

Modelling Norm Types and their Inter-relationships in EU Directives

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ABSTRACT

EU directives are deliberately imprecise to allow Member States to fulfill the objectives in their own way. It follows that deontic norms in EU directives cannot be properly understood without consideration of the motivation behind those norms, as well as consideration of how other provisions, or even other laws, may affect the scope or effectiveness of the norm in question. This paper seeks to model norm types and their inter-relationships. We envisage that this preliminary analysis may help to develop an automated system to find norms that are related in different ways in order to help legal professionals interpret laws for specific cases.

KEYWORDS

Natural language processing, Law, Machine learning, Recitals, European legislation, purposive interpretation, cosine similarity

1 INTRODUCTION

Norms are not “legal flowers without stem or root” [39], page 27. A normative provision almost always has to be read in the context of other norms. Generally, the law has a holistic character (cf. [43] and [19] among others) which emerges from a network of legal documents. This means that at times the meaning of legal norms emerges not from single parts of a normative provision but from a wider legislative corpus. Indeed, it is arguable that the context is even wider including parliamentary debates, legal common practice, and doctrinal interpretation. As such, legal interpretation takes much effort, and can be helped by automated efforts to find such links.

Less researched perhaps are important links between normative provisions in the same piece of legislation. Our manual analysis of a lengthy European Union (EU) directive revealed not only very different kinds of norms, but also different kinds of relationships between norms. While EU directives have particular characteristics (outlined in the next section), the general point remains that understanding of particular normative provisions can be greatly enhanced by reading them in conjunction with those norms that influence them in some way. Needless to say, not all normative provisions are of such relevance, and our research goal is therefore to help legal researchers find those provisions by semi-automated means. It is hoped some of the insights in this paper about the nature of norm types and relation between them will pave the way to automated detection of different kinds of norms and relations.

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This research is concerned with normative provisions and recitals in EU directives. While recitals lack the prescriptive status of normative provisions proper (their main purpose being to provide the wider context), they have been shown to yield some influence on the interpretation of normative provisions. The research questions of this paper are therefore:

- (1) What kind of norms are present in normative provisions and recitals?
- (2) What kind of links are there between norms, be they normative provisions or recitals?

Section 2 describes the challenges of legal reasoning, European law in the global context, and the nature of EU directives. Section 3 introduces our classification of norm types and section 4 our classification of link types. Section 5 provides issues for discussion, and section 6 outlines preliminary ideas for automated classification. Section 7 describes related work, and section 8 ends the paper with conclusions and future work.

2 BACKGROUND

2.1 The Nature of Legal Reasoning

The problem of vagueness pertains to all human reasoning, not just legal interpretation. As Sainsbury [41], page 324, explains: ‘Vagueness gives rise to borderline cases. Think, for example, of a colour spectrum. There are clear cases of red and clear cases of orange, and in between there are borderline cases: shades which we don’t feel inclined to classify either as red or as orange.’

Travis [47], pages 171-172, shows how context can influence the meaning of even a simple question such as whether a leaf is green: ‘Suppose a Japanese maple leaf, turned brown, was painted green for a decoration. In sorting leaves by colour, one might truly call this one green. In describing leaves to help identify their species, it might, for all the paint, be false to call it that.’

In the legal context the most famous example of such phenomena is the vehicle in the park scenario outlined by Hart [20], page 607: ‘A legal rule forbids you to take a vehicle into a public park. Plainly this forbids an automobile, but what about bicycles, roller skates, toy automobiles? What about airplanes?...We may call the problems which arise outside the hard core of penumbral instances “problems of the penumbra”...If a penumbra of uncertainty must surround all legal rules, then their application to specific cases in the penumbral area cannot be a matter of logical deduction, and so deductive reasoning, which for generations has been cherished as the very perfection of human reasoning, cannot serve as a model for what judges, or indeed what anyone, should do.’

These problems are well-known and have been alluded to in the AI & Law community: ‘The law is normally represented in natural,

albeit technical, language: the language of statutes and cases. These sources of law are not the law itself, but one possible representation of the law. It is clear that these documents are not themselves the law from the fact, that we must first interpret statutes and cases to get at the law which they represent, and from the fact that reasonable persons can disagree as to just what the law is, although there is rarely disagreement as to what, words make up the statute or case in question. It is the meaning of the statute or case which is the law, not the text of the document itself.' [17], page 2.

The degree of interpretation required is dependent on the nature of the legal document itself. Some technical legal instruments, such as medical clinical guidelines, are very precise, such that it is possible to identify the hierarchy of norms and model them with defeasible logic [37]. We argue that a different approach is required for legislation such as EU directives, which are more contextual and abstract. One issue, as mentioned above, is that the determination of whether a normative provision applies to a particular case is rendered difficult when the norm is less precise. The other issue is that the handling of conflicting legal principles is different to the handling of normative rules. Rather than one principle winning to the exclusion of the other, more often conflicting principles are 'balanced' to ensure that aspects of both principles are respected in a way that is proportional and fair. The demarcation between principles and rules is a point of contention, with some experts arguing that it is a continuous spectrum [14].

2.2 The Nature of European Law in the Global Context

The phenomenon of globalisation has put into question the inter-state structure of the international community. The global dimension of some phenomena (for example climate change, underdevelopment, immigration, terrorism, nuclear proliferation, financial transfers, information technology, human rights etc) have shown the inadequacy of an international community founded upon the independence and sovereignty of states. They require international rules and institutions due to their transnational character. Traditionally, international law governs relations between independent states, The norms that bind states originate from their free will in treaties or custom. The development of international law tends to reduce state autonomy. In certain matters, such as human rights, environmental protection, financial crime and terrorism, international law binds national law. There has been a movement from international commercial relations from direct inter-state mechanisms (above all the General Agreement on Tariffs and Trade) towards a system of international economic relations in the sphere of specific international organisations bestowed with normative, penal and judicial powers. For example, the evolution of GATT into the World Trade Organisation, as well as other international institutions such as the World Bank created to resolve controversies in the world of investment. Unlike states, international organisations are not given general competence, but are governed by the principle of specialisation and limited powers to pursue common interests attributed by the states. Not all organisations have a legal personality. To this end, they must a) be given sufficient autonomy, also organisational, distinct from that of member states b) have a well-defined mission with corresponding competence and status

within the international community. There are actors that do not truly have an international legal personality, but are involved and participate in such activities, including NGOs and multinational companies. The first represents public interests of the universal civil society, while the second represents productive interests of the current economic-financial system [10].

International law leaves great liberty to states in their choice of implementation, being interested only in that the objectives are achieved. This principle is not dissimilar to treaties of the European Union. Notwithstanding much similarity to international law, European Union law has certain characteristics that render it unique. In particular: "[t]o exercise the Union's competences, the institutions shall adopt regulations, directives, decisions, recommendations and opinions. A regulation shall have general application. It shall be binding in its entirety and directly applicable in all Member States. A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods. A decision shall be binding in its entirety. A decision which specifies those to whom it is addressed shall be binding only on them. Recommendations and opinions shall have no binding force"¹.

The limits of EU competences are governed by the principles of conferral²: "the Union shall act only within the limits of the competences conferred upon it by the Member States in the Treaties to attain the objectives set out therein. Competences not conferred upon the Union in the Treaties remain with the Member States"³.

The use of Union competences is governed by the principles of:

- subsidiarity: "in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States [...] but can rather [...] be better achieved at Union level"⁴. Moreover, "when the Treaties confer on the Union a competence shared with the Member States in a specific area, the Union and the Member States may legislate and adopt legally binding acts in that area. The Member States shall exercise their competence to the extent that the Union has not exercised its competence. The Member States shall again exercise their competence to the extent that the Union has decided to cease exercising its competence"⁵.
- proportionality: "the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties"⁶.

The primary characteristic that distinguishes the European Union from other international organisations is that member states have relinquished some sovereign powers to the European Union.

It follows other interesting phenomena. First, the European Union has the competence to conclude agreements with third states

¹ Article 288 Treaty on the Functioning of the European Union (TFEU)

² Article 5.1 Treaty on European Union (TEU).

³ Underline bot in the Article 4.1 and in the Article 5.2 of TEU.

⁴ Articles 5.1 and 5.3 of TEU. See also Article 4.1 of TEU and Article 352 of TFEU

⁵ Article 2.2 TFEU. We want to underline that the concept of subsidiarity also exist in some Member States government, but with a meaning more similar to division of competences e.g. see Article 118 of the Italian Constitution.

⁶ Articles 5.1 and 5.4 of TEU.

or international organisations, where such competences have been expressly given, or if they are acting within their limits.

Secondly, according to the "principle of sincere cooperation, the Union and the Member States shall [...] take any appropriate measure, general or particular, to ensure fulfilment of the obligations arising out of the Treaties or resulting from the acts of the institutions of the Union [...] and refrain from any measure which could jeopardise the attainment of the Union's objectives"⁷. The increasing trend towards harmonisation of EU law has put the European Court of Justice as the supreme arbiter of European law, and national judges are required to interpret their own laws in accordance with European law, even when there is apparent conflict between those laws⁸. The European Court can "review the legality of acts of bodies, offices or agencies. It shall for this purpose have jurisdiction in actions brought by a Member State, the European Parliament, the Council or the Commission on grounds of lack of competence, infringement of an essential procedural requirement, infringement of the Treaties or of any rule of law relating to their application, or misuse of powers."⁹ Furthermore, another particular characteristic of the EU is that "[a]ny natural or legal person may [...] institute proceedings against an act addressed to that person or which is of direct and individual concern to them", and more important "and against a regulatory act which is of direct concern to them and does not entail implementing measures"¹⁰. "If the action is well founded, the Court of Justice of the European Union shall declare the act concerned to be void"¹¹. It means that the Court has the power to "delete" some national law, and with it, delete also the future, present, and even past effects that law, as if that law never existed.

2.3 The Nature of European Directives

Our focus in this paper is on European directives, which as mentioned above, are prescriptive but sufficiently general to allow member states to articulate their own detailed norms and procedures as they prefer in order to achieve the goal of the directive. Being by nature goal-oriented, directives are particularly given to principle-based (balance) rather than defeasible reasoning. Almost half of the text of directives consists of recitals, which are intended to be explanatory and do not have the same status as normative provisions. There are different doctrinal positions [24] on the relationship between recitals and normative provisions:

- (1) recitals have no effect;
- (2) recitals are dominant over normative provisions;
- (3) recitals have an equal position in relation to normative provisions;
- (4) recitals encompass a subordinate position towards normative provisions.

⁷Article 4.3 of TEU.

⁸See Articles 258 to 260 of TFEU.

⁹Article 263, paragraphs 1 and 2 of TFEU.

¹⁰Article 263, paragraph 4 of TFEU.

¹¹Article 264 of TFEU

We are cognizant that the ECJ has assumed both positions 3 and 4 in its judicature in cases 24/62¹² and C-162/97¹³. The proportion of recitals in directives has increased over the years. Kierkegaard alleges [23] that "recitals are used by the Member States to insert normative provisions which they have failed to get into the text, and by the Commission to dump normative provisions which they do not want to prolong debate and disagreement on". From all this we can conclude that recitals cannot be ignored, but their influence is uncertain.

3 CLASSIFICATION OF NORM TYPES

There are different kinds of norms with different functions (they serve different purposes), and these different types are found in both normative provisions and recitals. Our categorisation is purely semantic and is intended to be generalizable to all directives. In particular, we have found that the structural aspects (e.g. type of modal verb used) are not a definitive indication. In this work, we have found 5 different types of norms: objective, constitutive, deontic, scope and meta-norms (procedural and contextual). All the examples provided come from a lengthy directive which we have analysed in some detail: Directive 2004/23/EC of the European Parliament and of the Council of 31 March 2004 on setting standards of quality and safety for the donation, procurement, testing, processing, preservation, storage and distribution of human tissues and cells.

Objective

Definition:

Outlines the purpose behind the directive as a whole, or some parts of it, and the wider social and legal context. Sometimes the objective is lofty and is a general principle for the existence of the directive. Other times the objective may be a more specific sub-goal.

Example 1:

ARTICLE 1: This Directive lays down standards of quality and safety for human tissues and cells intended for human applications, in order to ensure a high level of protection of human health.

Constitutive

Definition:

Official definitions of directive-specific technical concepts. Legislative constitutive norms are usually general descriptions, but also not uncommon are definitions by example, which allow extension by analogy, as well as definitions that explicitly include or exclude certain items from counting as the legal concept in question.

¹²Position 3: Case 24/62, F.R.G. v. Comm'n of the Eur. Econ. Cmty., 1963 E.C.R., paragraph 18, retrieved at

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61962J0024:EN:NOT>

¹³Position 4: Case C-162/97, Nilsson et al, paragraph 54, 1998, E.C.R. I-07477, available at

<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61997J0162:EN:NOT>

Example 2:

ARTICLE 3: For the purposes of this Directive: (a) “cells” means individual human cells or a collection of human cells when not bound by any form of connective tissue; (b) [...]

Deontic

Definition:

Specifies types of behaviour to be expected or permitted. Deontic norms have been further classified as permission, obligation, prohibition etc (see [21] for an elaborate study), but this level of detail is not required for our purposes.

Example 3:

ARTICLE 7.7: Member States shall, upon the request of another Member State or the Commission, provide information on the results of inspections and control measures carried out in relation to the requirements of this Directive.

Scope

Definition:

Outlines the extent of applicability or non-applicability of norms (or entire legislation) in the context of other norms (or other legislation) with which they may otherwise conflict. Scope also concerns norms that specify the areas of competence in different jurisdictions, in this case the EU and member states.

Example 4:

RECITAL 11: This Directive does not cover research using human tissues and cells, such as when used for purposes other than application to the human body, e.g. in vitro research or in animal models. Only those cells and tissues that in clinical trials are applied to the human body should comply with the quality and safety standards laid down in this Directive.

Meta-norms

Meta-norms are norms about norms. Laws do not only pertain to certain behaviours but also (1) the way in which the norms are produced, (2) the way in which they are applied and (3) the way in which upon violation a sanction is imposed. The distinction between norms and meta-norms is that the first concerns behaviour, the second concerns other norms or the production or application of other norms [15]. We distinguish between two kinds of meta-norms:

Meta-norms: Procedural

Definition:

Procedural refers to step-by-step processes for implementing law e.g. get signatures, agreement from the Committee, further signatures.

Example 5:

ARTICLE 10.3: Member States and the Commission shall establish a network linking the national tissue establishment registers.

While the above example is a procedure particular to the subject-matter of the directive, there are also other procedural norms that occur in practically all directives, and are part of the law-making process.

Example 6:

ARTICLE 26.1: Member States shall send the Commission, before 7 April 2009 and every three years thereafter, a report on the activities undertaken in relation to the provisions of this Directive, including an account of the measures taken in relation to inspection and control.

Meta-norms: Contextual

Definition:

Contextualisation is about time, space, addressee and hierarchy of norms.

Example 7:

ARTICLE 32: This Directive shall enter into force on the day of its publication in the Official Journal of the European Union.

4 CLASSIFICATION OF LINK TYPES

Norms are related to one another in many different ways. Below we provide definitions with examples from the above-mentioned Directive 2004/23/EC, and are mainly focused on links between normative provisions and recitals. Where not all parts of the recital or (sub)article are connected, the underlined sections highlight the related parts of the text.

Conceptually Similar

Definition:

There is content within the provisions that are about the same subject-matter and may use similar or different wording to say more or less the same thing.

Example 8 (using same wording):

ARTICLE 2.1: This Directive shall apply to the donation, procurement, testing, processing, preservation, storage and distribution of human tissues and cells intended for human applications and of manufactured products derived from human tissues and cells intended for human applications. Where such manufactured products are covered by other directives, this Directive shall apply only to donation, procurement and testing.

RECITAL 13: The donation, procurement, testing, processing, preservation, storage and distribution of human tissues and cells intended for human applications should comply with high standards of quality and safety in order to ensure a high level of health protection in the Community. This Directive should establish standards for each one of the steps in the human tissues and cells application process.

Example 9 (using different wording):

ARTICLE 5.1: Member States shall ensure that tissue and cell procurement and testing are carried out by persons with appropriate training and experience and that they take place in conditions accredited, designated, authorised or licensed for that purpose by the competent authority or authorities.

RECITAL 27: Personnel directly involved in the donation, procurement, testing, processing, preservation, storage and distribution of human tissues and cells should be appropriately qualified and provided with timely and relevant training. The provisions laid down in this Directive as regards training should be applicable without prejudice to existing Community legislation on the recognition of professional qualifications.

Constitutive

Definition:

The constitutive link is where one provision provides a definition of domain-specific terms contained in another provision. Often, directives contain a glossary of terms in one specific Article.

Example 10:

ARTICLE 3: For the purposes of this Directive:

- (a) 'cells' means individual human cells or a collection of human cells when not bound by any form of connective tissue;
- (b) 'tissue' means all constituent parts of the human body formed by cells;
- (c) 'donor' means every human source, whether living or deceased, of human cells or tissues;
- (d) 'donation' means donating human tissues or cells intended for human applications; [...]
- (f) 'procurement' means a process by which tissue or cells are made available; [...]
- (p) 'allogeneic use' means cells or tissues removed from one person and applied to another; [...]

RECITAL 16: Tissues and cells used for allogeneic therapeutic purposes can be procured from both living and deceased donors. In order to ensure that the health status of a living donor is not affected by the donation, a prior medical examination should be required. The dignity of the deceased donor should be respected, notably through the reconstruction of the donor's

body, so that it is as similar as possible to its original anatomical shape.

In this case Article 3 contains definitions of many domain-specific terms in Recital 16, so there is a Constitutive link between these provisions.

Motivation

Definition:

A link between a deontic norm and the motivation behind it. The provisions have the same goal but different levels of granularity. Sometimes the motivation is lofty and is a general principle for the existence of the directive, alternatively the motivation may be a core value of human rights or a fundamental principle of European Treaties. Other times the motivation may be a more specific sub-goal.

Example 11:

ARTICLE 16.3: Tissue establishments shall take all necessary measures to ensure that the quality system includes at least the following documentation:

- standard operating procedures,
- guidelines,
- training and reference manuals,
- reporting forms,
- donor records,
- information on the final destination of tissues or cells.

RECITAL 1: The transplantation of human tissues and cells is a strongly expanding field of medicine offering great opportunities for the treatment of as yet incurable diseases. The quality and safety of these substances should be ensured, particularly in order to prevent the transmission of diseases.

RECITAL 15: It is necessary to increase confidence among the Member States in the quality and safety of donated tissues and cells, in the health protection of living donors and respect for deceased donors and in the safety of the application process.

Impact

Definition:

A provision may affect the scope or effectiveness of another provision, or add additional requirements. This may be because the norm requires some kind of synchronisation with another procedure in another norm, or because two norms have conflicting goals. The content may be granularity independent.

Example 12 (conflicting goals):

ARTICLE 8.1: Member States shall ensure that all tissues and cells procured, processed, stored or distributed on their territory can be traced from the donor to the recipient and vice versa. This traceability shall also apply

to all relevant data relating to products and materials coming into contact with these tissues and cells.

RECITAL 23: All necessary measures need to be taken in order to provide prospective donors of tissues and cells with assurances regarding the confidentiality of any health related information provided to the authorised personnel, the results of tests on their donations, as well as any future traceability of their donation.

We can reason that traceability is a sub-goal of health protection, and that confidential information is a sub-goal of respecting the dignity of the individual, and that both these higher goals are sub-goals of maintaining the well-being of persons. However, there is a potential risk of conflict between these sub-goals e.g. traceability can be achieved without anonymity. As such, it is useful to link such norms to any norms that impose restrictions or additional requirements.

Example 13 (enforcement):

ARTICLE 6.3: The tissue establishment shall not undertake any substantial changes to its activities without the prior written approval of the competent authority or authorities.

RECITAL 26: Member States should organise inspections and control measures, to be carried out by officials representing the competent authority, to ensure that tissue establishments comply with the provisions of this Directive. Member States should ensure that the officials involved in inspections and control measures are appropriately qualified and receive adequate training.

RECITAL 30: In order to increase the effective implementation of the provisions adopted in accordance with this Directive, it is appropriate to provide for penalties to be applied by Member States.

The impact of Recitals 26 and 30 on Article 6.3 is to render the norm enforceable via monitoring and penalties.

Indirect Internal

Definition:

An indirect internal link is a structural (not semantic) link that exists purely because of an internal reference to a (sub)article. An indirect structural link between Recital X and (Sub)article Y depends on the existence of a primary semantic link between Recital X and another (sub)article that is cited by (Sub)article Y.

Example 14:

ARTICLE 11.3: The responsible person referred to in Article 17 shall ensure that the competent authority or authorities is or are notified of any serious adverse events and reactions referred to in paragraph 1 and is or are provided with a report analysing the cause and the ensuing outcome.

ARTICLE 11.1: Member States shall ensure that there is a system in place to report, investigate, register and

transmit information about serious adverse events and reactions which may influence the quality and safety of tissues and cells and which may be attributed to the procurement, testing, processing, storage and distribution of tissues and cells, as well as any serious adverse reaction observed during or after clinical application which may be linked to the quality and safety of tissues and cells.

RECITAL 25: An accreditation system for tissue establishments and a system for notification of adverse events and reactions linked to the procurement, testing, processing, preservation, storage and distribution of human tissues and cells should be established in the Member States.

In this example, Article 11.3 is indirectly structurally linked to Recital 25 because Article 11.3 refers to Article 11.1, which is Conceptually Similar to Recital 25.

Via Other Law

Definition:

When an article mentions another legal source. Applies only if reading this source is required in order to understand the provision or recital. This is a structural link, and not a semantic link.

Example 15:

ARTICLE 13.1 The procurement of human tissues or cells shall be authorised only after all mandatory consent or authorisation requirements in force in the Member State concerned have been met.

RECITAL 22: This Directive respects the fundamental rights and observes the principles reflected in the Charter of Fundamental Rights of the European Union (1) and takes into account as appropriate the Convention for the protection of human rights and dignity of the human being with regard to the application of biology and medicine: Convention on human rights and biomedicine. Neither the Charter nor the Convention makes express provision for harmonisation or prevents Member States from introducing more stringent requirements in their legislation.

In the above example, the fundamental rights and dignity of the human being mentioned in Recital 22 is the motivation behind the requirement for consent for the procurement of human tissues and cells in Article 13.1.

Procedural

Definition:

Involving routine bureaucratic procedures of some precision. The procedures referred to here are only descriptions of what the Commission, other EU body, or Member State, have undertaken to do to render the directive effective. They are not norms in the deontic sense. Procedural links do not pertain to norms about

what lower bodies within Member States are required to do, which are still deontic norms, in the sense that they impose an obligation.

Example 16:

ARTICLE 29.1: The Commission shall be assisted by a Committee.

RECITAL 34: The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission.

The procedural link exists to distinguish between deontic norms and descriptions of procedures that render the law effective. However, the linked sub-articles and recitals can have different levels of granularity.

Contextual

Definition:

Contextualising the applicability of all norms involved in the directive in terms of time, jurisdiction, addressee and position in the hierarchy of norms.

The following are the contextual meta-norms that should be linked to other articles and recitals of Directive 2004/23/EC.

Example 17:

ARTICLE 32 (time): This Directive shall enter into force on the day of its publication in the Official Journal of the European Union.

ARTICLE 33 (addressees): This Directive is addressed to the Member States.

RECITAL 31 (jurisdiction): Since the objective of this Directive, namely to set high standards of quality and safety for human tissues and cells throughout the Community, cannot be sufficiently achieved by the Member States and can therefore, by reason of scale and effects, be better achieved at Community level, the Community may adopt measures in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve that objective.

Norm Group

Definition:

A link between norms that are connected due to being part of the same general requirement. The links between the norms may be conjunction, disjunction or sequence. Such norms may be paragraphs of the same article, or may occur in different provisions.

Example 18:

ARTICLE 20.1: Tissue establishments shall include in their standard operating procedures all processes that

affect quality and safety and shall ensure that they are carried out under controlled conditions. Tissue establishments shall ensure that the equipment used, the working environment and process design, validation and control conditions are in compliance with the requirements referred to in Article 28(h).

ARTICLE 20.3: Tissue establishments shall include in their standard operating procedures special provisions for the handling of tissues and cells to be discarded, in order to prevent the contamination of other tissues or cells, the processing environment or personnel.

ARTICLE 21.1: Tissue establishments shall ensure that all procedures associated with the storage of tissues and cells are documented in the standard operating procedures and that the storage conditions comply with the requirements referred to in Article 28(h).

5 DISCUSSION

Our classification of norm types and link types was data-driven and based on line-by-line coding with an open mind, as espoused by grounded theory [11, 12], followed by comparison and alignment with theories in the literature. The analysis was carried out by researchers with a background in law, computer science and legal informatics. While the categories below were agreed by all to be evident in the data, the attribution of individual provisions to a particular category was more problematic. As such, our future work will involve annotation of a corpus of directives by a larger group of annotators in order to properly elicit the distribution of categories, evaluate inter-annotation agreement and, where necessary, refine the categories. In this preliminary work, we articulate below some of the theoretical questions that require further analysis.

In this work, we have used the term deontic norm to describe what we originally called detailed technical norms and to distinguish them from objectives. In some legal traditions, e.g. Italian, detailed norms also may include norms that are not strictly deontic. Further work is required to explore the correct classification of these norms.

The observant reader will have noticed that granularity is treated in different ways for different classes. Relevant sections in Conceptually Similar links are on the same level of granularity. On the other hand, a Motivation link features different levels of granularity, although the difference in granularity may be big or small. For Impact, Procedural and Contextual, the level of granularity is inconsequential. Is this difference justifiable? Should there be sub-categories beyond the classes identified in this work e.g. a 'general principle' versus 'immediate goal' type of Motivation? Or does the granularity issue indicate that there is something fundamentally problematic about the classes as they are? More work is required to explore this issue.

6 INSIGHTS FOR AUTOMATED IDENTIFICATION

The automated identification of norm types is a task which lends itself to well-known supervised classification techniques, such as SVM, Bayes, decision trees, and most recently neural networks [26].

The automated classification of links types, on the other hand, requires closer scrutiny. The input is two different texts and the output is the relation between them. Much literature on relevance, particularly in information retrieval, assume that relevance correlates with similarity. However, our analysis shows that norms are related in different ways. Our intuition is that different techniques are required to identify those links, and we intend to experiment with lexical-syntactic, knowledge-based and corpus-based techniques. Lexical-syntactic techniques are based on the words in the input data. They include edit distance [8], pattern-based [5], N-grams and Longest Common Subsequence [25]. Thesaurus-based approaches [31, 38] rely on background knowledge. Corpus-based techniques include word embeddings, such as Word2Vec [32] or GloVe [36], and topic modeling [30, 50]. We envisage the following techniques for each link type: word embeddings and topic modelling for Conceptually Similar links (since the similar texts need not necessarily contain the same wordings), pattern-based approaches for Constitutive links, thesaurus-based approaches for Motivation links (in order to capture information of different specificity), topic modeling for Impact, pattern-based for Indirect Internal links, pattern-based for Via Other Law links, pattern-based for Procedural links in combination with a set of trigger words, n-grams and longest common subsequence for Contextual links, and word embeddings for Norm Group links.

We believe that an eventual support system should take a greedy approach to selecting a low threshold for relevance. A high recall, low precision system means that users have to put up with the presentation of irrelevant data, but this is still less work than manually looking at all possibilities. On the other hand, a high precision, low recall system, means that users may be confident in the validity of the classification, but then have to go through all possibilities to find others missed by the system. While a greedy approach is, generally speaking, the most pragmatic approach to designing user support systems, there is a danger of information overload rendering the support system frustrating to use. The classic solution to this problem is to rank the results. However, the issue of how to rank the links is not simple for this work. Sections which are identical in meaning do not offer new information, and therefore may not be the most valuable to a legal researcher. Then, there are recitals providing general principles that motivate various norms. Are these so generic that they can be safely ignored? Only perhaps to those who are already familiar with the directive under consideration. Otherwise, even general principles can on occasion help disambiguate unclear provisions if one plausible interpretation would clearly go against the purpose of the entire directive. Perhaps the key to creating a user-friendly system is careful interface design that enables users to select the information they want. For instance, they could filter out certain classes of links. Or they could choose whether to e.g. display *Motivation* links in order of Most Specific or Most General, *Conceptually Similar* links in order of Most Similar or Most Dissimilar etc.

7 RELATED WORK

On the classification of norms, the papers of Tiscornia and Turchi [46], and de Maat [13] are notable for developing their classification informed by legal philosophy, while being tested on Italian and

Dutch legislation respectively. In the first paper, provisions are classified as definitions, attributing competence, constitutive, interpretative, instituting, prescriptive, procedural, sanctioning, material link (derogation or extension, amending link (abrogation, substitution), temporal link (prorogation, suspension). The second paper finds core rules, procedures for citizens, procedures for civil servants, rule management and definitions in the body of law, with introduction, conclusion and appendices completing the model of legislative text. Although there are similarities in the categorisation, there are also differences due to the nature of the legislation being modelled. EU law is particular for having less definite, more goal-based and principle-based norms both in the recitals and provisions. We would point out a couple of key differences in the classification. Tiscornia and Turchi [46] define constitutive norms more broadly than us to include also power-conferring norms. De Maat [13]'s categorisation includes procedural norms also for the addressees of norms, whereas our procedural norms describe the procedures undertaken by institutions of the EU to implement and maintain EU legislation. Another important factor is in the motivation for classifying the norms. The classification of Tiscornia and Turchi [46] and De Maat [13] serve to model the content of norms. Our classification of norms may help in determining the relatedness between norms.

The automated classification of norms have also been explored by Biagioli et al [16] and Waltl et al [51, 53]. The first used Support Vector Machines, while the second found similar performance by local linear approximations and a manually crafted rule-based approach.

Important theoretical analysis on contextualisation has been conducted in the development of annotation standards for modelling legislation. The temporal dimension is modelled in Legal Knowledge Interchange Format (LKIF) [35] by ascribing to each norm blocks of information covering time of entry into force, time of efficacy and time of application. Akoma Ntoso [6] has a multi-layered approach to modelling laws with the text layer continuing the original legal text, the structure layer providing a hierarchical representation of the parts present in the text layer, and the metadata layer associating the first two layers with ontological information to allow advanced reasoning using logic frameworks, and allowing for multiple interpretations of norms by different actors. Akoma Ntoso also incorporates the Functional Requirements for Bibliographic Record (FRBR) model [42] to identify different versions of the same work. The importance of contextualisation is well-explained in [4], page 152: '[P]rovisions, rules, applications of rules, references to text, and references to physical entities. All of these entities exist and change in time; their histories interact in complicated ways...[A] rule has parameters which can vary over time, such as its status (e.g., strict, defeasible, defeater), its validity (e.g., repealed, annulled, suspended), and its jurisdiction (e.g., only in EU, only in US). In addition, a rule has temporal aspects such as internal constituency of the action, the time of assertion of the rule, the efficacy, enforcement, and so on.' As such LegalRuleML annotates each rule with its defeasibility status, temporality, jurisdiction and authorial tracking.

On the classification of links between norms, we refer again to Tiscornia and Turchi [46], who also define links between norms. Their links are by logical implication - a norm of one class, such as

prohibition, will of necessity be linked to a norm of another class, such as sanction. Our classification of link types are generally more semantic and probabilistic.

An important work on normative similarity is that of Lau [29]. Provisions are tagged with the stems of noun phrases, legislative definitions or glossaries from reference books. The similarity analysis core takes as an input the parsed regulations and associated features, and produces a list of the most similar pairs of provisions. The most similar research to this paper in terms of its subject-matter is that of Humphreys et al [22], which explored the feasibility of semi-automated mapping between normative provisions and recitals. However, the focus of that paper was deontic norms and the links explored were only Conceptually Similar. The work of Nanda et al [34] is concerned with finding norms from national legislation that implement norms from EU directives. This thorough research investigates a variety of similarity algorithms suited for short text, including a unifying text similarity measure (USM) which incorporates methods for matching common words, common sequences of words and approximate string matching. While informative for our purposes, research on automated mechanisms for finding similar norms is only part of our agenda, since we seek to extend the notion of relatedness, and will require different approaches for different types of links.

On the nature of relations between norms, there is a wealth of theoretical research on conflicts between norms [2] and defeasibility (summarised in [37]). The main features of formal approaches to defeasibility are:

- arguments that are satisfied with certain criteria;
- counter-arguments that serve to attack or undercut other arguments;
- the non-monotonic nature of legal reasoning, where conclusions can be revised with the addition of new information.

Such analyses can be used to build a formal legal reasoning expert system such as that of Sergot et al [44] and Lam & Governatori [27]. Some attention has been paid to contrary-to-duty obligations i.e. a conditional obligation arising in response to a violation of another obligation, particularly for compliance management [18]. The use of automated systems in legal settings has gained credibility with the rise of AI in general. Even robotic judges are becoming acceptable for limited domains in Estonia¹⁴. However, there are certain kinds of laws that are simply too abstract or dependent on other laws to be modelled in this way with certainty.

There is also a wealth of literature on the discovery and classification of citations in legislation [1, 3, 28, 40, 52]. This work is chiefly concerned with structural references between norms of the same and different legislation, and we will look closely at the techniques used with respect to Indirect Structural and Via Other Law links. Interestingly, in addition to full-explicit references, semi-explicit references, and implicit references, Walzl et al [52] also refer to tacit references which are defined as follows: “[t]he connection between the norms emerges due to systemic interpretation and cannot not be determined by exclusively analyzing the norm text.” Tacit references are not covered by their system.

The case for support systems to aid legal support was made by Opijnen and Santos [48], page 84, which states that ‘given the

importance of digital information for legal professionals - lawyers easily spend up to fifteen hours per week on search, most of it in electronic resources although the abandonment of paper does not always seem to be a voluntary choice - the gap between LIR systems and user needs is still big’. This is because ‘retrieval engineering is focused too exclusively on algorithmic relevance, but it has been proven sufficiently that without domain specific adaptations every search engine will disappoint legal users’ (ibid, page 84). While there are several projects that seek to find linked legal data from different sources, such as EUCases [9] and the LATC project (Linked Open Data Around-The-Clock)¹⁵, in this article we chiefly looked at the relationship between norms within the same piece of legislation.

8 CONCLUSIONS AND FUTURE WORK

This paper sought to model norm types and their inter-relationships in EU directives. Recitals and provisions were categorised and the links between them were also categorised. We started from the presumption of the hyper-textuality and high-level nature of EU directives, which are deliberately imprecise to allow Member States to fulfil the objectives in their own way. It follows that deontic norms in EU directives cannot be properly understood without consideration of the motivation behind those norms, as well as consideration of how other provisions, or even other laws, may affect the scope or effectiveness of the norm in question. Our analysis includes the impact of meta-norms that render the norms effective and determine when the provisions are valid and in which context (time, space, jurisdiction).

The nature of EU directives means that modelling the inter-relationship between norms with defeasible logic cannot be undertaken with certainty. This does not mean AI & Law cannot be useful. Rather, we propose a different approach: to find automated means to find norms that are related in different ways in order to help legal professionals interpret laws for specific cases.

Our future work will involve the creation of a gold standard to help build a system to semi-automatically classify norms and their inter-relationships. Legal corpora have been created for a variety of different purposes including classifying norm types and extracting norm elements ([7] and [49]), ontology learning (e.g. [45]) and question and answering [33]. There is no specific legal corpora on norm types beyond deontic norms and the linking of related provisions as far as we know.

Our preliminary analysis suggests that different algorithms are required to identify different types of norms and their inter-relationships. Our future work will involve experimentation to discover which algorithms are most appropriate for each case. Moreover, we envisage that a semi-automated classification of norm types and links may enable the end-user in a support system to select which kind of norms and links (s)he wishes to view, further reducing the problem of information overload.

REFERENCES

- [1] Morayo Adedjouma, Mehrdad Sabetzadeh, and Lionel C Briand. 2014. Automated detection and resolution of legal cross references: Approach and a study of Luxembourg’s legislation. In *2014 IEEE 22nd International Requirements Engineering Conference (RE)*. IEEE, 63–72.

¹⁴<http://www.wired.com/story/can-ai-be-fair-judge-court-estonia-thinks-so/>

¹⁵<http://latc-project.eu>

- [2] Carlos E Alchourrón and David Makinson. 1981. Hierarchies of regulations and their logic. In *New studies in deontic logic*. Springer, 125–148.
- [3] Kevin D Ashley, Matthias Grabmair, and Rebecca Hwa. [n. d.]. Network Analysis of Manually-Encoded State Laws and Prospects for Automation. In *Workshop Format*. 1.
- [4] Tara Athan, Guido Governatori, Monica Palmirani, Adrian Paschke, and Adam Z. Wyner. 2015. LegalRuleML: Design Principles and Foundations. In *Reasoning Web. Web Logic Rules - 11th International Summer School 2015, Berlin, Germany, July 31 - August 4, 2015, Tutorial Lectures*. 151–188. https://doi.org/10.1007/978-3-319-21768-0_6
- [5] Alain Auger and Caroline Barrière. 2008. Pattern-based approaches to semantic relation extraction: A state-of-the-art. *Terminology* 14, 1 (2008), 1–19.
- [6] Gioele Barabucci, Luca Cervone, Monica Palmirani, Silvio Peroni, and Fabio Vitali. 2009. Multi-layer markup and ontological structures in Akoma Ntoso. In *International Workshop on AI Approaches to the Complexity of Legal Systems*. Springer, 133–149.
- [7] Roberto Bartolini, Alessandro Lenci, Simonetta Montemagni, Vito Pirrelli, and Claudia Soria. 2004. Automatic classification and analysis of provisions in italian legal texts: a case study. In *OTM Confederated International Conferences* On the Move to Meaningful Internet Systems**. Springer, 593–604.
- [8] Philip Bille. 2005. A survey on tree edit distance and related problems. *Theoretical computer science* 337, 1-3 (2005), 217–239.
- [9] Guido Boella, Luigi Di Caro, Michele Graziadei, Loredana Cupi, Carlo Emilio Salaroglio, Llio Humphreys, Hristo Konstantinov, Kornel Marko, Livio Robaldo, Claudio Ruffini, et al. 2015. Linking legal open data: breaking the accessibility and language barrier in european legislation and case law. In *Proceedings of the 15th International Conference on Artificial Intelligence and Law*. ACM, 171–175.
- [10] Sergio Maria Carbone, Riccardo Luzzatto, Stefania Bariatti, Paola Ivaldi, Ilaria Queirolo, Francesco Munari, Luigi Fumagalli, Bruno Nascimbene, Lorenzo Schiano Di Pepe, Manlio Frigo, et al. 2016. *Istituzioni di diritto internazionale*. G Giappichelli Editore.
- [11] Kathy Charmaz. 1990. Discovering chronic illness: using grounded theory. *Social science & medicine* 30, 11 (1990), 1161–1172.
- [12] Juliet M Corbin and Anselm Strauss. 1990. Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology* 13, 1 (1990), 3–21.
- [13] Emile De Maat and Radboud Winkels. 2007. Categorisation of norms. *FRONTIERS IN ARTIFICIAL INTELLIGENCE AND APPLICATIONS* 165 (2007), 79.
- [14] P Caretti-U De Siervo. 2002. Istituzioni di diritto pubblico. *Giappichelli, Torino, ultima ed. (dal Cap. X alla fine)* (2002).
- [15] Carla Faralli. 2016. *Argomenti di Teoria del Diritto*. G Giappichelli Editore.
- [16] Enrico Francesconi and Andrea Passerini. 2007. Automatic classification of provisions in legislative texts. *Artificial Intelligence and Law* 15, 1 (2007), 1–17.
- [17] Thomas F Gordon. 1986. The Role of Exceptions in Models of the Law. *Formalisierung im Recht und Ansätze juristischer Expertensysteme* (1986), 52–59.
- [18] Guido Governatori and Antonino Rotolo. 2010. A conceptually rich model of business process compliance. In *Proceedings of the Seventh Asia-Pacific Conference on Conceptual Modelling-Volume 110*. Australian Computer Society, Inc., 3–12.
- [19] Davide Grossi, John-Jules Meyer, and Frank Dignum. 2008. The Many Faces of Counts-as: A Formal Analysis of Constitutive-rules. *Journal of Applied Logic* 6, 2 (2008), 192–217. http://www.davidegrossi.name/Site/publications_files/grossi07many.pdf
- [20] Herbert Lionel Adolphus Hart. 1957. Positivism and the Separation of Law and Morals. *Harv. L. Rev.* 71 (1957), 593.
- [21] Risto Hilpinen and Paul McNamara. 2013. Deontic logic: A historical survey and introduction. *Handbook of deontic logic and normative systems* 1 (2013), 3–136.
- [22] Llio Humphreys, Cristiana Santos, Luigi Di Caro, Guido Boella, Leon Van Der Torre, and Livio Robaldo. 2015. Mapping Recitals to Normative Provisions in EU Legislation to Assist Legal Interpretation. In *JURIX*. 41–49.
- [23] Sylvia Mercado Kierkegaard. 2006. Here comes the cybernators! *Computer Law & Security Review* 22, 5 (2006), 381–391.
- [24] T. Klimas and J. Vaiciukaite. 2008. The Law of Recitals in European Community Legislation. *ILSA Journal of International & Comparative Law* 15, 6 (7 2008), 61–93. Available at: <https://nsuworks.nova.edu/ilsajournal/vol15/iss1/6>.
- [25] Grzegorz Kondrak. 2005. N-gram similarity and distance. In *International symposium on string processing and information retrieval*. Springer, 115–126.
- [26] Kamran Kowsari, Kiana Jafari Meimandi, Mojtaba Heidarysafa, Sanjana Mendu, Laura Barnes, and Donald Brown. 2019. Text Classification Algorithms: A Survey. *Information* 10, 4 (2019), 150.
- [27] Ho-Pun Lam and Guido Governatori. 2009. The making of SPINdle. In *International Workshop on Rules and Rule Markup Languages for the Semantic Web*. Springer, 315–322.
- [28] Jörg LANDTHALER, Ingo GLASER, and Florian MATTHES. 2018. Towards Explainable Semantic Text Matching. In *Legal Knowledge and Information Systems: JURIX 2018: The Thirty-first Annual Conference*, Vol. 313. IOS Press, 200.
- [29] Gloria T Lau, Kincho H Law, and Gio Wiederhold. 2003. Similarity analysis on government regulations. In *Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining*. ACM, 711–716.
- [30] Jon D Mcauliffe and David M Blei. 2008. Supervised topic models. In *Advances in neural information processing systems*. 121–128.
- [31] Rada Mihalcea, Courtney Corley, Carlo Strapparava, et al. 2006. Corpus-based and knowledge-based measures of text semantic similarity. In *AAAI*, Vol. 6. 775–780.
- [32] Tomas Mikolov, Ilya Sutskever, Kai Chen, Greg S Corrado, and Jeff Dean. 2013. Distributed representations of words and phrases and their compositionality. In *Advances in neural information processing systems*. 3111–3119.
- [33] Alfredo Monroy, Hiram Calvo, and Alexander Gelbukh. 2009. NLP for shallow question answering of legal documents using graphs. In *International Conference on Intelligent Text Processing and Computational Linguistics*. Springer, 498–508.
- [34] Rohan Nanda, Luigi Di Caro, Guido Boella, Hristo Konstantinov, Tenyo Tyankov, Daniel Traykov, Hristo Hristov, Francesco Costamagna, Llio Humphreys, Livio Robaldo, and Michele Romano. 2017. A unifying similarity measure for automated identification of national implementations of european union directives. In *Proceedings of the 16th edition of the International Conference on Artificial Intelligence and Law, ICAIL 2017, London, United Kingdom, June 12-16, 2017*. 149–158. <https://doi.org/10.1145/3086512.3086527>
- [35] Monica Palmirani, Guido Governatori, and Giuseppe Contissa. 2011. Modelling temporal legal rules. In *Proceedings of the 13th International Conference on Artificial Intelligence and Law*. ACM, 131–135.
- [36] Jeffrey Pennington, Richard Socher, and Christopher Manning. 2014. Glove: Global vectors for word representation. In *Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP)*. 1532–1543.
- [37] Henry Prakken and Giovanni Sartor. 2004. The three faces of defeasibility in the law. *Ratio Juris* 17, 1 (2004), 118–139.
- [38] Ray Richardson, A Smeaton, and John Murphy. 1994. Using WordNet as a knowledge base for measuring semantic similarity between words.
- [39] Rodolfo Sacco. 1991. Legal formants: a dynamic approach to comparative law (Installment I of II). *The American Journal of Comparative Law* 39, 1 (1991), 1–34.
- [40] Ali Sadeghian, Lakshman Sundaram, D Wang, W Hamilton, Karl Branting, and Craig Pfeifer. 2016. Semantic edge labeling over legal citation graphs. In *Proceedings of the workshop on legal text, document, and corpus analytics (LTDCA-2016)*. 70–75.
- [41] Mark Sainsbury. 2000. Logical forms: An introduction to philosophical logic. (2000).
- [42] KG Saur. 1998. IFLA Study Group on the functional requirements for bibliographic records. Functional requirements for bibliographic records: final report.
- [43] J.R. Searle. 1995. *The Construction of Social Reality*. London: Penguin.
- [44] Marek J. Sergot, Fariba Sadri, Robert A. Kowalski, Frank Kriwaczek, Peter Hammond, and H Terese Cory. 1986. The British Nationality Act as a logic program. *Commun. ACM* 29, 5 (1986), 370–386.
- [45] Peter Spyns and Marie-Laure Reinberger. 2005. Lexically evaluating ontology triples generated automatically from texts. In *European Semantic Web Conference*. Springer, 563–577.
- [46] Daniela Tiscornia and Fabrizio Turchi. 1997. Formalization of legislative documents based on a functional model. In *International Conference on Artificial Intelligence and Law: Proceedings of the 6th international conference on Artificial intelligence and law*, Vol. 30. Citeseer, 63–71.
- [47] Charles Travis. 1994. On constraints of generality. In *Proceedings of the Aristotelian Society*, Vol. 94. JSTOR, 165–188.
- [48] Marc Van Opijnen and Cristiana Santos. 2017. On the concept of relevance in legal information retrieval. *Artificial Intelligence and Law* 25, 1 (2017), 65–87.
- [49] Giulia Venturi. 2011. Semantic annotation of Italian legal texts: a FrameNet-based approach. *Constructions and Frames* 3, 1 (2011), 46–79.
- [50] Hanna M Wallach. 2006. Topic modeling: beyond bag-of-words. In *Proceedings of the 23rd international conference on Machine learning*. ACM, 977–984.
- [51] Bernhard Waltl, Georg Bonczek, Elena Scepankova, and Florian Matthes. 2019. Semantic types of legal norms in German laws: classification and analysis using local linear explanations. *Artificial Intelligence and Law* 27, 1 (2019), 43–71.
- [52] Bernhard Waltl, Jörg Landthaler, and Florian Matthes. 2016. Differentiation and Empirical Analysis of Reference Types in Legal Documents. In *JURIX*. 211–214.
- [53] Bernhard Waltl, Johannes Muhr, Ingo Glaser, Georg Bonczek, Elena Scepankova, and Florian Matthes. 2017. Classifying Legal Norms with Active Machine Learning. In *JURIX*. 11–20.