LEGAL PERSONALITY OF ARTIFICIAL INTELLIGENCE UNDER INTERNATIONAL LAW

SUPERVISOR: ASSOCIATE PROFESSOR CATHLEEN POWELL

BY

STUDENT: ANNA TODOROVA, IVANOVA

STUDENT NUMBER: IVNANN001

(LL.M. in International Trade Law)

DECLARATION

Research Dissertation presented for the approval of Senate in fulfilment of part of the requirements for the LL.M. In International Trade Law in approved courses and and Minor Dissertation. The other part of the requirement for this qualification was the completion of a program of courses.

I hereby declare that I have read and understood the regulations governing the submission of LL.M. In International Trade Law dissertations, including those relating to length and plagiarism, as contained in the rules of this University, and this dissertation conforms to those regulations.

Signed by candidate

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ABBREVIATIONS

AGI	Artificial General Intelligence
AI	Artificial Intelligence
ASI	Artificial Superintelligence
AU	African Union
DAO	Decentralized Autonomous Organisation
DARIO	Draft Articles on the Responsibility of International Organisations (2011)
DML	Deep Machine Learning
ECHR	European Court of Human Rights
EU	European Union
ICC	International Criminal Court
ICJ	International Court of Justice
ILC	International Law Commission
INGO	International Non-Governmental Organisation
ML	Machine Learning
NGO	Non-Governmental Organisation
NN	Artificial Neural Network
PAWS	Protection Assistant for Wildlife Security
PCIJ	Permanent Court of International Justice
SG	Secretary General
UN	United Nations
US	United States of America
VOC	Dutch East India Company
WTO	World Trade Organisation

ABSTRACT

To be able to offer a deeper understanding of the topic this work will first examine the concept of legal personality, its meaning and application in the legal framework of international law over the years. Without claiming advanced technological knowledge in scientific areas like robotics and engineering the paper will then try to present some basic overview over the latest developments concerning Artificial Intelligence, such as quantum computing and emotional intelligence. Consequently some suggestions about possibilities of connecting these two topics will be made. The questions introduced will engage with the nature and different forms of legal personhood, its connection to intelligence, autonomy and/or consciousness.

This paper aims to create a more practical and not a general, hypothetical idea of how an AI agent could be granted international legal personality and what could be the possible effects of that (for example rights and obligations). For this purpose it will focus on the recognised subjects of international law and examine on their example an AI agent as a possible future actor in international legal relationships. Subject of reference will be international law and recent developments in EU law, such as the European Parliament initiative to regulate Artificial Intelligence as well as some regulations and "visions" of national legislation, for example Estonia and China.

Consequently the dangers of granting legal personhood to AI agents will be presented and discussed. The arguments against the creation of a "technical veil" will be examined closely. The work will then refer to possible advantages and positive aspects of an AI's legal personhood under international law. In the final chapter a conclusion and some recommendation will be made.

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I. Chapter 1: Introduction

If Artificial Intelligence is not yet defined within the legal framework, where should be the link to legal personhood in the legal context? Do rights and obligations reflect the ability/possibility to participate in legal life and organize legal interaction? Are they connected to the ability to cause and experience damage? This chapter will examine these questions and create a deeper understanding for the legal term of "personhood" and its legal-philosophical development.

1.1. "Person" in Law - a controversial Question

One of the central terms in the legal science - "person" - is subject of heated debates and controversial views among scholars. Who and/or what should law define as a "person" and should a connection be drawn to human nature and reasonableness? Should the search for a definition lean on philosophical, psychological and/or biological considerations?

The legal "qualification" of something or someone as a "legal person" or property could have indirect effect on political and social perceptions, the same way as perceptions and developments within political, social and economic life influence shiftings in legal definitions and rules. This interconnectedness has often been discussed in legal philosophy. That being said, "property" and "legal person" are not exclusive in nature, as it can be observed on the example of corporations or animals. Law is rarely a science of final definitions and black or white dualist thinking. It is the grey areas that excite the jurists' debates and cause rethinking of the created rules and structures.

Three points of view crystalize in the discussion about the "legal person" in general.

The first and most restrictive one subsumizes under the term only human agents, acting on the basis of reasonableness and rationality, being aware to a certain point of the consciences of their actions and therefore bearing responsibility and liability. Examples for human beings excluded from the definition would be young children and people in an unconscious state. The essence of this "Will Theory" is that "every right is a vehicle for some aspect of an individual's self-determination or initiative.[1]

The second group of legal scholars refers to more metaphysical arguments and grants legal personality to living human beings. They define "living" from a legal perspective but "human" -

[1] Matthew Kramer, N E Simonds and H Steiner *A Debate over Rights: Philosophical Enquiries* Clarendon Press Oxford 1998 p 62

from a philosophical and natural one. "Person" here does not presuppose reasonableness or rationality, it originates from a human's state of "being".[2] Corporations are in this sense described as artificial person and it is emphasized that their functions and decision making are determined by humans. The same argumentation is applied to states, referring to individuals as the real actors behind every such formation or entity. It must be pointed out though that the definition of a corporation as an "artificial person" has always met resistance, especially in the corporate legal environment. The reason is "the corporation's inability to replicate exactly individual economic actor's profit-maximizing behaviour pattern".[3]

A third group of scholars goes back to the origin of the word "person" in their search for definition. The initial meaning of the word could be traced back to Greece where it was used to describe a mask that an actor was wearing. The symbolism behind this use is revealed by scholars like F. H. Lawson.[4] The term is defined as an empty shell or mask and behind it everything and everyone could act on the stage of legal life. A connection to any kind of "humanity" or to a human's will-building is irrelevant and does not constitute a condition for legal personhood. No philosophical, moral or social references are needed to determine who could be a "legal person". The sole deciding factor is the engagement in legal relations, which leads to the emergence of rights and obligations. This prerequisite could be fulfilled by animals, the dead, the environment, etc. The scholars see the term of a "person" in law as a completely different and independent from other sciences or social environments, as an "empty slot":

> "Just as the concept "one" in arithmetic is essential to the logical system developed and yet is not one something (eg apple or orange, etc.), so a legal system (or any system perhaps) must be provided with a basic unit before legal relationships can be devised… The legal person is the unit or entity adopted. For the logical system it is just as much as pure "concept" as "one" in arithmetic."[5]

This point of view is the most unbiased and the inclusion of AI as a legal person would be unproblematic.

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[2] L Waller *Any Reasonable Creature in Being* Monash University Law Review 37

[3] W W Bratton *The New Economic Theory of The Firm: Critical Perspectives From History* (1989) Stanford Law Review p 1493

[4] F H Lawson *The Creative Use of Legal Concepts* 1957 New York University Law Review p 907-915

[5] D P Derham *Theories of Legal Personality* in *Legal Personality and Political Pluralism* Melbourne University Press (1958) 1 p 5

Within the last view a more moderate approach could be chosen. The pure legal definitions and units could not be completely detached from the physical relations and cases they arise from. Law should be interpreted according to the situation it is discussed within, that is why case-by-case decisions are so common and significant. New legal rules and definitions are born out of new situations and developments in life. The legal science could become otherwise self-sufficient, deprived of its applicability to real events. Still, even if jurists assess the context and the interrelations that caused the case, their decisions are based on *legal* arguments and considerations. Law as science has its own terms and language, a system that defines the approach to a certain situation. In this sense the greatest strength of this point of view is its "most important ability, which is to stand for all."[6] All incorporates also a non-human agent, such as a machine. This concept is open to any new development, any symbiosis between man and machine or still to be unimagined future actors on the legal stage. It refers to the core of the legal science and its terms – organising "life" and interactions, regulating and influencing new developments and creating balance between different interests. This way chaos could be minimized and harmony as condition for progress protected or restored. In that sense the defining factor of determining a "person", the unit of the law science, should be the involvement in legal relationships and the "significance" of one's action for other actors on the legal arena. The main arguments should be of practical nature – it is the objective aspect of organising life in the most effective and legitimate way that should play a central role.

[6] Ngaire Naffine *Who Are Law's Persons? From Cheshire Cats to Responsible Subjects* The Modern Law Review (2003) Vol 66 No 3 p 367

II. Chapter 2: Legal Personality within International Law

Legal personality as the "ability to have legal rights and obligations" defines a status which reveals various facets within a certain legal order.[7] It does not only address the understanding about the capacity of an entity and the practical element of engaging and organising legal relationships of any kind. As shown above the ratio behind the concept could be examined also from a more legal-philosophical point of view. Granting legal personality is up to a certain point equivalent to recognising the significance of an actor's actions and omissions within the legal environment, an act of "acknowledgement" of that actor by the international legal community. It is a manifestation of the idea of equality and the ability to interact with different legal participants in a recognised relevant way within a legal context.

Within the context of international law, the rights and duties of legal persons arise from the international legal order and the subject becomes even more controversial. The core of legal personhood, its recognition and effects have been discussed by scholars, applying different approaches to define and set rules of categorizing this legal construct.[8]

To create a better understanding of the controversy around this subject, it should be referred to the historical developments.

2.1. Historical Context

It was Gottfried Wilhelm Leibnitz who, in the years after the Peace of Westphalia of 1648, was the first to coin the term of international legal personality. The German Princes had gained more power and thereby sovereignty. A possibility of recognising their new role in the political and social life was introduced through the created legal instrument. The political powers were changing, and Leibnitz found an elegant way to adjust the existing legal order to these changes. Legal theory and political reality were hereby reconciled.

For a while after that the world seemed "simply" constructed from an international law perspective – there were the States and even if their structures of power changed and Monarchies became Republics, there was a power not to be questioned – the sovereignty. International political relations were not always based on mutual understanding and violence was not the last resort, but this was

[7] Elizabeth A. Martin (2003) *Oxford Dictionary of Law* (7th ed.) Oxford: Oxford University Press

[8] R Portmann *Legal Personality in International Law* August 2010 p 5

simply a reflection of the common understandings of social rules and dynamics of that time.

During the first years of the Cold War the legal academic environment was shaped through the dark aftermath of two World Wars and the disillusioning truth that international law could not prevent the chaos and atrocities that have taken place. This made change inevitable and developments in international human law and international criminal law were triggered. The central and undisputed role of states as primary subjects of international law and the root of their sovereignty were challenged and the role of the individual reconsidered.

In the 1960s Wolfgang Friedmann suggested a new perspective on international law and the role it plays in the international community. He argued that its purpose is not exhausted in preventing chaos and regulating relationships. Its tools, such as legal personality and the recognition of new actors, embody the power of triggering progress:

> "In the last half-century, the nature and structure of international society has undergone fundamental transformations which, though far from completed, have already profoundly modified the substance and structure of international law. The science of international law is, however, still predominantly based on the system of international relations, as it developed from the time of Grotius and Gentili to the beginning of the twentieth century. To the majority of writers and exponents of international law, contemporary changes appear as extensions and modifications rather than as basic challenges to the structure of international law and relations."[9]

New phenomena like globalisation and technical and infrastructural rapid developments intensified the cooperation and interconnectedness between states and shifted the way international law was interpreted and applied.This led to the appearance of new actors on the international legal scene.

New impulses to the discussion came in 1949 when the ICJ issued its Advisory Opinion in the *Reparation for Injuries* case.[10] The court decided that international organisations, such as the UN, should be granted legal personality to the extent that they would otherwise not be able to fulfil their mandate and tasks, as set in the founding charters and declarations. The scope of legal personality of international organisations as non-state entities crystalized and the focus shifted on other agents such as NGOs and individuals (natural and juridical), with the latest controversy around armed non-governmental groups. In the process of examining legal personality other factors are now also

[9] Wolfgang Friedmann *The Changing Structure of International Law* Columbia University Press New York 1964

[10] *Reparation for Injuries Suffered in the Service of the United Nations* Advisory Opinion (1949) ICJ Reports 174 p 178

considered, apart from the capacity of bearing rights and duties under international law. These other factors are the ability to conclude agreements (treaties), to be involved in international claims and "participate in the creation, development, and enforcement of international law".[11] A few International Tribunals now allow individuals to address them directly and these cases undoubtedly lead to development of international law. Same argument applies for the indirect involvement of NGOs in case law. The later are also involved as consultants in the creation and implementation of most of the recent treaty-based norms. Following this argumentation international law now recognises legal personality of individuals (hereunder also corporations) and NGOs to some extent.
For a better overview, a short presentation of the separate international legal actors will be offered in the following subchapters.

2.1.1. States

Up to the early 20th century States were regarded by the majority of legal scholars and practitioners as the only subjects of international law, therefore the only "legitimised" participants who bear rights and duties. Despite this prominent role there is no clear definition of a State. The most significant codifying source in this regard is the Montevideo Convention on Rights and Duties of States from 1933. According to it decisive features of a State are:

a) permanent population
b) a defined territory (international arguments or conflicts about territories or undefined status of territories do not disrupt the legal personality of a State)
c) a government
d) capacity to enter into relations with other states.[12]

The classical idea of a State is as an independent and sovereign legal entity. Legal opinions divide on the question to what extent recognition by the international community is crucial and whether it has constitutive or only declaratory nature.

2.1.2. International Organisations

A big number of international organisations are now active on the international legal landscape.

[11] Robert McCorquodale *The Individual and the International Legal System* in Malcolm D Evans *International Law* Oxford University Press (2010) p 286
[12] Art 1 of the Montevideo Convention on the Rights and Duties of States, text available under https://www.jus.uio.no/english/services/library/treaties/01/1-02/rights-duties-states.xml

Probably the most prominent example is the UN. Others are the EU, the African Union (AU), the World Trade Organisation (WTO), the World Customs Organisation, Arab League and others.

There are three objective criteria for the characterization of an entity as an international organisation:

a) the members should be States and/or other international organisations (there is a possibility to include other entities as well)
b) the establishment should be under international law, most commonly by a treaty (other possibilities are resolutions of another international organisation or States or a joint unilateral act of a State[13])
c) autonomous organs (which ensure the formation of the organisation's will and policy as separate from the members').[14]

It is not always easy to determine whether these criteria have been met, especially in cases of lack of an explicit treaty provision. What the approach should be in these situations is a matter of controversy. The inductive theory relies upon the members' intention when answering the question. The way of determining the intention could also be indirect through analysing the defined goals, powers and duties of the organisation and whether they require international personality. The other school – the objective theory - relies only upon the criteria listed above and examines whether they are fulfilled or not. In its Advisory Opinion in the *Reparation for Injuries* case the ICJ examined the objective criteria and the intention and will of the members, so it could be argued that it took an intermediate approach and the two theories therefore complement each other.

The Advisory opinion of the ICJ in the *Reparation for Injuries* case was pioneering for the legal discussions around the legal personality of non-state entities under international law. The Court had to decide over the capacity of the UN to initiate a claim under international law and thus its legal personhood. The ICJ pointed out the powers of the organisation stipulated in the UN Charter (treaty-making, decision-making separable from the will of its members, immunities) and confirmed the legal personality, concluding that it was necessary for achieving the goals and the mandate of the Organisation, as incorporated in the Charter and intended from its members. According to the argumentation of the Court "the Organisation was intended to exercise and enjoy, and is in fact exercising and enjoying, functions and rights which can only be explained on the basis of the possession of a large measure of international personality and the capacity to operate on the

[13] E.g. the Organisation for Security and Cooperation in Europe (OSCE), the Organisation of the Petrolium Exporting Countries (OPEC)

[14] Dapo Akande *International Organisations* in Malcolm D Evans *International Law* Oxford University Press (2010) p 254

international plane".[15]

This decision is revolutionary not only because it paved the way of legal personality of international organisations, but also with regard to other non-state actors, such as NGOs and individuals. The legal considerations and arguments of the ICJ are applied to other participants in the international legal life.

Another important notice about the above case is the Court's implementation of the doctrine of implied powers. An international organisation has the powers necessary for the exercise of its duties, even if these powers are not specified in the constitutive documents of the organisation. In the case of the UN it was the power to initiate an international claim on behalf of its agent.

An important feature of an international organisation regarding its international legal personality is its capacity to conclude treaties which is governed by the organisation's internal rules. However, whether the legal personhood is objective and thus binding on other actors within international law, not members of the organisation, is determined by general international law rules. Regarding the practise on the international legal arena in this matter and the argumentation of the Court in the *Reparation for Injuries* case, it could be concluded that the legal personhood is objective and that it finds its source in customary international law.[16]

Further noticeable is that international organisations are usually granted with domestic legal personality, which enables them to enter into legal relationships on domestic legal level (own property, enter into contracts). To protect and guarantee their independence in decision making and acting they enjoy certain immunities in relation to member-states which are derived from customary international law. An example is the immunity from domestic judicial jurisdiction. Considering this and the fact that many of the international organisations today govern more resources than some states, it is not surprising that they gain more influence. They represent a mechanism of outsourcing certain state powers and often initiate unification of law regulations which facilitates international economic and political relations. This leads to the idea that the international power landscape has changed. Some voices in the legal scholarship claim that "the monopoly of the state as a political actor in the international system has entirely broken down".[17]

[15] *Ibid* 10 p 174-179
[16] *Ibid* 14 p 256-257
[17] J Delbrück *Prospects for a "World International Law?": Developments in a Changing International System"* Indiana Journal of Global Legal Studies (2002) Vol 9 Issue 2 p 410

2.1.3. Individuals

The system of international law has developed historically and ideologically around the concept of the State - its definition, features and functions. The later developments regarding the recognition of new actors on the international legal field and reconsidering the idea of the centralized State power and its role in the rules' system all evolved to a certain point from the contrast and comparison with the State. For this reason a gross distinguishment is drawn between state and non-state actors. The later is used for natural and non-natural persons and draws a demarcation line not only to States but also to entities such as international organisations and NGOs. The logic behind this view relates to the power structures of these organisations which are more similar to the ones in a state's governing system and hierarchy rather than in corporations or other organised groups of people.

i) Natural Persons

The role of individuals in the international legal system is a debate rooted deep in the past. In the 16th century the position and international legal rights of the native South American population was discussed by European scholars. These considerations intensified in the 19th century when concepts of reformation became stronger in Europe. Scholars like Brierly, Kelsen and Scelle aimed to democratise international law and humanise political and legal life by recognising the individual as the initial subject of international law. The central role of the states and the source of their legal personhood as "natural rights"[18] was contested as "pure fiction", based exclusively on human interactions and relationships. The establishment of the International Criminal Court institutionalized this idea to a certain degree creating a legal forum with the sole purpose of determining direct responsibility of certain individuals under international criminal or international humanitarian law. The concept of a single court dealing with these cases is not fully operational yet. Judgements over violations of an individual's duties under international law were also passed through International Tribunals created for the particular case. Some responsibilities under international law fall within the universal jurisdiction of every state. Historically such responsibilities arise from international criminal acts such as piracy and slavery and individuals committing such crimes are regarded as *hostis humani generis*, enemies of all mankind. This understanding is used as justification of the universal jurisdiction and the interest of every state in

[18] N Politis *The new Aspects of International Law* Carnegie Endowment for International Peace Washington DC (1928) 13

adjudicating such criminal acts.

Despite this kind of individual's responsibility and the ability to interact on the international stage many scholars and practitioners have long resisted the idea of an individual's international legal personality. The perception of international law as a rule system governing primarily the relations between States resisted the new reformational ideas. The position of an individual was only determined in the light of State power and sovereignty. Against the background of affirmed responsibilities the international legal personality of an individual was only understood as a passive one.[19]

In the beginning of the 20th century the PCIJ stated in its Advisory Opinion on the jurisdiction of the Courts of Danzig that individuals have rights under international law even though such rights could be of different nature and impact.[20] The 20th century was also a period of notable developments of international human rights law, which put the redefining of the individual's position and international legal personality on the current agenda. The number of human rights treaties,organisations and international legal tribunals that supervise the observance of the legal rules in that sphere have increased the degree of involvement of individuals on the international legal scene.

Notwithstanding these developments the possibilities for an individual to actively participate and produce legal consequences through own actions are still very limited in international law. Two main prerequisites must be fulfilled which are regarded by some scholars as a injust hurdle or a way to escape responsibility and leave room for unregulated cases. The first condition relates to admissibility - the possibilities that the local or national legal system offers have to be exhausted in order for an individual to approach an international forum or a treaty organ in regard of a certain case. Secondly the rule of nationality must be regarded. A State may bring the case of an individual to a certain international legal forum only if that individual is that State's national. This results in the individual's dependency on its state's authorities to bring a claim under international law and seek justice on the international legal arena (for example in front of the ICJ). This outcome has left many unsatisfied and has given rise to the establishment of tribunals and commissions that grant direct access to the international law system to individuals. One example for this practise is the Iran

[19] Shabtai Rosenne *The Perplexities of Modern International Law* The Hague Academy of International Law (2004)
[20] *Jurisdiction of the Courts of Danzig* Advisory Opinion (1928) PCIJ (ser B) No 15 (Mar 3)

- United States Claims Commission.[21] These kind of fora may bring in the future balance in the position of the individual under international law regarding the granted rights and imposed obligations. At the present time it is still challenging and effortful for an individual to enforce his rights in front of an international legal forum and such cases depend to a great extent on the individual's state and the collaboration of the national authorities. The matter of ratification of a human rights treaty by the own state as a prerequisite for an individual's international right will be discussed later in this work. The obligations on the other side are directly imposed and enforced by the legal system, in some cases regardless of the individual's state's consent or participation in the particular legal instrument.

Despite this controversial and undefined position of the individual in international law, the developments in the last century have led to a broad acceptance and recognition of international legal personality to some extent. This legal personhood is based on the individual's international rights and duties and the resulting ability to act on the international legal arena.

ii) Juridical Persons (Non-Natural Persons)

For the purpose of this work the focus in this subchapter is set on corporations and similar economic entities.

The significance of non-natural persons and especially corporations in international law is not a recent phenomenon. The global economic interests they represent have shaped global economic and legal relations for centuries. Recent developments like globalisation, technical, industrial and infrastructural progress through new inventions have reshaped in the recent years these relations and have given rise to many social and economical changes. Many leading politicians have warned against neglecting the regulation of these developments. One of the most prominent and experienced of them is probably the former SG of the United Nations Mr Kofi Annan, who addressed the progress through globalization in many of his speeches.[22] The discussions have expanded to a far-reaching spectrum in the last decades and have become a crucial economic and social topic.

Nevertheless, as mentioned above, these phenomenons have deep historical roots and are not only

[21] Richard B Lillich, David J Bederman *Jurisprudence of the Foreign Claims Settlement Commission: Iran Claims* American Journal of International Law (1997) Vol 91 Issue 3 p 436-465

[22] Full text of Kofi Annan's final speech: http://news.bbc.co.uk/2/hi/americas/6170089.stm
"Globalisation is irreversible and not an option" - Kofi Annan, Paris 1999:
https://iccwbo.org/media-wall/news-speeches/globalization-is-irreversible-and-not-an-option-kofi-annan

manifestation of recent events. The peace of Westphalia of 1648 is one of the most significant events in the history of international law, establishing the principle of state's sovereignty and the central role of the states as core subjects of international law. Among the parties of the peace treaties were also Spain and the Dutch Republic, that brought to an end their 80-years lasting war. Many historical documents reveal the central role the Dutch East India Company (VOC) and the West India Company played in the negotiations of these treaties. By the time of the conclusion of the treaty the companies have gained major international economic powers. The Charter of the VOC for example stipulated that the company is entitled to appoint judicial officials and armed forces and set up military facilities in order to secure and support trade. A central power of the company was also its right to conclude contracts with monarchs and sovereigns which determined its significant role in international affairs and international law.[23]

Even though this was subject of debates during the centuries, international law scholars and practitioners were always hesitant and careful when approaching the topic of the "status" of corporations and companies. This position could be the result of the idea of separation of powers and interests in order to secure an objective checks and balances test and consequently development through transparency and anti-corruption. Separation of powers is used here not in its legal meaning, but as a general term referring to the separation of the interests of different influential groups in society - like church-state interests in a secular state and merchants (economy)-state interests.

Nonetheless, in recent years the international legal personality of corporations, rooted in their undisputed capacity to bear rights and duties under international law, has been widely recognised. Notably the development of international economic and international investment law which offer corporations directly accessible international legal fora draws attention to the recognition of the corporation's international legal personality. The unique characteristics of a company as a juridical person have given rise to debates about its "classification" by comparing it to other subjects of international law.

Some scholars consider the analogy to an international organisation the most suitable one. They regard the company as an entity formed on the basis of contractual relationships between different parties which all define one goal and determine the parameters and resources that must be provided

[23] Fleur Johns *Theorizing the Corporation in International Law* in A Orford, F Hoffmann *The Oxford Handbook of the Theory of International Law* 2016 p 635-636

in order to achieve that goal.[24] The same structure could be recognised in an international organisation in which the members also voluntarily agree upon certain objectives and strategies.[25] Other legal writings, most commonly of the sphere of international human rights law, draw the comparison between an international corporation and a state. They underline similarities in governance and power and hierarchical structures. Different agencies directed by a centralized body and centralized politics as well as social structures could characterize these structures. The responsibility connected with these powers creates the connection to the protection of human rights. In the same way as a state is responsible for protecting and respecting human rights so is a global company obliged to regard not only the interests and rights of its members or shareholders, but also the rights of the broad public affected by its policy and conduct.[26] Another argument brought by business and human rights law scholars in favour of the state comparison is the reference to private international security companies which act on a global scale. States often use the services of such entities in order to restore security and transfer to these companies public competencies common to state power.[27]

Comparing the legal personality of corporations to the one of natural persons is probably the most widespread point of view. The arguments refer mostly to factors of "will-formation" and decision making.[28]

2.1.4. Non-Governmental Organisations (NGOs)

The Union of International Associations defines the non-governmental organizations as "legally constituted organization created by private persons or organizations without representation of any government. The term originates from the UN, and is usually used to refer to organizations that are not conventional for-profit business."[29]

International non-governmental organisations (INGOs) have become an integral part of world

[24] Jeffrey L Dunoff, Joel P Trachtman *Economic Analysis of International Law* Yale Journal of International Law (1999) 24 p 41
[25] Joel P Trachtman *The Theory of the Firm and the Theory of the International Economic Organisation: Towards Comparative Analysis* Northwestern Journal of International Law & Business (1996-97) 17 p 473-474
[26] P Muchlinksi *The Changing Face of Transnational Business Governance: Private Corporate Law Liability and Accountability of Transnational Groups in a Post-Financial Crisis World* Indiana Journal of Global Legal Studies (2011) 18 p 700
[27] P W Singer *War, Profits and the Vacuum of Law: Privatized Military Firms and International Law* Columbia Journal of Transnational Law (2004) 42 p 521-549
[28] F Johns *Performing Party Autonomy* Law & Contemporary Problems (2008) 71 p 243-271
[29] https://uia.org/faq/yb2

politics. In the debate about their significance a rough distinction can be made between a cosmopolitan and a critical perspective.

Cosmopolitans assign an important, positive role to INGOs because of their potential to challenge traditional power politics between states. This position is underpinned by examples of successful influence on political processes and the behavior of other international actors. Even in areas of so-called high politics that intervene with central areas of state sovereignty, INGO are able to exert influence. One example is the work of the International Campaign for the Prohibition of Landmines, founded in 1992, led to the conclusion of the Ottawa Convention, which 164 states have ratified. INGOs were also involved in the formulation of the Rome Statute, the international treaty establishing the International Criminal Court (ICC).

Traditionally international politics was more or less exclusive competence of the states. In the last few decades it became common that INGOs denounce human rights violations by states' politics, work for compliance with labour standards in the global industries or provide humanitarian aid in war or environmental disaster areas. Due to the fact that INGOs do not pursue a state-interest policy, but potentially represent the interests of affected groups worldwide, they are regarded as legitimizers for international politics. They can put local interests and issues on the agenda of international organisations and thus contribute to their inclusion in the political process. Many INGOs were granted a consultative status within international organisations (the most prominent of them the UN) which entitles them to certain rights.

Over the past decade, however, a more critical perspective on INGOs has emerged. It points to the limits of INGOs' influence and asks questions about its legitimacy. Unlike governments, INGOs are not elected. Therefore, they lack the necessary democratic legitimacy and political responsibility.[30] It must be noted though that the idea and perception of democracy is shifting as the classical political and social structures around the world are being contested. The rapid technical development changes also the way society acquires and evaluates information. Social media has become now a central source of political news and agendas. More informal structures are now favoured by many, this includes INGOs.

2.2. Conclusion, Criticism

Not all scholars and practitioner are satisfied with the current definition on international legal personality and the way it is applied. Judge Rosalyn Higgins, former President of the International

[30] *Ibid* 19

Court of Justice criticized the concept of objects and subjects of international law, whereby only the later are recognised to possess international legal personality. She states:

> "[t]he whole notion of "subjects" and "objects" has no credible reality, and, in my view, no functional purpose. We have erected an intellectual prison of our own choosing and then declared it to be an unalterable constraint."[31]

Other scholars have also criticized the system of division as biased.[32] Judge Higgins suggests the idea of participants,

> "...who engage in international activity… Participation will depend on the particular area of the international legal system concerned and the activity and involvement of entities in that area… As the international community changes and the "needs" or areas governed by international law develop, then so will participation in the international legal system."[33]

In other words, international legal personality could be understood as a tool to "legitimise participation"[34] in legal life. The introduced idea of participants is flexible and could be easily adjusted to any new development within the international legal environment. Further, it is aligned on actual participation and involvement in legal relations, hence connects the term of legal personhood with the factual reality it is based upon. It has some common ground with the third most broad and unbiased legal-philosophical understanding of "legal person" explained in chapter 1. This introduces the question: Is it possible that the term "participant" could also host an AI agent, provided this agent enters into relationships under international law and interacts in the described way with other actors on the international legal arena? Whether these ideas will be generally accepted by the international legal community and will in future determine the international legal practice only the future will show.

Some critics have gone further and declared international legal personality relic of international law and as such construct that hinders change within that sphere. Yet it must be recognised that international law lacks the clear codification of most national systems and terms like "legal personality" help overcome the uncertainty and thus fortify the effectiveness of relatively "new"

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[31] Rosalyn Higgins *Problems and Process; International Law and How We Use It* Clarendon Press Oxford 1994 p 49
[32] H Charlesworth, C Chinkin *The Boundaries of International Law* Manchester University Press (2000) 414
[33] Rosalyn Higgins *Problems and Process; International Law and How We Use It* Clarendon Press Oxford 1994 p 50
[34] Janne E Nijman *The Concept of International Legal Personality* Asser Press The Hague (2004) p 444

rules and principles. Other scholars are not as extreme in their views and have chosen a more general approach stating that the "doctrine and theory of international law has not yet caught up with…new reality".[35] The approach of dealing with challenges new participants introduce is perceived as inconsistent. Could or should this approach be changed in the face of new machine technologies and should they be made part of a new legal reality?

The answer to this question and how Artificial Intelligence could fit under the contested term of legal personhood could only be examined, once the term of an AI agent is analysed more closely in the following chapter.

[35] Nehal Bhuta *The Role International Actors Other Than States Play in the New World Order* Oxford (2012) p 61

III. Chapter 3: Artificial Intelligence

3.1. Technical and Legal Definition

Professors H. Simons and A. Newell (Carnegie Mellon University) as well as C. Shannon (Bell Labs) and N. Rochester (IBM) were among the first scientists to introduce the idea of artificial intelligence. Their definition was centered around human intelligence as reference point for machines' capacity to "understand, think and learn".[36]

In the Encyclopaedia Britannica artificial intelligence is described as "the ability of a digital computer or a computer controlled robot to perform tasks commonly associated with intelligent beings", though the reference to digital might seem narrow in the light of the developments of quantum computing. To create a better understanding of what those tasks could be, human intelligence is defined as "mental quality that consists of the abilities to learn from experience, adapt to new situations, understand and handle abstract concepts, and use knowledge to manipulate one's environment". Yet there is no universal definition for intelligence and no measurement quantification method. Some of the features pointed out above have been very intensively discussed by the media, within experts' and non-experts' fora, mainly with regard to autonomous systems, deep unsupervised machine learning, emotional intelligence and artificial neural networks.

Other attempts of defining AI chose a more systematic approach. Four categories could be introduced in exploring and creating AI systems:

1) thinking like humans
2) objectively rational thinking
3) acting like human
4) objectively rational acting

This classification contains two dimension criteria.

The first measures the success rate of AI through comparison with either the way of thinking of a human or the ideal concept of rationality. In the second one the comparison is with the behaviour of either humans or theoretically ideal rational agents. Consequently there are four possible combinations. Acting as a human is measured according to the Turing test. The test was designed

[36] Yunhe Pan *Heading Toward Artificial Intelligence 2.0* Engineering (2016) 2 p 410

by the British scientist Alan Turing in 1950 to examine whether a machine has the ability to demonstrate intelligent behaviour which is equivalent to, or indistinguishable from, the behaviour of an actual human being. The test does not check the ability to give the right answer, it tests how closely the answer resembles a typical human answer. It examines the ability of the machine to evaluate the dialogue, present knowledge and conclude new statements through adaptation and finding problem-solving templates. For this purpose, the "conversation" is limited to a pure text communication, such as a computer keyboard and screen.

The second criteria evaluates the ability of thinking like a human mostly by applying the cognitive modeling approach. Multidisciplinary cognitive science combines AI models and techniques of the experimental psychology to create verifiable theories about the work of the human brain. The applied methods include not only computer simulations but also scientific test with people and animals.

Applying these "general directions", the attempts to define artificial intelligence have acquired more concrete shapes in some national and international legislative initiatives.

The European Parliament Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics begins with reference to fictional works of the classic literature relating to artificial intelligence and artificially created minds. It is interesting to notice that this sphere of science has triggered the imagination not only of scientists but also of jurists and gave them occasion to leave the ground of strictly formal and fact related argumentation.

There is no universal legal definition to artificial intelligence, which opens room for controversy and speculations.

In the "General principles concerning the development of robotics and artificial intelligence for civil use" of the European Parliament Resolution some "characteristics of a smart robot" are defined.[37] Such are for example:

" - the acquisition of autonomy through sensors and/or by exchanging data with the environment…",

" - self-learning from experience or by interaction"

" - the adaptation of its behaviour and actions to the environment".

[37] European Parliament Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)) - http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2017-0051+0+DOC+XML+V0//EN

It should be noted at this point that according to recent surveys the leading countries in artificial intelligence development are currently not the European States, but the US and China. With hundreds of thousands of writings in the last ten years they hold the leading role in scientific publications in the area which makes the discrepancy between them and other countries in the ranking tremendous.[38] While China holds the leading role on this list, the influence of the US publications is considered far more significant. The application and testing of new technologies in China is more unproblematic and not subject to as many regulations and restrictions. Another factor is that China has a huge data pool and this represents an immense advantage. Nonetheless, technical research and development of new approaches and technologies is still concentrated in the US. Even though many private firms are involved in the AI sector in China, the start-up system in the US in the area is much more developed and diverse, business and technical structures have been generated for years.[39]

Considering this role of the US as development pool it is interesting to trace the latest attempt to define and regulate AI. In 2017 the "Fundamentally Understanding the Usability and Realistic Evolution of Artificial Intelligence Act of 2017" was introduced and, despite still lacking a legislative status, it could operate as a template for future legal regulations.[40] The definition of AI which the act introduces is open and general:

"(A) Any artificial systems that perform tasks under varying and unpredictable circumstances, without significant human oversight, or that can learn from their experience and improve their performance. Such systems may be developed in computer software, physical hardware, or other contexts not yet contemplated. They may solve tasks requiring human-like perception, cognition, planning, learning, communication, or physical action. In general, the more human-like the system within the context of its tasks, the more it can be said to use artificial intelligence.

(B) Systems that think like humans, such as cognitive architectures and neural networks.

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[38] Scimago Journal and Country Rank for the period 1996-2017 - https://www.scimagojr.com/countryrank.php?category=1702&area=1700

[39] McKinsey Global Institute *Artificial Intelligence: Implications for China* China Development Forum McKinsey & Company (2017) p 5-6 - https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/China/Artificial%20intelligence%20Implications%20for%20China/MGI-Artificial-intelligence-implications-for-China.ashx

[40] John Weaver *United States: Everything Is Not Terminator:America's First AI Legislation* Journal of Robotics, Artificial Intelligence & Law (2018, Mai-June) - http://www.mondaq.com/unitedstates/x/724056/new+technology/The+content+of+this+article+is+intended+to+provide+a+general+guide

(C) Systems that act like humans, such as systems that can pass the Turing test or other comparable test via natural language processing, knowledge representation, automated reasoning, and learning.

(D) A set of techniques, including machine learning, that seek to approximate some cognitive task.

(E) Systems that act rationally, such as intelligent software agents and embodied robots that achieve goals via perception, planning, reasoning, learning, communicating, decision-making, and acting."[41]

How far the current technical achievements fulfil the requirements of autonomy and could offer a basis for liability considerations will be examined through the following research introduction. Though a deep understanding of the technical side of the question could not be offered, some conclusion will be presented on basis of the research results.

3.2. Research and Analysis

3.2.1. General

The area of research in the field of artificial intelligence has broader impact than sometimes presumed. In the media it is often referred only to the technical achievements and engagement of engineers and professionals on the fields of technical sciences. It must not be overseen that these technical achievements inspire the work of researchers in may other various fields. Scientists in the sphere of epistemology and linguistics are also deeply involved in exploring and advancing the "artificial intellect". It is considered that recognising and classifying the environment is an initial stage of building intellectual abilities. As these abilities advance individuals learn to logically connect the acquired information and draw cause-effect relations. This affects also the mental argumentation processes through which relations are created between different impressions and informations and conclusion are formed. Such conclusions are later affiliated to a logical chain of considerations and evaluations. This process is argued by some scientists to be the true manifestation of intelligence. Artificial intelligence is still mostly in the initial stages of recognition

[41] "Fundamentally Understanding the Usability and Realistic Evolution of Artificial Intelligence Act of 2017" - https://www.cantwell.senate.gov/imo/media/doc/The%20FUTURE%20of%20AI%20Act%20Introduction%20Text.pdf

and classification of information. Even machine learning systems trained in image recognition evaluate huge amounts of data but make conclusions based on "simple" classification. More complex logical chains and connecting information on several levels is still a scientific challenge.

The applications of artificial intelligence and advanced robotics are probably too broad and diverse to be thoroughly presented. From mobile applications to the finance industry, medical services, image and speech recognition, military services, advertising, data evaluation, statistics and bioinformatics – advanced algorithms are everywhere, even if consumers are not always aware of it. In a fact sheet issued by the European Commission on the subject of the Digital Single Market, as major application fields for AI are named:

- agriculture (alternatives to pesticides and reducing pollution)
- data and health (data collection and evaluation, data security, automated surgical procedures, automated diagnostic systems, bioinformatics, advanced artificial human limbs' design)
- public administration and services (fast and secure data processing, flexible and cross-border procedures, technical advanced police and fire-fighting services, minimized risk for individuals, urban planning)
- transport (faster, more efficient and more secure public transport system, minimizing fuel consumption rates and traffic accidents)
- education (new resources and techniques for the purpose not only of improving technical understanding and skills but also introducing new possibilities in the sphere of arts, music, social sciences, translation systems, smart chip systems)
- manufacturing (automated systems that would take over hard, dangerous and monotonous tasks, sensor technologies)
- environment (optimizing the use of resources and reducing pollution).[42]

The applications of the new technology goes far beyond these examples. Some of the biggest industries are security and military services, business and investment, finance e-commerce, data management and customer service. It is hard to point out an area with no intervention of AI technology. An interesting example is the Uganda Wildlife Authority. The agency uses the AI software PAWS to catch poachers by route evaluation and predictions.[43] Even conservative areas

[42] Digital Single Market website, European Commission - https://ec.europa.eu/digital-single-market/en/news/factsheet-artificial-intelligence-europe
[43] Jackie Snow *Rangers Use Artificial Intelligence to Fight Poachers* National Geographic (2016) - https://news.nationalgeographic.com/2016/06/paws-artificial-intelligence-fights-poaching-ranger-patrols-wildlife-conservation/

like law are currently being reformed through the application of prediction softwares, bots used for legal analysis, computer programs for assigning a suitable lawyer for clients and many others.

An area sometimes overlooked with regard to its variety is computer gaming. Apart from the heated debate about the social and psychological effects of computer games and virtual reality on consumers and the younger public, the significance of this area for AI advancement cannot be negated. It offers an opportunity for AI developers to test their systems in a simulated environment. Most of the computer games created now are very complex and require strategic thinking and decision making. It is a world in which an advanced algorithm could undergo numerous options and evaluate different decisions which enhances the learning abilities. Compared to these achievements IBM's Deep Blue[44] is considered just an advanced calculator of similar datasets which cannot be used for simple everyday issues due to the variety of factors and input information. In 2015 the AlphaGo software won a game of Go against a human professional player. The Chinese game is considered highly complex and multi-layered and the software had to perform among advanced calculations also strategic decisions which it mostly developed in playing against itself.[45] In August 2018 a software designed by OpenAI lost a Dota 2 game against its human challengers. Dota 2 is a battle game and its arena is considered highly complex which explains also the popularity of the game. Machine learning experts that analysed the bot's loss remained quite positive pointing out one of the most important characteristics of machine learning algorithms - they are designed to learn through experiments, mistakes and, as in this case, defeat. What appears as failure at first sight is for some experts only a necessary step on the way to perfection.[46]

These examples illustrate the importance of game developments in different aspects. Creating and designing a complex computer game constitutes in itself advancement of the AI sphere. Furthermore, as mentioned above, it creates a virtual testing environment in which an algorithm could run endless times and mistakes could be detected, before its release on the market. This way evaluation could be undertaken and the risk for the market and the users (companies or consumers) could be reduced. Furthermore, an advanced algorithm could be provided with a complex and diverse environment, it could learn from. The direction in which the learning process develops in the virtual environment could be supervised with caution, considering the narrow-defined,

[44] Deep Blue is a chess computer designed by IBM known to be the first machine that won a chess match against a world champion chess player - Garry Kasparov - on the 10th of February 1996.
[45] Gonenc Gurkaynak, Ilay Yilmaz, Gunes Haksever *Stifling Artificial Intelligence: Human Perils* Computer Law & Security Review (2016) 32 p 749
[46] James Vincent *OpenAI's Dota 2 Defeat is still a Win for Artificial Intelligence* The Verge 28th August 2018 - https://www.theverge.com/2018/8/28/17787610/openai-dota-2-bots-ai-lost-international-reinforcement-learning

aggressive tasks of some games. Yet, this could be achieved only through better understanding of this learning process.

Over-regulating a phenomenon without fully understanding it should be considered ignorance to some extent. It could have a greater negative impact than negligence and avoided legal responsibility.[47] Artificial intelligence is currently one of the most prominent topics, present in every media space and discussed everywhere. This kind of popularity has its advantages in making different scientific milieus and the broader public aware of the way these developments change social and individual understandings and everyday life. Nonetheless, it also bears disadvantages that should not be disregarded. Artificial intelligence is considered a very specific and convoluted field of science which requires unique knowledge not accessible to most people. A common understanding is that a dialogue between engineers in the field of AI and other scholars, especially without technical or mathematical background, is difficult and a deep insight into computer sciences could be gained very arduous. For this reason the discussions often remain on a very superficial technical level. The core of the phenomenon remains untouched and unrevealed. In addition, the subject inspires the imagination and a lot of speculations are now circulating in the media. In some cases this obscures a practical and realistic approach of understanding and analysis which is an indispensable condition when it comes to legally regulating a subject. True criteria should be created for an objective examination of the impact of the technological developments in various fields of life and science. Thus legal methods could be prepared in order to strengthen the advantages and overcome or avoid the disadvantages through regulation. If not, the negative effects might be deeper and more influencias. This could lead to the vanishing of unique opportunities to deal with mistakes and disruptive developments from the near past and the present. Environmental and medical problems, poverty, social disbalances resulting from irresponsible and devastating policies could find their solution through the use of AI. Therefore it is crucial to understand how "intelligent" artificial intelligence really is at the present stage, is it just a sophisticated tool and what is currently the stage of "machine learning". The answer to these questions will provide a basis for predictions of near-future developments and legal regulating systems. Accordingly a gross overview of some of the AI technologies will be examined in the next subchapters.

[47] Gonenc Gurkaynak, Ilay Yilmaz and Gunes Haksever *Stifling Artificial Intelligence: Human Perils* Computer Law & Security Review (2016) 32 p 750

3.2.2. "fake AI"?

At this point it is important to differentiate between "fake AI" and advanced systems.[48] An example could be some chatbots or chess playing bots which use huge datasets but eventually only run the pre-programed algorithm. For this reason when AI advances as a new branch of computer science in the middle of the 20th century some descriptions of the new technology include machines that "appear" intelligent. Thus AI was for some period of time exhausted only in the creation and application of hardware and software that tackled problems with huge amounts of data and information much faster than humans. There AI agents were very problem-based and limited to very narrowly specified tasks. It should be noted though that the basis for the current advanced systems was laid at the beginning of the 20th century.[49] As one of the leading scientists in the sphere - Professor John McCarthy - stated in the 1950s, AI is "the science and engineering of making intelligent machines, especially intelligent computer programs."[50] Yet it was not until the end of the 20th century that this area of science received great attention and progress rapidly increased. At the beginning stages the created programs were inapplicable for real-life cases and problems due to the complexity of factors which could not all be programed by hand. This major hurdle was overcome mostly through the development of machine learning, especially deep machine learning. This technology offers the opportunity of transferring certain crucial tasks like specifying the relevant features for a certain prediction, from the programer to the software. Advanced systems and artificial intelligence agents operate currently mostly on basis of machine learning (ML).

3.2.3. Machine Learning

Even though the term of AI is not exhausted through ML development, it is considered the most promising technique for future technological progress and the efforts of creating intelligent machines. Arthur Samuel, one of the most prominent pioneers in the field of machine learning, defined it in 1959 as "the field of study that gives computers the ability to learn without being

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[48] This could be illustrated for example through a comparison between IBM's Deep Blue and DeepMind's AlphaGo. Another DeepMind application that could be used to demonstrate the difference is the improvement of energy efficiency by 40% in Google's data centre - Richard Evans, Jim Gao *DeepMind AI reduces Google Data Centre Cooling Bill by 40%* - *https://deepmind.com/blog/deepmind-ai-reduces-google-data-centre-cooling-bill-40/*

[49] Alberto Prieto, Beatriz Prieto, Eva M Ortigosa et al. *Neural Networks: An Overview of Early Research, Current Frameworks and New Challenges* Neurocomputing (2016) 214 p 244-247

[50] John McCarthy *What Is Artificial Intelligence?* Stanford University (2007) - http://www-formal.stanford.edu/jmc/whatisai.pdf; Andy Peart *Homage to John McCarthy, The Father of Artificial Intelligence (AI)* - https://www.artificial-solutions.com/blog/homage-to-john-mccarthy-the-father-of-artificial-intelligence

explicitly programmed".[51] The description defines new horizons and offers unlimited possibilities and developments still to be reached and explored. This area builds the core of self-advancement of machines and could provide a solution for the problem of dealing with too complex scenarios of real life. A reality situation, completely unchallenging for most humans, contains countless number of features and information units which are very diverse. As mentioned above, when broken down into these information units and translated into computer language, this "everyday" situation becomes too overwhelming to be dealt with by hand programing. Not only could the data amount impose a challenge but also the data variety. Different types of data need to be transmitted and evaluated through different types of "communication channels", for example they need to be detected through different sensors. This "parallel processing" on different levels is extremely complex. Advanced technological devices like self-driving cars can also interact with the surrounding environment and in this sense initiate actions that have certain effects and consequences for other actors and the environment. Accordingly, these actions could have also legal consequences. Important to emphasize is that a complex system acts upon the predictions and evaluations of a "brain", a central process that provides the information needed for an action to be initiated. The type of action could be for example whether a self-driving vehicle should turn left or right, whether the power in a smart city, home or office should be reduced or whether certain products should be bought or sold. The decisions upon these actions are pre-programmed and pre-defined upon the kind of outcome the ML process delivers (the "core" of the system). In order to create a better understanding for this decision making process this work will accentuate on examining machine learning and will focus mainly on artificial neural networks.

There are various approaches to machine learning depending on the type of algorithm used or the model applied. Some examples are random forests (aggregation of decision trees for more complex predictions), bayesian networks (a statistical probabilistic approach used to explore and represent the interdependencies of variables), support vector machines (used for classification of data) and others. It is mostly used in predictive statistics and classification on the basis of features that must not be necessarily pre-defined. A subcategory of machine learning is deep machine learning (DML).

[51] Arthur L Samuel *Some Studies in Machine Learning Using The Game Checkers* IBM Journal of Research and Development (2000) Vol 44 Issue 1.2 p 206-226

3.2.4. Deep Machine Learning

This method could be gross divided in supervised, unsupervised and semi-supervised machine learning.

Within the process the AI agent uses data (input) which it evaluates and from which it learns on the basis of a set algorithm (also called model or code rule). It then uses this "experience" to make predictions about future outcomes or to come out with relative classification of new inputs. The algorithmic approaches could vary significantly from clustering, to decision tree learning, expectation-maximization algorithms or artificial neural networks (NN).

i) Supervised Machine Learning

One of the major differences between supervised and unsupervised machine learning is whether the input data is labelled or not. Described in general terms, supervised machine learning uses labelled training set of data. A label attached to each data unit provides certain information about a feature of the particular unit. The data units are used to provide the AI with examples of "right answers" on the basis of which it is trained. "Right answers" refers to pre-set, desired outputs. The input training data is usually categorized through a matrix. When new data is introduced as input, the categorization and classification happens on the basis of a pre-programed mathematical model, a function. The algorithm then gives out a prediction, to what degree of certainty the new input could be assigned to a certain output. A characteristic feature of supervised machine learning is that there is a defined desired "correct" answer. Expressed in more general terms - "[T]he goal of supervised learning is to be able to correctly identify new data given to it, having learnt how to identify the data using the previous data set and learning algorithm."[52] Common types of supervised machine learning are classification (limited number of outputs is set), regression (outputs can vary within a certain scope) and similarity learning (classification based on similarity predictions).[53] One of the most prominent examples is image recognition. If the AI agent should recognise photos of birds, it is trained on a set of photos which contain the right images and when new inputs (in this example - new photos) are introduced to the agent, it classifies them based on the mathematical model. After running the algorithm and adjusting, the AI could determine that a new photo is to 90% a picture of a bird, to 7% a picture of a frog, and to 3% a picture of a snake.

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[52] Brandon Skerritt *Absolute Fundamentals of Machine Learning*
https://hackernoon.com/absolute-fundamentals-of-machine-learning-dca5deee78df
[53] Ethem Alpaydin *Introduction to Machine Learning* MIT Press (2014) p 9

Other common areas of application are speech and face recognition, as well as pattern recognition.

ii) Unsupervised and Semi-Supervised Machine Learning

In unsupervised machine learning the right outcome is not pre-defined by the programmer. This makes it hard sometimes to determine how well the algorithm is performing, it is often very domain-specific.[54] The dataset used is not labelled, the final result is not defined. The algorithm identifies common or similar features and organises the data in groups (for example by assigning a new data input to a cluster). The algorithm "compares" each new dataset and determines the presence or lack of similarities. It recognises structures through analysis based on the set rule (mathematical model, a function) and provides an output (again of predictive nature). The most common examples are clustering, anomaly detection or deep belief networks.

One of the problems that programmers have to solve is the feature specification (feature here refers to an attribute or a characteristic of the data) and optimisation of the weights. The weights are used to determine how important is a feature for completing the task or making the right prediction. The features need to be translated into mathematical language (for example through vectors). This is extremely complicated because they could be numerous and it is difficult to determine how important a feature is for the best output to be delivered by the algorithm. An example could be given with recognising handwritten digits. An image of a handwritten digit is usually divided into smaller sections and broken down to groups of pixels. The shading, position, shape, size, orientation and many other features play a role. For more complex pictures the features could be so numerous that it is unfeasible to be programmed "manually by hand". For this reason the sphere of automated feature engineering or "feature learning" becomes more and more significant. This approach allows algorithms to determine and classify (with regard to the importance for a good performance) the features. This could be completed for example by a second unsupervised machine learning algorithm that detects similarities. The continuous research and experiments in this sphere generates more and more sophisticated algorithms.

A method that combines both elements of supervised and unsupervised machine learning is known as semi-supervised learning. Usually most of the data used for the inputs is unlabelled, combined with small amount of labelled examples. In comparison to unsupervised machine learning, this

[54] Vishal Maini *Machine Learning for Humans, Part 3: Unsupervised learning* - https://medium.com/machine-learning-for-humans/unsupervised-learning-f45587588294

method improves the performance and the accuracy of the algorithm.[55] A disadvantage of supervised machine learning that could be overcome is the need of right amount of data which then still needs to be labelled. Labeling huge amounts of data requires more time and effort and could lead to the problem of "overfitting" (the learning examples share an unnoticed, but unimportant or even undesirable feature, which the model determines as significant during the learning process).

iii) Reinforcement Machine Learning

Another area of deep machine learning is the reinforcement machine learning. It builds the bases for most computer games. A specific desired task is defined, and the agent receives "an award" when it optimizes the way of achieving it and moves towards its completion. This gives the agent constant feedback from which it can learn and which it uses to construct its next decisions. Often this method is used when long term goals have to be achieved and there is no mathematical model of the environment.

One of the most advanced, common and promising models used at the present in deep machine learning is the artificial neural network (NN).

iv) Artificial Neural Networks (NN)

Artificial Neural Networks are inspired by the biology of the human brain and consist of layers of nodes, assigned weights and biases. Each node is an artificial neuron in each layer and is connected via a weight to each neuron of the next layer. The biases represent additional nodes. They are assigned a constant (a bias activation constant) and are not connected to the nodes in the other layers. The biases help adjusting the activation function with greater flexibility.
The central part of the system builds the so called black box, hidden layers of nodes. Their number and complexity could make the process of data evaluation and the outputs extremely difficult to retrace. One of the central processes within the NN, the backpropagation, is itself based on a mathematical model, a function. The complexity of the network (for example the number of hidden layers and the number of nodes in each layer) and the huge amount of data could make the output unpredictable, not an autonomous decision through the machine.[56] This applies to every complex AI

[55] *Semi-supervised Learning* - https://deepai.org/machine-learning-glossary-and-terms/semi-supervised-learning
[56] Chihiro Watanabe, Kaoru Hiramatsu and Kunio Kashino *Modular Representation of Layered Neural Networks* Neural Networks (2018) 97 p 62-73

system that initiates actions. These actions are currently always based on outputs of technologies like neural networks, where the basis of decision making is not true autonomy, but a mathematical model.

3.2.5. "True" Autonomy vs "Technical" Autonomy

As fascinating as the above described technological achievements are, the basis (the core) of decision making and predictions is what makes them significant for the legal considerations about "legal personality" and liability. In none of the described methods it could be claimed that the AI agent acts truly autonomously from a legal or philosophical perspective. "Autonomous systems" is a technical term used only to describe some level of independence at the stage of data analysis, data classification and for example predictions. More complex systems achieve independence also at the stage of causing an action. The physical act or even presence of a human is many situations no longer required. Yet in terms of legal analysis, autonomy is crucial for liability. The decisive arguments here are at the initial stage of decision making. AI technology of the present always relies on a mathematical model, a rule, that builds the basis for the decision making. The learning process does not go beyond this rule. The way of learning, "the path" is already specified and encoded. When developing a self-driving vehicle the decisions it "makes" in a critical situation have to be already programmed and encoded, it has already been made. Even complex systems like this are still very specialized and "narrow". They solve very specific pre-defined problems and are "highly-focused and purpose-built". Artificial general intelligence (AGI) that could lead to artificial superintelligence (ASI) or singularity has not yet been achieved.[57] As pointed out above, cross-media intelligence methods could advance the technology towards AGI.

The logical conclusion so far would be that there is no room for liability and therefore introducing legal personality to AI systems might impose more problems than solutions or create greater frustration within the legal fora.[58] Some scholars have shown that the existing system of rules and regulations is sufficient enough to regulate the matter without the need of ill-conceived or misjudged creation of new legal principles.[59]

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[57] *Artificial Intelligence Development - A Complete Guide For Innovators* Yakt - https://byjakt.com/artificial-intelligence-development/

[58] *Open Letter to The European Commission Artificial Intelligence and Robotics* - https://g8fip1kplyr33r3krz5b97d1-wpengine.netdna-ssl.com/wp-content/uploads/2018/04/RoboticsOpenLetter.pdf

[59] For example in the field of US company law – Bayern, Burri, Grant et al. *Company Law and Autonomous Systems: A Blueprint for Lawyers, Entrepreneurs, and Regulators*

Estonia is now launching a discussion about introducing legal personality to AI agents,[60] but even their legal drafts involve the idea of a new type of insurance policy that would cover the responsibilities and liabilities of an AI agent. In this case is there still room for AI as a separate legal entity with "legal personhood"? In order to find an answer to this question this work tries to approach the term of AI in a greater complexity. Technological factors should be revealed in their social impacts, here referring especially to the topic of biases of machine learning models. Also recent, still young and promising developments and their future prospects should be considered.

3.2.6. Biased Algorithms?

"AI models hold a mirror up to us; they don't understand when we really don't want honesty. They will only tell us polite fictions if we tell them how to lie to us ahead of time."[61]

The root of the problem of AI biases in most cases is the quality of data that builds the input of the algorithm. If the input is bias or imperfect, this is reflected through the outcome. The data represents the injustices and imperfections of the reality humans have created - social, legal, informational or economical. This acknowledgement has also a positive aspect. It uncovers and illustrates biases and discriminations in real world and helps recognising them as a first step on the way of overcoming and correcting them.[62] Some of the discovered factors are injustices that society is aware of,[63] but others are just subtle considerations that seem to influence human decision making. One example from the legal environment is a software developed by the University College of London that through the analysis of over 500 cases of the European Court of Human Rights was able to make judgements' predictions with 79 percent accuracy. In the course of data evaluation the results showed that relevant for the judgements were mostly non-legal facts and issues.[64]

There is a lot of research in this area and the number of writings in the social and technical sphere is

[60] https://e-estonia.com/data-embassies-robots-and-e-id-the-ingredients-for-a-revolution/
[61] Yonatan Zunger *Asking the Right Questions about AI* medium - https://medium.com/@yonatanzunger/asking-the-right-questions-about-ai-7ed2d9820c48
[62] *Ibid* 61
[63] Victoria Woollaston *Following the Failure of Tay, Microsoft is Back with New Chatbot Zo* wired.co.uk (2016) - https://www.wired.co.uk/article/microsoft-zo-ai-chatbot-tay
[64] Nikolaos Aletras, Dimitrios Tsarapatsanis, Daniel Preotiuc-Pietro and Vasileios Lampos *Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective* PeerJ Computer Science (2016) 2 e 93 - https://peerj.com/articles/cs-93.pdf

increasing.[65] There are also different approaches and prepositions of how most effectively and consistently to deal with biases and their effects. Exercising more cautiousness in the choice of data is one of them. A technical approach is the use of another machine learning algorithm which could detect a bias of the initial one. Since machine learning algorithms are applied in almost every sphere of life, undiscovered biases bear a dangerous potential and could lead to devastating effects. This applies especially in the legal environment where a judgement upon an individual's future is based among other factors also on the predictions of an AI software system.[66] These and other considerations led to the establishment of the term of explainability of AI agents.

3.2.7. Explainability, the Right to Explanation

This term gained significance not only with regard to biases. AI systems are now assigned with complex and important tasks in human life. Their predictions and decisions have enormous influence in many areas - from performing financial operations, like governing complex blockchain transactions, to medical diagnosis, examination of behavioural patterns relevant for the marketing and legal sphere. The examples discussed in this chapter are only a few among many others. Therefore it is of crucial importance to be able to retrace the decision making process and evaluate exactly what led to this specific algorithmic outcome. This currently evolves to a new area of AI research technology.[67] The development of 3D visualisation software and simulations help create more transparency of the processes in the "black box" of a neural network.[68] Most of these models and techniques do not have a 100 percent success rate yet. Therefore it is crucial that an AI agent is programmed and tested with great responsibility. One way to secure that is by creating legal regulations around the right of explanation. This way users (individuals, businesses) and people who are affected by the prediction outcomes of an algorithm could enforce their right to understand what exactly is the decision in the specific case based on. This would include the right to examine the programming code. The algorithmic process of data evaluation and the initial data that build the basis for the contested decision could be tested for correctness and biases. To ensure that should be the purpose of legal regulations which unfortunately fails in some cases.

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[65] Tomas Kliegr, Stepan Bahnik, Johannes Fürnkranz *A Review of Possible Effects of Cognitive Biases on Interpretation of Rule-Based Machine-Learning Models* - https://arxiv.org/pdf/1804.02969v3.pdf

[66] Jeff Larson, Surya Mattu, Lauren Kirchner and Julia Angwin *How We Analyzed the COMPAS Recidivism Algorithm* (2016) - https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm

[67] L H Gilpin, D Bau et al. *Explaining Explanations: An Approach to Evaluating Interpretability of Machine Learning* - https://arxiv.org/pdf/1806.00069.pdf

[68] Anne McGovern *Taking Machine Thinking Out of the Black Box* MIT News - http://news.mit.edu/2018/mit-lincoln-laboratory-adaptable-interpretable-machine-learning-0905

In a case in Wisconsin[69] a convicted person was not granted the right to examine the algorithm which evaluated his character and the likelihood of repeated unlawful behaviour. The claim of revealing the algorithmic code was unsuccessful. This is a very dangerous and unsatisfying outcome. A way of preventing such judgements becoming a precedent and gaining international influence throughout different legal systems is the advancement of legal framework in the sphere of AI. The development of mechanism, which could be promoted through the recognition of legal personality of AI agents, could counteract irresponsible and frustrating legal decisions.

3.3. Conclusion - New Developments

New impulses in the discussion could be introduced by a recent report of the Google Translate developers. In September Google launched its Google Neural Machine Translation System. It was reported recently that the system developed a new machine language (interlingua) which is an example of a zero-shot translation.[70] This means that the system developed a mechanism to translate between patterns of languages that have not been shown to it before by analysing and comparing semantics of whole sentences and not separate words or phrases. The programmers could not foresee this development. The different route of encoding that the system took was detected through the scientists by creating a 3D representation of the internal network data and the translation process.

Unforeseen developments and "decisions" of an AI agent could build the basis for a legal personality in the future. It is difficult to speculate at the present time how this legal framework would look like. The information analysed so far leads rather to the idea that the future of AI technology is exciting and uncertain in its concrete realisations. A new legal rule should not be based on speculations in the media and the need of satisfying certain popular public opinions. Yet, many professionals in the sphere of AI technologies consider the future too uncertain and even the achievement of singularity a possibility. Some voices among them refer to Moore's law applied to the technological development, stating that the law has failed since the development rates have not been steady over the last years (considering time frames of two years). They point out though that the major obstacle for rapid development are the current limits in computer power, memory and data storage. This makes hyperscaling difficult for very complex systems designed for compounded tasks. The term "hyperscaling" is used here to describe the increasing in the complexity of the

[69] *State of Wisconsin v Eric L Loomis* Supreme Court of Wisconsin (2016) WI 68
[70] https://ai.googleblog.com/2016/11/zero-shot-translation-with-googles.html

system structure as response to an increased demand. This demand could be related to different features, for example more data space. A very simple example is adding new servers to a system that remains expandable.

The current obstacles concerning system power, storage and others could be overcome through promising new technologies like quantum computing. The advantages of this technology could be incredibly significant and the possibilities are still not fully explored. Quantum computing would not also mean processing data much faster, but processing it simultaneously on parallel levels. Furthermore, the applied physical phenomenon of quantum enhancement seems to be the most suitable method for working with high dimensional data. One of the most important factors that makes quantum computing suitable for machine learning is the ability to operate with "noisy" (unstable) data and noisy data environments.[71] Although this theoretically promises to be very successful, there is still lack of practical experiments. The development of quantum computers is still at its initial stages.

Another area considered very promising by AI specialists is the development of emotional intelligent robots. The applications are very broad and there are currently robots that could evaluate human emotions based on different physical data and initiate actions (as reaction to the human emotion). The simulation of emotion through robots is currently still a technical simulation but considering the research of the biochemical process in human bodies the technology might reach very high levels.

These are only a few among many other fields of possibilities of technological advancement that are difficult to foresee at present time. Considering the potential of this area of knowledge the legal framework should be adjusted and jurists should start "experimenting" with different rule systems.

[71] V Dunjko and H J Briegel *Machine Learning and Artificial Intelligence in the Quantum Domain: A Review of Recent Progress* Reports on Progress in Physics (2018) 81 p 59

IV. Chapter 4: International Legal Personality and AI

4.1. Introduction

In this chapter possible connecting factors between the terms of AI and legal personality will be examined. In order to show how AI could fit in the concept of international law, some ideas will be introduced how AI could change and reform the current subjects of international law.

As shown above, "personality" or "personhood" in the international legal environment is not necessarily connected to consciousness or the ability to cause or suffer damage. This philosophical approach has been adopted in many of the discussions about granting legal personality to animals. The criticism of Judge Higgins of the way the term is "filled" in international law is shared by many other scholars. Philip Allott also refers to the factor of participation which underlines the substance of this idea. He argues that legal personhood could be granted to every individual or entity and the basis and source for this empowerment lies in the "social interest, determined in and through the operation of the total social process of society."[72] What kind of intensity and form will the social process of the international community reach when the involvement of AI in the business, social and legal world intensifies?

It remains unknown whether a stage of technological development will ever be reached that would include independent decision making, liability and even consciousness. What would be the prerequisites to assume these factors or what would be the test to determine them?

Some philosophical schools suggest the idea that humans and maybe life itself as we experience it is just a sophisticated and advanced algorithm, based on input and result.[73] The construct of free will would then be illusional, since every decision made is predetermined by a past experience (input) – conscious or subconscious. The progress made in the sphere of AI technologies could bear the potential of revealing some answers or new aspects to some of the oldest questions asked – what makes us human, why are we aware of ourselves, what is consciousness.

Yet, it is not a prerequisite to find answers to these questions in order to legally regulate AI. Law and international law in particular has long proven that it could form, develop and change as philosophical, social and political discussions go on. Flexibility of rules allows a legal environment to regulate a phenomenon and its effects while in the same time supporting the search for its roots

[72] P Allott *Eunomia – New Order For a New World* Oxford 1990

[73] For example, the school of determinism as a philosophical theory and the incompatibilist positions within it.

and its dynamically evolving role.
As stated above, assigning legal personality should be based more on a legal fiction that guarantees the functionality within legal life rather than philosophical considerations.

4.2. AI and the State

As shown in chapter 2 states are the undisputed and central actors on the international legal arena which possess full international legal personality.
It is hard to imagine a state completely governed by an AI agent and this idea might never be realistic. It is only a topic of science fiction that a society and state structures, as well as the complete governance system are controlled by artificial intelligence agents. If a technical system could be so complex and advanced to manage and regulate state structures, international disputes would probably also be decided through technical means, probably through legal softwares. There are examples in the present of algorithmic models that are taught in legal environments. For this purpose learning data are not solely the legal regulations, but also previous case, commentaries and legal writings of interpretation of laws. Scientist perform test operation with introducing new cases which the algorithm has to solve. This type of software is already on the market for specified areas of law, where a number of legal claims could be evaluated on relative simple legal basis. Flight delay and flight cancellation claims are an example in which the sorting out of the relevant documentation and the notification about the resulting legal rights happen on a fully automated basis.[74]
International law often does not have the clear structure and rule system of national legal systems. It builds in many cases on international practise and soft law. Yet processes such as globalization and increased interconnectedness may renew these concepts in the future and lead to unification that would make an AI legal software in international law seem not a science fiction any more.

The technical achievements of the last decades had also transformed the perception of the state, the central subject of international law. It has happened parallel to the development of human rights law. An example is the electronic governance (e-governance). A number of government and state administration services are now offered electronically and involve the application of new technologies. It is not a futuristic idea any more that more of these services and governmental

[74] *AirHelp Launches the World's First AI-Powered Lawyer to Fight for Faster Flight Delay Compensation Claims* - https://www.travelproof.nl/en/news/airhelp-launches-the-worlds-first-ai-powered-lawyer-to-fight-for-faster-flight-delay-compensation-claims/; https://www.airhelp.com/en/

functions will in future be performed by artificial intelligence agents.

There are also other factors that would probably play a significant role in the perception of the state and eventually maybe contribute to a legal redefinition. Law mirrors the changes happening in society and the human mindset and reacts to them. The political, economical, technical and infrastructural interconnectedness of the world is constantly increasing. This could lead to cultural unification and shifting of the term of citizenship. Phenomenons like social media are now integrated part of everyday life and have already changed significantly the field of politics. New practices like communicating through social media platforms are now common in international politics and diplomatic relations.

These considerations could lead to the speculation that the structure of a state might change in a direction towards artificial intelligence control. When examining this idea a state should not be visioned in its current legal form and definition. The technological developments change large scale structures of politics and economy even now. The distant future might develop towards a new form of organisation, governance and regulation of all aspects of society's life, which could be very different from the current states. At present it seems that AI would play a significant part in these changes and in this new form, considering that the application fields and impacts of AI agents, as well as the technical sophistication are rapidly increasing.

4.3. AI and the International Organisation

This subchapter aims to describe in what exactly consists the legal personality of an international organisation - how are its rights and obligations defined. It will then be described how an international organisation governed by an AI could look like and what would its legal personality consist in.

As already pointed out international organisations are now recognized as subjects of international law and possess international legal personality. These could be organisations of universal character (such as the UN), regional organisations or regional organisations for economic integration (such as the European Union). The legal personality of an international organisation depends on its formation treaty provisions, its capacity to enter into relations and conclude treaties with states and other international organisations (which could be explicitly codified or established through actual practice and competencies), and its capacity to participate in international legislative initiatives.[75]

It is still contested to what extent the principles of international law apply to international

[75] M N Shaw *International Law* Cambridge University Press (2014) ed 7 p 190

organisations and how their rights and obligations could be defined. Customary international law and the general principles of international law offer no explicit specification of these rights and duties. Some scholars have suggested the approach of comparison to the legal personality of states. This introduces the possibility of expanding the applicability rules of international law developed in legal relations only between states to international organisations. A prerequisite for this approach would be that the legal issue is comparable and to a certain extent identical. This idea originates from the general principle of non-discrimination and equal treatment - *ius respicit aequitatem.*[76] In this case it would mean that same matters should be legally treated the same way. Such generalizing approach is yet very difficult and controversial in international law due to its specific character and rules, very dissimilar to national law systems.[77]

The questions of international legal personality of international organisations became more relevant through the developments in international human rights law in the recent decades. This let new issues arise around legal obligations and rights, especially immunities of international organisations.[78] A general liability rule is that the responsibility for international acts remains with the organisation and is not carried by the organisation's members (states or other international organisations). This is unproblematic in the cases when members, agents or organs of the international organisation act according to their structural and hierarchical position within the organisation in fulfillment of their functions and according to their powers.[79]

Through the formation of international organisations states "waive" some of their powers in certain areas or for certain issues and transfer them to the new agent. This ensures greater effectiveness, uniformational and administrative straightforwardness. The organisation on the other hand gains greater experience and competency. Therefore it is not unusual that international organisations lend their organs or agents to states or other organisations. The liability in these cases could be difficult to determine. The *Draft Articles on the Responsibility of International Organisations* (2011) of the International Law Commission (DARIO) contain rules that deal with this specific matter. Article 7 stipulates that the organisation that exercises "effective control" carries the international

[76] Gerhard Leibholz *The Prohibition of Arbitrariness and the Abuse of Discretion in International Legal Relations between States* Magazine for Foreign Public Law and International Law (1929) 1 p 77-125 - http://www.zaoerv.de/01_1929/1_1929_1_a_77_125.pdf

[77] Albert Bleckmann *On the Binding Nature of General International Law for International Organisations* Magazine for Foreign Public Law and International Law (1977) p 107-121 - http://www.zaoerv.de/37_1977/37_1977_1_t_107_121.pdf

[78] Ruwantissa Abeyratne *Immunities and Privileges of International Organisations and the International Civil Service* Journal of Public Administration and Policy Research (2014) vol 6 (3) p 34-43 - https://academicjournals.org/journal/JPAPR/article-full-text-pdf/7B805ED47297

[79] *Maclaine Watson & Co LTD vs International Tin Council* UK HL (1989) 81 ILR 670

responsibility and is liable.[80] The possibility that international organisations could be held responsible under international law was also confirmed by the International Court of Justice in its Advisory Opinion in *Difference Relating to Immunity from Legal Process of a Special Rapporteur of the Commission on Human Rights* case (1999). The ECHR also stipulated that member states of the European Convention on Human Rights cannot dispose of their liability by assigning powers to international organisations. Determining factor is not the hierarchical chain of power or command but rather the exercise of "ultimate authority and control".[81] This tendency has not yet been confirmed through a decision of an international judicial body in a particular liability case.

Article 29 to 31 of DARIO stipulate the consequences of breaches of international law performed by international organisations. The legal instruments for the enforcement are still not developed. It should also be considered that DARIO is not universally recognised. Even though it is based mostly on the *Draft articles on Responsibility of States for Internationally Wrongful Acts* (2001) of the ILC it does not possess the same legal character of international customary law and the rules are not considered binding. Furthermore, there are only a few international tribunals hat could decide cases involving international organisations as lawsuit parties.

Considering these obstacles and uncertainties it is hard to picture an international organisation governed by an AI agent, even assuming that technology would achieve a level of development that would allow handling very complex issues.

Presently there are a few states that are willing to experiment with the idea of legal personality of AI agents on a national level, examples are Estonia and Saudi Arabia[82]. Depending on how these projects develop such states could decide to transfer their experience in the area on an international level and apply it for the creation of an international organisation, governed entirely by an AI agent. The goals and powers of such organisation could be very limited but it would be a legal, social and technical experiment. As shown above there are even now cases in which algorithms govern complex matters. Apart from the technical considerations such international organisation could also be granted legal rights and obligations. The enforcement of such rights could happen through other agents of law (agencies of the organisation).

The question of liability would be more difficult. An international financial fund (comparable to an insurance) could be established through the members that would cover claims for reparations. This

[80] *Draft Articles on the Responsibility of International Organisations* with commentaries International Law Commission (2011) - http://legal.un.org/ilc/texts/instruments/english/commentaries/9_11_2011.pdf

[81] *Behrami and Behrami vs France and Saramati vs France, Germany and Norway* ECHR (2007) 46 ILM 743

[82] In 2017 Saudi Arabia became the first state to grant citizenship to a robot - the AI agent Sophia.

could raise the question if such a futuristic outcome would not introduce another possibility of escaping liability. As shown above responsibilities of international organisations is even now a matter connected with uncertainties and cases lead to unsatisfying results. Introducing a "technical layer" behind a structure that is not characterized through transparency could lead to serious liability gaps.

These considerations could be opposed with the argument that the mechanisms for escaping liability are already there. The currently existing system of rules does not provide satisfactory outcomes in all cases. Yet granting legal personality to international organisations was a first step towards developing rules for their responsibilities and drawing attention on the matter of liability gaps. The same could be chosen also for AI agents in that sphere.

International legal personality is a "tool" of international law through which a certain degree of independence is manifested. It lends different legal shape to actions of different participants and allows new ways of regulating their behaviour on the international legal arena. This was shown on the example of international organisations. A further step in the future could be the international legal personality of an AI governed international organisation. This would offer new possibilities for the technical and legal development, it would ease and accelerate not only the technical but also legal progress. It would offer an appropriate tool to legally regulate these developments. Engineers and lawyers could gather experience.

Taking this idea further claims arising in cases that involve such futuristic international organisations could be solved in front of specific international tribunals. These fora should not only possess the legal but also the technical competency to decide on matters of autonomy and traceability of decision making. A necessary prerequisite could be the cooperation of specialists from more than one relevant areas.

4.4. AI and Individuals - Natural Persons

The Advisory Opinion of the ICJ in the *Reparations for Injuries Suffered in the Service of the United Nations* case was already pointed out as revolutionary in international law in the matter of granting international legal personality to non-state actors. This particular case concerned the United Nations (as an international organisation) but the legal opinion is used as reference for granting legal personality and recognising other subjects of international law beyond international organisations (such as individuals). The argumentation of the court referred to the different kind of

rights and obligations that different subjects of international law have. This necessarily and consequently results from the different positions and roles these subjects have, also the differences in their objectives and structure. Nonetheless international legal personality is a manifestation of independence of acting on the international legal arena. There are some voices among the legal scholars who represent the opinion that the ICJ targeted only international organisations in its legal analysis. The terms used in the Advisory Opinion argue against such understanding. The Court expresses the idea that the scope of subjects of international law is not static and can change and broaden. Determining factors for these developments will be the "needs of the international community and the requirements of international life."[83] The international community is here not defined and therefore intentionally used in its broad meaning. This argumentation is consistent with the developments at the beginning of the 20th century which shifted the focus of international law on other actors, among others the individual as natural person. The advancement of international human rights law and international criminal law contributed to the new understanding of the individual as subject of international law with its own legal personality.

As pointed out above, the rights and privileges connected with international legal personhood differ according to the different subjects and take different shapes - claim rights, immunities, different powers. Individual's rights are still rather passive and quite limited in this sense, even though every state has bound itself at least with one international treaty to protect human rights. The resulting state's obligation was in the beginning evaluated from a positivist point of view. It was considered that the state was only bound on such treaties on the basis of its consent, expressed through the ratification. Legitimacy was found only in the state's consent to limit its sovereignty by allowing review through the international community. Yet some of the core human rights developed the status of customary international law or *jus cogens*. Their violation was not considered justified through sovereignty or state practise, as it could be seen in the example of Apartheid in South Africa and the Advisory Opinion of the ICJ relating to these practises in Namibia.[84] This leads to the conclusion that human rights have now taken their own role within international law, independent from the powers, politics and authority of single states. When considering that installing these rights within the international law system originates initially from the states and their consent, it still cannot be overlooked that human rights law has developed now to a new category of rules with its own structure and dynamics. This, among other factors, has determined

[83] *Ibid* 11 p 287
[84] *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970)* Advisory Opinion ICJ Reports (1971) p 16-54, p 49

the role of the individual as a new subject of international law, separate from the sole will and control of a state, as claimed by some scholars (for example Koskenniemi, 1991).

The recognition of individuals as subjects of international law with their own specific rights and obligations poses the question of enforcement. Beyond the areas of international human rights law and international economic law it is difficult to find cases in which individuals are granted with claim rights under international law. Nonetheless, there is a number of international fora and arbitral bodies established in the last century that deal with claims asserted by individuals, one example is the European Court of Human Rights. Another area where individual claims are common is international criminal law with the ICC as most prominent judicial body.
It should be considered that even in these cases a prerequisite for an individual's claim right is the state's ratification of the treaty, applicable in the particular case. This could be for example an international treaty for the protection of human rights or a statute of an international arbitral body. Additionally all possible legal actions on domestic level must be exhausted first. These conditions are again rooted in the concept of state's sovereignty and consent. It is considered that the domestic law system relates to the case more closely and is therefore most suitable and appropriate when regulating the matter and would deliver the most satisfactory results. The international community cannot deprive a state of its right to investigate the issue on domestic level and initiate proceedings. The international claim right of an individual is hereby conditional upon a state's "action" and therefore limited and does not exist independently. Even so, this has had a great impact on the development of international law in general, its enforcement and practicability, specifically with regard to the "partial" international legal personality of individuals.

Another factor of great importance regarding individual's rights under international law is the nationality. A system of rules has been established through the judicial practise according to which an individual's nationality or connection to a state could be determined. In more complex cases the connection to a certain state could be evaluated on the basis of different features which enables the assessment of the individual's relation to that state. It is then the state that exercises its own rights by initiating an international claim (for example in front of the International Court of Justice), even though the claim is on behalf of its nationals. This could be demonstrated on the case of *LaGrand* which was based on Germany's right to exercise diplomatic protection.[85]

[85] *LaGrand (Germany vs. United States of America)* ICJ Reports (2001) p 466 - https://www.icj-cij.org/files/case-related/104/104-20010627-JUD-01-00-EN.pdf

Nationality could also become a factor in future with regard to international legal personality of AI agents. Possible approaches of determining such nationality could be the place of registration or the place of "living" which could mean the place where the agent is most active or in the beginning - most actively applied. It could be considered that this is the environment from which it learns most and which influences its decision making most intensively.

This idea may appear unrealistic at first sight but some legal and political bodies are already considering such suggestions. The Resolution of the European Parliament of 16 February 2017 anticipates in its Article 2 of "General principles concerning the development of robotics and artificial intelligence for civil use" the establishment of "a comprehensive Union system of registration of advanced robots" with defined classification criteria. A reference to the necessity of such registration system is made once again in the Annex to the Resolution.[86] This shows that policy makers on international level are currently considering different possibilities of regulating artificial intelligence agents and the scope of their application. One of these possibilities is granting the agents international legal personality. The case of the robot Sophia which was granted citizenship by Saudi Arabia could be an example for a link to nationality. It is difficult at the present time to create an overview of all possible futuristic scenarios in which AI agents with international legal personality may play a significant role and take a place as an important actor in the sphere of international legal relations.

One possibility that is currently still very fictional could be the drafting and ratification of Treaties that deal with AI or Robotics rights. As discussed above great emphasis is set on emotional intelligence and motivation of AI agents.[87] One of the key feature for advancement in these areas could be human interaction. Robots which are applied in households, not only handling housekeeping chores but also offering emotional comfort to individuals help scientist not only develop more advanced programs but also explore and understand the human psyche on a deeper level. Better results are achieved if the cooperation between robot and human is better and more natural without mistrust creating a gap. A way to create better understanding is to "teach" robot systems to "motivate" themselves, in other words to explain why they initiate certain actions. As stated by Professor Subbarao Kambhampati from Arizona State University[88] the machine learning

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[86] *Ibid* 37

[87] Pierre-Yves Oudeyer *Autonomous Development and Learning in Artificial Intelligence and Robotics: Scaling up Deep Learning to Human-Like Learning* - https://arxiv.org/ftp/arxiv/papers/1712/1712.01626.pdf

[88] Subbarao Kambhampati *The Rise of Artificial Intelligence and the Challenges of Human-Aware AI* presentation at the University of Cape Town (22.10.2018) - http://www.science.uct.ac.za/event/rise-artificial-intelligence-challenges-human-aware-ai

process could be compared to the one of an individual and it happens on a much slower level when no teacher is involved. Human interaction with some AI agents could bring an enormous advantage in the development of this type of technology.
Advancements of these areas of robotics in the future could be a factor that would lead to the creation of "robot rights". Such could be the right to learn and self-advance, maybe even right to learn through interaction with humans. A possibility is that an advanced robot is released on the market by a company not in its function as a tool but as a separate entity. In such cases it would seem more practical and realistic for an advanced robot to have legal personality and rights then its creator claiming rights over its "product" after it has been released on the market (for example the product not being deliberately destroyed by a consumer in the course of "using it").
As adventurous as these concepts appear presently the idea of "robot rights" and legal personality of AI agents is already explored in some domestic legal orders (for example Estonia, as discussed above). In the case that this development is adopted by an increasing number of states (for example the states of the European Union) it would have an impact also on international law. International Tribunals for matters involving "international robot rights" could be created. These could be cases in which a possible right of development is disrupted through a restrictive policy of a state, aiming to extensively regulate or even prohibit certain technological developments on national level.

As already examined on the example of individuals, the emergence of complex areas of law (such as international human rights law) and the recognition of international legal personality could be closely interconnected. Such developments could be initiated by states as a response to social and economic occurings and events. Once recognised as a subject of international law, the new actor could take a more active part in legal life and develop more potential and experience in order influence it. Every new participant in a legal environment learns from it and shapes it at the same time. This would apply also for artificial intelligence and granting it legal personality could reveal exciting new opportunities.

Another possible scenario could involve actions of advanced robot agents that have international consequences on individuals and markets. In such cases the question of liability would arise. Even though these are for now just hypotheses, some current projects and initiatives in the sphere of international law and politics demonstrate that this subject engages the thoughts and works of legal scholars and practitioners. The Member States in the European Union are in the recent years

strongly advising towards regulatory frameworks and liability rules for AI agents.[89]

A very popular possibility that the media often refers to involves the overlap of AI agents and the sphere of international criminal law and international human rights law. A frightening but not impossible scenario is that a state transfers the authority of undertaking certain actions during an armed conflict (domestic or international) to an AI agent. Combat armed drone systems are currently not applied on the level of decision making but rather only on the level of execution of certain military actions. This could change in the future as defense technology advances. "Smart AI agents" could be used in classical or cyber warfare, the impact of which could be exactly as devastating. If such agents undertake actions based on "their own" predictions and analysis of the situation, the question of liability could become an international law matter. Retracing how the algorithm has been trained, what kind of model and what kind of data sets have been used may not be easy to uncover or may not lead to satisfying results from a legal perspective. Humans often think in concepts of "good" or "bad", "moral" or "immoral" and tend to transfer these views on machines but such ideas are unfamiliar to algorithms. They function and perform operations mostly on the basis of tasks and goals. Human social or individual values first need to be translated into mathematical language and then introduced within the process of machine learning. Such values have to be involved when defining the task, they need to be "taught". International legal personality of the AI agent in these cases would not necessarily mean that a veil is created for avoiding liability. It could however evoke more intensively the question of how far the "AI decision" was predictable and what was the degree of diligence required and applied in the particular case. Current events and happenings show that it is not the factor of legal personality that leads to avoiding liability, especially with regard to military structures. The impression is that it is rather the mindset of the actors and not the rule system that determine the results. This is the reason why rules and regulations in the area of international human rights law and international humanitarian law often appear idealistic and impracticable. The "fault" is not in the system of rules or its possible imperfections but rather in the motivation of the actors involved.

Such developments in military technology and international politics are often used to create mistrust and fear in the broader public towards AI. Nonetheless, the future might bring the necessity of establishing AI-specialized chambers in international law tribunals or even the creation of separate

[89] *Robots and Artificial Intelligence: MEPs call for EU-Wide Liability Rules* European Parliament News Press Release (16.02.2017) - http://www.europarl.europa.eu/news/en/press-room/20170210IPR61808/robots-and-artificial-intelligence-meps-call-for-eu-wide-liability-rules

international criminal law tribunals specialized on AI agents with legal personality. The enforcement of a judgement against an AI system could include the reprogramming or even the "closing down" of the agent. A remedy could also be payment out of insurance or other financial fund established for that purpose, initialised through through a legal agent or a representative (such as a state for example). It could also be considered that the AI is acting itself as an agent (with limited legal personality) of another actor and the liability would be carried by this other actor (again for example a state). This model could be introduced in an initial experimental stage.

As pointed out above a crucial element would be the involvement of engineers and specialists in the sphere of AI technologies in any international tribunal or arbitral body. It is a fundamental principle, that a phenomenon or event could not be regulated or judged upon without being examined and understood. In this sense legal scholars and practitioners in case of doubt do not possess the technical knowledge required to fully investigate complex cases involving "smart AI".

4.5. AI and Individuals - Juridical Persons

For better understanding this subchapter will examine the juridical persons under international law on the example of international corporations and will show that their position is in many cases similar to the position of individuals and their international legal personality. Some legal scholars use these similarities and the individuals-based structure of companies to justify the idea that a firm is not more than the total of the will and decisions of its individual members. As already pointed out specialists especially in the area of economic sciences and business and corporate law resist such interpretations and recognise that a firm develops its own dynamics that does not necessarily mirror the intentions of its members. This could be due to structural specific features. These considerations oppose the idea that the basis of the legal personality of a corporation is the individual as natural person and a company is not more than its "consisting parts" (an argument used also about the legal personality of states). When regarding the legal personality of a subject of international law the focus cannot be laid exclusively on its origins or "parts". It is the way that a corporation participates in international legal life that defines its rights and obligations and therefore its legal personhood. The interactions with other legal actors and the way legal frameworks are influenced by economic activity and interests of companies cannot be exhausted through the role of the individuals. Legal writings from mainly economic and financial spheres emphasize the corporations' "plasticity, hybridity, and responsiveness; their capacity for 'moving with the times' in a pragmatic,

need-meeting mode."[90] This could make a juridical person the most suitable form under which AI agents could be granted international legal personality. It could also be noted that the lack of a "human feature" would not be an obstacle. On the example of a corporation an AI agent could be recognised as a separate entity with its own specific dynamics.

A great concern in this area relates to the limited liability and the "corporate veil". This involves a high degree of justified negativism among scholars and critics. Yet a legal and social reason behind this concept could be recognised. A company which is from financial and civil law perspective liable only with the company's funds and not the personal finances of its members stimulates economic activity on the market. This concept is often handled with great irresponsibility but this is rather a question of the member's ethics than of the legal model. The model is a tool and is used by the group of people involved according to their interests and goals and it takes a complexity of social, legal, economic and even psychological factors to corrupt these interests. A week model that allows speculations is in itself not enough to create or enforce injustice. Every legal concept hides specific weaknesses. It still requires an actor with the "right" motivation to apply those according to the personal purposes. Nevertheless, the limited liability allows individuals to participate in economic life on a greater scale without being restrained by concerns about their financial existence. There are a number of cases in which law anticipates personal liability of company members, both in civil and criminal law. The fact that these legal regulations are sometimes disregarded and not applied constitutes often not so much a mistake of the system, than a mistake of the human actors.

Through the years the rules of companies' liability and participation in economic and international legal life developed and were adjusted and perfected. One reason is the international legal personality which allows different kind of more intense participation in legal life and the legal recognition of such participation. This applies also for AI governed companies. There is a number of high scale businesses already governed by software agents. One example is the model of DAO, a decentralized autonomous organisation, which in practise operates as a capital fund on the basis of blockchain technology.[91] The recognition of the international legal personality could be the next logical step in regulating a phenomenon that is already part of economic and social life. Concerns about the creation of a "technical veil" and "liability escape door" for creators should be addressed with the arguments presented above. Responsibility in the creation, market release and the use of

[90] *Ibid* 23 p 646

[91] https://www.ethereum.org/dao

the artificial intelligence agents is a crucial factor and prerequisite in the present and the question would neither be exhausted nor corrupted through the recognition of legal personality of AI agents. In order to create better understanding of what the possible effects of such recognition could be, it will first be referred to the specific features that categorize the international legal personality of juridical persons.

As already mentioned above there are some similarities with regard to the position of natural persons in international law. One of them is the link of nationality and the right of a state to exercise diplomatic protection on request of its national - in this case the corporation that seeks remedy or international legal protection. Some differences and specific features need to be regarded. In the *Barcelona Traction, Light and Power Co Ltd* case the ICJ points out the two most significant criteria for determining the nationality of a corporation: "the State under the laws of which it is incorporated and in whose territory it has its registered office".[92] However, misuse of these criteria has led to the increasing significance of the "true investor" as a determining factor with regard to nationality.[93]

New developments when examining the international legal personality of juridical persons could be observed especially in the areas of international economic and international investment law. This has granted juridical persons some immunities and the ability to initiate international claims against states. Beginning with the establishment of ad-hoc tribunals, such as the Iran-US Claims Tribunal[94], this trend manifestes in the creation of institutionalised arbitral mechanisms and specialized bodies. Examples are inter alia the International Chamber of Commerce an the International Center for Settlement of Investment Disputes. These developments in international law are best constituted in the judgement of the European Court of Justice in the *Van Gend en Loos* case:

> " The European Economic Community constitutes a new legal order of international law for the benefit of which the States have limited their sovereign rights, albeit within limited fields, and the subjects of which comprise not only Member States but also their nationals. Independently of the legislation of Member States, Community law therefore not only imposes obligations on individuals but is also intended to confer upon them rights which

[92] *Barcelona Traction, Light and Power Co Ltd (Belgium vs. Spain)* ICJ Reports (1970) p 3
[93] M Burgstaller *Nationality of Corporate Investors and International Claims against the Investor's Own State* Journal of World Investment & Trade (2006) 7 p 859
[94] http://www.iusct.net/Default.aspx

become part of their legal heritage."[95]

There are also voices among the legal scholars that ask for direct liability of corporations for breaches of international law, especially in the area of international criminal and international human rights law though current legal reality is that responsibility remains with the state.
The demanded changes could be faster enforced through the recognition of international legal personality of AI companies. The subject would be highly controversial and public opinion and interest will be strongly focused on it. This would make escaping liability more difficult and may trigger the establishment of responsibility models that are perceived as more fair also in other areas of international law.
Some scholars have thoroughly examined the possibility of an AI corporation with legal personality. One example is the work of Shawn Bayern. He refers to company law and various models in different legal orders and shows how a company led only by an AI agent could be established and what the possible effects would be. The matter has various facets and the rights and obligations connected with the legal personality are also diverse, for example claim rights and property rights.[96]

To the question of obligations and possibilities of enforcement it could be referred to the ideas introduced in the preceding subchapter. The matter of liability could be decided by breaking down the decision making process in different steps, for example observing the environment, gathering data and evaluation of the data. Ut could then be evaluated what is the level of autonomy at each step. The complexity of the algorithmic process could be examined depending on different criteria determined in cooperation with AI engineers. Based on this information the level of autonomy could be determined on more clear criteria.

4.6. AI and Non-Governmental Organisations (NGOs)

On the field of international law the role and position of NGOs remains limited inter alia due to their limited rights and obligations. Only one documented case can be pointed out in which a NGO has played a central role. It is the *Rainbow Warrior* case in which Greenpeace took an active part in diplomatic and legal negotiations and procedures. Nonetheless, it was actually the state of New

[95] *NV Algemene Transport- en Expeditie Onderneming van Gend & Loos v Netherlands Inland Revenue Administration* ECJ (1963) case 26/62
[96] *Ibid* 58

Zealand that claimed the right of the NGO of remedy.[97] Another milestone in the history of NGOs and their position in international law as subjects with limited legal personality were the Rules for Arbitration between International Organisations and Private Parties of the Permanent Court of Arbitration.

Yet it cannot be ignored that the growing influence of non-governmental organisations in international legal, social and economic life has led to "rethinking" of their position in international law. As already mentioned this is also a subject of controversy. Some scholars and practitioners warn of the dangers that could appear when global matters are influenced or even decided by bodies which have no democratic legitimacy. The danger arises also from the central role of NGOs in shaping public opinion. The positive aspect of this impact is the possibility of creating awareness among the broader public. AI is a very controversial topic and subject to a lot of myths and speculations within the media and public opinion. It is very complex and involves such specialized knowledge that most of the people today feel excluded from the dialogue about regulations and the future of the new technologies. Surveys or serious discussions on the topic do not include participation of people from diverse professional fields. It is important to demystify AI.

Public opinion often influences politics and international relations and therefore also international law. NGOs play an influential role in this process. There are a lot of open source materials now on the basis of "How to train your algorithm" or "How to train your neural network" but they mostly require deep mathematical understanding and knowledge. Some organisations and professionals who provide some of these open source materials and try to minimize the "exclusivity" of AI knowledge warn at the same time of the dangers of a fully open access to this knowledge. Leading figures of the company OpenAI for example warn of people who will misuse the technological resources. Yet, as pointed out above, the danger roots in the mindset and motives of the people, problematic in most cases is how the information is used and not the information itself. NGOs have built networks in public work and have the experience and competencies to create a sense of more responsibility and awareness when dealing with AI. Together with politics and the media these organisations may be a crucial factor in the development of AI under international law.

4.7. Conclusion

A lot of the conceptual ideas of international law gained their legal existence first in domestic legal life. There are a number of initiatives that center around regulating AI and experimenting with legal

[97] *Rainbow Warrior (New Zealand vs. France)* France - New Zealand Arbitration Tribunal (1990) 82 ILR 500

personality of AI agents. The European Parliament resolution of 2017 is only one of many EU wide initiatives. Another example is the project RoboLaw. Its findings supported the idea that AI agents have not yet advanced to "ethical agents". The researchers state that it is still difficult to predict how far the technology will develop but regulations could trigger sustainable and responsible robotics creation. The RoboLaw scientists argue for balance between the interests of the AI industry, consumers' rights and safety. "Blind" liability rules for manufacturers, users or programers would undermine the balance between innovation and safety. This would create rather social tension than promote justice.[98] Creating and establishing legal frameworks could become more accurate and practical through the recognition of some kind of legal personality.

The German Federal Highway Research Institute is intensively dealing with possible legal regulations around self-driving vehicles. Authorities and bodies in a number of other countries, like Netherlands, Sweden and Japan, are also deeply involved with research in this area. On a global scale, the United Nations Convention on Road Traffic (1968) is subject to amendments relating to autonomous vehicles. Another example is the sphere of personal data protection. The General Data Protection Regulation in the European Union has been intensively discussed in the media but there are also new, unexpected actors in this sphere - China for example has released a new Personal Information Protection Standard.[99] These and many other examples show that the need of unification of rules concerning AI and its legal personality is increasing. Cases involving complex and advanced technologies have most of the time cross-border applications and are not limited within certain political borders (clear examples in this regard are international environmental and international space law). This intensifies the interconnectedness and legal unification is often the only way of achieving practical solutions.

Many initiatives dealing with this unification are focusing on creating regulations and methods to minimize and avoid biases.[100] Others are emphasizing on the crucial factor of responsibility and safety when creating and releasing the technologies on the market, as well as in their use. The area of transparency is in this regard of great importance. Legal regulatory frameworks should extend to the creation of models and mechanisms that aim to make software decision making more retraceable. If legal rules are created to secure and enforce these principles and the awareness in the industry and consumers increases, many of the concerns relating to the legal status of AI agents will

[98] http://www.robolaw.eu/

[99] Yan Luo and Phil Bradley-Schmieg *China Issues New Personal Information Protection Standard* - https://www.insideprivacy.com/international/china/china-issues-new-personal-information-protection-standard/

[100] Michael Butterworth *The ICO and Artificial Intelligence: The Role of Fairness in the GDPR Framework* Computer Law & Security Review (2018) 34 p 257-268

be resolved. Legal personality of such agents on the other hand may lead to rights such as claim rights, rights relating to the owning of property (for example company property of an AI governed company) or the right to enter into contracts. This will lead not only to developments in the technical but also in the legal sphere and create a better technological understanding among legal professionals. The result could be rethinking of the way law is created and applied.

V. Chapter 5: Conclusion and Discussion

Thomas Franck argues that it should be law's "primary objective to achieve a negotiated balance between the need for order and the need for change".[101]

AI technology could challenge the aspirational dimension of law. This technological phenomenon has the potential to contest the perception of "human" and law, the idea of natural law and the human's central position in it. Technology has long been one of the driving forces of the increasing speed of interconnectedness between the nations. In future our image of nations and borders could shift and could be redefined due to these developments. New concepts will be introduced and will become more powerful. AI could become a new major actor on that stage, change the source of law as "from humans for humans".

Assigning legal personality to AI agents at the present state could not be a solution to the problem but bring more irritation and chaos, considering the level of development of technology and the lack of true independency in decision making. It could contribute to a more negligent and irresponsible development of this branch of technology and create an escape door for liability, a "technical veil". Some legal scholars argue for that reason that creating a legal framework around AI could instead focus on principles and rules for the development and use of the new advanced technologies.[102]

Considering these arguments it should not be overlooked that the complexity of AI systems and algorithms is increasing with rapid speed. Many scientists claim that the unpredictability of the decisions of some AI agents is just a necessary step towards true autonomy which might be achieved. The legal system should take this into account and could develop even at the current stage in two directions – insuring that the development of algorithms is not entirely unregulated and developing a legal framework around legal personality. These two approaches are not exclusive - they should complete each other. Currently society still needs to face the fact that individuals are still responsible and liable for robotic acts. Dangers result not so much from AI's but from people's conduct. Yet the possibilities for technological development and achievements are countless and difficult to grasp and the law should consider this.

Granting legal personality to AI agents could be important for creating a better legal regulating

[101] Thomas M Franck *Fairness in International Law and Institutions* Oxford University Press 1997 p 23
[102] N Nevejans *European Civil Law Rules in Robotics Study* - http://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf

system for an actor that is to some extent already active on the legal scene. A system that would lean on practical arguments and would recognise risks from an objective point of view. The application of AI agents bears dangers but so does everyday life too and so did any "invention" in human history. In some of the cases in which these dangers manifested a limit had to be recognised that "there is no one to be blamed", the events could not have been foreseen and were outside the sphere of influence of the involved participants. Another aspect of the question of international legal personality of AI agents relates to the very nature of international law. Its rule system is not as strictly codified as domestic law systems and therefore much more flexible. This makes it a suitable environment for the implementation of new frameworks and regulations, structured under the term of legal personality. A third argument could be found in the nature of the described AI agents. It was already pointed out that these agents learn and self-advance through interaction with the environment and analysis of data. The recognition of legal personhood could intensify interaction of AI agents with other actors on the legal arena and offer new possibilities for participation. This way not only the ML process will advance, but also the legal framework. An important prerequisite of course is that the matter is handled with great responsibility. The recognition of an AI agent as a separate entity and subject will lead to gathering technological and legal experience and knowledge. This experience could help uncover technological and legal imperfections that then can be more easily corrected.

Granting legal personality to non-state actors such as international organisations happened on the basis of practical considerations and analysis and gave legal shape to occurrences in international legal life that were already there. This change did not arise from general theoretical considerations. Such practical basis is already there in the sphere of AI. Law should develop as a reaction to these developments, not only in a passive, but also in a creative role. Legal considerations could be applied to foresee future trends and processes and shape them. In future research in the sphere of biotechnologies might reach new achievements and a symbiosis between a human and an AI agent might impose new challenges on the legal system. AI and "human" regulations might both prove insufficient to cover such new developments. Yet, in order for any regulation to be created first the phenomenon needs to be understood and the "mind" and the language behind it. An increased cooperation between specialists and multidisciplinary exchange between the legal and technological area is an urgent necessity, especially when new legal regulations are discussed.

Many jurists regard the idea of legal personality of AI with concern and see immense potential danger in the technology itself. Considering their arguments it should not be overlooked that the

complexity of AI systems is constantly increasing. Despite the fears connected with it, this could be an opportunity to create something positive and overwhelming. The legal system should take this into account and begin considering different models of AI legal personality in order to shape the developments in a responsible and sustainable way and not leave society in a legal vacuum.

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