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ESSAY ON THE USE OF THE CONCEPT OF LEGAL FACT BY AI/ALGORITHM/S TECHNOLOGY

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Abstract: This text explores the traditional category of civil law jurisprudence, the theory of legal fact, showing the value of this category for exploring the contributions of AI to the Jurisprudence knowledge area. Also to show problems dependent on strong AI for the civil law Jurisprudence knowledge area. The theory of legal fact is used as a starting postulate and, subsequently, there are several constructions of hypotheses about the use of the concept to build a comprehensive and strong AI in the legal world.

INTRODUCTION

LEGAL FACTS, ALGORITHMS AND ARTIFICIAL INTELLIGENCE

This essay will explore the following postulate: the use of the traditional category of civil law jurisprudence, the theory of legal fact, as an organizer of data and AI/ALGORITHMS processes for solving legal problems. The suggestion will be that a strong AI, an AI/ALGORITHM technology for the world of law can use the elements of this construction of civil law jurisprudence to develop processes and flows. The development of the essay will be as follows: the theory of legal fact is used as a starting postulate; there is a description of this analytical category, of legal facts; Subsequently, there are several constructions of hypotheses, or scenarios, about the use of the concept to build a comprehensive and strong AI in the civil law Jurisprudence knowledge area, or algorithmic technology capable of legal solutions. The materials used to write the essay are bibliographic sources. The essay was developed through theoretical discussion focused on the use of typical creations of legal knowledge in intersection with knowledge about a possible technological development of algorithms/artificial intelligence.

THE ANALYTICAL CATEGORIES: THE LEGAL FACT AND THE SUBCLASSIFICATIONS CONSTRUCTED BY THE CIVIL LAW JURISPRUDENCE

The theory of legal facts is a category, or concept, of analytical civil law jurisprudence. The core objective of the category, or concept, is to classify the various human behaviors or actions, or even facts that have an impact on these relationships. Broadly speaking, the theory of legal facts seeks to classify, according to standards established by the set of legal norms, various events, achievements, actions or human conduct. Therefore, all situations regulated by law are situations classified as legal facts. The great functionality of the legal fact category can serve as an information input element. As there is a plurality and diversity of situations, events, conduct or human actions, the theory of legal fact has established classificatory divisions in order to treat the various possibilities of events, situations, conduct or actions differently). (PAULSON, 1990) (DECHESNE, DIGNUM e TAN, 2011) (KELSEN e PAULSON, 1982) (BOBBIO, 2011) (LARENZ, 1997). Categorization involves a basic cleavage between those events in which there is human participation, or not. (PRIEL, 2011) (HADFIELD e WEINGAST, 2012) (PAYNE, 2001) (STRECK e MATOS, 2018).

Thus, there are so-called legal facts strictly speaking, or in the strict sense, or without human participation. There are natural events that do not depend on human participation and have consequences regulated by law (in this case we cannot speak of human conduct, actions or behavior as such). In the classificatory continuity, there are legal acts. Events, situations, conduct and human actions have regulatory repercussions in law (unlike what was seen above, here there are conduct, behaviors and human actions).

In legal acts there is an analytical division into two moments: 1st conduct or behavior; 2nd the effects of such conduct or behavior. Because from this bipartition, legal acts receive other subclassifications and distinctions. For categorization, legal acts are divided in a broad sense (seen in this paragraph) from legal acts in a strict sense (seen below).

There are legal acts themselves, or acts in the strict sense. In this quadrant, as only happens in legal acts, there is conduct or behavior (the 1st moment of the bipartition seen in the paragraph above). The regulatory effects of such conduct or behavior will not be those intended by the subject of the conduct, or even regardless of what he intended, the effects of the conduct or behavior will be those attributed by the system of norms itself.

The problem of will in legal acts in the strict sense entails another dichotomy: the assessment made of the will: in legal acts themselves there is volitional externalization, and the assessment of the quality of this manifestation is fundamental for the regulatory effects and, later, the effects regulations themselves will be assessed in terms of this volitional manifestation: it must be conscious will. That is why there is another category of acts-facts, distinct from acts in the strict sense. In acts-facts, the 1st moment, the moment of manifestation of will, is not the moment of manifestation of conscious will. So there is human participation, but the volitional element is neutral. The effects, as in the legal act in the strict sense, will be, in the acts-facts, the regulatory effects defined by the system of norms.

Within legal acts, in a broad sense, there are legal transactions. Unlike legal acts in the strict sense, in which the elements of the bipartition (1st and 2nd moments) have different treatment in relation to the will of the agent, in legal transactions the will has defining effects on regulation in both moments. In legal acts in the strictest sense, the agent's conduct is determinant of conformation in this category, a volitional manifestation of the 1st moment, but not in regulatory effects. In legal transactions, the 1st moment, manifestation of will, and the 2nd moment, regulatory effects, depend on the will.

The entire category of legal acts depends, from the outset, on another assessment that leads to a dichotomy: is it an illegal/unlawful conductor a legal/lawful conduct? In illegal/unlawful conduct cases there is human participation with the regulatory effects of the law defined by the norms, and not by this initial human participation. The starting point of illegal/unlawful is contravention of rule conduct of legal norm. Here there is room for several subclassifications, for example, between the illegal and the unlawful itself.

THE STARTING PROBLEM FOR AI IN LEGAL FACTS: DEFINING THE INPUT ELEMENTS FOR INFORMATION PROCESSING AND OUTPUT

Take as a starting point that law is a system responsible for providing solutions to social conflicts. Such conflicts can be potential or actual. In short, social relationships feed and are essentially characterized by some conflicts.

In the case of potential conflicts, one has to imagine that the conflicts to receive legal treatment are those that are possible, latent or imminent. Thus, the way in which the law is processed, in these cases, is the normative and institutional definition of processes and patterns of behavior, conduct, or effects of events, before the dispute arises. The objective of law is to offer prior standards of regulation. Law as stimulus and direction. In effect, it establishes expectations of reciprocal behavior in the social environment and directions that can resolve eventual intersubjective disputes,

by standards previously established in legal norms, characterizing legal acts-facts in legal-illegal patterns.

Imagining it this way, AI devices or machines, algorithms, of any nature, must have the ability to process situations in the social world as if they were human intelligence. AI/ALGORITHMS must have the ability to subsume situations to the rule of agreement, the rule expected for the standard situation and shape it into a certain normative standard (one could say decision-making of regulatory options).

In the case of effective conflicts, there is no quadrant of regulatory options as before the conflict, as it is already assumed that this was not satisfactory. The conflict is already present here. In these cases, it is assumed that the law acts repressively. Law acts as discipline and coercion.

In this case, the AI must have the ability to subsume situations to conflict resolution rules. It must shape the conflict in the punitive-sanctioning rule expected for the standard situation and shape it in a certain normative pattern (one could say coercive and sanctioning decision-making).

CHALLENGES OF AI-ALGORITHM/S TECHNOLOGY IN CARRYING OUT LEGAL REGULATION FUNCTIONS

In a summary of the problematization of the present study, the possibilities and scope of machines and AI/ALGORITHM/S technology devices have the potential and feasibility to carry out the typical tasks of legal reasoning, based on the grouping and classification of facts legal.

TAKING THE LEGAL FACT CATEGORY, THE PROPOSED PROBLEMATIZATION INVOLVES THE FOLLOWING ASPECTS:

the capacity of AI-ALGORITHM/S technologies to carry out legal reasoning from the legal fact category, in the logical variants of law;

Continuing, it involves problematizing AI's capacity to use available data to arrive at legal solutions;

on a third point, the questioning of the ability to effectively use the law based on AI-ALGORITHMO/S, with the aim of developing improved formulas for applying the law;[1]

the fourth item, the ability of IA-ALGORITHMO/S to read legally adequately which patterns of events, conduct and behavior can be classified in this or that category;

fifth note, make the correct inference once informed of the necessary data and apply the legal facts;

In continuity, the system must resolve the problem with a legal solution, a legal solution that closes the issue;

As stated above, the steps are fundamental for the final understanding, that is, from the input of information – the conflict or potential conflict – to the appropriate legal solution;

As there is a demand for a result – legal solution –, the program/process has to anticipate inconsistencies, ruptures, or possible failures in referral.

It must be considered that the legal fact category is a useful element for defining how the interaction of AI/ALGORITHM/S technology systems with the environment occurs – or will occur

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1. This involves a double problem: optimal application of norms and effective application of norms to legal facts.

As it is a classificatory category that contains several inputs that can be inputs of information, the classifications and subclassifications of legal facts allow the establishment of a better relationship between AI/ALGORITHMS and humans

capturing potential or actual disputes (the typical problem in law); how the relationship between humans will take place (it is a way of cataloging legal relationships); favors the communication system in the specific field of law (since it establishes an accepted and assertive taxonomy); allows the establishment of cause and effect relationships (understanding events, or conduct, and legal effects).

PROBLEMS TO BE FACED IN AI/ ALGORITHM/S TECHNOLOGY SYSTEMS AND THE VALUE OF THE LEGAL FACT CATEGORY

Taking the postulate consideration that AI machines would have the hypothetical task of resolving conflicts, potential or installed, the following problems can be listed in the application of AI-ALGORITHM/S to the matrix category of legal facts:

How can we imagine that the input of information into AI/ALGORITHM/S technology systems is made up of abstract notions, or that it depends on qualitative assessments and a gradient of optimizations? What we have are AI systems that presuppose the evaluation of conduct or action in accordance with standard conduct, delimited, shaped by some information, and it is not possible to carry out a case-by-case analysis according to submission, or not, to the system of law.[2]

Can you imagine an AI/ALGORITHM/S technology system that can make the choice of what the starting premise will be, without this starting premise already being formed? The problem that AI-ALGORITHMO/S has to face is that of considering facts in the universe of legal facts. In the world of events, conduct, behaviors and actions, what would be possible to classify as legal facts? Which ones would be irrelevant to the legal world?

In addition to the variation in input mentioned above, whether legal fact or not, there is the variation in input of information, between different behaviors, actions and events. Again, the limitation arises from the dependence on the starting choice, that is, what will be the starting element for encapsulation in those varieties of legal fact: is it act-fact? Is it an act? Is it business?

What the above indications still suggest is the strong dependence on the human factor when choosing the starting point. Beyond this initial point, and apart from events without human participation that seem to be more easily included in a standard programming of legal solutions using AI/ALGORITHMS technology, other key considerations about the participation of AI/ALGORITHMS in

2. 'One of the central questions in free speech jurisprudence is what activities the First Amendment encompasses. This Article considers that question in the context of an area of increasing importance – algorithm-based decisions. I begin by looking to broadly accepted legal sources, which for the First Amendment means primarily Supreme Court jurisprudence. That jurisprudence provides for very broad First Amendment coverage, and the Court has reinforced that breadth in recent cases. Under the Court's jurisprudence the First Amendment (and the heightened scrutiny it implies) would apply to many algorithm-based decisions, specifically those involving substantive communications. We could of course adopt a limiting conception of the First Amendment, but any nonarbitrary exclusion of algorithm-based decisions would require major changes in the Court's jurisprudence. I believe that First Amendment coverage of algorithm-based decisions is too small a step to justify such changes. But insofar as we are concerned about the expansiveness of First Amendment coverage, we may want to limit it in two areas of genuine uncertainty: editorial decisions that are neither obvious nor communicated to the reader, and laws that single other speakers but do not regulate their speech. Even with those limitations, however, an enormous and growing amount of activity will be subject to heightened scrutiny absent a fundamental reorientation of First Amendment jurisprudence.' (BENJAMIN, 2013)

legal solutions can be seen:[3] (SURDEN, 2014)

Can AI systems capture the volitional nature of human conduct (sensory capacity)? This is essential for, for example, building reasoning and solutions about legal versus illegal; about conscious will or not (act-fact or fact in the strict sense), and from there derive casuistic solutions.

Do AI systems have the challenge of capturing the nature of the subject involved? There is a problem here with the capacity, or lack thereof, of the subject involved. There is some reasonable scope for framing and standardization based on the subject's data (birth, health history, among others), but, without pre-determined data, is it possible to sensorially assess the conscious will? [4]

From - 5.2.2 - there is another challenge for AI systems: is there the possibility of framing events, information received from the environment that includes the participation of the system itself as an issuer of will? In general, systems that involve volitional manifestation of AI/ALGORITHMS systems have worked with the standards of legal acts in the strictest sense, for example for some administrative acts. [5]In the area of legal business, this appears to be more comprehensive, as it would be important for the system to have sufficient learning and information for varied patrimonial and consequential dynamics.[6]

The descriptive and analytical elements of the concept of legal fact can be input supports for information from AI systems in law. As seen in - 4.2 – the category is attractive in solving AI/ALGORITHMS problems in the world of law. Offers standardized information guides for the formulation and creation of AI systems/ALGORITHMS for regulatory framework and conflict resolution.

DEFINITION OF PROCESSES

The tables below are general illustrations of how a hypothetical formalization of algorithms for forwarding legal solutions could occur. As explained above, the work is an illustration based on the categories of legal fact.

The starting point would be:

Organization of legal reasoning by the theory of legal fact	Taking advantage of this input and formalization base for the development of systems that develop legal reasoning and produce legal solutions

And they would be illustrated by the following movements:

What matters are considered matters of law, that is, are they subject to legal regulation? This is the input problem	In a broad sense, all possible facts (excluding the impossible and necessary)
	In a strict sense, the possible facts predicted in norms
Legal facts will be defined as input from:	Facts that, in an abstract and broad way, impress legal norms

The other basic element for defining data entry in a hypothetical legal solution system

3. 'Definition acquisition is a necessary step in building an artificial cognitive assistant that helps military personnel to gain fast and precise understanding of the various terms and procedures defined in applicable legal documents. We approach the task of identifying definitional sentences from operations law documents by formalizing this task as a sentence-classification task and solving it by using machine-learning methods. This paper reports on a series of empirical experiments in which we evaluate and compare the performance of learning algorithms in terms of label-prediction accuracy. Using supervised techniques results in an F1 score of 95.93% and a 96.72% recall rate. However, for real-world applications, it would be too costly and unrealistic to ask personnel involved in military operations to label substantial amounts of data in order to build a new classifier for different types or genres of text data. Therefore, we propose and implement a semi supervised (SS) solution that trades off prediction accuracy to label efficiency. Our SS approach achieves a 90.47% F1 score and 93.44% recall rate by using only eight sentences labeled by a human expert.' (CHANG, DIESNER e CARLEY, 2012)

4. See the text by Jennifer Xu and Hsinchun Chen.(XU e CHEN, 2004)

5. Examples such as traffic signs and issuing administrative sanctions resulting from this; administrative and tax forms.

6. In legal business there is still limited standardization, with systems serving as homologators of standardized transactions, or adhesion, without in-depth interaction.

is the structure of the norm. In this case, the algorithm performs the fact-norm deduction:

Established/ positive legal standard	Norm as communication; identify the authority – sender – and the universe of receivers	
	Norm as prescription; identify the deontic nature : obligation, permission, prohibition	
	Norm with the structure of: description of the fact, or hypothesis of the norm;	The system must have inputs that are capable of capturing the relevant fact, or be fed with the relevant fact
	The consequence	The system must stipulate the legal consequence: Sanction? Award? Legal situation?

An initial execution problem that must be analyzed by any AI system/algorithm is the following:

Initially, the binary: Legal fact Or Fact without legal relevance	If it is classified as a legal fact, the second step is what is the category of facts. Here there is the challenge of fitting into the system; analysis of actions to forward an appropriate solution	There is no human participation	There are legal consequences		Legal solution
		There is human participation – results defined by standard	Action analysis – conscious?	Valid or invalid	Legal solution
			Analysis of action – not conscious?		Legal solution
		There is human participation – standards define the process and framework for implementation		Valid?	Legal solution
				Invalid?	

And another illustration that shows how initial determination is necessary when thinking about an algorithm for forwarding legal solutions:

The fact – initial framework	unlawful/illegal
	Lawful/legal

All of the tables above require a definition of machine participation, from what point onwards?

Human participation	Defines the entry legal fact or not? Or the machine/system must be developed to make the choice between legal facts and facts without legal relevance
	Will it define the entry of legal/lawful and illegal/unlawful? Or will the machine/system do it?

From the definition as a legal fact, and as lawful/legal or unlawful/illegal, it will lead to the problem of subjection to the rules:

The fact or act	Definition within a general standard that includes the fact-act in the subsystem?
	Definition within a general norm that excludes the fact-act from the subsystem?
	Definition of a general standard that includes the fact-act in the subsystem?

And the regulation to be processed:

In the case of (1), above	High margin of choice for machine/ AI system – limit setting challenge – possible heuristic algorithm
In the case of (2), above	The solution must be to exclude legal consequences – determination of solution
In the case of (3), above	Forwarding a legal solution – determination of solution

The tables above are illustrative explorations of possible processes-formalizations of AI/ALGORITHM/S technology for legal solutions. Each situation deserves the development of its own hypothesis. In the essay the general objective is to illustrate the promotion of debate.

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