

Paweł Księżak

Artificial Intelligence and the Dawn of Cyborg Law

Key Legal Challenges
for Private Law
in the Era of Human Augmentation



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„We are already cyborgs. Our memory is overwhelmingly outsourced to computers – they remember everything with extreme precision down to the pixel.”

Elon Musk

„The boundaries of human beings in the digital age extend beyond their biological boundaries to encompass the greater boundary of their cyborg selves and include the digital organs by which they extend themselves.”

Article 2 of Universal Declaration of Cyborg Rights (by Aral Balkan)

„A person is entitled to dominion over intelligences and agents, and their activities, whether they are acting as permanent residents, visitors, registered aliens, trespassers, insurgents, or invaders within the person’s body and its domain.”

„A legally recognised mutant shall enjoy all the rights, benefits, and responsibilities extended to natural persons.”

*From The Cyborg Bill of Rights
(by Cyborg Foundation)*

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1. OUTLINE OF THE PROBLEM

It has become a cliché to say that the law has not kept pace with the development of new technologies. Certain phenomena, such as blockchain, artificial intelligence and, before that, the internet, or social media, change reality extremely quickly and profoundly, so much so that there is indeed room for entirely novel fields of inquiry, also within legal sciences. Reactive lawmaking has some advantages, in that it captures the actual, emerging problems that the law should solve. However, while particular issues are identified, there is a lack of theoretical tools for creating specific holistic concepts: structures which may encompass such new problems are inscribed. The flood of not infrequently incompatible solutions to address various elements of a given broader phenomenon makes it much more difficult to build the edifice from the ground up, as it were, starting with the structure, the essential framework, the foundations. This problem is readily seen with respect to the law of artificial intelligence (AI). When—quite unexpectedly—a new technology in the form of machine learning led to the rapid development of AI in the mid-2010s, the sudden search for normative solutions began virtually in the dark. Hence, one would quite haphazardly approach the most elementary questions, ranging

from the subject of future regulation (AI, robots or high-risk AI, definition of AI), the scope of regulation (defining the principles of AI in the market or, rather, the framework for its creation) or the legal status of the entity described (subject, object, product). The misalignment of the law goes so far that pertinent regulations become obsolete even before they come into force, simply because a new field of AI activity emerges (e.g. so-called generative AI). The intense debate has resulted in draft legislation which, even at first glance, appear to be only a prelude to a comprehensive regulation.

In order to avoid repeating the same mistakes, a discussion on the future law of cyborgs should begin today¹. Indeed, it is highly likely that the law governing the symbiosis between the human and the machine will be the main challenge in the latter half of the 21st century, inevitably involving issues such as artificial intelligence. Perhaps AI will be analysed as a special case of a more general cyborg law. The following deliberations will focus on only one aspect of the issue, namely the relevance of cyborgisation for private law, while the inquiry will be primarily concerned with the cognitive integration that leads to AI-supported cerebral function.

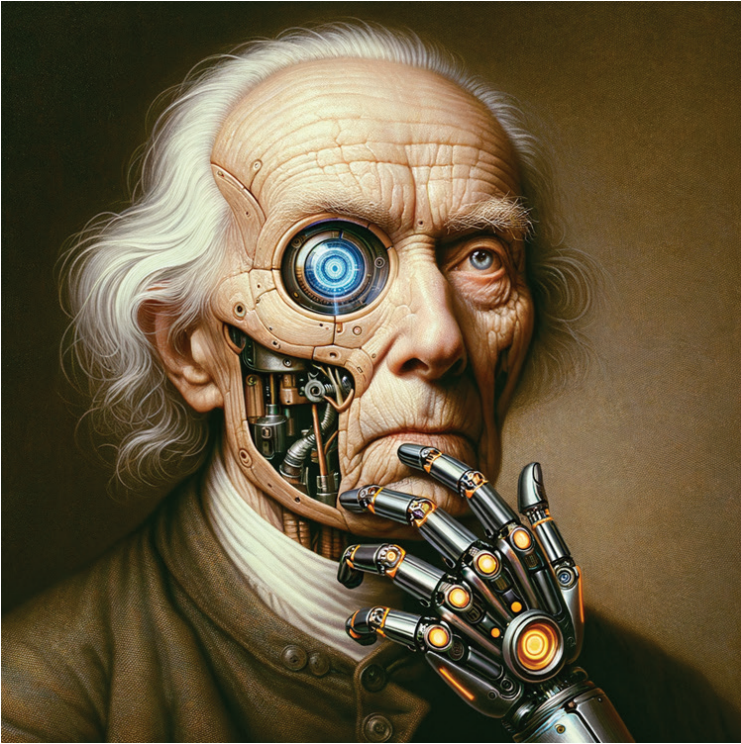
¹ I have been publishing a series of articles on this topic in *The Voice of Law*. *Allerhand Law Review* since 2021 (P. Książak, *Prawo cyborgów (I). Wprowadzenie w problematykę*, *Głos Prawa* 2021, vol. 4, No. 2(8)).

2. CHALLENGES FOR THE LAW

What is a cyborg? The word itself—a portmanteau of “cybernetic” and “organism”—was coined in 1960 by Manfred Clynes and Nathan Kline to describe an entity with biological and technical elements², most often a human being combined with a machine. Cyborg law, on the other hand, denotes the legal norms governing commercial operation of such technologically enhanced humans, which may encompass both the rules governing the process of human-machine integration itself and—or even primarily—the commercial operation of cyborgs.

The discussion must begin by formulating the subject of inquiry in more precise terms. Clearly, the dictionary definition is general, broad and very ambiguous and, from a legal point of view, such a general definition of the subject may seem inadequate. However, as we will see, the combinations of the human and the machine can assume a variety of forms, and developing precise definitions is not so much difficult as it is counterproductive, since it fails to cover convergent elements of cyborgisation that emerge in a broader historical, social and technological context. One could adopt an extremely broad view of technological assistance available to humans, but this would warrant

² https://en.wikipedia.org/wiki/Cyborg#cite_note-andspace-1



talking about cyborgs from the moment a Homo species started using tools. Such an approach would of course be worthless because it would essentially encompass all human activity.

Taken more narrowly, only those humans who use mechanisms (machines) which perform some of the work that serves humans and use energy that does not come from humans may be considered cyborgs. Under such a proposition, humans have been cyborgs since the Neolithic Revolution, with the invention of

the wheel, the steam engine, electricity and the automobile being the successive stages of cyborgisation. Once again, such a definition is too broad and does not facilitate understanding the nature of the new phenomenon unfolding before our eyes. Thus, when speaking of the cyborg, we will only have in mind such human-machine fusions in which the degree of integration is very high: machines are either built into people, implanted in their bodies, or are in a permanent, very close relationship with them, “improving” them constantly. Still, further caveats are likely to be necessary even here, as such a general definition could apply to a watch, a smartphone, a hearing aid, a pacemaker or a prosthetic arm.

Is a person with a smartphone, which they use and which is an extension and complement of their mind, already a cyborg? This question has already been explicitly addressed in case law and jurisprudence.³ In a famous statement, Justice John Roberts in the US Supreme Court decision in *Riley v. California* observed:

“Modern mobile phones . . . are now such a pervasive and insistent part of daily life that the proverbial visitor from Mars might conclude that they are an important feature of human anatomy.”⁴

³ B. Wittes, J. Chong, *Our Cyborg Future: Law and Policy Implications*, Center for Technology Innovation at Brookings, 2014, <https://www.brookings.edu/research/our-cyborg-future-law-and-policy-implications/>

⁴ 573 U. S. 373 (2014), <https://supreme.justia.com/cases/federal/us/573/373/>



The question of whether a person with a smartphone is a cyborg would, of course, be irrelevant if it were reduced to mere conceptual and terminological issues. From our point of view, the question has to be asked differently, namely whether the symbiosis of a human being with a technology such as the smartphone requires special legal regulation; in other words, whether a new phenomenon is emerging that should be recognised and standardised. The view that humans are already cyborgs has long been

expressed in the literature. Undoubtedly, the entire normative environment associated with the development of new technologies (including the use of AI to process human data) supports this. However, it seems crucial to identify those elements of human-machine fusion that will force further normative transformations. It may be tempting to circumscribe the notion of the cyborg to those people who have a machine-like component implanted in their bodies. However, a paradigm which ties the notion of the cyborg to the degree of integration or union of the human and the machine, has serious drawbacks.

Firstly, it makes a *criterium divisionis* out of an element that is perhaps only of secondary importance: are a chip in a watch and a chip under the skin, which process the same data and perform the same function, really two completely different realities that require distinct regulation?

Secondly, this criterion alone is certainly not sufficient, as the resulting set is still too heterogeneous. On the one hand, it applies to devices that support motor functions of the body (e.g. prostheses, exoskeletons) or, more broadly, the functioning of various organs (e.g. bloodstream nanorobots which examine organ function, test blood composition and distribute medicines, or help clean the kidneys), or improve sensory capacity (cameras that replace sight and are connected to the brain, implanted hearing aids). On the other, there are technologies which support mental faculties through cognitive enhancement

(e.g. direct connection to the internet, memory enhancement, AI support). In other words, the question is whether “cyborg” denotes a person with a hearing aid, an artificial heart valve, a prosthetic arm or leg, or a person using devices that support their mind, such as a processor implanted directly in the brain that enables one to control external objects or give commands to a computer.

We may introduce another criterion that is important to distinguish: whether a device which is more or less connected to a human being plays a passive role and serves a tool (whereby the degree of its “passivity” can also vary), or whether it is to some extent autonomous in relation to the human being. The degree of autonomy may differ as well: it may be a device that communicates with the outside world, collects data (internal or external) and responds to the latter (e.g. it tests blood parameters and sends the data to a computer, or receives external information relevant to the functioning of an artificial heart). However, it could also be an autonomous device in the strict sense of the word, i.e. one that is equipped with artificial intelligence (AI) and makes decisions relating to the human body or the outside world (e.g. after analysing blood data, AI sends an impulse that causes medication to be administered or informs the smart home system of the need to raise or lower the temperature in the bedroom). A device implanted in the brain, equipped with direct online access, may help to acquire and process information as well

as prompt certain decisions, without even registering in human consciousness.

This overview demonstrates that there may be various degrees and forms of the cyborg, an entire spectrum of relations between humans and technology. It seems quite obvious that the analyses of future cyborg law will have to dismiss those elements that do not introduce any significant novelty into the previous social and legal categories. As already noted, although it may be said that the human is becoming more and more of a cyborg throughout their development and that the change is quantitative rather than qualitative, it seems reasonable to recognise that the scale of such changes, the degree of human dependence on machines and the emergence of new technological phenomena involving direct coupling of the human brain with machines, translate into a qualitative change. A new phenomenon is emerging which can no longer be meaningfully described in terms of the existing “classical” legal concepts and cannot be understood within the framework of the former constructs. If, for example, we imagine an interface built directly into the brain of a human being, which allows them to be constantly online, and at the same time integrated with their senses in such a way that what they perceive is simultaneously processed by an artificial intelligence system and fed into the network; if, furthermore, we imagine that there is a constant conversion of data—that is, the decisions that the

human makes are directly influenced by the workings of this system—then establishing a connection with the brain of a human being is a process that can no longer be described in terms of “classical” legal concepts and cannot be understood within the framework of the former constructs; if we imagine that establishing a connection with another user of such a system consists of simply thinking about talking to him or her, it is impossible to say that such a situation can be described as a special instance of the familiar solutions of privacy protection, personal data protection, image protection or telecommunications law. Such an approach would be completely counterfactual, although it would be in line with a certain trend in legal scholarship, according to which such new phenomena as artificial intelligence can be successfully described by drawing on the legacy of past centuries (e.g. by relying on the Roman experience with the operation of the slave trade) or by making only minor adjustments to the existing solutions which pertain to “similar” phenomena. I firmly believe that technology does indeed create a new quality that requires new norms, and that there is little point in looking to Roman law or the law of nature (regardless of what it may mean) for inspiration.

Our considerations should therefore focus on those situations in which there is a primary integration of the human with a machine to support their mind, and above all on those systems that are either



permanently connected to the human system or extremely closely integrated with it over a long period of time. This last reservation is, of course, evaluative and may be questionable in relation to a specific device. Curiously enough, Steve Mann, who is sometimes described as the first cyborg and who gained fame for using a device called EyeTap⁵—a forerunner of Google Glass, i.e. a computer device worn in a manner similar to glasses, which makes it possi-

⁵ <https://en.wikipedia.org/wiki/EyeTap>

ble to display images from a computer and at the same time capture images—found the term applied to him too vague⁶.

As previously stated, we should not reject the idea that we have already become cyborgs out of hand, and therefore a redefinition of certain rudimentary legal concepts, such as subject - object - property, is already necessary today. After all, it is hardly decisive whether a mobile phone is held in the hand or whether it can perhaps be miniaturised and implanted in the hand. Moving a watch that performs the functions of a computer interface from the hand under the skin may not be much of a qualitative change either. Instead, greater importance should perhaps be attached to how the device affects human functioning, especially the functioning of the human mind, rather than where exactly the device is located. It should be noted, however, that a view which is functional (material) as opposed to formal (i.e. a qualitative change perceived in the technological transgression of the body) is fundamental to the law. Many laws (e.g. criminal procedure) explicitly draw the line between what is internal and external to a person. A vision of an augmented mind that also includes technological elements outside the human being (e.g. the computer) would already have to cause a revolution in the perception of certain events.

It would seem, therefore, that the need to build a new legal architecture arises primarily in those sit-

⁶ [https://en.wikipedia.org/wiki/Steve_Mann_\(inventor\)#cite_note-48](https://en.wikipedia.org/wiki/Steve_Mann_(inventor)#cite_note-48)

uations in which the mind is modified by technological tools integrated with the body. These are systems that have not yet been introduced into everyday life, at least not on a large scale, but which are likely to spread rapidly in the coming decades. For example, one is working on brain-computer interfaces, which will make it possible to control prostheses, exoskeletons, robots, or computers with thoughts alone, and to improve the brain itself through AI support. It also follows from the above that it is impossible to draw a clear line where the cyborg thus understood begins and where we are dealing with phenomena that do not require a revolutionary change in the law. Future laws relating to cyborgs may span a whole spectrum of different norms that will apply to different types of cyborg, with the need for new legal constructs becoming more apparent where the intrusion into the mind and the use of artificial intelligence is greater. We must not overlook those elements which, albeit not exclusively specific to cyborgs, will become increasingly important in this context, such as data security, privacy and data protection.

What are the main issues to be analysed from the standpoint of future cyborg law?⁷ Undoubtedly, the issue of data protection comes to the fore. Securing

⁷ Attempts to identify the legal problems involved have been made by e.g. I. Goold, *The legal aspects of cognitive enhancement*, in: *Rethinking Cognitive Enhancement* (pp. 250-273), ed. R. Meulen, A. Mohammed, W. Hall, Oxford University Press, 2017; J.A. Chandler, K. Vogeley, *Cognitive enhancement from a legal perspective*, in: *The Routledge Handbook of the Ethics of Human Enhancement*, ed. F. Jotterand, M. Ienca, New York-London 2024.

data (i.e. securing the mind) and defining who will manage the personal data resulting from the integration of the human and the machine, establishing systems for the protection and use of data as it circulates reciprocally between the two entities, will be a fundamental challenge for law in the 21st century. Naturally, this applies not only to cyborgs in the strict sense, but more generally to all human activity in an increasingly powerful technological environment. Given such a point of view, it makes little difference whether we consider the use of the smartphone, the autonomous car, smart home appliances, and the Internet of Things as part of cyborg law or as an entirely separate phenomenon. In any case, these issues will become more and more important as the symbiosis between the human and the machine intensifies. This issue, in the context of the connection between the computer and the human brain, creates the need for a catalogue of neurorights that safeguard cognitive integrity and human autonomy.⁸

The second fundamental issue for cyborg law is human autonomy.

Faced with growing involvement of machines, it will be a fundamental challenge for the law to distinguish between the so-called “free will” of a human being and the will of a machine—an artificial intel-

⁸ O. Nawrot, *What about the interior castle? Response to Ienca's and Andorno's new human rights in the age of neuroscience and neurotechnology*, *Roczniki Teologiczne* 2019, 66, 69–85. doi: 10.18290/rt.2019.66.3-5; M. Ienca, *On Neurorights*, *Front. Hum. Neurosci.* 2021, 15:701258. doi: 10.3389/fnhum.2021.701258

ligence that tells a human being what to do. After all, the answer to this question will crucially bear on other issues such as guilt (in criminal and civil law), knowledge, intent, a person's good or bad faith, or due diligence of a person using technological tools to assist him or her in making decisions. The integration of the human being with AI is progressing—manifesting, for example, in the imminent fusion with the smartphone—and the moment artificial intelligence is integrated with the human being (via an implant or other direct brain interface technology) in such a way that it is impossible to distinguish between the actions of a human being and those of a machine, the question of who acts will become fundamental. If this cannot be easily determined, it is clear that new norms will have to be created. The attribution of guilt and responsibility (criminal and civil) when the brain is assisted by technology and the decision is a product of the joint “will” of the human and the machine needs to be redefined. The distinction between liability for damage caused by humans using machines (e.g. cars) and liability for “natural” acts is well-established, but how to judge a case when humans and machines become one? The matter will become even more complicated if the technological element itself acquires legal autonomy (which seems inevitable in the longer term with regard to artificial intelligence). The question is also fundamental to constitutional law, to the very foundations of a democratic system of government.

Can a cyborg—half human, half AI—vote, govern, or judge?

Other questions concern the participation of cyborgs in civil law. It should be considered to what extent a human being integrated into a machine, possessed of superhuman abilities, with enhanced sight and hearing, having infinitely more knowledge through direct access to the internet or relying on neural networks of artificial intelligence that assist them in decision-making, may participate in trade on the same terms as other, unenhanced humans. Since the advantages of certain categories of actors over others lead to special protection for the weaker ones (consumers in their relations with businesses are the best example), similar mechanisms may have to be constructed for the protection of unenhanced human beings. This could lead to a situation where there is no special law for cyborgs, but rather a law for non-cyborgs, i.e. those who—just as consumers, children or persons with disabilities—qualify as disadvantaged parties and are therefore specially protected by comprehensive sets of norms. In certain domains, it is already taken for granted that a person acting without the assistance of a machine will be treated differently from a person assisted by one. Sport offers eloquent examples, as problems arise if the enhancement of the body is intrinsic, whereby the supporting element integrated into the body cannot be separated from the human being and can lead to an advantage over other athletes (as was the case with Oscar Pistorius).

However, if cyborgs were to be considered on an equal footing with other human beings, this must lead to the obvious question of subjectivity, or rather its extent. Superficially, the question seems nonsensical: after all, it cannot be assumed that a particular technological improvement deprives a cyborg of subjectivity, or that those who do not do so lose subjectivity. However, what is self-evident today may not be self-evident tomorrow, when the differences between modified and unmodified persons become relevant. For instance, if Neanderthals were still with us, would they be considered the same subjects as *Homo sapiens* and participate on the same terms? What about australopithecines? Perhaps the difference between *Homo sapiens* and *Homo cyborg* will soon be greater than that between *Australopithecus* and *Homo sapiens*. In that case, it will be natural (i.e. it will ensue as an inevitable consequence of certain events) to create a different legal environment for different types of the human: unmodified and cyborg. These types may be numerous and there may be multiple different subjectivities. This question requires careful analysis.

Enhancing mental performance today, in the pre-cyborg stage, is a challenge when it involves the support of computer systems that are easy to hide (e.g. AI support in chess tournaments). However, will it still be possible to detect dishonesty where the human-machine interface is located in the brain? Is there any point in banning the use of such devic-



es? In a world of cyborgs, what would be the point of having to pretend not to be one in an exam? This, of course, ties in with the questions posed at the beginning: who will own the data, it is permissible to look into someone else's brain, into the information in the augmented mind, under whatever pretext, be it to identify dishonest practices in sport or any other seemingly legitimate purpose.

The question of being able to look into an augmented mind raises questions about criminal law.

Can a person using such tools still be treated in the same way as an unenhanced person? Does treating them differently entail increasing or diminishing their responsibility? How do we account for the integrity of the cyborg? Is the destruction of technological enhancements bodily harm or merely the destruction of things? Even so, data-related issues will again prove the most relevant: is it possible to “search” the enhanced mind of the criminal, to look into the chip implanted in the brain that records various information (e.g. what the person sees, and perhaps what the person thinks and does)? Should such a memory be treated as computer memory would or as a part of the body that must not be hacked into? May a person facing charges or a witness be compelled to reveal what they have in the electronic part of their mind? Should the information stored on a disc located in the brain or somewhere in the body be treated as if it were stored on a computer disc and therefore to be searched under the same conditions as a search of a computer, or is it to be regarded as part of one’s memory? In the case of memory integrated into the brain, this distinction is blurred; in fact, the contemporary human has a much weaker memory than their predecessors before the invention of writing, because they use external storage media such as paper or a computer. Thoughts cannot be read, but written thoughts can. The body is the limit. In the case of the cyborg, this limit no longer exists, so new paradigms are needed.

Today's extended memory includes computers, the internet, the smartphone. Soon, however, extended memory will no longer be external to the human being, it will no longer be "at arm's length", but perhaps "in hand", available in the blink of an eye. Relevant information, and perhaps photos and memories, will be recalled at the mere thought of it. The way data is stored and the applicable interface will continue to change; it will become ever closer, more internal, more integrated. This creates another problem: in an expanded mind, changes in memory storage can occur quite easily. So it is not just a matter of storing information perceived through the senses, given that it may also be supplemented with data from the internet, as well as modified, altered and deleted. Modifying memories is not particularly difficult under "analog" conditions, as psychologists have described such processes on numerous occasions. Anyone can be tricked into thinking they remember something they have never experienced, using fairly simple persuasion techniques. Moreover, all memories are only a particular mental representation of past events, not a true-to-life, detailed and accurate record. When the appropriate technological tools are attached directly to the brain, memory modification will probably be easier, perhaps even standard (as in Philip K. Dick's famous short story *We'll Remind You Wholesomely*). Since it will be possible to implant a memory, store it on an external drive or in the cloud, how do we draw the line between the

self and the external? Already today, this boundary is becoming increasingly blurred: minds of many people are already more engaged in the virtual world than in the real one; fewer and fewer people look at an interesting event and write it down in their heads; most take out their mobile phones and start filming. Reality becomes what is digitally recorded (and shared). The transition between one's own memory and one's own external life, external memory and external human image becomes easy.

From the point of view of civil and criminal liability, another question will become increasingly relevant: will a person be obliged to turn themselves into a cyborg; will they be compelled to resort to such a solution if this ensures a higher standard of performance?⁹

Let us consider a doctor who is short-sighted: it is obvious to everyone that they should wear glasses or contact lenses, and we will assess the standard of their due diligence with respect to a person with good vision. Will we apply the same standard of care with other, much more advanced technologies, when it is not just a question of addressing certain conditions or disabilities and restoring one's health, but of improving the ability to treat patients? It is precisely in the medical field that these problems will quickly and clearly become apparent: if the tools exist to improve the work of a medical professional to a superhuman

⁹ The current state of discussion on this topic is collected by J.A. Chandler, K. Vokeley, *Cognitive enhancement...*

level, a look at the issue from the patient's point of view may lead to the conclusion that this new technology is shaping a new standard to which everyone will have to conform, subject at least to civil liability. After all, who wants to use the services of an imperfect doctor when a cyborg with hundredfold better diagnostic and therapeutic capabilities is next door?

Finally, the problem of the cyborg raises questions about the rights to the technologies involved. Can one own a part of another's body? Does the concept of thing and component make sense here? How should one formulate copyright and industrial property rights in the context of the integration of a thing and software with a human being?

As the mind-machine interface technologies necessary for humanity become mainstream, will data and hardware companies have unfettered access to the most intimate thoughts, dreams and memories? Will governments have such access, and should they, even if it requires court approval? What rights does a person have to change or delete enhancements they no longer want? There is no doubt that regulations will be needed to ensure actual and thorough control over technologies that are integrated into the human nervous system and mind. Such regulations must balance progress with the empowerment of individuals and communities to make decisions that affect their mental sovereignty and bodily autonomy.

Legal dilemmas will multiply as the technologies which integrate humans with artificial intelligence

become smaller, more powerful and more networked than ever before. In addition, when machine-based systems gain capabilities that augment and even surpass human capabilities, the line between the body and these tools will become increasingly thin.



In the commercial sphere, there emerge entirely new types of technology-mediated transactions that can alter human traits, abilities, and characteristics at the most fundamental levels. For example, how will contract law deal with the purchase and ongo-

ing management of long-term implants or other advanced enhancements? As biological wetware or humanware becomes a consumer product, will we protect customers with new laws on issues such as producer liability, data ownership, transparent pricing, customisation options, return policies for upgrades and recalls, and dispute resolution mechanisms?

Health law raises even more complex issues. For example, will insurance adequately cover expensive personalised treatments or enhancements? What if treatments blur the line between medical therapy and “lifestyle enhancement”? How will benefit policies define and distinguish between disability, medical conditions, evolution and cosmetic changes? Will providers require mandatory enhancements to remain “competitive”, thereby undermining patient autonomy? In the future, medical practice may be radically transformed by the emergence of tools that can rewrite our genetic destiny and reshape what it means to be human at the most fundamental levels of our biological heritage. Health policies must carefully consider the new dilemmas that arise from taking control of our own evolution.

Finally, employment and anti-discrimination law faces unprecedented issues in the era of human augmentation. While technologies increasingly enhance physical abilities and mental capacity, they can also become visible signs of inequality that inadvertently encourage prejudice in areas such as hiring, promotion, access to resources and work-

place integration. As the range of abilities spans both disability and enhancement, policies need to ensure inclusive and equitable treatment of people in different ability categories.

Based on this brief overview of potential issues, we can hypothesise that the global legislator will face a difficult task in balancing all the interests at stake. Identifying and solving the problems will not be easy, and a number of issues will require the creation of new legal concepts relating to the human-machine relationship. Existing law is neither sufficient nor adequate¹⁰ The changes will have to be profound, covering both the fundamental constitutional issues and the specific issues in each area of law. Private law, which will be discussed later, also has a role to play. It turns out that even in private law, the integration of humans with machines—artificial intelligence in particular—creates new problems that concern fundamental issues.

¹⁰ W. Barfield, A. Williams, *Law, Cyborgs, and Technologically Enhanced Brains*, *Philosophies* 2017, 2, 6; doi:10.3390/philosophies2010006, p. 15.

3. THE BODY AS A SUBJECT-OBJECT BOUNDARY

For the law, the external outline of the human body is now the fundamental boundary between subject and object. Things, including those used by humans, always have a different legal status from humans. Let us leave aside here the special status of certain entities, e.g. animals, as this is not relevant to our considerations. Another issue to be addressed later is the analysis of the symbiosis of human beings with artificial intelligence, whose status as a possible subject is unclear, as this is an issue that requires separate attention.¹¹ With this caveat, we may note that there are virtually no common points in the legal characterisation of the parts of the human body (as a whole, but also cells, tissues and organs) and what is outside, i.e. beyond the boundary of the skin. What is outside the human being is, in principle, the object of the law; the human being itself is the subject. The Austrian Civil Code (ABGB) expresses this in the most classical way by defining a thing:

§ 285. Alles, was von der Person unterschieden ist, und zum Gebrauche der Menschen dient, wird im rechtlichen Sinne eine Sache genannt.

¹¹ For a comprehensive view of the place of artificial intelligence in civil law, see P. Księżak, S. Wojtczak, *Toward a Conceptual Network for the Private Law of Artificial Intelligence*, Springer Cham, 2023, <https://link.springer.com/book/9783031194467>.

(Everything that is separate from a person and is used by people is called a thing in the legal sense).

The body of a living person is not a thing.¹² From a technical-legal point of view, this reason alone precludes considering any property relations involving the body or its elements. However, the term “property” is also used in a broader sense to cover various kinds of exclusive (or most extensive) rights over objects which are not things in the strict sense. However, even in this broad sense, the concept of property would not be valid because the body of a living human being (and its inseparable parts) cannot be considered as an object of law at all. The body creates, constructs and constitutes (in the eyes of the legal system) the human being: it is the human being. The mind, consciousness, emotions—all these manifestations of humanity are products of the body and cannot exist outside the body, at least until the transhumanist dream of transferring the mind to a quantum computer is realised. There is no physical person without a (*nomen omen*) physical substrate. Therefore, since the human being is the subject and the human being is simultaneously constituted of its body (although not exclusively, as we shall see later), the body is the subject, it creates the subject. Insofar as we acknowledge the paradigm (which is not at all obvious) that subject and object are opposed concepts, the body cannot be an object.

¹² The civil-law status of the human body is extensively discussed by L. Bosek in: *Institucje Prawa Medycznego. Tom 1. System Prawa Medycznego*, ed. M. Safjan, L. Bosek, Warsaw 2018, pp. 602-626.

Such a syllogism leads to the conclusion that, no matter how broadly we define the term “ownership”, asserting that a human being (an individual) owns their body cannot be considered valid in the legal sense. This is because such a term presupposes that there is an entity—an extra-corporeal entity—that possesses an ownership relation with the body. But there is no physical person who is other than the body, who is outside the body. It is the living organism, *Homo sapiens*, who is the physical person, the subject, and it is the body that has certain relations to what is outside of it, while it has no property relations to itself. The human does not own themselves, but is themselves. Therefore, no part of the body “belongs” to the body in the sense that the body is the subject-owner and the parts of the body are the object of its ownership. The parts of the organism (the parts of the body) make up the body, therefore they belong to the human being in the sense that they are part of a larger whole (they belong to the set designated as “body”). Since the whole is the subject, the parts of the body are part of the subject. Ownership or quasi-ownership relations do not apply here.

These statements are important in the context of cyborgs. A cyborg is a combination of the human and the machine. Diverse in terms of function, appearance and design, the machine is undoubtedly an object of law, usually a thing in the strict sense.¹³ The thing then

¹³ With regard to integrated things that are controlled by a kind of algorithms, the thing is the *corpus mechanicum* itself. On the other hand, it is difficult to imagine human integration with the software itself,

becomes an element of the body, it is fused with it. Do the above remarks apply to such an integrated thing? Can (or should?) it be assumed that such an integrated thing also becomes a structural element of the human being (subject), and that it also “belongs to the whole”? The answer, incidentally, need not be zero-sum. Firstly, a different qualification can potentially be applied to different types or levels of “integration”. Secondly, the rejection of the notion of “subjectification” of objects integrated into the body does not necessarily imply that the law applicable to “ordinary”, i.e. external, objects should be applied to the things in question. In other words, there is no reason in such a case not to consider a different legal classification of such things, avoiding the subject-object dichotomy. Thirdly, even if one considers them to be a kind of thing (in the technical-legal sense), it may be that their particular factual status entails certain legal corollaries. The key question in this context seems to be whether the person into whose body the thing has been implanted is the sole subject of rights to an implanted thing. A human being (and thus parts of their body) cannot be the property of anyone; it cannot be the object of law - but does this also apply to artificial elements integrated into the body?

without some interface having the form of the thing. Another issue, however, is that the interface may be outside the body.



The degree of integration between a machine and a human being, as well as the nature of the connected device, can vary greatly. It is one thing to have a metal implant reinforcing a bone, another to have a microsensor analysing blood data, and quite another to have a chip implanted in the brain that enables infrared vision or access to the internet. With regard to the latter cyborgs, it is necessary to recognise that there is a fusion of already “integrated” entities. Integrated things, i.e. closely coupled with the controlling software (which nowadays are increasingly provided

with a certain degree of autonomy, as in the case of autonomous vehicles, smart homes or the Internet of Things), represent an important category that has become extremely widespread in recent decades (in everyday life, the economy and the state as a whole). A robot, as an embodied algorithm, is the ultimate example; such a thing cannot be described or understood without taking into account the software which controls it. In consequence, the rules of property law are not sufficient to describe the legal status of such integrated things, as the intellectual property rights of the algorithm, the rules relating to the analysis and flow of information or the protection of personal data play a relevant role here. Most known examples of human-machine integration still involve non-integrated things (e.g. standard prostheses), whereby we can speak of first-degree integration (human-thing). If elements added to the body are already integrated (integrated thing steered by an algorithm), a meta-integration takes place: human-thing-algorithm¹⁴, while each element is essential in this conglomerate. While the law still somehow refers to the integration of the thing with the algorithm and the human being with the mechanical elements (especially in the medical field), that second level of integration is an utter *terra incognita*.

¹⁴ M. Quigley, S. Ayihongbe, *Everyday cyborgs: on integrated persons and integrated goods*, *Medical Law Review* Volume 26, Issue 2, Spring 2018, pp. 276–308, <https://doi.org/10.1093/medlaw/fwy003>. The authors believe that this combination creates entirely new challenges for the law.



In civil law, the question of the legal status of elements implanted in the human body is not analysed any further. It has been occasionally argued that prostheses or implants lose the character of things as soon as they are integrated into the human body, but they can be detached after the death of the person concerned if so requested by the heirs.¹⁵ This last contention is interesting because it warrants the

¹⁵ M. Bednarek, *Mienie. Komentarz do art. 44-55³ Kodeksu cywilnego*, Kraków 1997, p. 82.

conclusion that such elements are not treated in the same way as the human body (the corpse) and that, in any case, the status of such things is variable. At any rate, if such artificial elements may be removed from the body after the death of the person concerned, the question arises whether they then return to their original status, which, after fusion with the body, was in a sense “suspended” in an “abeyance” for the duration of the integration, or whether the former qualification of the thing is irrelevant, since the object detached from the body is to be treated as a new thing, the acquisition of which is of primary nature. In such a case, the position—arguably—would have to be that the owners of such things are the legal successors of the deceased.

The silence of civil law with regard to the legal status of objects implanted in the body may be due to the fact that, in any case, the legal qualification will clearly have little relevance in describing the actual set of rights that can be exercised in relation to such things.

What comes to the fore here are the rights of personhood: the entitlements of the person in whose body these artificial elements are contained. There is no doubt that the status of things associated with the body is primarily determined by the non-property element. Consequently, in practice, regardless of the formal legal status of the implanted thing, the extent of the claim to it will be determined primarily by the non-property interest of the person in whose body

it is located. They will be the only individual who can dispose of it, and concepts such as justification or enforcement of the thing become meaningless in this context. At the same time, this leads to the conclusion that, with the implantation of the object in the body, the rights of personality constitute a kind of overlay on the pre-existing legal regulation of the object in question. It becomes irrelevant whether the object previously belonged to the person in whose body it was implanted or to a third party and, in the latter case, whether it was implanted with or without that person's consent. These circumstances may be relevant to possible claims for damages or unjust enrichment, but do not affect the ability to actually dispose of the integrated object. The authority over the thing, its possession, the possibility of using the thing cannot be exercised as the most important rights of the owner. Thus, even if one were to consider that implanted objects are still things within the meaning of private law, and that their owner may be someone other than the person in whose body they are located, such a right of ownership would still only constitute a *nudum ius*, a legal title without substance and protection, or more precisely: with highly modified substance and limited protection. "Overlapping" personal rights (such as health, bodily integrity, the right to privacy, liberty) would considerably narrow the field for the exercise of property rights.

However, it should be noted that this overlay of personal rights of the individual in whose body con-

tained the items would cease to exist upon one's death, yet simultaneously time another—weaker, but also dominant—overlay of the personal rights of the next of kin (the so-called cult of the memory of the deceased) would appear. Thus, even after death, the exercise of property rights in such things would have to give way to the protection of personal rights. Undoubtedly, the interests of the next of kin are different from those previously protected; their scope seems narrower, which may mean that in certain situations the property interests of others can already be treated as equivalent or even dominant. For example, if the body of a deceased person contained an expensive piece of equipment belonging to a third party (e.g. a medical institution), it would seem acceptable that the interest in recovering this equipment for re-use should be better protected than the right of the next of kin to decide on the treatment of the decedent's remains.

To sum up this part of the discussion, it may be said that as soon as an object is permanently attached to a body, it is removed from circulation and ceases to qualify as an object for the purposes of the law. Consequently, the institutions that could otherwise apply to a thing are no longer applicable; this affects both absolute rights (ownership, usufruct, pledge) and relative rights (lease, loan). What is more, the object is protected by the rights of the person (personal property) and thus becomes a subjectivised part of the body, it is already a subject and not an object of law.

Consequently, its protection must be governed by the provisions on the protection of personal rights.

However, this does not mean that these rules will invariably and exclusively apply. In the light of what has been said so far, cyborgisation, and thus the “personalisation” of things connected to the body, represents a certain spectrum of highly distinct situations in which property or non-property components may be present in different proportions. If the artificial element is outside the body and it is not permanently attached to it, is not wired to the nervous system and does not directly affect the functioning of the body’s organs, the rules of property law apply in its description. It can be traded while its destruction or damage is deemed property damage. At the other end of the spectrum, an object which has been introduced into the body, remains permanently connected to it (including the nervous system) and affects the functioning of other organs (an artificial heart), should be asserted to have become an object legally equivalent to a natural organ; it is not an object, it is not subject to civil law transactions and any damage must be considered in terms of violation of non-property rights. However, there may be a number of intermediate links between such situations, in which concurrent analysis from the perspective of both property law and personal property may be admissible.

Similar conclusions, albeit from different normative positions, have been reached with respect to common law by Muireann Quigley and Semande Ayihong-

be¹⁶, who argue that “the greater the physical integration with persons, the greater support or replacement of bodily functioning, or the greater the dependency of persons on the devices, the more the subject–object dichotomy blurs and breaks down. Significantly, any such division is completely eliminated in the case of devices which keep persons alive.” This is a valid point. After all, including certain things within the scope of protection proper to personal property evinces the blurring of the subject-object dichotomy. In terms of direction, the attempt to differentiate between legal qualifications of implants in line with the degree or type of integration should be considered correct. Particular problems may arise where artificial elements are connected to the nervous system, as well as with the implantation of integrated things (the concepts of integrated objects and objects connected to the nervous system may or may not overlap). If a thing is connected to the nervous system and, moreover, it is controlled to some extent by an algorithm (including AI), then a third level of integration arises, which requires a new perspective. Of course, it would be necessary to clarify how the connection of the thing to the nervous system should be construed, and in particular whether this connection has to be physical (mechanical). If a certain device (either inside or outside the body) is able to emit electromagnetic waves that affect the brain, is this a “connection” to the nervous system? Is a radio receiver connected to the nervous

¹⁶ M. Quigley, S. Ajihongbe, *Everyday cyborgs...*, p. 306.

system of the listener? What if that receiver is miniaturised and inserted into the bloodstream in order to stimulate the brain and, indirectly, certain organs, depending on the results of the blood tests carried out according to the relevant guidelines of medical AI? Is a person who enters the metaverse through VR goggles connected to the computer which generates that meta-world? It seems that neither the location of the object nor its physical connection is necessarily the right criterion for distinction.



Since we accept that at least some categories of things permanently connected to the body should be treated on a par with the body, we need to return to the central problem of the boundary. Consider a chip that is implanted under the skin, connected to the nervous system, and performs certain functions. In the light of what has been said so far, legalistic formulas will not be appropriate to assess such a chip. Let us now assume that the chip is located outside the skin (e.g. in a watch), performs the same functions and it is also connected to the nervous system. Can the paradigm of the body as a boundary really be sustained in the new technological context? Can the physical location of a machine with mind-enhancing technology really be the most important differentiating criterion for the law? Is there really a fundamental dichotomy between situations where the data processing chip is to be found in the brain, in the leg or in an armband? The question concerning qualification and possible “subjectification” of an object that has been implanted in the body and has thus crossed the boundary between the outside world and the subject can be formulated quite differently: is the body (more precisely, the skin) really the boundary of the subject, or is the subject broader, transcending the body?

Clues to the answer may be found in our earlier remarks:

Firstly, personal possessions such as name, dignity, image, privacy are undoubtedly extra-corporo-

real and yet “personal”, i.e. they are inherent to the subject, though obviously in a different fashion than bodily organs. This paradigm has long been known in relation to things (especially immovable property). After all, from a legal point of view the constituent parts of a thing can also be other things that are physically located elsewhere and even rights connected with the ownership of the thing. Since the object (thing) extends beyond its spatial boundaries, there is nothing to prevent the conclusion that the subject also extends beyond its place in space.

Secondly, as we have seen above, it is justifiable to presume that at least some objects implanted in the body, namely those connected to the nervous system, may be treated as parts of the body. Thus, the constitutive element for such a qualification is the connection to the nervous system. It is only a step from there to saying that it is of no constitutive significance whether an object connected to the nervous system crosses the boundary of the skin, i.e. whether it is located under, on or in the skin.

Thirdly, as we have seen, in relation to things connected with the body, a kind of subjectification occurs when such objects are included in the sphere of influence of personal rights. If, in the case of the cult of the dead, such a process of subjectification (in the civil law sense) takes place in relation to an object such as a tomb, then much the same applies with the living, whose personal rights can, as it were, also “absorb” the objects of the extra-bodily world. The “su-

perimposition” of personal rights, in which the immaterial substrate replaces the material elements, is in fact already observed with e.g. certain objects of religious worship: although they are objects, their protection is based on their immanent link with the subject and their freedom of conscience; this protection goes so far that subjective property rights (material and obligatory) can be significantly attenuated.

Hence, one may conclude that the subject is not confined to the body¹⁷: the subject also includes artificial and immaterial elements, both inside and outside the body. The body appears to be the point of concentration and the source of subjectivity, but it extends further. Personal interests, including the protection of personal rights, are not limited by the boundaries of the skin. Implanted elements can be equated with the body in terms of their legal qualification but, more interestingly, elements outside the body can also be conceived of in this fashion. If we understand subjectivity to encompass cognitive processes, experiences, a sense of agency and interactions with the world, then the technologies that become directly integrated with the mind and through which we act can be seen as an extension of subjectivity itself. The objects associated with our thoughts, perceptions and decisions can, in principle, be incorporated into our sphere of experience and existence as cognitive subjects (i.e. parts of the subject).

¹⁷ Regarding the fact that the body may now be an insufficient boundary point see B.-J. Koops, *On Legal Boundaries, Technologies, and Collapsing Dimensions of Privacy*, *Politica e Società* 2014, 3(2), pp. 247-264.

Within civil law, too, this implies a reclassification of such objects.¹⁸

Therefore, cyborgisation should not mean objectification of human beings. Rules relating to things should not be included in the evaluation of what happens in one's body. On the contrary, the concept of the subject should be extended beyond the boundaries of the body and beyond the natural. The object-subject boundary turns out to be fluid and does not always run along the edge of the body: it can be shifted much further.

¹⁸ For a comprehensive analysis of the concept of the body and its boundaries in the context of law and cyborgisation, see Ch. Bublitz, *The body of law: boundaries, extensions, and the human right to physical integrity in the biotechnical age*, Journal of Law and the Biosciences, 1-26, doi.org/10.1093/jlb/lSac032. The author takes the view that "the body is an essential and unavoidable reference point of legal norms. However, neither metaphysical facts nor subjective or objective criteria clearly define the boundaries of the body." Whilst sharing the notion, I cannot fully concur with the exclusion of granting artificial objects (especially those external to the body) the status of a subject.

4. SUBJECT SPACE

The technological support of the human being, notably where integration with the machine comes into play, must at the very least provoke a reflection on the established and seemingly indisputable axioms relating to human subjectivity. Apparently, irrespective of the extent and form of cyborgisation, the foundations of human rights cannot be undermined and, consequently, no revolution can be expected in the field of fundamental rights and subjectivity (including private subjectivity). After all, it is clear that no technological modification (be it a modern prosthesis, a brain-enhancing chip or a nanorobot testing blood sugar levels) can take away a person's subjectivity. Even so, contenting oneself with such a conclusion may not be enough when faced with the reality of a world full of people with highly divergent physical and cognitive abilities. The process leading there may be faster, deeper and easier to achieve (legally and technically) than the parallel process of medical enhancement (e.g. through genetic or pharmacological modifications). This is due to the fact that with technological enhancement, the ethical or philosophical issues that are central to the discussion of human biological modification are much less obvious. Consequently, it is relatively easy for technology

to penetrate the human body without the legal constraints that characterise interventions of a biological nature. This, in turn, will have far-reaching social implications, forcing a rethinking of the rules governing the participation of technologically modified humans in commerce. Moreover, it seems that both routes of the transhumanist evolution, involving either biological or technological modifications, will proceed concurrently, driving and complementing each other. For example, it may be that only certain genetic modifications will open up the possibility of certain technological interventions in the body.

As I have suggested above, the body itself can no longer be the boundary which separates the subject from the object. The subject—the natural person—occupies a specific locus in space, because there are no natural persons without a physical substrate, without a body. However, the natural body is not the exclusive vehicle of subjectivity, given that artificial elements can also be part of the subject; moreover, even things (or, more broadly, entities) outside the body can be considered elements of the subject (and therefore, in the normative sense, no longer objects). Such an approach, meaning a spatial and substantive extension (i.e. including elements other than the natural body) of the subject, will nonetheless inevitably require new legal instruments for resolving conflicts between the spheres of interest of subjects. Since subjectivity can encompass or permeate artificial things located inside and outside the body, the

rights of a contractual or material nature may be limited as a result. Legal relations will therefore be much more complicated than before.

Similar assertions, somewhat pretentiously labelled as *The Universal Declaration of Cyborg Rights*, were formulated by Aral Balkan¹⁹. The declaration consists of three articles:

Article 1

Human beings in the digital age are cyborgs; sharded beings.

Article 2

The boundaries of human beings in the digital age extend beyond their biological boundaries to encompass the greater boundary of their cyborg selves and include the digital organs by which they extend themselves.

Article 3

The articles of The Universal Declaration of Human Rights apply to the definition of human beings in the digital age as defined within this Universal Declaration of Cyborg Rights and protect the integrity and dignity of the cyborg self.

This succinct proposal aptly presupposes the extension of subjectivity beyond the body and consequently declares the protection of the entire extended sphere of human interest. However, it may prove difficult to put the concept into practice because of

¹⁹ <https://cyborgrights.eu/>

individual dogmas. In private law, such an approach will primarily lead to the recognition of the primacy of non-property interests (personal interests) in qualifying legal situations and events relating to objects integrated with the human being. In public law, on the other hand, it would have to lead to the need for a precise definition of the limits of intrusion into privacy. These questions are beyond the scope of our considerations, but they can clearly be described as fundamental for areas such as criminal law. For example, it will be necessary to determine whether it is possible to access information stored in the human body as long as it is contained in an artificial element (a chip); otherwise, what if the information were transferred outside the body and, should this be the case, are there any additional facts that must be present for such access to be permissible. On the assumption that human rights extend not only to the natural body but also to artificial elements, including those that remain integrated (in particular those connected to the nervous system or those that provide data flow from the body), the answer to these questions should in principle be in the negative. Information stored in a chip implanted in the brain should be protected just as information stored in the brain itself. At the same time, the mere fact that the data has been transferred outside the body should not be sufficient to consider that the connection with the subject has been severed; at least, there should be a proviso that the data has been transferred outside the body with the consent of

the subject and that the data has acquired some form of autonomy in the sense that it can be processed independently of the connection with the brain. Of course, such issues are inextricably linked to the issue of privacy. The subjective approach is complementary and may allow for an even broader protection of elements of personality. After all, this is not just a matter of the information stored on a medium associated with the body, but of the status of the medium itself and its close association with the person.

However, the fact that an object is integrated into the body (and thus becomes part of the subject) does not necessarily imply a revolution in which the function of the object, rather than its location, turns out to be crucial. A number of provisions sanction certain actions which, at present, can only be performed using external devices. For example, a person deprived of liberty is not allowed communicate freely with the outside world (use of the telephone or the internet is restricted). The fact that the potential communication interface is located in the body (or even the brain) of the incarcerated individual does not change anything. Admittedly, in the light of the concept of subjectification, such a thing will become an element of the body, but a norm prohibiting communication may nevertheless still apply. Therefore, the mere ability to communicate without the use of a device outside the body does not make the behaviour in question permissible. Situations involving the recording and processing of personal data would have to be similarly assessed. The



fact that a recording device becomes part of the body (e.g. a camera in the eye) and information is stored in a chip in the brain does not preclude certain actions (recording, data processing) from being covered by the presumed standards relating to the protection of personal data, privacy or image. Consequently, it may be argued that the subjectivity of things implanted in the body will not be equal to the subjectivity of its natural components. However, this will not be due to their artificiality, but to the fact that they perform a function that the natural elements cannot deliver.

5. CAPACITY

It is a cornerstone of modern law that everyone possesses legal capacity and may participate in social interaction on an equal basis. Legal capacity (the ability to act on one's own behalf) may be limited by the need to protect a person who cannot act on their own behalf (e.g. children or people with disabilities). On the one hand, such principles are founded (individually) on the premise of inalienable dignity of every human being and, on the other, on the observation that all human beings, despite their obvious individual differences, are very similar as a result of their biological affinity. This biological commonality means that individual differences fall (at least in principle) within a relatively well-defined framework. Since certain physical and mental (cognitive) parameters are acknowledged to be available to human beings, it is possible to create a uniform system of laws for all human beings. Any norm which specifies the rules of the game (e.g. a norm of civil law) implicitly assumes that the parties to the game (a civil-law relationship) are able to understand and apply said rules in the same way, because their bodies (vehicles of subjectivity) allow it, in view of the intellectual capacity characteristic of *Homo sapiens*. However, if the participant in the game were a sub-

ject with an utterly different mental framework (e.g. an animal), common rules would be difficult or even impossible to formulate (the example of the possible participation of animals in civil law transactions demonstrates that the difficulty is not normative, i.e. it is not due to an *a priori* exclusion of animal subjectivity, but to a cognitive incompatibility that precludes universal acceptance of the applicable rules). However, such underpinnings of the law (including private law) cannot be accepted uncritically when considering technological enhancement.

The premise of certain human-machine connection projects (with Elon Musk's Neuralink as a prime example²⁰) is to enable humans to reach a level that rivals and perhaps even surpasses artificial intelligence. Without such support, apparently, humans will not stand a chance against machines in the long term. Combining the human brain with AI, on the other hand, will allow humans to retain power over the world. Such a goal presupposes that a technologically enhanced human will be significantly cognitively superior to an unenhanced human. At the same time, the superiority must be substantial, as the linking of the brain with the network and AI systems is intended to expand and accelerate mental processes. It is impossible to say today if, when and to what extent such an intention will be realised. However, on the basis of current experiments, it is reasonable to assume that some form of computer-net-

²⁰ <https://neuralink.com/>

worked communication, direct AI assistance, or augmented senses will soon be available. Even such experimental steps (such as extending the senses to include the ability to see in infrared, to hear sound waves beyond the available frequency, to feel magnetic fields, to speak through an interface connected to the brain, etc.) compel reflection on the validity of the above paradigm concerning the similarity of all human beings. Now, taking the aforementioned infrared vision, for instance, *Homo sapiens* does not possess such an ability. Naturally, with regard to an element of legal transactions (e.g. drafting or enforcing contracts), we usually do not consider it relevant to have such an ability. However, without envisaging *ad hoc* fanciful examples, one cannot fail to notice that the ability to see the temperature of objects may be legally relevant in certain situations.²¹ Such enhancements do not materially affect the ability to participate on an equal footing with others, but having one's brain connected to the internet or AI, or acquiring technology to record and analyse data received through the senses, will already have a major impact on participation in social interactions and, as such, cannot remain beyond regulation. The emergence of advanced language models, with GPT at the forefront, has made it clear to everyone that, on the

²¹ For example, when considering liability for a tort arising from the negligent handling of a hot object, the fact that the injured person or the malefactor was able to see the temperature of the object may already be relevant to the attribution of fault or the determination of the extent of the injured person's contribution.

one hand, it is becoming increasingly difficult to distinguish between human and machine speech and, on the other, that the use of such tools offers significant advantages (including market advantages).

6. ACTING IN LEGAL TRANSACTIONS WITH THE SUPPORT OF INTEGRATED AI

Cyborgisation will exacerbate the problem of machines becoming more like humans, because to an outside observer there will be no difference between the actions of a human and those of an AI integrated with the human (e.g. in the form of a chip in the brain). Thus, even contact with a living person will not guarantee that what one communicates (e.g. a declaration of intent) is not analysed by an AI or that the other party's communication (declaration of intent) has not originated from a machine. Outwardly, one might see two farmers haggling over the price of a chicken, but inside a contest of autonomous systems will be taking place, whose statements will be externally prompted by yet another machine. In consequence, the contract will no longer be between people—as we understand it today—but between robots speaking through people or influencing their actions. The problems that have been pondered since the advent of automata, i.e. attributing machine action to humans²², will be reversed as a result of cyborgisation: it will be necessary to consider when to attribute human action to a machine.

²² E. Till, *O znaczeniu prawnem automatu*, Lwów 1900 (reprinting Głos Prawa 2023, nr 1 (11)).



This reversal of transactional paradigms within civil law will be fundamentally important, as it may turn out that what we perceive as human action (their body as a result of internal processes) is more or less an emanation of non-human, i.e. algorithmic, artificial, autonomous processes. This may be somewhat reminiscent of the question of a human being acting under the influence of intoxicants or an illness that renders one unconscious or unable to make a decision or express their will. What will be new is that

these “agents” will not merely cause the disruption of human processes, but will also be inherently intentional and intelligent. Therefore, it is not just that in certain situations an act (statement) may no longer be attributed to a person (making an allegation, linking legal consequences), but that such human behaviours may reasonably be attributed to the action of a machine (algorithm) that is integrated with the body (or, more generally, influences the functioning of the body). This would make a human being merely a messenger, a transmitter of the will of another entity. Admittedly, the degree of autonomy of a human being in such an association may vary, and thus the question of the attribution of criminal or civil liability, for example, may be formulated differently.

In the light of current concepts, at least from the standpoint of contract law, the effects of the combination of artificial intelligence with a human being should probably be seen as follows: the human being in question acts as a messenger, while the machine is the actual actor, and its action should be attributed to some entity—presumably the very human being whose action was externally perceived—but the possibility that it is another entity for which and on whose behalf the machine acts cannot be ruled out. In such a qualification, the legal status of the algorithm itself is of little importance.²³ Such a paradigm

²³ I espouse the view that in contractual relations artificial intelligence may be treated as a *prokxy*, which in this respect has a punctual legal capacity (this topic is discussed in greater detail in P. Księżak, *Zawieranie umów przez sztuczną inteligencję (AI)*, in: M. Dumkiewicz, J. Szczołka,

completely changes the legal environment in which human beings operate, whereby it may be said that nothing is what it seems. To return to the example of farmers haggling over the price of a chicken, what is visible on the outside would no longer matter. The contract would be made by those to whom the law attributes the effects of the algorithms that control their brains.

Likewise, one should resolve the question of civil liability (both in contract and, above all, in tort) for the actions of a human being enhanced by artificial intelligence. The attribution of liability stemming from fault is certainly secondary to the question of who acted. The mere fact that a particular external act was performed by a human body is not conclusive as to the operation of the human mind that is ultimately liable. If the mind acts in a disturbed manner, the responsibility of the human being may be limited or even excluded. A similar view would have to be taken in the case of an artificial intelligence acting through the body: at least in certain situations, this could lead to a limitation or exclusion of the responsibility of the human being in whose body the machine is located. However, because of the difficulty of separating the scopes of responsibility, it is necessary in such a case to link responsibility objectively to a specific entity: it could be an enhanced human being, it could be the provider of the AI, or even the AI itself if it admits

K. Kopaczyńska-Pieczniak (ed.): *Sto lat polskiego prawa handlowego. Jubilee book dedicated to Professor Andrzej Kidyba*. Volume I, Warsaw 2020, pp. 294-307.

responsibility. This does not mean a definitive abandonment of the concept of culpability as it can still be analysed in terms of specific patterns of behaviour. However, the finding that a cyborg has acted in an objectively wrong or negligent manner will no longer determine who is at fault—the human or an integrated AI machine—and thus who bears responsibility. However, the need to protect other participants in civil transactions (in the context of contracts) and social life (in the context of tort liability) seems to make it necessary to assign liability in principle to the one who uses technological support, which does not preclude 1) the exemption from this liability in specific circumstance 2) the extension of this liability to other entities.

7. SUPPORTED DECLARATIONS OF INTENT

Nonetheless, it may be necessary to develop new theoretical concepts to supplement basic civil-law institutions. For example, we might consider introducing a special category of “assisted expressions of will”, which will require additional scrutiny given the implications of AI involvement. In such a situation, the law would need to define thresholds of technological sophistication beyond which will would be deemed assisted and subject to specific regulation. An assisted expression of will is one in which a human decision is made with significant support or influence from artificial intelligence systems. This support may include analysing data, suggesting options, predicting the consequences of a decision, or even generating decision recommendations.

With respect to the nervous system, all those elements may occur simultaneously and intertwine. In order to determine when an expression of intent is “assisted”, the law would need to establish specific criteria to define thresholds of technological sophistication. Such criteria might include

1. The degree of autonomy of the AI: the more autonomous the system is in analysing data and generating decision proposals, the more likely it is that the expression will qualify as assisted.

2. The extent of AI influence on the final decision: if the AI has the ability to modify or select final options without direct human intervention, this may exceed a certain threshold.
3. Transparency of the decision-making process: if the process through which the AI influences a decision is obscure to the decision-maker, this increases the likelihood that such decision will be considered assisted.

It would of course be impossible at this point to stipulate the details of the legal regulation governing such representations and, by extension, the rules for the operation of AI-assisted humans in market transactions. In such a case, it may be inevitable to link private and public law regulations, as Sylwia Wojtczak and this author have jointly suggested. Moreover, all such AI systems (even more so if their role is to provide cognitive support to humans) would be subject to registration and certification requirements, and only such verified, registered systems would be able to produce legal effects. Needless to say, the person expressing the will should be aware of the extent and nature of the influence of the AI on their decision. Mechanisms must also be in place to guard against undue or unintended influence by AI, including auditing and control of algorithms. Changing civil law in this regard will be the culmination of a process that will need to cover a number of aspects. In any case, civil-law rules will not only have to refer explicitly to the conditions for recognising the validity of

such an assisted declaration of intent, but will also have to introduce specific protection mechanisms. In this context, it seems obvious that the counterparty of the person making the assisted declaration of intent must have full information on this issue. However, the advantage of an enhanced person making such an assisted declaration of intent entails such a degree of potential risk to the other party that the latter must be provided with additional legal protection. Solutions developed for the protection of a consumer entering into a distance contract with a professional might be used here.

8. THE MULTIFORMITY OF CYBORGS

In the normative context, the multiform and hybrid nature of cyborgs will present additional difficulty. A human combined with a machine will not only function differently (and arguably better) in certain legally relevant social relations but, just as importantly, will be indeterminate as an entity. In the case of unenhanced humans, who function within a legal system built over millennia, it is possible—within certain limits—to determine the maximum and average physical and mental capacities of each human. In the case of the cyborg, however, there is no single model of enhancement. From the perspective of legal capacity, cognitive capacity is crucial, though the range of possible solutions is almost limitless as well. Meanwhile, civil transactions between humans are based on the implicit assumption of similar mental capacities of all adult, cognitively-able participants.

In the long run, cyborgisation may therefore lead to the emergence of different types of human beings with different physical and cognitive capacities. This process has already begun, but it is very slow and appears only in specific contexts. Wherever there is any kind of competition, as in sports or examinations, arbitrary rules can always be created, including those that exclude all enhancements (just as pharmaco-

logical performance agents are prohibited). Leaving aside the question of whether and to what extent the state should interfere in the freedom of self-improvement, i.e. whether the state should disinterestedly tolerate the cyborgisation of human beings, leaving everyone free to decide as to the principle and confining itself to creating a safe legal environment, or whether the state should actively oppose and suppress or, on the contrary, actively support such processes. A decision in this regard is bound to be informed by political or ideological assumptions of various kinds, more often stemming from prejudice rather than empirical research. Let us assume that some form of advanced enhancement is acceptable. In that case, the paradigm of human equality will not be undermined by ideological assumptions and cultural prejudices, but by measurable reality.²⁴ Enhanced humans (where technological enhancement may be further enhanced by biological techniques) will possess non-human abilities.²⁵

²⁴ However, it is clear that only certain types of enhancement are involved. When a particular technology makes it possible to compensate for a disability, it has the opposite effect to that described in the text, i.e. a fuller inclusion of the person in society (i.e. a fuller actualization of one's subjectivity) and the realisation of equality (W. Veit, *Procreative beneficence and genetic enhancement*, KRITERION – Journal of Philosophy 2018, 32 (1): 75-92).

²⁵ According to certain researchers, technological enhancements (especially cognitive enhancements) will lead to increased inequality (so e.g. N. Bostrom, R. Roache, *Ethical Issues in Human Enhancement*, in: *New Waves in Applied Ethics*, ed. J. Ryberg, T. Petersen, C. Wolf, Pelgrave Macmillan, 2008): pp. 120-152, and thus should be considered unacceptable. However, this view is contested. Walter Veit argues (*Cognitive Enhancement and the Threat of Inequality*, Journal of Cognitive En-



A radically libertarian approach to the issue of cyborgisation can be found in the concepts advanced by individuals with a vested interest in technological enhancement. The Cyborg Foundation circulates a document called *The Cyborg Bill of Rights v.*

hancement 2018, 2:404-410) that, firstly, there is no empirical evidence that such an increase in inequality will actually occur, secondly, even if it does occur, the benefits of cognitive enhancement will outweigh this side-effect and, thirdly, banning such enhancement may not be an effective method for achieving the intended goals (i.e. improvement of the society or causing no change for the worse).

1.0²⁶. It contains proposals for five fundamental rights which, as one might suspect, define the inviolable limits of state intervention in cyborgisation. Given the issues analysed here, the most interesting of these is the right to equality, according to which “a legally recognised mutant shall enjoy all the rights, benefits and obligations of a natural person.” Such an apparently uncontroversial formula (which, after all, is only a general transhumanist postulate and not a law, or even a formalised draft law), if taken to its extreme, should revolutionise a number of human activities based on the competition of minds (e.g. poker or chess games, school and professional examinations, etc.). In certain areas of law (especially private law), this need may not be obvious at all. The need to take into account other people’s interests will perforce engender mechanisms which challenge this equality.

²⁶ <https://www.cyborgfoundation.com/>. From the point of view of the augmented subjectivity discussed above, which includes artificial objects joined with the body, the highest-ranking right—Freedom from Disassemblage—is also relevant: “A person shall enjoy the sanctity of bodily integrity and be free from unnecessary search, seizure, suspension or interruption of function, detachment, dismantling, or disassembly without due process.”

9. SUBJECTIVITY AS A SPECTRUM

A proper description of the place of cyborgs in the market must involve a redefinition of subjectivity itself as the grounds for the legal position of human beings. It must set out with the observation that subjectivity cannot be seen as a single, finite concept that either exists (in its fullness) or does not exist (in relation to any entity). Subjectivity is a specific bundle of rights, duties, capacities and other legal situations deriving from the ability to participate in social life, which may occur in different intensities and configurations.²⁷ Undoubtedly, human subjectivity is the most comprehensive and general, yet even so—as we have shown with Sylwia Wojtczak—a form of punctual and contextual subjectivity may be granted to other entities (in particular some types of artificial intelligence)²⁸, limited only to those fields of activity of that entity in which granting such subjectivity is justified by its social role.

The extension of capabilities far beyond what even the fittest unenhanced *Homo sapiens* can potentially do (e.g. connect directly to a computer or

²⁷ As to the principle, the concept adopted here envisions subjectivity as a bundle of rights, duties and competences, which may exist in varying degrees. (V. Kurki, *A Theory of Legal Personhood*, Oxford University Press, 2019).

²⁸ P. Księżak, S. Wojtczak, *Toward...*, p. 31.

see in infrared) will inevitably change the scope and, above all, the manner in which such Homo cyborgs participate in social life. Without predicting how the law will respond in concrete terms to technological assistance²⁹, it may be assumed that the legal position of such persons will be different from that of unmodified persons, with—obviously—a whole range of regulations applicable to various types of enhancements. From a theoretical-legal point of view, multiple forms of human subjectivity will subsequently be identified. The bundle of powers, duties and competences available to different persons will not be the same. The paradigm of equal human subjectivity will be undermined *de jure* and *de facto*, although it will probably remain intact at the declarative level. The technological improvement of the human will therefore affect the characteristics of their subjectivity and, consequently, the rules (and limits) of their participation in the market. It may be presumed that, just as it is currently necessary to establish whether a given trader is of age in order to meaningfully describe their capacity to take legally relevant actions such legally relevant facts about human beings will be significantly more numerous in the future; in fact, the spectrum of different parameters resulting from technological improvements will be open-ended. These parameters will primarily affect the ability to

²⁹ For example, by prohibiting people with a brain-computer interface from taking part in chess competitions or professional exams, or by imposing a range of information requirements on people with implanted devices that record external stimuli.

participate in commerce (e.g. the ability to enter into contracts under a particular formula), but also to be the holder of certain duties and rights. For example, an enhanced human being with a brain-computer link will be able to have rights and obligations that may completely unavailable to other unenhanced humans, but also to cyborgs with different abilities and characteristics.

It should be noted from the outset that, the form of subjectivity notwithstanding, the essential guarantees of human rights will remain inviolable in any case, and no context will sanction any deprivation, impairment, or restriction of subjectivity. Nor can one expect that such an approach will involve a hierarchy of subjectivity in which homo cyborg would rank higher or lower than the imperfect *Homo sapiens*. Instead, the point is that human subjectivity may no longer be described as homogeneous, resulting from a diversity of potentials that far transcends biological diversity, and thus from a multiplicity of modes of participating in social life. Human subjectivity will thus be seen as a concept with fuzzy boundaries, fluid, diffusing both spatially (towards extra-corporeal or inorganic elements) and content-wise. Although the core of subjectivity (as we understand it today) will remain unchanged, its fullness will no longer be the same for every human being. With increasing cyborgisation, it will be impossible—without proper digital identification—to determine the parameters of a given human being that will affect the extent of

their social rights and obligations. Only by knowing the “nameplate”, which states, for example, whether a person is permanently connected to the internet or digitally records all impulses perceived by the senses, will it be possible to establish the conditions under which entering into civil law relations with such a person may be deemed conscious and correct. As a result, the law will be personalised and every individual will have their tailored, personal statute, which will determine their position in the market.

Moreover, this fluid, multiform subjectivity will at the same time constitute a symbiotic subjectivity, i.e. one closely related to the subjectivity of algorithms. Obviously, there can be no question (in the conceivable future, and therefore before the achievement of the so-called technological singularity as conceived by Ray Kurzweil, which will also become a legal singularity) of that symbiosis being equal (and equally legitimate). Clearly, regardless of the nature of AI integration with humans, it will perform a subservient function, and it is only in this context that its status can be analysed. In fact, granting a form of residual subjectivity to AI is to yield legal tools for a better legal inclusion of this technology into the human world, thus ensuring the latter’s power over even the most advanced machines. However, the symbiosis with machines, which by virtue of their autonomy must be considered as something more than mere automatons serving to convey human will, must lead to a constant coupling and a kind of looping of the

two entities, the external effect of which is the homogeneity of the decision obtained. In other words, the expression (or, more generally, the act) of an enhanced human being represents the synergistic outcome of various processes, whereby some originate in their biological body and some in the integrated autonomous machines, while in most cases it is impossible to determine the influence of each of these elements on the final effect (e.g. a particular expression of will or act of the human being). Therefore, in certain situations, augmented subjectivity is an integrated, symbiotic, hybrid subjectivity. However, as I have already indicated, it is the integration with autonomous systems, i.e. the combination with artificial intelligence (tertiary cyborgisation), that will create the most legal difficulties. The action of a cyborg connected to autonomous systems can be described on the one hand as the action of a human assisted by a machine, and on the other hand as the action of an autonomous machine with residual legal capacity, which benefits from the support of a human being (depending on the type of connection, this support may even be reduced to providing a specific bodily interface). This kind of symbiotic subjectivity does not seem to have any precedent in the evolution of humanity, which is why the legal tools necessary to describe such an arrangement are lacking.



Thus, it is evident that a reliable characterization of the participation of cyborgs in legal transactions will necessitate a multiform theory, encompassing symbiotic human subjectivity. The participation of a specific improved human being in the market requires the definition of pertinent parameters, which determine their factual and legal capacity to act as well as the spatial and contentual scope of its subjectivity. The edifice of a new law will inevitably have to be built on these very foundations.

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TABLE OF CONTENTS

1. OUTLINE OF THE PROBLEM.....	5
2. CHALLENGES FOR THE LAW	7
3. THE BODY AS A SUBJECT-OBJECT BOUNDARY	30
4. SUBJECT SPACE	47
5. CAPACITY	53
6. ACTING IN LEGAL TRANSACTIONS WITH THE SUPPORT OF INTEGRATED AI	57
7. SUPPORTED DECLARATIONS OF INTENT	62
8. THE MULTIFORMITY OF CYBORGS	65
9. SUBJECTIVITY AS A SPECTRUM.....	69
REFERENCES.....	75

“Therefore, it is not just that in certain situations an act (statement) may no longer be attributed to a person (making an allegation, linking legal consequences), but that such human behaviours may reasonably be attributed to the action of a machine (algorithm) that is integrated with the body (or, more generally, influences the functioning of the body). This would make a human being merely a messenger, a transmitter of the will of another entity.”

“With increasing cyborgisation, it will be impossible—without proper digital identification—to determine the parameters of a given human being that will affect the extent of their social rights and obligations. Only by knowing the “nameplate”, which states, for example, whether a person is permanently connected to the internet or digitally records all impulses perceived by the senses, will it be possible to establish the conditions under which entering into civil law relations with such a person may be deemed conscious and correct. As a result, the law will be personalised and every individual will have their tailored, personal statute, which will determine their position in the market.”

„Clearly, regardless of the nature of AI integration with humans, it will perform a subservient function, and it is only in this context that its status can be analysed. (...) However, the symbiosis with machines, which by virtue of their autonomy must be considered as something more than mere automatons serving to convey human will, must lead to a constant coupling and a kind of looping of the two entities, the external effect of which is the homogeneity of the decision obtained.”



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