

Contribution

[Part 2]

New Ethics and a Return to the Roots of Ethical Capitalism

(1 of 3)

#Healthcare, QoL #Innovation Creation #Co-creation and Open Innovation #Generative AI #IoT/Data Utilization

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In 1971, Koizumi graduated from the Department of Pure and Applied Sciences in the College of Arts and Sciences of the University of Tokyo, and in the same year, he joined the Department of Optical Instruments at Naka Works of Hitachi, Ltd.

In 1976, Koizumi submitted his thesis to the Faculty of Science and received his doctorate in science from the University of Tokyo. He discovered and developed many new principles in fields such as the environment and medicine, and applied them in society. In 2000, Koizumi was appointed General Manager at the Advanced Research Laboratory. He became Corporate Chief Scientist in 2003, a Fellow in 2004, and has been working in his current role since 2017. Koizumi is a Fellow and a member of the RCAST Board, the Research Center for Advanced Science and Technology (RCAST) of the University of Tokyo, a Foreign Member of the Chinese Academy of Engineering (CAE), and Professor Emeritus at Southeast University. He has also worked as Director at the International Council of Academies of Engineering and Technological Sciences (CAETS), and as board member at various research institutes and foundations in the USA, Europe, Australia, and other countries. Recently, he published “Albert Einstein’s Inverse Omega: Considering Education from the Perspective of Evolution of the Brain (Evolutionary Pedagogy)” (winner of Papyrus Award, Bungeishunju Ltd.).

Highlight

A year has passed since I wrote the opening piece in this series of articles. The state of the pandemic has changed over this time and major changes have likewise taken place in the international situation across Eurasia and the Middle East. Meanwhile, the world is seeing worsening weather conditions that are very likely the result of human activity. The spread of generative AI, too, has been astonishing. Standing at this historic turning point, I have attempted to look ahead as best I can in my writing. In circumstances like these, primary sources of information are more important than ever. In acquiring language, *Homo sapiens* also gained the ability to predict some aspects of what is to come. This made it the only species with the capability to build a better future. This ability to grasp the future given to us by evolution provides the standpoint from which I seek to consider further what lies ahead. As to how the predictions in my previous articles turned out and where they went astray, I will consider this in an appendix at the end of this article.

Transition toward an Ethics that Reimagines Society

I had an opportunity to talk to Markus Gabriel of the University of Bonn, who as the author of “*Why the World Does Not Exist*,” an unexpected best seller from the field of philosophy, has come to be recognized globally as a thinker who has attracted more attention than any of his peers. Underpinned as it was by an all-encompassing knowledge extending from the natural sciences to the humanities and social sciences, what he had to say was extremely interesting and we were quick to reach a mutual understanding (see column 1).

Column 1

Meeting with Professor Markus Gabriel

Here, I will recount some of the background to this meeting. The International Council of Academies of Engineering and Technological Sciences (CAETS) held its annual conference at Versailles on the outskirts of Paris in the Fall of 2022. In recognition of the importance of ethics, there was a session at which Professor Christiane Woopen of the University of Bonn (founding director of the Center for Life Ethics) was invited to give a lecture on this topic (see Figure 1). Prior to this, at the CAETS board of directors meeting that took place at the 2019 annual conference held in Stockholm, a proposal was made (by Japan) to add engineering ethics as one of the objectives that head up the CAETS Bylaws. After further deliberation, the proposal was passed by both the board and council at the CAETS 2021 annual conference (hosted by Argentina but held remotely due to the COVID pandemic). “Promote ethics in engineering education, research and practice” was added as section f) of Article 1 - Objectives of the Bylaws. This came a full decade after the CAETS 2011 annual conference (hosted by Mexico) in the immediate aftermath of the 2011 Great East Japan Earthquake at which, having been requested to do so only the previous day by the CAETS president, I gave a report on the situation on the ground and the nuclear accident, commenting that we were at a period in time when a fundamental rethink was happening in the ethics of science and technology.

The promotion of ethics is now explicitly stated as one of the CAETS objectives.

In the first article, Part 1 of this series, I wrote about the 100th anniversary of the founding of the Royal Swedish Academy of Engineering Sciences (IVA). The event held to mark this occasion took place in the Fall following the CAETS 2019 conference and featured discussions between experts in the respective fields of engineering and ethics. Speaking last, I told the audience about the Astro Boy robot from Japan. Observing how Astro Boy’s creator, manga artist Osamu Tezuka, had envisaged a “warm-hearted robot that sheds tears” (in the words of the artist’s wife), I also made the point that this represents an Eastern ideal of AI.

This caught the interest of Prince Daniel, husband of the Crown Princess of Sweden, who attended the event. He spoke to me after the symposium and introduced me to both the King and Queen.

Subsequently, a symposium was held in Tokyo in 2023 to which Professor Takahiro Nakajima, Director of the Institute for Advanced Studies on Asia at the University of Tokyo, invited the two academics from the University of Bonn. In addition to being delighted to get reacquainted with Professor Woopen, I also took the opportunity to speak in depth with her colleague, Professor Gabriel. In particular, I was able to speak with him about the concept of trans-disciplinarity at the end of his presentation and debate session. In the lunch that followed, the two professors kindly arranged for me to be seated between them and we were able to continue what proved to be a highly interesting discussion.

Figure 1—CAETS 2022 Annual Conference where “Engineering Ethics” was on the Agenda and the Connection with the University of Bonn



Professor Christiane Woopen (founding director of the Center for Life Ethics, University of Bonn) gave a presentation at the CAETS 2022 annual conference in Versailles. In May 2023, a symposium to which Professors Woopen and Gabriel, both of the University of Bonn, were invited was hosted by the Institute for Advanced Studies on Asia at the University of Tokyo (to which Professor Takahiro Nakajima had been appointed director in April of that year). This provided the opportunity to establish a new connection between the humanities and natural sciences in the form of a formal

Recently, the idea of ethical capitalism being put forward by Professor Gabriel has caught the world's attention. As I noted in the third article in Part 1 of this series, Adam Smith (1723-1790) was at heart an ethicist. The essence of the capitalism expressed in his "*Wealth of Nations*" was predicated on the ethics described in his "*Theory of Moral Sentiments*." In other words, what he was saying was that social harmony depended not only on the pursuit of self-interest, but also on fellow-feeling (sympathy).

Despite this, my impression is that an American strain of economic thinking has come to predominate, one that emphasizes wealth. The tendency has been to focus on market principles and economic liberalism, as exemplified by the concept of the "invisible hand" whereby it is held that an appropriate distribution of resources across society is achieved when everyone pursues their own self-interest.

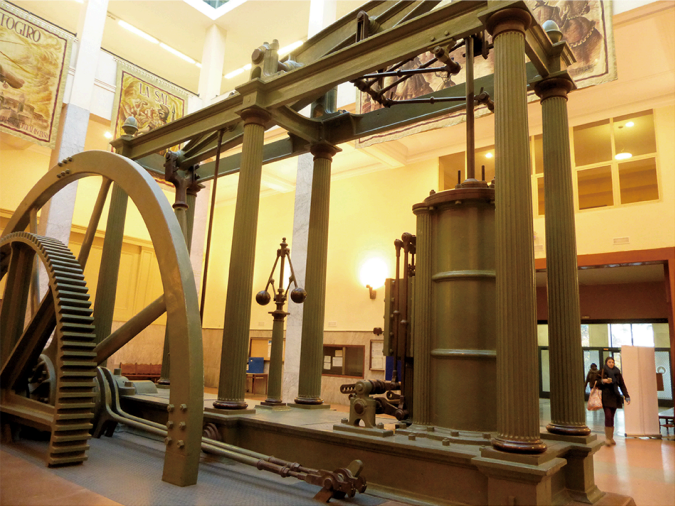
Reciprocal Effects of Industrial Revolution and Steam Engine

The Industrial Revolution happened progressively over a period of more than a century, from around 1733 to 1840. This coincided with the latter part of Japan's Tokugawa period, which lasted for 265 years from 1603 to 1868. An industrial revolution refers to a broad-based transformation of industry and the economy driven by technological change. [The term is believed to have first appeared in "*Histoire de l'économie politique en Europe*" (1837) by Jérôme-Adolphe Blanqui (1798 to 1854).] As the steam engine served as its driving force, James Watt (1736 to 1819) is recognized as having played a major role. Watt succeeded in significantly improving steam engine efficiency compared to previous machines (in 1776) and he introduced a planetary gear mechanism for transforming engine output into rotary power (in 1781). I also suspect that the economic thinking of the time was driven by the power and majesty of these new steam engines. The Technical University of Madrid in Spain has preserved one of Watt's steam engines from that time and seeing it now, enshrined in all its physical bulk, gives me a sense of how human strength falls far short of this power and presence. The impact of Watt's steam engines extended beyond industry, in time giving birth also to paddle steamers for maritime commerce and steam trains for land transportation. That so many of us have a fascination with steam-puffing locomotives (SL) is no doubt a testament to the ability of these engines to appeal to our emotions. I also learned from a recently published book (Robert L. Heilbroner, Encyclopaedia Britannica, 2023) that Watt and Smith met in person. I can only assume that the ethicist and philosopher Smith had consciously set out to learn the realities of society and the economy.

The principle by which steam can be used as a power source has been known since the time of Ancient Greece, while the first steam engine similar to that built by Watt was invented in 1712 by Thomas Newcomen (1664 to 1729). What allowed Watt's steam engines to play such a role in the Industrial Revolution was how dramatically he improved their energy efficiency and gave them the ability to deliver rotary power. The coal used to power these steam engines was dug up from the world's coal mines and burned in huge quantities. In thermodynamic terms, a steam engine is a form of external combustion engine, meaning combustion takes place outside the engine. In time, highly efficient internal combustion engines in which petroleum is combusted internally were also developed, making it possible for cars to drive and for airplanes to fly. The consumption of fossil fuels like coal and oil has been relentless, so much so that artificial substances (greenhouse gases emitted by human civilization) are increasing the temperature of the global biosphere, raising concerns that humanity is facing an unprecedented worsening in climatic conditions.

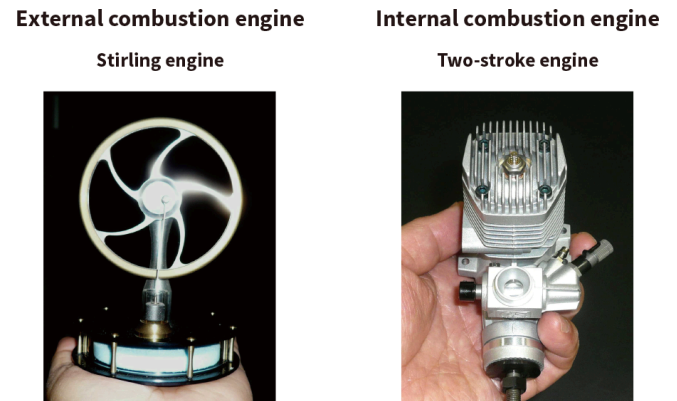
Figure 3 shows examples of an external combustion engine (like a steam engine) and an internal combustion engine (like a gasoline engine). Specifically, these are a Stirling engine, the engine type that boasts the highest theoretical thermal efficiency, and a two-stroke engine that combines high output with small size and light weight.

Figure 2—Watt Steam Engine



A beam engine of the Watt type built by D. Napier & Son (London) in 1832. From 1861 to 1891, this engine was used to drive the coin press at the Royal Mint of Spain. It is now exhibited in the lobby of the Higher Technical School of Industrial Engineering of Madrid, part of the Technical University of Madrid. (As this location was the entrance to the hall where CAETS 2017, the annual conference of the International Council of Academies of Engineering and Technological Sciences was held, I walked past the engine on a daily basis. So large was it that I did not at first realize it was the real thing.)

Figure 3—Examples of an External Combustion Engine (e.g., a Steam Engine) and an Internal Combustion Engine (e.g., a Gasoline Engine)



The photographs show a Stirling engine, the engine type with the highest theoretical thermal efficiency, and a two-stroke engine that combines high output with small size and light weight. The efficiency of the Stirling engine is so high that, if placed on the palm of your hand, the difference between room and body temperature is enough for it to start rotating. The two-stroke engine, meanwhile, can run at high speed on a mixture of alcohol and glycerin (a lubricant). Despite its small size and light weight, this high-performance engine can deliver 1.7 hp of output. (Both engines are photographed in the palm of the author’s hand.)

Column 2
Adam Smith and the Macaulay Institute for Soil Research

Adam Smith and James Watt were both born in Scotland in the northern part of the UK. Scotland has been the source of many great scholars who went beyond their specific fields to set their sights on the wider world. While the basic principles of magnetic resonance imaging (MRI) emerged from laboratories in the USA and UK, it was the University of Aberdeen in Scotland (albeit also part of the UK) that was the first to apply it to live adult humans. Earlier, it was a research center located in Aberdeen, the Macaulay Institute for Soil Research founded in 1930, that became a world center for spectroscopy through the research it conducted into nutrients contained in infertile soil. As I noted in my previous articles, I believe that Adam Smith was that sort of person. It is an example of how having a clear target led to the birth of an entirely new field.

While Smith started out as an ethicist and philosopher, living in the Age of Enlightenment and drawing on the trend toward thinking in terms of laws of nature, he was also deeply concerned with the practical aspects of economics, society, and technology.

As I emphasized in my previous articles, Smith never spoke of the “invisible hand of God” that present-day economists still write about. The term “invisible hand” appeared once only in his earlier work, “*The Theory of Moral Sentiments*,” and likewise only once in “*The Wealth of Nations*.” This too shows the value of consulting primary sources. This is evidence of how even experts sometimes fail to consult the original.

One final note about the Macaulay Institute for Soil Research. It was my own invitation to visit the institute in the 1970s that set me on a journey toward analytical science and the trans-disciplinary concept.

Although our only contact had been a brief conversation at a Kyoto conference, I received an invitation from the institute’s director Thomas S. West (1927 to 2010) at a time when I was still little more than a student. He took a half-day out of his busy schedule as director to take me for a drive in his own car, showing me around the rolling hills and brooks of Scotland and visiting sights such as a residence of the British Royal Family. That gave me a sense of the mettle of Scottish people. This assuredly was Scotland at its source. He also taught me that I should not stick exclusively to my own specialty. Scotland did not just give birth to Adam Smith and James Watt, it was also where the earliest medical MRI machines were developed at the University of Aberdeen (in 1980).

(<https://www.jsac.or.jp/bunseki/pdf/bunseki2006/200604konohito.pdf>) (in Japanese) (PDF Format, 679KB)

A World Finding its Way Back to Ethical Capitalism

Economic inequality has only grown since the Global Financial Crisis. With many people beginning to sense that something is wrong, it is fair to say that current trends represent a backlash.

One such outcome is the interest in ethical capitalism as promoted by Markus Gabriel. There has also been a re-evaluation of the views of Karl Marx, as exemplified by Kohei Saito's best-seller "*Capital in the Anthropocene*." Both trends have emerged out of the same shift toward people seeking ways of fixing capitalism or finding alternatives.

On the other hand, another new development is that ethics, traditionally a branch of philosophy, is now being actively incorporated not only into economics, but also into other fields such as science. In a discussion with Sir Philip Campbell, a former editor-in-chief of the broad-ranging scientific journal *Nature*, he made the point that the most important foundation underlying future science will be ethics. When speaking of ethics with pundits who look to the future, such as the aforementioned Kohei Saito, a chorus of voices comes back to us asserting that upcoming ethical problems are of extreme importance. This trend may represent a backlash in an even broader sense, calling into question the actions and constitution of a society that no longer concerns itself with human wellbeing, not just by taking market fundamentalism too far, but also through changes such as the rapid advancement of science and technology.

To reiterate, however, this recent interest in ethical capitalism represents a move back to the roots of capitalism, one that constitutes a return to the concept as originally advocated by Adam Smith. On the other hand, given that nowhere in history has a capitalism based on ethics ever been fully realized, the notion likely appears to people of today as a new way of thinking.

Column 3

The Metamorphosis of *Nature* Magazine

The renowned journal *Nature* is published by Nature Publishing Group (NPG) of the UK and carries papers from the field of natural science. This journal, too, has in recent years come to place greater value on the views of the humanities and social sciences. I wrote about economic inequality in the third article in Part 1 of this series. In it, I made the point that the reality of global economic inequality is plain to see (as shown in Figure 1 of that article). Awareness of this is also rising in the world of the natural sciences. A 2023 article in *Nature* entitled "*Reducing inequality benefits everyone — so why isn't it happening?*" (Aug. 16, 2023) is just one example.

When NPG took a step outside the field of natural sciences, starting with the launch of the social science journal *Science of Learning* in 2015, I was able to play a small part. This came about through a national program of the same name in Australia and my serving as an international advisory board member at the University of Queensland (QU). The kickoff symposium to mark the new publication was held in Brisbane and was attended by Sir Philip Campbell, the editor-in-chief at that time. When the invitation came to put questions to the panel, I asked about their thoughts on unconscious (subconscious) learning and education. All of the panelists responded in the same way, saying that they could see its importance now that I had mentioned it but that they had never given it any thought. While knowledge acquisition is primarily achieved consciously through language, most learning happens through the subconscious reconfiguration of neural circuits. I believe that this makes considerations of natural science vital to both learning and education.

That evening, I was able to talk at length with Sir Philip. In doing so, we found common ground on the importance of ethics. Recently, articles on this topic have appeared in the natural sciences journal, *Nature*. Indeed, in 2023, it carried an article on reducing economic inequality that came close to being an editorial.

Figure 4—Kickoff Symposium for *Science of Learning*



The launch of a new journal on education entitled *Science of Learning* was the first venture into a field relating to the humanities and social sciences by Nature Publishing Group, the publisher best known for its natural sciences journal, *Nature*. The symposium held to mark this event took place at a historic venue belonging to the University of Queensland. Sir Philip Campbell, the former editor-in-chief of *Nature*, emphasized the significance of this new academic journal that went beyond the confines of the natural sciences.

Katsuhito Iwai, an economist well-known for his many works, including “*Where to Next for Companies?*,” has been articulating ideas associated with ethical capitalism for more than 20 years (Katsuhito Iwai, Heibonsha Ltd., 2003). On the publication of a paperback edition of his work, he wrote the following words.

“... I have attempted to demonstrate through both historical and theoretical considerations that the American way of thinking that gives primacy to shareholders will not necessarily become the global standard for the companies of the future. The shareholder capitalism concept of companies being first and foremost the possessions of their shareholders is a misconception of legal theory, mixing up companies with corporations Today, on August 12, 2009, as I write this foreword to the paperback edition, the world is in the midst of a once-in-a-hundred-years global economic crisis.”

What lay behind this foreword, I believe, was Professor Iwai’s taking an economist’s approach to his study of the philosopher Immanuel Kant (1724 to 1804), especially his “*The Metaphysics of Morals*.” As chance would have it, after encountering him in Tokyo, I spent an entire day with him from that evening to the evening of the following day at the Shinano Kizaki Summer University. This was in 2019, a full decade after he wrote this foreword. As well as being fortunate to attend his lecture, I also had the opportunity subsequently to pose numerous questions to him.

What especially struck me from his lecture was the result from a survey of executives from around the world taken in 1991. In contrast to the 75.6% of US executives who agreed that the purpose of companies is to serve their shareholders, only 2.9% of those from Japan held this view. Similarly, whereas only 10.8% of US executives agreed with prioritizing employment over dividends during recessions, 97.1% of their Japanese colleagues supported this proposition. While most Japanese companies now follow American management practices, it was the old style of Japanese management that more resembled ethical capitalism. As such, the attention being given to ethical capitalism in Japan represents a return to its roots in two different senses (from lecture notes taken by the author at Shinano Kizaki Summer University, August 8, 2019).

Toward an Ethics that Finds its Foundations Naturally in Human Habits and Customs

It is no coincidence that Professors Iwai and Gabriel have both come up with the idea of a capitalism based on ethics. Both are fans of the philosopher Immanuel Kant and have been strongly influenced by him. Kant says that human will imposes a moral duty on ourselves, emphasizing the importance of our acting not for ourselves but on the basis of what is morally right. This is very much a way of thinking that leads us to ethical capitalism.

In this way, Kant saw morals as being a more universal form of good will and called for people to act in a way that pays heed both to an “ethics” based on individual will and to “laws” suitable for humans that are determined unconditionally by reason. Georg Wilhelm Friedrich Hegel (1770-1831), a philosopher from a slightly later generation, considered ethics as a system for putting into practice what is right and, in addition to one’s own personal morals, saw a need for law as an objective and formalized system of retaliation. While Kant and Hegel had opposing definitions of morals and ethics with the result that the two terms have widely come to be seen as meaning something different, they share an origin in words for habits and customs, with “moral” coming from the Latin *mores* and “ethics” from the Greek *ethos*.

Figure 5—Shinano Kizaki Summer University



The Shinano Tsuzoku Daigaku-Kai was founded in Tokyo more than 100 years ago in 1916 (the 5th year of the Taisho era), primarily through the enthusiasm of the farmer-led educational community in the Shinano area and with the approval of politicians like Shinpei Goto. Similarly, the Shinano Kizaki Summer University was established on August 1 of the following year on the shores of Lake Kizaki in Ōmachi City, Nagano Prefecture. It is called a summer university because it only opens for a limited time during the summer months. The school remains open to the present day thanks to the efforts of the principals and deputy principals of the elementary and junior high schools along the Oito Line in the Kita-Azumi District of Nagano Prefecture (my early involvement with the school consisted of giving lectures and I continue to offer support in my role as a director).

I became aware of the philosopher Kant's songbird fostering experiment by chance when reading a collection of his posthumous manuscripts. In his day, philosophy teachers also had the job of teaching educational studies and Kant left lecture notes behind after his death. One such volume, published posthumously by one of his pupils, was "*On Pedagogy*." In it, he states that the concept of education exists only in humans and oscines (songbirds). Reading this in the early 2000s when I was trying to establish the new field of "brain science and education," it took me very much by surprise.

Kant kept canaries and deliberately introduced a sparrow egg into a clutch of canary eggs. Kant recounts how the newborn sparrow was raised by the canary and ended up acquiring the ability to sing like one, albeit not quite as well. This experiment was conducted in a closed room away from the sound of sparrows chirping in the wild. I believe that, when addressing the question of education, Kant chose to take this systematic approach to conducting his fostering experiment because he was also a true scientist. When they came up with the idea in the 1980s, ornithologists considered the fostering experiment to be a new technique for modifying learning environments. As this experiment of Kant's was not known in the field of natural science, I tried to announce it at academic conferences for linguistics and behavioral science. Professor Kazuo Okanoya (currently an emeritus professor at the University of Tokyo), who studies language in humans and other animals, stated that Kant needs to be recognized as the inventor of the fostering experiment. I still remember how the audience erupted into laughter.

While I set about sorting the works of Kant and their contents chronologically, it felt like they were arranged in order from input to output in terms of the nervous system. (Hideaki Koizumi: Guest lecture, 131st Conference of the Linguistic Society of Japan, Satake Memorial Hall, Hiroshima University (2005) and other sources)

Recently, there has been a lot of research into birdsong and how it is learned. Meanwhile, 2024 will be the 300th anniversary of Kant's birth. Despite his being a philosopher, Kant conducted a meticulously executed fostering experiment on birds in his own home, successfully getting a canary to hatch a sparrow's egg that was placed in among its own. He then went on to confirm that this sparrow grew up with the ability to sing like a canary, even if not very well. He addressed the core question of nature versus nurture from an educational studies standpoint and came to the conclusion that education is something only seen in humans and songbirds. Nowadays, while numerous animal behavioralists have reported that limited educational behavior is evident in non-human primates, education is still said to be humanity's greatest invention. The study of how songbirds learn to sing is a complex one. Cases have been identified where juveniles that have been raised listening to their male parent are able to learn songs from that parent during adolescence.

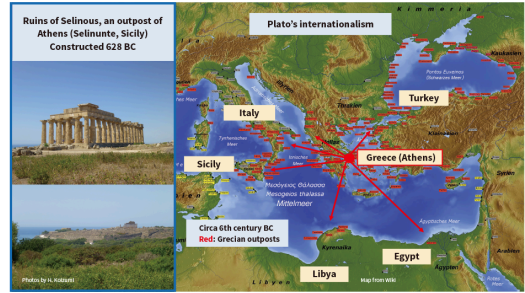
Considering Ethics and Morals in Academic Terms

Taking a step back, this way of thinking dates to the time of Ancient Greece. Plato left Athens after the death of Socrates and traveled abroad. I think we have reason to believe that he possessed what we would now call an international perspective. While the records that remain are incomplete, he is thought to have visited Sicily, Italy, Egypt, and Libya. Greece had many colonial outposts dotted around the coast of the Mediterranean at this time, including in what are now Italy (including Sicily), France, Turkey, Egypt, and Libya. The boatbuilding technology of the time is said to have been at a very high level, with extensive maritime travel. Based on his international perspective, Plato established his school, called *Academia*, at a site on the outskirts of Athens. This was the origin of the Academy. He was 40 years old at the time (see Figure 6).

Numerous Greek colonial outposts existed along the Mediterranean from around the 7th century BC. The international activity included considerable maritime travel. Prior to his founding the Academy at age 40, (informal) records tell of Plato traveling not only within Greece, but also visiting outposts located in numerous different places (including Libya and Egypt as well as Sicily and other parts of Italy). As such, it is believed that he was familiar with life in other places. I suspect that Plato's internationalism was crucial in leading him to his philosophy of the Academy.

The School of Athens, the famous fresco painted by Raffaello in the Vatican, provides a clear depiction of the concept of the Academy. Plato and Aristotle, the leading figures of the Academy, take center stage. The title on the spine of the book held by Plato is *The Timaeus* (one of his late dialogues, on natural philosophy), while that held by Aristotle is *Nicomachean Ethics* (a systematic study of ethics). As the artist left behind no explicit records, considerable study has gone into identifying the other figures who appear. One contention is that they include Socrates and Hypatia [a female Neoplatonist mathematician and scientist and who worked in Alexandria (Egypt) many centuries later]. The large fresco also shows women and children engaged together in learning and the concept of Phronesis (wisdom and the thinking of the wise) is vibrantly depicted. Another interpretation is that the history of philosophy through to the present day represents the explication of this way of thinking.

Figure 6—Map of Ancient Mediterranean circa 6th Century BC and Plato's Internationalism



While Plato lived from 427 to 347 BC, the Greeks established a large number of colonial outposts along the Mediterranean coast around 600 BC. The wooden boats of the time, both large and small, were built with a high level of skill, with the large triremes built for military purposes being capable of speeds close to 10 knots. It was also comparatively cheap for civilians to travel by sea. Plato, for example, is known to have visited what is now Sicily at least twice. The ruins of Athenian Greek outposts can still be seen along the western coast of Sicily, one of which is shown on the left of the map.

Figure 7—*The School of Athens* (Fresco by Raffaello) and Historic Academies of the Present Day



The large fresco shown on the left can still be found in the Vatican. It is *The School of Athens* (The Academy), painted by Raffaello, a major figure in Renaissance art. Plato and his pupil Aristotle are depicted in the center of the work and the titles on the spines of the books they are carrying are, respectively, *The Timaeus* (one of Plato's late dialogues on natural philosophy) and *Nicomachean Ethics*. The fresco also depicts women and children, which is thought to express the neutrality of the Academy and the philosophy that learning is equitable.

The photographs on the right show some of today's most historic scientific academies as they appear now. The foundations of our present-day scientific academies were established around 400 years ago in Europe. These institutions remain very active and engaged with the wider world.

What we can deduce from this, I believe, is that, while past concepts of ethics and morals arose out of human habits and customs, just as large societies emerge out of smaller ones, the process of history has seen our conception of ethics and morals expand beyond that of habits and customs.

We now live in a time that has come to be called the Anthropocene epoch, one in which human activity has had such a major impact on nature that it has wrought changes on the geology and ecosystem. As I touched on in the second article of Part 1, the biosphere that humans share with other life is but a thin layer, analogous to a soap bubble. With many of us having felt threatened by the spread of COVID-19 and the Russian government's invasion of Ukraine, people are now questioning whether humanity is at risk of extinction, whether through nuclear war, climate crisis, pandemic, or some other threat.

At this time when planetary boundaries, the limits to humanity’s continued existence on the Earth, are becoming clearer, something in the nature of the Copernican Revolution is needed in our conception of ethics and morals. In other words, what is called for is a shift from “ethics and morals as they manifest in human societies as a whole,” which consists in not causing trouble to other people, to “an ethics and morality founded in the entirety of nature*,” encompassing all of these societies. It goes without saying that people will need to cooperate with one another if we are to survive in an environment of limited resources and numerous constraints. Accordingly, this upcoming new ethics founded in nature will have its source in warm heartedness.

* In Buddhist terminology, this corresponds to the word “*Jinen*,” meaning affirmation from itself.

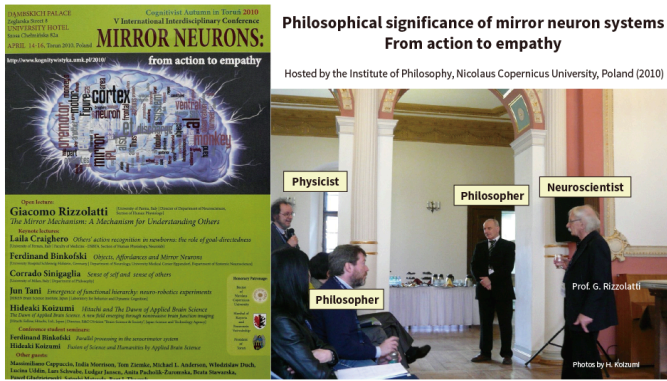
What I have written here has emphasized the relationship between philosophy and ethics in the broad sense, beginning with the visit by the energetic philosopher Professor Markus Gabriel to Japan.

One institution that has striven to hold onto a relationship between the field of philosophy and those of physics and biology is the Institute of Philosophy at Nicolaus Copernicus University in Poland. The university contacted me about neuroscientific brain research, wanting to deploy this in the field of philosophy also. Specifically, it wanted to install a functional MRI machine.

Figure 8 shows a symposium held at the Institute of Philosophy that brought together philosophers, neuroscientists, and physicists. This had the feeling of a world-leading initiative in the field of philosophy at that time.

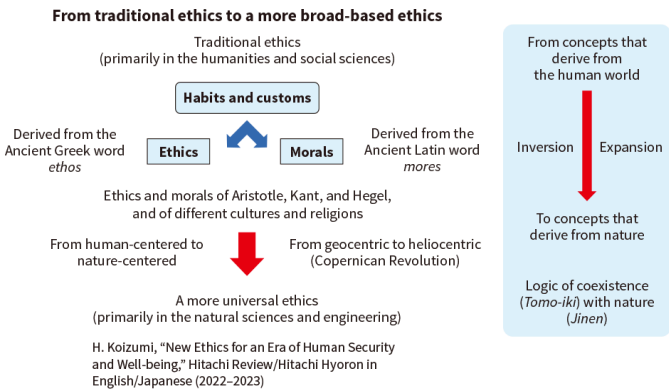
Professor Giacomo Rizzolatti from Italy, the discoverer of mirror neurons, a newly topical subject in the field of neuroscience, was among those invited to attend the symposium. A careful debate took place on the relationship between mirror neurons and empathy. I believe that joint studies like this that are radical while also being academically well grounded can lead to the creation of new fields.

Figure 8—Ground-breaking Symposium Bridging Different Disciplines Held at Nicolaus Copernicus University



It was in the late 1990s, and primarily in Germany, that the ability to use methodologies such as functional MRI (fMRI) and optical topography to observe brain function in live human subjects drew growing interest from the humanities, the polar opposite of the natural sciences. This was especially true in the field of philosophy. Ground-breaking international symposiums that addressed this particular matter began at the Institute of Philosophy at Nicolaus Copernicus University in Poland in the late 2000s as preparation for installing a brain imaging machine in their philosophy faculty. The images shown here record how they set about holding an in-depth debate at a venue in Torun, Poland, inviting Professor Rizzolatti, the discoverer of mirror neurons, and bringing in notable academics from the fields of philosophy, cognitive science, neuroscience, and physics.

Figure 9—Concept of Universal Ethics



Along with the current growth in recognition for ethics as an academic field that bears upon humanity’s survival, it is also drawing attention as a fundamental approach that will be essential to reforming the roots that underlie practical societal problems. While this lies at the heart of what this series of articles is about, the basic concept is as follows. What is needed to study the humanities in the pure sense pursued by institutions such as the Institute of Philosophy at Nicolaus Copernicus University, the International Center for Philosophy at the University of Bonn, and the Institute for Advanced Studies on Asia at the University of Tokyo is an approach that establishes a new ethics, one that is coupled with the many different natural sciences. This requires a shift in viewpoint from the ethics and philosophy that arose out of the humanities and from the standpoint of humans being able to go on living in nature to a viewpoint that places ethics clearly in the field of the natural sciences.

Appendix 1
Current State of COVID-19 Pandemic

I wrote about the ongoing COVID-19 pandemic in my earlier articles (published on October 31, 2022), starting with the “Structural Problems Behind Emerging Infectious Diseases” section in the **first article** and including the outlook for the future. I based this on the latest data available at the time, which ran up to August 2022.

Now, roughly a year later, the pandemic is entering a new phase. While the Omicron variant was highly infectious, it appeared to be somewhat less virulent. Meanwhile, the problem of long COVID has now risen to prominence, with new findings being published in reputable journals that show evidence of this condition.

Japan’s Ministry of Health, Labour and Welfare announced on April 27, 2023 that, whereas COVID-19 had previously been classified as a novel influenza infection (a class 2 infectious disease), it would be reclassified as a class 5 infectious disease from May 8, 2023. As a result, tracking of the status of the disease shifted to routine sampling conducted by a limited number of medical institutions, as is the case with influenza. As a result, precise figures on the number of cases are no longer available. However, the ministerial announcement also included the wastewater surveillance shown in **Figure 4** in the **first article of Part 1** of this series. Moreover, governmental announcements and reporting on infections has been significantly reduced, with the emphasis being on economic recovery. While achieving a balance with economic factors is vital, a fair appraisal of whether the correct policies have been adopted will be essential for keeping the pandemic under control going forward.

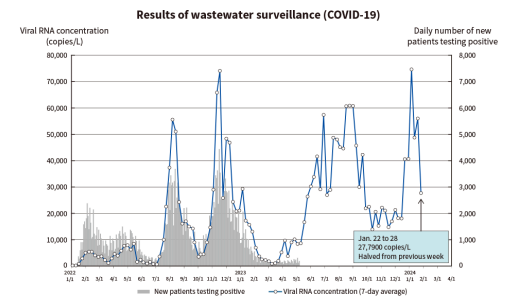
In China, a change in direction came in early December 2022 when the country abruptly ended its zero-COVID policy (strict quarantine measures with the use of PCR testing to identify infections in individuals and communities). This was done for economic reasons and due to the virus becoming less virulent. The USA, meanwhile, despite its being a world-leading nation, had a slow initial response to COVID-19 and consequently had the misfortune of losing more than a million lives to the disease. The UK followed a similar path and is currently engaged in assessing and reviewing its policies. In its early days, COVID-19 was a dangerous disease that was frequently accompanied by severe pneumonia. In its later stages, the virus mutated into the Omicron variant and instances of severe pneumonia lessened. What is important in the control of infectious disease is to get the timing right for the shift to policies that prioritize economic considerations, carefully assessing how best to balance economic costs with rigorous early measures to reduce virulence. Nevertheless, the pandemic is still not completely over. While the probability of a more virulent strain emerging is low, careful measures are needed that also allow for unknown after-effects.

Thanks to the efforts of those involved, including Hokkaido University and Sapporo City, wastewater-based epidemiology is on its way to becoming a well-established and effective tool for infection monitoring and prediction, including the launch of the Japan National Council for Promoting Wastewater Surveillance on August 25, 2023. One example is the virus data obtained by wastewater surveillance that was published by Sapporo City. This shows that COVID-19 remained widespread even at the end of 2023. This is corroborated both by the many new cases we are seeing and by the limited information available from routine sampling. While the effectiveness of vaccines and the trend toward new variants being less virulent are both evident, the number of hospital admissions of the elderly and people with chronic health conditions means that further action is needed. There is a pressing need for careful measures given that there are also cases of patients showing serious after-effects despite only suffering mild symptoms when infected*. It may be that the shift to class 5 classification was prompted by economic effects and, as this too constitutes an issue of ethics, there may be a need for a fair assessment that extends over a number of years.

* A recent paper published by the group working with Professor Akiko Iwasaki at Yale University has attracted interest. (J. Klein, et al.: “Distinguishing features of long COVID identified through immune profiling,” *Nature* 2023 Nov; 623 (7985): 139–148. (Epub 2023 Sep 25).

Some of the after-effects of COVID-19 are severe, with notable symptoms such as a halving of cortisol levels having been identified.

**Figure 10—Wastewater Surveillance Example
(Published Data from Sapporo City)**



RNA: ribonucleic acid

The graph shows the prevalence of the COVID-19 virus in wastewater over recent times.

Government policy has been such that precise statistics on new case numbers have no longer been gathered since COVID-19 was reclassified in Japan as a class 5 infectious disease on May 8, 2023. While wastewater surveillance indicates that the disease has yet subsided, there is at present no sign of high virulence, including among variants of the virus. With the healthcare system having progressively put measures in place, pressure on hospital beds from serious cases is beginning to subside. The case number trends in wastewater data, on the other hand, give a reasonably clear indication that the 10th wave of COVID-19 is upon us. This trend is evident in routine sampling undertaken across the country.

Sapporo City was comparatively quick to publish the results of wastewater surveillance of COVID-19 and influenza on its website in collaboration with Hokkaido University. COVID-19 was reclassified from a class 2 to a class 5 infectious disease (same as influenza) in May 2023. As a result, infection monitoring was reduced to routine sampling only. Accordingly, as shown in Figure 10, figures for the number of new cases testing positive were no longer available from May onwards. Nevertheless, wastewater surveillance showed COVID-19 going through a 9th wave, with the latest figures (for the end of January 2024) showing a level of infections near the peak of a 10th wave. With an Omicron variant called JN.1 having taken over as the predominant strain, I believe the situation is close to the threshold for economic considerations taking precedence as the proportion of severe cases is slightly lower. Influenza, meanwhile, showed signs of reaching high levels in 2023, with these indications also coming from wastewater surveillance. While this form of surveillance was still at the experimental stage when I was writing Part 1 of this series, it is becoming ever clearer that the technique will serve as a worthwhile tool for any future pandemics. I would also like to express my deep gratitude to the young official who, exactly two years ago, having transferred from the Japan Agency for Medical Research and Development (AMED) to the Japan Science and Technology Agency (JST), put a lot of work into the arguments I made in Part 1 and also made a small amount of new research funding available. While considerable funding went into numerous ICT research projects aimed at addressing COVID-19, sadly, little of this made it into actual use. This is something that calls for rigorous review and reflection to better prepare us for future pandemics.

Appendix 2
What Gives Rise to International Conflict – Instinct versus Intellect in Modern Humans

Russia's invasion of Ukraine has gone on for a long time. While Russian academia spoke up in the early days, controls have become stricter and accurate information from inside the country can no longer be obtained from outside. This makes commentary difficult even in relation to specialized fields of science and technology. The long history of rivalry between East and West that I wrote about in the first article in Part 1 of this series shows us that, once started, wars are very difficult to end.

Likewise with the Oslo Accords that I wrote about in the second article in Part 1, large military assaults that unfortunately cause deaths on both sides lead to the abandonment of reason and ethics. A powerful chain of hatred has arisen. As a result, the only option we have, I believe, is to draw on ethics and international law to build a fundamental framework for preventing military attacks, even if taking only one small step at a time. On October 7, 2023, events beyond reason took place in a way that served to reignite the conflict between Israel and Palestine.

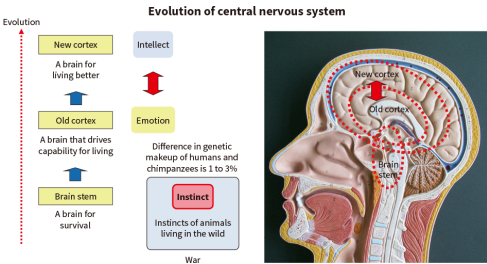
"Why war?" is a collection of letters between Albert Einstein (1879 to 1955) and Sigmund Freud (1856 to 1939)*Column 5. While it may seem a rather dour proposition, what war highlights is the conflict between intellect and instinct in modern humans. My own view is that the history of evolution makes it abundantly clear that instincts are an integral part of what makes modern humans what we are.

Traces of past life remain to this day in the form of fossilized green algae (bacteria) dating back 3.8 billion years, and it was from such organisms that multicellular life evolved. Marine algae incorporated chloroplasts into themselves, subsequently finding their way onto dry land where they evolved into many different forms of plant life. The evolution of animals, meanwhile, ultimately led to the primates, of which humans are but one species. As animals are unable to directly extract the energy from photons in sunlight, we instead obtain energy efficiently from plants and by way of a food chain governed by the law of the jungle. The instinct for survival exists as one of the vital functions in the brain of modern humans also.

However, rather than living by instinct as non-human animals do, the acquisition of language has given us the ability to envisage the future and exert some degree of control over it as it affects ourselves. It is our having acquired a depth of intellect that makes this possible. The reason why so many humans are able to live on this planet is, I believe, because we have extricated ourselves from pure instinct, having gained a capacity for empathy, or more specifically warm-heartedness, in order to coexist. It is because, rather than self-centered instincts, we are imbued with a desire to show consideration for others that we have been able to become what we are as *Homo sapiens* (modern humans, who emerged in Africa 200,000 years ago) with our unique position among Earth's many species. The coexistence of ourselves and others (Tomo-iki) in the realm of nature (*Jinen*) in which we humans live is both the source of our dignity and the reason we are able to so exist.

On the other hand, instincts remain integral to our brains. They operate subconsciously, and while they sometimes show their positive side in such forms as passion and desire, they are unable to hold us back from those actions that diminish our dignity. War can be seen as arising out of this fact. Once started, instinct begins to drive out intellect. The history of war makes it clear that, in its midst, we frequently cast off the dignity of modern humans in a way that reflects biology. What fields like neuroscience and the evolution of life make evident, I believe, is that what matters most is to value warm-heartedness and intellect as much as possible and to not start wars. The way in which those who instigate wars exhibit behavior that is progressively more instinctive is a process clear to everyone.

Figure 11—Sagittal Cross Section of Modern Human (*Homo Sapiens*) Brain



The modern human brain has evolved in layers from the center outward. The difference in genetic makeup between humans and our nearest relative, the chimpanzee, is said to be around 1% to 3% (although opinions differ). A comparison of the two species' brains shows that the area under the forehead called the frontal pole is twice as large in humans (measured in terms of the frontal pole as a proportion of total brain mass). The function of this area is not yet well understood.

“Why war? A letter from Albert Einstein to Sigmund Freud” is a collection published in 1932 of Einstein’s letters to Freud and Freud’s replies. It was published by the Hebrew University of Jerusalem in Israel and a Japanese translation was put out by Kodansha Ltd. The letters came about from a request by the League of Nations to Einstein asking him to engage in a discussion with a person of his choice on the topic that he believed matters more than any other to the world right now. Einstein had a heartfelt love for the arts, especially violin music, saying that many of his novel ideas came from music, and I don’t doubt this was true. As a result, Einstein saw the causes of war as being the greatest challenge facing humanity and he grappled earnestly with this problem as if devising a new idea in physics. After consideration, he chose to send his letter to Freud. I suspect he wanted a specialist from a field far removed from his own to explain to him what it was that made humans, as living beings, what we are. Freud made a sincere effort to respond, drawing on all of the knowledge of human beings available at the time to do so.

As I noted earlier, the history of modern human (*Homo sapiens sapiens*) evolution appears as a brief blip when viewed in terms of the 3.8-billion-year evolution of life itself. Modern neuroscience is beginning to provide us with knowledge of intellect and emotion in considerable detail. Nevertheless, putting aside the discontinuity represented by our novel acquisition of language, our brains continue to harbor instincts just like all other animals.

* The only musical performance by Einstein known to exist used to be available on many websites that host short musical pieces. Being very interested myself, I listened to the performance repeatedly on a video streaming site. I did so because there is much in a musical performance that tells you of the ideas, character, and carriage of the person performing it. It is a short and tranquil piece that on first exposure seems easy, although with a rhythm that is somewhat wavering such that many people will, I expect, be convinced that the recording is of Einstein indulging in his hobby. However, the way in which the performance [the second movement of Mozart’s Violin Sonata No. 26 (K-378)] is so full of artistry left me a little doubtful and so I looked into whether any old standard play (SP) recordings still existed somewhere. In doing so, I discovered that there was a recording of the same piece. This was a wonderful SP record of Carl Flesch (1873 to 1944), a famous violinist of those times, playing in 1936. When I started the performance attributed to Einstein and the corresponding part of the Flesch recording at the same time and listened to them simultaneously, I discovered that they overlapped exactly. I wrote about this in “*Albert Einstein’s Inverse Omega: Considering Education from the Perspective of Evolution of the Brain (Evolutionary Pedagogy)*” (Bungeishunjū Ltd., 2014). Subsequent to publication, the number of sites on the web carrying the Einstein performance began to diminish one by one to the extent that it has now largely disappeared. When I spoke about this with Kazuki Sawa, a renowned violinist and former President of the Tokyo University of the Arts, he told me that the SP recording was so good, it had been used in classes at the university.

Figure 12—“Why war?”



Einstein had a deep love for the arts*. While Freud worked on neuroscience and evolution when young, the prohibition on teaching by Jews meant that by the time of these letters he had switched to a mix of research and practice, focusing on clinical work. Visiting the place where he came to live in London after having been forced out of Vienna conjures up vivid reminders of his thinking.

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