Environmental law: discourse complexity indices

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Abstract. The problem of the complexity of legal texts has been a highly-demanded topic in modern cross-disciplinary research. Considering the fact that environmental law and its language is objectively recognized as complex due to its ongoing development, substantive nature and the diversity of the subject matter, an integrative character of the branch of law under study. The authors propose investigating the analysis of complexity of legal texts applying both qualitative and quantitative approaches. The authors conduct the research into the development and the specifics of environmental law supported by the analysis of its language features. The authors come to conclusion that apart from purely legal complexity factors, the language of environmental law possesses some features that may also be viewed as discourse complexity indices.

1 Introduction

Environmental law is a relatively new branch of law that has existed for only over half a century. It is also an integrated area of law which is comprised of the norms of other areas and branches of law (land law, administrative law, water law, civil law, finance law, criminal law). The subject-matter of environmental law is complex and it includes rational use of natural resources, environment protection, as well as the system of relations between various agents and institutions related to these types of activity.

The complex nature of environmental law is determined by the fact that social ecological relations are regulated by both environmental norms and the norms of other branches of law, which leads to “ecologization” of these branches [1]. Thus, the inclusion of other branches of law into environmental law and the regulation of ecological relations by the norms of other branches may be understood as a factor of the complex nature of environmental law.

To clarify the complexity as well as to determine the subject-matter of environmental law, we need to mention that environmental law can be considered in narrow and wide contexts. In a narrow context it represents the area of law whose norms regulate only the relations concerning only environment protection and protection of separate natural resources from

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the negative effect of human (anthropogenic) activity. Thus it is viewed exclusively as protective / conservation law. As far as the use of natural resources is concerned, as well as other types of relations within this area (natural resources management, ownership of natural resources), they are under the jurisdiction of land law (natural resources law), i.e. the branch of law which is supposed to regulate the relations of the use of land, water and other natural resources. Therefore, relations arising in connection with the nature considering its role (on the one hand, natural resources, on the other hand, the environment) are regulated by two branches of law – environmental law and land law.

Criticizing this approach, it is essential to point out that the nature is universal though it is seen in two capacities. Interconnection and interdependence of natural objects and natural phenomena in terms of the use of natural resources and environment protection are to be regulated by an integral branch of law as these two elements – the use of natural resources and environment protection – represent two sides of the problem.

In a wider context, environmental law is an integrated area of law, its norms regulate the whole complex of relations arising of both environment protection and the use of natural resources.

2 Research methodology

The article is aimed at conducting the analysis of the use of pronomial adverbs in the texts thematically belonging to the sphere of environmental law. The research is conducted on the material of the texts of two important instruments of environmental law – The Convention on Biological Diversity [2] adopted by the results of the Earth Summit in Rio de Janeiro in 1992 and which was the first global agreement to address the problems of biological diversity in all its aspects; and the United Nations Framework Convention on Climate Change [3] signed in 1992 at the same conference – the Earth Summit in Rio de Janeiro. To fulfil the purpose of the presented study, the authors employ such methods as systemic and diachronic analysis of the legal specifics of environmental law; content analysis and frequency analysis of the texts of environmental law documents, descriptive analysis of the results obtained by conducting the linguistic research of the documents.

3 Environmental law through discourse complexity framework

3.1 Environmental law: complexity factors

The confusion concerning the status of environmental law cannot avoid influencing the features of this branch of law, including language and discourse ones. On the one hand, these features are determined by the characteristics of law and its language in general. On the other hand, the specificity of the subject-matter of environmental law may serve as the key to understanding its language and discourse peculiarities.

Quite an extensive body of research is devoted to the study of legal language in general, its genres, functions, linguistic specifics [4-12]. No research has been conducted into the language of environmental law yet. Nevertheless, some scholarly publications, as well as comments from the professional community, in part touch upon the issues of complexity of the language of environmental law, both linguistic and discourse [13-16].

So, obviously, the integrative character of environmental law coupled with the problem of terminological ambiguity, may be viewed as the factors of its complexity. Indeed, “the notorious imprecision and ambiguity in the language of environmental law is one of the major obstacles to the realization of its objectives. Thus, the problem with conceptual obscurantism and ambiguity in environmental law is not one of semantics but bears heavily upon the
substance, constitution, and intention of the instruments on environmental law. Clarity in language and concepts in legal instruments define and determine the substance and extent of obligations and duties” [17: 346], which affords ground for viewing these factors as the factors of discourse complexity of environmental law.

3.2 Discourse complexity indices: overview of approaches

The study of discourse complexity is based on the theory of language complexity which has been actively investigated since the 1920s [18: 80]. Complexity is a separate characteristic feature that requires detailed consideration both at the level of all languages, groups of languages, and a single language as a system, language level, language sign. Complexity analysis can be qualitative and quantitative. While some scholars provide qualitative analysis of certain aspects of language, others tend to measure complexity by means of various quantitative tools. In this regards it is necessary to point out that about two hundred formulas have been developed based on a limited set of variables over the past seventy years.

Simple measures, which have substantially encouraged the development of further more advanced formulas, include SMOG [19], Flesh-Kincaid [20]; Coleman-Liau [21] readability measures. They are based on the features which can be easily analysed on the example of a text with no other additional linguistic resources or automatic tagging; they include the medium length of words (in letters or syllables), number of words containing more than five characters, medium length of a sentence (in syllables or words), number of punctuation marks, number of words in a simple or a complex sentence, etc.

Generalizing various measures, we will provide an example of a traditional approach to the division of indices according to various layers of the language (Fig. 1).

![Fig. 1. Complexity indices by language levels](image)

These metrics represent linear regression formulas (Fig. 2) [22].

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots, \]

![Fig. 2. The example of a linear regression formula for measuring text readability](image)

In this formula \(X_1, X_2, X_3\) stand for various text features, while \(Y\) represents the result – the readability index calculated by the proposed formula.

More advanced formulas are built on the combination of several factors, so-called models-classifiers, or cross-validation models, in which the number of factors may exceed 150. It is clear that in such cases the texts will be processed automatically, so the criteria will be based on such features which can be measured applying automatic methods (Tab. 1), as it
is shown in the research of O. Blinova and N. Tarasov on the example of legal texts in Russian [23].

Table 1. Complexity indices measurable by automatic methods.

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Morphology</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency word lists</td>
<td>Parts of speech count</td>
<td>Length of a main clause</td>
</tr>
<tr>
<td>Level-based word lists</td>
<td>Share of parts of speech</td>
<td>Length of a subordinate clause</td>
</tr>
<tr>
<td>Lemma frequency</td>
<td>Suffix frequency count</td>
<td>Length of a participle clause</td>
</tr>
<tr>
<td>Abstract words count</td>
<td>Prefix frequency count</td>
<td>Length of an infinitive clause</td>
</tr>
<tr>
<td>Function words count</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discourse features are difficult to measure by automatic methods as they are not quantity-based. Still, such features as the share of dialogical units and coreference markers, or the number of anaphoric pronouns can be measured automatically using frequency counts methods.

3.3 Discourse complexity indices: results

One of the factors of discourse complexity in the texts of the documents of environmental law are pronominal adverbs. Pronominal adverbs, often called legal adverbs, are a typical element of legal documents. They are widely used to ensure the preservation of the conservatism of legal English and contribute to concise and accurate presentation of the necessary information [24]. Their primary function is to help avoid the repetition of names of things in the document – very often, the document itself [25: 35].

Pronominal adverbs are complex in their structure: they are formed by combining two or three elements, one of them is here, there or where, the other is a preposition. The examples include such adverbs as herein, hereby, herewith, hereof, hereto, hereinafter, therein, thereby, thereof, whereby, etc.

The content analysis of the documents under study showed that the adverbs with the component here are not used in the texts of the document of environmental law. It is our understanding that is can be explained by their functions – they may be used in texts as cataphoric adverbs, which is not typical of legal documents. On the contrary, adverbs with the element there are widely used in the studied texts to show referential adverbs – they show reference to the words used earlier in the texts, which allows considering them as anaphoric adverbs.

Let us demonstrate our findings by examples from the texts.

(1) According, the developed country Parties should take the lead in combating climate change and the adverse effects thereof [3].

   The adverb thereof means ‘of the thing just mentioned’ [25: 36], so in the example is it replaces the word combination climate change.

(2) The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State member thereof or observers thereto not Party to the Convention, may be represented at sessions of the Conference of the Parties as observers [3].

   In example (2) we deal with two adverbs – thereof and thereto which are both used to replace the whole parts of the sentence. Thereof means any State member of the International Atomic Energy Agency, while thereto means observers to the International Atomic Energy Agency.

(3) Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the costs of the tribunal shall be borne by the parties to the dispute in equal
shares. The tribunal shall keep a record of all its costs, and shall furnish a final statement thereof to the parties.

In example (3) thereof refers to the previously used phrase a record of all its costs. We believe that repeating the phrase will make the text clearer, though more cumbersome. Still, in our view, accuracy of meaning is more important in legal texts than the desire to avoid unwieldiness. At the same time, we may observe two contradicting tendencies – on the one hand, legal texts which are characterized by an active use of nouns to avoid ambiguity, on the other hand, the use of pronomial adverbs is aimed at avoiding the repetition of nouns, which, in our opinion, poses a difficulty in understanding the referential relations within the text, which allows viewing pronomial adverbs as a complexity factor.

4 Conclusion

The analysis of the texts of the legal documents revealed the contradicting tendency in the language of environmental law – pronomial adverbs are used as anaphoric adverbs to avoid the repetition of corresponding nouns. At the same time, their use creates difficulties in understanding the referential relation within the given texts. All this gives ground for viewing pronomial adverbs as factor of complexity. No measures have been developed based on the use of pronomial adverbs in the language of law. We believe that such adverbs can be considered as potential indices which may be taken into account while determining the complexity of legal texts.

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