

# Development of the Diachronic Terminology from a Japanese Statutory Corpus

Makoto Nakamura\*, Yasuhiro Ogawa<sup>o</sup>, Katsuhiko Toyama<sup>o</sup>

*\*Japan Legal Information Institute, Graduate School of Law, Nagoya University*

*<sup>o</sup>Information Technology Center / Graduate School of Information Science,  
Nagoya University*

*Furo-cho, Chikusa-ku, Nagoya, 464-8601, Japan*

*Email: mnakamur@law.nagoya-u.ac.jp*

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## 1. Introduction

This extended abstract draws our research plan for the development of the diachronic legal terminology, which deals with temporal change in terms. In general, important terms in the statutes are explicitly defined prior to use. We focus on legal terms defined in a provision, each of which consists of a tuple of a legal term and its explanation. The provision for definitions is typically put on Article 2, following the purpose of the act. In other words, legal terms in the provision are regarded as governing the whole act.

Meanwhile, statutes are not only newly established but also often amended by the change of the social situation. In some cases, legal terms are also revised, added and deleted, depending on the scale of the amendment. Therefore, the amendment to the provision for legal terms implies a drastic change of the whole act.

In this study, we deal not only with a diachronic change but also with a synchronic similarity in legal terms. The legal terminology will consist of an exhaustive number of legal terms from all the acts collected in a statutory corpus. This thorough study makes it possible to find hidden relations among acts. For example, submitting bills is often motivated by the change in the social situation such as economical and political issues, war and natural disasters, which makes multiple acts enacted simultaneously. Although similar terms are often defined in different acts with explanations that are similar to each other, it is difficult to find such a relation without knowledge. The natural language processing technique makes it possible to calculate similarity between terms and explanations. Therefore, the diachronic legal terminology could provide legal scholars a method for analyzing the dynamics of legal change.

Our purpose in this study is to provide the diachronic legal terminology, in which the definition of each legal term is traceable back to the new enactment date. This study contributes to FALM in the following two points. One is that this terminology would be helpful for practical use; since the law at the time is applied in the case, it should be able to be referred to at any given point in time. The other is that this terminology will be employed by LegiViewJP (Kawachi et al., 2015), which is a portal site of Japanese legislation releasing the outline of a newly promulgated statute.

The rest of this extended abstract is given to explanation of our target issues in the next section and conclusion with our research progress at last.

## 2. Target Issues

In this section, we introduce our target issues in this study with some examples. In Section 2.1, we explain the diachronic change in legal terms. Section 2.2 shows the actual change in definitions. In Section 2.3, we discuss how to find synchronic similarity in legal terms among related statutes.

### 2.1. DIACHRONIC CHANGE IN LEGAL TERMS

We give Gas Business Act (Act No.51 of 1954) as an example to explain the diachronic change in legal terms. As of May 2015, this act has been amended 30 times so far, out of which seven amendment acts include the revision of terms and definitions. Figure 1 shows a diachronic change in the terms at three time-points:

- (1) At the new enactment, only two terms were defined in the act (Act No.51 of 1954), which came into effect as of April 1, 1954.
- (2) The name of the “Gas Business” was changed to the “General Gas Utility Business,” which became a hyponym of the newly defined term “Gas Business” together with the newly added term “Community Gas Utility Business,” by Act on the Partial Revision of the Gas Business Act (Act No.18 of 1970), which came into effect as of October 12, 1970. Note that the sense of legal terms was forced to change on the effective date.
- (3) As of the effective date, April 1, 2004, of Act for the Partial Revision of the Electricity Business Act and the Gas Business Act (Act No.92 of 2003), the number of terms defined in the Gas Business Act

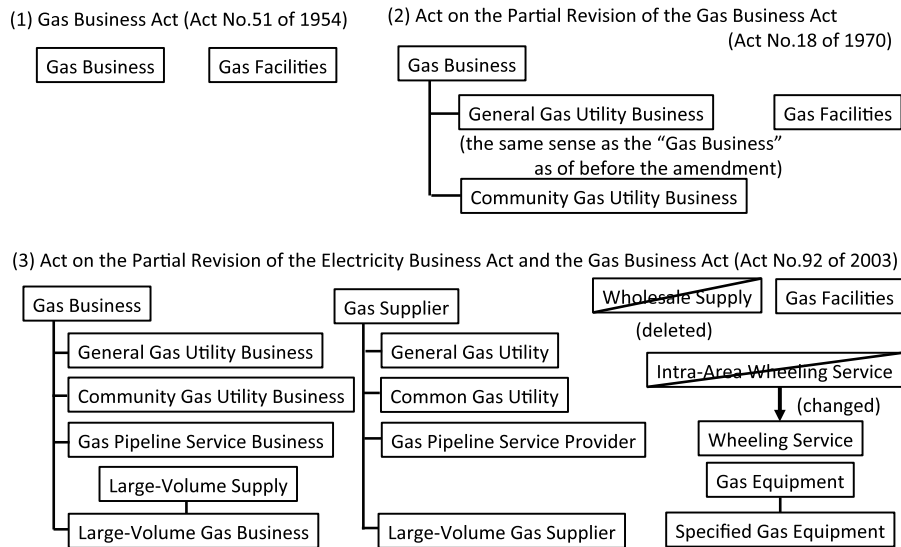


Figure 1. Example of definitions in provision and in parenthesis

was increased to 15. In the period between (2) and (3), the term “Wholesale Supply” was defined but deleted later. In addition, the term “Intra-Area Wheeling Service” was replaced with “Wheeling Service.” They are regarded as being eliminated by social selection.

## 2.2. AMENDMENT OF LEGAL TERMS

Statutes are written in two types of languages; one is an object language for a new enactment, and the other is a meta language, which rewrites a description in the object language, for amendment, rearrangement and repeal of acts. While the former describes a law itself, the latter is to show how to rewrite it with patch expressions. This method of amendment is called *consolidation*.

Figure 2 shows the excerpt from the acts dealing with the change in the sense of the term “Gas Business” from (1) to (2) in Figure 1.

## 2.3. SYNCHRONIC SIMILARITY IN LEGAL TERMS AMONG RELATED STATUTES

Related statutes are defined as ones directly or indirectly refer to each other. It is not difficult to find directly related statutes of the target one; list up all the statutes that refer to and are referred to by the target one.

Some related statutes share the same or similar terms with different explanations from each other. They are often amended simultaneously.

## Gas Business Act (Act No.51 of 1954)

**Article 2** (1) The term “Gas Business” as used in this Act shall mean the business of supplying gas via pipelines to meet general demand.

## Act on Partial Revision of the Gas Business Act

(Act No.18 of 1970)

“Gas Business” in Article 2, Paragraph (1) of Gas Business Act shall be deemed to be replaced with “General Gas Utility Business” and “ (excluding, however, businesses generating gas at a gas generating facility prescribed in paragraph (3) and supplying such gas via pipelines)” shall be added after the term “general demand”, (\*snip\*) and the following five paragraphs are added after Article 2, Paragraph (1):

(\*snip\*)

(3) The term “Community Gas Utility Business” as used in this Act shall mean the business of generating gas at a simplified gas generating facility specified by a Cabinet Order (hereinafter referred to as a “Specified Gas Generating Facility”) and supplying such gas via pipelines to meet general demand at not less than 70 gas service points within one housing complex.

(\*snip\*)

(5) The term “Gas Business” as used in this Act shall mean a General Gas Utility Business or Community Gas Utility Business.

Figure 2. Excerpt from Gas Business Act (Act No.51 of 1954) and Act on Partial Revision of the Gas Business Act (Act No.18 of 1970)

In this case, that amendment act would play the key role as a bibliographic coupling. In other words, it would be difficult to find such a relation between statutes without explicit reference.

Focusing on legal terms, we may be able to estimate the strength of connection between statutes. Electricity Business Act (Act No.170 of 1964) is related to Gas Business Act (Act No.51 of 1954). The defined terms include:

General Electricity Business, General Electricity Utility, Wholesale Electricity Business, Wholesale Electricity Utility, Specified Electricity Business, Specified Electricity Utility, Specified-Scale Electricity Business, Specified-Scale Electricity Utility, Electricity Business, Electricity Utility, Wholesale Supply, Wholesale Supplier, Cross-

Area Wheeling Service, Intra-Area Wheeling Service, Wheeling Service, and Electric Facilities.

Some of them correspond to those in Gas Business Act.

We can see a synchronic similarity in legal terms among related acts. In fact, the term “Wheeling Service” was added by the above mentioned amendment act as a broader concept of the terms “Cross-Area Wheeling Service” and “Intra-Area Wheeling Service,” while the term “Intra-Area Wheeling Service” was replaced with “Wheeling Service” in Gas Business Act by the same act. Since Gas Business Act does not define the term “Cross-Area Wheeling Service,” the term “Wheeling Service” is defined not as a broader concept of but as a replacement with the term “Intra-Area Wheeling Service.”

Those terms have been fixed by Act on the Partial Revision of the Electricity Business Act and the Gas Business Act (Act No.92 of 2003), which totally amended 29 acts, out of which it is clear that these two acts are strongly connected from the similarity of legal terms. In the same way, we may be able to find *hidden* related acts, which are indirectly related but not explicitly described.

### 3. Research Progress

We employ a naive method to construct the diachronic terminology from a statutory corpus. We have compiled a corpus of all of the Japanese statutes consisting of 9,915 acts that have been enacted up to 2012 since promulgation of the new constitution of Japan in 1947 (Nakamura et al., 2013). The size of corpus is 252MB. The statutory corpus is based on articles of legislation in the official gazettes. Since most of them are digitally scanned, there are many typos that are not included in the published version.

We need to develop the following tools:

- (1) a tool for XML annotation
- (2) a crawler for a history of legislation
- (3) a tool for consolidation

(1) is to find provisions for definitions of legal terms (Nakamura et al., 2014). The current version is problematic especially when processing amendment acts. (2) is to make a list of amendment acts. And (3) is to extract a diachronic change in legal terms by consolidation.

We also refer to the database developed by a private enterprise, which includes consolidation, a history for each provision and indexing

of referential acts. In addition, we can extract difference of an act between before and after consolidation. The problem is that the data for consolidation are stored only for 15 years.

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