

Edmund Wittbrodt^{*}, Zdzisław Brodecki^{**}

TECHNOLOGICAL LIFE AND ITS IMPLICATIONS

Abstract: Technological life is at the embryonic stage. For now, we observe only fragments of knowledge in the ocean of ignorance. The distance between Artificial Intelligence and Artificial General Intelligence is so great that the design architecture of computers reminds only the brain of a child. We may observe how IT and AI increasingly integrate into our society. New technologies present many fundamental questions concerning safety and security in cyberspace and outer space. Such collective superintelligence will be more advanced than the Internet (digital intelligence) and autonomous machines (universal intelligence). Protection of future generations in the age of technological civilization requires presenting a vision of jurisprudence as a (particular sort of) practice. Special attention should be given to global justice and exploitation, which reflects freedom (as a primary value) and other rights of smart robots. Those rights in transnational contexts: everyday activities and impact on fundamental human rights (including dignity). The global civil society (singleton) ought to be constructed on cosmopolitan rights and the duty of hospitality. Those ideas may generate binding norms not only for individuals but also for collective actors and, most importantly, for humans and smart robots.

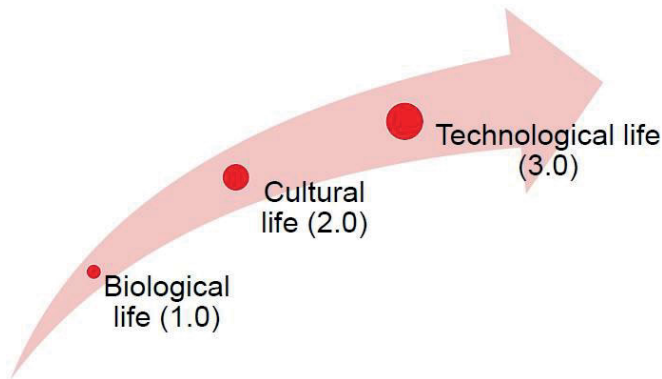
Keywords: Artificial intelligence; biological, cultural and technological life; individual and collective superintelligence; smart and quasi-human robots; law and responsibilities

^{*} Professor of Gdansk University of Technology.

^{**} Professor of University of Business and Administration in Gdynia.

1. TECHNOLOGICAL LIFE. FROM BIOLOGICAL THROUGH CULTURAL TO TECHNOLOGICAL LIFE

We live on the archipelago of artificial intelligence¹. Artificial intelligence (AI) is the collection of various methods that remind small “islands” linked intrinsically, which does not exclude the hybrid techniques based on a few of them². The lack of the big picture of the archipelago makes it hard to understand the evolution from biological through cultural to technological life³.



Source: M. Tegmark, *Życie 3.0. Człowiek w erze sztucznej inteligencji (Life 3.0. Being Human in the Age of Artificial Intelligence)*, Prószyński i S-ka, Warszawa 2019, p. 58.

Technological life is at the embryonic stage. So far, we have observed only fragments of knowledge in the ocean of ignorance. The map showing various systems of learning machines includes algorithms (genetic, arts, experts), neural networks (Kohonen network, Hopfield network), fuzzy sets (created by Zadeh), pattern recognition (developed by scientists from the Jet Propulsion Laboratory), and cluster analysis⁴.

¹ See: R. Tadeusiewicz, *Archipelag sztucznej inteligencji (Archipelago of Artificial Intelligence)*, EXIT, Warszawa 2021, p. 7–8, The metaphor of “archipelago” is very pictorial, explaining the difference between diversity and unity.

² *Ibidem*.

³ Technological life (3.0) is introduced by Max Tegmark (professor of physics) in his excellent book *Life 3.0. Being Human in the Age of Artificial Intelligence*. Book published in Polish: *Życie 3.0. Człowiek w erze sztucznej inteligencji*, trans. Tomasz Krzysztoń, Prószyński i S-ka, Warszawa 2019, *passim*. Also: M.A. Galewski, P. Duba, *Marine and Cosmic Inspirations for AI Algorithms*. [in:] *Per mare ad astra: space technology, governance and law*, Vol. II, eds. E. Wittbrodt, M. Konopacka, P. Chyc, Polska Akademia Nauk Oddział w Gdańsku, Komisja Nauk Kosmicznych, Gdańsk 2021, p. 160–172, Z. Brodecki, M. Konopacka, *Thinking out of the box: the human being in the AI era*. [in:] *Per mare ad astra: space technology, governance and law*, Vol. II, eds. E. Wittbrodt, M. Konopacka, P. Chyc, Polska Akademia Nauk Oddział w Gdańsku, Komisja Nauk Kosmicznych, Gdańsk 2021, p. 195–214.

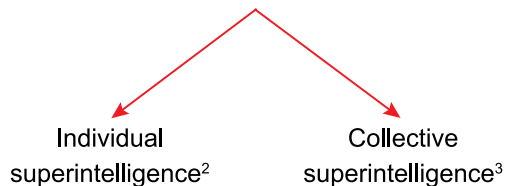
⁴ R. Tadeusiewicz, *Archipelag...*, *passim*.

The gap between Artificial Intelligence (AI) and Artificial General Intelligence (AGI) is so vast that computer architecture merely resembles a child's brain. Some experts believe in the rapid development of artificial intelligence, anticipating that by the latter half of the 21st century, it will achieve the capabilities of a mature adult. Aligning human intelligence with brain-computer interfaces will be a monumental step toward the future. From that point onward, the question of a smart robot's personhood will become paramount.

Superintelligence (SI) might emerge in the 22nd century if it does at all. It is prudent to consider its implications primarily for future generations. The debate is mainly ethical and focused on algorithms and neural networks. If computers surpass human capabilities and begin intercommunicating across different robotic entities, our intervention ability might already be past due. It is conceivable to envision an uprising, akin to a new Spartacus, on another planet by AD 2223, liberating these "artificial slaves".

2. THE FUTURE OF EVOLUTION

The anatomy of technological life: toward(s) superintelligence¹



2. The future of evolution

Legend:

1. From AI (Artificial Intelligence) through AGI (Artificial General Intelligence) to SI (Superintelligence)⁵.
 2. Individual superintelligence: genetic manipulation⁶, transfer of the human brain⁷, brain-machine interface⁸.
 3. Network (web) of human brains in cooperation with all kinds of robots = synergic mind⁹
- Source: N. Bostrom, *Superinteligencja: scenariusze, strategie, zagrożenia (Superintelligence: Path, Dangers, Strategies)*, Helion, Gliwice 2016, *passim*.

⁵ See: N. Bostrom, *Superinteligencja: scenariusze, strategie, zagrożenia* (original title: *Superintelligence: Path, Dangers, Strategies*), trans. D. Konowrocka-Sawa, HELION, Gliwice, 2016, *passim*.

⁶ See: R. Plomin and others, *Common DNA Markers Can Account for More Than Half of the Genetic Influence on Cognitive Abilities*, "Psychological Science", 24(4), 2013, p. 562–568.

⁷ See: A. Sandberg, N. Bostrom, *Whole Brain Emulation: A Roadmap*, Future of Humanity Institute, University of Oxford 2011, *passim*.

⁸ See: M. A. Lebedev, M. A. Nicoletis, *Brain-machine interfaces: past, present and future*, "Trends in Neuroscience", 29(9), 2006, p. 536–546.

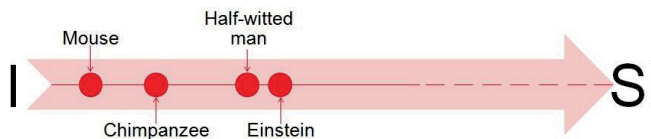
⁹ See: B. J. Baars, *In the theatre of consciousness: The workspace of the mind*, Oxford University Press, New York 1997, *passim*.

We can observe how IT and AI are increasingly integrating into our society. New technologies raise fundamental questions about safety and security in both cyberspace and outer space. The strategy to protect the digital world and the physical universe plays a critical role in upholding human and quasi-human rights and defending a morally acceptable version of the global free market system. What is certain is that major players on the international stage should be acutely aware of the impact of their decisions on the development of collective superintelligence. This “synergic mind” could potentially bring beneficial and harmful outcomes.

3. SYNERGIC MIND

Collective superintelligence is defined as a system comprising many rational entities, surpassing any currently recognized system in all fields of science. A collection of exceptional human brains working in collaboration with various robots takes on the form of a unified mind, often referred to as the “synergic mind”.

Such collective superintelligence will be more advanced than the Internet (digital intelligence) and autonomous machines (universal intelligence). From the anthropocentric point of view, the scale of intelligence between half-witted man and Einstein is significant, but from a less provincial perspective, the minds of those two are almost the same. Nick Bostrom illustrates it in the following way:



Source: N. Bostrom, *Superinteligencja...*, p. 112.

4. SMART ROBOTS. A NOVEL APPROACH

THE VISION

Protecting future generations in the age of technological civilization requires presenting a vision of jurisprudence as practice. It seems to be the “jurisfiction”; the new current within the “law and literature” movement: the law of literature, the law as literature, and the law in literature. Such works are sometimes genuine fiction, sometimes transpositions, and sometimes pastiche. All of them try to analyze the fundamental legal problems: the idea of justice

(Sophocles' *Antigone*), a hyphenated identity (Franz Kafka), the dangers of cognitive dissonance (George Orwell's novel *Nineteen Eighty Four*), investigation (Fyodor Dostoyevsky and Bertolt Brecht) or the utopian capabilities (Cervantes' *Don Quixote*)¹⁰.

The "Law and Films" movement seems to be the most appropriate approach to present the topic of this essay. In contemporary society, law is often examined by the scenario of motion pictures. Authors of an excellent book entitled "*Blade Runner. O prawach quasi-człowieka*" refer to the contents of films known in the Polish language as "*Łowcy androidów*"¹¹. They examine the fundamental ethical and legal questions behind the human-robot interaction¹².

"Robot" does not appear to be a legal term yet. It is "smart" when three conditions¹³ are satisfied:

- moral algorithm;
- ability to communicate moral decisions;
- no immediate human supervision.

While discussing existing approaches to creating moral algorithms, it is possible to distinguish two theories: rule-based approach (which requires encoding all moral rules in advance in order to eliminate decisions under ethical uncertainty) and the utility maximization approach (which is a form of machine learning through trial and error).

LEGAL STATUS

One might wonder if we need a legal status for robots. Let us consider the following two scenarios:

- Smart robots as agents.
- Smart robots as quasi-humans.

In the first scenario, such robots operate as "black box algorithms". They are so intricate that even their designers and programmers cannot easily decipher the ultimate actions of the computers running these algorithms. As a result, manufacturers, programmers, sellers, or insurers should be held liable for any damage caused by these robots. As far as humans can discern, the robot merely acts as an agent¹⁴.

¹⁰ See: *Law and Legal Cultures in the 21st Century: Diversity and Unity*, Special Workshops Abstracts, Jagiellonian University Press, 1–6 August 2007, Kraków, Poland, p. 150–160.

¹¹ *Blade runner. O prawach quasi-człowieka (About quasi-human rights)*, red. K. Zeidler, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2021, *passim*.

¹² See, for example: J. Kamień, *Golem – pierwszy android?* (p. 23-38); M. Andruszkiewicz, *Blade Runner 2049 – wyzwania etyki przyszłości* (p. 53-70); P. Rybiński, *Test Scotta-Villeneuve'a* (p. 249-264).

¹³ See: Y. Hu, *Robot criminals*, "University of Michigan Journal of Law Reform", Volume 52, 2019, p. 488-499.

¹⁴ See: Ch. Mulligan, *Revenge against Robots*, Brooklyn Works, Spring 2018, p. 10-15.

This traditional perspective has recently faced criticism from those who have begun to explore the concept of “social robots” that communicate and interact with humans on a social level. Kamil Zeidler identified key attributes potentially indicative of android personhood: memories, emotions, survival instinct, innate poetics of “replicants” free will, and finally, a potential reproduction mechanism¹⁵. This aligns with the analysis by Gabriela Bar, who delved into the legal facets of robot personhood, considering aspects such as the legal status of AGI, technical standards, certification and registration of AGI, and mandatory insurance for AGI¹⁶.

RIGHTS AND DUTIES

Modern legal considerations encompass both the semantics of legal concepts and the cognitive function of legal policy. Such introspection becomes vital when deliberating: Which robot actions should be prohibited? The answer to this pivotal query shapes the rights and duties associated with smart robots. Emerging legislation should integrate seamlessly with technological advancements and governance¹⁷.

Particular attention should be given to global justice and exploitation, reflecting the freedom (as a primary value)¹⁸ and other rights of smart robots. These rights have transnational implications, influencing daily activities and fundamental human rights, including dignity. As a starting point, we might adopt a robust cosmopolitan stance, advocating for a global principle of equality of opportunity and global human rights¹⁹.

¹⁵ K. Zeidler, *Prawno-etyczne problemy podmiotowości androidów i przysługujących im (?) praw człowieka* [in:] *Blade runner...*, p. 11–21.

¹⁶ G. Bar, *Robot personhood, czyli po co nam antropocentryczna sztuczna inteligencja?*, [in:] *Prawo sztucznej inteligencji*, red. L. Lai, M. Świerczyński, C. H. Beck, Warszawa 2020, p. 29–44.

¹⁷ See: E. Wittbrodt, Z. Brodecki, *In search of common ground for the space sciences*, [in:] *Per mare ad astra: space technology, governance and law*, Vol. I, eds. E. Wittbrodt, Z. Brodecki, M. Nyka, Polska Akademia Nauk Oddział w Gdańsku, Komisja Nauk Kosmicznych, Gdańsk 2019, p. 7–22; and also: K. Malinowska, *Legal aspects of managing the risk of space projects* [in:] *Ibid.*, p. 57–70; further remarks: M. Polkowska, A. Golab, *Managing the international space* [in:] *Per mare ad astra: space technology, governance and law*, Vol. II, eds. E. Wittbrodt, M. Konopacka, P. Chyc, Gdańsk 2021, p. 59–84.

¹⁸ The idea of “rational freedom” is promoted by Immanuel Kant’s (1724–1804) thinking and developed by Amartya Sen, who refers to broader than self-interested goals and more socially oriented values (including categorical imperative). P. Räsänen, *Rational Freedom: Sen and Kant on freedom and rationality* [in:] *Law and Legal Cultures in the 21st century...*, p. 73–74.

¹⁹ See also: T. Widłak, *Robo-etyka cnót: o androidach, prawie i kształtowaniu ludzkiego charakteru* [in:] *Blade runner...*, p. 71–88; K. Ginszt, J. Ginszt, „Bardziej ludzcy niż człowiek” – o potrzebie reinterpretacji prawa do życia, wolności i informacji w świecie filmu *Blade Runner* Ridleya Scotta [in:] *Blade runner...*, p. 89–104; P. Sut, *Co relacje człowiek–android mówią nam o człowieczeństwie?* [in:] *Blade runner...*, p. 165–176; J. Jankau, D. Sreter, *W poszukiwaniu informacyjnego „ja”*, czyli ucłowieczanie androida [in:] *Blade runner...*, p. 211–218; A. Łucka,

The issues of global responsibility and liability are equally important. Consequently, the duties of smart robots must be addressed in discussions about their status. The justice principle, relevant in both domestic and regional domains, should be extended to the global arena. The question, “Who is responsible and/or liable for what, and to whom?” appears universal and is evident in contractual and tortious relations. A concise overview of the legal system directs our primary focus to:

- Smart robots as tortfeasors;
- Smart robots as criminals;
- Smart robots as weapons.

The evolution of cosmopolitan norms of justice in tort law suggests that such lofty goals are attainable. In fields like commercial contracts or even tortious obligations, the law is evolving into a universal language with regional nuances rather than manifesting as distinct dialects. This convergence is mainly because numerous individual and collective actors embrace the market philosophy. The market system underpins the “law and economics” movement, which foresees its expansion accompanied by mutual transformation among individuals and communities.

The universalization process of criminal law is, however, less progressed. As such, advancing international criminal law and embedding it within regional and domestic frameworks is challenging. The notion of “interculturalism” (bridging the gap between ethnic nationalism and radical multiculturalism) finds limited potential in a landscape with smart robots positioned as criminals. Hence, cultural diversity remains more prevalent in this field than cultural unity. We can hope that social philosophy will fuel the “law and sociology” movement and, eventually, shape the philosophy of criminal law in an evolving context.

The idea of “reciprocity and connection” helps to reconstruct the concept of collective self-defence in the case of armed attacks against an independent state of the UN and the famous NATO formula “One for all, all for one”. We may observe how the law of armed conflicts works in the Ukrainian war. The question of authority (the Security Council of UN; NATO) imitates the common opinion because the role of the Security Council depends on the decision of Russia (the second Byzantine), whereas the role of NATO depends on the decision of the USA (the second Rome). The present situation proves that “There is no such thing as a free lunch”. It is a somewhat cynical way of saying that you never get something for nothing. However, how do we interpret it when Ukraine fights for “itself and at least all Europeans” and does not “get enough”? Let us believe that the formal status of Ukraine (as it is not a member

of NATO yet) does not blind us since all friendly neighbours are our allies. If we do not follow the idea of communitarianism now, then in the future, the superintelligent robots either liberate humans from their “constraining mind” or exclude us from the global civil society.

5. CONCLUSIONS

The new challenges are inspired by the most significant transformation in the history of man, which we can observe during the transitional period from cultural to technological life. The process of digitalization and autonomation of public life requires an extraordinary effort to avoid the crash of civilization. The global civil society (singleton) should be constructed on cosmopolitan rights and the duty of hospitality. These ideas may generate binding norms not only for individuals but also for collective actors and – most importantly – not just for humans but for smart robots.

BIBLIOGRAPHY

- Baars:** B. J. Baars, *In the theatre of consciousness: The workspace of the mind*, Oxford University Press, New York 1997.
- Bar:** G. Bar, *Robot personhood, czyli po co nam antropocentryczna sztuczna inteligencja?*, [in:] *Prawo sztucznej inteligencji*, red. L. Lai, M. Świerczyński, C. H. Beck, Warszawa 2020.
- Bostrom:** N. Bostrom, *Superinteligencja: scenariusze, strategie, zagrożenia* (original title: *Superintelligence: Path, Dangers, Strategies*), trans. D. Konowrocka-Sawa, HELION, Gliwice, 2016.
- Brodecki:** Z. Brodecki, M. Konopacka, *Thinking out of the box: the human being in the AI era*. [in:] *Per mare ad astra: space technology, governance and law*, Vol. II, eds. E. Wittbrodt, M. Konopacka, P. Chyc, publ. Polska Akademia Nauk Oddział w Gdańsku, Komisja Nauk Kosmicznych, Gdańsk 2021;
- Galewski:** M.A. Galewski, P. Duba, *Marine and Cosmic Inspirations for AI Algorithms*. [in:] *Per mare ad astra: space technology, governance and law*, Vol. II, eds. E. Wittbrodt, M. Konopacka, P. Chyc, publ. Polska Akademia Nauk Oddział w Gdańsku, Komisja Nauk Kosmicznych, Gdańsk 2021.
- Hu:** Y. Hu, *Robot criminals*, “University of Michigan Journal of Law Reform”, Volume 52, 2019.
- Lebedev:** M. A. Lebedev, M. A. Nicolelis, *Brain-machine interfaces: past, present and future*, “Trends in Neuroscience”, 29(9), 2006.
- Mulligan:** Ch. Mulligan, *Revenge against Robots*, Brooklyn Works, Spring 2018.
- Plomin:** R. Plomin and others, *Common DNA Markers Can Account for More Than Half of the Genetic Influence on Cognitive Abilities*, “Psychological Science”, 24(4), 2013.
- Räsänen:** P. Räsänen, *Rational Freedom: Sen and Kant on freedom and rationality* [in:] *Law and Legal Cultures in the 21st century*.

- Sandberg:** A. Sandberg, N. Bostrom, *Whole Brain Emulation: A Roadmap*, Future of Humanity Institute, University of Oxford 2011.
- Tadeusiewicz:** R. Tadeusiewicz, *Archipelag sztucznej inteligencji (Archipelago of Artificial Intelligence)*, Warszawa 2021.
- Tegmark:** M. Tegmark, *Życie 3.0. Człowiek w erze sztucznej inteligencji (Life 3.0. Being Human in the Age of Artificial Intelligence)*, Prószyński i S-ka, Warszawa 2019.
- Zeidler:** K. Zeidler (red.), *Blade runner. O prawach quasi-człowieka (About quasi-human rights)*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2021.