to this very fact?*

Max Weber had already raised this question. He believed that modern states would increasingly resemble authoritarian bureaucracies. Had he been able to witness the rise of China, he would have seen this as a most convincing confirmation.

As a matter of fact, the two central Western institutions – the political order on one, the economic enterprise on the other side – are in stark opposition, each attempting to extend its governing principle across society. Labor unions have to a limited extent achieved democratic participation in areas such as working conditions and wage negotiations.[69] However, the likelihood of the democratic principle spreading to the economy is nearly zero, especially in our time where expertise is essential. But the reverse process, *the spread of hierarchical and undemocratic corporate structures to the political order, remains a real possibility and danger*. This is not just a theoretical conclusion – this tendency has been proven

time and again throughout history, most recently by a certain Donald Trump.[70] If the majority of a population consists of poorly educated, perhaps even largely uninformed people who do not understand the complex problems of a modern technological society, then the uninformed will elect an uninformed person as their president or their parliamentary representative. In comparison, a political dictatorship can — *under certain conditions!* — be far more successful, indeed just as successful as a modern industrial enterprise.

In any case, it seems difficult to deny China's one-party system and its leadership a sensational historical success. Within a few decades, China catapulted from a bitterly poor agrarian nation to a superpower that threatens to dethrone the previous alpha state, the United States.[71] The secret of this success is as clear as in any well-run enterprise. First, a goal is set; for a company, this is maximum profit. In the case of a country like China, the goal is determined in such a way that the government can count on maxi-mum consent from most of its citizens. This was and is the eradication of poverty and eventually the achievement of Western levels of prosperity and beyond.[72]

Second, the goal must be reached in the shortest possible time and at the lowest cost according to rational criteria. For a company, this approach usually involves the reduction of costs or improved production methods. In China, it is taken for granted to engage scientific experts in overcoming poverty. Development - 发展 (Fa zhan) and science - 科学 (Ke xue) - based on knowledge and skills are the prevailing mantras – fully in line with the Enlightenment. The government's promise may be summarized in the following way: "*We'll make all of you a bit wealthier every day, but we can only achieve our ambitious task if you follow our instructions to the letter. If you don't, you are the enemies of progress, and we will eliminate you*."

So far, the Chinese leadership has fulfilled both parts of its promise: a meteoric rise – meticulously planned like that of any successful corporation – and, on the other hand, the ruthless prosecution of all dissenters and dissidents opposing its directives.[73] So long as the first part of the promise is consistently realized, most citizens support the regime, and it can feel sufficiently secure.

Did China endorse and fulfill the Enlightenment's ideals by not only applying knowledge and skills to corporate management but also to the governance of the state? And if so, why don’t we transfer even in Western states the undemocratic but well-functioning corporate model to the political sphere as it works so well in China – and is, indeed, increasingly emulated by developing countries worldwide? Why not an elite of

knowledgeable people, when in democracies there is a risk that the ignorant and demagogues will rise to the top of the state?

We know that many people in the West are asking themselves precisely this question — especially leading business figures such as Peter Thiel, Elon Musk, and lots of Silicon Valley executives. The same attitude is likely to prevail among CEOs doing business in Russia or China. And there can be little doubt that the freedom to express one's opinion on any subject in public is an intellectual luxury that means little or nothing to people living in poverty. They willingly give up this freedom if they can hope for material progress in return.[74]

German history offers a stark example of such voluntary renunciation of freedom. Between 1924 and 1928, the share of votes for the Nazis had decreased from 6.6% to 2.6% – as Germans were gradually experiencing better times. They could afford democracy and freedom of speech. Then, the Great Depression of 1929, which had swept over from America to Europe, hit Germany, undoing in an instant the modest economic recovery of the previous four years. Between May 1928 and September 1930, the number of unemployed skyrocketed from 270,000 to about 1 million. By 1933, it had multiplied to 5.5 million. Desperation drove people to clamor for a savior.[75] The share of Nazi votes surged from 18.3 to 43.9 percent in these three years. The freedom promised by democracy - and largely granted until then - no longer played a role for family men queuing in front of soup kitchens. They were ready to follow any populist who promised them salvation. Democracy had lost.

The same may happen in the United States. There the outsourcing of the past thirty years has caused a significant portion of the working class to drift into precarity.[76] For these people, Donald Trump is a messiah who, like Hitler, Mussolini, and other great seducers, promises them salvation. Furthermore, the contrast between the super-rich power elite and the broader masses is evident not only in income and wealth but also in education and the opportunities it provides. A handful of American universities still rank among the world's best, but "*a third of high school graduates never read another book for the rest of their lives, and neither do 42 percent of college graduates*" (Chris Hedges). Donald Trump is a representative of this stratum. Therein lies an acute danger as a minimum level of education is essential for democracy to function.

The state – a moral purpose with technical means

> It is particularly crucial to remember that elections are not a method for discovering truth. Rather, they are a method for maintaining order by adjudicating between people's conflicting desires. Harari

> Democracy is based on the understanding that the people is never a unitary entity and therefore cannot possess a single will. Harari

Let me summarize: The attitude of the European Enlightenment toward democracy was ambivalent, depending on whether governance was based on privilege or on knowledge and ability. Privilege was embodied in ruling dynasties that had for centuries stood at the head of states availing themselves of hereditary power. This was unacceptable to all great thinkers of the 18th century. In a democracy, an inept statesman can be voted out, whereas in a dictatorship, removal is only possible after catastrophic defeats or devastating civil wars. Despotism typically involves an entire nation paying the price for one individual's madness, with no institutional mechanism - self-correcting mechanisms, as Harari (2004) calls them - to remove a leader in case of incompetence. This difference alone is so significant that democracy – to borrow from Winston Churchill – is indeed the worst form of government, except for all others that have so far been tried. The Enlightenment rejected all forms of privilege which it consistently replaced with knowledge and skills – much like any modern corporation. Sons and daughters do not normally rise to managerial positions, just as the children of a Nobel laureate do not inherit his honor.

Well, could this not be an argument for not electing our statesmen but elevating only those individuals to such ranks who have passed specific examinations, like ancient China's literati governors? And could we not overcome the distinction between democracy and dictatorship by following the example of today's China, entrusting the state to science, and running it, like Western companies, exclusively by experts with specialized knowledge?

Many would certainly answer this question in the affirmative, but they commit a fundamental error, *because they assume that states may be equated with corporations.* But this is by no means the case. A crucial difference between the two immediately becomes apparent. A company can replace its employees at any time since they are no more than functions in the service of predefined tasks. If these are no longer performed by the existing staff, or if they are no longer performed sufficiently well, people must leave. There is no legal right to be part of a company.

This reduction of humans to carriers of specific functions characterizes the nature of economic enterprises and all other organizations like bureaucracies, where predetermined goals are realized through rational means.

But these rules evidently do not apply to a state. *It cannot choose its citizens, let alone replace them with others. They have a right to belong*.

Certainly, states also consistently set goals achievable only through rational means – in this respect, they resemble enterprises. That explains why, in our time, they increasingly rely on the knowledge of experts. When a single, clearly defined goal determines state action, such as the imperative of economic growth to overcome poverty, and this goal supersedes all others, the state may indeed be ruled like a company. While it cannot replace its citizens, it can imprison them or even execute them if they defy state mandates. This continues to occur in China to this day.

But only in developing nations plagued by extreme poverty may such a clearly defined and one-dimensional goal displace all other objectives. Once basic human needs are met, other needs take precedence – and these are only partially rational, so they resist realization through rational means. The moment humans are more than functions, entirely different perspectives come into play: they seek respect and spiritual well-being, they want to have a voice in matters of public interest and decisions. Likewise, they want to explore new horizons of knowledge and experience for themselves and others. They contemplate the distribution of wealth, rights, and responsibilities and desire to have a say in it. *Such moral choices precede all rational knowledge – they are universally human*.

When functioning correctly, democracy grants its citizens this participation. *Experts have a say wherever specific moral tasks subsequently require rational means for realization, but they have no say in the moral decisions themselves*. This is the case for nearly all public issues and problems. Whether same-sex marriage should be legally equated with heterosexual marriage, or gender-neutral language should be permissible; to what extent differences in the distribution of wealth should be acceptable – these and almost all questions related to human happiness or suffering elude rational explanation. They express moral or aesthetic preferences or aversions, which resist rational justification. Nevertheless, decisions are always made one way or the other: in a dictatorship, through decrees from above; in a functional democracy, citizens decide in a manner perceived as just.

European Enlightenment was focused on reason, which made it unable or unwilling to see that *moral decisions precede reason*: they should have the first and the last word – and this word belongs to the whole community. Therein lies the fundamental justification for democracy. All people together should decide on the fundamental goals of a state, while their execution remains in the hands of a state bureaucracy legitimized by knowledge.

In this perspective, *the state is a moral purpose with technical means*. Ultimately, all state action is shaped by moral (plus aesthetic) purposes, using rational expertise only as its – often indispensable – means. This constitutes the fundamental difference compared to a company. Companies have no moral purpose or rather assume it as given when offering certain goods to customers. As soon as entrepreneurs – private individuals – behave like statesmen, they become a threat to the state.[77]

Democracy and dictatorship are the two extremes between which political reality positions itself on a scale with open ends and fluid boundaries. There is no pure democracy or absolute dictatorship; rather, in every democracy, dictatorial tendencies lurk, and conversely, every dictator relies on loyal followers, thus requiring participation from below. We saw that all Western democracies are built on a broad base of undemocratic enterprises that constantly threaten to spill over into the political realm. So long as a majority is largely content with the existing conditions (primarily wealth distribution and upward mobility), the moral dimension of state action is tacitly accepted and presupposed. The state's role then seems to be solely technical: it is expected to support and promote these conditions effectively through rational means.

However, when a majority perceives the existing conditions as burdensome and unjust – lack of upward mobility opportunities, wealth distribution based on privilege, acute threats to the standard of living such as climate change, etc. – the moral dimension immediately regains prominence. People are asking questions about justice and about the moral legitimacy of state leadership. In such times of turmoil, a figure like Franklin D. Roosevelt may emerge, who - openly criticizing monopoly rule and plutocracy - redirected institutions toward the common good. Moral impetus and the ability to implement it through rational means were balanced during his governance. Democracy and the common good were again reunited.

Contemporary dictators like Vladimir Putin and populist leaders like Donald Trump also call loudly for moral renewal, finding resonance among the masses. However, the American real estate speculator could hardly be more different from Roosevelt, his great predecessor: with him the notion of making America great again through rational means is entirely absent. The common good is of no concern to the man, and even self-interest matters to him only insofar as it concerns his own person. On the other hand, the new Tsar in Russia certainly knows how to utilize and promote expertise, but he cherishes the moral impetus in its most archaic form. Just as the Germans were the chosen people for the Nazis, the Russians are, in his view, the chosen people on the Eurasian continent. In Putin’s view they have the right to force other nations under the Russian yoke. *This diabolocracy is more dangerous than the modern plutocracy*

of the Americans. Putin is more akin to Hitler. His brutal rule will only endure if he can rely on the unconditional loyalty of his followers. But by stressing loyalty, he loses many people whose expertise would be important for his country. Russia is suffering from intellectual emaciation. The delusion of a single man drags an entire nation into the abyss.

The great transformation

Knowledge and skills, democracy, abolition of privileges – these demands, some of which are directly, some indirectly rooted in the ideals of the Enlightenment - have reshaped the world after the fossil revolution created the necessary material conditions. Knowledge and skills have made democracy possible in the first place. As Yuval Noah Harari shows in his latest book "Nexus", democracy can only develop in mass societies if information reaches all citizens. However, this was only the case after the invention of the printing press and later of radio, television and social media. But democracy requires more than just means of information. It relies on self-determination leading to a free choice of profession. The "agrarian dependency formula", which until fossil revolution had condemned eighty percent or more of the population to become food suppliers for the top twenty percent, did not allow for such a choice. This was another reason why democracies could not develop in former mass societies.

Comparing energy output, population, nutrition, health, life expectancy and political constitution before and after fossil revolution, it is evident that the past two centuries have transformed the world more rapidly and thoroughly than any previous era in human history.

Remarkably quickly, population density adapted to the new trend, even anticipating the emerging optimism. Around 1700, there were about 700 million people on the globe; a century later, the number was already just under a billion. By 1900, this figure had risen to slightly over one and a half billion, and by the year 2000, the planet's population had skyrocketed to six billion people, now nearing eight.

The most crucial factor for a development later referred to as the "population explosion" was and remained the availability of food. In developing countries, about 13 percent of people still suffer from malnutrition, but 45 years ago, it was 35 percent, and the corresponding figure for the year 1947 was estimated to be as high as 50 percent worldwide. However, it should not be forgotten that this progress is even more remarkable considering that the world population increased by about five billion people during the same period.[78]

The driving force behind this development was technological progress. The green revolution quadrupled crop yields between 1950 and 2000; only in this way was it possible to provide sustenance for a rapidly increased population, rising from around 1.5 to six billion people during that time.[79]

Although nearly a million children still die from pneumonia each year worldwide, half a million from diarrhea or malaria, and hundreds of thousands from measles and AIDS, overall health is much better today than a hundred years ago. Medical progress has made many diseases curable and eradicated, some entirely, such as smallpox, an extremely painful and disfiguring disease that claimed the lives of 300 million people worldwide in the 20th century. In many countries, people now suffer more from diseases of affluence, primarily caused by excess calories.

The life expectancy of Europeans has increased by about a third over the past century. During the last two centuries, child mortality rates have been reduced from over thirty percent to less than five percent, and in developed countries, less than one percent.[80] *Just two hundred years ago, the life expectancy even in the then-richest country in the world, the Netherlands, was only forty years; nowhere in the world was it higher than forty-five.* However, even the poorest countries today, such as the Central African Republic, have a life expectancy of fifty-four, and in no present-day country is life expectancy less than forty-five years. A hundred years ago, the average American died at the age of fifty-one, whereas today they retire at sixty-two.

Around 1800, no country in the world had an average life expectancy higher than forty years. By 1950, it had risen to about sixty in Europe and America.

Overall, we have become more peaceful as well. The contrast between times when mere survival was paramount for humans and those when their existence was so secure that they could pursue purposes beyond mere survival can be gleaned from the numbers summarized by Steven Pinker (2018). Uncertainty and the constant struggle for survival take a much greater toll on life than a peaceful existence in orderly conditions. A full stomach doesn't necessarily make good people, but those who are hungry are more likely to commit crimes. Today, in the most peaceful countries of Europe, there is an average of one murder per 100,000 people. The world average is nine times that much, with a significant portion attributed to economically unstable states like Colombia or Somalia. In the feudal states of medieval Europe, as many as twenty to forty people out of 100,000 died from murder.

The material success of Fossil Revolution also includes Europe's temporary domination of most of the rest of the world. Until 1914, Great Britain - a tiny island with a small population – succeeded in controlling a

quarter of the Earth's land area reaching its greatest extent in 1921. Altogether, the industrially armed states of a small corner of western Eurasia had conquered entire continents (North America and Australia) and subjugated the rest of the world, including the two advanced civilizations of China and India. This was not because Europeans represented a new race of superhumans - although since the late 18th century some of them believed exactly that – it rather was a direct result of formidable new inventions as Jared Diamond (1997) was eager to prove. There could be no doubt that weapons played a crucial role in this spectacular conquest. Efficient weapons, however, were the immediate fruits of the newly acquired scientific knowledge and skills.

For a while, it could seem as if the immensely higher physical well-being of people produced by the Industrial Revolution would be matched by an increase in social satisfaction. The protagonists of scientific and technological progress, England and the United States, granted their citizens ever greater democratic participation. In the second half of the twentieth century, especially after the fall of the Soviet Union, many were convinced that this model of actively involving citizens in the political decision-making process would triumph over authoritarian systems and dictatorships worldwide. The existential challenges of the fossil age were only foreseen by a few clear-sighted visionaries.

On the other hand, an existential failure for the whole: nature and mankind

> The dream of a congenial world commonwealth has long sparked the social imagination, yet throughout our fractured and bloody history it has remained a utopian abstraction. *Paul Raskin*

> We are so smart that we can produce nuclear missiles and superintelligent algorithms. And we are so stupid that we go ahead producing these things even though we're not sure we can control them and failing to do so could destroy us. *Harari*

Holodoxy is the study of the relationship between the whole and its parts. This relationship was fundamentally disrupted during the more than ten thousand years of agrarian civilization. In some of these, up to 95% of the population led a powerless and rightless existence. All this was changed by Fossil Revolution. The privatization of power, its distribution among many individuals, was its greatest achievement. It began in the second half of the 18th century, and, by the end of the 20th century, it had almost conquered the entire world. For the first time since the era of hunter-gatherers, a dignified existence became possible for most people on earth. In hindsight, we may perhaps say that in Western states, the whole and its parts were never as well aligned as during the three "golden decades" after the end of World War II.

Why has the privatization of power, so beneficial at its beginning, distorted this relationship again? Why do we have to acknowledge two serious aberrations? On the one hand, privatization instead of enhancing equality is now destabilizing the social fabric. Keyword: a handful of super-rich individuals own as much wealth as half of the world's population.[81] On the other hand, the human relationship with the whole of nature is so severely damaged that it threatens man's very existence.[82] If we were to satisfy our current demand for energy by burning wood, as mankind did almost exclusively until the 18th century, we would have to destroy an area of forest equivalent to twenty times the size of the European continent every year. Ulrike Herrmann illustrated the prospects arising from the growth compulsion of capitalism with the following calculation: "*The world economy recently grew by an average of 2.8 percent a year. This sounds harmless, but it is frightening. Because it follows from this rate that global economic output doubles every 26 years. By the year 2100, the flood of goods would then have increased 16-fold compared to the beginning of the millennium*."

In the previous chapter, I described the bright side of the fossil era quoting some key development indicators from the internationally renowned optimist, Steven Pinker. Unfortunately, we know, especially since

the climate crisis, that mere whitewashing won't get us any further. The task of holodoxy is to show the reasons why, since about the second half of the 20th century, the relationship between the parts and the whole has again fallen into a dangerous imbalance.

The privatization of power, which initially brought such great progress to mankind, has meanwhile led to seven and soon ten billion people seeing their highest purpose in rapidly transforming *the first nature*, which has grown over billions of years, into a second man-made nature: *an artificial world of all kinds of machines*. This process entails continuous material transformation; we may call it a constant and exponentially accelerating digestion and destruction of nature. Growing amounts of natural resources are first transformed into countless machines of daily use.[83] Soon after, a second transformation occurs. Modern throwaway society converts all this into waste - waste that poisons the air with CO_2, the seas with plastic, and the soil with pesticides.

Until about half a century ago, this process was still celebrated as liberation from the constraints of nature, it was seen as a constant upswing and miracle of endless growth, promising an earthly paradise at the end: a guaranteed better life for all. We have seen that this promise has indeed been partially fulfilled. But we now realize that the guarantee of a better life is limited to protected enclaves, while surrounding nature is being sucked dry, devastated, or poisoned. Kohei Saito (2023) puts it in a nutshell. "*Ironically, it is precisely economic growth ... that is undermining the foundations of human prosperity*."

Spaces of protected living and intact nature are shrinking, while the desolation of nature is spreading. Thus, Fossil Revolution unleashed an *exponentially swelling avalanche*, the inevitable consequence of which, if not slowed down in time, will be the complete destruction of man's natural habitat. Suddenly we realize that science and technology, precisely because they are trans-moral and trans-aesthetic, *can bring about both the better life and its exact opposite, the end of all life*.

Just to mention a single example, we still celebrate the discovery of atomic energy as an outstanding intellectual achievement (which it undoubtedly is), but the realization that humanity, due to this insight, could risk bringing about its own demise is swept under the rug, as if it were forbidden to connect pure knowledge with its practical consequences.

Yet, that is the outstanding failure of our time. We close our eyes to the consequences, as if we would defile our intellectual achievements by doing so. Thus, we have created a world where in millions of laboratories and even in private garrets and garages research is done not only on "useful mousetraps" but equally on chemical, biological and nuclear weapons of mass destruction. We forgot that *the privatization of power also leads*

to the privatization of absolute evil. The expansion of our knowledge of nature and its mastery *has become an end in itself* - much like in former times the knowledge of God and his intentions. The most capable, the pioneers, the role models, some of them honored annually by the Nobel Prize Committee, are, according to our modern worldview, those millions of scientists and engineers who are ceaselessly busy developing yet more "mousetraps" and other devices. Most of them do so without even realizing that through countless interventions in the cycle of life they are making the globe increasingly uninhabitable or even creating the conditions for finally blowing it up.

Certainly, the world can no longer do without science and technology. This point should be stressed unequivocally. Without science and technology, not just hundreds of millions but billions of people would starve instantly! However, with science and technology as they are pursued today by every state and millions of individuals, we ruin the climate, destroy the soil, and ultimately even kill life in the oceans. *Shouldn't this uncanny perspective motivate us to ask again about the meaning of it all and to redefine excellence?*

Let me modify the insightful statement of the great economist Galbraith. In the post-fossil era, the inventors of "mousetraps" can no longer save us. On the contrary, they are steering us ever closer to collapse. In our time, we can only hope for salvation from those supposedly "crazy" individuals who persistently question the purpose of this runaway enterprise.

Yes, the sciences rely on truth having set new, irrevocable standards, but truth must no longer merely refer to the trans-moral and trans-aesthetic knowledge of nature; it must also - and must above all - ask *what research and technology mean both for man and for nature.* In the field of armament, where mere errors in the interpretation of signals announcing an impending missile attack may lead to a nuclear conflagration and the extinction of the species,[84] research and technology obviously lose all value. There, they are not merely trans-moral but unmistakably amoral. Likewise, research and technology turn into destructive forces when they ruin global equilibrium - namely, those biological cycles to which nature owes its previous homeostasis. It is time to ask again for the meaning of human actions, as people have always done when they listened to the voice of universal moral conscience.

The disruption of balance with nature

> We are giants in planet-sized boots trampling the land, plundering the sea, and altering the chemistry of the biosphere. *Paul Raskin*

> Nations will obviously continue to compete in the development of new technology, but sometimes they should agree to limit the development and deployment of dangerous technologies like autonomous weapons and manipulative algorithms – not purely out of altruism, but for their own self-preservation. *Harari*

Holodoxy is confronted with its most extensive field of research when it examines the relationship between the whole and its parts in nature. Just like living beings, the green planet possesses - or rather, once possessed - the remarkable ability of *homeostasis, that is self-regulated equilibrium*. If too much carbon dioxide was produced, vegetation flourished to absorb the excess. Conversely, if a global cold snap occurred, burying large parts of the world under ice, conditions were created that eventually reversed this process - this is known as negative feedback. Without greenhouse gases, the Earth would freeze at minus 18 degrees Celsius; on the other hand, if the atmosphere consisted solely of greenhouse gases, Earth would be as warm as Venus, where temperatures of over 400 degrees Celsius make life impossible.

The existence of living beings, including humans, was made possible by this kind of self-sustained holodox equilibrium. A relatively stable homoeostasis had been established since the end of the last ice age about twelve thousand years ago, as the climate has hardly changed from then until now - at least, that was the case until recently.

Homeostasis - an equilibrium oscillating around a mean value - characterizes not only the relationship between the climate and the factors determining it but also applies to that of the entire fauna in relation to individual species. If one species proliferated excessively, their predators were favored to such an extent that they soon eliminated this excess. Predators therefore fulfill an important biological role. As research now knows, when predators are exterminated, herbivores reproduce to such a degree that they may destroy natural vegetation over large areas. All living species thus contribute to the task of maintaining the whole in a balanced state.

This observation even applies to the two poles of the living and the dead. All deceased life, whether dead trees or animal carcasses, is decomposed by organisms that create new life from dead substances. Over millions of years, a system of equilibrium-oriented self-regulation has established itself on the green planet, maintaining a cycle that - measured by human standards - could extend infinitely into the future.

The existence of humans on the planet would not have been conceivable without these various cycles. That is why it is so disturbing that for

about two hundred years, we have been on the verge of destroying this balance. Hunter-gatherers already succeeded in largely eradicating most of the species that posed a threat to them. The major agrarian civilizations continued and accelerated this process. Since then, other biological species either depend on human mercy in areas that are difficult or impossible to cultivate, or they serve as livestock for consumption or labor. Since the human population crossed the billion mark and more and more areas serve human needs, "useless" species only survive because we either are powerless against them - this applies to most insects, bacteria, and viruses - or because we tolerate them as museum pieces in national parks. In this way, Faber caused a great extinction of species, which could make him soon quite lonely on the globe.

But the problem of disturbed homeostasis does not end at this point. Rather, it consists in the fact that we are producing more and more artificial substances whose effects on the environment tend to be devastating or at least unforeseeable. The “privatization of power” (in this case economic power) has largely deprived the general public of control over private actors (see p. 149: *A global glut of artificial substances*). We are producing techno-waste in such enormous quantities that it can no longer be eliminated by natural metabolism, the homeostasis that existed until then, and is therefore destroying any balance (see p. 151: *Waste: Disrupting natural metabolism*) .

Disturbed equilibrium in the human world

> The world, awash in specialized reports, was starved of systemic examinations and panoptic foresight. *Paul Raskin*

Privatization of power not only impacts the relationship between humans and their natural environment in a historically unprecedented manner but also profoundly intervenes in the mutual relations among people.

In this regard, Karl Marx demonstrated great acumen. He recognized that the social changes of his time left their marks on people's psyche. Marx primarily conceived his concept of alienation as the separation of the worker from the means of production due to ownership being held by entrepreneurs rather than the workers themselves. The rift that Marx thereby created within companies persists up to the present day and has caused far more harm than good. However, when understood in a broader sense, alienation exposes a fundamental ailment of modern societies. The privatization of power has erected thousands of barriers and partitions among people – and continues to do so.

The dispersion of power brought about by its privatization only makes sense when private individuals enrich society through their respective knowledge and skills. In other words, *specialization is the predominant feature of any high-tech society*. Just two centuries ago, an Indian, Chinese, and European farmer shared a common reservoir of experience. The basic techniques of tilling the land showed such broad similarities that after a short time each of them would have found his way in the other milieu. Most people therefore possessed about the same collective reservoir of knowledge and skills.

Evidently, this is no longer the case. A lepidopterist has nothing to discuss with a quantum physicist; an IT expert specializing in programming bank security systems intellectually resides on an island inaccessible to most other individuals. Such intellectual islands are multiplying with each passing day.

We may assess this development positively, as we use to measure the progress of a knowledge-based society by precisely this criterion: the deepening of knowledge and the ensuing progress of specialization. What this assessment overlooks is its socially disturbing aspect: the increasing alienation that eventually translates into silence. Despite living in the same apartment building, city, country or nation, human closeness is eroding. A quantum physicist may communicate intellectually with colleagues across the globe in the US, Japan, or China, but they have nothing to say to their immediate neighbors. Among them, physicists live in growing intellectual isolation. In a highly technological and increasingly specialized knowledge society, progressive isolation becomes an acute social problem, affecting a growing portion of the population.

The resulting intellectual vacuum is a novel phenomenon. In earlier societies, a common religion and shared traditions united people and bound them together. A collective pool of shared thinking and feelings existed, defining a village, city, region, and nation, even if this sense of shared identity rarely surfaced, or only did so in the interaction with strangers.

Today, such unspoken cohesion is scarcely present. Science has discredited and marginalized religion, and the mechanization of everyday life has largely marginalized or even eradicated shared traditions. In place of unity, silence prevails. However, such silence is by no means a natural state but rather an extremely painful or even unbearable condition. When individuals, despite physical proximity, have nothing to say to each other, a society disintegrates.[85] We see how this process currently corrodes society in the US.

The need for communication and community is an anthropological constant – scarcely less potent than the sexual drive. Even in our overly

complex modern techno-societies, people continuously attempt to overcome this silence. This may be seen as an *ongoing search for identity* reconnecting them with their fellow human beings.[86] *While the search for "truth" causes the infinite fragmentation of the scientific-technical world, the search for identity or "order" creates commonality* (Harari 2004).

In the cosmos of science and technology, in which more and more people spend their intellectual existence, emotional coldness prevails. As already mentioned, science is trans-moral and trans-aesthetic.[87] At best, there is temporary enthusiasm, for example when a researcher or engineer gains the respect of his colleagues through great knowledge or even new discoveries. This is a powerful drive because it appeals to ambition, a human characteristic that has nothing to do with knowledge itself. *Knowledge itself is emotionally sterile, and the smaller the number of people with whom you share your knowledge, the more sterile it becomes.* This applies to scientific research anyway, but increasingly also to the humanities. The elementary connection between people was and still is established through shared feelings and sensations.

Empathy is hitting borders

> Socrates proclaimed, "I am a citizen, not of Athens, or Greece, but of the world." Two centuries later, the Stoics built an ethical framework that centered on the notion of cosmopolis—a world polity in harmony with reason and the universe. *Paul Raskin*

A shared history binds people together when they draw on collectively celebrated events, "narratives," respected figures, or a shared understanding of meaning, as in former times conveyed by religions. This creates a sense of belonging. The quest for identity is, first, a response to growing silence. It manifests differently depending on where and how different social strata locate their own identity.

If materially in a secure position, the educated class tends toward cosmopolitanism. They understand that humans all over the world have been genetically (almost) identical for at least hundreds of thousands of years, and that cultures mold this basic biological identity through their traditions. Due to this knowledge of human equality, a cosmopolitan opposes any politics that create or exacerbate artificial rifts with other people – especially those beyond their borders.

Those who are not only educated but privileged to such a degree that they possess the leisure to look beyond daily issues and consider the broader world may be attracted in a deeper way by people beyond the border. They do not just recognize human equality. *Diversity itself appears to them as a virtue*. For them, different languages, cultures, creeds,

and traditions and hence different culturally formed identities are particularly valuable, because it is here that human freedom finds its visible expression. The great poets and thinkers of Europe and the New World – Shakespeare, Montesquieu, Voltaire, Kant, Herder, Goethe, Schiller, Heine, William James, Will Durant, Lewis Mumford – were all cosmopolitans. Nothing was more foreign and suspicious to them than hatred towards strangers.

This perspective is still prevalent today, particularly among educators, namely in universities, high schools, and other educational institutions, as well as in the so-called liberal professions of interpreters, journalists, tax consultants, experts, notaries, lawyers, designers, musicians, actors, and medical doctors. Left-leaning political circles often pride themselves on their own global openness – sometimes unjustly. This openness often extends only to people in general and to migrants, while far less understanding and empathy is shown for the poverty of nearby neighbors – poverty in one's own country. And we should not forget that cosmopolitanism has usually been a privilege of those whose material situation is relatively secure.[88] In environments where this prerequisite is absent, radical tendencies also emerge among intellectuals.

Indeed, intellectual freedom based on material security is a privilege of rather few people. Most of them experience the privatization of power in a different way. While it has liberated them from their former lifelong dependency, it has also left them in a new state of uncertainty. Modern societies were built upon knowledge and skills, but these are subject to incessant rotation. The better engineer, IT specialist, scientist, and laborer consistently replace those who are less skilled in the same fields – just as better (or cheaper) devices – mobile phones, cars, computers, etc. – consistently displace inferior ones.

While the privatization of power has liberated people from their previous dependence, it simultaneously subjects them to tremendous psychological pressure. It is nothing new that an ignorant person will be considered worthless or even dispensable, but now this also applies to those whose knowledge and skills no longer meet current requirements. Individuals are at risk of being reduced to their utilitarian value for the production apparatus.[89] This is alienation as it characterizes our time (p. 163: *Alienation*).

Such alienation does, of course, particularly apply to socially disadvantaged segments. Being engaged in a constant struggle – the struggle for their own social status, which is always susceptible to slipping downwards - they lack material security and hence the leisure to feel solidarity with people in other parts of the world or to view cultural differences as enrichment. *People belonging to disadvantaged segments will hardly*

become cosmopolitans. On the contrary, unfavorable living conditions often drive these people into the hands of populists, and even dictators. The greater the social disparities perceived as unjust, the more likely one finds a willingness within this segment to look for scapegoats beyond or even within national borders. The desperate search for identity as a means to overcome alienation also explains why democracy holds so little value for these segments, while demagogues like Donald Trump are revered as messiahs. Trump gave a newfound sense of self-worth and togetherness to the disdained, the "deplorables," as Hillary Clinton disparagingly labeled them. I fear that they will still revere the man even if they were to suspect that he consistently deceives them.

In truth, Donald Trump is not one of them; he is a representative of the opposite side. While Fossil Revolution eliminated the privileges of nobility and clergy, *it has created a new hereditary elite that owes its position not to individual skills and knowledge but to the mechanisms of asset accumulation*. In the social sphere too, the relationship of the parts to the whole is disturbed. These mechanisms are nothing short of the social Achilles' heel of the Fossil Era.

Disturbed social equilibrium within states

High-tech societies not only offer their citizens longer and better education, but they must also demand it, otherwise they will not be able to keep up in international competition. But the average intelligence quotient is growing at a much slower rate than these rapidly increasing demands. That is why the leading industrialized nations have embarked on global headhunting. Their success depends on the willingness to pay ever higher salaries to highly specialized scientific and technical experts to attract them to their country and keep them there. This promotes inequality in both material compensation and associated prestige with tensions between the local population and recruited foreign specialists likely to increase. In the United States, Asian students and researchers are distinguished by exceptional achievements. As is well known, this has already led to crimes of racial hatred.[90]

High material compensation and social prestige based on individual achievements are in line with the demands of the Enlightenment and, as I showed earlier, are compatible with the ideal of a classless society, because knowledge cannot be inherited; it passes on to new individuals with each generation. *But this does not apply to money and wealth.* Soon after Fossil Revolution, the inheritance of money and assets apart from personal merit gave rise to new privileges and classes.

No social revolution is so comprehensive that it turns societies into a tabula rasa, erasing not only all previous habits but also eliminating all preceding institutions. Achieving such a radical new beginning would have been possible for the fossil-industrial revolution only if it had first abolished that age-old institution which enriches individuals independently of talent and education – an institution that regularly destabilized agrarian civilizations, incited revolts, and toppled thrones. This institution, furthermore, violates the elemental sense of justice as it not only questions the fundamental principle of Enlightenment – knowledge and skill – but ultimately eradicates it over time.

I am referring to mechanics of debt. It is a mechanism that nullifies the principle of knowledge and skills because the wealthy, who lends money to those in need and then charges interest on the use of their property such as land, resources, food, or money need only possess sufficient surplus wealth. Perhaps their ancestors had acquired such wealth by means of personal abilities and labor, but in a society of heirs, this condition may date back to the distant past. In the form of goods or money, credit automatically increases existing wealth – and this has been due to interest (and later, dividends).[91] Thus, credit provided an age-old yet still highly relevant *counter-principle to gaining wealth and social recognition by means of knowledge and skills*.

Though inherited from the distant past of agrarian civilizations, this counter-principle has been perfected in Fossil Society. Instead of the entire community – the state – providing support to the needy without recompense, the better-off members of society offer their help in exchange for payment (interest). The result has been consistently and globally the same after but a few generations: the poor get even poorer, while the rich become richer.[92] The mechanism was repealed only when in "jubilee years" all debts were cancelled, or some ruler ordered the same measure by decree.

For a tiny class at the top, the mechanism of automatic money multiplication makes knowledge and skill superfluous. The fact explains, why a society, the basic principle of which was the abolition of estates, classes, and castes, creates precisely these social differences anew.[93] The upper one percent of the super-rich in the United States and a somewhat broader segment in European countries have already solidified themselves as a new class, a new feudal elite.[94]

How does this accumulation of private power come about, given that it would not be possible if knowledge and skills – distributed anew in each generation – only temporarily granted positions of power to individuals, families, and even nations?

Discussions about parasitic, unearned wealth are hindered in three ways. First, this transfer now occurs so covertly that only its effect – wealth concentration – is noticeable, while the underlying mechanism is largely obscured. Second, Karl Marx, otherwise the most outspoken critic of capitalism, chose to overlook this kind of parasitic accumulation (p. 164: *Marx*) . And third, the profit derived from ownership of scarce goods or money can, in exceptional cases, even have positive effects that should not be criticized.

How ownership of scarce goods like land, resources, water, money etc., can make individuals wealthy without work is easy to understand. Let's focus on the mechanism of how ownership of money achieves this. In a modern economy, private companies mostly finance a significant portion of their investments through borrowed money and incur debt for that purpose.[95] If the investment is successful because it yields the expected returns, they repay the borrowed sum along with real interest (interest minus inflation) to their creditors. *Successful investments through borrowed money have proven to be the driving force behind industrialization and growth*.

Even at this stage, a factor comes into play that separates small from large creditors and thereby increases inequality. The amount of loans is crucial. A lender offering a million dollars can expect higher interest than another who provides only one hundredth of that sum – in the second case, higher processing costs account for the difference. Thus, great wealth is favored from the start. Additionally, wealthy lenders can insure themselves against losses, whereas with smaller amounts, insurance would largely offset interest gains – another advantage for wealthy creditors over the smaller ones.

However, the most significant yet least visible difference between poor and rich savers (creditors) has not yet been mentioned. The truly poor have no excess assets but often nothing but debts. So, they cannot save at all and earn from saving, because their incomes are just enough to cover their living expenses. The mechanism of interest clearly works against them.

This brings us to another more deep-lying aspect of bottom-up redistribution, that occurs without regard to knowledge and ability. Companies taking on debt must somehow cover the costs of the interest (and dividends) to be paid. If they cannot slash wages, acquire resources, or produce more goods at cheaper prices, they are compelled to pass interest costs to the prices of their products, which means consumers must bear the burden. But not all consumers are affected to the same extent. The burden primarily affects the poor. This is because the extra price of products is paid primarily by those *whose incomes are largely eaten up by essential consumption* - and these are always the most disadvantaged people.

Conversely, it affects the rich the least, as only a fraction of their income is needed for essential consumption.[96] This contrast reliably ensures a continuous flow of wealth from the poorer majority to the wealthy top.[97] Instead of eliminating or exposing the root of this antisocial mechanism, welfare states only attempt to counter it through reverse redistribution.[98]

The discussion of capitalism's community-destroying Achilles' heel – unearned incomes – is further hindered by the fact that during the initial stages of industrial development, interest and dividends can indeed have positive effects. As long as there are *no significant differences between rich and poor,* small lenders too benefit from the accruing interest – the initial transfer from the bottom to the top remains insignificant (in fact it resembles a zero-sum game where everyone gives as much as he takes). During this initial stage, the common people can only be motivated to save – and thus finance business – by enticing them with such reward. Surplus capital in private hands is channeled into development and thus favors rapid industrial growth.

However, shortly after this initial phase, the divide between small and large creditors will inevitably widen, *causing the interest gains of small savers to be more and more offset by the higher costs of consumption,* which makes them de facto poorer rather than wealthier.[99] In this way - unfortunately quite legal - the transition from the feudal society of the great agrarian civilizations to the fossil society brings forth a new nobility, a new monied “aristocracy”.

Today's money and wealth aristocracy profits from all significant loans. Meanwhile it has the financial power to acquire media and entire publishing houses on a large scale and manipulate public opinion for its purpose. Alongside the large industrial capitalists, this class represents the "deep state," from where significant money covertly guides politics and public discourse. In the United States, power is still much more dispersed than, for instance, in Russia, but the sovereign – the people – has increasingly less influence. When Noam Chomsky labels the United States' form of government a "plutocracy," this is not inaccurate. Apart from rare exceptions, individuals from below who stand as presidential candidates only have a chance if their campaigns are financially sponsored by the top one percent of the most powerful corporate magnates and their donors.

The aristocracy of knowledge propagated by the Enlightenment now stands shoulder to shoulder with this new aristocracy of birth and wealth. Knowledge aristocracies do not produce class societies, because only money but not knowledge can be inherited. The new money aristocracy is the untimely embodiment of a new ruling class of privileged heirs. As soon as the most powerful strata of fossil-industrial states no longer owe

their influence to performance but to accumulated wealth, the age-old feudal principle of birth privileges comes into force again.

As long as the competition between nations remains the driving force behind technological development, there will be no escape from this vicious circle — on the contrary, social tensions are likely to intensify. The whole world is crying out for investment to catch up in this international race or at least maintain its position. It would therefore be completely counterproductive for any country to make life difficult for investors or prevent unearned income.

Hobbes' state of nature: Disturbed equilibrium between states

> There are now more types of warfare than one can imagine and, within each, more weapons systems than anyone knows. While of course nuclear warfare is a scary prospect, I have heard equally scary prospects of biological, cyber, chemical, space, and other types of warfare. *Ray Dalio*

Wherever people must get along with each other, they face the task of creating an order that coordinates their actions (cf. the contrast between "truth" and "order" in Harari 2004). The most basic requirement obviously being a common language: the spontaneous work of individuals in interaction. Languages do not require coordinated governance to arise. But the latter is needed for that higher kind of order, which establishes a balance between the interests of individuals and the common good.

In the chapter on hunter-gatherers, we saw that this task was probably best fulfilled when the institution of government did not yet exist. It was rather easy for a handful of individuals to agree on a common course of action. But this picture was to change fundamentally during more than ten thousand years of agrarian mass civilizations. These could not exist without institutional governments. Due to the agrarian dependence formula these did not primarily act for the common good but invariably represented the interests of minorities. From this perspective, the short-lived Fossil Revolution achieved a remarkable breakthrough. After all, it was temporarily successful in giving priority to the interests of a majority so that we may speak of a victory of the common good over personal interests. During the three "golden" post-war decades, probably *the greatest approximation of a holodox balance between the interests of the whole and those of individual citizens was achieved in Europe as well as in North America*.

Thomas Hobbes, the British social philosopher of the war-torn 17th century, had justified the necessity of the state by arguing that people in

the “state of nature” would attack each other because each person only has their own survival and interests in mind. Whether such a state of nature ever existed is doubtful, but this doubt would only confirm Hobbes' thesis. No community has ever tolerated individuals pursuing their interests so relentlessly that they jeopardize the existence of the community as such. For this reason, all states defend themselves against murderers and thieves within their ranks.

It is for this reason too, that no state is in a state of nature - except when it descends into civil war and thus into chaos and is no longer a functioning organism. Under normal conditions, the whole and its parts are brought into some equilibrium through constitutions and laws, creating a characteristic balance for each nation and state.

However, this only applies to individual states, not to the relationship between them. On a global level, such a balance has never existed up to the present day. The individual nations do not form a community where a superior entity weighs the interests of the whole against those of its parts.

The present world community therefore finds itself in that dangerous state of nature described by Hobbes - each state follows its own interests: a war of all against all is possible at any time. As Vladimir Putin is proving to the world right now, there is no entity that can prevent one state from suddenly attacking any other.

This is not as surprising as it may seem at first glance. During the past ten thousand years, a global entity that advocates the interests of all of humanity against those of its parts - the individual states - had not or had only rarely been needed. Europe remained separated from India and China by high mountains and wide seas, at best they were connected by modest trade flows. Intensive contacts between widely separated states and cultures were sometimes achieved through technological breakthroughs, but they had only temporary effects. The "world government" of the Mongols over the Eurasian continent was nothing more than a transitory raid based on a technological invention: highly mobile mounted archers. The colonialism of European nations was also more like a raid, made possible by technological innovations: the invention of firearms and large sea-going ships. Without Fossil Revolution, geography would have continued to isolate the major nations of the Globe from each other.

All this has changed at the latest since the beginning of the 21st century. The situation of the global community of states now very much resembles that which existed in Europe before its unification. *Unlike in the past, almost all states have become so closely interconnected by modern technology that their military, economic, and social interests constantly collide with each other.* And people too have come very close to each other. Whether they are at home in Tasmania, New York, or Svalbard, each of

them can see in real time what is happening in almost any other part of the globe. The metaphor of a tiny spaceship, densely packed with a human race that has swollen to almost ten billion people, a ship moving lonely through the vastness of space, corresponds to both perceived and intellectually understood reality.

And this situation is at least as dangerous as the one that existed in Europe before its unification. The parts - that is, individual nations and states – continue to be committed almost exclusively to their own particular interests. They are not only indifferent to the interests of other states, but - and this has even more dramatic consequences - also to the interests of the whole, that is, the world community. Under these circumstances, a lasting economic equilibrium is inconceivable. The statistics prove this point. In 1990, the BRICS countries accounted for only 17% of global GDP, while the G7 countries accounted for 47%. By the end of 2022, the BRICS countries had risen to 31.5% of global GDP in purchasing power parities (PPP), compared to 31% for the G7. In 2008, the United States and the euro zone had equivalent GDPs (around $14,000 billion). Fifteen years later, European GDP is only 80% of American GDP. Only the US managed to maintain its position over the past half-century. In 1980, it accounted for 25% of global GDP; in 2023, its share of global wealth was still just as large.[100]

On the military level, this “state of nature” is particularly evident. Any state may at any time become a wolf to its neighbor. *It is fear that drives people against each other, even though universal moral conscience binds them together*. Fear has the effect that no one reduces their own arsenal of weapons so long as others still have them. Every state that does not yet dispose of the ultimate weapon believes itself safer if it also develops and acquires it.[101]

Unfortunately, this is sound reasoning: one's own security is increased by deterrence. It is the security of the entire world community that is increasingly endangered, just as individual weapon ownership benefits the individual but ultimately undermines the state. *Sound reasoning of individuals or individual states may thus become utterly unsound in relation to the whole*. So far it is only fear that prevented states from using nuclear weapons - the fear of nuclear contamination, which affects the attacker as much as its victims.

In the economic sphere, philanthropic cooperation and fear-driven competition are subtly intertwined. The need for philanthropic cooperation prompted the United States, for example, to share a large part of its scientific research results and the technology based on them with other states, largely free of charge - even though these achievements were often financed with American taxpayer money, and no international agreement

obliged them to do so. There can be no doubt that today's powerful and self-confidently rising China owes most of its technological progress to the knowledge developed in Europe and the US. Only the most recent achievements had to be purchased through licenses or patents. This generosity, i.e. the willingness to support and help each other, is of course completely absent in the global arms race. Here, fear hinders cooperation and intensifies murderous competition (p. 192: *All against all*).

Free trade was and is a visible expression of a philanthropic mindset and a progressive approach to the ideal of greater equality. Economic competition, which initially acted as an engine for the dismantling of privileges and for equality of opportunity, was thus transferred to entire states. The industrially underdeveloped among them had less knowledge and skills, but they had the opportunity to offer labor at lower cost. In this way, Germany caught up with the world power England; Japan and the former "Asian Tigers" kept up with Europe, and China is currently on the verge of economically surpassing the United States

. The Renminbi could finally become the world's new reserve currency.[102]

Thus, competition not only enables equality of opportunity within a state; through free trade it can also cause it between them. But there it soon exhibits the same flaw as competition within a state. If government does not regulate it for the benefit of all citizens, then the initial equality will soon be abolished and classes with inherited privileges will gradually emerge. After some time, wealth will once again concentrate in a few hands.

This vicious circle happens between states as well. China is channeling an increasingly significant portion of the wealth it acquired through the adoption of Western technology into its military. It pursues an expansionist policy, challenging the previous Alpha state, the US.[103] Between 2001 and 2022, over one generation, global military spending rose from $1,139 billion to $2,240 billion. During this period, per capita military spending increased by a factor of 5 in China, and by a factor of 3 in Russia. The US suddenly becomes aware that its generous transmission of technological achievements resulted in something quite different from an equal and grateful partner. The United States is facing a new emerging alpha state that is poised to rise past it to the top. While free trade, unlike military buildup, awakens some of the finest human qualities such as altruism and willingness to help, there can, unfortunately, be no doubt that it eventually produces the same effects as the armament race. It strengthens some – as a rule the successful latecomers – and weakens others – the former pioneers. More than a hundred years ago, the latecomer Germany surpassed the British empire in industrial strength - a decisive factor in the outbreak

of World War I. Today, the latecomer China is on the verge of surpassing the American empire. Once again, the specter of war is being invoked. A military confrontation between nuclear world powers such as the US on the one hand and China and Russia on the other would have unimaginable consequences.

Therefore, the United States is now applying the emergency brake. The Biden administration intended to prohibit further American investments in China, especially in areas of high technology where the USA still holds the lead. This was a decision in the interest of the American common good but it could provoke war with China as feared by Dalio.[104] However, even without such action the American standard of living, which has already suffered greatly from outsourcing much of the country's industrial capacity since the late 1980s, will continue to decline as China takes over ever larger portions of US production. But while Biden's decision certainly serves the common good, it contradicts the interests of private US companies as well as those of a minority of wealthy investors who benefit greatly from the reduction in production costs through outsourcing and the corresponding increase in profits. Unregulated free trade has empowered China and a privileged minority of US investors, while causing great harm to a large part of Americans, that is to the entire country.[105]

China is now crying foul, as if it had a right to free trade, *even though it systematically protected its own industries so long as they weren't competitive on the global market – doing everything to suppress free trade.* This too illustrates the "state of nature" governing international relations. States willingly adapt their ideology to their specific needs and interests (p. 166: *Free trade*). A beneficial free trade that benefits all will only come into being once a supernational authority favors its positive effects in the interest of global welfare, while at the same time curbing its harmful effects. In other words, if such an international agency acts in the same way on the global level as does a good government within a single state.

Part IV – The fourth Tidal Shift: Homo Deus sive Diabolus (The end of the rise and fall of great nations)

> Secretly, it was clear that nuclear weapons would only disappear once there were no more superpowers, and a politically united humanity had taken their place. *Herfried Münkler*

> The big risk is that when existential irreconcilable differences exist and there is no mutually agreed-upon party or process to adjudicate the conflict, there is a good chance that there will be a fight. *Ray Dalio*

It is no new insight that unforeseen inventions can profoundly affect human existence and completely transform living conditions, giving rise to irreversible crises. Inventions can change living conditions so comprehensively that people are no longer the same afterwards. They love, they hate, they sleep and write, they believe and know - they do just about everything differently.

Who could have foreseen during the longest era of human history that free people who tolerated no one above themselves would give rise to nations with almighty kings and slaves without rights? Who could have guessed that the radically new worldview that emerged after the first crisis would also extend to religion? The totemism of Australian hunters and gatherers was still based on a kind of democracy of all living beings, but soon the heavens were ruled by an almighty God to whom all other beings must obey. Of course, it would be silly and unhistorical to assume that revolutionary inventions had a direct effect on the complex belief systems of historical eras, but the historical facts described above clearly show that these ideas were steered in a certain definite direction by the living conditions that arose as a result of such inventions.

We have seen that the second crisis did not owe its revolutionary impact solely to the great technical achievements of the 18th century, but at least as much to an invention that in this case is more of a discovery: it owed its almost immediate impact to the use of those enormous energies slumbering in the earth. The majority of the population, at least 80 and sometimes as much as 95 percent, who had previously toiled in the fields and were forced to produce food for themselves and for the 5 to 20 percent at the top of the social pyramid, were finally freed after more than ten thousand years from their mostly lifelong position as subjects. Admittedly, this did not happen overnight. In early or predatory capitalism, the lower classes were initially treated even worse than before in the fields. However, the “privatization of power” soon spread to all sections of the population. It quickly became apparent that the people in the factories were much less easy to control than the farmers scattered across the countryside. Strikes could affect more than just individual factories; they could

paralyze an entire country. Unlike the peasants in agrarian civilizations, workers became a powerful force—and that is precisely what ultimately brought them equality and subsequently enabled political democracy. This development was further facilitated by the "race between nations" that had begun in Europe even before the 18th century. Every state sought to encourage the cooperation of its citizens by promising them greater and eventually equal rights and opportunities for advancement – this trend soon extended to women as well. For only those states that were able to develop all the talent available to them could succeed in the constant race for economic, political, and military power. The era lasting more than ten thousand years, in which membership of a particular class was usually inherited from father to son, thus came to an end. In some modern states, it was now entirely possible for a dishwasher to become president.

Some three hundred years have now passed since this third great turning point, i.e., since the Industrial Revolution. Every state is now dependent on the development of all available talents. There is fierce competition for the latest scientific and technical inventions and, of course, for the people who make them possible. For the first time in history, the *race for innovation* has become a collective goal for all humanity. This alone represents a radical change, because previously, the golden age was always located in the distant past. Industrial Revolution did, however, shift the goal to be pursued by individuals as well as by nations into the future - not to an imagined salvation in the hereafter, but to a coming technological paradise. That alone was a strange reorientation, because no one even asked whether the emerging new reality would serve life or, on the contrary, destroy it. We know that today's industrial agriculture (keyword: artificial fertilizers and pesticides), as well as the chemical industry (keyword: plastic waste) and, last but not least, transportation and industry (keyword: carbon dioxide), are already seriously damaging the ecological foundations of the planet, while nuclear armament threatens humanity as a whole with a self-inflicted holocaust. Nevertheless, all states are continuing the race undeterred.

Huge hurdles ahead for the necessary global restructuring

> The human race's prospects of survival were considerably better when we were defenseless against tigers than they are today when we have become defenseless against ourselves." *Arnold Toynbee*

The rival states, and with them humanity, are faced with a dilemma that currently seems unsolvable. On the one hand, the era following the

Second Crisis has increased our knowledge of nature and humanity in a truly fantastic way and has supplemented this knowledge with corresponding skills in almost all areas. *All the problems mentioned above, including those that threaten our very existence on Earth, could be eliminated overnight, or at least within a generation or two, with the help of this knowledge.* For even with its hope-inspiring capabilities, our age stands out above all others. I have illustrated the incredible prospects this opens up for us by means of a few specific, but central examples. First, let us consider the problem posed by the so-called population explosion. It may sound unbelievable at first, but it is by no means an exaggeration to say that we could eliminate this problem in a completely painless manner within two generations, without harming a single human being and without humanity being afflicted by catastrophes such as wars, epidemics, famines, and the like (see p. 155: *Population*).

With the help of this outstanding knowledge, we could also overcome the traffic problem and the dangers it poses to the climate (see p. 157: *Transportation*). On the same basis of existing knowledge, it would also be possible to eliminate what is probably the most urgent problem today, namely the destruction of the environment (see p. 159: *Farewell to throw-away society*). As Ulrike Herrmann had emphasized, there is even a historical precedent for this type of action (see p. 161: *British war-time economy*).

But such a solution to the problems proves fundamentally impossible on a global scale, where the *race between nations* forces them to outdo each other in terms of power because mutual fear leaves them no other choice. The first among the global competitors to take all the necessary measures in their own country to avert further ecological damage would make life so expensive for their own citizens that they would fall behind in the race. The poorer section of the population would then vote for a different government. If a state would decide to be the first to scrap its own weapons arsenal, it must expect to be invaded without hesitation by rival rulers of competing countries (as is currently happening with Ukraine, which scrapped its own nuclear arsenal after receiving security guarantees from Russia in return in the Budapest Memorandum of December 5, 1994). Pacifist idealists should have realized by now that for the Joseph Stalins, Adolf Hitlers, and Vladimir Putins of this world, military strength is all that counts. This dilemma alone should make us aware that the race between nations will not only continue unabated for the time being, but that it will do so at an increased technological pace and with a steadily growing threat of a third global war. As a general rule, ***any measures that are not only right but necessary in a united global community are regarded as fantastical and unworkable in the race among***

nations—and their proponents as ridiculous—and indeed they are, because under the conditions of such a race, no politician can openly support them. When France and Germany were still mortal and hereditary enemies, the mere idea of a shared political future must have seemed like treason. The paradox that what is good and right at one time is rejected as unthinkable by another has accompanied the entire history of mankind.

In our time, there is yet another factor to consider: an ideological one. I spoke above of a modern "science-religion", because the Second Crisis has made the domination of nature a collective goal that requires the same objective methods of truth-finding anywhere in the world: it is a modern language that — like its object nature — is common to all human beings, more common than religions ever were. A Buddhist, a Muslim, a Christian, or a Siberian shaman have never been able to agree on an objective truth that is the same for all of them. In contrast, scientific results in one country can be confirmed or falsified anywhere else on the globe. If one understands religion in its original sense as "religio" – a worldview that connects people – then science and technology have become precisely that: a new religion that unites all of humanity for the first time in its history. In the race between nations, they therefore play not only an outstanding role, but one that makes this race possible in the first place and ultimately accelerates it exponentially. It is new inventions in technology and science that give the most successful state a leading position in the international hierarchy. No wonder that collective wealth flows in a broad stream into education – especially into scientific and technical education.

This decisively exacerbates the dilemma of a race that is leading the world into the abyss. Who could object to humanity constantly increasing its knowledge of the objective laws of nature and, through such research, devising and developing even more devices and instruments to master them? At most, it makes sense, and is perhaps even necessary, to prohibit countries such as Iran or North Korea from researching and developing nuclear weapons, because otherwise the world would become even more of a powder keg than it already is today. However, the idea that such control might be sensible or even necessary regarding thousands of inventions that are now poisoning our planet and could completely ruin it ecologically is still as taboo as blasphemy or profanity was in earlier times. So, people tend to overlook the fact that for almost two thousand years, China, the richest country on earth, had done exactly this, deliberately suppressing many inventions – for example, machines to replace labor and even what was once the world's strongest fleet – because, in the opinion of the ruling governor-literati, they would not increase the country's prosperity. As is well known, China only abandoned this policy under external pressure. Shortly afterwards, the Far Eastern country even found itself forced

to enter the race between nations, rising within a few decades to become the second most powerful state in the world (see Hot societies, cold societies, p. 205).

Today, the whole world, including China, is eager to expand its technical knowledge, because economic and military power are directly linked to technological progress.[106] The modern credo of free research in all conceivable fields (with the sole exception of nuclear research for military purposes) is defended tooth and nail not only by the scientists and engineers themselves, but also by all states vying with each other in the contest of nations. The question of what this freedom portends for the future of mankind is not even discussed. But it should concern us more than anything else. It is true that Stone Age people were able to use sharp edges to peel fruit or slit throats. In this sense, all knowledge has always been capable of being beneficial or destructive. But since the 20th century, our fantastic knowledge has enabled us to destroy the globe ecologically and through nuclear poisoning. For the first time, our survival depends on *global control of such knowledge*. However, even a benevolent and credible hegemon is incapable of ending this race. Herfried Münkler's astute distinction between three models that determine the third circle of dependency, i.e. the relationship between nations, does not lead out of this vicious circle.[107]

Evil believed long since overcome returns

This also applies to an evil well known from agricultural civilizations and which had been fought most vehemently by the Enlightenment. I am talking about the evil of heredity. Those who have significant capital in the form of money (see p. 165: Money) or scarce goods can live a life of luxury, even if they lack all knowledge and skills – just like the upper ten thousand in the old agricultural civilizations. At most, they must pay a few knowledgeable advisors to help them invest their capital in such a way that it multiplies all by itself. The legal conditions for automatic self-reproduction without any effort or merit on the investor's part exist in all modern states and are exploited to the full by a new moneyed aristocracy (see p. 99: *The mechanics of Debt*). Here, too, the race between nations has a devastating effect. All states court rich investors and are therefore wary of enacting laws that could restrict the privileges granted to them.

All this has led to a noticeable regression since the second half of the 20th century. While the “privatization of power” initially ensured that the millennia-long exploitation of the majority by a ruling minority was finally ended and replaced by democratic participation , to such an extent

that an astonishing degree of economic equality was achieved in the three "golden post-war decades," powerful counterforces are now working in the opposite direction. Since scientific research and technical inventions require ever greater intellectual competence, the social fabric is subject to increasing tensions. This is because the shrinking number of highly qualified personnel, coupled with growing demands for performance, inevitably leads to rising wages for the lucky few. Individuals may then gain so much economic power that they also claim political authority, even though they have no democratic legitimacy to do so (think of Elon Musk, Mark Zuckerberg, Jeff Bezos, etc.). This deepens the divide between an elite of highly paid individuals and an increasingly broad mass of so-called "precarious" workers, whose once well-paid jobs are now being relocated to cheaper countries. This creates a class of failed individuals, particularly in economically leading countries — people who are considered superfluous and see themselves as such. This leads to social unrest and protests, not only in the Rust Belt regions of the United States. Life for the majority is no longer as secure as it used to be half a century ago. The reason for this is the "race between nations" with its constant dance around the golden calf of maximum economic and political power.

From a holodox perspective, the late phase of the fossil fuel revolution that began in the second half of the 20th century has ushered in a new era of imbalance. The initially beneficial "privatization of power," which made democracy possible in the first place, has led to the most successful private individuals — techno- and financial oligarchs — seizing more and more public power. *The parts often successfully defying the whole*. The superrich have developed a momentum of their own that threatens to upset the holodox balance. Overcomplexity is another indication of the onset of destabilization (see p. 197: *Overcomplexity and the surveillance state*).

The growing complexity of the artificial world we created has increased our freedom only in isolated cases, while *radically restricting it overall*. The relationship between the whole – humanity – and its parts – states and individuals – is disrupted. Sustainable equilibrium has been lost. For the first time in history, the self-extinction of the human species representing the maximum loss of freedom hangs over our heads like a sword of Damocles. Even if we repress this possibility from our consciousness for reasons of mental health, we cannot change the fact that *growing complexity is pushing humanity toward a systemic collapse and thus toward a total negation of freedom.*

In the field of armament, where one superpower forces another to respond to the growing responsiveness and threat of its opponent with ever faster and more lethal systems, this state of *unstable complexity* has already been reached.

> Today's independent regional states are unable to maintain peace, to protect the biosphere from human pollution or to preserve the irreplaceable sources of raw materials. This political anarchy must not be allowed to continue in a worldwide ecumenism that has long since become a unity in technical and economic terms ... In an age in which mankind has acquired control of nuclear power, political agreement can only take place voluntarily. However, as it appears to be accepted with great reluctance, it will probably be delayed until further disasters have taken place, catastrophes of such magnitude that mankind will eventually consent to a global political unity as a lesser evil (retranslated from German). *Arnold Toynbee*

It is the balance of power between states that will decide Faber's future. Nothing brings home the vulnerability of our world and the threat to our existence as starkly as the global arsenal of nuclear weapons, the existence of which we have almost completely suppressed from our everyday consciousness for precisely this reason. The United States, Russia, France, China, Great Britain, India, Pakistan, Israel, and North Korea possess an arsenal of approximately 6,450, 6,850, 300, 280, 215, 130-140, 140-150, 80, and 10-20 nuclear warheads, respectively. This adds up to a total of about fourteen thousand bombs.[108] The full significance of this number only becomes apparent when compared to the statement by U.S. experts that the modest quantity *of a total of just three hundred nuclear bombs would be more than sufficient to deter any potential adversary from attacking the United States*. A retaliatory strike with three hundred bombs would render its own territory uninhabitable for centuries.

It is true that the United States and Russia, by mutual agreement, succeeded in temporarily interrupting the arms race. In the U.S., the nuclear arsenal was reduced by 85% compared to 1967, in Russia by 89% compared to the maximum in Soviet times. This was a historic breakthrough, a temporary victory of reason and goodwill. There are now 54,000 fewer nuclear bombs than in 1986, which is remarkable even when one considers that three hundred bombs would have sufficiently contaminated the earth anyway, and that much was scrapped that had already become unusable through obsolescence.

But reason unfortunately got stuck halfway. The goal of progressive reduction leading to a complete abolition of the nuclear arsenal, to which the nuclear powers had explicitly committed themselves in Article VI of the 1968 Treaty on the Non-Proliferation of nuclear weapons, remains a dead letter to this day. Instead, it seemed obvious from the outset that any power venturing too far in reducing its weapons becomes vulnerable and disadvantaged relative to its rivals. That is why the arms race is now taking place again. Defense expenditures for the purpose of modernization and innovation are being further escalated – especially since the time of Donald Trump. The world collectively spends nearly $1.7 trillion on arms

- about 70% more than at the beginning of this century, or as much as the entire GDP of Canada.

Moreover, scientific and technological "progress" is unmistakable here as well. With each new generation, nuclear bomb carriers are becoming faster – *and the warning time for supersonic missiles is shrinking accordingly*. In the event of a first strike by the adversary, neither Americans nor Russians still have half an hour to decide, as they did a decade ago; this already minimal time frame has now (depending on the rocket's launch position) shrunk to fifteen to five minutes.[109] Within this minimal time interval, the Russian or American president must determine whether his country is faced with a deadly attack warranting an immediate counterattack, or with nothing more than false alarm. Obviously, such a brief time frame is insufficient for human decision-making – especially since it will continue to shrink in the future due to inevitable "progress."

Fortunately, the risk of a superpower launching a preemptive strike is so low that optimists can afford to ignore it. No president is so powerful that he would not first have to consult with his military leaders—and the experts are well aware of the consequences that would ensue. *The situation is, however, quite different with a second strike, which could be triggered by misinformation* and was prevented in the Soviet Union once before, in 1983, only by Lieutenant Colonel Stanislav Petrov at the very last moment.

In order to respond immediately to a second strike, since Kennedy and the Cuban Missile Crisis, an assistant (currently female) has had to accompany the American president wherever he goes with a black briefcase so that he is able to give the final order for a nuclear second strike at any moment. Since a first strike only makes sense if it destroys as much of the enemy's nuclear arsenal as possible, the second strike must of course also be as powerful as possible. However, due to the minimal time window of around five minutes, serious consultation with military experts is no longer an option. The president of a superpower must either rely on data transmitted by computers or decide on gut instinct whether or not giving a doomsday order that will reduce a substantial part of the globe to rubble and ashes!

In concrete terms, this means that *the president and his advisory staff can no longer respond to the challenge of a first strike – they simply lack time*. The decision about whether to ignite global fire or not must therefore be left to computer systems and the monitoring systems from which they receive their information![110] This is where the real danger lies. The prospect that the fate of humanity will soon be entrusted entirely to machines rather than humans is probably the most distressing of all future

perspectives because machines are fundamentally indifferent to our fate, and they are, of course, fallible.

This brings another disturbing factor into play. *The probability of an unintended technical incident is increasing*. It rises to incalculable levels as ever more nations acquire doomsday weapons in a polycentric nuclear-armed world. As mentioned above, in 1983, the planet narrowly escaped a nuclear strike by the Soviet Union.[111] In fact, as Noam Chomsky (2012) rightly states, it is *"nothing short of a miracle that nuclear war has /so far/ been avoided*." In fact, we must expect that, due to mere chance or human error, "something will happen," because the carriers of the bombs — supersonic missiles—are getting faster and faster with each generation; our astonishing scientific and technological progress ensures this with great reliability, especially since researchers around the world are now working on this and similar deadly tasks in thousands of laboratories.

What is it that causes our conscience to fail?

> The concentrated destructive power of weapons of mass destruction ... leaves us with a choice between peace with the help of a world government ... and the self-destruction of industrial societies. *Raymond Aron*

I have explained above that the modern world possesses the necessary knowledge and skills to painlessly overcome all the threats facing the globe and our species. Science and technology are in the process of destroying our world, but they could just as easily transform it into a paradise. Why does universal conscience that drives us to reduce suffering and beautify our surroundings so conspicuously fail? Why does it seem impossible, under the current circumstances, to implement even one of the positive measures mentioned above for the good of the planet?

We are clearly dealing with a disruption of the holodox balance between the whole and its parts. The hope of overcoming the existing crises remains unrealistic as long as the whole—the global community—is unable to assert itself against the parts—the states—because the latter strive for maximum strength out of fear of all others. To quote Thomas Hobbes, the global community must overcome the state of nature, where everyone fights against everyone else.

This state of nature – the fight of all against all - had led to the great European civil war between 1914 and 1945, during which – over a thirty-year period - its leading powers tore each other apart. Wars between them had occurred since the Roman Empire, but technological progress had brought them much closer to each other, causing their military, economic, and social interests to collide more frequently and intensely. Today's

situation is confusingly like that of the past, only that now it concerns the whole planet (see p. 168: *War psychosis*).

In such a case, there are only two possible strategies. Either such a confrontation leads to unending wars where the whole, along with its parts, is ultimately destroyed, or *a common regulatory authority is established to create and maintain a new balance*. It was the horror of war that gave birth to such an authority in postwar Europe, today known as the European Union.

Much earlier, the Habsburg Empire and the United States of North America had already established such regulatory authorities, which reconciled the regions or nations united under their auspices. The nations of Europe re-adopted this principle. The European Commission is a government-like central institution that looks out for the common good. The universal conscience had overcome its most formidable adversary - fear.

The sudden transition from mortal enmity to a shared coexistence demonstrates once again, if proof were still needed, that the universal conscience of shared humanity exists everywhere - even between former enemies. The European Union was and remains a new world order on a small scale.

The Holodox Principle in the Post-Fossil Era

> The world has become one interconnected place, but not yet one integral nation. Years of denial and drift have allowed the preconditions for cataclysm to strengthen. *Paul Raskin*

The dependence of the parts on the whole and the whole on its parts has been brought about by technological progress and now encompasses the entire globe. All nations are interconnected by the need for raw materials and are harmed by the production of toxins across borders. Such interdependence can no longer be cut off. A sudden interruption of global trade would result in famine and social unrest in most countries.

Mutual dependence extends even further. Since the second half of the 20th century - the zenith of Fossil civilization - every militarily advanced state has acquired the capability to reach and, in case of necessity, destroy any other point on the globe, i.e., any other state, by means of missiles and nuclear weapons. *The interdependence between the whole and its parts has thus become truly total and irrevocable for the first time in history*.

Conversely, this fact implies that the future of every state and its citizens now only partially depends on domestic political ambitions and decisions. Regardless of whether they are idealists, pacifists, militarists, saints or criminals, their fate is primarily determined by whether the states

and citizens in other parts of the world are idealists, pacifists, saints or militarists and criminals. Everyone anywhere on the globe depends on other people in other parts of the globe to follow the dictates of reason and humanity in their decisions. Like themselves, other people have the power to do lasting damage to the whole by poisoning the common atmosphere and oceans, polluting the satellite orbit, turning the Internet into a forum for global disinformation or by bombing the rest of the world by means of transcontinental rockets. This is an entirely new situation.

Locally – that is merely through initiatives from the parts - a solution to the many crises threatening humanity is no longer possible. The old principle of "think globally, act locally" has lost its validity. This, however, requires the world to establish a new order that prevents the parts from acting at the expense of or against the whole. Within its own borders, each individual state already ensures such an order. It restricts the freedom of the individual so that the whole may flourish. Since the 21st century at the latest, it has become the task of all humanity to protect itself as a whole. Whether we want it or not, the Fossil Era has welded humanity into one community of fate - it is forced to think and act as one global unit. *In our time, the holistic principle states that all changes in the parts are only effective if at the same time the whole changes as well.* Therefore, it is of no use for the United States to destroy its nuclear arsenal, while Russia or China do not do so, but perhaps even seize the opportunity to gain an unassailable arms advantage for their part. Nor is it of any use for France or Germany to reduce their own population through birth control if more children are born in Africa.

The same considerations apply to climate change. Suppose the "climate activists" in Germany were successful in shutting down transportation and manufacturing industries, or climate “terrorists” finally forced entire cities to cease all fossil fuel combustion. As long as such actions only affect a single country and others do not follow suit - perhaps even exploiting the unused resources more extensively - the global balance remains unchanged. *The climate crisis can only be averted through collective action.* As this still seems utopian for the time being (early 2025), the European Commission under Ursula von der Leyen is largely abandoning its climate targets so that Europe can remain competitive in the ongoing industrial race between nations.

The United Nations – embodiment of universal conscience?

> War is a horrible thing, and constantly more horrible and dreadful, so that unless it is ended it will certainly end human society ... an effective will for a world peace… /is/ an effective will for a world law under a world government … for in no other fashion is a secure world peace conceivable … *H. G. Wells*.

The United Nations is a symbol – unfortunately it is nothing more for the time being. It was founded in the 1920s by US President Woodrow Wilson with the intention of ending inter-state anarchy – Hobbes' state of nature. With its help, lasting peace between nations was to be established. For the first time in human history, universal conscience had thus taken on an institutional form.

However, from the outset it remained nothing more than an intention and a mere symbol. Although the institution was conceived by the Americans to finally bring peace to those quarreling European nations, the US — already the leading power at the time—did not join. But even if they had decided to become a member, the League of Nations, as it was called at the time, would still have remained nothing more than a well-intended symbol. To be more, the League of Nations would have had to possess the power of a world government. However, this is precisely what the United Nations has never yet been granted. In intention, it was meant to be everything, in practice it soon turned out to be almost nothing, a mere debating club that only exceptionally exercised real power, namely in those rare cases when the small circle of permanent members of the Security Council made a decision not blocked by a veto of one of its members. Only in these exceptional cases did and does the UN appear as the precursor of a future world government—as its embryonic harbinger, so to speak.

Usually, the UN is merely a forum where the different points of view of rival nations clash irreconcilably. Such confrontations tend to assume a typical pattern. The leading world power – currently still the US – combats the anarchic "state of nature" by imposing common rules of trade, international transport routes, military agreements, etc. on all other nations. They can do so as long as they have the power to do so and are ready to use it at any time. Currently (June 2025), they officially maintain 750 military bases in 80 different countries. In comparison, the United Nations have no power of their own. They can only draw on troops and military equipment that are loaned to it by its members. Real power is therefore only held by the rival nations themselves – and this fact determines their behavior toward the UN. The leading power sees this forum as a kind of annoying competition, because the UN wants to establish a common order by democratic means, that is by means of the votes of its currently 193

sovereign member states. Votes have the advantage of expressing the democratic will of the entire world population, but they have the decisive disadvantage that this expression of will has no consequences because the UN does not have the power to enforce it.

In addition, the interests of the leading power are by no means identical with those of the rest of the world community—indeed, they often contradict them. The leading power establishes order and thus eliminates the greatest danger, namely anarchy and chaos, but in doing so it is naturally always guided by the maximization of its own interests. The tension between the leading superpower and the United Nations would become evident if the latter possessed real power. Then the United Nations General Assembly would largely expropriate the leading power by a democratic majority vote — no longer granting it any more of the world's wealth than corresponds to its percentage share of the world's population. This tension explains why the leading power tends to downplay the UN or withdraw from those fields of its activities where the conflict of interests is most visible.

The interests of the other nations, especially those that want to knock the leading power off its pedestal, tend to be exactly the opposite. In order to weaken and discredit the leading world power and gain strength for themselves, they like to refer to votes in the General Assembly whenever it contradicts that of the leading power. China and Russia are known to disregard all external arbitration rulings (e.g., those of the International Court of Justice in The Hague) when they run counter to their own interests, but they do not shy away from loudly and often hypocritically praising the UN when such maneuvers further their own interests.

The result: although the UN is humanity's first attempt to embody universal conscience in a global institution, this institution is doomed to powerlessness as long as the race between nations continues unabated. Sometimes it is deliberately exposed to ridicule.

Cruel Leviathan, mild hegemon

> The long-term momentum /in the US/ is toward increasing division and this is a serious risk. The fact that the US is simultaneously deeply indebted, its international standing is weakening, and it is experiencing serious conflict should be concerning both to Americans and to non-Americans who depend on them. *Ray Dalio*

If the anarchy that still exists between states has not yet led to a devastating catastrophe, this is due to two fortunate circumstances. The first is the size of the globe itself and the distances between states. Before the advent of the Internet, which transmits events occurring at any point on Earth to

every other point in real time, it took weeks, months, or even years for people on the southern hemisphere to learn about events occurring in the northern hemisphere. Before supersonic rockets were invented that can reach any point on Earth in minutes, all countries were in relative isolation and security from each other. Science and technology have shrunk this distance in space and time. Today, every country is a neighbor of every other, and every person on the globe is dependent on the goodwill of all others. If this goodwill does not exist, international anarchy becomes the biggest problem for all.

The fact that most people are still largely unaware of this fundamental change is due to a second factor. Since the beginning of the second millennium AD, the major powers have ensured a minimum level of intergovernmental order. They have been able to do this in two very different ways. Either they continued the age-old Leviathan approach described by Thomas Hobbes in his magnum opus, a model prevailing in all large agrarian societies and which was later adopted by the colonial powers. In this case, the strongest state subjugated the weaker ones, incorporated them into its territory, or ruled them from afar as a colonial power. The enormous costs of violently enforcing this order were borne by the subjugated population in the form of taxes of all kinds. Leviathan regards the existing raw materials and the labor of the population as its own rightful property, to be used as it pleases. The result is a “rentier economy” in which the ruling political power asserts itself solely through oppression and surveillance, depriving most of the population of all civil liberties. This model was practiced in the Soviet Union until 1989 and is being continued today by Vladimir Putin. So long as people strive for freedom, this model will never be able to hold its own in the long run.

The second model is hegemony, which can be achieved by any large state when it temporarily far surpasses all others in military and economic strength. This situation arose for the British Empire at the beginning of the nineteenth century and for the United States at the end of World War II, when the latter were economically so powerful that they could afford to spend more than fifty percent of all global military expenditure on their defense. Let us remember that after 1945 the US did not conquer any of the many countries that benefited from the new Pax Americana. All Western Europe and all of Asia - the communist countries formed a separate bloc - were allowed to develop their own industries and enrich themselves by the resulting trade relations. "*In a policy 'unprecedented in the history of empires', said Toynbee, America was making 'her imperial position felt by giving economic aid to the peoples under her ascendancy, instead of ... exploiting them economically'*" (Alfred W. McCoy).

In doing so, the Americans laid the foundations for a unique economic boom in Europe and Asia, where Japan and later the emerging "Asian Tigers" achieved great prosperity in a short period of time thanks to the new international order. The paradox that the US would soon suffer from was that, although it initially possessed the greatest power, it *itself created the conditions for gradually losing it*.

National greatness, especially that of a world-dominating power, resembles a brief state of intoxication, followed by great disillusionment. The higher the pedestal of power that a nation has achieved, the deeper the fall it faces in later times. None of the external hallmarks of power is immune to being transformed from a blessing into a curse.

Thus, the initial strength of an alpha state is bound to erode if the exorbitantly high military expenditures required to maintain and secure it can no longer be sustained by a weakened economy. Historian Paul Kennedy spoke of imperial overstretch. As already mentioned, at the end of World War II, the US accounted for more than fifty percent of global defense spending. They were the undisputed leading power. Today, the US accounts for merely 38 percent, while China, the second largest military power, already accounts for 14 percent. If China's economy grows by five percent annually, government revenue and military spending will grow by the same amount. It is a mere matter of calculation that China will have caught up with the United States militarily by 2030 to 2035 at the latest.

Donald Trump, whose leadership style and priorities have sparked domestic and international controversy, has clearly recognized the decline in American power. The bleak rust belts across the country can no longer be overlooked. Hence his promise to make America great again. He also pretends to know who is to blame for this decline, namely the allies who enjoy the American protective shield but still refuse to pay for it. Of course, here too Trump is only half right. No more than any other historical alpha state, the US rose to become a leading power out of altruistic motives, but rather because this rise initially provided it with enormous advantages. Power is an aphrodisiac that gives nations and states their economic and military drive in international competition. It is power that determines the international pecking order. Not Germany or France can tell the US what to do or not to do. The existing power relationship naturally works in the opposite sense (see p. 203: *Nordstream 2*).

However, the decline in power already begins when a leading state is at the height of its power, as its currency too has now conquered the world. The global reserve currency — normally the visible symbol of an alpha state's dominance (see p. 201: *World reserve currency*) — carries within it the core and cause of its later decline. During its initial phase, the former vassals have become the largest creditors of the US, which in turn

becomes the largest debtor of its competitors.[112] If the dollar begins to weaken and loses its position as the world's reserve currency, financial hegemony will be broken. The Chinese are just waiting to help their own currency, the yuan, achieve this position.[113]

There will be no lasting multipolar world order

> In the first decades of the twenty-first century, the relentless advance of military technology has created the potential for great power conflict across all five domains of modern warfare—air, land, sea, space, and cyberspace. *Alfred W. McCoy*

> The only salvation for civilization and the human race lies in the formation of a world government. So long as sovereign states have weapons and military secrets, wars will be inevitable. *Albert Einstein*

But why does the world need any superpower at all? Can't a multipolar world get by without an alpha state? There are various possible answers to this fundamental question. The wrong answer is given by second-tier political actors who fight the leading state because they would like to take its place. They seek allies among the weaker and weakest states to form a common front against the ruling superpower. They do this by extolling a "multipolar" world. So long as they have not got to the top themselves, they insist on equal rights for all. The leading state naturally rejects this rebellion from below. It gives the right answer by emphasizing that without a common order, the world would descend into anarchy and chaos, but it usually justifies its own role with divine election, racial superiority, or other qualities that it exclusively claims for itself. The Americans too regarded themselves as a "chosen people."

The philosopher and social theorist Thomas Hobbes provided the only impartial and correct answer, albeit only for individual states, but it applies equally to the international community of states. In the state of nature, there are no rules to prevent individuals or states from robbing, attacking, or killing each other at will. Within states, this state of nature must therefore be abolished. Here the demand for a common order is self-evident as the alternative consists in bloody civil wars.

Likewise, the relationship between states is threatened by anarchy as until today no world government exists that enforces a common order. In the history of civilization, the task of defining certain basic rules for behavior between states was temporarily performed by the state that happened to be the strongest at that particular time. *A multipolar world order in which no one and everyone has their say is an illusion in the international as well as in the national sphere* (see p. 169: *World government*). *The only acceptable meaning of a multipolar order is to equate it with*

democracy, regardless of whether one is referring to the national or international level. However, it is precisely this understanding that is rejected and discredited by Russia, China and, unfortunately, now also by the Trump administration in the US.

We saw that the alpha state, which possesses enough power to establish a working world order, at least temporarily, can take two fundamentally different shapes: as a cruel Leviathan or a benevolent hegemon. Leviathan is that terrible monster which, according to Thomas Hobbes, uses all the means at its disposal to establish an order that is binding on all its members. Since people in a state of nature know no rules that protect their property and survival from the greed of their fellow human beings, a supreme power is needed to which all submit. In extreme cases, this power rests on weapons alone. Then privileged minorities rule over subjugated majorities. This was the case until three hundred years ago in all agrarian mass societies, where a minority of 10 to a maximum of 20 percent was forcibly supplied by the remaining 90 to 80 percent with food and services. After the industrial revolution, food production increased dramatically. As a result, the parasitic minority turned to other scarce and highly coveted resources, especially raw materials such as coal, oil, gas, uranium, rare earth elements, etc.

Exploitative rule based on violence must always reckon with uprisings from below. This compels Leviathan to exercise comprehensive control to keep the population in check through all-round surveillance, and to radically restrict all civil liberties. The former Soviet Union embodied this type in its purest form. People were promised happiness and equality, in other words, paradise on earth. Those, however, who didn't believe in it, experienced hell on earth – they were deported to one of the many gulags or physically exterminated. Putin's Russia has continued this tradition; the system is based on surveillance that extends into the private sphere and on unbridled brutality against dissidents. Under Xi Jinping, China too has turned into a surveillance state, but it allows its citizens a much greater degree of freedom than its Russian neighbor. So long as they accept the party's guidelines, which so far have brought the country an incredible economic boom, China's citizens can and should develop freely in business, science and technology.

The European Union will have to make its choice. Although being a major economic power, it is too internally divided to serve as an alpha state. Ray Dalio sums up Europe's current position in a single sentence: *Europe's debt is large, its economy is fundamentally weak, its internal conflicts are relatively large, its vitality and level of inventiveness are relatively weak, and its military is not strong.*[114] In other words, Europe has only the choice between Leviathan and the American hegemon. The

latter's regime was mild when compared to that of Stalin, Putin, Khamenei, but also of Xi Jinping - all of whom were or are the declared foes of freedom. The United States did not take revenge on its former adversaries, Germany and Japan, but on the contrary allowed them free access to a good part of its technical achievements. After President Nixon's state visit to Beijing (1972), it exercised this generosity towards China as well. This country's phenomenal rise from a backward agrarian state to a leading industrial power is due not only to the proverbial diligence, Confucian discipline and high level of education of its population, but above all to American generosity. In just two or three decades, it was able to acquire almost free of charge all the scientific and technical knowledge that the West had accumulated in three hundred years.

Indeed, Europe has no choice but to continue to stand by the United States, but as a power that contributes significantly to the costs of public goods. International peace and order are the highest of all public goods. We know that peace reigns in a state only because the police and the judiciary ensure it by convicting and punishing thieves, murderers and swindlers. The same applies to peace between states. The fact that they do not attack each other is to the credit of the strongest state, so long as the latter is able to prevent any disruption of the international order through its vigorous intervention. If it can no longer bear the costs alone, then the allies must take on their share of the burden. This applies, for example, to the Red Sea, which has become a dead sea since Yemen started causing unrest there on behalf of Iran. 95 percent of all goods passing through the Red Sea are of European and Chinese origin, but Europe and China are standing idly by. Once again, it is the Americans who are called upon to deploy their military power. *We have to do the dirty work for them. The Europeans can't do it,* was the comment from the American side some time ago.

World peace does not come about because the idealists among us demonstrate their peaceful attitude. "As if it were a matter of course, people in Germany became accustomed to the idea that it was possible to live in 'peace with fewer and fewer weapons' — not just as an interim period between two periods of rearmament, but as a permanent state of political stability" (Münkler 2023). As in every nation-state, so must inter-national peace be secured by appropriate institutions and measures. If Europe does not want to choke under the yoke of leviathans, it must contribute to this peace alongside the US. The mistakes of American politics should not be an excuse. American presidents have at times pursued foolish policies, such as the Vietnam and Iran wars.[115] One was as dreadful as it was unnecessary. The other was unbelievably stupid, because by destroying Iraq, the United States bred, so to speak, their mortal enemy, Iran. And currently, there is a man at the helm who could lead his own country to ruin (see p.

203: *Donald Trump*). But is it for us Europeans to look down on them? It was not so long ago that Europe tore itself apart in fratricidal wars.

Doom and gloom after the fourth turning point?

> The solidarity of a state is due primarily to its need to defend itself against other states; one loves one's fellow countrymen because one hates foreigners. That is primitive instinct, and it is still there beneath a superficial covering of civilization. We still feel a natural love for our relations and our neighbours, whereas love of Humanity is a cultivated taste. We reach the former direct, the latter only at second hand, for it is through God alone that Religion leads Man to love the Human Race; as also it is only through Reason that philosophers teach us the dignity of human personality, and the right of all men to be respected. Neither in the one case nor in the other do we reach the conception of Humanity by way of the family and the nation. *Arnold Toynbee*

The final phase before the third turning point differs from the race between nations that had been familiar up to that present in that there will no longer be any final losers. The Habsburg Empire once had finally ceased to exist. The once powerful Netherlands is now a modern but geopolitically insignificant state. The former British Empire is just an island with declining economic power; apart from historical monuments, nothing reminds us that Great Britain once ruled over most of the world's oceans and landmasses. In contrast, the US, India, Russia, and China will still be in a position to shake the rest of the world even if they do not yet or no longer hold the alpha rank. The continuing possibility of parts throwing the whole off balance is already a reality, but it will be even more so in the future.

This already applies on a small scale to individual states, which are increasingly becoming surveillance states — and inevitably so — since individual citizens may easily acquire most available collective knowledge (see p. 223: *Overcomplexity and the surveillance state*). The recipes for hackers to create Internet viruses, for terrorists to create biological and chemical weapons or nerve gases, and even, for those with greater ambitions, the recipes for nuclear weapons, etc. are within easy reach of any reasonably intelligent criminal. In our time, the ubiquitous Internet provides access to all means and tools of destruction — access that is made even more convenient with the skillful use of artificial intelligence. All this was enabled by the "privatization of power", which was such a tremendous achievement at its inception in the late 18th century, after the third turning point in history. At that time, it freed entire nations from more than ten thousand years of servitude. Today, however, the same achievement is having the opposite effect: as individuals have ever more opportunities to harm the whole, governments around the world are forced to spy on the public sphere with an ever-increasing number of video

cameras. There is already one CCTV camera for every eight people on the planet. At the same time, Trojans are spreading in cell phones - another reaction to the potential power with which criminal individuals threaten the state.

The privatization of power is even more dangerous when the relationship between individual citizens and the state is replaced by that between states and the global community. Even tiny states such as North Korea and Israel are perfectly capable of manufacturing nuclear bombs. They can use them to defend themselves against the announced annihilation by their enemies, as Israel does, or to blackmail the rest of the world, as North Korea does. Or they may follow a collective frenzy over border disputes and fight them out with nuclear weapons, as Pakistan and India came close to doing in 2025. Due to our inevitable "progress", which in our days ensures that every significant invention from the United States is imitated in China within six months at the latest — unless conceived there in the first place — it will certainly become easier and easier to enrich uranium in perfect secrecy. The theocracy of Iran – according to many critics rather inspired by the devil than by god - will certainly do everything in its power to deceive the world public about its intentions until the very end. And in so doing it will certainly not remain alone. The race between nations will lead other states to follow the same path of systematic deception. Everyone wants to be equally "progressive," and this is precisely what makes everybody a deadly danger to everyone else.

It is not only through weapons that people and states threaten each other, even if weapons pose the greatest immediate danger. In the long run, the modern way of life poses no less of a threat. The tidal wave of waste (see pp. 151: *Waste*) that is polluting the environment can no longer be broken down in a natural way – the homeostasis between the creation and decomposition of organic matter is of no avail against those hundreds of thousands of artificial substances we constantly introduce in the environment (CO_2 is just one of many toxins). This growing glut of civilizational waste has long spread from developed to so-called underdeveloped countries, i.e., to the entire planet. By technological means — keyword: "recycling" — it can only be eliminated to a limited extent because these processes tend to require a very high level of energy — energy that is becoming increasingly scarce worldwide and which furthermore contributes to further global warming. Add to this the fact that the race between nations is turning the disastrous increase in global waste production into a moral imperative and you realize the dimension of our predicament. Doesn't every country have the moral right to offer its citizens the same standard of living that the most materially developed countries boast? Who can and will answer this question in the negative? But, of course, the holodox

balance between the parts and the whole, in this case between the human species and nature, is being increasingly damaged in this way.

Exactly half a century ago, one of the most intelligent and best-informed Germans of his generation described this danger and its consequences, which were already clearly recognizable at the time, with clairvoyant insight. In his book *So lasst uns denn ein Apfelbäumchen pflanzen – Es ist soweit* (Let us plant an apple tree – apocalypse is soon to come), Hoimar v. Ditfurth concluded that the inevitable end of man's further life on the planet was approaching. His book was not a warning, because warnings only make sense if disaster can still be averted. In his opinion, that was no longer possible. With such a pessimistic view of the future, Hoimar v. Ditfurth plunged his readers into a kind of shock for a brief moment. Afterwards, they took revenge on the author's pessimism – the book was simply forgotten, as if a decent scientist should refrain from mentioning proven facts if they seriously disturb the audience's joie de vivre.

Readers of this book will already have noticed that I am unable to follow the great man in his radical pessimism. In my view, Hoimar von Ditfurth is right so long as the race between nations continues unabated. But there is another possibility – and this he failed to consider. A third great shift leading to a new world order at the last minute, seems to me to be a realistic way out of the current life-threatening crisis. The world has already become a planetary community with a shared destiny – it just needs to realize that this is the only and therefore necessary way out of danger..

One world: a global community

> The Planetary Phase clamors for a global movement: an encompassing cultural and political awakening united under the banner of Earthland. *Paul Raskin*

Against their own will, states and people across the globe have grown into a unity. No one foresaw this development, let alone actively promoted it. It is the result of technological progress that largely unfolded without any planning. On one hand, this progress has brought significant benefits to many people. Even in the remotest parts of the world, they now profit from the fundamental blessings of modern medicine, live longer, and can afford many technical tools that significantly ease their lives. The bright side of fossil revolution was extensively discussed above. Whether we may also count it as a blessing that undersea cables and satellites now connect all continents, allowing an Inuit in Greenland, a Papua in New Guinea, or a resident of the Marshall Islands to be as informed about

global events and catastrophes as an American or a German remains open to debate. And hardly anyone would dispute that the contamination of the global internet with destructive viruses and the glut of hateful messages on social media pose an acute danger to the world. But there can be no doubt that, for the first time in history, the ubiquity of modern technology has welded all people together into a planetary community.

China's leadership must be credited for not only being aware of this common destiny but for constantly invoking it like a mantra. However, they understand it in a very limited sense, namely as a call to export their industrial goods to the entire world and, in return, extract and import the raw materials of other countries. This global offensive is supported by loans that primarily deepen mutual dependence for the benefit of China. The new doctrine is called "Fa zhan" - development - and is spread with the same missionary zeal as it had been by Europeans in the 19th and by Americans in the 20th century. The belief in the redemptive power of science and technology was inherited and fully adopted by China, but only insofar as it pertains to the natural sciences. The humanities are suppressed because they could challenge the belief in eternal progress and encourage dissent. From the Chinese perspective, their own country stands for equal rights of all states, while the United States strives for global dominance. This is pure hypocrisy, because China is simultaneously doing everything it can to break American dominance and become itself the leading power.

The seemingly altruistic policy was and is very lucrative for China, its development mission proves to be a global success as its authoritarian model is gaining widespread acceptance in the developing world. China's commitment to a global common destiny is correct, but it follows the model practiced in the West for two hundred years without offering a new perspective.

Europe assumes the universality of its own values with equal conviction. At the same time, it renounced much of its independence. The old continent had made itself dependent on Russia for energy (now reduced), on China for a substantial part of its industrial needs, and on the United States for its military protection. No other large and wealthy region owes its security and prosperity to such extent to the benevolent policies of other nations. When President Trump threatened to withdraw military protection by NATO, that is, by the U.S., panic spread across Europe. When Putin's Russia reduced gas supplies, prices skyrocketed, and Europe painfully became aware of its dependence. If China were to pursue a similar policy, the European prosperity model would be on the brink of collapse.

The only chance to mitigate the consequences of this dependence lies in collective action; on its own, each European nation would be hopelessly

vulnerable to external pressure. It therefore seems absurd that it is precisely in Europe that the disunity and the striving of member states for more independence are particularly pronounced. How far our continent has strayed from its greatest achievement, Enlightenment! Since its inception, the latter aimed to transcend the boundaries of nation-states. It took the renaissance of American isolationism under the current president and the fascist Putin regime's invasion of Ukraine to overcome the renewed fratricidal strife in Europe. However, the growing far-right camp and the extreme left have learned nothing from history. They are not even aware of the European community, let alone the global one that must and will become our destiny.

The US has been the leading global power for a century. This did not happen because it intended to become so - on the contrary, even today there is a strong isolationist trend. Rather, this role was and is forced upon it by technological progress, as this has brought all nations so close that they are constantly colliding with each other. In such a situation, the Hobbesian state of nature must be tamed and controlled. It is not surprising that the strongest state prevails and defines the rules. Until yesterday, the US has been a strong hegemon.

Superior strength is both an opportunity and a curse. It is an opportunity because coexistence among people is only possible in a regulated manner. This is why only groups of a few dozen people can do without government, while any larger political entity falls apart in civil wars if people cannot agree on a binding order. Today, the globe has become so small and the devastation a single state can inflict on the entire planet through weapons and toxins so existential that mankind must rely on some binding international order if the globe is not to tumble into chaos. As the strongest power on the globe, the United States had no choice but to assume this role, *or else another power would have done so*. In this way, the dollar became the world's reserve currency, the standards for economic enterprises and technical processes were largely set by the U.S., and military bases emerged in all regions to enforce - even in the face of resistance - the order determined by the Americans.

The U.S. has made many mistakes - the war against Vietnam and 2003 against Iraq were probably the biggest, but compared to previous world powers, there regime cannot be said to be worse. Few would want to trade their rule for the fascist dictatorship of today's Russia or the authoritarian government of China. Nevertheless, leading powers are never loved – they must live with this curse.

Why we may hope

> For states ... there can be no other way out of the state of lawlessness, which is nothing but war, than for them, like individuals, to give up their wild (lawless) freedom. *Immanuel Kant*.

> The most controversial question - What should be considered irreducibly global? - has provoked a tug-of-war between contending camps advocating for either a more tight-knit world state or a more decentralized federation. *Paul Raskin*

Fossil Revolution has created the technical prerequisites for a life of prosperity, at the same time it has given us the potential to destroy all life: nature and ourselves. We reached the point that we must live with this dual perspective. However, hope lies in the fact that we dispose of the necessary knowledge and skills to avert the danger. We know that all people inhabit the same small and vulnerable boat that carries us through the cosmos. None of us can retreat to a secure niche, as was still possible a century ago. We thrive together, or together we perish. Since everyone recoils from the second perspective, we may hope to achieve the first.

But this outcome is only likely to happen if we take the concept of a common destiny literally by creating the conditions that make us masters of our fate. Unfortunately, this is not the case at present. The truth is that bad luck and pure arbitrariness may have the last word. Since the nuclear powers confront each other, any technological mistake resulting from false warning signals is enough to ignite a global conflagration – in the past decades this could have happened several times already.

Arbitrariness is no less threatening. Any state can pollute the environment as it pleases and thus block the future of all others, without any international organization being able to take effective action against it. *A strong government with its binding order that makes life possible within a state is absent between them*. Far from being a community of destiny, fate still pits all nations against each other.

Due to the numerous threats mentioned above, we find ourselves in a much more dangerous situation than Europe during the time of Immanuel Kant, when the German philosopher called for the establishment of a federal league of states. Without it the nations of Europe would tear each other apart in constant conflict (see p. 169: *World government*). In Europe, all states were geographically close to each other, and they were so well-armed that only some kind of transnational authority could enable a lasting peace among them. Meanwhile, two and a half centuries later, Europe has almost realized the vision of the German philosopher. In contrast, today's world, with its technological civilization spread across the globe, is outwardly more uniform than ever before but still far from achieving this unity.

In my view, the current situation can be described as follows: a technologically unified humanity lives in a world state without a world government. It has exposed itself to the very danger so lamented by Thomas Hobbes: every individual (in this case every individual nation) strives to achieve maximum material and ideological power, even if it does so at the expense of everyone else. In a single state, this would be called political chaos, which could erupt into civil war at any time. In the case of humanity as a whole, we use the more appealing term analyzed above. We invoke the "multipolar world order."

Max Weber insisted that a state can only establish peace among its citizens if it possesses a monopoly on legitimate violence. *By its nature and purpose all functioning governments are monopolar, even when democratically granting maximum freedom to particular interests*. In this respect, federalism of free states, as Kant demanded, cannot be a solution that guarantees lasting peace or even ecological survival (see p. 169: *World Government*). The sovereignty of the parts must end precisely where it would otherwise endanger or destroy the whole. No individual state ought to have sovereignty over the production of atomic bombs, none ought to pollute the environment across borders, none ought to claim for itself the reservoir of raw materials that should belong to all of humanity. Such freedom or sovereign multipolarity of power centers, each of which has only its own advantage in mind, corresponds to the current situation, which is certain to lead the world into the abyss.

Within two centuries, Europe and its offshoot, the United States, have exponentially upgraded their technological assets. Today, the entire globe is copying this process in just a few decades. Technology has brought all states so close together that none can separate themselves anymore from the others. Communication and data flows bridge all distances at the speed of light; supersonic nuclear missiles can reach any point on earth in the shortest possible time. Hackers from Korea or South Africa are just as close to us as those from the neighboring city. Our species Homo faber insapientissimus has become a single people through technology, but a people steeped in a cold war that may at any time turn into a hot one.

People in civil war live without a functioning government because there is no authority with a monopoly on violence; instead, order and violence are distributed among many conflicting multipolar forces. This may apply to fighting citizens of individual states as well as to rival nations. Until about the beginning of the new century, the United States was the undisputed leading power, which, as Arnold Toynbee noted, represented a kind of benevolent world government defining the rules of the game.[116] The United States now lacks the economic strength to maintain this position against rising China and nuclear-armed Russia. Seen in this

light, the war in Ukraine - that often-tormented buffer state - is just one more chapter in the fight for supremacy. This struggle will only end when one of the superpowers, several powers in joint coordination, or the UN can assert itself as a functioning world government. Until then, the dominant alpha power will strive for a unipolar order, while the beta powers call loudly for a multipolar one.[117]

Without a universally recognized authority with a monopoly on the use of force, there can and will be no lasting peace. Albert Einstein saw this even more clearly than Immanuel Kant, who knew nothing of nuclear armament with which all life on the planet can be destroyed. "*The only salvation for civilization and the human race lies in the formation of a world government. So long as sovereign states have weapons and military secrets, wars will be inevitable."* Regardless of whether we want such a world power or abhor it, *technological 'progress' is forcing it on us*, otherwise it will bring ecological or nuclear disaster.

The future world order must not and will not be multipolar. Does this mean that those people are right who conjure up a dictatorship - an "eco-dictatorship" in view of the climate crisis? The fact is that every state imposes dictates – usually we call them laws. The only question is whether this is done in the name of autocrats or a ruling minority, as in feudal agrarian civilizations in the past or in Russia and China today, or whether these "dictates" are based on the democratic decision of majorities. In the latter case, the global community conforms to the definition I previously gave to the state. Both should act as "a moral end with technical means".[118]

We may draw hope from the fact that universal moral conscience is alive in all men and all nations; nowhere do people want to pollute the planet with nuclear or chemical toxins. Many are taking environmentally friendly measures. But that alone offers no solution as all are reluctant to adopt those measures that would significantly weaken them in international competition, allowing others to overtake them. It is for this reason that the parts do not respect the whole. *No part – single nation - will scrap its own armament or limit its resource consumption and toxin emissions to the extent necessary for the survival of the whole*. Today, the world stands at the same crossroads as Europe at the beginning of the last century: either murderous war or unity for the sake of peace. Europe followed its conscience only after two bloody world wars. We must learn from this and do everything in our power to ensure that the post-fossil fuel era begins its long overdue journey without war.

We are not there yet – far from it. Just a few years before Germany and France decided to unite in a common Europe, they were bitter enemies – mortal enemies, as they were called at the time. Anyone who even

mentioned surrendering their sovereignty to a higher supranational authority risked being branded a fantasist blind to reality if not a traitor. It was only the complete exhaustion of Europe during the thirty years of war or false peace between 1914 and 1945 that brought about a turning point.

Today, the whole world is facing a similar situation, as the race between nations with neo-Stalinist Vladimir Putin in the East and Donald Trump in the West reaches a new peak. The globe is currently being shaken by several crises together, but the ever-accelerating arms race starkly highlights the greatest danger. The number of states with nuclear weapons or the corresponding ambitions is growing. “It was secretly clear,” says Herfried Münkler, "that ... nuclear weapons would only disappear when there were no more great powers and a politically united humanity had taken their place.“ But, he then adds a sentence that the staunch ‘realists’ on both sides would likewise have voiced before 1945 with regard to the reconciliation between Germany and France. “That lies in the distant future.”

No, that does and must not lie in the distant future, because the “world is in turmoil,” as Münkler himself describes its present state in the title of his book. Apocalyptic catastrophes that threaten the survival of humanity have now come eerily close to us.

Towards a new consciousness

The post-fossil era faces a formidable challenge. It must not only renew the institutional foundations of man’s collective existence; it must furthermore reject the dogmatic worldview that is to blame for the dark side of its predecessor, the fossil era. The European Enlightenment bestowed upon the world a new concept of truth - this was its great achievement, which, in the form of science and technology, has conquered the entire globe. It is an achievement we cannot and do not want to do without. There is no turning back to a world without enlightenment, without science, because even the existential problems created by them can only be overcome through their conscientious use.

But the second part of the challenge is no less weighty and urgent. Science, as understood by the Enlightenment, was flawed from the beginning. It aspired to be a new doctrine of salvation - one that claimed the same omnipotence and omniscience that humanity had previously attributed to God. This flaw has persisted to the present day and is a major reason for the mistrust of science. For it will neither attain omniscience nor omnipotence. It only makes statements about being – in other words, it studies the orders of nature (its laws) as it finds them in the past. It cannot make

statements about what should be, i.e., the future and how humans can or should shape it. What "should be" cannot be derived from “what is."[119]

But men are living for what they want to be and to do. Universal moral conscience always rebelled against intolerable conditions. In the guise of totemism, we encountered this conscience among hunter-gatherers; in agrarian civilizations, it manifests itself in religions and its prescriptions. The Enlightenment rightly ridiculed religious superstitions, Voltaire's rallying cry, "Écrasez l'infâme" (crush the infamous!) was in our time continued by Richard Dawkins with his “God Delusion”. But the Enlightenment was not aware that religion, whenever it fulfills its highest and truest purpose, is a mouthpiece of universal moral conscience and, thus, of what humans should do – a task that science cannot assume.

Science has repeatedly made such attempts, however. It tried to derive what "should be" from what "is," as if laws could enlighten us about what we would like to be or to do. That explains why willing itself was time and again declared a pseudo-reality and its basis, human freedom, expressly denied. This aberration is "scientific delusion", which entangles thinking in insurmountable self-contradictions and paradoxes (see p. 172: Distorted world view). Human freedom – or chance in nature – is just as much a constitutive feature of our world as is the order of nature and its laws. *We must recognize moral conscience, and thus desires and intentions, as a second pillar alongside the knowledge of laws*.

With the help of Fossil Revolution, Enlightenment liberated the individual oppressed for more than ten thousand years, by promising equal access to knowledge for everybody. Science thus produced a democratic form of knowledge. Everyone had equal access to it, no one could acquire knowledge because of inheritance or other privileges. The new doctrine replaced all previous privileges granted to favored minorities with individual effort and personal ability.

After millennia of powerlessness, which was the lot of the majority in all former mass civilizations, the dismantling of a social order based on privilege brought nothing less than redemption. The empowerment of individuals - the privatization of power - vis-à-vis the whole of a state that had kept them in bondage for so long was the great achievement of fossil civilization. The balance that the universal conscience had always demanded was - for a time at least - achieved to an astonishing degree.
Unfortunately, this progress did not last long. The privatization of power – its initially liberating and beneficial distribution – led to a new imbalance between the parts (individuals) and the whole (the common good represented by the state) . It was not long before private corporations and wealthy investors increasingly disregarded the common good, demanding instead unlimited freedom for themselves, i.e. for the parts. Similarly,

individual states, indifferent to the well-being of the global community, exclusively pursued their own advantage. This is the imbalance that is troubling the world today - and it stems directly from a one-sided understanding of the Enlightenment.

We should remember that "religio," the Latin word for bond, refers to the relationship of people to universal moral conscience and thus to the common good. Only by drawing on such a new consciousness can we restore the fragile balance between the parts and the whole. Only in this way can we limit the destructive effects of science and technology - which is undoubtedly one of the most important tasks of our time.

For the human community - be it the individual state or humanity as a whole - is a moral end with rational (technical) means. The means, including the trans-moral, trans-aesthetic sciences, must never become an end in themselves. The purpose of life in its moral and aesthetic dimension may make use of rational means, but not vice versa. Reason must be at the service of life and thus of universal conscience.

Further Reading

Unity versus separation (separatism)

People become predictable to each other when they speak a common language and feel connected to each other through shared customs, beliefs, and moral imperatives. However, such commonality always gives rise to opposition to those people — those "strangers" — who speak a different language and follow different customs, beliefs, and moral imperatives. Mutual predictability is sought because otherwise the other person could become a danger. In Western societies, if a person paints a black cross on their forehead, wears their tie on their back instead of their chest, or stubbornly mixes up "die" and "der" in German language, they will certainly not find employment at any company. Such peculiarities do not pose any danger to the public, but they arouse suspicion. If someone goes their own way in small things, how can they be trusted in more important matters? The scope for tolerance is nevertheless subject to constant change. Just two or three decades ago, visible tattoos would have triggered the same fundamental rejection. Today, even nose and earrings are part of the permissible freedom conceded to the individual, even for men. But in every society, this freedom is clearly limited. The reason: people feel insecure when dealing with others who refuse to follow accepted rules. Voluntary or publicly enforced submission to prevailing rules is nothing more and nothing less than the basis and prerequisite for all social life based on mutual predictability.

On the other hand, every society thrives on the diversity of talents, ideas, and inspiration of its individual members. The pressure to submit to the common way of life and its inherent rules is therefore always countered by the desire for independence and separation. A society that denies individuals all freedom for personal development will perish through ossification. Just as genetic diversity among individuals of a species enables successful adaptation to sudden changes in environmental influences, individual diversity in mental and physical characteristics also increases the survivability of societies. The balance between unifying and binding rules on the one hand and conscious separation through personal idiosyncrasies on the other is therefore never static. At present, every person is allowed to express certain personal idiosyncrasies in their language, clothing, behavior, and even their physical appearance (ear and nose rings, tattoos, etc.), but if they exceed the limits of what is permissible, they risk social ostracism (tie on the back, cross on the forehead, violation of basic grammatical rules, etc.).

However, the two opposing tendencies were and are not equally pronounced. From a historical perspective, the tendency toward standardization clearly prevails. There are various reasons for this. Probably the most powerful is the fear of the unknown. When people with different languages and customs encounter each other, the result is usually war, unless they unite - with the stronger usually imposing their rules on the weaker or, more rarely, mutual assimilation taking place. During the past twelve thousand years of agricultural civilization, one further motive played a more prominent role. Princes sought to expand the basis of taxation and thus enhance their power and prestige – usually at the expense of rival princes in neighboring states. In this way, too, rivalry was eliminated, and peace was made possible in enlarged political entities. The Roman Empire, the Habsburg and Russian empires, the English Commonwealth, and many other violent unions under a common government followed this model. However, only a strong prince at the helm could guarantee peace, as there was generally no intention to standardize the different languages and customs, beliefs, and moral rules. The prince needed more taxes – what and how his subjects spoke, thought, and believed was generally none of his concern. Therefore, such greater political entities were always in danger of disintegrating due to separatist tendencies as soon as the prince at their head lost his legitimacy or power.

Nevertheless, from the early days of hunter-gatherers to the present, a clear and consistent trend can be seen. Families became clans, clans became tribes, tribes became cities and states, states became confederations and empires. Today, only three superpowers remain – China, the US and a rapidly declining Russia. And the reason for the increasing formation of larger political units, leading to the ultimate unification of humanity, is obvious to everyone. *It is the fear of mutual annihilation* due to rapid progress toward ever more comprehensive, ever more powerful, and ever more unpredictable killing machines. This apocalyptic threat makes the final step toward a united humanity inevitable. Only this step will eliminate mutual unpredictability in the race between the superpowers. Only this step can guarantee peace.

> If you build a bomb and ignore the facts of physics, the bomb will not explode. But if you build an ideology and ignore the facts, the ideology may still prove explosive. While power depends on both truth and order, it is usually the people who know how to build ideologies and maintain order who give instructions to the people who merely know how to build bombs or hunt mammoths. *Harari*

In this book, I deal with scientific facts on the one hand and with human conscience, that is, human will and desires, on the other. Both represent fundamentally different dimensions. The scientist tends to believe that he can manage with a single dimension. Our knowledge of the laws of nature would eventually enable us to achieve perfect control over both: over nature as well as over humans. In this view, desire and will do not play a role, since science wants to explain these also by means of laws. This view leads to insoluble aporias - logical contradictions - as I will show later. But it forms an essential part of modern thought. Among many others, the historian Francis Fukuyama (1992) has clearly seen this.

> The entire tendency of modern natural science and philosophy ... consisted in denying the possibility of autonomous moral decision and understanding human behavior solely in terms of subhuman and subrational impulses. What once appeared to Kant as free and rational choice was seen by Marx as the product of economic forces or by Freud as deeply hidden sexual drives. According to Darwin, humans literally evolved from the subhuman; more and more of what he was became understandable through biology and biochemistry ...[120]

The irrepressible will of science and technology to dominate nature and man can be traced back to the European Enlightenment. On the one hand, it has given us a better understanding of truth, but on the other hand, it has led us astray. The fact remains that our knowledge of nature on the one hand and human will and desires on the other belong to two fundamentally different kinds of knowledge.

I would like to call the first "knowledge of nature" as we are dealing with processes that are fundamentally beyond human will and desire. We cannot influence the regularities of natural events that we call laws. In this sense, they exist "objectively",[121] i.e. independently of ourselves - like all of nature that surrounds us, insofar as it is beyond our grasp.[122]

On the other hand, there is knowledge that we generate ourselves, that is through our own will and desire. I believe that the term "cultural knowledge" is the most appropriate designation. The laws that regulate the behavior of citizens in any given state are man-made, as are the languages they use to communicate, and the institutions present in their community. Insofar as the relevant knowledge was created by their ancestors in the past, we can speak of "objective cultural knowledge" that has

become a fact, since it was created by human will - the will of past generations, which exist as objectively as other facts. Only to the extent that cultural knowledge is currently emerging it appears to us as "subjective" coming into being at a particular historical moment through human will and desire.[123] Great scholars of both the humanities and the natural sciences have seen the matter in a similar way.[124]

There is a fundamental contrast between the two kinds of knowledge. We equate the validity of the laws of nature with the duration of the cosmos as we know it. For this reason, they are often referred to as "eternal and immutable". *Cultural knowledge, however, owes its origin to human freedom, and precisely for this reason, humans can create it at any time, as well as abolish and change* it on the basis of our changed will and intentions.

And this is not the only fault line between the two types of knowledge. Collecting cultural facts is no more difficult for us than exploring natural facts. However, as soon as it comes to *explaining the facts*, we become aware of the unsurpassable complexity of cultural knowledge. Regarding cultural knowledge, we try to explore the motives; we ask why people thought or acted in one way and not another. However, these are not always easy to find. When a starving person becomes a thief, this is a motive everyone will immediately understand; but why in one country the consumption of pork is forbidden, in another the consumption of beef, and why in a third a particular day of the week is considered sacred, cannot be deduced from individual desires and wants. These rules were created by earlier generations. Here, the motives often remain beyond our understanding. But this does not make us doubt that there were always certain motives for people in a certain historical situation, that led them to think or act in just that specific way. In other words, all cultural knowledge seems fundamentally explainable because we recognize ourselves in other people.

The situation is different when it comes to the approach of natural sciences. No researcher ever asks about a motive when calculating the formula for the orbit of a comet. Science does not ascribe any desires or wishes to the comet. Its complexity has a different reason. The formulas describing the orbit of planets may be so complex that only specialists can understand them.

The *fundamental* approach of the natural sciences is nevertheless characterized by utmost simplicity. Alfred North Whitehead (1985), the English philosopher and mathematician and lifelong friend of Bertrand Russell, reduced its approach to the shortest possible formula: "*Search for measurable elements in phenomena and then for relationships between the measured physical quantities."*[125]

This basic rule of scientific knowledge is elementary and allows us to precisely distinguish between false and true explanations in every specific case – no matter how large or small the scope of our factual knowledge. And only because this basic rule is one and the same in all areas of natural science can there be specialists who devote their whole lives to just a tiny part of reality and yet, in their respective fields, draw as valid explanations from the facts as their colleagues in completely different fields. The basic rules just mentioned remain the same for everyone and apply in all areas.[126]

Everyone knows the witty bon mot that the specialist knows everything about nothing, while the person who knows nothing about everything is a philosophizing generalist. This book on Holodoxie can be seen as a bold attempt to refute this modern prejudice. Hopefully it will demonstrate – and herein lies the usefulness but also the challenge of the Holodox method – that the conclusions it reaches are anything but trivial.

India's reverence for life

Our thoughtful Stone Age philosopher quoted above, resurrected, as it were, in the guise of American ethnologist Marvin Harris, had argued entirely rationally when he praised the supposedly paradisiacal time of peace and equality he anticipated with the advent of agrarian civilizations. It was subsequent history that proved how much reason can deceive us. No epoch of humanity brought forth such extreme inequality – and none produced so many wars.

Yet, even regarding war, we encounter curious exceptions to the rule – this is particularly true for the Indian subcontinent. Since the time when the concept of reincarnation conquered the Hindu mind that is two or three centuries before the Christian era, humans began to perceive themselves as kin to all living beings. From blades of grass to elephants, even up to the gods, they were all wandering souls on the path to salvation. Everyone, regardless of caste, saw himself as an embodied soul in the midst of nature pulsating with and shaped by the forces of will and desire. Through their decisions for right or wrong actions, Hindus held the power to intervene favorably or adversely in the cycle of rebirth. Opting for a morally exemplary life, as stipulated by their respective caste, held the promise of a correspondingly higher station in the next life. Eventually, one could even ascend to the highest rank by assuming the position of one of the many gods in the Indian pantheon. Conversely, engaging in morally reprehensible behavior caused a downward slide in the hierarchy of beings. This could lead to becoming one of the "Pretas," the terrifying hungry spirits.

The profoundly moral worldview of the Indians transformed the entire realm of the living into a single worldwide web.

It was this theory of an all-encompassing community of all living things that turned classical India into a land of peaceful coexistence among all creatures. Naturally, it was also a land of vegetarians. While China never had reservations about consuming meat – a luxury, however, that the majority could rarely afford – and while in Europe, the killing of animals was taken for granted and industrialized since the 19th century, high caste Indians regarded the killing and consumption of living beings a crime.

But this abstention came with a strange exception that pertained specifically to humans. A member of the Kshatriya caste, the order of warriors, was indeed allowed to kill – that is to kill humans. It was even considered *a duty and a right of this caste*, as explicitly stated in one of India's holiest texts, the Bhagavad Gita![127] Apparently, the oppression of the lower ninety percent by the happy ten percent at the top could never be guaranteed by faith alone: faith in the deserved and just karma. In addition, it required violence or the threat of it. The highest caste, the Brahmins, denied themselves the exercise of violence by delegating it to the soldiers - not unlike the way the church in the Christian West left the execution of heretics and witches to the secular power.[128]

When discussing the "enchantment of the world" and India as its outstanding example, this is connected to a peculiarity closely linked with authority. While the empires of Mesopotamia and China sought maximum uniformity within their realms and managed to achieve it to a high degree[129] – through linguistic unification, customs, economic systems, etc. – *Hinduism not only allowed diversity, but it made pluralism of worldviews and traditions its very foundation*. Truth was relative, but not in the sense of Paul Feyerabend, suggesting that there can be no ultimate and unassailable truth. Rather, according to Hindu belief, humans differed regarding their state of salvation, the highest truth could therefore be understood only by those of the highest caste, that is by Brahmins, all others would simply be unable to grasp it. The result was tolerance and an infinite variety of minds and ways of life. As long as the spiritual authority of Brahmins and the secular authority of warriors (Kshatriyas) remained unchallenged, each caste was free to find bliss in its own way; their rank in the social order was determined by their distance from the Brahmins. Hinduism underpinned diversity and made India what it was until a century ago: a land of inexhaustible material and intellectual diversity – "*a country greater than the world*", as the eminent poet George Louis Borges so eloquently put it. Within the confines of the agrarian order, human freedom unfolded there into an astonishing intellectual cosmos: "*The Wonder*

that was India," as described by the Asia scholar A. L. Basham in a book of the same name.[130]

Plato and the totalitarian state

Plato's testimony is significant in two respects. First, because the Greek philosopher was clearly aware that a society is unjust if it condemns some people to hard labor from birth while allowing others to live a life of luxury and comfort solely because of the accident of their birth. Plato refused to accept this injustice and therefore proposed a radical solution to eliminate it. Firstly, because the Greek philosopher was well aware that a society is unjust if it condemns some to lifelong toil while allowing others to live in luxury and abundance simply because of the chances of birth. Plato refused to accept this injustice and proposed a radical solution to eliminate it.

Plato was, however, a realist. So he recognized that under the production conditions of his time, a society could only provide a minority with space for intellectual development and higher cultural activities, if a majority generated sustenance for the few privileged ones at the top. *Injustice of the hereditary assignment of social roles on the one hand and on the other an insurmountable constraint to put a majority in the service of a privileged minority* - this was the starting point for Plato's philosophical reflections.

In a clever manner, the great Athenian attempted to defuse this fundamental conundrum by two different stratagems. First, by abolishing the hereditary nature of functions. But how could this be achieved? Wasn't it quite natural indeed that our innate parental love would lead to giving our children all the benefits enjoyed by ourselves? A king bequeathed his own position to his son, the crown prince, in such a way. Similarly, the children of slaves and laborers assumed the same roles as their parents. Plato deduced from this observation that if a just state was to exist, this hereditary mechanism must be eliminated.

From this first insight, the philosopher derived a second one: the demand that all children in his imagined ideal state be taken away from their families immediately after birth and entrusted to the care of the state. There, they would be educated and *allocated to various classes according to their abilities*. At the top of the state, the ruling minority would consist of philosophers and sages, alongside the warrior class responsible for defense (don't forget that in classical Greece there was an endemic state of war between city states). At the base of the social pyramid stood the broad mass of sustenance providers, including craftsmen, farmers, and traders.

Plato's solution for a just society resembles the Chinese approach in that both sought to regulate access to different classes *based on objective qualities of knowledge and skill*. However, there remains a fundamental difference between the two: the Chinese system did not subject human nature to coercion, while Plato's conception did just that: it sacrificed human nature to abstract logic. Philosopher Karl Popper even labeled Plato's vision, which involved breaking up families, a blueprint for a totalitarian state. The fact is, only a few mothers would willingly let their child be taken away by the state without utmost resistance. This resistance is biologically so deeply ingrained that a society can only overcome it by applying brutal force. Accordingly, Sparta, the original and model for all highly militarized totalitarian states, provided the historical blueprint for Plato's Republic.

The greatest thinker of Greece had veered onto an erroneous path with this proposal, one that not even dictatorships follow today. However, his genuine concern for justice is evidenced by another recommendation, which, on the contrary, deserves serious consideration even in our time. *Plato insisted that the highest class leading the state, the philosophers, should largely forgo material wealth*. The philosopher recognized that power and money tend to coalesce into an indissoluble bond at the top of the state, and that it is this very fact that so often makes rulers the target of suspicion. Power is pursued for the sake of money, and money pursued for the sake of power. Plato sought to break this unfortunate bond – his insight was that wisdom can and should liberate itself from all greed for material possession.

Unlike Plato's flirtation with totalitarianism, which has never improved people's fate, this recommendation could have very positive effects indeed - if genuinely heeded by a ruling class. In Greece and Europe, this has never been the case. Nonetheless, history knows at least one major agrarian civilization that largely realized Plato's ideal. The intellectually leading class of classical India were the Brahmins, spiritual leaders much like Plato's philosophers. For more than two thousand years wealth rarely concentrated in their hands; instead, it belonged to the Kshatriyas, the warriors who formed the second-highest caste. Only kings and their vassals lived in magnificent castles and palaces, flaunted harems and luxury without restraint, and incessantly waged war against each other to claim larger portions of the rural population as providers of sustenance and servants. In contrast, the Brahmins did not stand out for their wealth. On the contrary, the sacred texts produced under their guidance expressly advocated renouncing wealth, just as Plato did. Thus, *we may conclude that universal moral conscience led the Greek Plato and the Brahmins of India to similar conclusions*.

The Indian religious philosophers at the top of the state held tremendous power for over two millennia, and it was never seriously shaken. They owed their spiritual dominance primarily to the fact that, like Plato, they followed the demands of justice. It was this renunciation of material wealth by India's intellectual leadership, breaking the otherwise ubiquitous link between money and power, which granted the Indian caste system its extraordinary stability until the 19th century. In India, human equality was fundamentally denied, yet *the equation of power and money prevalent almost everywhere else in the world did not hold for the spiritually leading class*.

In contrast, the leading class of Chinese literati considered it natural to accumulate greatest wealth for themselves even though accepting the fundamental equality of humans. They never tolerated too much wealth in other hands, such as those of traders and producers.[131]

The transition from a moral to a scientific world view

We are connecting here to a basic insight that dominates the present work like a leitmotif. Throughout its history, man has always had to choose between two complementary and conflicting world views. One of these – let us call it the moral one – is rooted in our dealings with other people, with whom we want to interact as effectively as possible; the other – let us call it the scientific one – aims to control nature as effectively as possible.

Dealing effectively with people whom you want to win over or control requires moral as well as aesthetic standards. Here, a distinction is made between good and evil, beautiful and ugly (instead of between true and false as in its scientific counterpart). In the chapter on agriculture and especially on India and China, we spoke of the thoroughly moral world view of those great cultures. It was by no means wrong when applied to its proper sphere: man, and society. Just as in the past, relationships between people are still regulated according to moral principles. Every society necessarily rests on a foundation of shared ethical principles if it is not to disintegrate into civil war and chaos. Therefore, both world views are always and necessarily present in the minds of people, as the great British anthropologist Radcliffe-Brown had noted.

A more precise way of stating the view I am here suggesting is that in every human society there inevitably exist two different and in a certain sense conflicting conceptions of nature. One of them, the naturalistic, is implicit everywhere in technology, and in our twentieth-century European culture, with its great development of control over natural phenomena, has become explicit and preponderant in our thought. The other, which might

be called the mythological or spiritualistic conception, is implicit in myth and religion and often becomes explicit in philosophy (Radcliffe-Brown, 1979; p. 130).[132]

Both conceptions are true when applied to their proper sphere, but they turn wrong when going beyond it. Take for instance good versus evil, both rooted in the human sphere and only there. The laws that apply in outward nature are neither evil nor good, neither ugly nor beautiful. They exist independently of human will and desire. This applies to non-human nature in general. There is no empirical evidence that surrounding nature may be ruled by human-like spirits, as was believed in all known cultures. Modern scientific mastery of nature did away with the idea of spirits.[133]

The Enlightenment of the 17th and 18th centuries therefore had an easy time ridiculing as pure nonsense the myths of earlier generations and their anthropomorphic interpretation of nature. But as I will explain towards the end of Part V in the chapter "Distorted Worldview", it has itself fallen into the trap of mental blindness and deception. For both worldviews – the moral and the scientific – form the very basis for understanding man and nature.

Since the beginning of human history, both conceptions have determined human thinking – albeit to varying degrees. Nature has always shown to man that its laws are valid everywhere. A fish must be streamlined to shoot through the water like an arrow, a bird must weigh as little as possible to move in the air. Bionics studies the tricks of nature that we use in our time for inventions such as Velcro or the aerodynamic design of high-speed trains. But this is by no means new. No hunter or gatherer, no farmer would survive even a day if he did not submit to the constraints of nature, from which he must wrest his food. Man has always been subject to the natural laws that exist independently of his wishes and desires, and that is why there have been approximations to scientific thinking since the earliest times.

We saw that, according to the simple formula of the British physicist Alfred North Whitehead, science basically consists of the *search for measurable elements in the phenomena in order to find relationships between them* - relationships, we should add, that occur constantly under certain conditions, thus appearing as *laws or automatisms of natural events*.

Anthropologists agree that humans have been searching for such automatisms or laws of nature since the earliest times.

But is it not the case that magical thinking, this "gigantic variation on the theme of the principle of causality", as Hubert and Mauss said ... differs from science only in the assumption of an even more imperious and unyielding determinism? ... In that case, determinism would be anticipated

and brought into play before it had been properly recognized and respected. The rites and beliefs of magic appear as expressions of the belief in a science that has yet to be born (Lévi-Strauss 1962, p. 18).

In our view, rational technology is as old as magic, and both are as old as man ... However, if you consider what appears to be the most fascinating thing about both phenomena, it may well be automatism. Because even in the minds of primitives, magical powers are neither arbitrary nor spontaneous, but ... an automatism that permeates the whole world and can be set in motion with the right formula (Arnold Gehlen, 1980; p. 96).

We just insisted that natural science has nothing to do with morals. In none of their textbooks about the laws of nature is there any mention of good or evil. This also applies to magic – as the first researchers noticed when they studied the classical texts of magic in India, the so-called Brahmanas:

Morality has no place in this system: the sacrifice is ... a mechanical operation that takes effect through its inherent energy; hidden within nature, it is only set in motion by the magical action of the priest ... It is indeed difficult to imagine anything more brutal and material than the theology of the Brahmins of that time (Lévi; pp.9 and 164).

If both conceptions, the moral and the scientific, have their roots in prehistory, then we are faced with a question of the greatest scope and importance: Why was the moral worldview, which was prevalent almost everywhere in the past, replaced by a predominantly scientific one from the 17th century onwards?

Let us first look at explanations that do not shed any light on the phenomenon or do so only partially. Greater inventiveness on the part of Europeans cannot have been the deciding factor, because prior to the 17th century, it was greater in China than in Europe, as the great American historian Paul Kennedy convincingly argues.

To readers brought up to respect "western" science, the most striking feature of Chinese civilization must be its technological precocity ... Chinese cities were much larger than their equivalents in medieval Europe, and Chinese trade routes as extensive. Paper money had earlier expedited the flow of commerce and the growth of markets. By the later decades of the eleventh century there existed an enormous iron industry in North China, producing about 125,000 tons per annum, chiefly for military and governmental use – the army of over a million men was, for example, an enormous market for iron goods. It is worth remarking that this production figure was far larger than the British iron output in the early stages of the Industrial Revolution, seven centuries later! The Chinese were also probably the first to invent true gunpowder; and cannon were used by the Ming to overthrow their Mongol rulers in the late fourteenth century. /And then

there was the great naval expedition to the coast of Africa between 1403 and 1433/ ... From what historians and archaeologists can tell us of the size, power, and seaworthiness of Cheng Ho's navy ... they might well have been able to sail around Africa and "discover" Portugal several decades before Henry the Navigator's expeditions began earnestly to push south of Ceuta. /But the fleet was scrapped soon after and a navy never rebuilt until the twentieth century/ ... Apart from the costs and other disincentives involved… a key element in China's retreat was the sheer conservatism of the Confucian bureaucracy ... According to Confucian code, warfare itself was a deplorable activity, and armed forces were made necessary only by the fear of barbarian attacks or internal revolts (Paul Kennedy 2017, p. 6ff).

A further explanation blames wars for Europe's lead. In comparatively small Europe, wars were endemic and, since the invention of firearms, technology increasingly determined their outcome. No doubt, war was and remains a powerful stimulus for innovation to this day. The historical explanation, according to which Europe, in comparison with China, was more stimulated to technical innovations due to constant internal conflicts, seems plausible but is not sufficient.

This applies even more to Max Weber's famous hypothesis that it was the ethics of Protestantism that initially fostered the spirit of capitalism. The fact itself is undeniable. In Catholic Italy, after the trial of Galileo Galilei, scientific and technical progress was stifled. It largely shifted to the Protestant north and from there to Protestant North America.

On the other hand, it is hard to deny that at the beginning of the second millennium AD, the Song dynasty offered the best conditions for an industrial revolution on Chinese soil. The fact that it did not take place there is explained by the high labor potential, which meant that labor-saving inventions did not appear economically viable. But the industrial revolution not only destroyed jobs, it also created them on a historically unprecedented scale. This explanation is just as insufficient as the comparison of relative economic strength. *A rough estimate of global social product for the year 1700 suggests that around 22.3 percent was accounted for by India and 24.4 percent by China, or 61.7 percent by Asia as a whole, but only 2.9 percent by England and 22.5 percent by Western Europe... Even per capita, income was only around twice as high as in Asia. Only the Netherlands and England are thought to have reached three times the value of China and India* (Menzel 2023).

But these and similar explanations are all insufficient. The transition from mere knowledge of nature to its comprehensive mastery requires more, namely material resources. Only pure knowledge can do without material resources. Mathematics, for example, a most important branch of science,

goes back to early Indian and Greek history. You need neither raw materials nor energy to develop mathematical formulas; a thinker like Euclid was able to develop his insights on a slate without any material aids. Relying on mere observation and mental operations, the Babylonians, Indians and Incas had already acquired solid scientific knowledge about the course of the stars. Since mathematics is the basis for all modern science, we may therefore claim that basic research – in the true sense of the word – has existed for several thousand years, but without for that matter having achieved or often even aimed at a better mastery of nature.

A global glut of man-made materials

The privatization of power results in greater freedom for individuals. Free choice of occupation, which for most people never existed in populous agrarian civilizations, is one of its great achievements. Hardly anyone denies that this was a historic act of liberation. But the distribution of power was not only an opportunity, from the outset it was also a danger. It was an opportunity only *if individuals used their newfound freedom for the benefit of the whole. However, from the very beginning, they also had the opportunity to harm the whole for their private benefit.*

How private companies misuse their freedom by releasing toxins into rivers, the atmosphere or the soil has been known for a long time. But the abuse of freedom now takes place in a thousand different ways and is becoming increasingly difficult to control. In fact, *the privatization of power threatens to completely upset the relationship between the whole and its parts*. I would like to devote some more lines to the flood of artificial substances that embody much of what is called progress in the "most advanced" states.

In our brave new techno-world, there are now hundreds of thousands of synthetic substances that neither the state nor the public can monitor let alone control. In his thought-provoking book "Green Lies," German chemist Friedrich Schmidt-Bleek notes: "*It is suspected that at least 300,000 substances and entire cocktails of various, constantly changing compositions enter the air, soil, and water. Some of the best-known problematic substances are now subject to legal requirements. But what about the vast majority? These numbers illustrate the stark disproportion between the damage induced by technology and the possibilities to control and contain it. There cannot be a checklist that claims completeness and ensures safety regarding the chemicals we produce and use*."[134]

This checklist cannot exist because *the state's regulatory bureaucracy would then need almost as many heads and departments as the entire*

private business landscape. Furthermore, it would need to be financially equipped as well as the entirety of companies to assess every new product's environmental compatibility. Finally, it would need access to the confidential data of products, which appears unlikely due to the rules of competition.[135]

This clearly indicates that the public has lost control over its private actors - it can only exercise it in exceptional cases. Only when products from the chemical, pharmaceutical, or biocide industries clearly have harmful effects is there any control at all. In all other cases, it has become an impossible task, due to the immeasurable number of produced substances.[136] This fact explains why the state long ago delegated control to the companies themselves. They are required by law to proactively assess impacts on health, environment, climate, etc. But it goes without saying that their short-term business interests tend to cause them to overlook the long-term consequences of their products. As the old saying goes, making the fox a gardener has always been questionable. It is no secret that some enterprises intentionally manipulate scientific results if they threaten the sales success of their products.

However, it would be short-sighted *if we were to blame this loss of control exclusively on much-criticized capitalism*. In truth, we are confronted with something much more fundamental: the indirect consequences of our immensely increased knowledge and technical capabilities. It was to be expected that the privatization of power would increasingly channel science and technology in private hands. In turn, this would make public control more and more difficult.

Respected experts like Schmidt-Bleek see this as a major problem that is threatening to overwhelm us. The chemist was, however, a lone voice in a desert where typically very different sounds are heard. In the media and in political statements, the abundance of materials produced, their labor-supporting production and, of course, their consumption are generally taken as a positive yardstick for assessing the respective degree of progress and growth. The more cars circulate, the more houses and roads are built, the more goods department stores sell - generally speaking, the greater the gross domestic product - the higher a state ranks on the international development scale.[137] Where people produce only what is necessary for survival disturbing the balance with nature as little as possible, extreme poverty prevails according to today's standards.

We will see that the greatest challenge for the post-fossil era will be to counter the privatization of power with state control, so that freedom is not abused to the detriment of the whole but is used for its benefit. Until now, we did not want to admit that *the privatization of power - the*

increased freedom of individual citizens - requires not less but substantially greater control by the state, so that its effects do not prove destructive.

Waste: Disrupting Natural Metabolism

The fossil epoch jeopardizes the balance between humans and nature in multiple ways. It wasn't always like this. Up until the 18th century, our ancestors largely conformed to self-regulation through homeostasis, meaning they didn't significantly disrupt it. The materials they used were primarily plant or animal-based foods, or durable natural substances like stones, wood, or fired bricks for building houses. Even the use of iron or bronze merely involved a transformation of natural elements, without deeply altering effective homeostasis.

But a massive interference with nature occurred with fossil-industrial revolution. Since then, not just a few hundred but hundreds of thousands of new inorganic and organic substances have been invented and manufactured. The EU alone currently produces about 300 million tons of man-made substances each year.[138]

This presents a significant problem because evolution was not prepared for the inundation of the ecosphere with artificial substances. Within millions of years, it had created an armada of organisms that were able to compensate for any disturbance of the equilibrium - in this way biological toxins created in a natural way are decomposed by countless small and micro creatures and returned to the cycle. *Evolution had not, however, created organisms to break down the hundreds of thousands of toxins and new substances that humans have burdened nature with over the past two hundred years*. Most of these substances cannot be broken down and re-integrated into the natural cycle. They remain foreign bodies, increasingly threatening the existing equilibrium - the natural homeostasis.

This holds true especially for the most infamous toxin of our present time, the greenhouse gas CO_2. Nature could deal with a limited excess of carbon dioxide through decomposition or absorption, but the vast quantities resulting from the combustion of fossil fuel overwhelm natural processes, endangering mankind with irreversible climate tipping points.[139]

As dangerous though much less discussed are all those synthetic substances - chemical products like plastics, biocides etc., - which cannot be broken down or naturally absorbed. I spend most of my time in a rural village, where the ever-growing tide of waste is much easier to observe than in cities where it remains almost unnoticed since it seems to

mysteriously disappear overnight. In the countryside, no one fails to notice that the mountain of garbage is growing as much as consumption does.[140]

The problem is that most of this waste is bound to remain waste for centuries - in some cases, perhaps even millions of years. Nature hasn't developed processes and organisms for its disposal. We only shift it by burying it or removing it from our immediate surroundings, but that doesn't erase it. Just how impossible such a removal may be, can be seen in the immediate vicinity of our planet. In the spatial environment, known as the satellite orbit (between 160 - 40,000 km above Earth's surface), technical waste from thousands of satellites, rockets, and other remnants accumulates in such density (one more exponential trend!), that space travel may become increasingly hazardous and eventually even impossible in the foreseeable future due to the exorbitant cost of removing spatial waste.[141]

True, on Earth, there are more alternatives at our disposal. Recycling by breaking down unusable industrial products into their constituents is a method to emulate natural homeostasis through scientific means. However, this process requires a significant amount of energy, much more in any case than will be available after the end of the Age.[142] Incineration is often touted as a second-best and much cheaper solution to the problem, but as chemist Ugo Bardi notes, the resulting end products are often more dangerous than the waste itself, which is only seemingly destroyed by fire.

Hence, a third option is extensively used: disposal. On one hand, the oceans worldwide serve as sinks for plastic and many other waste materials, causing increasing damage to the marine ecosystem - not just to the Mediterranean Sea once so rich in fish. On the other hand, a significant portion of household and industrial waste is buried or piled up on land. The resulting landscape consumption - often coupled with groundwater contamination - has reached alarming proportions. Both methods of disposal run parallel to the growth of fossil society. The more income and goods, the greater also the downside of this wealth: the accumulation of waste. And its removal is becoming ever more expensive.[143]

Among affluent industrialized nations, a convenient pseudo-solution to the problem has been adopted. They delegate this toxic and mostly foul-smelling burden to poor developing countries in Africa or Asia in exchange for payment. From Germany alone, around 70,000 tons of waste were sent to India in the course of 2018.

However, more and more countries are no longer willing to serve as garbage dumps for industrialized nations, as they understand that they are trading dangerous long-term problems for short-term gains. According to the environmental organization Blacksmith Institute, the massive e-waste

landfill in Ghana's capital, Accra, is one of the ten most toxic places in the world. Moreover, developing countries have themselves begun to follow the path of industrialization - they are now in turn becoming producers of landscape-destroying waste. For instance, Mumbai, India, still generates 500 cubic meters of plastic waste daily, even though the city administration reduced daily waste from 9500 to 7200 tons between 2015 and 2018. Across India, over 10,000 hectares of urban space are now occupied by landfills. Delhi's waste mountains in Ghazipur are 69 meters high, in Okhla 55 meters, and in Bhalswa 56 meters, all far exceeding the permissible limit of up to 20 meters.[144] The most distressing image comes from Sri Lanka. Amid a landscape of breathtaking beauty, a waste mountain spanning several football fields defaces paradise - and amidst the waste, one can see an elephant herd scavenging for revolting remains.[145]

Environmental devastation is being carried out on a global scale. In all industrialized nations, the increase in gross domestic product can be measured by both production or consumption and by its unsightly counterpart: the generation of waste. Global environmental poisoning becomes truly eerie when we consider how short-term the benefit derived from consumer goods usually is. “According to investigations by the American National Academy of Engineering, in the United States, 93/?/ percent of extracted resources are never converted into sellable products, 80/?/ percent of all products are discarded after a single use, and 99/?/ percent of the substances within products become waste within six weeks of being sold” - a colossal cost factor for the economy and for nature. This disheartening information comes from a reputable agency and is cited by a knowledgeable scientist.[146]

Subjective will, objective laws

> According to the philosophy of the average modern intellectual, there is only one authority, namely science, conceived as the classification of facts and the calculation of probabilities. The realization that justice and freedom are intrinsically better than injustice and oppression is scientifically unverifiable and useless. In itself, it now sounds just as senseless as the realization that red is more beautiful than blue or that an egg is better than milk. *Max Horkheimer*

> “The really frightening thing about totalitarianism is not that it commits atrocities but that it attacks the concept of objective truth: it claims to control the past as well as the future.” *George Orwell*

There is no doubt that man is a part of nature, but we must strictly distinguish our knowledge of nature from our cultural knowledge.[147] According to Whitehead's methodological guideline, the relationships that the scientist determines between the physical quantities he has measured are either

present or they are not. In other words, scientific *findings are either correct (true) or false*.

In contrast, we judge current political measures or the norms handed down to us by earlier generations according to the criteria of *good or bad*. We also judge our living space and the architecture that surrounds us, the design of the landscape and the monuments of past cultures according to the standard of *beautiful or ugly*. Both dimensions, the moral and the aesthetic, reflect human desires and wishes and therefore have no place in "objective natural knowledge". To emphasize this point once again: *The facts of the physical world and the laws that we derive from them are non-moral and trans-aesthetic because they are beyond human desire and wish.* For the physicist, the fact that ice melts when the freezing level is exceeded is a fact that is neither good nor bad, neither beautiful nor ugly. The textbooks of Physics lack any reference to morality or aesthetics.

On the other hand, people have always been enthusiastic about the beauty of butterflies and daffodils and sung about the majesty of the starry sky. There have been mystics who have felt so at one with nature that they believed themselves and the world around them to be the work of the same divine will. Physicists usually lack an understanding for such things. If they were to describe the data and laws they have determined as good or beautiful, this would seem to be nothing but childish arbitrariness, which adds an unnecessary subjective dimension to the objective data – mere opinion.[148]

It is different when the results of natural science are reflected in the products of daily use: in cars, airplanes, computers, cell phones, etc. Then the criteria of cultural knowledge, i.e. good versus bad, beautiful versus ugly, suddenly play a decisive role. Advertising correctly assumes that people buy products because they find them "beautiful" and useful hoping that they will "enrich" their lives. Advertising proves to us that those very objects *that function according to laws that are removed from human will and desire owe their value to the fact that they satisfy our will and desire*. All "objective" knowledge of external nature is ultimately at the service of man, namely of his "subjective" desires. We may formulate this insight in general as follows: *Natural knowledge derives its meaning from cultural knowledge – but never the other way around*.

This may seem obvious and even trivial to some. But when ever larger parts of cultural knowledge - such as the sciences of the soul and society: psychology and sociology - are in turn treated according to the method that Whitehead formulated for inanimate nature, then it becomes apparent that this is by no means a matter of course. Man is seen as a machine, the *possibility of autonomous moral decision is denied*, as Fukuyama puts it, *and human behavior is understood exclusively in terms of subhuman and*

subrational impulses. The autonomy of cultural knowledge from natural knowledge gets lost in the process.

This too is a holodox problem, that is, one that concerns the relationship between the whole and its parts - in the present case the disturbed mental reflection of the external world in human consciousness. This disturbance this is due to our unwillingness to understand *the limits of our seemingly endless conquest of nature*. If we accept Ludwig Boltzmann's statement that the practical successes of modern natural science prove the correctness of its methods, then we *must evaluate the global destruction of nature of the past two centuries in exactly the same way as practical proof that its methods and knowledge are limited and perhaps even incorrect and dangerous in their generalization*. The ultimate meaning of all our objective knowledge relies on satisfying our subjective desires – our conscience.

Population

> Gross over-crowding will produce social stresses and tensions that will shatter our community organizations long before it starves us to death. It will work directly against improvements in intellectual control and will savagely heighten the likelihood of emotional explosion. *Desmond Morris*

Let's not forget that the various disasters just mentioned have historically been nature's preferred instrument for rectifying population imbalances. Prominent American anthropologist Marvin Harris attributed endemic wars in so-called primitive societies primarily to the competition for food, which always became particularly intense when there were too many mouths to feed and a meager food supply. Famine was the sad norm in large agrarian civilizations until the threshold of modern times.[149] Towards the end of the 18th century, Thomas Malthus still assumed that population growth would occur in geometric progression, while the supply of food could at best be increased arithmetically. At the end of the 18th In his book "Söhne und Weltmacht" (Sons and World Power), German sociologist Gunnar Heinsohn (2006) reached similar conclusions regarding the states of North Africa and the Middle East.[150] And a critical observer like Bertrand Russell (1952) had already in 1949 warned of the dramatic consequences of a continuously increasing world population. If humanity couldn't limit its own numbers through rational planning, then nature would do it instead through wars, famines, and epidemics. The large streams of refugees that besiege the gates of Europe and the US are partly due to the fact that ever larger parts of the globe are no longer able to adequately feed the people living there. If the rich countries, whose

ecological footprint is far too heavy for this planet, were to operate sustainably, the same conclusion would apply to them too.[151]

So, we certainly describe Faber's past quite correctly when we conclude that an increase in population over the available food supply has generally been brought back to equilibrium in bloody ways. Furthermore, it seems obvious that the climate crisis will substantially increase this threat.

That's why it may seem like magic that, for the first time, Faber's knowledge and skills offer him the opportunity to significantly reduce population in the shortest possible time and without physical pain. Less people inhabiting the globe may, of course, substantially reduce their carbon dioxide and other toxic emissions, revitalize biodiversity, and eliminate almost all the damage done to nature and fellow humans. They may even do so while significantly increasing wealth!

This doesn't require a miracle if man decides to use existing knowledge and skills. If all women in all countries use contraceptives, then the world population could be reduced from eight billion to, let's say, two billion within two generations, without a single casualty in the process. On the contrary, millions of people who would otherwise be condemned to painful deaths from wars, hunger, and malnutrition would be spared. The pressure on nature would decrease dramatically, just as it temporarily decreased during the COVID-19 pandemic when there was hardly any traffic on the streets in areas most affected. After relinquishing uncontrolled growth, the remaining population would undoubtedly be much wealthier, as they could utilize all the devices, buildings, land, and resources now freely available for their use (I am, however, deliberately ignoring the fact that, apart from Africa and parts of Asia, many industrialized countries already have a shrinking population, and I am leaving undiscussed the enormous difficulties that arise with any radical intervention in existing conditions).

But how realistic is the assumption that humanity will use its knowledge and embark on this path? The fact is that it has already done so in the most populous country, China, three-quarters of a century ago, in China. At that time, the leadership recognized that any increase in prosperity was quickly offset by uncontrolled population growth. That is why the ruling party limited fertility by imposing a strict one-child policy, which soon proved to be a historically unique success. Not least because of this policy, China became what it is today: a world power that has, arguably, already surpassed the United States as the leading economy.[152]

Undoubtedly, its one-child policy saved overpopulated China from those regular outbreaks of famine and wars, which it had suffered from in the past. By this measure alone it immensely alleviated misery and, in the

end, enriched the country. However, this policy, although entirely bloodless, had to be enforced from above with constant surveillance since people perceived it as a severe infringement on fundamental rights. Until today, the freedom of the individual to reproduce at will is understood as a fundamental right - even if it results in a catastrophe for one's country and for the rest of mankind.

In fact, voluntary and peaceful population reduction would be the most beneficial measure for the good of the planet and its inhabitants. It need not even change the existing balance of power if all nations participate proportionally. Nevertheless, any observer informed about the present world situation will smile at such a proposal as totally unrealistic, if not simply fantastic. To this day, we are incapable of applying our knowledge and skills for the benefit of the whole.

Transportation

Let's explore another example: the decrease of the climate pollutant CO_2 through a drastic reduction in transportation. In the Federal Republic of Germany, with its approximately 80 million inhabitants, there are currently about 60 million cars in use. If we subtract the young, not yet capable of driving, and the elderly no longer able to drive, there is almost one car for every resident. In China, almost half of the German car fleet entered the market as *new cars* in 2016 (approx. 24 million), i.e. during merely a single year.

Where this development will lead is easy to see. As soon as the whole of humanity achieves the same luxury for itself as the Germans, five and eventually up to ten billion motor vehicles will be driving the globe instead of today's approximately 1.3 billion - and all of them will require energy, up to now mainly oil. Currently, transportation accounts for approximately 15% of global fossil energy consumption. Cars thus significantly contribute to the greatest crisis of our time, climate change. If the number of passenger cars multiplies by a factor of ten in the coming decades - a development that Western car companies and the previously disadvantaged citizens of developing countries are vigorously promoting - there will be no escape from ecological collapse.

The taxation of fossil fuels combined with tax incentives for electric power is not a solution because it creates social imbalances. As long as renewable energy is only available to a modest extent while electric cars are still much more expensive and their costly batteries become unusable after a few years, this alternative is out of the question for the majority.

On the other hand, humanity will still need this means of transportation in the future. The simplest solution - giving up cars altogether - is hardly an option in modern societies where places of work and residence tend to be far apart. Even public transportation can only partially meet the need for individual mobility. Many have long called for the expansion of public transportation systems, which have been relegated and, in some countries, even neglected to the point of decay due to the prevalence of automobiles.[153] Expansion will undoubtedly be necessary, but by itself does not provide a solution to the problem, as a public transportation system connecting every point to every other would become unwieldy. Expansion makes sense only where the largest human flows occur; all other routes must be covered by other means: walking, cycling, or using cars.

An ecologically satisfying solution to the problem lies in our current knowledge and abilities. It has been made possible by a technological breakthrough achieved in this century: by artificial intelligence. (AI). This technology offers us a solution that effectively complements public transportation, significantly reducing resource consumption and potentially decreasing the number of necessary cars - all without compromising freedom of movement. Technology offers us a solution that complements public transport so effectively that resource consumption is decisively curbed, and the number of cars needed can be reduced to about one tenth - all this without sacrificing freedom of movement. This requires five technological innovations:

1. Electric cars with a minimum range of four hundred kilometers.
2. Driverless autonomous control of these cars to and from any point connected to the public road network.
3. Artificial Intelligence to control these cars.
4. A widespread G5 system enabling control in conjunction with onboard computers.
5. Mobile devices allowing every citizen to order such a car and specify their destination at any time.

We know that private cars remain idle for approximately ninety percent of the time, which means that their number may be reduced to one-tenth when all are in constant use.[154] This principle has already been tried and tested in many cities on electric scooters and to some extent on bicycles, albeit in an imperfect way, because scooters and bicycles have to be parked somewhere - they cannot be summoned by the customer on request. With cars, this becomes possible. The nearest unused vehicle may be called by the customer and autonomously driven near to him.[155]

Conclusion: The entire car fleet in Germany consisting of approximately 60 million cars may be reduced to about one tenth without citizens suffering a loss of mobility, and the same reduction may be applied to the rest of the world.[156] CO_2 emissions would be reduced to one-tenth, even if the fleet continues to operate on fossil fuels for the time being.[157]

This could indeed be a beneficial measure for the planet and its inhabitants. It will not even change the existing power balance between states if all participate proportionally. Nevertheless, any informed observer of the current world situation would dismiss it as completely unrealistic, if not simply fantastic, because it would be perceived as a serious blow to car industries, employment, salaries etc.[158] Conclusion: to this day we are incapable of applying existing knowledge and skills for the benefit of the whole.[159]

Farewell to Disposable Society

> Radically altering production and consumption practices within a conventional framework would be akin to trying to climb up a down escalator. *Paul Raskin*

Modern throwaway society is responsible for rapid resource depletion and environmental pollution that, if not stopped in time, will inevitably lead us to ecological collapse. Here again, available knowledge and capabilities offer a solution that is as straightforward and effective as the one proposed for transportation: equivalent performance with minimal resource consumption.

The required strategy is by no means revolutionary, as it will be immediately understood by everyone, but its practical application would have revolutionary consequences because *it goes against the practices of disposable society and the prevailing imperative of growth*. We need a transition to durable and repairable products, a shift towards an economy that aims for sustainability rather than novelty. Regarding cars, we saw that there would be no compromise in mobility if we reduced the existing fleet to one-tenth. Similarly, we do not need to lower our current standard of living when applying the same limitation to all other products!

This time, the limitation does not concern the quantity of currently available products but the quantity of goods used over an extended period - it is achieved by *significantly increasing their lifespan*.[160] Assuming that, on average, all products have a lifespan ten times longer, *the effect is the same as a tenfold reduction in population:* we would need one-tenth of the energy and raw materials for their production.

Technically, it is already possible to exceed this factor of ten by a significant margin.[161] The oldest Egyptian pyramids are nearly five thousand

years old; until the start of the industrial revolution, the wealthy all over the world placed a great emphasis on the durability of their property, whether it be castles and palaces, swords, furniture, or other items of everyday or lifelong use. As for the poor, it went without saying that they maintained and preserved their few possessions for as long as possible.[162]

Our modern buildings and consumer goods could also attain biblical ages, especially if all devices are designed in modular fashion, making it easy to replace faulty components. Currently, this is not the case. Rather, industry and trade are interested in the exact opposite of durability; they aim for the shortest lifespan possible – at least so long as such a policy can be maintained in global competition. Whether it's mobile phones, computers, toothbrushes, razors or television sets, durability goes against the interests of producers because it reduces sales. The faster a product turns into waste, the sooner a customer will replace it with a new one, leading to higher profits and growth.

If German industry were to increase the durability of all products by a factor of ten, then economic output and income could likewise shrink up to a tenth; if, conversely, it were to reduce durability by half (in agreement with global competitors), economic output and income could double - *growth through greater waste production.*[163]

The connection is so obvious that we easily understand why companies are so eager to introduce their products with ever-changing, new designs. Using sophisticated techniques of psychological and aesthetic seduction, sometimes even with the help of advanced technical intelligence, both the economy and society work together to make resource conservation through reduced consumption appear as an elusive mirage. Nor should we forget that it is precisely the fastest-growing companies and countries that have the greatest scope for research and innovation. *In fact, our so-called progress is closely intertwined with throwaway society.* This can be observed most clearly in China. The far eastern giant is always waving its green cloak, but at the same time it is not only fueling the consumption of 1.4 billion people at home, but also everywhere else in the world through the forced export of its products.

In this context, it is important to maintain perspective because it would not be fair to solely blame the economy (capitalism). Ultimately, the economic life rests on an openly assigned mission from society and the state. Short product lifespans mean higher sales, greater economic output and growth - which in turn leads to higher salaries for all working people. What sense does it make if, on the one hand, government tries to attract companies with high subsidies and tax breaks, but at the same time imposes a shrinkage cure on them with regulations on the durability of products? The *citizen as a consumer* might welcome such measures. When

asked about their preferences, most consumers would likely vote for durable products and enthusiastically welcome the resulting reduction in waste. On the other hand, the consumption of these same citizens depends on their available income – and they earn this income as employees of the companies selling such products. *The position of the citizen as a worker or employee is. therefore, opposed to that of the same citizen as a consumer*.[164]

However, what tends to be overlooked in such assessments is the balance between profit and loss. It is true that an increase in the average lifespan of all products, say, by a factor ten, would lead to a corresponding shrinkage in economic output and income - in extremis to a tenth, if sales decline accordingly.[165] But after such a radical transformation, each product will be purchased much less frequently - for example, only once every ten years instead of every year as before. Therefore, for the individual citizen, there is neither a profit nor a loss: they now get by with one-tenth of their original income. Therefore, they do not need to make any compromises on their accustomed standard of living. *Negative growth – or degrowth as it was called by Herman Daly - does not necessarily result in a lower standard of living*.

On the contrary, such a simple measure *raises the standard of living* because it ends the war against nature. A sick industrial economy that systematically engages in resource destruction and pollution has become a sustainable one, where services for maintaining health and social cohesion largely replace the production of material goods. Such a service-oriented society preserves nature while people still enjoy prosperity.[166] The overall effect achievable through significantly extended product lifespans is substantial enough to avert ecological collapse, provided it goes hand in hand with a transition to renewable energies.[167]

This measure would, indeed, be a blessing for the planet and its inhabitants. It will not alter the existing power balance between states if all participate proportionally.[168] *However, anyone informed about the current world situation will dismiss it as entirely unrealistic, if not simply fantastic*. Again, we are incapable of applying our knowledge and skills for the benefit of the whole.

British war-time economy

We have seen: a painless reduction in fertility saving an infinite amount of suffering, has been carried out in China; the reduction of traffic may be achieved by means of existing high-tech in a similar way as it is now realized with electric scooters and other borrowable driving devices. Ulrike

Herrmann is to be thanked for drawing attention in her book "The End of Capitalism" to an economic model that implemented a radical restriction of production and consumption in a similar painless way, indeed in a way that was extremely popular among the citizens affected by it: the sacrifice met with general approval.

While Hitler was invading England with his blitzkrieg, "rationing was carried out, but there was no shortage. The British invented a private and democratic planned economy that had nothing to do with the dysfunctional socialism in the Soviet Union ... The British wartime economy from 1939 onward provides a suitable model as to how a climate-neutral world could be striven for in an orderly fashion ... unfortunately, /however/ it will not work without interdictions. Our way of life can only be ecological if we do not consume permanently and without limits. The analogy to World War II is therefore apt ... Quantity and price controls were immensely popular in Britain ... government-imposed egalitarianism proved a boon: The state-imposed egalitarianism proved to be a blessing: During the war, the lower classes were even better off than ever before. The British did not starve during World War II, because there were 2,800 calories per capita per day ... in the middle of the war, the population was healthier than ever, with the fitness of babies and schoolchildren particularly standing out ... Consumption fell by a third then - and in a very short time. The enormous cutback and rebuilding make the British wartime economy a fascinating model for today: German consumption must fall similarly dramatically if the climate is to be saved."

Not only German consumption but the consumption of all countries operating above sustainability would have to be curtailed in this way and much more - and such a curtailment would be quite possible, as shown above, but is it feasible given the prevailing circumstances?

In fact, the introduction of the British war-economy model would be a beneficial measure for the good of the planet and its inhabitants. It would not change the existing balance of power between the states if everyone participated in it proportionally. Nevertheless, any observer informed about the present world situation will reject it as completely unrealistic, if not simply fantastic, because it consists in sacrifices, which – under present circumstances - no nation is willing to accept in times of peace. Once again, it seems evident that we are incapable of applying our knowledge and skills for the good of the whole.

Specialization proves to be a powerful driving force for material progress. Adam Smith had already regarded the division of labor as the most important cause of the wealth of nations. He illustrated this insight with the example of needle production, which could be multiplied almost indefinitely if the total manufacturing process was not concentrated in the hands of single individuals but distributed among as many people as possible, each of them undertaking only a specific, easily performed task. This principle now dominates all industrial production and serves as the essential foundation and prerequisite for the mass production of goods. Without the progressive division of labor, the modern economy would be inconceivable.

The flip side of this success is psychological desolation, the "alienation" from a kind of work whose meaning for the individual is barely perceptible. A painter who creates an entire painting, a writer who completes a full novel or a craftsman who produces an entire cabinet from start to finish view their work like a child whose growth stages they experience step by step. In contrast, a typesetter who merely arranges letters on a composing stick to print a novel by an unknown author is just a cog in a large production machine - a cog that can be replaced and substituted at any time. The larger and more complex the industrial mega-machine, the greater the number of people who experience their own work as meaningless activity driven not by inner motivation but solely by the necessity of livelihood. According to a Harvard Business Review study, this applies to fifty percent of American professionals, while 37% of Britons consider their work completely pointless. A cross-sectional study of 142 countries found that no more than 13 percent of all wage earners are satisfied with their work.

Such a state of "alienation" is perhaps not as new as the term used for it by Hegel and Marx. *For thousands of years, ninety percent of the population in agrarian cultures have experienced it as the whip of their masters relentlessly drove them to produce.* However, the infinite branching out of specialization in industrial production has made it a fate for a large portion of the population even in our time. I believe that the only way of escape is through another revolution: the digital one, which takes individual tasks away from people's shoulders and transfers them to machines that are indifferent to the question of meaning.

In addition to alienation as an inevitable consequence of specialization, the erosion of responsibility must be added as a further predicament of Fossil Revolution. When people experience their actions as meaningful, it is loaden with responsibility. The novelist bears responsibility for his

work; the scientist must take responsibility for the theses published under his name. When meaning gets lost because work processes are fragmented a thousandfold, responsibility also shatters into a thousand individual pieces. The senselessness and aimlessness that many lament in modern society are based on this vacuum of responsibility. No one seems to know any longer what purpose material progress is meant to serve - except that in this way ever more people are supplied, who in turn make greater material progress possible, so that even more people can then be supplied - and so on and so forth.

Marx

Marx profoundly misunderstood reality. For him, the real infirmity of industrial society lay not in the origin of power - whether based on inheritance or on knowledge and skill - but in the fact that power was unequally distributed between workers and entrepreneurs. This led him to overlook the real problem, though it should have been evident from the outset that there would be significant disparities in the exercise and distribution of power even if the latter were solely based on knowledge and skills. Both managers and workers must meet these requirements, albeit to different degrees. Consequently, differences in knowledge and skills inevitably affect their respective powers and determine their material rewards.

Marx neglected this point, as he solely conceived the contrast between workers and entrepreneurs from the perspective of exploitation. While exploitation is always possible when it comes to power and material compensation, *reducing the differences in knowledge and skills to exploitation was a theoretically erroneous path with disastrous consequences*. Marx and his followers were led to pit the less knowledgeable and skilled against the more knowledgeable and skilled – in other words, the numerically significant but politically powerless working class against the entrepreneurs. *In doing so, he failed to recognize the true destroyers of a classless society of knowledge and skills, namely those who siphon wealth from others and often wield exorbitant power without being entitled to it through their abilities*. Marx did not want to see this parasitic layer, perhaps in part because they are in fact largely invisible.

This situation persists to this day. Even Occupy Wall Street was largely ineffective against the top one percent – the blindness of the German revolutionary continues to have disastrous effects. By drawing a red line within the camp of producers – that is between entrepreneurs and workers, both of whom make indispensable contributions to the common good – Marx has from the start misguided the protest against the privatization of

power. Instead, he should have directed it against *the real exploiters: the parasites who derive unearned incomes from the labor of others*.

For over a century, social democrats were preoccupied with attempting to defuse the conflict ignited by Marx. The supposed expropriators were not expropriated – that would have led to the devaluation or even abolition of the most valuable social asset, namely greater knowledge, and skills. Rather, social democrats have seen their primary task as giving workers a fair share in the success of businesses. As we know, their endeavor was most successful for a brief period in the post-war decades and has failed since then. Meanwhile, financial parasitism has grown into an exponential avalanche.

Money

In my view, Ulrike Herrmann exaggerates a valid insight when she says, "Growth can only occur when loans are taken out – but these loans can only be repaid when there is further growth." This is not entirely accurate. Growth does not arise "only" from loans but can also result from the use of one's private capital or significant corporate profits. It is true, however, that these resources too can only be repaid due to growth. With this qualification, it is correct when Herrmann continues to assert, "The pressure for growth is triggered by loans because they must be paid back." However, what she says about interest in this context does not necessarily follow from this premise. "Interest is not the problem; from a macroeconomic perspective, interest is self-financing." Yes, in macroeconomic terms, domestic debt naturally cancels itself out: Assets and debts inevitably have the same value, but *the mechanism of interest and dividends makes the rich richer and the poor poorer*.

Herrmann's misunderstanding stems from an example of Mathias Binswanger, who argues that growth cannot result from savings because these always entail a reduction in consumption: savers are reducing their normal consumption when they make their deposits available to investors. On the other hand, growth cannot happen without new money injected into the economy. Since the savings of individuals do not represent new money, they cannot drive growth - this is the essence of his argument.

It is true so far that new money is not created by savings, but it is incorrect to conclude that for this reason savings cannot stimulate growth. It makes a fundamental difference whether citizens spend all their money on consumption or make a portion of it available to businesses through banks for investment. John Maynard Keynes' groundbreaking economic theory is famously based on this distinction.

But then where does the money come from, without which growth would lead to deflation and therefore extinguish itself? The matter has been a subject of debate for a long time. Keynes himself viewed this differently in his "Treatise on Money" of 1930, where he attributed the ability to create loans out of thin air to private banks, as opposed to the "General Theory" where central banks are responsible for the creation of money. As for myself, let me just remark that central banks manage money creation in a very elegant way by creating money out of thin air, that is *out of nothing but by no means for nothing*, as they only inject it into the economy against securities, i.e., tangible assets, and charge interest for it. These interest payments can easily be repaid when investments prove to be successful, and growth does indeed take place. But if the economy shrinks - which generates a surplus of money, i.e. inflation - then the securities are repurchased, as the interest rates would otherwise quickly become unaffordable for the economy. Ray Dalio takes a clear stance. For him, the central bank is the source of new money, with private banks merely acting as transmission belts. That's because a private bank can't print money ... while some central banks can.

Free trade

This adaptation to national needs causes freedom - in the form of free trade - and its massive curtailment – protectionism - to be mutually interdependent. This observation could already be made more than a century and a half ago in the second half of the 19th century when Japan began its rise as an industrial nation. The Far Eastern nation could never have built its own industries; the tiny island would never have become the world's second-largest economic power - a position now inherited by giant China - if it hadn't curtailed a significant portion of its citizens' freedom. Japan did not become a democracy at that time because that would have hindered its ascent. Back then the Japanese government could not grant its citizens the democratic right to make their own purchasing decisions. All industrial products from the West, primarily those of the world power England, were either not yet manufactured in Japan or were still far back in quality. If Japan had allowed the import of Western products and their free consumption, then its own fledgling industries would have had no chance. Any state that wants to hold its own in the international race against far superior competitors feels compelled to make such authoritarian interventions. It restricts the current freedom of its citizens to be able to provide them with greater freedom in the future.

The United States itself had followed this path during the 19th century, when competing against the then-world power, England. Japan and China later followed in their footsteps. So long as there are significant differences in technological development in the economic race of nations, *freedom is a luxury that only the leading states can afford.* This may seem evident, but the beneficiaries of such freedom usually prefer to conceal the obvious truth. Yes, they even go to great lengths to impose the freedom that is so useful to them on the rest of the world with siren songs. They seem to do this out of philanthropy, but as a matter of fact, they just cling to their interests. When Japan was building its industries, English propaganda painted Japan's protectionism as a sign of political backwardness. Later, China's protectionism was criticized for the same reason. The truth is that all catching-up states owe their success to a policy that necessitates the temporary limitation of civil freedom.

For most of its history, the US has been a protectionist country; indeed, it owes its founding as a nation to its rebellion against the economic dependence imposed by the mother country. After declaring independence, it managed to build up its own industry by consistently isolating itself from England, which was far superior in industrial terms. They only suffered from this resistance to free trade between 1930 and 1945, but the temporary collapse of their economy at that time was mainly due to the Great Depression, which, as is well known, originated in their own country. In their case, the dialectic between freedom and the resistance against it is particularly evident. After the end of the Second World War, they suddenly became the greatest propagandists of economic freedom and the most vocal opponents of protectionism. This was hardly surprising, given that their competitors' industries had been largely eliminated and they themselves took the technological lead in several areas until the end of the last century. Ideology is determined by the respective interests at stake. This is no different in the case of the US than it is in the case of China. Nations in the early stages of development protect themselves through protectionism, while emerging nations with competitive industries advocate free trade. Nations that lose their leading position become protectionist once again – as just proved by the government Trump two.

However, the dialectic between freedom of trade and its restriction through tariffs is losing its previous validity, since all states are losing much of the previous control over their destiny. Manufacture requires access to both the necessary raw materials and a suitably educated population. This is hardly the case even for the largest nations. On the world stage, the nations of the globe are progressively caught in a network of mutual dependencies. Populist politicians like to tell their citizens that

their fate lies entirely in their own hands, but such propaganda is increasingly turning into self-deception.

War psychosis

The situation before the First World War presents to us pretty much the same situation as today. Germany had experienced a brilliant industrial rise during the previous three decades. The States of Europe had attained greater prosperity than ever before, but each of the leading powers of the old continent saw itself threatened, envied, cornered by its rivals. England, still the leading economic and military power at the time, feared the rising Germany, which was challenging British supremacy with its rapid build-up of arms. In this situation, all the major European powers began to ask themselves whether it would not be better to pre-empt their rivals with their own military strength, if not by striking first. When mutual suspicion becomes psychotic, war seems like a cleansing thunderstorm - hence the enthusiasm of many people, so difficult for us to understand, when war broke out in 1914.

We find ourselves in a similar situation today. The rising powers in and outside the so-called "Global South" are about to teach the old industrialized countries of the North a lesson in fear. First and foremost, China and Russia are contesting and fighting the leading role still played by the US. They are doing this with growing success, just as Germany formerly did when confronting the world power England. "The BRICS format (Brazil, Russia, India, China, South Africa) ... has managed to overtake the G7: at the end of 2022, the BRICS accounted for 31.5% of global GDP in purchasing power parity (PPP), compared to 31% for the G7. As a reminder: in 1990, the BRICS accounted for only 17% of global GDP, while the G7 reached 47%." Their economic catch-up is reflected in military spending. "Between 2001 and 2022, military spending rose from 1,139 billion US dollars to 2,240 billion US dollars within one generation. During this period, military spending per capita increased fivefold in China and threefold in Russia."

Economically, the US is stagnating at a high level. But what still counts is its "ability… to maintain its unique position on the international stage thanks to its network power and to its adaptation to a new age, the age of competition and interdependence: in 1980, the US accounted for 25% of global GDP, 15 years later at the height of its unipolar moment it still accounted for 25%, and in 2023 it still achieved 25%." In contrast, the eurozone's share has fallen noticeably. "In 2008, the USA and the eurozone

had the same level of GDP (around 14 trillion US dollars). Fifteen years later, European GDP was only 80% of US GDP."

Thomas Gomart (2024), to whom I owe these quotes, comments on the military supremacy of the USA. "Its supremacy is based less on its military strength, which has been undermined several times since September 11, 2001, than on its technological and global control over the hubs through which the most important financial and information flows pass." /But/ "the Chinese Navy already surpasses the US Navy in the number of ships and is expected to field 450 units by 2030, while the US will have 360 units." And "China is /also/ the only permanent member of the Security Council that continues to produce fissile material for military purposes."

China is not only expanding economically and militarily by leaps and bounds, it is also asserting ever more far-reaching territorial claims. Following the incorporation of Tibet and the once Uyghur Xin Jiang, it is pushing for a further expansion of its borders. "At the end of August 2023, the Chinese Ministry of Natural Resources published the "National Map of China", which encroaches on the territories of India, Malaysia, the Philippines, Vietnam, Taiwan and even Russia, sparking fierce protests. On this document, Taiwan is an integral part of the PRC."

A leading power that feels threatened and, on the other side, stragglers who feel humiliated in their role. That was the starting point for the war back then. It could be again today.

World Government

It should be noted that no thinker from Kant to Russell argued in favor of a politically united humanity because they believed that size, in and of itself, was an advantage over the self-determination of smaller political units. The thesis "Small is beautiful," proposed by E. F. Schumacher in 1973, went unquestioned by anyone. Instead, the focus has always been on eliminating the greatest evil, which is war. This intention is also evident in Kant when he inquired about the *possibility and conditions for "Perpetual Peace."* Kant aimed to delineate the boundaries within which political action must operate to achieve this goal. Precisely because the philosopher from Königsberg had no illusions about human nature, he called for a restraint on political arbitrariness.

"Man has a tendency to socialize because in such a state he feels himself more as a man, i.e. capable of developing his natural dispositions. But he also has a great tendency to isolate himself ... because at the same time he finds in himself the unsociable quality of wanting to direct everything

solely according to his own sense ... He therefore needs a master who will break his own will and compel him to obey a universal will in which everyone can be free."

"But for states ... there can ... be no other way out of the lawless state, which is full of war, than for them, like individual people, to give up their wild (lawless) freedom ... Thus, international law should be based on a federalism of free states."

Kant advocated for the association of free states: federalism - not a world government that merges existing states into a single superstate, causing them to lose their sovereignty. According to Kant, such a union would only result in a "soulless despotism". There should be merely some higher authority acting as a mediator among sovereign nations in the event of conflicts.

The UN, which American President Woodrow Wilson sought to establish as the League of Nations after World War I, was supposed to fulfill Kant's vision. But today, it is evident that the UN cannot meet the expectations placed upon it. A superpower - any superpower, not just the United States - must fear that a supranational, genuinely democratic forum will compel it to relinquish its privileges. This would also apply to its military dominance. Why should other states allow the superpower the privilege of possessing nuclear, hydrogen or neutron bombs just because, due to a historical accident, it was the first to invent and acquire them? If other states could democratically decide on this issue, they would undoubtedly demand the same right for themselves - as not only Russia, China, France, and England have already done, but now a dozen other states, including North Korea. If the UN could democratically prevail over the superpowers, as its charter demands, then only two decisions would be possible: Either the United Nations insist on the general abolition of all weapons of mass destruction, so that superpowers do not enjoy privileges over other states. Or, based on the tacit consensus of its members, the UN assumes the same right for every nation, allowing all to acquire weapons of mass destruction.

We may exclude the first of these two democratically arrived-at possibilities as unrealistic from the outset. Neither the United States, nor Russia, nor China will accept a UN vote that prohibits them to possess weapons of mass destruction.

Hence, only the second possibility remains, which, for obvious reasons, never comes up for a vote but effectively determines the actions of most states. All great powers regularly bribe smaller states or even threaten them to gain approval in the UN Security Council or General Assembly for sanctions that they impose on emerging nuclear nations. Smaller states rightly perceive such restrictions as a violation of their democratic rights, which they should have as equal members of the world community. Thus,

it becomes understandable that the UN has been powerless until today and will remain so in the future regarding the greatest challenge of our time, the existence of weapons of mass destruction and their proliferation. Instead of the UN, it is the superpowers, primarily the United States, that seek to prevent such proliferation by force or the threat thereof.

The UN is also powerless when it comes to curbing growing environmental pollution. It will be unable to restrict the high resource consumption of leading powers any more than their arsenals of bombs. Most countries will insist on their democratic right to first achieve the same standard of living for their own country that the leading powers already possess – on this point they will not even enter negotiations. This does, of course, mean that *the UN cannot effectively intervene against the two historically greatest threats to humanity*.

Taken together, these facts demonstrate that Kant's recipe for a voluntary federal self-government of states has completely failed - and furthermore, it has no prospect of ever being realized. The UN is as powerless in the face of the threat of self-annihilation of humanity as it is in the face of the destruction of the natural environment. But today we know that the prevention of nuclear proliferation and unlimited growth are the primary tasks of the 21st century - and that the only institution able to accomplish them is a world government.

The idea seems logically compelling, yet it still appears to most people as a pipe dream, born from the minds of unrealistic idealists. In truth, it is these scoffers who must be accused of being blind to reality. They failed to realize that since the end of World War II such a government already exists. Although it does not operate under the name "world government", it acts as a de facto forerunner of such an institution. Whenever the UN Security Council makes binding decisions, it acts as a kind of embryonic world government - the first in human history.

Benjamin Libet

The Freiburg psychoanalyst Joachim Bauer has questioned the arrangement and the measurement results of Benjamin Libet's well-known experiment - we may call it the "anti-freedom experiment". But even if Libet has posed the question about freedom correctly and his measurement results do not leave any doubt, human freedom is still by no means disproved. Why? I tried to explain this in my book "Creative Reason". Here is my argument in a nutshell.

In his famous experiment, Libet measured the temporal sequence of a conscious act of will and the corresponding release of muscular activity.

"In these experiments it could be shown that muscular activity *preceded* volition on average by 550 to 350 milliseconds ... it never coincided with the latter nor followed it.“ In fact, the "act of will occurs *after* the brain already decided on the movement to be produced“ (Gerhard Roth).
My objection is straightforward and quite simple. Oddly, neither Libet himself nor his fellow psychologists seem to have raised this rather elementary objection: *If both the inner act of volition (e.g. my conscious and linguistically framed decision, "I will now raise my hand"), and its objective manifestation (e.g. the corresponding gesture) are but two different manifestations of an unconscious, non-linguistic cause* situated at a much deeper level *then nothing is proved by Libet's results.*

Let us turn to what happens in any elementary act of thinking. Before words and phrases begin to be built up in my brain, in other words, before there arises something like the conscious intent, "Now I want to turn on the radio," something else must already have happened on a deeper unconscious and, therefore, pre-linguistic level. Two hundred years earlier than Freud, Leibniz had already discovered this unconscious realm. According to him, our conscious thoughts are but "small islands in a sea" (1873). This means that linguistically expressed acts of consciousness do not come from nowhere; they rest, so to speak, on a pre-linguistic and preconscious basis. We may designate this elusive X or preconscious plane as ‘non-manifest volition’. It is important to note that non-manifest volition precedes both: the linguistically marked conscious or manifest will and the visible act of its execution (e.g. the actual movement of my hand).

At one point in his book *Mind Time,* Libet (2004) describes the unconscious braking act of a driver who, all of a sudden, sees a child in front of his car. He activates the brake 150 milliseconds after the sensual impression, while the driver's conscious awareness of the endangered child only pops up after 500 msec, that is, 350 msec later. The temporal sequence matches my interpretation. If immediate reaction is required in a situation of utmost danger, the brain would indeed offer a very bad service to survival if it were first to activate conscious awareness. The chronological sequence therefore fits my interpretation perfectly.

Distorted worldview – the “religion of science”

Holodoxy is, as its name suggests, the study of wholes. It therefore transcends all boundaries that are normally drawn between disciplines. The social constraints to which man has been subjected during the three past epochs of humanity had to be addressed in this book, as well as their respective relationship to the environment. But it is just as important to

describe the spiritual foundation that characterizes each of them, because civilizations base their social order and their interaction with nature on their respective world view.

The latter has a special role to play because it serves to justify both the interaction of humans and their dealing with nature. The fossil epoch owes its intellectual foundation, its particular worldview, to the European Enlightenment. I would like to call this spiritual foundation "science-religion".

Nature and Man viewed as machines

The holodox perspective is as old as man himself, even if it has lacked this name until now. It manifests itself most clearly in religion, which has always held out the prospect of access to the whole and the highest: to individual salvation or enlightenment, where the individual will be absorbed into the greater whole.

In contrast, undogmatic science tended towards great modesty. This was precisely what set it apart from religions and their promises. But right at the beginning, as early as the 17th century, dogmatic science was born - better described as a "*science religion*" - that not only continued the tradition of dogmatic religion but took it to a new climax. Science was understood as a process to achieve omniscience and omnipotence over man and nature.

It is this dogmatic science-religion that is critically examined by Francis Fukuyama in the passage quoted at the beginning of this book. The religion of science understands not only external nature but ultimately also human beings as computable mechanics and machines - reducing them to such.

"The entire tendency of modern natural science and philosophy ... consisted in denying the possibility of autonomous moral decision and understanding human behavior solely in terms of subhuman and subrational impulses."

Fukuyama is neither a scientist nor a doctor. The latter could rightly object that the astonishing success of scientific healthcare would be neither conceivable nor possible if humans could not be repaired - just like machines. As in the rest of nature, medicine looks for laws in the human organism and then applies them. Although such laws only apply at the human level and to some extent among primates and other higher creatures, this in no way invalidates their lawfulness, it just makes them less universally valid than those of chemistry and physics, which were already in force before there were organic beings on the planet.

It is a truism indeed that *humans also behave like machines*. That makes it even more important to emphasize that this is a relative truth,

which becomes absolute and obvious nonsense the moment it is generalized. Then it leads to the claim *that man is nothing but a machine*, since he, like all of nature, is throughout governed by laws – an assertion which is not true even for non-human nature, because in nature chance is the omnipresent counterpart to law.

Nevertheless, many neurologists are convinced that human behavior is as determined as - in their view - the processes in the external world.[169] If they were correct, future science would not only, as is currently the case, precisely predict the trajectory of a rocket, but will one day do the same with regard to human behavior and intellectual activity. According to these neurologists, freedom of thought and action is nothing more than a subjective delusion. The processes in a human brain are just as strictly determined by laws as those of the rest of nature.

The problem with this view: it suffers from an irresolvable contradiction. An all-knowing science that could predict the thoughts and behaviors of scientists and experimenters would have to abandon its role of science, as its omniscience would inevitably nullify its omnipotence. Theology had been struggling with the same problem for at least two thousand years.[170]

Why do scientists want to uncover a law, like for instance the precisely defined ballistic curve of a cannonball? Unless they are specifically focused on celestial trajectories, they want to apply this *law at any location, at any time, and for any purpose*. The same applies to a seemingly trivial process like heating water in an electric kettle. The regularity of the process (the consumption of a specific amount of electrical energy to heat a certain amount of water to a specific temperature in a specific time) is well known, and the entire course of the process is *strictly calculable*.

But our aim in analyzing such a predictable event is to realize it in *a completely unpredictable* manner, namely at any location and any time thus opening new fields for human freedom.

This is a fundamental principle of theoretical holodoxy that may be formulated as follows: The laws of physical nature exist *independently of human will and desires* – they are discovered but not invented by scientists. These laws describe the existing order of nature, over which we have no control. However, their entire value for humans – the reason why we search for them – is that *we may use them according to our will and desires*. A rocket to the moon doesn't build itself and doesn't launch on its own; a specific government makes the decision to embark on and finance this extraterrestrial endeavor.

As we saw right at the beginning, the mathematician and physicist Alfred North Whitehead summed up the procedure of the natural sciences in the simplest possible formula. "*Seek measurable elements in phenomena, then seek relationships between measured physical quantities.*"

So long as the scientist remains with unconnected measurable elements, he is dealing with facts; as soon as he discovers relationships between them, he moves on to explanations, because he is demonstrating existing orders in nature, which he describes in the form of laws.

Whitehead's formula does, however, merely summarize the procedure of science - there is no mention of its purpose, i.e. why people want to practice it. This is a serious shortcoming as it is that purpose which gives the procedure of science its meaning in the first place (the practical evidence for its truth, as Ludwig Boltzmann put it). Seeking the relationships between measured physical quantities has meaning for humans because events are made predictable and many of them controllable as well.

Nor does Whitehead's formula provide any information as to whether all measurable elements of this world or only some of them stand in lawful relationships to one another. It therefore says nothing about whether we live in a completely determined world or in a world where we are confronted with chance and freedom, so that many measurable elements will never be brought into a lawful relationship.

It is the prerogative of Holodoxy to be able to make the following unequivocal statement. *Logically it is impossible for all measurable elements to have law-like relationships*. If this were the case, there could be no science. The proof is of a logical nature and therefore precedes any concrete experiments.

It was already given above. The search for and the use of natural laws describing *calculable events* only make sense in relation to that freedom that allows us to apply these laws in a *non-calculable, unpredictable way*, at any location and any time, for human purposes. But the reverse conclusion holds just as true: Freedom only has meaning because it enables us to apply laws. This mutual dependence on freedom and necessity can be expressed in a general way as follows. Freedom – chance in outward nature – means much more than a temporary lack of knowledge, as it had been defined from Voltaire to Laplace, Bertrand Russell and Albert Einstein. *Freedom – chance - is no more and no less than the logically necessary counterpart to necessity*.[171]

If freedom too were calculable and obedient to laws, then the efforts of scientists would fade into illusion. Not only would all of nature be a deterministic machine, but humans too would be machines, unable to think and act differently from what they do. Together with the abolition of freedom, we would also discard the concept of scientific truth, as every statement would be as necessary as its opposite. *Strict determinism is manifest logical nonsense, as it leads to irresolvable contradictions*.

To some, these simple considerations will seem trivial. However, they must then explain what is perhaps the greatest mystery in the history of

science, namely the fact that even some of the greatest minds remain unaware of the logical absurdity of strict determinism. In my view, this mystery can only be explained by viewing the deterministic vision as *desire and delusion*. If humans (scientists) aspired to God-like knowledge this was only possible if they eliminated both freedom and chance. A dogmatic science or "science religion" replaces the omniscient God of earlier times with the—at least theoretically—omniscient scientist, who eventually attains just the same omnipotence over nature and humankind.

To a certain extent, this delusion continues to persist, and that is where another psychological factor, human vanity, comes into play. The absurdity of denying chance and freedom is obvious to anyone with some training in critical thinking - let's call him a philosopher - while the elaborate experiments of biogenetics or quantum physics require years of study together with most expensive instruments. That makes experts in these disciplines look down on philosophers with a condescending or even mocking smile. Thinking alone does not satisfy them, even though it is the necessary foundation for all scientific engagement with nature. Mere thought-experiments without figures and formulas are not considered credible, in the first place.

Nevertheless, it remains true that chance does not need to be "discovered" by quantum physics, biogenetics, or any other applied science. *It is logically required as the foundation of science*.

Two perspectives

> Man alone ... has the privilege ... to reach into the ring of necessity ... through his will and to start a completely fresh series of phenomena in himself. The act by which it does this is preferably called an action. (*Friedrich Schiller*: On Grace and Dignity)

Not long ago leading German neurologists like Gerhard Roth and Wolf Singer considered all those naive, if not downright stupid, who failed to recognize that from a scientific point of view man does not possess the freedom of will.[172]

To be sure, such conviction is nothing new. The Babylonians thought that human destiny was determined by the stars. Church fathers like Augustine, Luther and Calvin justified their rejection of human freedom with the omniscience of God. To God, the entire future including the thoughts and intentions of men must be known since the beginning of creation - ergo, human freedom cannot exist.

Philosophers like Democritus, Spinoza, Voltaire, Schopenhauer up to Bertrand Russell also belong to the vocal deniers of freedom. They are opposed by thinkers such as Gottlieb Fichte and Martin Heidegger, who – not less pathetically - proclaim human freedom. In the middle between

these two opposing camps usually stands the unbiased layman, who has always known to be at the same time free and exposed to multiple constraints. Among the great philosophers who convincingly argued this point of view we find William James, Karl Jaspers, and Karl Popper.[173]

The opposition between these two positions not only manifests itself in the history of religion and philosophy, but is inherent, as it were, in each of us. When observing other people, we intuitively ask about the motives of their behavior, i.e., about the limits of their freedom, so that we may respond to them in an appropriate way. This is the case with feared adversaries anyway, but even with people we love. The better we know their respective likes and dislikes, the more likely we are to anticipate their reactions, and the less danger there is that there will be friction in dealing with them. In the same way, this *object perspective* is assumed by all writers of novels when they endeavor to make us understand why their protagonists act just the way they do (novelists describe the conscious or unconscious compulsions to which their actions obey).

In contrast, we adopt the subject perspective when analyzing our own personal actions. Yesterday I spontaneously decided to embark on a trip to the Kulm, a nearby mountain, the autumn morning being so fresh and beautiful. This was of course a free decision. Nobody forced me to do so, not even I myself - it could be revoked at any moment. Such awareness of one's own freedom of thought and action may go so far that some people deliberately do the opposite of what others expect of them or even what they expect of themselves.

The two perspectives of object against subject relatedness are based on opposing needs, which are fundamental for individuals as for societies. *Security* in dealing with nature and other people we only gain when exploring the rules and laws to which they obey. Regarding nature, we have succeeded so well in this endeavor that we are now able to retrodict the history of the cosmos back to the Big Bang and to predict it until the sun would burn its last hydrogen fuel.

But security has never been the only human concern. For children and all people who have retained their natural curiosity into old age, the unexpected, the surprise, the mystery of existence is a constant challenge without which life would lose its charm and color. Complete security, i.e. predictability, would enclose us within a straitjacket that suffocates all spontaneity. As long as we live, we constantly look for the attraction of the not yet known, the emergence of things new.[174] A world, in which we would know everything, would be a mere machine, devoid of freedom. It would be dead and frozen.

I venture to say that the need for security on the one hand and for mystery on the other, i.e. for the challenge by the unknown and the new,

dominated man from the very beginning of history. They are no more and no less than the two constituent features of the human condition.

The paradox of our conditio humana is that we alternately - and with a kind of inner necessity - strive for security and for freedom, with these two elementary needs closely linked to the opposition of the object and the subject perspective. The contrast attains its maximum expression when man becomes a researcher, i.e. when he questions nature and himself not only intuitively like any layman but systematically. Psychology as a science would be of no avail if all our emotional or intellectual reactions were the result of mere chance, so that research would only meet with chaos instead of recognizable regularities. The same observation applies to sociology. And, of course, it is only worthwhile for neurological science to investigate the biological foundations of the brain because it exhibits an abundance of such regularities (some of a law-like nature).

At this point the paradox becomes particularly clear. *The same neurologist who regards man as an object revealing to him an abundance of regularities or even laws, holds the second role of a subject when becoming aware of his role as their active observer and discoverer*. In this role, he not only feels free – he must in fact be free, because otherwise his approach would be subject to an insurmountable contradiction. If the human beings studied by him were completely predictable - in popular diction bereft of free will - then the same would apply to the observer himself. In other words, he would condemn himself to the role of automaton controlled by impersonal laws. We have seen that his scientific statements would equally be conditioned by impersonal laws, which means that the distinction of scientifically true in contrast to false statements would become meaningless.

So long as science assumes that basically all human thinking and acting can be interpreted in a law-like way (provided we would only carry on our research for a long enough period), this paradox is unsolvable, because we are faced with an insurmountable logical contradiction. In our time it is fashionable to deny any credit to purely logical considerations. Scientists prefer to carry out physiological experiments like Benjamin Libet (see p 171: Benjamin Libet) or turn to quantum physics to clarify the problem in a very elaborate and costly way. *But the elementary rules of logic and scientific truth are at the base of all research and experiments*, so the logical paradox remains crucial, even if its recognition costs us no more than a little more than average thinking ability.

The insight itself is unambiguous: *Even when discovering ever more regularities or even laws in the thinking and acting of man, it remains nevertheless evident that these rules and regularities never determine him completely*. Besides being conditioned by rules or laws, our freedom

originates from the opposition of subject and object perspective, both of which are inherent in each of us.[175]

Prescribed meaninglessness

Any human worldview has always been and remains holodox: it encompasses the whole as well as its parts. Until the European Enlightenment, the whole was understood as manifestation of divine power or – like in mysticism – as God himself. From there, the parts receive their sense of life and the ultimate goals they should pursue. Since the French Enlightenment, humans placed themselves at the center. Now the parts – individuals and states – derive their sense of life and their goals from this new center.

Initially, this shift of center seemed to yield no significant changes. The promises for the future remained equally optimistic. God had promised believers a paradise in the afterlife, provided they were willing to follow his commandments. Based on secular scientific knowledge, the Enlightenment now promised humans – all humans – a paradise on Earth. The success of this new promise initially seemed to be much greater than that achieved by any religion, because it was there for all to see. The majority of 80 to 90 percent previously toiling in agrarian civilizations could now lead a dignified life for the first time after over ten thousand years.

Yet, this success was not without controversy – the dark side of Fossil Revolution became evident to the world at the end of the twentieth century at the latest. Worldwide species extinction, resource exploitation, environmental pollution and climate change quickly turned the fervent optimism of the fossil era into militant pessimism, which saw its mission in saving the world.

Pessimism is nothing new, it had existed much earlier, already since the beginning of the Enlightenment. From the beginning, it concerned the new doctrine itself. Its unmistakable shortcoming is that it fails to give any meaning to the world; on the contrary, *its final word on the natural world is its utter meaninglessness.*

That is new as such a flaw had never afflicted religious creeds. God and his plan of salvation guaranteed the meaning of human existence together with that of the world. But where was the plan of salvation science could offer, abstracting from its concrete achievements? Could such a plan of salvation even exist?

In 1970 Jacques Monod's seminal book "Le Hasard et la Nécessité" (Chance and Necessity) was published, on the cover of which the renowned biochemist summed up in a single and concise formula the worldview which since the 17th century was to dominate first Europe and

then the entire world. For objective science, so Monod's message, the world is *nothing but* chance and necessity. For there is nothing in the world but these two principles alone: on the one hand, necessity representing that order, which the natural sciences explore in the shape of laws, and on the other hand, chance, which denotes the void within this order - in other words, a meaningless nothing with which science does not know what to do.

Since the time when Monod established this formula, neurology has made tremendous progress, his book is certainly no longer "up to date", but the view that reality has nothing else to offer but these two dimensions has become even more entrenched. According to a prevalent view, our world is made of calculable mechanisms of the physical and neuronal world, and the yawning emptiness of meaningless chance.

But is this worldview as unassailable as Jacques Monod and the mainstream of science believe? Undoubtedly, it is correct to concede that the exploration of order (laws) has always been the true task of knowledge. On the other hand, chance was perceived as so disturbing and superfluous that its very existence was called into question - and in two different ways. France's prince of enlightenment, Voltaire, was convinced that chance was but temporary ignorance - it merely refers to what we do not know yet. This opinion can be based on solid arguments, because an infinite number of findings that still seemed random events to our ancestors - like for example cholera epidemics or lunar eclipses - can be deduced by modern science from quite specific causes and are thus conforming to definite natural laws. At first glance, it seems therefore quite convincing that all events we still call random are so only because of gaps in human knowledge. To the extent that the progress of science gradually fills these gaps with increased knowledge, we would be able to eliminate chance altogether and, in the end, recognize everywhere and at any time nothing but lawful order.

That had already been the conviction of Baruch de Spinoza and was likewise accepted by his great admirer, Albert Einstein, who famously expressed his rejection of chance: "God does not play dice." In other words, the good Lord creates order because order conforms to reason, order is rational. Chance, on the other hand, carries with it the odor of the worthless and the irrational. No doubt the idea that in chance we are encountering something quite useless and superfluous resonates in its disparagement.

However, this notion is based on a misunderstanding: chance is more than just a gap in our knowledge. Towards the beginning of the 20th century, it was physics, the supreme discipline of natural sciences, that was, finally, forced to accept randomness - the absence of order. The basic principle of

classical physics, according to which every definite effect could be attributed to some definite cause, had to be abandoned. Werner Heisenberg (1959) expressed the revolutionary insight in the following way.

"Let us consider a radium atom, which can emit an α-particle. When we observe the emission, we do not actually look for a foregoing event from which the emission must follow according to some established rule ... If we wanted to know why the α-particle was emitted at this particular time ... we would have to know the microscopic structure of the whole world, including ourselves, and that is impossible."

Chance added the dimension of unpredictability to the world of classical physics, which up to then had been considered thoroughly predictable.[176] Jacques Monod (1970) put this view in a nutshell when describing evolution (once understood as a process of divine creation) in the following way.

"*Chance alone is at the source of every innovation, of all creation in the biosphere. Pure chance, absolutely free but blind, at the very root of the stupendous edifice of evolution: this central concept of modern biology is no longer one among other possible or even conceivable hypotheses. It is today the sole conceivable hypothesis, the only one that squares with observed and tested fact*."

The French biochemist, would not have insisted so emphatically on the sole validity of this hypothesis, had he not kept its opponents in mind, the religious "animists", as he calls them, who want to give some ulterior meaning to the events of evolution. But this meaning, Monod adamantly insists, does not exist. The scientist, no matter whether physicist or neurologist, cannot see anything else in the history of dead or living matter but lawful mechanisms that owe their unfolding to blind, meaningless chance. And just to be certain that even the most stubborn reader correctly grasps the extent of such total absence of meaning, Monod refers to chance as mere 'noise'. " ... *we may say that the same source of fortuitous perturbations, of 'noise', which in a nonliving... system would lead little by little to the disintegration of all structure, is the progenitor of evolution in the biosphere and accounts for its unrestricted liberty of creation*."

In these crushingly bleak lines, Monod summarizes the worldview of modern science. But in case they are not bleak enough, they may still be complemented by the passionate statements of Bertrand Russell, one of the most influential philosophers of science of the 20th century, alongside Karl Popper. Russell:

"*That man is the result of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms...— all these things, if not quite beyond dispute, are yet so nearly*

certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built."

This hopeless pessimism was new and inseparably linked to the emergence of the natural sciences.[177] According to the prophets and religious founders throughout history, a poet like Dante sat at the typewriter, composing the divine comedy, except that this poet was God himself, creating the cosmos according to a plan of salvation that his creatures may understand. *In the view of great thinkers since the 17th century, who no longer believed in a creative God, this role now fell to a monkey mindlessly hitting keys.* Over limitless eons pure chance mechanically generated the cosmos without meaning and purpose. Whereas to the religious view, God embodied wisdom and intelligence, the monkey symbolizes the exact opposite, embodied non-intelligence, a case for the madhouse.

In my opinion, both metaphors say more than we may legitimately assert, *the first cannot be proven, but the second must be labeled as incorrect – incorrect according to the standards of truth and of science itself.* The idea that God created a universe with a plan of salvation rationally accessible to humans was soon rejected by scientists. Giordano Bruno as well as the mathematician and philosopher Blaise Pascal were awestruck by the boundlessness of a universe beyond all human comprehension. Even Albert Schweitzer, a great theologian and an even greater man, openly confesses to this insight with admirable candor.[178]

But what about the counter-image of blind and meaningless chance? It is by no means correct; we must even render a much harsher judgment. The image of a monkey mechanically hitting keys is simply "unscientific," and it remains so even if a great scientist, like Monod, merely insists on calling chance "blind" and "meaningless." Unscientific in this case means that we assert more than we can ever know. When attributing properties to some object we must, of course, be able to know it, in the first place. Yet, that precisely is not the case with chance. *We don't know what chance is, and we cannot artificially create it* (certainly not through so-called "random generators"!).[179]

This is a simple and yet decisive insight. It states that we can form a mental image of chance only insofar as it represents the opposite of what we do and can know. *To human understanding, chance is the ultimate unknown, the inexplicable, something that science cannot fathom. In this sense, it remains an unsolvable mystery.*

Therefore, the philosopher as well as the critical scientist feel compelled to call Monod's worldview not only naive but scientifically untenable. The world is not a realm of meaningless chance and necessity, but *its two fundamental dimensions are order and mystery.* Reality presents

itself to us in two ways: on the one hand as the object of our (presumably infinitely expendable) knowledge, and on the other hand, as fundamentally unknowable - the limits to human knowledge being set by chance.[180]

Chance and the limits of science

The hurried reader may skip this and the following two chapters up to "Power Science and Power Religion". The interested reader will find in them the basis for an in-depth interpretation. Without a solution to the problem of freedom, our view of reality remains distorted. The following three chapters deal with the same basic issue in different ways.

As already mentioned, quantum physicist Anton Zeilinger, recently celebrated chance as the most significant discovery of the 20th century.[181] Doing so he directly opposed a tradition that goes back to the Babylonians and, of course, to all those practices spread all over the world, by which man wanted to find out the future by consulting celestial constellations (astrology), by examining the liver and other oracles, believing that the course of things was fixed since the beginning of creation. In the seventeenth century, this belief - for a mere belief it is – had been turned into a scientific dogma and decree. *Chance was not allowed to exist as it was considered a mere synonym for human ignorance*. Classical physics even gave a Latin name to this revolt against chance, it spoke of "determinism" - from Latin determinare – thus making the deterministic belief sacrosanct and unchallengeable for three centuries. When Professor Zeilinger calls chance the greatest discovery of the 20th century, I assume he meant to say that with this discovery three centuries of scientific misconception were finally laid to rest.

Fully developed we meet the nightmare of determinism already with Descartes (1953) around the middle of the 17th century. "I wish, therefore, that all the functions which I have attributed to this machine /a machine which exactly imitates the human organism/, such as the digestion of flesh, the beating of the heart ... the perception of light ..., the impressions of memory ... the external movements of the limbs .... ; I wish, I say, that these functions be conceived in such a way that they arise in this machine in a quite natural way from the arrangement of the organs alone - just as the movements of a clock or other automaton arise from that of the weights and wheels." Descartes precedes all later scientists and thinkers in that from the outset he also declares man to be a machine (apart from the soul in the pineal gland. This concession could hardly be avoided, for Descartes had the funeral pyre before his eyes on which poor Giordano Bruno had been burned).

Leibniz remains faithful to this line. "Everything comes about by necessity; this is as certain as three times three is nine. That is because necessity

makes all things follow each other like in a chain so that what still must happen will happen in a definite way, while what has already happened could not happen otherwise .... so that you only need a sufficient insight into things combined with an appropriate degree of memory and reason in order… to be a prophet who, looking at the present state of things, would foresee all their future relations like in a mirror."[182] A century later, David Hume (1779) expresses himself in the same manner: "Look round the world, contemplate the whole and every part of it: you will find it to be nothing but one great machine, subdivided into an infinite number of lesser machines." His younger contemporary, the French mathematician Laplace (1886), only repeats the central idea of Leibniz when he asserts: "An intellect, which, at a certain moment, would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes." And even in the twentieth century, long after the findings of quantum physics, Bertrand Russell (2004) continued to cling to the common dogma of classical physics. "It is thought that matter consists of electrons and protons, which are of finite size and of which there are only a finite number in the world ... The laws of these changes can apparently be summed up in a small number of very general principles which determine the past and the future of the world when any small section of its history is known."

Werner Heisenberg (1959) was one of the first who considered the world view of classical physics to be obsolete due to the new findings of quantum research. He provided concrete reasons for this rejection. "*A radium atom, for example, can emit an /alpha-/ particle. When observing the emission of the alpha-particle, the physicists ... no longer ask for a preceding event ... Logically it would be quite possible to look for such an ... event ... Now, why has the scientific method ... changed in this very fundamental question? ... If we want to know the reason why the alpha particle was emitted at this very moment, we will have to know the microscopic state of the whole world, of which we ourselves are a part, and this is certainly impossible.*"

Fritjof Capra and the followers of the New Age movement took up this idea with enthusiasm. They believed they had discovered a fundamental turning point that would split the history of science into two parts, as it were: the previous age of the mechanistic worldview and the new age of indeterministic quantum physics. Even people who understood next to nothing about quantum physics were intoxicated by the "Tao of physics"

and believed that this was something like a doctrine of salvation. Classical physics had turned the world into a dead mechanical clockwork, but the new physics would give freedom and life back to it. Rarely did scientific findings, the understanding of which largely eludes the layman, have such an immediate and strong effect on thinking.

Professor Zeilinger speaks of a significant "discovery". But chance can by no means be discovered in the same way as the physicist discovers a new element in the periodic system or the biologist discovers a new species. Of course, everyone who is not a trained physicist let alone a member of the elite of quantum researchers, lacks the necessary competence to comment on the subject. But everybody may quote the opinion of competent scientists. And here again we may turn our attention to Werner Heisenberg. In the above-quoted passage he says literally that "*logically it would be quite possible to look for such an ... event ...*" /that is for a cause/ preceding the emission of an alpha particle. If we don't do so it is because "*we would have to know the microscopic state of the whole world, of which we ourselves are a part, and this is certainly impossible."*

This is quite an astonishing explanation indeed! The reasoning of the quantum physicist Heisenberg, who helped chance make its breakthrough in physics, is almost identical to the reasoning of the classical physicists who so persistently denied it. Laplace explicitly said that an intelligence which at a given moment surveys the whole world so that it grasps all the forces at work - that is, a divine intelligence far superior to man - would recognize strict causality in all events: every cause would have its necessary effect and every effect its necessary cause. Heisenberg does by no means reject this argument. Instead, he maintains that it would still be logical to look for causes. If we refrain from doing so in the case of radium emissions, it is because human intelligence is far too limited. Thus, for Heisenberg, determinism does not fail in any fundamental way – certainly not because of logical untenability - but only because human intelligence is incapable of grasping the whole.

The man considered to be the greatest physicist of the 20th century, Albert Einstein, had never given up determinism anyway. With his famous dictum *God does not play dice* - in which he probably oriented himself on Spinoza, whom he particularly admired - he went even further than the mathematician Laplace. Einstein imputes to God the intention to have constructed the universe as a calculable machine where chance can have no place at all. Following Werner Heisenberg and Albert Einstein, we must conclude that even modern physics never really invalidated the deterministic world view.

These considerations take us very close to the motif that prompted scientists from the 17th century onwards to imagine the universe as a

deterministic machine. They felt compelled to do so if science was to replace and supersede religion. For God there can be no chance, because as the creator of all things he knows their future course in all eternity. Therefore, in science too, chance was not allowed to exist, because otherwise scientists would have to admit that their knowledge was limited in scope and could never equal that of religions.

Classical physics owes its origin not to experimental evidence – neither a single nor all experiments taken together can ever provide a logical proof of determinism. It owes this origin to unscientific wishful and delusional thinking. *The scientist as a reborn Homo Deus would one day be able to grasp reality as a whole; he would explain everything because he would discover the causal mechanics hidden in all things.*

Delusions can be very powerful - even if they thoroughly distort reality. Anton Zeilinger, the Nobel Prize winner, is undoubtedly right when he assigns such a significant role to chance. But Werner Heisenberg and Albert Einstein are also right when they insist that there can be no empirical proof for chance, because, after all, superhuman intelligence might still be able to trace back every event to a cause. So, is the question undecidable? Will we never be able to answer it?

Austrian biologist Rupert Riedl (1988) made exactly this point when he wrote "*but ... no organ seems to have been formed that is capable of directly proving chance."* In his words, we are programmed exclusively to recognize order, that is the laws of nature, and to make use of them, because this is necessary for human survival. The recognition of chance is without survival value. It merely designates the blanks between laws. This argument is still along the lines of Monod and Russell. Is it truly indisputable?

Truth and delusion in science

What about reality itself, if we leave aside three centuries of deterministic delusion and wishful thinking? The fact is that without this blinker we get a completely changed perspective. Chance is an omnipresent reality - none of us can predict our own actions and thoughts even for the next day as exactly as it is true for many lawful phenomena of nature. Of course, such a statement is merely based on intuition. But we already did go much further by proving that *the investigation of calculable regularities (laws) in nature gets its meaning solely by the fact that we may use these laws for human purposes by applying them - in an arbitrary, i.e. basically incalculable way - to bring about desirable effects.*

This is what physics and with it all sciences researching for laws have been doing for three hundred years. They explore thousands of laws to construct pumps, railroads, radios, airplanes, computers, cell phones etc.

based on recognized laws; but they do this solely for the purpose of opening up new fields of activity *for human freedom*. Freedom, however, is nothing else than that unpredictable and incalculable dimension which in nature outside of ourselves we call chance.

It seems important to me to illustrate the fundamental and, at first sight, by no means self-evident relationship between necessity and freedom (chance) by a concrete example of such a simple kind that everyone understands it immediately. The example illustrates the elementary logic on which even the most complex science is ultimately based. It can hardly be surpassed in its ordinariness because it describes the typical situation of a scientific experiment and our search for truth.

A group of scientists have calculated the trajectory of a rocket to the moon. If their calculations are correct, its launch at time 't' from location 'l' will certainly lead to the spacecraft arriving at the target point at time 'tn' and location 'ln'. After the time of Isaac Newton the trajectories of earthly and celestial bodies can be calculated with increasing accuracy, scientists may therefore be confident that their predictions will come true. At some point, such missions cease to be experiments to confirm (or falsify) recognized laws, but instead become routine processes based on well-established knowledge.

At the end of all preparations, it is a person named Mr. So-and-so who stands in the control room, counting down three, two, one, zero, and finally presses the red button that ignites the rocket and sets its precisely calculated flight in motion.

So far, everything seems perfectly clear, trivial, and simple - yet at this very point, we are confronted with the fundamental problem of human knowledge. We would acquire total knowledge only if apart from accurately calculating and predicting the trajectory of the spacecraft, we would also know (and could therefore predict) when and where which person will press the button. Total knowledge would furthermore imply that we could predict which societies at which historical moments will decide on a lunar mission. With such total knowledge, the entire future would be known to us - not only to the extent that it can be derived from lawful processes in nature but also because we could predict human intentions and actions.

At this stage, an all-knowing science would indeed occupy the role of an all-knowing God. This was the vision of determinism constructed in competition with God's omniscience from Laplace to Russell and Albert Einstein. It was and is the quintessence of a world view for which chance and freedom do not exist. And it is precisely this line of thinking that gives rise to the irresolvable paradoxes mentioned above. An omniscient

neurologist could predict his own discoveries, i.e. the future functioning of his brain, since its course is also determined, i.e. governed by laws.

Still, an important question remains to be answered. What do we gain from considering chance a necessary component of reality, since our search for laws would otherwise be meaningless? What are the changes in our worldview when we realize that most events in our lives and in the unfolding of nature obey randomness?

First and foremost, we distinguish our potential knowledge from our fundamental lack of knowledge. The stages of development from the point zero of undifferentiated primordial plasma about 14 billion years ago to our present time, where fantastic things like bloodthirsty ticks, Mozart's musical world, and a human consciousness reflecting this existence have emerged from this primordial matter – this process we may depict by means of a potentially infinite knowledge, as it allows us to delve deeper and deeper into any level of detail and doesn't even end with the present, given that evolution may continue indefinitely. On the other hand, *the evolutionary process is merely known to us as something given. Why it unfolded the way it did, why it happened this way and not differently, that "why" remains a mystery*. From the properties of undifferentiated primordial plasma, we can neither "derive" the bloodthirsty tick, nor the wonderful C-major Piano Concerto No. 21 by Mozart, nor even the human consciousness in which the world would once reflect. And this impossibility of derivation does not only apply to the creative process of evolution considered as one whole but also to each of its individual stages.[183]

The disparity between facts and explanation is evident at every stage. *Our knowledge of facts may be infinite, but our explanatory knowledge is extremely limited in comparison.* Even if a Mozart scholar knows all the musical influences the composer was exposed to during his time and knows every detail of his life down to the type of coffee he consumed on the day of composition, this factual knowledge – no matter how extensive – cannot explain, let alone derive, the wonder of this composition.

If, as Professor Zeilinger says, the greatest discovery of the 20th century is chance, then another equally significant discovery must be added to this statement. Just as chance stands as the second ontological dimension next to necessity, so does non-knowledge stand as the second epistemological dimension next to human knowledge. *Science may acquire potentially infinite factual knowledge about the world, but its lack of explanatory knowledge extends just as infinitely*. British philosopher A.C. Grayling (2021) openly acknowledges this truth: „/Scientific/ enquiry… generates a paradox: increasing knowledge increases our ignorance."

All creative processes, whether in natural evolution or in the life of individuals, point to the unpredictable, the unexplainable, i.e., to non-

knowledge.[184] We may speak of "élan vital," the vital force, as Henri Bergson did. Regarding the artist who creates a poem, the musician who composes a piece or the scientist who makes a discovery, we may further speak of “inspiration”, but in doing so, we merely apply a convenient label to our fundamental *lack of knowledge*.

It is foolish, however, to call chance blind, as did great and astute scientists like Jacques Monod and Bertrand Russell. If our explanatory knowledge fails before the unknowable, if we are blind to it, that is not a reason *to devalue the unfolding of reality itself as blind and meaningless*. The randomness that allowed human consciousness to emerge from undifferentiated primordial plasma is neither blind nor meaningless. It would be more accurate to call this process *an incomprehensible miracle, the subject of never-ending amazement*. The most foolish thing we can say about it is if we use the image of a monkey typing Dante's Commedia into a machine "randomly" bringing about the unfolding of the universe. In this case, we pretend to know how the miracle comes about. But that is by no means true. Chance is synonymous with human non-knowledge.[185]
Once we leave behind the talk of blind and meaningless chance, we are left with only two options: Either we give up our desire for total explanation, or we accept the image of some higher intelligence. The determinists of the 17th century did not want to tolerate God at the top of creation. Such a supernatural being could have arbitrarily intervened in earthly events at any time through miracles and thus overrule the laws of nature.[186] But this is not an evident conclusion. We have seen that *science must assume as logically necessary that humans use natural laws (the predictable order of nature) in unpredictable ways for their own purpose. So, humans are not acting against the laws of nature; they simply prove that alongside these laws, there exists an equally large realm of chance.* Assuming that God would be more than a mere metaphor and a mere result of human speculation, his actions would remain just as hidden supposing that he constantly interferes with earthly events (without violating the laws of nature). These actions would be just as unpredictable; indeed, *we would not even be aware of them*.[187]

> In our personal lives, religion can fulfil many different functions, like providing solace or explaining the mysteries of life. But historically, the most important function of religion has been to provide superhuman legitimacy for the social order. *Harari*

Let us summarize: The Enlightenment spread truth as well as delusion. Out of ideological bias, it did not take seriously its own grandiose concept of truth. That shortcoming transformed it into a double-edged sword. Initially, it simply denied the existence of chance as it did not fit with its conception of God-like scientific omniscience - chance (freedom) imposing insurmountable limits on human knowledge and power. When science was finally forced to acknowledge its existence, this resistance still did not abate. By labeling it as “blind” and “meaningless” evolution became the work of a monkey randomly pressing keys.

Admitting its own ignorance has consequences for religion too. If God created the world, then a critical believer like Albert Schweitzer had to admit that he is unable to understand the meaning and purpose that God gave to his creation. This admission does not imply that meaning and purpose do not exist. After all, *there is a fundamental difference between something not existing as such or not existing for human cognition.* The Austrian biologist Rupert Riedl found the fitting analogy for this difference. "*How presumptuous it would be if a tick wanted to imagine the blood vessels of a mammal, a dog the international drug scene, or we the laws beyond the cosmos*." Science is now capable of explaining countless things in ever greater detail, such as why a bee stings us, a volcano erupts, or how a cellphone works, but it cannot tell us why this world and its order exist at all, and what meaning we should assign to human existence. The Enlightenment abolished that kind of meaning, which religions had given to the world. It did so because such meaning could not be proven by scientific empiricism. But science drew a wrong conclusion, namely that life is meaningless. Meaning is rather too great to be grasped by our small understanding.

Religion and science share the potential to become either *power religion or power science*, claiming to know more than they possibly can. Religion then masquerades as science, while science mutates into religion. Both seek to provide comprehensive, total explanations. Throughout history, power religion believed it knew the goals and purposes of an almighty God. Similarly, power science either insists that future science will eventually be able to precisely predict all possible events (as does the perfect intelligence envisioned by Laplace in the early 19th and by Russell in the 20th century), or it acknowledges the existence of chance and then dogmatically asserts that chance dooms the world to meaninglessness.

The moment science took this path, it resembled its adversary, becoming dogmatic power science. Both behave in an astonishingly similar way towards their critics. The church of the all-forgiving Jesus Christ, who preached a religion of love, had pyres burn for centuries to destroy heretics. Power-science uses more subtle means but destroys its opponents equally mercilessly. Instead of “heretical” the ban that it hurls at critics is called "unscientific". Anyone bearing this condemnation is not a thinker who should be taken seriously. For those who believe that truth can only be found in the measurable and in experimentation, philosophers are particularly prone to the suspicion of being "unscientific".

Yet, there were always critical scientists who took a different path. From purely logical considerations, mathematician Kurt Gödel concluded, that no system can transcend itself - due to inherent incompleteness (incompleteness theorem). If a system still attempts to do so, it behaves, as pointed out by Rupert Riedl, like a police dog imagining the international drug scene.

In contrast to power religion, which, as Albert Schweitzer criticized, gives us an unproven optimistic worldview, power science offers people an exceedingly gloomy perspective. Can there be a more desolate vision than the *philosophy of Nothing-But* where humans and the cosmos are *nothing but* mechanisms determined by blind and meaningless chance? And could one deviate more sharply from the principles of science itself? Because that's the kind of valuation scientists usually refrain from, when for instance describing the combination of H and O to H_2O. There is no talk of greatness or desolation – the phenomenon is simply presented as a trans-moral fact. Science cannot do more if it does not want to slide into ideology.

If we refer to chance as a mystery, *that does not constitute a judgment but a statement of fact,* as we don't know what chance “really” is, apart from it representing the opposite of all recognizable order. Thus, we must firmly reject the worldview of Monod, which is also that of most scientists today, and replace it with a different one. Reality is an architecture of unknowable mystery and knowable order - whereby the latter too remains an inexplicable fact.

This insight is new only for power science and for power religion. *Critical religion*, exemplified by mystics like Meister Eckhart has always been aware of it. And so has *critical science* represented by men like Kurt Gödel, William James, the supposed positivist Karl Popper, Karl Jaspers, biologist Rupert Riedl (and many others). But due to the fear of admitting their limitations, power religion and power science insist on total explanation. The first does so when pretending to know the divine plan of salvation, the other when it devalues the world into nothingness.

The dogmatism of power science is refuted in still another way. It would have sufficed to seek the mystery of chance within us. Evolution takes place here and now, in every living being. The moment we explore it within ourselves, we experience it not as meaningless but on the contrary as the essence of meaning - for instance in music. Its elemental effect on our psyche is based on resonance and recognition. We love the beauty of musical architecture, a sonata by Mozart or Bach, not merely because it comes to us as an external sequence of tones but because the elements of such order are already within us, leading to a feeling of reunion and recognition. Musical enjoyment comes from both external and internal sources. Without resonance, that is without our active participation, music would have no effect on us.

But music is far more than just a certain order or architecture that we have internalized as part of our culture; it is at the same time an outbreak from this order, an unpredictable play with basic architectural elements. Music becomes poor, boring, or kitschy when it seems predictable, lacking new tonal or rhythmic elements. Great music surprises us precisely because we constantly discover what we already know, yet find it utterly unpredictable, as we can't foresee or calculate the incoming inspirations, variations, and sudden discoveries. *In this context, unpredictable freedom (chance), when experienced firsthand, gains a superior quality. We perceive it as the highest meaning, revealing itself as a source of happiness. It reveals itself as liberating creation – not of meaninglessness but of unsuspected abundance.*

This applies not just to music but to all creations in the cultural sphere. Such happiness and abundance remain a mystery since we cannot reduce them to any formula, yet their impact is no less real. Real enough, in any case, to significantly modify Monod's bleak worldview, which largely prevails today.

All against all: the cyberwar against truth and reason

Hardly any thinking person today would still claim that the "progress" of weapons technology makes the world a better let alone safer place, but this was precisely the prediction made with regard to the internet and the social media. The interconnectedness of all with all appeared to its creators as a promise of worldwide dissemination of truth and knowledge. The fact that everyone could now express their opinions and that these could, in principle, be heard by everyone else on the globe was even hailed as the dawn of a new global democracy.

During our previous philosophical reflections on predictions in history, we did, however, realize that even prophecies that have the weight of the most reasonable arguments on their side often turn out to be spectacularly wrong. This failure of rational "futurology" was most vividly demonstrated by our fictional Stone Age prophet (and his later mouthpiece Marvin Harris), who saw a time of peace and equality dawning with the new agrarian way of life. Subsequent history was indeed to prove the exact opposite.

The same applies to the benefit of the internet regarding peace, democracy and truth. It turns out that sabotage as a form of cold war weapon became possible by the internet – but now on a global scale. In February 2009, for example, the Americans succeeded in destroying fifty Iranian uranium enrichment centrifuges with the help of the Stuxnet virus.

"Described in the press as 'the most sophisticated cyber weapon in history', Stuxnet is the first major offensive in global cyber warfare" (all quotes of this section are taken from David Colon 2023).

What the Americans failed to consider. The new weapon allows for a new type of asymmetric warfare, as its use is incomparably cheaper than researching and developing conventional weapons systems. As a result, it was immediately adopted by the US' adversaries such as China, Russia, Iran and North Korea - and with equal success.

"on May 12, 2017, North Korea launched one of the most massive cyberattacks of all time, infecting 230,000 computers in 150 countries with the WannaCry virus, designed from an NSA tool revealed the previous year by the Russians: "Eternal Blue", which exploited a vulnerability in older versions of Microsoft Windows ... The virus affected numerous hospitals, paralyzed the British healthcare system, and brought production to a halt at several assembly plants of the car manufacturer Renault. Because it affects civilian infrastructures massively and indiscriminately, the North Korean WannaCry virus has emerged as a new form of international terrorism."

In comparison, it seems almost harmless that modern information highways enable not only sabotage but also espionage on an unprecedented scale. Meanwhile China seems to have surpassed the US in this respect.

"There are two types of large companies in the United States, summarized James Comey, then director of the FBI, in 2014. There are those that have been hacked by the Chinese and those that don't know they've been hacked by the Chinese ... Not only is the number of Chinese cyberattacks not decreasing, but they are now affecting some of the US government's most secret data."

The Internet crosses all existing borders, provided they are connected by the highways of information (Russia and China have largely severed

outward links). It therefore opens up the new perspective of globally influencing people's minds. This is where optimistic predictions have proven to be particularly wrong. Today, less than half a century after its invention, we already know that the internet does not serve the cause of peace, it does not serve the dissemination of truth nor the consolidation of democracy. On the contrary, it is proving to be one of the most dangerous and effective instruments for destroying truth and weakening democratic nations. This is particularly true for artificial intelligence (see Harari 2004).

For the same need which, in a world stuck in a Hobbesian state of nature, causes all nations to strive for the ultimate weapons, also causes each of them to spread the best possible image of themselves - the image of a peace-loving, selfless state concerned with the well-being of the rest of the world. As this propagandistic self-portrait rarely corresponds more than partially to the facts, states try to "correct" the facts through their propaganda by embellishing and falsifying them. This observation now applies to all states, even to Western democracies - although to a much lesser degree.

"On April 9, 2003, images of a jubilant crowd dismantling the statue of Saddam Hussein in Baghdad's Firdos Square went around the world. It was a pseudo-event, organized by the American army with the help of a few dozen militants of Ahmed Chalabi - the head of the Iraqi National Council - in front of journalists gathered for the occasion."

No doubt the collection and verification of facts is playing an increasingly minor role even in Western democratic states. French historian David Colon draws on relevant scientific studies when he remarks.

"In 2006, the U.S. media as a whole had just 141 foreign correspondents worldwide ... And yet, while the number of journalists is falling, the PR industry continues to expand. By 1990, in the United States, the number of employees in the PR industry (162,000) was three times higher than that of journalists (50,900)."

As is well known, the PR industry's task is to advertise, regardless of whether the advertised product is a washing machine, a car or a state. The more people a national self-image created by the PR machinery reaches abroad, the greater its impact. Such impact is no longer achieved by the traditional disseminators of news, i.e. newspapers, radio or television, but by social media. Social media are used (abused) by all states to create in the minds of a global audience an ideal image of themselves and the most negative possible portrait of their enemies.

"In the 21st century," observes Joseph Nye /a US-American political scientist/, "conflicts will be less about which army wins than about which narrative prevails."

Although this kind of war is taking place below the threshold of hot gun battles, history teaches us that contests of words and incitement have always been the prelude to the war of deadly weapons.
Social media, above all Facebook and Twitter (now X), are the active promoters of such a development, because messages that incite hatred and anger have a far greater impact than moderate statements.

"… anger emerged as the most powerful emotion, because it generates the most engagement (likes, shares, comments). The previous year, Chinese scientists had reached the same conclusion by analyzing 70 million messages distributed among 200,000 users: "Anger is more influential than other emotions such as joy."

In the interests of greater profit, social media CEOs therefore tend to give free rein to calls for distrust and rebellion, even in democratic countries. The right to freedom of expression - a sine qua non of democracy – is, of course, violated when, for the benefit of business, incitement and the distortion of facts are allowed to take on disproportionate weight.

We know the effect of hatred and anger. They paralyze reason and the pursuit of truth. It is therefore not surprising that such feelings serve as preferred vehicles for spreading misinformation.

"By studying the lifecycle of 126,000 rumors spread by 3 million people on Twitter between 2006 and 2017, American researchers at MIT established that fake news spread six times faster than real news and reached far more people: 'Fake news is spread significantly farther, faster, deeper and wider than truth, across all news categories,' they conclude."

The most effective instrument of state propaganda is the tactic of sowing doubt about the government and institutions of competing or hostile states. Authoritarian states such as Russia and China are using this tactic with great success because - unlike Western democracies - they are not hindered by an independent press and research institutions or by legal requirements.

Russian propaganda gives a sounding board to all centrifugal forces, to all critical voices, as well as the greatest possible resonance to social tensions and terrorist attacks ... Russian propaganda seeks to undermine the European Union from within, devalue the West and turn democracy against itself. In 2014, it supported the proponents of Scottish independence in the referendum, and when the "no" vote won, Russian media and trolls broadcast videos purporting to show electoral fraud. In the Netherlands, it interfered in the April 2016 referendum campaign on the association agreement between Ukraine and the European Union, notably by broadcasting fake videos claiming to show Ukrainian terrorists wreaking havoc in Dutch cities. In Spain, the Kremlin supported Catalan secessionists in the referendums of 2014 and 2017 ... Across Europe, Russia

actively supports far-right parties, including Bulgaria's Ataka Party, Austria's Freedom Party, Belgium's Vlaams Belang, the Finnish Party, France's Front National, Italy's Northern League, Greece's Aube Dorée and Hungary's Jobbik Party. In Germany, Alternative für Deutschland (AfD) has been financed and media-supported by Russia since its creation in 2013 ... In 2020, the Russian propaganda machine is engaged in a worldwide disinformation campaign about the Covid-19 pandemic. At the same time as Vladimir Putin is encouraging his population to protect themselves and vaccinate, he is spreading covidoskeptic and vaccinoskeptic theories in the West. RT propagates the thesis of an imaginary pandemic conceived by Bill Gates to extend his influence.

In the meantime, China has developed its own social platform, TikTok, to influence minds worldwide.

„Today, the spread of TikTok around the world appears to be China's historic revenge, weakening the great Western powers by massively capturing the attention of their youth and diverting them from more useful activities. In many ways, the hypnotic, dreamlike state of some TikTok users evokes that of opium-addicted Chinese as described by numerous 19th-century writers."

No wonder that the Party prohibits its use within China itself.

„If you're under 14, they'll show you scientific experiments to reproduce at home, museum visits, patriotic or educational videos. And they limit usage to 40 minutes a day. They don't release this version of TikTok to the rest of the world. They know that technology influences the development of young people. For their domestic market, they sell an impoverished form, while exporting opium to the rest of the world."

Meanwhile the effects of TikTok consumption are well proven.

„In December 2022, an IFOP study showed that daily TikTok users were far more likely than the rest of the population to subscribe to false information and conspiracy theories."

Nevertheless, TikTok has proved to be a resounding success.

" ...when it comes to addiction, TikTok far outstrips its American competitors, resulting in unprecedented and spectacular growth in the number of users worldwide. Just five years after its launch, the app has 1.7 billion monthly active users worldwide, including 100 million in the U.S., where 30% of adults and 67% of teenagers are using it by 2022."

There is no need to emphasize that the Communist Party, true to the best Stalinist tradition, does, of course, deny its own citizens the right to think freely and express their own opinions.

"The CCP's document 972 published the same year lists 'seven taboo subjects', deemed disruptive, that Internet users are forbidden to discuss: universal values, freedom of expression, civil society, civil rights, the

CCP's historical errors, crony capitalism and the independence of the judiciary."

For the time being, however, the Russian dictatorship goes even further than the Chinese one, because the Putin regime is keen to present the facts themselves as arbitrary, as if they had always been the mere inventions of certain opinion-makers.

"The disinformation campaigns of Russia's external intelligence services systematically attack the guardians of factual authority, whether journalists or scientists, with the aim of blurring the line between fact and falsehood ... 'Objectivity', says Dmitri Kisselev in 2013, 'is a myth that is proposed to us and imposed on us.' Challenging the very idea of an 'objective truth' enables Russia, through the massive dissemination of contingent alternative truths, to gradually erode the confidence of Western public opinion in all sources of information ... In 2015, one of Russia's leading disinformation specialists, Ben Nimmo, summed up the Kremlin's strategy with the "4 Ds" formula: dismiss the critic, distort the facts, distract from the main issue, and dismay the audience ...The advent of social media has thus enabled the Kremlin to accelerate the abolition of any distinction between truth and falsehood, hacking into freedom of expression, public space, digital platforms, destroying in the process the very possibility of conceiving of the Internet as a democratic space and a source of reliable information. 'Today,' exclaims Russian nationalist Vladimir Zhirinovsky triumphantly, 'we're succeeding in what we've been trying unsuccessfully to do for five hundred years! We're changing the Occident.'"

Overcomplexity – and the surveillance state

> Altogether, in 2023 more than one billion CCTV cameras were operative globally, which is about one camera per eight people. *Harari*

> Not only are most Americans living under the Argus-eyed gaze of a digital surveillance state, but drones are now in our skies, cameras are an everyday presence in our lives, and the NSA's net sweeps up the personal messages of millions of people worldwide. *Alfred W. McCoy*

All countries that have the means to do so see the digitization of information and its rapid transmission as one of the most important technical tasks for the future. In this way, growing volumes of data can be exploited in ever shorter time intervals. Nuclear power plants, ballistic missiles, drones, driverless cars, surgical procedures can all be controlled remotely. State surveillance of entire populations is just as possible as influencing the voting behavior of perfectly screened citizens.

It has, of course, been a trivial truth for thousands of years that knives can be used to cut open pumpkins or murder people. It should therefore not come as a surprise that Google may help us to gain encyclopedic insights into thousands of facts, while at the same time it subjects us to constant observation. Therefore, I do not want to criticize digitization because, like all other technological achievements, it can be both used and abused. Instead, I would like to focus on a completely different aspect - one hardly ever considered: *the increasing complexity of that new artificial world we have created*.

Such complexity means, first, that an overwhelming majority no longer understand the things they routinely use every day. While a car still belongs to the analog world, so that most of us can explain how and why it moves, more than ninety-nine out of a hundred people have no idea what happens in everyday gadgets like a cell phone. At first glance, this fact need not cause concern. Our body and brain provide us with the most amazing services every day, but even the greatest luminaries of medicine and neurology have only just unraveled some of the processes that take place within them at any given moment. In other words, the natural world has always been a mystery to man, but this lack of understanding has not prevented even Stone Age people from subjecting it to their needs. Indeed, the complexity of the natural world stretching from atoms to cosmic galaxies never affected human survival.

But what about the artificial world of computers, robots, nuclear-powered intercontinental rockets, and the like, which we created ourselves? Is their growing complexity just as insignificant? Apparently not. The artificial world confronts us with existential problems that never existed in the past.

Here we encounter a disturbing truth that no society can avoid. The number of people who, due to their mental abilities and training, can develop, maintain and monitor the hardware and software of this artificial new world *will be decreasing to the same extent as the latter's complexity is increasing.*

This is an inevitable consequence resulting from the fact that the Gaussian normal distribution of technical intelligence does not depend on our needs but is a constant (in every population there are only so and so many percent of people whose technical IQ exceeds a certain value). From the outset, therefore, only a fraction of the population can be considered as pioneers and waiting personnel for this need. Even if this potential is up to now far from being exhausted in countries with large populations such as India or China, the contradiction between exponentially growing demand and constant supply means that the latter will shrink more and more in the future, because the increasing complexity of the technical

world will be driving the demands on technical intelligence ever higher. Not merely today's 99 percent of people will no longer understand the cell phones of the n-th generation, but the remaining one percent will also melt down to a residual value.
Complexity will be increased in two different ways. In the analog age, no special technical skills were required to run a private institute like for instance a bank. This situation has changed in a fundamental way. In our time, every financial institution must expect to become inoperative from one moment to the next unless highly paid specialists set up, maintain, and update the programs that electronically manage and control the flow of money around the clock. Since national boundaries have long been crossed, international networking is further increasing complexity.

And this is only one part of the story. Specialized attackers - on the one hand brilliant amateurs, on the other hand highly paid experts from competing countries - do their utmost to gain unauthorized access to these systems. Such ongoing attacks are another driving force behind *the spiral of complexity*. Not only banks are affected by this trend, but manufacturing companies too. They are becoming larger as otherwise they would not be able to afford the required number of defense professionals.

This gives rise to a second no less disturbing truth. *The compulsion for size is not merely caused by the imperative of producing more cheaply, it also serves to reduce the costs of increasing complexity*. The consequences for society can no longer be overlooked as they are anything but harmless. I can still remember the fun I had as a child using the square beer coasters on the table of some restaurant to build a tower that could grow up to five stories high but usually collapsed after the third. What will our future look like when the artificial world around us grows more complex with each passing year? The danger of a system collapse increases with every floor we add to the tower. To prevent this from happening, the demands on maintenance and monitoring must be increased at least to the same extent.

At this point a third consequence comes into force, namely, the need to massively expand technical education, especially in computer science, so that the potential of technical intelligence available in each population is exploited to the greatest possible extent. From elementary school (perhaps even kindergarten) to universities, technical education will take up an ever-greater share of the curriculum, pushing the traditional subjects, first and foremost, the humanities, more and more into the background - a process already noted by Steven Pinker for the US and that now spreads all over the world.

What a strange development! Does it not contradict the original intentions on which the technological boom was based in the first place? *We*

once believed that technology would simplify life, relieve people of the tiresome everyday material worries thus freeing their minds for higher purposes.

These expectations came true in many respects. For a mother in Vienna, it is undoubtedly a tremendous relief to be able to call her son in New York at any time or transfer money electronically. At least in its initial phase, technical progress was really what it was meant to be: a breathtaking advance into a fantastic world previously imagined only by storytellers.

By now, this fairytale time lies somewhere in the past. Not only revolutions devour their children, so does complexity. We know, for example, that fast breeders may significantly stretch the uranium reserves. That is the reason why China is sticking with this technology. Other countries such as Germany have turned away from it because the extraordinarily high complexity of such plants extremely increases the risk of wholesale nuclear contamination.

This imposes on us a fourth truth that is even more disturbing. The awareness of extreme risk results in extreme measures of control, that is the creeping transition to the surveillance state, as it is penetrating all areas of life, not only in China. Even among sociologists, it is common practice to interpret such surveillance by the state primarily in political terms, as if it were based primarily on evil intentions and lust for power. Undoubtedly, this is often enough the case, but *an increasingly large part of central supervision is due to the progress of technology, that is to the growing complexity of our modern artificial world.* With the consequences of sabotage becoming ever more devastating and costly, governments strive to prevent them from happening in the first place by means of complete surveillance, which of course increasingly restricts human freedom. The fourth inconvenient truth therefore states that *it is not just the desire for political power that is to blame for the surveillance state, but technical progress itself.*[188]

Just consider, for instance, the quantum computer, a product of outstanding technical intelligence. The moment it will be marketable, so that every private individual can buy it, it will be just as elementary a threat to society as the many nuclear arsenals that meanwhile even small countries like North Korea can afford to develop. From one day to the next, banks will lose their protection against hackers because the new technology will be able to crack all existing codes in a matter of seconds. All money is then on the plate for all the world to take away, so to speak.

In the end, technicians will, of course, develop counterstrategies. As of now, the largest banks are already looking for these in the field of quantum encryption. But the unavoidable consequence will be a further increase in

complexity and much higher costs. Mankind is rapidly approaching the point where the tower collapses, because constant increases in complexity will no longer be either manageable or affordable.

World Reserve Currency

The leading position of a world power in the race between nations inevitably ensures that its currency assumes the role of the world's reserve currency. But this is precisely where the seeds of its later decline lie. Strangely enough, even Dalio fails to see that the role of the world's reserve currency brings only short-term advantages and long-term disadvantages. I have explained this elsewhere. "Since the world reserve currency serves as an international means of payment, it is demanded by all countries for its own sake. All are willing to exchange their goods for dollars, i.e., for nothing more than printed paper (without receiving goods of equal value from the US in return) ... The result was not long in coming. *The success of the dollar as the world's reserve currency inevitably led to a negative trade balance for the United States – just as the success of any other national currency would if it assumed the role of world reserve currency*. Donald Trump and his advisors apparently do not understand this, or do not want to understand it. "They – our competitors – are taking us to the cleaners. They sell us their goods but buy much less from us. This cannot continue!"

In the long run, the initial blessing proves to be a poisoned gift, because the world's reserve currency state no longer needs to produce many of the things it obtains so conveniently from abroad. Its development therefore carries the seeds of its own destruction from the outset. At the beginning of its rise, it owes its power to a far superior industry (on which it then builds a no less superior military power), but at the very moment when its industrial power is increasingly transformed into financial power, the reserve currency begins to undermine this basis through *progressive deindustrialization*. To obtain dollars, competitors produce far more industrial goods for the Alpha State's market than the Alpha State produces for their markets. In the 1980s, at the height of its industrial development, Japan flooded the United States with its industrial products, while importing almost exclusively agricultural goods from North America. This was still the case in April 2025, as was the case with China, which supplied Walmart and all other supermarkets in the US with up to 90 percent of their goods. Since the 1990s, large American industrial companies have accelerated this process by relocating ever larger parts of their production to low-wage countries – especially China – to gain price advantages on

the world market. The most successful exporters: Japan, Germany, and China ultimately generate such a large dollar surplus that its secure investment becomes a major problem for them. This surplus must be invested somewhere—profitably, but above all safely. This is where the alpha state comes into play again. Who else could better guarantee the required security than the world's strongest military power? So they prefer to invest their surplus in the US stock market or in government bonds – and thus become the largest creditors of the US, which in turn becomes the largest debtor of its competitors. Once again, this proves to be both a curse and a blessing for the alpha state. It is a blessing because it provides the US economy with more resources than any other country. The enormous financial resources it had to muster for its own protection and that of its allies in the confrontation with the Soviet Union, as well as the wars in Iraq and Afghanistan, were largely paid for with deposits from foreign creditors. The latter two wars cost around $400 billion between 2003 and the end of 2006. During roughly the same period, the Chinese foreign exchange administration acquired US government bonds and government-guaranteed mortgage bonds worth $464 billion.[189] Indirectly, China made these wars possible for the United States. For the United States, however, these are debts that need not cause them much concern so long as they maintain their position as a world power.[190] But woe betide them if they are no longer the world's leading power and the dollar collapses ... The curse is evident in this case too, because demand for the dollar strengthens its exchange rate against all other currencies to such an extent that American industrial products are becoming increasingly difficult to sell on the world market – another factor that promotes the deindustrialization of the alpha state.

In the past, China deliberately manipulated its own currency, i.e., devalued it against the dollar, to gain advantages for its own exports on the US market. Trump and his advisors are aware of this stratagem. With their erratic tariff experiments, they are spreading such uncertainty that a flight from the dollar is beginning. But this is a dangerous game if the dollar does not merely decline but collapses. Economic isolation cannot ruin the country because the US is far less dependent on foreign countries than they are on it. But with the demise of the dollar, the US would lose its status as a leading power. Do Trump and his advisors believe that this is the way to make America great again?

Nordstream 2

This fact was demonstrated before the eyes of the world shortly before Russia's attack on Ukraine, when Olaf Scholz and Joe Biden met in Washington.

Everyone knew at the time that the Putin regime's financial support from the Europeans had already been a thorn in the side of Donald Trump during his first term in office. He had put Angela Merkel under considerable pressure to renounce Russian gas supplies. Joe Biden, for his part, was firmly opposed to these German gas imports. During their joint press conference in Washington – which was shortly before the Russian attack on Ukraine – Biden spoke in plain terms to the German Chancellor Olaf Scholz: "If Russia invades Ukraine, then there will be no longer a Nord Stream 2. We will bring an end to it." When a reporter asked how that could happen, given that the project was under sovereign German control, Biden added: "I promise you, we'll be able to do it."

This unequivocal and unmistakable threat probably just slipped out of President Joe Biden's mouth, who sometimes used to be carelessly honest. In any case, Russia had no interest in blowing up the pipeline; it could have simply turned off the gas tap. At most, Ukraine had an interest, because it had to forgo a large part of its transit fees because of Nord Stream 2. But Ukraine did not have the complex logistics for such a step. It certainly could not have ensured that the positioning signals on the ships traveling there were temporarily switched off at the time of the attack. If it turns out that a Ukrainian ship was at the relevant location at the relevant time, then this only speaks to the CIA's ability to cover all tracks and point in the wrong direction.[191]

In retrospect, Joe Biden's blowing up of Nord Stream 2 seems fully justified. It was an untenable situation that the American president gave Ukraine full support while his ally, Germany, had no qualms about filling Putin's war chest. I do, however, believe that the US should have acknowledged its authorship, which to this day it vehemently denies. They didn't need to resort to this lie. This only reinforces the general mistrust of politics, that "those up there" are all liars (see my website 29.9.2022).

Donald Trump

The current president of the United States can boast two significant achievements. He prevented the outbreak of war between two nuclear powers — India and Pakistan — at the last minute, and he managed to provide Israel with significant support in the destruction of Iran's nuclear

facilities in a lightning operation, but then performed a minor miracle by immediately seeking to bury all hostilities and offering Iran the most favorable conditions for rebuilding the country and lifting sanctions, provided that the regime renounced nuclear weapons. This is significant even when one recalls that the same president had deliberately destroyed the carefully negotiated agreement on precisely this renunciation during his first term in office. However, these two achievements are countered by objections that have never been raised against any other president before.

It now seems that the greatest misfortune that could have befallen the United States and the rest of the world is Donald Trump, a man who, by his very person, calls into question everything that has so far made up the fame and greatness of his country. He despises truth and is vulgar and brutal to a degree that could lead to war. “They will kiss my ass to make a deal with me.” It is foreseeable that China, an ancient cultural nation, is more likely to start a war with such a man than to negotiate with him. Trump not only has an intense aversion to truth, but also to education, which he actively opposes, thus willfully jeopardizing the primacy that the United States has held to this day with its world-leading universities. Can we call it anything other than profound ignorance when he rejects or reverses all steps to protect the environment? Politically, he is far closer to Putin and Kim Jong-un than to America’s democratic tradition. No wonder he incited the mob against the Capitol and clearly stated that he does not think much of elections, i.e. the country's constitution. Meanwhile, the incompetence of his administration and of the advisors he has personally chosen is being recognized even by his former voters. Decisions are made today and revoked the next day. MAGA, which he writes on his flags and caps, is increasingly becoming MASA: “I will make America small again.” We can only hope that Donald Trump will do so many stupid things in such a short time (hopefully not a big war) that a storm of outrage will drive him out of office.

The only question that remains is how such a man could get into the presidential seat of a great nation? In my opinion, this is due to a real failure of American politics. In the US, they use to cheer for the winner, while they leave the losers behind. Hillary Clinton, after all a Democrat, publicly disparaged the globalization losers, who became opponents of globalization, as “deplorables”. With such contempt, you make enemies in your own country – even more so if you represent a party that emphasizes its proximity to working people. For the American opponents of globalization, the elite sitting in Washington is indifferent to their fate. Even the highly educated “eggheads” from the country's leading universities, who usually serve as advisors to the political elite, have not given these people any hope of improving their situation. To those people in the

bleak rust belts of the United States, democracy or dictatorship are empty concepts of a political theory that has nothing to do with their fate. For these people, the deindustrialization of their country is not offset by the USA's global success in the services sector, because in the past their industrial companies also employed unskilled workers, while the digital service companies require university degrees. *This further deepens the gap between the top and the bottom*. Donald Trump has a flair for demagoguery – the only undeniable talent of this man – and he has used it to rally all the abandoned, disappointed, frustrated and resentful to his cause.

This is a lesson that we should take to heart here in Europe. American capitalism has made great achievements possible, but if a part of the population is left behind as superfluous and "deplorable", the state must fall into the hands of radicals and incompetent populists.

Hot societies, cold societies

In this book, I have insisted that the race between nations has only been going on for about five hundred years, but at an ever-increasing pace since then. Changes that were bound to lead to this situation did, however, always exist. In this sense, Claude Lévi-Strauss, the great French anthropologist, distinguished between "hot" and "cold" societies in his work "La pensée sauvage" (The Savage Mind).

"We have suggested elsewhere that the clumsy distinction between 'peoples without history' and other peoples could be advantageously replaced by a distinction between so-called 'cold' and 'hot' societies ... The goal of "cold" societies is to ensure that /random/ temporal circumstances alter as little as possible the essence of each of them ... thanks to the institutions they have given themselves ... they try ... almost automatically to neutralize the effects that history might have on their equilibrium and continuity ... Undoubtedly, they only succeed in this imperfectly, but it is the standard they set for themselves. /In contrast/, /hot societies/ resolutely internalize historical development in order to make it the engine of their development."

It is obvious who this conceptual reordering is directed against Hegel as well as his student Marx. Hegel, who liked to indulge in philosophical fairy tales, had carelessly lost himself in the clouds of speculation when he wrote the following: "History must begin with the Chinese Empire, for it is the oldest, as far as history records, and its principle is of such substance that it is both the oldest and the newest for this empire. Early on, we see China growing into the state it is in today; for since the contrast between objective being and subjective movement is still lacking, any

changeability is ruled out, and the static, which reappears eternally, replaces what we would call the historical. China and India still lie, as it were, outside world history, as the prerequisite for the moments whose combination will first become their living progress." (*Lectures on the Philosophy of World History*).

Karl Marx is somewhat more specific: “The simplicity of the productive organism of these self-sufficient communities, which always reproduce themselves in the same form and, if they happen to be destroyed, re-establish themselves in the same place, under the same name ... explains the mystery of the immutability of Asian societies ...” (Karl Marx, *Grundrisse der Kritik der politischen Ökonomie*, MEW 42, p. 379).

In his capacity as a mythologist, Lévi-Strauss emphasizes a different point of view. Cold societies want to eliminate the influences of time on their constitution from the outset as far as possible. The French anthropologist could also have justified this by saying that for them, the golden age always lay in the past. Any innovation was therefore inherently suspicious. However, this rule applies not only to the so-called primitive societies studied by Lévi-Strauss, but also to the era of developed agrarian mass civilizations. Christianity projected the salvation of mankind into the future, but this was nothing but an imaginary afterlife. *Only after the fossil fuel revolution did “hot” societies emerge that reversed the direction of time by promising mankind salvation from all evils already in this world.*

Mistrust of everything new thus lasted until the dawn of the Enlightenment. It goes without saying that until then the elites had no interest in change. Their greatest ambition was solely to maintain and increase their own power. But even the masses who served them did not allow upstarts among them. Private competition, as opposed to solidarity and subordination, always met with mistrust, especially among the lower classes in agrarian cultures, and allowed the established elite to take merciless action against social climbers (p. 83).

However, the French anthropologist rightly notes that even in primitive societies, resistance to the new could never be perfect: “Undoubtedly, they only succeed in this imperfectly, but it is the standard they set for themselves.” Individual hunters and gatherers developed the technologies of agriculture and animal husbandry, thereby setting in motion the revolutionary second turning point. And China, the richest and most powerful state in the world until the 17th century, produced a wealth of inventions. The fact that it did not use them, and why, is due to the imperative exposed by Lévi-Strauss, an imperative that obviously did not apply only to “primitive” societies.

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Annotations

1 There is no single definition of a just society that applies once and for all. Is it fair that the most capable enjoy the greatest material rewards and the highest prestige? Shouldn't the disabled and the sick be compensated for the fact that nature has treated them so cruelly? Apparently not. Every society is oriented toward its own benefit. It promotes those whose activities promise the greatest gain. In the past, this could have been the religious explainers of the world. Today, it is primarily the world changers, i.e. scientists and technicians.

2 It first became established in Europe, namely in the eventful history of the Greek city-states, which lived together or rather against each other in a geographically very small area.

3 As Karl Popper explains in his great book "The Open Society and its Enemies", the closed society of Sparta became Plato's model.

4 To which Münkler remarks with reference to Hobbes: Beyond the sovereign /= sovereign states/, which for Hobbes always exist in the plural with regard to Europe, there is ... no master, so that the "state of nature" /anarchy/ continues to exist between them..

5 In my 1997 book "Die Arbeitslose Gesellschaft" (S. Fischer), I predicted almost thirty years ago that the United States would be the first to defend itself against predatory trade and the resulting de-industrialization of its own country with protectionism, with the Europeans following suit later. The first part of this prediction has since been fulfilled. In his foreword to my book The Ponzi Scheme, published by Signum in 2008, former member of the German Council of Economic Experts Gerhard Scherhorn wrote: "We owe to Gero Jenner's book 'Die Arbeitslose Gesellschaft' the concept and analysis of predatory trade". Perhaps he is right about that – I don't know.

6 "The parallel to the decline of the British Empire lies in the fact that the United States initially tolerated the free rider China just as Great Britain tolerated the free rider USA in its day, by alone ensuring a liberal world economic system. China used liberalism for its export offensive while restricting access to its own market. Chinese tankers and container ships benefited from the freedom of the seas guaranteed by the United States, as well as from the US development of the Global Positioning System (GPS), the lighthouse of the 21st century, while China made no contribution to global security" (Menzel 2023).

7 On this subject, Münkler (2023) states: "Ideally, the order of economic interdependence is based on the complete substitution of military with economic power ... However, Russia under Putin has taken the opposite path ... It was not the establishment of a prosperous order that played the decisive role, but rather the historical cultivation of memories of former imperial glory and power, i.e., the breeding and nurturing of resentment ... Russia feels that it is not recognized as a great power, and Putin's belligerent actions can also be interpreted as a desperate 'struggle for recognition.'"

8 “The difference between the logic of profit and the logic of rent, in a nutshell, is that in the first case, income arises from entrepreneurial activity and in the second case, from political control of income-generating resources... In the first case, you have to invest to remain competitive; in the second case, you have to ‘invest’ in the organs of power from the army, police, presidential guard, secret services, moral police and, if necessary, private mercenary troops in order to maintain control” (Menzel 2023)
9 Münkler (2003) comments: “Russia had transformed itself economically into a rentier state. The economy of a rentier state is based to a large extent on the capitalization of natural resources and is at the same time dependent on the import of technologically sophisticated finished products.”
10 “The galleon was a floating fortress that could sail to any port in the world, block it, bombard targets on land, carry out landing operations if necessary, and fight enemy ships at sea or capture cargo ships. There was no comparable type of ship in Asia since the Chinese war fleet had been scrapped” (Menzel 2023).
11 In ‘Who Rules the World?’ the British historian Ian Morris (2011) addresses the question of which factors favor or inhibit the development of power in states, so that there is a shift in the balance between them. This is a highly relevant question today, as its resolution determines nothing less than the survival of humanity on our now so cramped planet. Is there a balance to be struck between the whole of the world community and its parts, the states that are still fighting each other relentlessly?
12 See Paul Kennedy 1996, p. 33.
13 Münkler (2003) sees a close connection between inventiveness or lack thereof and “thalassic” (seafaring) empires as opposed to river- and land-based “potamic” ones. Given the many important inventions that were made in China earlier than in Europe, I do not find this observation really convincing.
14 Basic scientific research provides only an apparent objection to this assertion by the great physicist. Basic research has always existed. Before the Industrial Revolution, it consisted of statements about God and his intentions for humankind. In the moral worldview of earlier times, such statements served to *rule over mankind*, so that people were held together by common views and committed to common goals. In the trans-moral, trans-aesthetic modern worldview of science, basic research, like science in general, serves to *rule over nature.* But basic scientific research does, of course, derive all its significance from its success in better explaining the totality of empirical observations.
15 To my knowledge, Max Weber was the first to describe this contrast in these terms.
16 In democratically constituted societies, it is their elected representatives who determine the powers that the community may exercise over its members when they violate the common rules and prohibitions. In the fascism of Mussolini, in the National Socialism of Hitler, and in the arbitrary regime of Vladimir Putin, it is an individual who presumes to act on behalf of everyone when he destroys those who stand in his way and

rewards those who grovel before him. This applies to all dictators from Lenin and Stalin to Mao Zedong.

17 Desmond Morris puts the matter this way: The strong urge towards mutual assistance … has become susceptible to powerful arousal in intra-specific aggressive contexts. Loyalty on the hunt has become loyalty in fighting, and war is born. Ironically, it is the evolution of a deep-seated urge to help our fellows that has been the main cause of all the major horrors of war.

18 Konrad Lorenz summed up this diversity of lifestyles. “Let us assume that ... /a/ zoologist had come from Mars who was well informed about the sociology of various animal species ... but knew nothing of the specific achievements of the human mind... If such a researcher compared, for example, the clothing and dwellings of New Yorkers with those of the Papuans in central New Guinea, he would certainly believe that these cultural groups belong to different species, perhaps even different genera.” (Lorenz, 1977; p. 223).

19 The artificial environment created by man did not only consist in tools but in food as well. Cf. Jared Diamond (1977): “That’s why Darwin, in his great book On the Origin of Species, didn’t start with an account of natural selection. His first chapter is instead a lengthy account of how our domesticated plants and animals arose through artificial selection by humans.”

20 In emphasizing language as the decisive distinguishing feature between apes and Homo sapiens, I disagree with Desmond Morris, who sees language as only one of a number of distinguishing features. On the other hand, the great biologist is well aware of the uniqueness of human language. The “astonishing rate of learning in the field of vocal imitation is unique to our species and must be considered as one of our greatest achievements…There is nothing like it, nothing even remotely approaching it, in other closely related living primates.”

21 Whether this is a spatially separate area or whether meaning and signs are stored side by side can, of course, only be determined by neurological research, but it is inevitable that a new sector must be added, i.e., that the brain must be expanded.

22 See Gero Jenner: The Principles of Language – towards trans-Chomskyan Linguistics (revised edition Amazon 2019) and as an introduction: Noam Chomsky as a Linguist: A Great Vision defeated by Faulty Logic (Amazon 2020).

23 Ian Morris (2010): “Modern hunter-gatherer life is famously violent; with no real hierarchy to keep their passions in check, young hunters often treat homicide as a reasonable way to settle disagreements. In many bands, it is the leading cause of death.

24 Claude Lévi-Strauss described totemism in "The Savage Mind” (La pensée sauvage) and the incredibly complex rules of permissible and impermissible marital unions among clans in “The Elementary Structures of Kinship” (Les Structures élémentaires de la parenté). In this book, I will not go further into the moral inhibitions that people at different times and in different cultures felt toward killing and eating animals. It seems more important to me to highlight the inhibitions toward killing conspecifics,

i.e., humans. Nevertheless, it is interesting to note that the rationale for prohibiting the killing of animals is pretty much the same everywhere. When people become vegetarians, it is because they are aware (a point long proven by science) that humans and animals are branches on the same family tree of life and that higher animals feel pain just as we do, being similar to us in many other ways too. Along with the totemism of Australian aborigines, who did not renounce the consumption of meat but tried to appease their conscience with a complex justification, the Hindus of classical India deserve special mention. They renounced the consumption of meat because animals were for them the embodiments of souls carried along by the wheel of reincarnations. Again, it is the idea of a common ancestry or destiny of all living beings that underlies such beliefs.

25 "Objective science" appeared to Carl Schmitt, the Nazi head of German legal theorists in the first half of the 1930s, mere delusion. "An alien to the species /he has Jews in mind/ may act however critically and strive however perceptively, may read books and write books, he thinks and understands differently because he is of a different kind, and remains in the existential conditions of his own species in every decisive train of thought ..." (Acham 2016).

26 It is possible that this is a conversation Rauschning invented. It would, however, fit in with Hitler's general views.

27 The sources for these facts can be found in Jenner "Reflections on Meaning and Purpose in History". Maja Göpel quotes the calculation of the Czech-Canadian ecologist Vaclav Smil: "When people still roamed the earth as hunter-gatherers, that is, more than ten thousand years ago, each of them needed about five gigajoules of energy per year to survive... Today, the average energy consumption per person per year worldwide is almost eighty gigajoules... In fact, the population of Germany... per year per person... consumes about twice the global average. Those living in America, in turn, consume twice the German average."

28 This was true even of primitive garden culture. Cf. Jared Diamond: "New Guineans have been living in societies where human numbers were too low for epidemic diseases of dense populations to evolve. Instead, traditional New Guineans suffered high mortality from murder, chronic tribal warfare, accidents, and problems in procuring food."

29 "In the mid-14th century, it took about twenty to thirty years for the plague to spread from the central Chinese province of Wuhan to the coastal cities and the end points of the ancient Silk Road... In 2020, it took only a few hours by plane for coronavirus to reach Heinsberg in the Lower Rhine region of Germany, from where it spread literally in no time at all" (Menzel 2023).

30 Cf. Jared Diamond (1997): "If the Americas eventually came to hold hunter-gatherers at an average population density of somewhat under one person per square mile (a high value for modern hunter-gatherers), then the whole area of the Americas would eventually have held about 10 million hunter-gatherers."

31 Cf. Joseph Henrich (2019): "Social norms dictate that he /the hunter-gatherer/ must share, so his store of goods won't last for more than a couple of weeks. In short, among the Hadza, one just can't get too attached

to one's stuff, because soon it will be someone else's stuff." Seen in this light, we do not necessarily have to marvel at the philosophy of a hunter-gatherer from the Inuit tribe when he gives the following response to a European's expression of gratitude to whom he had given a lavish gift of captured prey. „Up in our country we are human. And since we are human, we help each other. We don't like to hear anybody say thanks for that. What I get today you may get tomorrow. Up here we say that by gifts one makes slaves and by whips one makes dogs" (Graeber 2012).

32 Nexus, p. 136.

33 The Kwakiutl did not need to migrate to siphon off the sea's abundance of fish. They were among the few sedentary hunter-gatherers - for these too existed when at some given place food supply was particularly abundant. The Kwakiutl had created a highly unequal social structure in which, alongside a hereditary aristocracy, there were also slaves. Nevertheless, the original tradition of sharing persisted, notably in regular festivals where the aristocrats distributed accumulated wealth in the form of blankets, furs, canoes, slaves, and food. But now sharing was restricted to the happy few on top of the social pyramid, i.e. to other members of the aristocracy. After a year or two, these peers would host similar festivals with the intention of reciprocating with gifts of at least equal value. This custom, known as Potlatch, gradually lost its original meaning of distributing wealth within the tribe. It became a mere display of power, culminating in orgies of destruction. The most powerful would set blankets, furs, etc., on fire in front of their competitors, humiliating them because they were incapable of reciprocating such gifts. This was a perversion of the original act of sharing. "The purpose of all Kwakiutl enterprises was to outdo rivals... Measured against the standards of other cultures, the speeches of the chiefs at the Potlatch festivals were an expression of megalomania" (Ruth Benedict). Erich Fromm categorized the Kwakiutl as "destructive societies" (see also Huizinga 2006). Marvin Harris tracing potlatch back to its ancient root of mutual sharing provided a more balanced interpretation.

34 But even garden cultures could be quite inegalitarian. Cf. Jared Diamond (1977). "In social organization, Polynesian societies ran the gamut from fairly egalitarian village societies to some of the most stratified societies in the world, with many hierarchically ranked lineages and with chief and commoner classes whose members married within their own class."

35 Cf. Jared Diamond (1977): "However, detailed archaeological studies have shown that complex irrigation systems did not accompany the rise of centralized bureaucracies but followed after a considerable lag."

36 In Germany, this fact probably contributed in no small measure to a "cult of genius" that culminated in Friedrich Nietzsche's contempt for the masses and the mass man and the blind veneration for the violent man – see his Zarathustra - who places himself at their head.

37 Cf. Jared Diamond (1977): "The two indisputably independent inventions of writing were achieved by the Sumerians of Mesopotamia somewhat before 3000 B.C. and by Mexican Indians before 600 B.C. (Figure 12.1); Egyptian writing of 3000 B.C. and Chinese writing (by 1300

B.C.) may also have arisen independently. Probably all other peoples who have developed writing since then have borrowed, adapted, or at least been inspired by existing systems."

38 Cf. Gero Jenner Reflections on Meaning and Purpose in History.

39 Cf. Hallpike (1988). "With the final establishment of the Confucians as the orthodox philosophers of the Empire, the Four Classes became an ideal hierarchy of social merit - scholar-officials at the top, followed by farmers, artisans, and merchants in the lowest category… Four groups of major significance in other civilizations are notably lacking from this scheme: priests, nobles, soldiers, and slaves."

Mencius had set out on this path early on: "Some labor with their brains and some labor with their brawn. Those who labor with their brains govern others; those who labor with their brawn are governed by others. Those governed by others, feed them. Those who govern others, are fed by them. This is a universal principle in the world. (Mencius Ilia, 4)."

40 Between the end of the 14th century up to the French Revolution, peasant uprisings flared up at least once every ten years, later almost every year at some place of the subcontinent. It was a never-ending series: Jacquerie (France, 1358), Peasants' Revolt (England, 1381), Maillotins Uprising (France, 1382), Engelbrekt Uprising (Sweden, 1434-1436), Peasants' Revolt in Transylvania (1437-1438), "Outrage following the Timpanist of Niklashausen" (Hans Böhm, Tauberfranken, 1476), Carinthian Uprising (Carinthia 1478), Bundschuh Movement (Southwest Germany, 1493-1517), Peasant Uprising of György Dózsa (Hungary, April-July 1514), Poor Konrad (Württemberg) (1514), Windisch Peasant War (Carinthia, 1515), German Peasant War (Southern Germany, Switzerland, Austria; 1524-1526), Palatine Peasant War (Palatinate, 1525), Peasant Uprising of Kaymen (East Prussia, 1525), Schladming Peasant and Squire Uprising (1525), Dacke Uprising (Sweden, 1542-1543), Württemberg Peasant Uprising (Southern Germany, 1547), Croatian-Slovenian Peasant Uprising (1572-1573), Second Upper Austrian Peasant Uprising (1595-1597), Lower Austrian Peasant Uprising 1596/1597, Rebellion of the Croquants (France, 1593/94, 1624 and 1636/37), Upper Austrian Peasant War (1626), Lower Austrian Peasant Uprisings (1632), Swiss Peasant War (1653), Tolmein Peasant Uprising (1713), Horea Uprising in Transylvania (1784), Grande Peur in France (1789), Saxon peasant uprising (1790), peasant unrest in Lusatia (1790-1794), "clapper war" in the Eifel (1798). On this subject Walter Scheidel (2017) remarks: "The largest of all rural uprisings in western Europe, the German Peasants' War of 1524 and 1525, which engulfed much of southern Germany, sought to preserve income gains achieved in the wake of the plague and resist seigneurial rights and encroachment on common lands, goals that were reinforced by the spread of antiauthoritarian ideas. As so often occurred, elite reaction proved vastly more violent than peasant action itself." Friedrich Heer (1953) also describes the frequent peasant uprisings in his „Europäische Geistesgeschichte" (European History of Ideas)

41 For the 16th century, Immanuel Wallerstein (2004) describes the lower 90% in the following way: "*There were slaves who worked on sugar plantations and with simpler mining methods (e.g. by scraping the soil). Then*

there were the serfs, who worked on large manors in cereal cultivation and the timber industry. There were tenants who produced cash-crop agricultural products in different ways, and in some branches of agricultural production wage laborers. These groups accounted for 90 - 95% of the European world economy."

42 "France was 24,670,000 men, women, and children; so Necker reckoned the population in 1784. The number had grown from 17,000,000 in 17I5 through greater food production, better sanitation, and the absence of foreign invasion and civil war. All but two millions of the French were rural" (Will Durant).

43 Oswald Spengler (2014) is aware of this fact - and yet tries to deny it again and again. "All real history begins with the primitive estates, nobility and priesthood, forming themselves as such and rising above the peasantry." The lot of the peasant is therefore almost everywhere the same: "The peasant is without history. The village stands outside world history… And the peasant stands helpless on the pavement, a ridiculous figure, understanding nothing and understood by no one, good enough for comedy and to create this world's bread." But on the other hand, Spengler wants to idealize the peasant, to elevate him to the very origin of soul and culture: "The peasant house is the great symbol of sedentariness. It is itself a plant; it sinks its roots deep into its 'own' soil. It is property in the most sacred sense." But this is true at best where there was a free peasantry – it was never true for the great agrarian civilizations.

44 For example, in Sparta. The number of Helots kept like slaves there at the beginning of the 4th century B.C. is estimated at about 200,000, that of the free Spartans at about 9,000, which corresponds to a ratio of about five percent (Cartledge). A small number of free people thus lived parasitically on 95 percent Helots, who had to earn not only the daily food for themselves, but in addition that surplus, which, under constant threat of violence, was extorted from them by their masters, the free Spartans. Helots could be killed by the secret state police at any time without reason or trial (Durant).

45 Grain was obtained from Thrace and Egypt and paid for with luxury goods as well as with the silver from the mines under Athenian rule - the silver mines of Laurion were only 60 km away from Athens. But it was also exchanged for products of the crafts, which the free Athenians originally produced themselves, but later had mostly produced by slaves. These were goods like wine and olives as well as the many luxury products of a flourishing industry: jewelry, ceramics, art. The luxury items were, of course, intended for the great lords of the exporting countries, not for the little people who had to deliver the wheat to their masters. The silver mines of Laurion employed only slaves, possibly between ten to twenty thousand (David Graeber).

46 But even the population living in Attica was very mixed. Of the approximately 315,000 people by whom Attica was populated around 431 B.C., only a little more than a tenth (40,000) enjoyed the status of free citizens; the remaining nine-tenths were largely lawless foreigners or slaves, the number of the latter being estimated at least at 200,000 (Brockmeyer, Durant). Estimates vary widely, however. Keith Roberts (2011), drawing

on Sallares (1991), assumes a total population of 150,000 for roughly the same period, with 20,000 slaves and 10-30,000 unfree. Will Durant comes close to Brockmeyer's estimate. In ancient Attica, out of a total population of 315,000 souls, 115,000 were slaves, and only 43,000 were citizens with the right to vote.

47 Compared to Sparta, the commercial city of Athens was much less militarized, although the basic agrarian law was equally in force. Like the free citizens of Sparta, the free citizens of Athens represented the favored five to ten percent at the top of the food pyramid. But in Sparta, the ninety-plus percent Helots were the immediate neighbors of the free Spartan citizens, while the ninety percent food producers who supplied the free Athenians with food lived mostly far away, in Egypt and Thrace.

Wherever the military and a constant propensity for violence set the tone, the voice of critical intelligence was silenced because any protest was considered dangerous to the state. When talking about the Axis period and its great wealth of thought, it is easy to forget that the world does not owe a single significant thought to the military dictatorship of Sparta, one of the leading Greek states at the time. As already Jacob Burckhardt noted in his "Greek Cultural History", not even reading and writing were taught in Sparta. Likewise, Will Durant: "*The Spartan code of conduct produced good soldiers and nothing more.... mere physical strength it transformed into repulsive brutality, because it killed off almost all receptivity to things of the spirit*."

It does not make this dictatorship any more sympathetic that among free Spartiates the principle of equality was more strictly maintained than anywhere else. The reason for such equality is all too obvious: any difference in terms of class and property would have torn the tiny minority of exploiters apart internally and endangered their position vis-à-vis their subjugated slaves. Therefore, “Every Spartiate held from the state an allotment of land of equal size, or equal productivity, and each of these allotments, cultivated by Messenian serfs (Helots), was sufficient to provide maintenance for the Spartiate and his family and thus enable him to devote the whole of his own energies to the art of war…. The Spartiate served fifty-three years with the colors” (Toynbee)."

What a contrast with Athens, which was a commercial empire, where free citizens were under arms only in times of war, but during peace were occupied with the production of those special goods of weaponry and handicraft, which enjoyed such a great demand that the Athenians could not only exchange for it the food they needed, but, moreover, possessed leisure enough to develop that "Attic spirit" which has ever since belonged to the heritage of mankind.

48 The conditions that characterized the trading city of Athens were to be repeated more than two thousand years later in the Netherlands of the 17th century. For "the products of their soil could support only an eighth of their population; the life of the country depended upon foreign trade and colonial exploitation; and these depended upon a navy capable of protecting Dutch vessels and settlements" (Durant).

49 To which Hermann Kurzke aptly remarks in his Büchner biography: Would rural poverty have been eliminated by a redistribution of state

finances? The entire Hesse-Darmstadt state budget of 1831, distributed among the population, would amount to nine guilders per capita. Each person could buy three sheep with it.
50 See Delumeau 1978.
51 Cf. Neumann 2022: “In America, the number of industrial workers fell from seventeen million to eleven million during the 2000s - a loss of more than one-third... Thomas Piketty argues that, except for the years leading up to the French Revolution, there has been no historical period in which inequality has been greater... When Obama pushed to phase out coal in the early 2010s, it was a kind of declaration of war on traditional "coal states" like West Virginia, where mines closed by the dozen and once-thriving towns became deserted. Many of the former coal communities found their savior in Donald Trump.”
52 See Francis Fukuyama 1992: “Middle-class societies arise as a result of universal education. The link between education and liberal democracy has been frequently noted and would seem to be an all-important one.” I would add that it is even a necessary one.
53 Inequality arises from differences of power as well as of material rewards. It is inevitable and even desirable that people with individual competence have more say than others with less knowledge and ability when both are required. In other words, a gap in influence and power is an inevitable part of every society. To choose a particularly blatant example, in times of war, leadership will certainly not be entrusted to a child, but to an ex-perienced adult. On a smaller scale, this power imbalance can be found even in small groups, right down to the social nucleus, the family. However, this does not necessarily have to go hand in hand with a disparity in material rewards. It seems to me – but this is a mere assertion – that a society is more stable when it mainly relies on differences in power keeping those of material reward as low as possible (in international competition, where head hunting is usual practice, this has become more and more difficult, though). In this sense, I wrote a paper years ago that explains how greater material equality would be substantially enhanced through the taxation of consumption - as already proposed by John Stuart Mill. “Ecological Consumption Tax” (https://www.amazon.de/Ecological-Consumption-Tax-Verbrauchssteuer-Steuersystem/dp/1686752474).
In view of all that has been said, it goes without saying that, unlike Marx, I do not intend any attack on private property
54 As Max Scheler recognized with great foresight. See endnote 3
55 Ian Morris: “… by 1650 more than half of Britain’s fuel energy came from coal.”
56 Why was it the English who initiated the fossil revolution? Ulrike Herrmann (2022) summarizes the research on this question. "*The most convincing answer is that industrialization began in England because it was there that the highest wages in the world were paid. In the 18th century, English workers earned at least three times as much as their counterparts on the European continent... As early as 1600, England experienced a "coal revolution" that replaced wood. Well before industrialization proper, coal was used in energy-intensive trades... So, England had the most expensive labor and the cheapest energy. This combination was unique in*

the world... Capitalism arose in Britain unintentionally. Machines were developed and used only because labor was so expensive." Herrmann likewise refers to serious historical research when she rejects the myth that colonialism encouraged or even enabled this process. "*Paradoxical as it may sound, exploitation does not make you rich. This was the experience of all colonies that relied on slave labor. Brazil remained just as backward as Jamaica or the US state of Mississippi... It is no coincidence that only the north of the US industrialized, where there were hardly any slaves... Europe did not have colonies because its economy would have collapsed without them. Rather, it was the other way round: the colonies existed because Europeans could economically afford global expansion*."

57 Nevertheless, the development had an unattractive drawback. The tremendous increase in energy input was matched by a much smaller gain in additional food. While in 2000 eighty times as much energy was used per hectare as a hundred years earlier, the harvest was only four times as large.

58 Ulrike Herrmann (2022) puts this in a nutshell. "As long as a society is poor, the rulers can only get rich by exploiting their subjects. It amounts to a brutal zero-sum game: the powerful appropriate the scarce goods, leaving the vast remainder almost completely empty-handed. However, when economies grow, this struggle is no longer compelling. The gains are large enough for everyone to share." Karl Marx's theory of pauperization wrongly assumed that this zero-sum game would also apply to capitalism.

59 "Western man has created a society in which the seemingly free, independent, and unprejudiced individual actually feels increasingly isolated and abandoned... The tendency toward individualization has led to a systematic devaluation of the concept of community, thus confirming research findings that observe a decline in social solidarity in Western civilization, and in Europe in particular... Today, as in the past /i.e. in Rome during the first century B.C./ the systematic self-destruction of traditional groupings in favor of the... material self-interest of individuals has a shadow side: the end of emotional attachment to the community. This leads to the loneliness of individuals and to an increasing but unreal idealization of the concept of individual friendship" (David Engels 2012).

60 Even such an everyday event as a soccer match demonstrates the fundamental dualism of human action based on both competition and cooperation. The winning team is admired for its superior efficiency. In a feigned struggle for existence it has won, but it owes its victory to perfect cooperation, where successful interaction provides the members of the team with a special degree of spiritual satisfaction. Cooperation precedes the fight and is a conditio sine qua non.

61 By the twentieth century at the latest, the success of the new social order could also be demonstrated quantitatively, namely by comparing states that had taken the path of competition with those that refused to do so for ideological reasons. The latter patronized their citizens and forced them into a corset of uniformity. The socialist states, in which a politburo dictated to the population the right way to think and act, continued the tradition of feudal regimes. Just like these, they condemned the population to inaction and stagnation: the logical consequence of any uniformity

imposed from above. The figures speak for themselves. In 1988, shortly before reunification, West Germany's per capita gross domestic product was DM 36,200, while in the GDR it was less than half that amount (DM 14,000). West Germany proved to be a state in which the inventiveness of its citizens could develop freely.
The difference between the north and south of the still divided Korean peninsula is even greater. There, the ratio in average per capita income is about one for the North and ten for the South. For reasons of communist ideology, the North forbids private property as well as a free market (only now things slowly begin to change). Both prohibitions deter private citizens from investing their money because they justly fear that the state may confiscate it at any time. To this day, famine is a regular occurrence in the communist country; the standard of living does not exceed that of countries south of the Sahara. In contrast, South Korea has experienced a rocket-like rise since 1961, catapulting it to the same level as much older industrialized nations such as Italy and Spain. Since then, it enjoyed a free market economy, secure private property, regulated competition, and surprised the whole world because of the great success of its leading corporations. See Acemoglu 2012.
62 Kohei Saito (2023) continues to harbour such unrealistic ideas. See pos. 3361-64 of his book "Systemsturz" (english: Slowdown).
63 As an idealist, Marx strove to abolish all power of man over his fellows. Strictly speaking, his classless society amounted to anarchy - the abolition and end of domination. But Marx was at the same time a keen-eyed realist, so it was perfectly clear to him that no ruling class would voluntarily renounce its prerogatives. For this reason, Marx insisted on bringing about *the end of domination and violence by force: through the dictatorship of the proletariat*.
This radical self-contradiction persists to the present day. Marx is portrayed as an idealist with the intent to embellish his ruthless pragmatism. The real-existing communist systems of the former Soviet Union and present-day China sanctify Marx as an idealist who wanted to build a society without rulers and classes. But when it comes to realize that dream, all that remains is bloody dictatorship.
But with his strange doctrine Marx only confirms a historical rule. Whoever wants to eliminate the rule of man over man, including rule by the means of representative democracy, logically ends up with violence and dictatorship. Except in families, sects and family-like small structures, the leveling of all social differences and material advantages can only be imposed by force - and this is usually concentrated in the hands of a party, a politburo, a nomenclature.
64 If we continue this trend into the present day, where an industrial society based on the use of fossil fuels allows for the accumulation of wealth on a massive scale, the close connection between property and human inequality seems to be spectacularly confirmed. *According to a 2016 Oxfam study, just eight privileged individuals* - Bill Gates, Amancio Ortega, Warren Buffett, Carlos Slim Helú, Jeff Bezos, Mark Zuckerberg, Larry Ellison, and Michael Bloomberg - *currently possess the same wealth as 3.6 billion of the poorest people, which is half of the world's*

current population! Such a high level of material wealth and, at the same time, such a high degree of inequality existed never before. A highly successful industrialist like Elon Musk is taking the privatization of power and the evil of inequality to unprecedented levels. Even now (at the end of 2024), he is openly interfering in US politics.
Today's inequality surpasses all previous excesses in its extent because its foundation, material production, has also expanded in an unprecedented way. Both have grown exponentially: prosperity as well as inequality. It is, therefore, surprising that this evil, although it outshines all its predecessors, provokes comparatively little resistance. The Occupy Wall Street movement primarily mobilized the educated, urban segment of the population. The truly affected, that is millions of workers living in the Rust Belt of the United States, who were displaced from their jobs, were hardly interested. While they live in poverty, the latter is relative, as unlike in earlier times, their physical survival was never in question. They elected a populist president, Donald Trump, in the hope that he would improve their situation, but they did not launch a civil war like the uprisings born of hunger that regularly shook Europe between the 14th and 18th centuries.
65 However, this only lasts as long as there are no more than a few dozen members—and even then, the community tends to fall apart after a short time.
66 See Desmond Morris (2017): “in a behavioural sense, religious activities consist of the coming together of large groups of people to perform repeated and prolonged submissive displays to appease a dominant individual … The dominant individual is usually, but not always, referred to as a god … religion has proved immensely valuable as a device for aiding social cohesion.”
67 Harari (2024) p. 7. “While different people, nations or cultures may have competing beliefs and feelings, they cannot possess contradictory truths, because they all share a universal reality. Anyone who rejects universalism rejects truth.”
68 Rolf Kreibich (1986): "Since 1750, when there were about ten scientific journals in the whole world, the number of scientific publications has obviously increased tenfold every fifty years with great precision."
69 Ulrike Herrmann (2022) aptly and only seemingly paradoxically describes the role of unions when she states, "Unions are the saviors of capitalism."
70 But the economy is not a monolithic entity. While the manufacture of products generally requires a high degree of knowledge and skill, successful trade rather relies on persuasion and psychological influence, i.e. on theatrical talent. In extreme cases, factual competence, can be completely dispensed with. *Production and trade are therefore two fundamentally different parts of the economy*. Everyone knows in which area Donald Trump was socialized
71 Ray Dalio: Deng died on February 19, 1997, having transformed China almost beyond recognition. When he came to power, 90 percent of the population lived in extreme poverty; at the time of his death that number had fallen by more than half, and as of the most recent data is below 1 percent. From the start of his reforms in 1978 until his death in 1997, the

Chinese economy grew at an average rate of 10 percent a year, sextupling in size while experiencing an average inflation rate of just 8 percent… reserves grew from $4 billion to nearly $150 billion (inflation-adjusted to today's dollars, its reserves grew by over $250 billion)… Output per person has increased 25 times, the percentage of people living below the poverty line has fallen from 96 percent to less than 1 percent, life expectancy has increased by an average of about 10 years, and the average number of years of education has increased by 80 percent… the number of science, technology, engineering, and math (STEM) graduates that are coming out of college and pursuing tech careers in China is about eight times that in the US.

72 Although extreme poverty has been eliminated at an astonishing pace, "it cannot be ruled out that China's income inequality, which is the highest in the world, and the sub-proletariat of rural migrant workers living in miserable conditions will develop such political explosive power that it will shake Xi Jinping's regime, which appears so unshakeable to the outside world" (Münkler 2023).

73 Ray Dalio brings it to the point: When they are in a superior position, the Chinese tend to want a) the relative positions to be clear (i.e., the party in a subordinate position knows that it is in a subordinate position), b) the subordinate party to obey, and c) the subordinate party to know that, if it doesn't do so, it will be punished. That is the cultural inclination/style of Chinese leadership.

74 Francis Fukuyama is quite outspoken when he states: "A modernizing dictatorship can in principle be far more effective than a democracy in creating the social conditions that would permit both capitalist economic growth and, over time, the emergence of a stable democracy."

75 And it doesn't matter whether this messiah has a right-wing or a left-wing hue. Cf. Francis Fukuyama 2018: „Parties of the left have been losing out to nationalists for well over a hundred years, precisely among those poor or working-class constituencies that should have been their most solid base of support."

76 Fukuyama 2018: "Between 2000 and 2016, half of Americans saw no gains to their real incomes; the proportion of national output going to the top 1 percent went from 9 percent of GDP in 1974 to 24 percent in 2008."

77 Google, Facebook, Twitter, Amazon and Starlink are privately owned, but for several decades, the individuals leading them have wielded power equivalent to that of medium-sized nations. Elon Musk, for instance, boasts a personal fortune of over $200 billion, while in 2021, the tax revenues of the German state amounted to $354 billion. This comparison has multiple limitations, but it does highlight the actual power in the hands of a leading private entrepreneur.

One indication of Musk's significant influence is the fact that he is courted by leaders and heads of state worldwide, as if he were one of them. Even more significantly, we realize the extent of private power when we consider that Ukraine owes its survival as an independent state to this man. In the early days of the Russian invasion on February 24, 2022, Russian attacks on the infrastructure practically crippled the Ukrainian internet. Under these circumstances, centralized defense would have been impossible,

and Russia would likely have swiftly executed its plan to subdue Ukraine entirely. Musk prevented this by providing Ukraine with his tightly woven satellite network, Starlink. Communication channels between the central command and the front lines remained intact, enabling a centrally coordinated Ukrainian defense.
We may wonder what might have happened if this man's personal inclinations had leaned toward Russia instead. Musk has already made it clear that he would not approve the use of his satellites if Ukraine were to utilize the internet connection to reclaim occupied territories. The fact that Elon Musk uses his private power to exert substantial political influence and pressure even within his own country is no secret. X, the reborn Twitter, is allowing Donald Trump back on its platform. With his enormous power, Musk elevates himself to oligarchic status thus undermining democracy.
78 The figures in this section come largely from Steven Pinker's book *Enlightenment Now*, where the author summarizes the achievements of the Fossil Era.
79 Such figures do not invalidate the dark side of a development that Jean Ziegler warned about. They only indicate that material development has on the whole taken a positive direction. Today, hunger has not been eliminated, it is still a threat in underdeveloped countries, but the problem of fossil civilizations is not hunger, but the exact opposite, namely overfeeding with calories, which is responsible for a new widespread disease: obesity. In 2014, 850 million people suffered from malnutrition, while around 2.1 billion suffered from overweight.
80 In London around the middle of the eighteenth century, only one child out of three survived to the age of ten. "... fifty-nine per cent of all children born in London died before reaching the age of five, sixty-four per cent before reaching ten" (Will Durant).
81 https://www.oxfam.org/en/press-releases/just-8-men-own-same-wealth-half-world. Cf. Tim Jackson (2017): "The poorest half of the world's population earn less than 7 per cent of the total income. The top 1 per cent by contrast earn about 20 per cent of global income and own almost half of global wealth."
82 It is the special merit of Rolf Kreibich's "Wissenschaftsgesellschaft /Knowledge Society/ to have clearly identified the destructive effects of the new social system back then - in 1986! - at a time when business and politics were still dreaming of eternal progress.
83 Maja Göpel: "Global raw material extraction alone has increased by more than fifty percent since the turn of the millennium and is twice as high as it should be for the sustainable use of our planet's resources. Metals, non-metals, fossil fuels or biomass - everywhere the curves are going up. The same is true for global consumption of water and energy."
84 "Nuclear weapons may well have made deliberate war less likely, but the complex and tightly coupled nuclear arsenal we have constructed has simultaneously made accidental war more likely." Carl Sagan quoted in Schlosser 2013. In 1983, the world narrowly escaped a supposedly retaliatory nuclear strike by the Soviet Union. Cf. https://de.wikipedia.org/wiki/Stanislaw_Jewgrafowitsch_Petrow.

85 Francis Fukuyama 2018: “The extreme example of what can happen absent national identity is state breakdown and civil war.”
86 Cf. Fukuyama 2018: „If we do not agree on a minimal common culture, we cannot cooperate on shared tasks and will not regard the same institutions as legitimate; indeed, we will not even be able to communicate with one another.“
87 Goethe did not want to admit this when he wrote his Theory of Colors. As a poet, he did not want to forego sensations and feelings. But even our immediate sensory impressions have no place in the natural sciences if the data from instruments prove to be more reliable.
88 This is what the German-Iranian essayist Navid Kermani overlooks when he reminds Germans of their grand tradition of cosmopolitanism.
89 This is not really a new phenomenon. When the survival of the community was at stake, earlier societies dealt quite ruthlessly with individuals who were seen as nothing more than a burden. In the poorest regions of Japan, the old (especially old women) were sent to the mountains to die, because the food was not enough for both - the newborn and the old. In Europe, until the Industrial Revolution, beggars were locked out of the cities to starve. People did this with a guilty conscience because religion had made all people equal before God, but they did it anyway.
In today's secular society, all values beyond knowledge and skills have been increasingly dismantled. A person who is ignorant, incapable, or merely old, so that his knowledge is no longer useful, will soon be aware that he loses his place in society. *In our modern societies of personal knowledge and ability, the fear of no longer having a place is rampant.* The solution our society has found for the elderly is unique in all history. If in earlier times they lived in the family until their death, today they are shunted off to institutions of custody. Nor seems there to be any other solution. The young would not be able to use their abilities in the right place at any moment if they had to drag the old along with them until the end. This relinquishment - let us say more precisely: this cruelty - is inherent in a radical privatization of power: the individual sees himself called upon to suspend even biological ties.
90 High technical intelligence is a precious commodity. That's why it's precisely the best-earning people who will have to work more rather than less. I therefore cannot agree with Paul Raskin when he says: “The contemporary way of life depends on the abundance of a once scarce commodity: free time… The social labor budget - and therefore the necessary work-time per person - has steadily decreased.” To me this rather seems to be a temporary and passing phenomenon. The reduction of work-time is only possible if and as long as a state is at the forefront of the technological race between nations.
91 Interest and dividends must always be mentioned in the same breath, because the one may fall towards zero or even below zero, and then it will be the other to which the wealthy must switch in order to continue earning without performance.
92 Just as great havoc as within states has been wreaked by unearned income between them. With the mediation of the IMF, loans were virtually forced upon Third World states (or rather upon the dictators who ruled

them). Often inflated by interest to several times the amount originally borrowed, the debt had then to be repaid by selling off available resources and imposing immense hardship on populations not responsible for it. Cf. David Graeber. “I launched into historical background, explaining how, during the '70s oil crisis, OPEC countries ended up pouring so much of their newfound riches into Western banks that the banks couldn't figure out where to invest the money; how Citibank and Chase therefore began sending agents around the world trying to convince Third World dictators and politicians to take out loans (at the time, this was called "go-go banking"); how they started out at extremely low rates of interest that almost immediately skyrocketed to 20 percent or so due to tight U.S. money policies in the early '80s…”

93 In this sense, I define capitalism as a system that tends to substitute parasitism for performance. And I agree with David Graeber (2012) when referring to classic China he distinguishes between a market economy and capitalism. „The Confucian state may have been the world's greatest and most enduring bureaucracy, but it actively promoted markets, and as a result, commercial life in China soon became far more sophisticated, and markets more developed, than anywhere else in the world. This even though Confucian orthodoxy was overtly hostile to merchants and even the profit motive itself. Commercial profit was seen as legitimate only as compensation for the labor that merchants expended in transporting goods from one place to another, but never as fruits of speculation. What this meant in practice was that they were pro-market but anti-capitalist… From this perspective, China was for most of its history the ultimate anti-capitalist market state… merchants were driven by greed and basically immoral; yet if kept under careful administrative supervision, they could be made to serve the public good. Whatever one might think of the principles, the results are hard to deny. For most of its history, China maintained the highest standard of living in the world - even England only really overtook it in perhaps the 1820s, well past the time of the Industrial Revolution."

94 This kind of parasitic exploitation was most clearly recognized by Silvio Gesell in Germany and Henry George in the United States. Helmut Creutz has added considerable theoretical depth to these insights, and I believe I have also made a small contribution to them. David Graeber has pointed out the historical dimension of parasitic enrichment. At present, it is above all the U.S. economist Michael Hudson who takes a clear, even if somewhat radical position. But mainstream economic science studiously ignores these voices. Even Maynard Keynes' remark, quoted a thousand times, that we have more to learn from Silvio Gesell than from Marx, has not been able to produce any change of mind.

95 When selling part of their substance in the form of shares to investors, to whom they then distribute dividends, the same process of indebtedness to private individuals takes place in an analogous manner.

96 To this day, the classic account of this mechanism is The Money Syndrome by Helmut Creutz. An author who describes with equal acumen the same transfer of wealth for the United States is Michael Hudson. Creutz and Hudson are both outsiders. By contrast, Thomas Piketty enjoys the

advantage of being taken more seriously as a recognized member of the economic guild. But his findings fall short of those of the first two authors. Piketty advocates progressive taxation, but this alone is by no means sufficient, because it makes no distinction between wealth acquired with or without personal effort.
97 This is an exponential progression that can be calculated exactly. The standard example repeatedly found in the relevant writings concerns a saver who, in the era of Emperor Augustus, would have invested a modest sum of a few ounces of gold at two percent interest and whose heirs would then withdraw this deposit in our time after it had grown uninterruptedly by interest and compound interest in the intervening two thousand years. It turns out that no bank would be large enough to hold the accumulated wealth. The heir could not only claim a right to our entire globe consisting of pure gold, but as a bonus he would get a dozen more gold planets on top.
98 I am not talking about speculation, e.g. the price gains of shares, although its effects are much more eye-catching. Insofar as speculation is a pure game of chance, the profit of one speculator is always paid for by the loss of another. However, if the losses - as is usually the case - mainly affect the poorer players, then illegal insider knowledge is usually involved, i.e. an illegal form of private enrichment. Here, I am only considering the legal transfer of wealth from the bottom to the top. This alone is quite sufficient to disintegrate a society, even without the need for illegal machinations.
99 John Maynard Keynes saw one of the main economic evils in the unearned income of rentiers. But, as already said, debt in and of itself is not an evil but indispensable. It only leads to unearned income if the wealth of investors is increased instead of merely preserved.
100 Figures quoted from Gomart 2024.
101 Francis Fukuyama 1992: “Any state that hopes to maintain its political autonomy is forced to adopt the technology of its enemies and rivals.”
102 Ray Dalio: The renminbi is the only fiat currency to be chosen as a reserve currency because of its fundamentals. China’s potential is sizable. Its shares of world trade, world capital flows, and world GDP are roughly equal to the United States’. China has managed its currency to be relatively stable against other currencies and against goods and services prices, it has large foreign exchange reserves, it doesn’t have a 0 percent interest rate and a negative real interest rate, and it isn’t printing and monetizing a lot of debt.
103 Ray Dalio: Some people imagine that China could achieve broad military superiority in five to 10 years. I don’t know if that is true.
104 If the United States shuts off Chinese access to essential technologies, that would signal a major step up in the risk of a shooting war.
105 Cf. Gero Jenner „Die Arbeitslose Gesellschaft“ 1997. New edition titled „Nach der Coronakrise – keine Arbeitslosigkeit durch Auslagerung und Automation“ Amazon Kindle.
106 Of course not alone. The social willingness to cooperate is an equally important factor. Constant internal confrontation can sabotage technical superiority.

107 Münkler distinguishes between horizontal competition between nations for greater economic and military power (*Vegetius model*), which at best leads to a temporary equilibrium but but regularly ends in economic competition and an arms race, from a vertical one (the *Dante model*), where a credible hegemon with the appropriate power at the top of the state hierarchy temporarily replaces inter-state anarchy with an order recognized by all. The third, or *Comte-Spencer model*, attempts to replace war with economic interdependence - as if economic competition did not create imbalances. From a historical perspective, only the first model of horizontal competition has prevailed in the long term, for two reasons, both of which can be attributed to unpredictable chance. Inventions can upset the balance between human societies at any time and have done so repeatedly – this has been the case since the invention of agriculture. Another unpredictable factor is the strength of will of particular personalities. Napoleon undermined the balance institutionalized by the Peace of Westphalia by confidently disregarding the rules of the game laid down there. War theorist Carl von Clausewitz commented: "Since Bonaparte, war has taken on a completely different nature, becoming first on one side, then on the other, a matter for the whole people..."

108 These figures were given by Japan's JSTV in a February 10, 2019 broadcast. SIPRI (http://www.sipri.org/yearbook/2013/files/sipri-yearbook-2013-chapter-6-overview) comes up with a higher figure: "At the beginning of 2013, eight states possessed around 4400 operational nuclear weapons. Nearly 2000 of these are kept on high alert. Counting all nuclear warheads - ready warheads, spare warheads, warheads in active and inactive storage, and intact warheads scheduled for dismantlement - the United States, Russia, the United Kingdom, France, China, India, Pakistan, and Israel together possess about 17,270 nuclear weapons."

109 Nuclear-equipped submarines can take up positions in the immediate vicinity of the enemy's national territory, e.g. off the U.S. East Coast. In this case, the warning time is close to zero. For this reason, Vladimir Putin warned the West not to position its missiles in Ukraine. In this case, too, the warning time of a first strike in Moscow could be reduced to less than five minutes.

110 The prospect that the collective fate of mankind will soon have to be placed entirely in the hands of machines instead of humans is probably the most depressing of all future perspectives, because machines are indifferent to our fate. Add to that the fact that machines have always been fallible, then you know what existential risk we are exposed to today. In the past, we have had to experience this fallibility several times. Even a company as large as Boeing had a faulty control system implanted in one of its airplanes (Max 737). In two successive crashes, close to three hundred people were killed. This should be a serious warning: *overwhelmed and stunned by our own technical "progress", we have placed our fate in the hands of subhuman machines, in those of artificial intelligence*. Nevertheless, the will to put an end to this madness seems to be on the retreat. Donald Trump, an ex-president of the United States after all, could even ask. "Nuclear weapons? If we have them, why don't we use them?"

111 See https://de.wikipedia.org/wiki/Stanislaw_Jewgrafo-witsch_Petrow.
112 Ray Dalio repeatedly expresses this fact in his quoted book in exactly the opposite way and, in my opinion, misleadingly. He talks about rich countries borrowing money from poor countries, as if it were not the latter that were looking for a safe haven for their investments. The richer countries get into debt by borrowing from poorer countries that save more – that is one of the earliest signs of a wealth and power shift. This started in the United States in the 1980s when it had a per capita income 40 times that of China's and started borrowing from the Chinese who wanted to save in dollars because the dollar was the world's reserve currency.
113 See Ray Dalio: The renminbi is the only fiat currency to be chosen as a reserve currency because of its fundamentals. China's potential is considerable. Its share of world trade, world capital flows, and world GDP are roughly equal to those of the United States. China has managed its currency to be relatively stable against other currencies and against goods and services prices, it has large foreign exchange reserves, it does not have a 0 percent interest rate and a negative real interest rate, and it is not printing and monetizing a lot of debt.
114 With regard to the Euro he says: The euro… is a weakly structured fiat currency made by smaller, uncoordinated countries with weak finances that are tenuously held together by a highly fragmented currency union… Dalio defines "fiat currency" as a currency that is not linked to gold or other precious metals. However, as long as the euro remains linked to the economic performance of the Union – i.e., in times of growth, additional money is fed into the real economy by the central bank and withdrawn again in times of contraction – the currency cann remain "hard." External debts cannot be settled in gold, but they can be settled with a country's own economic production.
115 Unlike Ulrich Menzel, Münkler sees the position of the US as a hegemon and peacekeeper as being threatened at least as much by its foreign policy mistakes as by the erosion of its economic and military supremacy. "In no war waged by the US worldwide has the image of Western supremacy been so severely and consequentially damaged as in the Vietnam War, also and especially in Europe, and here above all in West Germany ... For some, these were regrettable but unavoidable violations of Western values that occurred repeatedly but did not invalidate Western values; for others, geostrategically guided power politics was the real purpose of the Western alliance, and the narrative of values was merely the ideological veil under which the real purpose of the alliance system of US policy was to remain hidden ... As the US squandered its reputation, it became increasingly costly for it to exploit the "unipolar moment" until it finally became unaffordable."
116 The great British historian (Arnold Toynbee) acknowledged the United States to have largely been a benevolent hegemon. Whether he would still have said that after the war in Vietnam and the invasion of Iraq under Bush Junior is, of course, an open question. For here we recognize the potential fatality that goes hand in hand with the role of hegemon. The strongest nation is always tempted to exploit its superiority by dictating

rules to the others that humiliate them in their self-respect or exploit them ruthlessly in material terms. The U.S. has been a benevolent hegemon toward Europe to this day (we rarely thanked them for it). But towards the states of South America and other "backyards", their private corporations often acted with utmost ruthlessness. As the Swiss political philosopher Jean Ziegler repeatedly points out in his books, the West has lost much of its credit in large parts of the world.

117 The same hypocrisy can be observed here as with free trade. So long as a state is unable to cope with international competition, it unabashedly - and quite rightly - pursues protectionism. As soon as it has become competitive on the world market, it immediately changes its ideological shirt and becomes a champion of free trade.

118 Kohei Saito (2023) has also pointed out the two alternatives. The first: "The principles of the free market and free democracy are abandoned and a centralised dictatorship is established, which may push for more "effective" and "egalitarian" climate protection measures. Let's call this scenario Climate Maoism." He calls the second alternative "degrowth communism". In late notes by Karl Marx, he found a certain disappointment with the ruthless treatment of nature brought about by the industrial revolution. However, the attempt to portray Marx as a discoverer and propagator of degrowth is no less fantastic than when states in the past endeavored to understand the teachings of Christianity as a call to violence (against pagans or other religious communities). Saito himself basically knows better: "Degrowth with Marx? Is he /Saito/ still in his right mind?"
Degrowth has nothing to do with Marxism - as we know it from Marx and from actually existing types of socialism - but it is certainly compatible with humane communitarianism.

119 Social order, that is intersubjective ideologies, religions, narratives, myths, etc., cannot be proven scientifically, as it arises from human freedom. This point is emphasized by Harari (2204) as well. Conversely, it very often happens that "what is" - i.e. scientifically gained insights - contradicts “what should be” that is the dogmas of religions, ideologies and myths. Then totalitarian states tend to suppress scientific truths, democratic ones can be shaken by them.

120 Similar critical statements can be found in the works of William James, Will Durant and Lewis Mumford.

121 This observation does not change the fact that all our knowledge has arisen historically and thus emerged from subjective sources, as the science historians Thomas Kuhn and Jürgen Renn note. “Even the most fundamental aspects of the classical scientific paradigm – evidence, experiments, data, objectivity, rationality – have turned out to be profoundly historical in nature” (Renn 2020). I believe that this statement needs to be qualified to a certain extent. The independently and in this sense “objectively” existing facts of nature can indeed be described using different and thus “subjective” conventions (just as human groups use different languages to describe nature), but these conventions must fit nature if we want to achieve the desired results.

122 Only the fact that we consider it useful to uncover the laws of nature at all arises from our subjective will. This can be seen from the fact that

for most of history, it was considered much more important to take care of one's personal salvation and one's God-given duties towards one's fellow human beings. In this view, measuring natural processes seemed superfluous, if not sacrilegious. This explains the failure of Roger Bacon in the 13th century.

123 In his book “Nexus”, the historian and thinker Yuval Noah Harari summarized natural and cultural knowledge in the term “information” and then contrasted the two as “truth” and “order”. Truth (knowledge of nature) serves to represent objectively existing facts, while order (cultural knowledge) is an intersubjective reality created by people. Order therefore has only intersubjective validity. It serves to regulate interpersonal relationships.

124 The philosopher Wilhelm Dilthey and the physicist Erwin Schrödinger come to the same conclusion. “This context differs from the causal context of nature in that it [...] generates values and realizes purposes. Historical life creates. It is constantly active in the creation of goods and values [...]” (Dilthey, 1970 (1905); 1).

“As a species, we are in the process of development and we, as those currently living, form the vanguard of generations; every day in the life of a man therefore represents a small part in the evolution of our species, an evolution that is still in full development... As stated before, only those changes enter consciousness that are still in the stage of practice before they are transformed, much later, into a hereditarily fixed, well-acquired and unconscious possession of the species. In short, consciousness is an occurrence within the zone of evolution. This world illuminates itself only where and insofar as it develops and creates new forms.” (Schrödinger, 1967; p. 106). Henri Bergson speaks of “Évolution créatrice”.

125 It does not matter whether we ascribe any qualities to the measurable events that are characteristic of direct perception. “For Schrödinger, too, it is clear that there is no other definition of the physical [being] than through the medium of [laws] and cannot be. That electrons 'really' exist and that they follow certain paths: this, as Schrödinger himself once explicitly stated, can only mean that the laws we derive from experiments with cathode rays and other observations apply. There is no other physical 'reality' for us than that which is conveyed to us through physical measurements and the laws based on them and which are therefore 'objective'” (Cassirer, 1957).

126 Our everyday observations as well as the more systematic observations of scientists lead us to certain repetitions and regularities in the world. Night always follows day; the seasons repeat themselves in the same order; fire always feels hot. The laws of nature make nothing but statements that express these regularities as precisely as possible. (Carnap, 1974; p. 11).

127 Cf. Basham: "... war was generally accepted as a normal activity of the state, even by Buddhist kings. The doctrine of non-violence, which in medieval India had become very influential and had made most of the respectable classes vegetarian, was never at this time taken to forbid war or capital punishment. It was only in modern times that Mahatma Gandhi reinterpreted it in this sense."

128 Ulrich Menzel (2023) is undoubtedly right when he states: “Pension-based systems are... perfectly capable of setting technical and artistic development in motion, forming advanced civilizations, and – compared to Europe - achieving excellence in the production of luxury goods. However, these do not lead to freedom and capitalism, but to increasingly elaborate forms of violence-based rent economies.” But at that time, there was no viable way out for mass societies.
129 However, until 2011, China was never such an unyielding dictatorship insisting on uniformity as the Communist Party under Mao and, more recently, again under Xi Jinping. The governor-literates enjoyed a fair amount of freedom in their respective provinces and were also largely dependent on local forces for the usual administrative tasks.
130 Hinduism had no problems with the existence of other religions, provided they could be spiritually integrated. Christ or Mohammed were simply seen as avatars of certain Indian deities. However, if the monotheistic religions resisted this appropriation, then Hinduism's tolerance also came to an end. Islam never allowed itself to be appropriated in this way and fought Hinduism, which was not considered a “religion of the book”, with extreme brutality. “The Muslim conquest of India," says the great American historian Will Durant, "is probably the bloodiest event in world history. It is a disheartening story because it conveys the obvious insight that civilization is always at risk." Sultan Ahmad Shah is said to have celebrated for three days every time the number of Hindus slaughtered in one day exceeded twenty thousand.
131 In his monumental work "The Protestant Ethic and the Spirit of Capitalism," Max Weber points out that China would never have developed capitalism on its own. Under the moral guidance of the literati, there could never have been legal security for traders and producers. This, however, was the prerequisite for the emergence and existence of the new economic order emerging in Europe.
132 For the primitive, the universe as a whole is a moral or social order, governed not by what we would call natural laws, but by laws which we must call moral.... The recognition of this view... is, I believe, one of the most important steps towards the right understanding not only of what is sometimes called primitive mentality, but also of all those phenomena which are vaguely grouped around the concept of religion. (Radcliffe-Brown, 1979; p. 130)
133 Arthur Schopenhauer made this mistake when he equated the moral world of man with the cosmos of external nature. In both spheres the will is supposed to rule: “Everyone finds himself as this will, in which the inner essence of the world exists, just as he also finds himself as the cognizing subject, whose conception is the whole world, which insofar has an existence only in relation to his consciousness, as its necessary bearer. In this twofold view, everyone is therefore the whole world itself, the microcosm, and finds both sides of it completely within himself. And what he thus recognizes as his own essence, the same exhausts the essence of the whole world, the macrocosm... (Schopenhauer, 1818 (1949); p.193.)
134 In his book "Grüne Lügen” (The Lies of the Greens), the German chemist was referring, among other things, to the tendency of the green

party to target almost exclusively the poisoning of the air by CO2. Schmidt-Bleek rightly insisted that the exponential pollution of water and soil is less immediate but just as consequential in its long-term effects.
135 Rolf Kreibich's demand: "In principle, all new product and technology developments must be put to the test of impact assessment and evaluation" seems unrealizable under the given circumstances.
136 Prof. Schmidt-Bleek already revealed this fact. "Given the testing capacities available in (West) Germany, one would have to estimate about 400 years for the originally planned testing of the chemicals already on the market. However, this did not take into account that many new chemicals would enter the market during these 400 years."
137 No wonder that growth has turned into an imperative. “When demand stalls, for instance, unemployment typically rises, tax revenues typically fall and debts rise. These impacts tend to create a ‘growth imperative’” (Tim Jackson 2017).
138 The European Chemicals Agency estimates that there are more than 144,000 man-made chemicals. The U.S. Department of Health and Human Services assumes that 2,000 new chemicals are released every year. Chemist Friedrich Schmidt-Bleek suspects "that at least 300,000 substances and whole cocktails of various, continually changing compositions are released into the outside air, soil and water." For production volume, see:
https://ec.europa.eu/eurostat/statistics-explained/index.php/Chemicals_production_and_consumption_statistics.
139 “The maximum available ‘carbon budget’ between now and the end of the century is only 350 billion tons. At the current rate of emissions, this budget would be exhausted within a decade” (Tim Jackson 2017). The trend has become particularly acute recently, as more than half of the CO_2 emissions entered the atmosphere after 1990.
"What is particularly bizarre for climate protection is the fact that most countries even subsidize the burning of fossil fuels! In the annually published World Energy Outlook, one can read that annual subsidies amount to several hundred billion US dollars. For the most part, the aim is to make fossil energy, especially oil, significantly cheaper for domestic consumption than the official reference price in the respective country" (Ernst Ulrich v. Weizsäcker).
Even Marxists are now recognising the problem. "Of course, there are attempts to reduce emissions in all countries, but these are insufficient, which is why it is said that we can expect an increase of 3.2°C at the end of this century." And: "There is therefore no realistic prospect that the target of 2°C can be even approximately achieved through sufficient absolute decoupling /of production and emissions/." (Kohei Saito, 2023).
140 “The throwaway society is not so much a consequence of consumer greed as a structural prerequisite for /its/ survival. Novelty has become a conscript to and an agent for economic expansion” (Tim Jackson 2017).
141 Theoretically, there could be catching devices that collect the garbage particles one by one, bring them back to earth or let them burn up below 400 km. The Swiss company ClearSpace wants to make big money on this project. But the already extraordinary amount of energy required for each

space launch would multiply if such a space cleanup were to be pursued seriously. More and more fossil fuels would then have to be used for this purpose alone, while the imperative to save the climate demands that we limit this consumption as quickly and as drastically as possible. How illusory such disposal actually is can be shown by its costs. *120 million Swiss francs would currently have to be spent to remove even a single particle*.

142 Some see virtually costless and radiation-free nuclear fusion as the solution to all the problems that beset us. It may not be unrealistic to assume that one day we will succeed in generating energy in this way. However, it seems very likely that this would be the greatest of all conceivable disasters. Our attack on nature would then really begin as free energy would allow us to exploit nearly free of cost the last corners of the earth and the remotest depths of the seas. The run of mankind on the last still existing non-energetic resources would be unleashed at the very moment we have Pandora's box of nuclear fusion at our disposal.

143 “If the cost of toxic waste dumps were subtracted from the value product of the chemical industry, we might discover that we have already attained zero growth in value from that sector of the economy.” (Daly 1996).

144 Cf. "Atlas der Globalisierung" (2019).

145 (https://www.gmx.at/magazine/panorama/elefanten-muelldeponie-tiere-schuetzen-moechte-36515302)

146 Quoted from Friedrich Schmidt-Bleek 2014.

147 This topic is masterly dealt with by French sociologist Gérald Bronner: *A l’aussault du réel* (2024).

148 But the mystical tendency is not absent altogether even among physicists. Albert Einstein explicitly recognized the beauty of the simplicity and elegance of some formulas and even attributed the simplicity of fundamental physical laws to a divine will. My thesis, according to which subjective cultural knowledge always stands in the background of all objective natural knowledge, is further reinforced by this.

149 Until the 18th century, famines depopulated entire landscapes all around the world. "Between 1692 and 1694, while Louis XIV, the Sun King, indulged with his mistresses, 2.8 million French people starved to death – 15 percent of the population. In the following year, 1695, famine struck Estonia, where it killed one-fifth of the population. In 1696, it was Finland's turn, where between one-quarter to one-third of the population perished. Scotland suffered a severe famine between 1695 and 1698, with some districts losing up to twenty percent of their population," noted Israeli historian Yuval Harari. These are just randomly chosen examples of a devastating scourge that regularly afflicted humanity. In India and China, it was not uncommon for between five and ten percent of the population to fall victim to famine. Right until the 20th century, this was still happening in the Far East. Between 1958 and 1961, during the "Great Leap Forward," between 20 to 50 million people died from starvation. Of the total 70 million people that hunger killed in the 20th century, 80 percent were victims of forced collectivization and totalitarian planning in communist regimes. In North Korea's Stone Age communism, as late as 1996 to 1997, two million people died due to the lack of food!

150 Even if food supply was sufficient, there was a severe lack of jobs for the younger generation.
151 William E. Rees (2019) - together with Mathis Wackernagel the inventor of the ecological footprint - has calculated that humanity should not exceed the two billion mark at current resource consumption levels if it wants to operate sustainably. Otherwise, it would need five or more planets - but that would be unsustainable without ecological collapse.
152 It is a different matter that by now the party would once again be happy to compensate for the ageing population by having more children. But women are no longer playing along.
153 In the United States, an excellently functioning public transport system of railroads and streetcars was deliberately destroyed after 1929 to make way for the automobile industry (Kemfert 2020).
154 "On average, each car rests unused for 23 hours a day" (Kemfert 2020).
155 The providers of these cars are private companies charging customers with a usage and maintenance fee plus automatically calculated travel costs – as they do now with scooters or bicycles. Accordingly, the vehicles are no longer individual property. It would indeed be a major social and environmental advance to eliminate personal ownership of cars altogether - just as public transportation may be owned by the state or by private companies. This is not a vote for nationalization; on the contrary, competing private companies should seek to offer this fleet of cars, with government making sure that their total number be adequately reduced and prices for their use kept to a minimum through competition.
156 Is such a drastic reduction in the automotive fleet realistic? It assumes that traffic can be evenly distributed over 24 hours so that the existing vehicles are constantly in use. This assumption does not align with reality because most of the traffic occurs at the beginning and end of a workday. The minimum number of cars is determined by the number of employed individuals whose workplaces are not near their homes or cannot be reached quickly or conveniently by public transportation. Currently, there are about 45 million people employed in Germany. Assuming the worst-case scenario where only a tenth of them use bicycles or public transportation to get to work, Germany would still need 35 million cars during peak hours.
However, it is not unreasonable to assume that on average, three people who live relatively close to each other, could share the same car to commute to work. In that case, we would only need a total of one-third of the vehicles, which is roughly 15 million cars.
For the sake of environmental conservation, it would also be feasible to stagger office and factory start times at the beginning and end of the day, where one-third begins work at seven, another third at eight, and the final third at nine (similarly staggered for closing times). In this scenario, a fleet of 5 million cars would be sufficient to handle the morning and evening rush-hour traffic.
157 The advantages are evident. Only one-tenth of the parking spaces would be needed because all vehicles are in use almost around the clock (parked in designated large garages at night). Urban spaces currently

occupied by parking lots and parking structures could be used for greenery, playgrounds for children, and other amenities. The resource burden from car manufacturing would be reduced by a whopping ninety percent, and daily energy consumption in transportation would also be significantly reduced, provided that three or more people use the same car or small buses to commute to work at the beginning and end of the day.
Under such conditions, transitioning to electric cars would not pose a hurdle in terms of social injustice. The cost would be borne by the entire population, spreading the burden evenly. It also makes sense to gradually increase the cost of fossil fuels in step with this transition so that eventually, it is in everyone's interest because owning a car becomes more expensive than renting one and ordering and using it on a short-term basis. To prevent the system from being abused by those who can afford to reserve cars for themselves continuously, a basic quota of driving kilometers should be available to everyone at minimal rates (expanded for professional use). Beyond that, driven kilometers should be progressively more expensive to encourage the use of public transportation for longer distances.
158 It should be added that the automotive industry, especially the German one, excelled in producing engines powered by fossil fuels. Electric cars are technologically less demanding. Therefore, there is justified concern that this transition may not provide advantages to a leading sector of the German economy but instead lead to its decline and the destruction of many jobs.
159 "It is not the case that renewable energies are used as a substitute for fossil fuels, they are just an additional supplement for the constantly growing energy demand due to economic growth," says Kohei Saito, who is much more pessimistic and also refers to the corresponding figures: "According to the International Energy Agency IEA, the number of electric vehicles will increase from the current two million to 280 million by 2040, but the global carbon dioxide emissions that would be reduced as a result are estimated at only 1 per cent." However, reducing - degrowth - the car fleet to a tenth would result in much better figures.
160 In this regard, the prophetic Kenneth E. Boulding stated as early as 1966, "I suspect that we... in our wasteful society have underestimated the benefits of a longer lifespan, and that this could well be one of the areas where the price system needs correction through government-sponsored research and development."
161 Cf. https://en.wikipedia.org/wiki/Centennial_Light.
162 Refer to Erich Fromm (2000): "In the past, people cherished and took care of everything they possessed, using it for as long as possible. They bought things to keep them. The motto was: 'Old is beautiful!' Today, people buy things to discard them. The motto is 'Consume, don't preserve.' Whether it's a car, a piece of clothing, or a technological device, they purchase it, and after using it for some time, they grow tired of it and eagerly seek to acquire the newest model... the motto is: 'New is beautiful!'"
163 Cf. https://de.wikipedia.org/wiki/Kaufen_f%C3%BCr_die_M%C3%BCllhalde

164 Additionally, many products are expected to deliver more than just the advertised features - they also serve as status symbols, as so many people in our time define themselves through consumption. More than a century ago, Thorstein Veblen already referred to this phenomenon as "conspicuous consumption."
165 So, it may only be true with regard to the past when Naomi Klein (2016) and economist Nicholas Stern equate the reduction of emissions resulting from an economic downturn with the worst economic catastrophes: "... a decline in emissions by 8 to 10 percent year on year is practically unprecedented since we began powering our economies with coal. In fact, reductions of more than 1 percent per year have historically only been associated with economic recession or upheaval, as economist Nicholas Stern articulated in his 2006 report for the British government... It was only immediately after the Great Stock Market Crash of 1929 that emissions in the United States dropped by more than 10 percent annually for several consecutive years, but that was the worst economic crisis of modern times."
166 However, service-based economies are departing from the growth trajectory, as Tim Jackson (2017) observes: "... the returns on service-based investments are lower than those in manufacturing, for a very specific reason: they resist increases in labor productivity... Ultimately, Baumol and Nordhaus are aware that an economy insisting on preserving (or even expanding) its service sector is heading towards zero growth... When demand, for instance, stalls, unemployment typically rises, tax revenues fall, and debt increases, all of which negatively impacts international competitiveness! These effects tend to lead to a 'growth imperative.'"
167 The model of this farewell to growth and a disposable society is simple and comprehensible to everyone, but its implementation will meet with fierce resistance as it requires a fundamental restructuring of the existing economic order and geopolitical reality. *Growth mania* may be corrected by better insight and even be removed altogether through the awareness of obvious ecological hazards (cf. Miegel 2010). However, this does not apply to *growth compulsion*, because this emanates from existing institutions and grown economic habits and structures. I agree with Tim Jackson in England and Ulrike Herrmann in Germany that the growth imperative is inherent in the capitalist economic system. It is therefore much more difficult to eliminate.
168 However, this is also a conditio sine qua non because the slump in industry's production naturally means that its research budget is reduced to a minimum, if not to zero, while the state lacks money for defense due to steep drop in taxes.
169 Cf. Gero Jenner “Creative Reason”.
170 The logically irresolvable contradiction of God's postulated omniscience and omnipotence had tormented theology from Augustine to Martin Luther and Calvin. Regarding free will, Augustine followed a rather meandering path. In his book *De libero arbitrio* (about free will), he had still taken the side of freedom against Manichaeism, but later he changed his stance. In his later doctrine of grace, expressed in a letter he wrote in 397 to Simplician (*De diversis quaestionibus ad Simplicianum),*

Augustine emphatically denies that man could by his own force achieve what is good or avoid what is evil. In *De dono perseverantiae* he takes the same position: We will, but God "works the willing in us". (2010: 244) In his book on freedom, *De servo arbitrio*, Luther took a position that was quite similar to that defended later on by Calvin. "De servo arbitrio argued that if God is omnipotent He must be the sole cause of all actions, including man's; that if God is omniscient He foresees everything, and everything must happen as He has foreseen it; that therefore all events, through all time, have been predetermined in His mind, and are forever fated to be. Luther concluded, like Spinoza, that man is as 'unfree as a block of wood, a rock, a lump of clay, or a pillar of salt'. More strangely still, the same divine foresight deprives the angels, nay, God Himself, of freedom"… But Luther and Calvin argue in a different way: Luther says that "the future is determined because God has foreseen it and His foresight cannot be falsified; Calvin reverses the matter, and considers that God foresees the future because He has willed and determined it"… "We shall always find it hard", concludes Will Durant in his report on John Calvin, "to love the man who darkened the human soul with the most absurd and blasphemous conception of God in all the long and honored history of nonsense."

171 Therefore, the great science theorist Karl Popper (1980) can be only partly right with the following remark: "One can sometimes hear that the movements of the stars obey invariable laws, while the fall of a dice is random... In my view, the difference lies only in the fact that we have been able so far to successfully predict the motions of the planets, but not the single result of a throw of the dice... There are cases in which predictions prove to be unsuccessful... In such cases it can happen that we consider it hopeless to ever find a satisfying law. But it is not probable that we will ever give up the attempt to do so, unless the problem does not interest us very much, - which may be true, for example, if probability predictions satisfy us. In no case, however, we can assert with absolute certainty that there can be no laws in a certain area ... I speak of chance when our knowledge is insufficient for predictions." Here Popper finds himself - for once - in contradiction to himself, because he resolutely opposed historicism, i.e. the transfer of determinism to man and history.

172 His colleague Lüder Deecke (2012) comments on this: "Gerhard Roth, who worked predominantly on salamanders, is trying to persuade us to give up responsibility... Another neuroscientist, Wolf Singer, an expert of the visual system... is of the opinion that the principle of responsibility of man is untenable, for in the brain there is no leadership... Wolf Singer draws extensive conclusions for our legal system from his dubious premises, he pleads for the abolition of responsibility."

173 In "Creative Reason", I deal more extensively with these arguments.

174 The Polish philosopher Leszek Kolakowski (1973) expresses this inborn tendency most convincingly: "The unknown world can be a source of fear, but the source of that fear can also be the excessively familiar world with a well-known course that we ourselves have planned. In the things we have subjugated over centuries of dramatic effort, we can no longer find a mythical organization, nor can we seriously believe in it. Precisely because they are tamed, harnessed to the cart that we know how

to steer, physical energies appear to our eyes a hundred times more 'dehumanized,' indifferent, in the abundance of meaninglessness, even though we have just integrated them meaningfully into our plans. We yearn once again for the abandoned unpredictability of things... we have longed for it since the 18th century, from the moment mechanized industry began to alter the Earth's surface."
And elsewhere: "Complete predictability is a quality fundamentally different from what we know from our relationships with other people. In encounters with other people, where we manage to loosen the rules of objective exchange and let the pulsating spontaneity on both sides come to the fore, the inability to predict and its superfluity represent a distinctly human value for us; predictability in other people is a characteristic of reified relationships between us: every spontaneity is creative..."
175 Human freedom, its complexity and multidimensionality, remain intact even when its limits are sometimes determined by very simple factors. Throughout history, humans have formulated the most absurd theories about natural disasters, plagues, and diseases. Witchcraft and magic, the wrath of the gods, or personal enemies were held responsible, leading to the persecution of countless innocent people due to such imaginary causes. It wasn't until the 19th century that the existence of bacteria, and even later, viruses, was discovered. At that point, these correct monocausal explanations immediately swept away the incorrect but often highly complex multicausal explanations of earlier times. Obviously, human freedom sometimes encounters its limits in a single cause, such as bacteria or viruses.
176 The fact that chance probabilistically understood may range from zero to one, i.e. from total unpredictability to the certain occurrence of an event, only says that the transition from recognizable order to unrecognizable chaos is a gradual one.
177 „For a hundred and fifty years past the progress of science has seemed to mean the enlargement of the material universe and the diminution of man's importance. The result is what one may call the growth of naturalistic or positivistic feeling. Man is no law-giver to nature, he is an absorber. She it is who stands firm; he it is who must accommodate himself. Let him record truth, inhuman tho it be, and submit to it! The romantic spontaneity and courage are gone, the vision is materialistic and depressing. Ideals appear as inert by-products of physiology; what is higher is explained by what is lower and treated forever as a case of 'nothing but' — nothing but something else of a quite inferior sort. You get, in short, a materialistic universe, in which only the tough-minded find themselves congenially at home.“ (William James, Public Domain Book; p. 10).
178 "*The sophisticated and deceitful attempts to understand the world in an optimistic-ethical sense have no better success than the naive ones. What our mind wants to pass off as knowledge is always only an unjustified interpretation of the world. Against this admission the mind rebels with the courage of despair, because it fears to face the problem of life helplessly. What /moral/ sense to give to the human existence, if we must renounce to recognize the /moral/ sense of the world? But there is nothing left for our mind but to submit to the facts.*"

An unequivocal statement! The greatest critics of religion could not have expressed themselves more clearly than Albert Schweitzer in these lines, where he even calls the moral interpretation of evolution "deceitful". For thousands of years people attributed plans of salvation to their gods, they invented a meaning for the world, but the scientifically sober observer is forced to admit that the facts are not in accordance with any of these mythological constructions.

179 Every algorithm, even the most complex one, by which we try to represent randomness, necessarily produces repeatable orders - i.e. the exact opposite of randomness. Who knows the algorithm in question, is therefore able to predict its result. We can imitate real chance only by including reality, for instance by triggering a certain algorithm whenever a real coincidence happens, e.g. when a sensor by which it is activated notices something like a woman with a yellow shirt passing by on the street. This is then just as random an event as when a passerby crossing the street is struck dead by a tile that suddenly falls on his head from above (Monod uses this example to illustrate chance).

180 This insight bears consequences for believers too. If God created the world, then we must acknowledge with Albert Schweitzer that we do not understand the meaning he gave to his creation - but that is, of course, not the same as Monod's statement that the world is devoid of meaning. *It makes a crucial difference whether something does not exist in an absolute sense or only when seen from the perspective of the human mind*. Austrian biologist Rupert Riedl (1988) hit on the right metaphor for expressing this truth. "What presumption would it be if the tick wanted to imagine the blood vessels of a mammal, the dog the international drug scene or we /humans/ the laws beyond the cosmos." Science is now able to explain so many things in detail, e.g. why a bee stings us, a volcano erupts or how a mobile phone works, but it cannot tell us anything about why this world and its orders exist at all and what sense to give to human existence.

181 Unfortunately, I do not remember on which occasion I heard of this statement. On the Internet I found the following source from the pen of Prof. Zeilinger, which at least comes close to this formulation: https://medien.umbreitkatalog.de/pdfzentrale/978/344/215/Leseprobe_l_9783442153022.pdf

182 Cf. Cassirer 1957.

183 What I summarize here in one sentence has filled entire volumes in the history of philosophy and, to some extent, also in the history of science. The strata theory (Schichtenlehre) was developed in the German-speaking world by Wilhelm Dilthey, Nicolai Hartmann, Konrad Lorenz and Rupert Riedl. In France, Henri Bergson established a similar tradition. The great difference to the biogeneticist Jacques Monod lies in valuation. For the latter, chance is blind, for others it is a creative force.

184 British philosopher A. C. Grayling (2021) remarks on non-knowledge. “If the question ‘Are there limits to knowledge?’ is meaningful, it is at best a defeatist one in implying that there might be such limits. But it is not a meaningful question, because it is not an answerable one.” In the present section I try to explain why the admission of non-knowledge (as

distinguished from mere ignorance) is by no means defeatist and why the question about it can very well be answered quite unambiguously. Grayling contradicts himself: “Note that scientism – the view that science can and will ultimately explain everything – is not the same thing as science.” And in the preface he admits: “/Scientific/ enquiry thus generates a paradox: increasing knowledge increases our ignorance.”

185 On the other hand, our potentially infinite knowledge also includes the realization that the physical conditions that make our survival on Gaia possible are highly specific and thus extremely improbable. We are riding through the cosmos on a ball glowing with fire, whose crust must be neither too cold nor too hot, whose gossamer mantle of gases, which we need to breathe, must have exactly the right mixture to protect us from an incessant particle bombardment from outer space. The improbability of our existence on this ball in the middle of a largely hostile universe awakens in us the obvious thought that the miracle of evolution can by no means be the mere result of a blind and meaningless chance.

This conclusion seems irrefutable. We saw that chance is neither blind nor meaningless; it is the synonym for our not-knowing - no more and no less. At best we can imagine an intelligence for which all this makes sense - then we would be speaking of an "intelligent design". God, or whatever we may call this higher intelligence, would have made sure that on our planet the conditions within a narrow corridor are so exactly coordinated that we, Homo faber, are able to exist on it. This too is but a metaphor, but a more convincing one than that of an ape blindly hacking at a writing machine....

186 The reaction of "enlightened" theologians to this objection was the so-called "deism", which recognizes God only as the creator of the laws of nature. Once he had set these in motion, he had to say goodbye to his creation: the machine now ran all by itself. This view is echoed in the reproach which Pascal (1955) raised against Descartes. "I cannot forgive Descartes; in his whole philosophy he would have preferred to do without God at all; instead, he has agreed to the concession that God gives the world a nudge /at the beginning/ to set it in motion; after that he doesn’t know what to do with God."

187 At this point, however, we are once again facing a serious challenge. This higher intelligence would not only have been responsible for the conditions that allow our improbable existence on Gaia, but we would also have to hold it accountable for the fact that we survive on Gaia in a very precarious manner. As so vividly described by Schopenhauer, in this world, there is eating and being eaten, love and hate, childbearing and murder, wonder and horror. Traditional religions never fully reconciled with this contradiction. They would have liked to declare a benevolent, a "loving" God as the sole ruler of the world (and parents still present this world image to their children), but that is only possible if they close their eyes to so much evil that undeniably belongs to this world as well. Therefore, most religions chose to oppose the loving God with an evil force, which they called devil. Yet, in doing so, they once again sidestepped the question of "why" - the question that tormented Job. Whether science or God, the mystery remains.

188 Harari (2004) has shown this convincingly for artificial intelligence.
189 See Schumann 2008, p. 52.
190 Ray Dalio: When debts are in currencies that central banks have the ability to print and restructure, debt crises can be well-managed so they are not systemically threatening... /But/ if the US lost its reserve currency status, it would be in serious financial trouble.
191 See my article from 29.9.2022 (https://www.gerojenner.com/wp/falter-spiegel-and-nord-stream-2-what-about-the-quality-of-western-quality-media/).

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