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NATIONAL LIBRARY OF POLAND AND KABA SUBJECT HEADING LANGUAGES AND THEIR EVOLUTION TOWARDS NATIONAL LIBRARY OF POLAND DESCRIPTORS

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INTRODUCTION

In this article¹ we examine the evolution of subject heading languages (SHLs) as demonstrated by two of the languages used most often for subject indexing in Polish library catalogues in the late twentieth and early twenty-first century: the subject heading language of the National Library of Poland (henceforth SHL NLP) and the subject heading language KABA (SHL KABA). We also discuss the next stage in that evolution, namely the creation of the post-coordinated indexing language which has been in development by the National Library of Poland since 2017, known as the National Library of Poland Descriptors (henceforth NLPD).

Research into the language of subject headings generally takes a diachronic approach. The diachronic method, which originates in diachronic linguistics, was introduced by Ferdinand de Saus-

1 This article is an adapted version of part of my doctoral dissertation, defended on April 10th, 2019, at the Faculty of Management and Social Communication of the Jagiellonian University (supervisor: Professor Wiesław Babik).

sure. Unlike synchronic linguistics, diachronic linguistics brings a chronological perspective to the study of linguistic phenomena. It was traditionally used in the analysis of natural languages, although it has become somewhat less popular in recent years. Diachronic linguistics looks at how a language changes and evolves over time.

Changes in artificial languages take place much faster than in natural languages and are easier to see, which makes the diachronic perspective particularly interesting when analysing artificial languages. Saussure distinguishes between two dimensions when analysing the evolution of languages:

- External history - external factors (cultural, political, other)
- Internal history of the language system

In the case of artificial languages, it is the external history that imposes changes on the language system; changes in the language system result from alterations in its environment. For information and search languages (ISLs), alterations in the environment can be of the follow types:

- Changes in the needs of users
- Technological changes - integrated systems, software and so on
- Social changes - the sociological perspective, influenced by the creation of the Internet

As they evolve, artificial languages are “witnesses” to these external changes.² ISLs, as communication tools, must adapt to them. The external changes force the languages of subject headings that we discuss here to gradually evolve.

The issue of the evolution of the syntax of subject heading languages, which I treat in this article, has been discussed on multiple occasions in the Polish and foreign specialist literature. As far

2 A. Picton, *Diachronie en langue de spécialité. Définition d'une method linguistique outillée pour repérer l'évolution des connaissances en corpus. Un exemple appliqué au domaine spacial*, Toulouse, Université Toulouse le Mirail - Toulouse II, 2009, p. 58 - <https://tel.archives-ouvertes.fr/tel-00429061> [accessed 14.12.2019].

as the languages discussed here are concerned – the languages on which the post-coordinated NLPD was based – key studies include Jadwiga Sadowska’s *Hasła przedmiotowe w teorii Adama Łysakowskiego i praktyce „Przewodnika Bibliograficznego”* [“Subject headings in the theory of Adam Łysakowski and in practice in *Przewodnik Bibliograficzny*”], published in 2000, and the same author’s *Język haseł przedmiotowych Biblioteki Narodowej. Studium analityczno-porównawcze* [“The language of subject headings of the National Library. An analytical and comparative study”] from 2003. The latter work contains highly valuable comments comparing the changes taking place in the two subject heading languages analysed here, SHL NLP and SHL KABA, illustrated with a wide range of examples.

A somewhat more theoretical approach is found in the studies of Jadwiga Woźniak-Kasperek, who points out general trends emerging in the development of ISLs in the network age. Her key work in this field is *Wiedza i język informacyjny w paradygmacie sieciowym* [“Knowledge and information language in the network paradigm”], dating from 2011. Also worthy of note is her 2017 study co-authored with Bartłomiej Włodarczyk, *Język Haseł Przedmiotowych Biblioteki Narodowej* [“The language of subject headings of the National Library”]. The study is a record of SHL NLP at the time when it was replaced by the new language NLPD and thus has an archival value, but it also contains valuable information on the changes that had taken place in SHL NLP since its creation.

The changes occurring in the syntax of SHL KABA (simplification of the list of subheadings, of the rules for the use of particular headings, and of the structure of headings consisting of a topic and a subheadings) took as a prototype the modifications made to the language RAMEAU.³ These changes are described in two articles by Michel Mingam: *RAMEAU: bilan, perspectives*⁴ [“RAMEAU: assess-

3 Répertoire d’autorité-matière encyclopédique et alphabétique unifié (RAMEAU) – the language used for subject headings in French library catalogues and the original model for the methodology and vocabulary of SHL KABA.

4 M. Mingam, *RAMEAU: bilan, perspectives* in: *Bulletin des bibliothèques de France*, No. 5, 2005, <http://bbf.enssib.fr/consulter/bbf-2005-05-0038-001> [accessed 21.04.2020].

ment and outlook”] dating from 2005 and *RAMEAU: les catalogues, le web*⁵ [RAMEAU: the catalogues, the Web] from 2015. Mingam pays particular attention to the complicated nature of the syntax of RAMEAU, which in turn affects the nature of the syntax of SHL KABA.

A very interesting work on the subject heading languages that we discuss in this article is Bartłomiej Włodarczyk’s doctoral thesis *Mapy tematów w językach haseł przedmiotowych* (“Topic maps in subject heading languages”), published in 2016.⁶ In his study the author attempts to transform SHL NLP into topic maps. The work is purely theoretical in nature but nevertheless represents a significant contribution to thinking on attempts to implement the vocabulary of languages created to meet the needs of card catalogues using modern technologies.

The main section of the present article is a presentation of selected problems related to the syntax of subject heading languages, using as examples structures occurring in SHL NLP and SHL KABA. The examples from SHL KABA come from the NUKAT catalogue database⁷, while those from SHL NLP come mainly from existing studies of the language (references are included in the text). My starting point is an analysis of the different ways of expressing a subject, the “aspect” (Polish: *ujęcie*) of a subject in a publication and the relationship between subjects in the languages in question. I also propose ways of transforming these structures into post-coordinated language. The elimination of the syntax of a pre-coordinated language is very often associated with changes in the area of vocabulary. It should be noted that the approach presented below is merely a proposal; in some cases more than one solution is possible.

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- 5 M. Mingam, *RAMEAU: les catalogues, le web* in: *Bulletin des bibliothèques de France*, No. 5, 2015, http://bbf.enssib.fr/matieres-a-penser/rameau-les-catalogues-le-web_66265 [accessed 21.04.2020].
 - 6 B. Włodarczyk, *Mapy tematów w językach haseł przedmiotowych*, Warszawa 2016.
 - 7 See <http://katalog.nukat.edu.pl/search/query?theme=nukat>.

SYNTAX - DESCRIPTION AND EVOLUTION TOWARDS NLPD METHODS OF EXPRESSING THE SUBJECTS OF DOCUMENTS IN SUBJECT HEADINGS

Adam Łysakowski's theory of the subject catalogue forms the basis for the methodology of SHL NLP, as can be seen from the structure of the subject headings. In the methodology of SHL KABA, by contrast, it is difficult to see the principles of Łysakowski's theory in unaltered form, although reference is made to his works.⁸

In the remainder of this article we present some examples of the differences between Łysakowski's theory and the methodology of SHL KABA. These differences create significant problems when trying to bring the two languages together, although they do not render the task quite impossible. We do not attempt to give a complete exposition of the syntax of the languages in question but rather focus on those elements whose transformation into a post-coordinated ISL brings to light problematic issues, for example, incorrect recording in the working format or an incorrect interpretation of Łysakowski's principles. The purpose of my analysis is to demonstrate that it is necessary to properly understand ISLs as they were used prior to computerisation (and recording in MARC format) in order to steer their further evolution in the right direction.

In Łysakowski's theory, the order of the elements in the part of the heading expressing the subject is highly significant. The "topic" - that is, the first part of the heading - should express the subject of the document (publication) while the following parts may express the properties, aspect and other features of the subject.⁹ There are many exceptions in how these requirements are implemented in the languages we analyse here.

8 T. Głowacka, *Katalogowanie przedmiotowe w języku KABA*, Part 1, *Analiza dokumentu i jego opis przedmiotowy*, Warszawa 2003, pp. 7-8, 17.

9 A. Łysakowski, *Katalog przedmiotowy. Podręcznik*, Warszawa 1946; cf. idem, *Katalog przedmiotowy*, Part 1, *Teoria*, [introduction by J. Woźniak, ed. M. Banacka], 2nd ed., Warszawa 2002 - <http://bbc.uw.edu.pl/publication/650> [accessed 14.12.2019].

SUBJECT EXPRESSED IN THE TOPIC OF THE HEADING

The “topic” in an extended subject heading is defined as “the elementary lexical unit - the auto-syntactic expression of the subject heading language - which comes first in the subject heading”.¹⁰ In some cases the syntax of the extended heading brings about a change in the type of element used. A special case of the influence of the syntax (position in the subject heading) on the type of initial element used in an extended heading involves the use of a geographical location as the topic of a subject heading, whether simple or extended.

The MARC 21 format for recording elements in the subject description of library documents does not as a rule foresee the use of a geographical name in any other sense than to indicate the location of the subject. One exception here is the name of a collective territorial body, where the first element is a geographical name; this is not recorded as a subject in the bibliographic record in field 651 (151 authority file record) but rather in field 610 (110 authority file record), e.g. *610 1. /a Polska. /b Urząd Bezpieczeństwa* (established heading in SHL KABA).

The lack of flexibility in records in MARC format clearly shows an attempt to transform the elements of a pre-coordinated language containing a geographical name into post-coordinated form. The designators expressed in the geographical name include geographical area, political/administrative state and historical state.

Examples of SHL NLP and SHL KABA headings with a geographical name:

Geographical area:

SHL NLP: *151 .. /a Konin (woj. wielkopolskie ; okręg) /x fauna*

SHL KABA: *151 .. /a Polska /x ludność*

Political/administrative state:

SHL NLP: *151 .. /a Polska /x polityka międzynarodowa*

SHL KABA: *151 .. /a Polska /x stosunki /z Francja*

10 B. Bojar, *Słownik encyklopedyczny informacji, języków i systemów informacyjno-wyszukiwawczych*, 2nd ed., Warszawa 2002, p. 272 - <http://bbc.uw.edu.pl/publication/639> [accessed 14.12.2019].

Geographical area with historical name:

SHL NLP: 151 .. /a Jugosławia /x emigracja /y od 1991 r.

SHL KABA: 151 .. /a Związek Radziecki /x emigracja i imigracja

Extraterrestrial geographical area:

SHL NLP: 150 .. /a Mars (astr.) /x badanie /x projekty¹¹

SHL KABA: 151 .. /a Księżyc /x aspekt symboliczny

Fictional geographical area:

SHL NLP: 151 .. /a Atlantyda /x a kultura masowa

SHL KABA: 150 .. /a Atlantyda /v komiksy

The majority of geographical names can function as either a topic or a subheading in the extended subject heading. Łysakowski also attempted to solve this problem, stating that a “geographical entity may only be the topic where it represents the main subject of the work”.¹² The specific instructions in Łysakowski’s theory also reveal the heading 151 .. /a Polska /x gospodarka to be incorrect where the subject of the document is a farm located in Poland. According to Jadwiga Sadowska, failure to observe Łysakowski’s recommendation here, as is current practice in SHL NLP, should be considered a mistake.¹³

According to the methodology for transforming extended headings in SHL NLP and SHL KABA into post-coordinated form, the topic expressed in the geographical name in these cases should become a “geographical descriptor”, whose function is to indicate the location of the subject. The element resulting from the transformation of the subject subheading, on the other hand, becomes the subject. In the example above, the subject descriptor would be *Gospodarka* and the geographical descriptor *Polska*. Here are some further examples¹⁴ of SHL NLP headings where it would be necessary to carry out this type of transformation:

11 For Łysakowski, astronomic entities fall under geographical entities; this changed in SHL NLP, where they are considered common names.

12 A. Łysakowski, *Katalog przedmiotowy...*, p. 156.

13 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego i praktyce „Przewodnika Bibliograficznego”*, Warszawa 2000, p. 132.

14 *Poradnik JHP BN* (guidebook of SHL NLP).

151 .. *la Śląskie, województwo (1918-1939) lx aptekarstwo*
 150 .. *la Aptekarstwo; 151 .. la Śląskie, województwo (1918-1939)*¹⁵
 151 .. *la Lwów (Ukraina) lx sądownictwo*
 150 .. *la Sądownictwo; 151 .. la Lwów (Ukraina)*

This freedom in constructions with geographical names in extended headings is not found in SHL KABA due to the adoption of a methodical solution permitting or prohibiting the use of geographical subheadings after subject topics or subject subheadings. For example, subject subheading *180 .. lx emigracja i imigracja* is a subheading used after a topic expressed in a geographical name, and a geographical subheading may not be used after it. Details of whether a geographical subheading may or may not be used are given in the records (in MARC 21 format) for established headings in SHL KABA in fixed-length fields (field 008/06 authority file record). For comparison, in RAMEAU this information is also visible, in editable form, to users who are not familiar with the working format. Coding this information in the record of the established heading in SHL KABA, where it is not accessible to users of the library catalogue, does not help users with their search queries. The established heading *150 .. la Emigracja i imigracja* may also be used as a topic in an extended heading, but a geographical subheading may not be used after it. As a result, the extended heading *151 .. la Francja lx emigracja i imigracja* is correct, whereas the extended heading *150 .. la Emigracja i imigracja lz Francja* would be incorrect.

Although this rule creates correct, consistent extended headings, the dual construction with geographical names is neither clear nor rational for users unfamiliar with SHL KABA methodology, even if they learn the basis on which they are created. Moreover, in some headings the reverse structure is considered correct. For example, both the following extended headings are correct: *150 .. la Polityka rolna lz Chiny* and *151 .. la Chiny lx polityka gospodarcza*. Subject sub-

15 Geographical descriptors have a different structure in NLPD; for the sake of clarity - to show the transformation - we use the old form from SHL NLP in this paper.

heading 180 .. *lx polityka gospodarcza* is used after topics expressed in a geographical name, but after topic 150 .. *la Polityka gospodarcza* is it not permitted to use a geographical subheading. In the case of topic 150 .. *la Polityka rolna* the situation is reversed: it is permitted to use a geographical subheading, while the subject subheading 180 .. *lx polityka rolna* does not exist. There is no rational justification for the co-existence of these two syntactic structures. Similar solutions are found in RAMEAU: 150 .. *la Politique agricole lz Pays de l'Union européenne*; 151 .. *la Pays de l'Union européenne lx Politique économique*¹⁶; and also in LCSH:¹⁷ 150.. *la Agriculture and state lz European Economic Community countries*, 151 .. *la European Economic Community countries lx Economic policy*.¹⁸

In the case of the two SHL KABA headings described above, the subjects of the documents are “economic policy” and “agricultural policy”, and the location is China. Dividing the extended headings into descriptors resolves this problem – if, of course, the role of the different elements of the extended heading is first properly understood.

The examples above show that the subject of the document may also be expressed in the subject subheading. Both the subject heading languages analysed in this paper contain a group of extended headings that begin with a geographical name in the topic of the heading, which, post-transformation, does not indicate the location of the subject but rather the subject itself. It is not possible to transform this group of extended headings correctly into post-coordinated form without modifying the working form.

For example, the SHL KABA subheading 180 .. *lx stosunki zagraniczne* is used after geographical names for works on the diplomatic relations of one country or region with another country or region,

16 For the sake of clarity, examples from RAMEAU are shown in MARC 21 format. The Bibliothèque nationale de France (BnF) uses the INTERMARC as its working format.

17 Library of Congress Subject Headings – the language used for subject headings in the library catalogues in the United States and the model for RAMEAU.

18 Examples from the catalogue databases of the BnF and Library of Congress.

the latter appearing as a geographical subheading within the same heading: *151 .. /a Polska /x stosunki zagraniczne /z Niemcy*. The two geographical names in the heading do not indicate the location but rather the subject, that is to say, the relations between the two (see *Relation between subjects*, p. 53). The geographical names in the SHL NLP extended heading *SHL NLP 151 .. /a Niemcy /x a Polska* play a similar role.

The reasons for this problem can be found in imperfections in how the data is recorded in MARC format. In its plans to do away with the syntax of RAMEAU and transform it into a post-coordinated language, the BnF intends to make changes to the working format such that recording a geographical name as the subject is possible.¹⁹

A further example of incorrect recording of data in MARC format is SHL KABA extended headings with the subject subheading *180 .. /x kolonie*. In the extended heading *151 .. /a Portugalia /x kolonie /z Afryka*, the heading used as topic does not indicate the location but rather the owner of colonies that are located in Africa (the geographical subheading fulfilling its correct function). To transform this type of heading into post-coordinated language it would be necessary to create the subject descriptor *150 .. /a Kolonie portugalskie* and the geographical descriptor *151 .. /a Afryka*.

Another interesting example is SHL KABA extended headings with the subject subheading *180 .. /x badania*. In the heading *151.. /a Polska /x badania /z Czechy*, the geographical name “Polska” (“Poland”) is used as the subject of the research; the place of the research – that is, the location of the subject – is indicated by the second geographical name, used as a subheading.

A similar problem occurs in SHL NLP with the heading *151 .. /a Kraków (woj. małopolskie) /x godła*, in which the geographical name used as a topic does not indicate the location but rather the politi-

19 *Rapport du Groupe de travail national sur la syntaxe de Rameau. Préconisations et pistes d'évolution* - https://rameau.bnf.fr/sites/default/files/chantier_syntaxe/pdf/rapport_final_syntaxe_rameau.pdf [accessed 14.12.2019].

cal/administrative entity. It is not possible to transform this construction into the subject descriptor *150 .. /a Godło* i *151 .. /a Kraków* (*woj. małopolskie*). A better solution would be to create the subject descriptor *150 .. /a Godło miasta Krakowa*.

We may summarise this as follows. If, in an extended heading whose topic is a geographical name, there exists a relationship of dependency between that name and the element that follows it (the subject subheading), it is not possible to transform the topic expressed in the geographical name into a geographical descriptor. However, if the relationship is one of location, where the geographical name indicates the location of the element that follows it, it is indeed possible to transform it into a geographical descriptor.

SUBJECT EXPRESSED IN A SUBHEADING

In Łysakowski's theory, the topic should express the subject of the document while the subheadings play a secondary role, expressing "aspects, facets, properties and certain circumstances relating to the subject".²⁰ This concept is based on card catalogues, where the most important element in terms of meaning needs to be in the initial position and items following the topic are less relevant for the purpose of searches.

In computer catalogues this order is not so important, although in the structure of a catalogue where headings are presented in index form, the place in the index is determined by the first element of the extended heading. The increasing search capabilities of the systems supporting library catalogues has enabled – or rather forced – a gradual departure from Łysakowski's original principle. But the principle itself gives rise to doubts in some cases, such as the role of individual subheadings in the subject heading. In SHL KABA methodology, too, it is possible to find subheadings which express the subject of the document (see *Subject expressed in an individual subheading*, p. 17).

20 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...*, p. 139.

SUBJECT EXPRESSED IN AN INDIVIDUAL SUBHEADING

In SHL KABA, headings with an individual subheading expressing, according to Łysakowski, not the subject itself but the properties of the subject²¹ are described (using the example of the names of buildings in a city) as “fixed (inseparable) constructions” in which “the subheading contains the proper name of the building – the subject of the information that is mapped”.²²

According to Łysakowski, individual subheadings express “their properties (parts, products)” and “one could say that they themselves become the object of classification”. He adds that “they belong to various larger subject groups; if those larger groups are not mentioned, the names of the details are incomplete, for which reason they must be content with the position of subheading”²³. Here, researchers also talk about a “dependent” or “affiliated subject” (Polish: *przedmiot przynależny*) expressed in the individual or general subheading. Much has been written about the issue of affiliated subjects,²⁴ most authors concluding that distinguishing between main subjects and affiliated subjects becomes less important as the subject heading language develops:

The main vs. affiliated opposition is becoming increasingly theoretical and is often ignored in processes for analysing and indexing documents. [...] Today, subject heading languages have partially replaced developing subheadings expressing the properties of subjects with developing a stock of multi-word topics representing affiliated subjects. This shift appears to be justified by practical considerations regarding searching for information in the catalogue.²⁵

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- 21 A. Łysakowski, *Katalog przedmiotowy...*, pp. 35-39.
 22 *Kartoteka wzorcowa języka KABA: praca zbiorowa*, Part 1, *Nazwy własne*, ed. J. Woźniak, Warszawa 1994, p. 100.
 23 A. Łysakowski, *Katalog przedmiotowy...*, pp. 106-107.
 24 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej. Studium analityczno-porównawcze*, Warszawa 2003, pp. 172-174; J. Woźniak-Kasperek, *Wiedza i język informacyjny w paradygmacie sieciowym*, Warszawa 2011, p. 90.
 25 J. Woźniak-Kasperek, *Wiedza i język informacyjny w paradygmacie sieciowym...*, p. 92.

Examples of constructions with an individual subheading:

SHL KABA: 110 2. /a *Biblioteka Uniwersytecka w Warszawie*. /b *Gabinet Rycin*

SHL NLP: 151 .. /a *Toruń (woj. kujawsko-pomorskie)* /x *Kościół św. św. Piotra i Pawła*

SHL KABA: 100 1. /a *Mickiewicz, Adam* /d (1798-1855). /t *Dziady*

In the examples above, according to Jadwiga Sadowska:

[...] it is obvious that the topic does not correspond to the subject in question. The subject is expressed in the subheading but in order to identify it fully you also need the topic that precedes it, and only the full heading allows you to identify the subject.²⁶

SHL KABA methodology uses an interesting term, proposed by Jadwiga Woźniak-Kasperek, for describing a heading comprising a topic and an individual subheading, namely a “topic with a preposition” (“temat z prepozycją”).²⁷ Woźniak-Kasperek states that “the preposition forms an integral, inviolable part of the topic”.²⁸ The term she proposes suggests a change in the role of the subheading. According to Łysakowski, the subheading expresses the properties of the subject expressed in the topic. In the term “topic with a preposition” it becomes the basic element, preceded by a “preposition” that “in a certain way announces or introduces the topic proper”.²⁹

The next stage in the development of the structure in question is the tendency, seen in various subject heading languages, to shorten the structure and leave only the second term (what was previously the “subheading”) or change the order of elements in the established heading. Also worth noting is the change in the type of established heading in cases where the two terms are not compat-

26 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 172.

27 *Kartoteka wzorcowa języka KABA...*, p. 39; J. Woźniak-Kasperek, *Redakcja językowa haseł KABA*, in: *Materiały z konferencji „Język haseł przedmiotowych KABA. Stan obecny i perspektywy rozwoju”*, Sopot, 9–11.09.1997, Warszawa 1998, pp. 32–33.

28 J. Woźniak-Kasperek, *Redakcja językowa haseł KABA*, w: *Materiały z konferencji „Język haseł przedmiotowych KABA...”*, pp. 32–33.

29 *Kartoteka wzorcowa języka KABA...*, p. 39.

ible in this respect; ultimately it is the type of the second element that remains (see Table 1).

TABLE 1. CHANGE OF STRUCTURE OF ESTABLISHED COMPOSITE HEADING AND CHANGE OF TYPE OF HEADING (IN BOLD)

	ISL	Before	After
Name of building in city	SHL KABA	151 .. a Lublin (Polska) x Bernardyńska (ulica)	150 .. a Ulica Bernardyńska (Lublin, Polska)
	SHL NLP → NLPD	151 .. a Toruń (woj. kujawsko-pomorskie) x Kościół św. św. Piotra i Pawła	150 .. a Kościół św. św. Piotra i Pawła (Toruń)
Name of collective body with hierarchical structure	SHL NLP → NLPD	110 2. a Biblioteka Uniwersytecka w Warszawie. b Gabinet Rycin	110 2. a Gabinet Rycin (Biblioteka Uniwersytecka ; Warszawa)
Events with dates after geographical topics	RAMEAU	151 .. a Lisbonne (Portugal) y 1755 (Séisme)30	150 .. a Séisme de Lisbonne (1755)
Titles of works after person topics	LCSH → FAST	100 1. a Mickiewicz, Adam, d 1798-1855. t Dziady	130 .0 a Dziady (Mickiewicz, Adam)
Name of body in collective territorial body	SHL NLP → NLPD	110 1. a Polska b Ministerstwo Finansów	110 2. a Ministerstwo Finansów (Polska)

The evolutionary tendency seen in headings which consist of a topic and an individual subheading (or “topic with a preposition”) is for the subject to be expressed in the second element - the subheading or the second part of the established heading. The topic is an additional element - a necessary one, but one whose role is to clarify the subject by:

- locating it in physical space: a building (*Kościół św. św. Piotra i Pawła*) located in a specific area (*Toruń*), or an area (*Ulica Bernardyńska*) located within a larger area (*Lublin (Polska)*)
- indicating the author of the work: a work (*Dziady*) by a specific author (*Mickiewicz, Adam (1798-1855)*)
- positioning it within a hierarchy: an institution (*Gabinet Rycin*) subordinate to another institution (*Biblioteka Uniwersytecka w Warszawie*), or an organ of a collective territorial body (*Ministerstwo finansów*) appointed and managed by a collective territorial body (*Polska*)

30 In RAMEAU, records are created in INTERMARC format; for the sake of clarity, we show them here in MARC 21 format.

This tendency to change the structure of the above group of established headings is gradual and varies between languages and groups of headings.³¹ A comparison of the established headings (and descriptors) for one type of designator reveals differences even within one system (see Table 2).

TABLE 2. COMPARISON OF ESTABLISHED HEADINGS/DESCRIPTORS FOR MANUSCRIPTS³²

ISL	Designator - manuscript as object	Designator - work contained in manuscript
SHL KABA	110 2. a Biblioteka Narodowa (Warszawa). k Rękopis. n Ms. 8002	130 .0 a Psalterz floriański
NLPD	150 .. a Psalterz floriański 410 2. a Biblioteka Narodowa x Rps 8002 III	130 .0 a Psalterz floriański
RAMEAU	110 2. a Biblioteka narodowa (Pologne) x Manuscrit. Ms. 8002	--
LCSH	130 .0 a Psalterz Floriański 410 2. a Biblioteka Narodowa (Poland). t Psalterz Floriański	110 2. a Catholic Church. t Psalter (Ms. St. Florian)

SUBJECT EXPRESSED IN A GENERAL SUBHEADING

Besides individual subheadings expressing the subject of the document, which are found in all the pre-coordinated languages discussed here, there exist other structures for extended headings in which the role of expressing the subject of the document is shifted from the topic to the subheading.

In Łysakowski's theory, the "general" subject subheading serves to express the properties of the subject,³³ and the subject itself is expressed in the topic.³⁴ The list of subheadings in SHL NLP was originally limited; however, over time, as new editions of the

31 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 173.

32 I have chosen the distinction in SHL KABA as a basis for this comparison: "For works on the topic of the manuscript (manuscript book) of an anonymous work held in a certain library (museum, archive), one uses for cataloguing purposes an established subject heading of the type: [name of library, archive, museum] - manuscripts. [no.]. If the text of the manuscript is of interest to specialists in various disciplines (historians, linguistics, etc.) and has been published, one creates a second heading for the title of the unified manuscript" (T. Głowacka, *Katalogowanie przedmiotowe...*, p. 59). This distinction is in line with the idea of a conceptual modelling structure but does not reflect the spirit of Łysakowski's theory.

33 A. Łysakowski, *Katalog przedmiotowy...*, pp. 35-39.

34 Ibidem, p. 58.

Słownik JHP BN (Printed edition of the authority file of SHL NLP)) appeared, this list grew.³⁵ A second tendency that can be observed is the shift away from the “topic - general subheading” structure towards multi-word topics.³⁶ This tendency indicates that the precise distinguishing of subjects from their properties is becoming less important.³⁷ Sadowska believes that this second tendency, observable in SHL NLP since the mid-1990s, shows that “the essence of subject heading languages - the expression of subjects in topics, and their approaches and aspects in subheadings - is becoming blurred”.³⁸ Przemysław Ćwikowski does not view this tendency as negative: “in the ongoing changes I do see not so much the destruction of the concept of the “subject” as a return to the original, epistemological understanding of the concept”.³⁹ In the remainder of this article we focus solely on manifestations of this tendency and the need to properly recognise the nature of the different elements occurring in complex structures in order to steer their further decomposition as a basis for post-coordination.

The persistence of complex structures can be explained by the fact that they fall into regular patterns with which librarians are familiar, and are convenient for cataloguing purposes. However, the moment we attempt to transform pre-coordinated language into post-coordinated form, the question of what the individual elements in the extended heading express becomes crucial. As we shall see, in most of the cases discussed below, the answer to this question is far from simple.

Examples of subject headings where the subject of the document is the “teaching or study” of a specific issue:

LCSH: 150 .. |a Education |x Study and teaching

35 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...* pp. 140-144.

36 Ibidem, pp. 76, 80; J. Woźniak-Kasperek, *Wiedza i język informacyjny w paradygmacie sieciowym...*, p. 91.

37 Ibidem, p. 91.

38 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, pp. 181, 188.

39 P. Ćwikowski, *Język haseł przedmiotowych KABA wobec teorii Adama Łysakowskiego. Koncepcje wyszczególniania przedmiotu*, Wrocław 2005, p. 13 - http://open.ebib.pl/ojs/index.php/wydawnictwa_zwarte/article/view/142/273 [accessed 14.12.2019].

RAMEAU: 150 .. /a Français (langue) /x Étude et enseignement /z Sé-négal

SHL KABA: 150 .. /a Aktorstwo /x studia i nauczanie (akademickie) /z Polska /y 1990-

Examples of subject headings where the subject of the document is the “reception” of a specific issue:

LCSH: 150 .. /a Instrumental music /z Italy /y 17th century /x Analysis, appreciation

RAMEAU: 150 .. /a Littérature autrichienne /x Appréciation /z Bel-gique /z Flandre (Belgique) /y 1945-1990

SHL KABA: 150 .. /a Literatura rosyjska /y 1870-1914 /x recepcja /z Francja

Examples of subject headings where the subject of the document is “public opinion” on a specific issue:

LCSH: 150 .. /a Arab-Israeli conflict /y 1973-1993 /x Public opinion

RAMEAU: 151 .. /a États-Unis /x Relations extérieures /y 1989-... /x Opinion publique

SHL KABA: 150 .. /a Aborcja /z Polska /y 1990- /x public opinion

The headings above are extended subject headings in which the subject of the document is expressed in the subject subheading, while the element preceding the subheading supplements it; in other words, the “subject of the subject” is expressed in the sub-heading. For example, if the subject of the document in one of the examples above is “public opinion”, then the subject of that public opinion is “abortion”. The subject of the document - “public opinion” - is not described in the subject heading in terms of its location in time or space. This may be expressed in a second heading:

150 .. /a Aborcja /z Polska /y 1990- /x public opinion

150 .. /a Public opinion /z Polska /y 1990-

In the example above, “public opinion” is indicated as the subject of the document by the second, supplementary subject heading.

After some subject subheadings of this type in SHL KABA, RAMEAU and LCSH, it is possible to use geographical and chronological subheadings. In this case, the principle is that one geo-

graphical subheading and one chronological subheading may be used in each extended subject heading:

150 .. */a Dramat niemiecki /x recepcja /z Polska /y 18 w.*

150 .. */a Dramat niemiecki /y 18 w. /x historia i krytyka*

In the above example, unlike the example for “public opinion”, “eighteenth-century German drama” is indicated as the subject of the document by the second subject heading. In fact, the actual subject of the document is its reception, but because it is not possible to have two chronological subheadings in the first subject heading, “German drama” is not defined from a chronological perspective.

A similar principle exists in SHL NLP regarding the impossibility of having a chronological subheading after the subheading *180 .. /x recepcja*, and the fact that in SHL NLP it is not possible to change the position of a chronological subheading:

155 .. */a Poezja polska /x recepcja /z Hiszpania*

150 .. */a Poezja polska /x historia /y 1980-1989 r.*

Another example found in both the subject heading languages analysed here is the subheading *180 .. /x konstytucja* used after geographical names. The subject of the document is expressed in the subject subheading:

SHL NLP: 151 .. */a Polska /x konstytucja 1997 r.*

SHL KABA: 151 .. */a Polska /x konstytucja (1997)*

The way to transform this type of extended heading is shown in the section on extended headings where the initial element is a geographical name (see *Subject expressed in the topic of the heading*, p. 10).

In SHL KABA it is possible to have more than one subject subheading in an extended heading. This combination of subheadings may also express the subject of a document:

100 1. */a Mazowiecki, Tadeusz /d (1927-2013) /x kariera /x polityka*

150 .. */a Samochody /x silniki /x tłumiki*

In the examples above, the subject subheading (or combination of subject subheadings) expresses the subject of the document, and the topic becomes an integral part of it. We can check the correctness of the naming of the subject in such constructions by

reading the elements expressing the subject in reverse order, that is, starting from the end. For example, in the heading SHL NLP 155 .. *la Poezja polska |x recepcja |z Hiszpania*, the subject is the reception of Polish poetry, while in the heading SHL KABA 150 .. *la Samochody |x silniki |x tłumiki*, the subject is silencers for the engines of cars.

A special type of construction where the subject is expressed in the subject subheading is subject headings whose initial element is the name of a type or genre of literature, a type of film, or a type or form of music, and so on, used as the subject heading:

SHL NLP: 155 .. *la Powieść polska |x język |y 20 w.*

SHL NLP: 155 .. *la Sonata (altówka i fortepian) |x historia |y 20 w.*

SHL NLP: 155 .. *la Film amatorski polski |x historia |y 1939-1945 r.*

SHL KABA: 150 .. *la Powieść historyczna amerykańska |y 19 w. |x tematy motyw*

SHL KABA: 150 .. *la Muzyka na fortepian |y 1900-1945 |x historia i krytyka*

SHL KABA: 150 .. *la Filmy biograficzne |x historia i krytyka*

In these examples the subject subheadings - 180 .. *|x historia* in SHL NLP and 180 .. *|x historia i krytyka* in SHL KABA - simply indicate that the remaining elements in the heading express the subject of the document. The semantic value of subheadings can be misleading, however, and the document may actually be about the history of the elements expressed in the first part of the heading, for example. A similar role within the subject heading is played by the SHL KABA subheading 180 .. *|x krytyka i interpretacja*, used after the names of people for works on the topic of the creative output of writers, for example 100 1. *la Norwid, Cyprian Kamil |d (1821-1883) |x krytyka i interpretacja*.

One more option exists for expressing the subject in the general subject subheading, found in both the subject heading languages analysed here, although with a different methodological basis in each case. This is the use of a heading consisting of a topic and a general subject subheading rather than a more specific heading. In the NUKAT catalogue, the following headings are used to classify the publication "U Olgi Boznańskiej: oblicza pracowni artystki":

100 1. |a Boznańska, Olga |d (1865-1940) |x rezydencje i miejsca pobytu
150 .. |a Pracownie artystów |y 1870-1914

Both of these headings are too broad. In the first heading, the subheading *180 .. |x rezydencje i miejsca pobytu* used after the personal name expresses the concept more broadly than the actual subject of the document, which should be the name of Olga Boznańska's workshop.

Headings with a similar structure and use can be found in the way subject classification is carried out in practice in SHL NLP. For example, the following heading is used to describe the publication "Wstęp do projektowania konstrukcji kadłubów okrętów":

150 .. |a Statki |x projekty |v podręcznik⁴⁰

The above example reveals a tendency towards generalisation in SHL NLP methodology. In SHL KABA, the replacement of a detailed heading with a heading in which the general subheading expresses a concept broader than the actual subject of the document is probably the result of the author of the subject-heading description lacking the authorisation to create a new established heading. In both subject heading languages, in the examples above, the subject of the document is not expressed directly but rather implied (see *Implied subject*, p. 25), which does not make searches easier.

IMPLIED SUBJECT

In pre-coordinated subject heading languages, cases occur where the subject is implied in the subject heading. In other words, it is not expressed directly in any element of the subject heading.

The following are examples of extended subject headings in SHL KABA where the subject of the document is implied:

100 1. |a Dickens, Charles |d (1812-1870) |x fabuły, intrygi

- here, the subject of the publication is themes, plots and events depicted in the work of Charles Dickens, not the person of Dickens himself

40 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...*, p. 67.

100 1. *la Kafka, Franz |d (1883-1924) |x krytyka i interpretacja*

- here, the subject of criticism and interpretation is the creative work of Frank Kafka, not the person of Kafka himself

150 .. *la Śmierć |x w literaturze*

- here, the subject of the publication is not death but rather how it is presented in literature.

For comparison, here is an extended subject heading in SHL KABA with the same structure, expressing the subject directly:

100 1. *la Dickens, Charles |d (1812-1870) |x myśl polityczna i społeczna*

- here, the subject of the publication is the political and social philosophy of Charles Dickens.

Constructions with an implied subject are also found in SHL NLP, for example:

100 1. *la Kafka, Franz |d (1883-1924) |x recepcja*

- here, the subject of the publication is the creative work of Franz Kafka, not the person of Kafka himself

100 1. *la Proust, Marcel |d (1871-1922) |x w literaturze polskiej*

100 1. *la Corot, Camille |d (1796-1875) |x w literaturze polskiej*

- these headings are used to describe the publication “Proust i Corot w eseistyce Józefa Czapskiego”, the subject of which is the writing of Proust and the paintings of Corot, not the individuals whose names appear as the topic in the subject headings.

A special case of implied subjects is syntactic structures consisting of a topic and a subject subheading, where the syntactic scope is broader than the subject of the document in question. Such structures are found in both subject heading languages. In Łysakowski's theory, these structures are referred to as “reductions”, but this is not a typical case of reduction as a methodological solution. This type of reduction could be called “syntactical reduction”.⁴¹

Łysakowski's suggestion of reduction as a methodological solution, which he says should be used in exceptional circumstances

41 The distinction between “syntactic reduction” and “semantic reduction” is mine, used here for the sake of the argument.

only,⁴² consists of replacing an adequate heading with a different heading, most often a more general one (although this was not the idea behind Łysakowski's proposal) or a related one, which meets the linguistic requirements better (for example, it contains the correct Polish name).⁴³

“Reductive” phenomena occur in both the subject heading languages analysed here. They fall into two main types: semantic reduction and syntactic reduction. Syntactic reduction consists of creating a more general extended heading which replaces the detailed heading specifying the subject of the document. This is formally similar to the “reversed” headings found in SHL NLP (see *Incomplete subject*, p. 28 and *Relationship between subjects*, p. 53), but has a different function in the classification of the document. Łysakowski's recommendation, simplifying somewhat, was semantic reduction; syntactic reduction appears to be a phenomenon that arose independently in the course of the language being used in practice.

Jadwiga Sadowska cites some relevant examples from “Przewodnik Bibliograficzny”,⁴⁴ such as the use of the heading “Bibliistyka - protestantyzm - zagadnienia” instead of “Grzech” and “Zło”, or “Boże Narodzenie - zagadnienia” and “Kucharstwo” instead of “Potrawy wigilijne”. In these examples the subject is not expressed adequately; it is implied. According to Sadowska, such headings arose in order to avoid the physical dispersion of documents due to the use of excessively detailed headings.⁴⁵

The creation of structures such as these, rather than adequately detailed headings, occurs fairly often in SHL KABA. The reason may lie in the method of creating established headings and the procedures that apply, which in some cases take too much time and work. Examples of headings of this type, created using sub-

42 A. Łysakowski, *Katalog przedmiotowy...*, p. 68.

43 Ibidem, p. 85.

44 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...*, p. 68.

45 Ibidem, p. 67.

ject subheadings, include 180 .. |x pomniki, 180 .. |x rezydencje i miejsca pobytu, 180 .. |x biblioteki, 180 .. |x budynki, 180 .. |x chóry and similar. They are used as substitutes and generally have a broader semantic scope than is necessary for classifying the document. These headings represent a significant problem for searches; although they are created correctly, in line with the methodology, in other cases they can prove inadequate.

INCOMPLETE SUBJECT

In both the subject heading languages analysed here, there are several methodological solutions where the subject heading does not express the full subject but only part of its semantic scope. In such cases it is recommended to supplement the expression of the subject with an additional subject heading.

The most common reason for using an additional heading to supplement the expression of the subject is the rule prohibiting the use of additional subheadings after subheadings expressing the subject. This is also most often the case with headings where the subject is expressed in a general subheading (see *Subject expressed in a general subheading*, p. 20).

Examples of SHL KABA subheadings which require the creation of an additional heading in practice, if such a heading arises from an analysis of the contents of the document to be classified, include the following:

180 .. |x w literaturze + 180 .. |x tematy, motywy⁴⁶:

150 .. |a Kobiety |x w literaturze

150 .. |a Poezja polska |y 20 w. |x tematy, motywy

180 .. |x w sztuce (kinie, muzyce, operze) + 180 .. |x tematy, motywy:

150 .. |a Aniołowie |x w sztuce

150 .. |a Malarstwo renesansowe |z Włochy |x tematy, motywy

Examples of SHL NLP subheadings which require the creation of an additional heading in practice, if such a heading arises from an

46 A. Bober, D. Patkaniowska, *Katalogowanie w języku haseł przedmiotowych KABA, Part 2, Opis przedmiotowy dokumentów z dziedziny literatury*, Warszawa 2005, p. 18.

analysis of the contents of the document to be classified, include the following:

- 180 .. |x w literaturze [...] + 180 .. |x tematyka⁴⁷:
 150 .. |a Kobieta |x w literaturze polskiej
 155 .. |a Poezja polska |x tematyka |y 19-20 w.

In SHL NLP the order of the elements in an extended subject heading cannot change, which leads to a risk of ambiguity.⁴⁸ For this reason, to avoid having to change the order of the elements in this language, it is recommended to use the following headings:

- 150 .. |a Przekłady polskie |x historia |y 20 w.
 150 .. |a Powieść irlandzka |x historia |y 19 w.
 150 .. |a Powieść irlandzka |x przekłady polskie.⁴⁹

The same reason lies behind the prohibition on the use of chronological and geographical subheadings after certain subheadings in SHL KABA which require further definition in order for the subject of the document to be expressed fully. However, this is a “quantitative” solution: it is not permitted to use more than one chronological and one geographical subheading in each extended SHL KABA heading:⁵⁰

- 150 .. |a Aborcja |z Polska |y 1990- |x public opinion
 150 .. |a Public opinion |z Polska |y 1990-

The restriction in SHL NLP that only geographical subheadings that are the names of countries or areas larger than a country can be used, makes it necessary to use a second, supplementary subject heading:

- 155 .. |a Muzyka |x historia |z Włochy
 151 .. |a Florencja (Włochy) |x kultura.⁵¹

Because these subject headings express an incomplete subject and require supplementation with a second subject heading, they

47 *Poradnik JHP BN*, Part 7, p. 36.

48 B. Włodarczyk, J. Woźniak-Kasperek, *Język Hasel Przedmiotowych Biblioteki Narodowej – od analizy dokumentu do opisu przedmiotowego*, Warszawa 2017, pp. 130–131.

49 *Ibidem*, p. 131.

50 T. Głowacka, *Katalogowanie przedmiotowe...*, pp. 40, 53.

51 J. Sadowska, *Język hasel przedmiotowych Biblioteki Narodowej...*, p. 138.

can be used more often, combined with other headings, and are therefore more universal. This methodological solution represents an important step towards post-coordination.

A methodological solution with analogous effect is the elimination of formal subheadings in SHL NLP, carried out in 2010–2012.⁵² The expression of a document’s contents in a formal topic and not a formal subheading, as was previously the case, supplements the description of the document’s contents. For example, for the publication entitled “Kolizje: antologia nowego dramatu węgierskiego”, SHL NLP uses the headings:

155 .. |a *Dramat węgierski* |y 21 w.

155 .. |a *Antologie*

A special use of supplementary headings to express the subject of a publication is found in the principle of “reversing” topics, which involves adding a broader, more generalising heading. The detailed (adequate) heading is accompanied by the generalising heading in the description of the publication.

One of the basic characteristics of both SHL NLP and SHL KABA is their “detailing” approach to the classification of documents. In one of the earliest publications on the methodology of SHL KABA, we read as follows:

This [...] will be an information and search language [...] whose semantic scope is determined by the subject matter of the collections in the Libraries and how that subject matter is segmented, which will make it possible to use a detailing rather than a generalising approach to subject headings.⁵³

In the case of SHL NLP, the methodological declaration on its “detailing” approach to classifying documents, understood to mean “giving the publications to be described headings that are adequate with regard to their contents”,⁵⁴ is accompanied by a re-

52 B. Włodarczyk, J. Woźniak-Kasperek, *Język Hasel Przedmiotowych Biblioteki Narodowej...*, p. 114.

53 *Kartoteka wzorcowa języka KABA...*, p. 14.

54 Biblioteka Narodowa. Fabryka Języka. Blog by the Pracownia Języka Hasel Przedmiotowych BN - <http://fabryka-jezyka.bn.org.pl/?p=1255> [accessed 14.06.2019].

mark on the possibility of adding headings with a broader scope in order to indicate the “context, domain, membership of a certain group or category (known as the principle of “reversing” topics)”.⁵⁵ *Poradnik BN* gives the following example of the use of this “reversing” principle: a biography of Johann Sebastian Bach under the personal heading 100 1. /a Bach, Johann Sebastian /d (1685-1750) has the heading 150 .. /a Kompozytorzy niemieccy /y 18 w. added to it, which groups together “all materials on German composers of this period in the library catalogue”.⁵⁶ At the same time, the prohibition on adding headings “which are connected by a hierarchical or associative relationship in the authority file”⁵⁷ to the description of the publication suggests that the principle of “reversing” has the same function as the semantic relations recorded in the authority file record of the established heading. The use of two different methods interchangeably to achieve the same effect would not appear to make users’ searches for documents easier.

This “reversing” of headings in the manner observed in practice in subject cataloguing in SHL NLP does not come directly from Łysakowski. According to Jadwiga Sadowska, the practice of adding generalising headings by “reversing” appeared in the mid-1980s as a result of an incorrect interpretation of the principle of multiple descriptions in cases where, next to the personal topic, Łysakowski recommends adding a “separate heading” for the topic accompanying the personal topic. For example, for the work *Napoleon a Polska*, Łysakowski recommends using a personal heading for Napoleon and a separate additional heading for Polish-French policy and the Polish Legions in 1797.⁵⁸

– *Język Hasel Przedmiotowych Biblioteki Narodowej: poradnik*, Part 2: W. Klenczon, *Opracowanie przedmiotowe – podstawowe zasady*, p. 8 - <http://fabryka-jezyka.bn.org.pl/wp-content/uploads/2012/01/IL.JHP-BN-opracowanie-przedmiotowe.10.01.pdf> [accessed 14.06.2019].

55 Ibidem, p. 8.

56 Ibidem, p. 8.

57 Ibidem, p. 9.

58 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...*, p. 154.

An example of “reversing” in SHL NLP⁵⁹:

- 245 10 |a Słowacki :|b opowieść biograficzna / |c Zbigniew Sudolski.
 600 14 |a Słowacki, Juliusz |d (1809-1849)
 650 .4⁶⁰ |a Poeci polscy |y 19 w.
 655 .4 |a Biografia

According to Jadwiga Woźniak-Kasperek, the principle of “reversing” headings leads to generalised headings, which create micro-classification clusters in the catalogue or index”.⁶¹ Jolanta Hys, writing on the pragmatics of SHL NLP, explains that the purpose of this procedure is to increase “pragmatic relevance”. As an example she gives the heading “Kowalski, Jan - biografia”, which is supplemented by the heading “Stolarze - biografie - Polska - 19 w.” The supplementary heading, which is a “reversing” heading, indicates important features of the subject which are absent from the heading “Kowalski, Jan - biografia” - namely his profession and when and where he lived.⁶² It is this form of clarification that justifies the use of “reversing” headings supplementing the description of the subject matter of the document.

When examining the evolution of subject heading languages, it is very important to identify and evaluate methodological phenomena. Some of these phenomena - such as the principle of “reversing” headings described above, practised for years by the National Library of Poland - require verification to see whether they agree with the methodology of the new language NLPD, created out of the transformation of SHL NLP.

59 Example from the catalogue database of the National Library of Poland, selected on 18.12.2017.

60 The second indicator “4” was used in the library of the National Library of Poland until mid-December 2018 for SHL NLP/NLPD headings. In the present article it occurs solely in examples of bibliographical descriptions.

61 B. Włodarczyk, J. Woźniak-Kasperek, *Język Hasel Przedmiotowych Biblioteki Narodowej...*, p. 22.

62 J. Hys, *Pragmatyka Języka Hasel Przedmiotowych Biblioteki Narodowej (JHP BN) i Uniwersalnej Klasyfikacji Dziesiętnej (UKD) w „Przewodniku Bibliograficznym”*, Warszawa 2009, p. 6.

ASPECT OF THE SUBJECT

In his analysis, Łysakowski differentiates between the subject of a document and its “aspect” (Polish: *ujęcie*). When describing the contents and scope of a document, he pays particular attention to the choice of its main feature. “Outside the book, the scope corresponds [...] to an individual subject or set of subjects [...]”.⁶³ The expression of the subject/subjects of the document using “topics” reflects the scope of the document. In the subject (“thematic”)⁶⁴ catalogue, this is the main feature.

In the concept of the subject catalogue, the aspect of the subject is a secondary feature (or “secondary descriptive category”).⁶⁵ Łysakowski defines “aspect” as the “contents of the work”, comprising the “thoughts (judgements and representations) of the author on or about a given subject (on a given topic, in a given scope) from a specific point of view”.⁶⁶ Łysakowski continues that aspect is to be indicated by general class subheadings, expressed in the names of domains of knowledge and cultural and economic life. They are to be used “where the subject is discussed from the perspective of this domain”.⁶⁷

Łysakowski’s concept was reflected faithfully in the methodology of SHL NLP. Subject subheadings (general, content-related), which are the names of domains such as *psychology*, *ethics*, *philosophy* and so on, were used to express aspect.⁶⁸

We find a similar idea in the methodology of SHL KABA:

In the process of subject cataloguing, the aspect of the subject is a secondary descriptive category. In the subject heading (headings) assigned to the document in question, aspect generally receives the status of a subheading.⁶⁹

63 A. Łysakowski, *Katalog przedmiotowy*, Part 1, *Teoria*, ed. 2, Warszawa 2002, p. 41.

64 *Ibidem*, p. 43.

65 *Ibidem*, p. 40.

66 *Ibidem*, p. 43.

67 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...*, p. 140.

68 *Poradnik...*, Part 1, p. 5.

69 T. Głowacka, *Katalogowanie przedmiotowe...*, p. 31.

In SHL KABA, aspect is expressed differently. Following the pattern of LCSH (and RAMEAU), aspect in SHL KABA is expressed by means of subheadings with the structure “aspect [adjective created from the name of the domain]”, for example: *180 .. /x aspekt medyczny*, *180 .. /x aspekt ekonomiczny*. In languages that are compatible with SHL KABA, similarly constructed subheadings occur. However, in LCSH they have a different structure: the element expressing the domain comes in the initial position (see Table 3). According to Jadwiga Sadowska, putting the “semantically important word” first was a better solution for card catalogues, as with SHL NLP subheadings expressed in the simple name of the domain.⁷⁰ The structure of subheadings in SHL KABA, she argues, means that they are difficult for users to remember and, contrary to Łysakowski’s recommendations, “do not group related material together but actually disperse it”.⁷¹ However, analysis of all the subheadings expressing aspect reveals that they do not all have the same structure. Some, as in SHL NLP, are the same as the name of the domain, for example subheadings *180 .. /x filozofia*, *180 .. /x historia*, *180 .. /x socjologia*, *180 .. /x prawo* (see also Tables 3 and 4). This diversity does not make the language easier to use.

For certain domains SHL KABA has more than one correct subheading (Table 4). Except for main subheadings expressing the domain aspect (as with subheadings *180 .. /x filozofia*, *180 .. /x historia* and *180 .. /x prawo*), these subheadings, which are identical with the names of the domains, have a different, strictly defined scope of use. They may be used after certain headings specified in the notes on their use, in the function of topics from the scope of the domain in question. For example, in the domain of psychology, the main “aspect subheading” is subheading *180 .. /x aspekt psychologiczny*. This may be used “after common names, with the exception of expressions with a psychological connotation, for works on the topic of the psychological impact of said subject”. An

70 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 125.

71 *Ibidem*, p. 126.

TABLE 3. DOMAINS AND THEIR CORRESPONDING SUBHEADINGS IN SUBJECT HEADING LANGUAGES⁷²

Domain	SHL NLP	SHL KABA	RAMEAU	LCSH
Anthropology	180 .. x antropologia	180 .. x aspekt antropologiczny	180 .. x Anthropologie	180 .. x Anthropological aspects
Economics	180 .. x gospodarka	180 .. x aspekt ekonomiczny 180 .. x sytuacja gospodarcza	180 .. x Aspect économique 180 .. x Conditions économiques	180 .. x Economic aspects 180 .. x Economic conditions
Ethics	180 .. x etyka	180 .. x aspekt moralny 180 .. x moralność 180 .. x etyka 180 .. x sytuacja moralna	180 .. x Aspect moral 180 .. x Morale pratique 180 .. x Morale 180 .. x Conditions morales	180 .. x Moral and ethical aspects 180 .. x Conduct of life 180 .. x Ethics 180 .. x Moral conditions
Philosophy	180 .. x filozofia	180 .. x filozofia 180 .. x estetyka 180 .. x logika 180 .. x metafizyka	180 .. x Philosophie 180 .. x Esthétique 180 .. x Logique 180 .. x Métaphysique	180 .. x Philosophy 180 .. x Aesthetics 180 .. x Logic 180 .. x Metaphysics
Physiology	180 .. x fizjologia	180 .. x aspekt fizjologiczny 180 .. x fizjologia	180 .. x Aspect physiologique 180 .. x Physiologie	180 .. x Physiological aspects 180 .. x Physiology
Genetics	180 .. x genetyka	180 .. x aspekt genetyczny 180 .. x genetyka	180 .. x Aspect génétique 180 .. x Génétique	180 .. x Genetic aspects 180 .. x Genetics
History	180 .. x historia	180 .. x historia	180 .. x Histoire	180 .. x History
Medicine	180 .. x medycyna	180 .. x aspekt medyczny 180 .. x aspekt zdrowotny	180 .. x Aspect médical	180 .. x Medical aspects
Political science	180 .. x polityka	180 .. x aspekt polityczny 180 .. x polityka i rządy 180 .. x działalność polityczna	180 .. x Aspect politique 180 .. x Politique et gouvernement 180 .. x Activité politique	180 .. x Political aspects 180 .. x Politics and government 180 .. x Political activity
Parapsychology	----	180 .. x aspekt parapsychiczny	180 .. x Aspect parapsychique	180 .. x Psychic aspects
Psychology	180 .. x psychologia	180 .. x aspekt psychologiczny 180 .. x psychologia	180 .. x Aspect psychologique 180 .. x Psychologie	180 .. x Psychological aspects 180 .. x Psychology
Law	180 .. x prawo	180 .. x prawo 180 .. x status prawny	180 .. x Droit 180 .. x Statut juridique	180 .. x Law 180 .. x Legal status, laws, etc.
Religion	180 .. x religia	180 .. x aspekt religijny 180 .. x religia	180 .. x Aspect religieux 180 .. x Religion	180 .. x Religious aspects 180 .. x Religion
Sociology	180 .. x socjologia	180 .. x aspekt społeczny 180 .. x socjologia	180 .. x Aspect social 180 .. x Sociologie	180 .. x Social aspects 180 .. x Sociology

72 Subheadings are capitalised here for RAMEAU and LCSH but not for SHL NLP and SHL KABA, following the methodology of each language.

additional subheading in this domain is subheading *180 .. |x psychologia*, which “is used after personal names, categories of people and ethnic groups, titles of holy books, names of living organisms and after the heading *Zwierzęta* for psychological studies on said topic”. Another example, subheading *180 .. |x aspekt religijny*, “is used after the names of wars and armed conflicts, and after common names, with the exception of headings with a religious connotation, for works presenting the topic in question in its religious aspect or with regard to religious practices associated with it”. However, subheading *180 .. |x religia* “is used after geographical names (regions of the world, countries, cities) for works about the situation of the religions adopted and practised there”.

TABLE 4. EXAMPLES OF SHL KABA HEADINGS BELONGING TO PARTICULAR DOMAINS (WITH AN IMMANENT CONNOTATION), SUBHEADINGS GIVING THE CONNOTATION, AND SELECTED OTHER DOMAIN SUBHEADINGS

Domain and subheadings giving a connotation (in bold), and other domain subheadings in SHL KABA	Established headings with an immanent connotation	Extended headings containing domain subheadings
Anthropology: 180 .. x aspekt antropologiczny	150 .. a Plemiona 150 .. a Antropologia medyczna 450 .. a Choroby x antropologia 450 .. a Choroby x aspekt antropologiczny	150 .. a Dotyk x aspekt antropologiczny
Economics: 180 .. x aspekt ekonomiczny 180 .. x sytuacja gospodarcza	150 .. a Zysk 150 .. a Przemysł okrętowy 450 .. a Budowa statku x aspekt ekonomiczny 150 .. a Histereza (ekonomia)	150 .. a Antysemityzm x aspekt ekonomiczny 151 .. a Afryka Południowa x sytuacja gospodarcza
Ethics: 180 .. x aspekt moralny 180 .. x moralność 180 .. x etyka 180 .. x sytuacja moralna	150 .. a Przebaczenie 150 .. a Decyzja (etyka) 150 .. a Etyka biznesu 450 .. a Biznes x aspekt moralny	150 .. a Ekonomia x aspekt moralny 100 1. a Rousseau, Jean Jacques d (1712-1778) x etyka 150 .. a Alpiński x moralność 151 .. a Rosja x sytuacja moralna
Philosophy: 180 .. x filozofia 180 .. x estetyka 180 .. x logika 180 .. x metafizyka	150 .. a Epistemologia 150 .. a Działanie (filozofia) 450 .. a Filozofia działania 450 .. a Działanie x filozofia 150 .. a Wojna x filozofia 450 .. a Filozofia wojny	150 .. a Ból x filozofia 100 1. a Austen, Jane d (1775-1817) x filozofia 100 1. a Balzac, Honoré de d (1799-1850) x estetyka 100 1. a Milosz, Oskar Vladislav Lubicz de d (1877-1939) x metafizyka 100 1. a Struve, Henryk d (1840-1912) x logika

Physiology:	150 .. a Dojrzewanie płciowe	150 .. a Emocje x aspekt fizjologiczny
180 .. x aspekt fizjologiczny	450 .. a Dojrzewanie płciowe x aspekt fizjologiczny	150 .. a Histamina x aspekt fizjologiczny
180 .. x fizjologia	150 .. a Fizjologia człowieka	150 .. a Dzieci x fizjologia
	450 .. a Człowiek x fizjologia	
Genetics:	150 .. a Genetyka ewolucyjna	150 .. a Inteligencja x aspekt genetyczny
180 .. x aspekt genetyczny	450 .. a Gatunki (biologia) x ewolucja x aspekt genetyczny	150 .. a Rośliny strączkowe x genetyka
180 .. x genetyka	150 .. a Komplementacja (genetyka)	
	150 .. a Prawa Mendla	
	550 .. w g a Genetyka	
History:	150 .. a Reformacja	150 .. a Urbanistyka x historia
180 .. x historia	151 .. a Hiszpania y 1936-1939 (Wojna domowa)	150 .. a Ubóstwo y 1990- [domyślne]
	150 .. a Medycyna lotnicza	151 .. a Nigeria y 19 w. [domyślne]
Medicine:	450 .. a Lot x aspekt medyczny	150 .. a Podróże x aspekt medyczny
180 .. x aspekt medyczny	150 .. a Grypa	150 .. a Ogień x aspekt zdrowotny
180 .. x aspekt zdrowotny	150 .. a Syndrom przesunięcia czasu	
	550 .. w g a Medycyna lotnicza	
Political science:	150 .. a Partie polityczne	150 .. a Aborcja x aspekt polityczny
180 .. x aspekt polityczny	150 .. a Architektura i polityka	151 .. a Polska x polityka i rządy y 17 w.
180 .. x polityka i rządy	450 .. a Architektura x aspekt polityczny	150 .. a Katolicy x działalność polityczna
180 .. x działalność polityczna	150 .. a Autorytaryzm	150 .. a Drzewa x aspekt parapsychiczny
	550 .. w g a Nauki polityczne	
Parapsychology:	150 .. a Kolor x aspekt parapsychiczny	
180 .. x aspekt parapsychiczny	450 .. a Kolor i parapsychologia	
	450 .. a Kolory x aspekt parapsychiczny	
	150 .. a Psychologia humanistyczna	150 .. a Alpinizm x aspekt psychologiczny
Psychology:	150 .. a Identyfikacja (psychologia)	100 0. a Abel c (postać biblijna) x psychologia
180 .. x aspekt psychologiczny	150 .. a Obraz ojca	100 1. a Milne, Alan Alexander d (1882-1956) x i psychologia
180 .. x psychologia	550 .. w g a Psychologia	100 0. a Aristoteles d (384-322 a.C.) x wkład do psychologii
180 .. x wkład do psychologii		150 .. a Handel elektroniczny x prawo
	150 .. a Prawo administracyjne	150 .. a Bezrobotni x status prawny
Law:	450 .. a Administracja publiczna x prawo	
180 .. x prawo	150 .. a Zwierzęta x prawo	
180 .. x status prawny	450 .. a Zwierzęta i prawo	
	150 .. a Obowiązek alimentacyjny	
	450 .. a Alimenty (prawo)	
Religion:	150 .. a Wiara	150 .. a Alchemia x aspekt religijny
180 .. x aspekt religijny	450 .. a Wiara religijna	151 .. a Europa x religia
180 .. x religia	150 .. a Celibat x aspekt religijny	
	450 .. a Celibat kościelny	
	150 .. a Indianie x religia	
	450 .. a Religia Indian	
Sociology:	150 .. a Socjofizyka	150 .. a Moda x socjologia
180 .. x socjologia	150 .. a Konflikt (socjologia)	150 .. a Adopcja x aspekt społeczny
180 .. x aspekt społeczny	150 .. a Architektura i społeczeństwo	
	450 .. a Architektura x socjologia	
	450 .. a Architektura x aspekt społeczny	

The significant differences in the scope of application of SHL KABA domain subheadings should be taken into account when converting them into descriptive form (see Tables 6, 7 and 9). It is worth noting that SHL NLP subheadings expressing aspect do not come with such extensive comments on their application; the comments are usually limited to general information, for example “the subheading *filozofia* is used after general topics”, or they specify the scope of the domain, for example “the subheading *genetyka* is used after topics from the domain of biology, medical and veterinary sciences”.

Comparing SHL NLP headings with SHL KABA headings, Jadwiga Sadowska points out that in some SHL KABA headings the aspect is an “immanent part of the topic”.⁷³ This is shown, for example, by the following comparison:

SHL NLP: 150 .. |a Nauczanie |x psychologia

SHL KABA: 150 .. |a Psychologia edukacji

According to Sadowska, the existence of headings in which the subject is “hidden” and the aspect of the subject is exposed “leads [...] to the impression of a lack of clear rules for expressing the subject and its aspects and to the scattering of information”.⁷⁴

In SHL KABA methodology, the problem of aspect being expressed, or not, in the topic of the heading is connected with the “connotations” of headings⁷⁵ – a central issue in the method of

73 J. Sadowska, *Język hasel przedmiotowych Biblioteki Narodowej...*, p. 178.

74 Ibidem, p. 184.

75 Connotation (intension), opposite of denotation: Meaning understood as the content, i.e. set of features of elements of non-linguistic reality on the basis of which a linguistic expression can be assigned in accordance with the semantics of the language in question (B. Bojar, *Słownik encyklopedyczny informacji...*, p. 143). Denotation (extension), opposite of connotation: Meaning understood as the scope, i.e. collection of elements of reality to which a linguistic expression can be assigned in accordance with the semantic rules of the language. The denotation of a unit name is the individual object referred to by this name (the designate), while the denotation of a general name is the set of all its designates [...]. In the description of information and search languages it is possible to distinguish between direct denotations and indirect denotations. A direct denotation is the set of direct designates of a given expression, while an indirect denotation is the set of its indirect designates (ibid., p. 47).

building extended headings in SHL KABA. In the field of ISLs, a “connotation” is defined as “a set of constitutive and characteristic features [...]”.⁷⁶ This can be seen in the case of established headings in SHL KABA, for example the established heading 150 .. /a Choroby autoimmunizacyjne has a medical connotation.

SHL KABA subject subheadings expressing a connotation (see Table 3, 8) may only be used after headings not possessing said connotation. These subheadings therefore perform the task of lending a connotation to the element preceding them in the extended heading. After headings where the aspect (in other words, the connotation) forms an immanent part of the heading, it is not possible to use subheadings that provide a connotation. According to Przemysław Ćwikowski, “this indicates that certain terms acting as topics belong to the terminology of some domain or scientific discipline and are thus not neutral from the point of view of the aspect of the subject”.⁷⁷ The phrase “belong to the terminology of some domain or scientific discipline” in the quotation above is a reference to the methodology of RAMEAU, the immediate source of the SHL KABA’s lexicon and methodology. RAMEAU talks of “headings that belong to a certain domain” (French: “*domaine auquel appartient la notice*” or “domain to which the record belongs”) rather than the “connotation of headings”. These domains correspond to simplified Dewey Decimal Classification codes; for example the established heading 150 .. /a Quarks is assigned the symbol 530 (Fizyka). The use of simplified Dewey Decimal Classification codes makes it easier to work with vocabulary and is also very helpful for the process of creating extended subject headings. In doubtful cases the codes indicate unambiguously the domain (connotation of the heading) and therefore suggest what subheading may be used after the heading.⁷⁸

76 B. Bojar, *Słownik encyklopedyczny informacji...*, p. 143.

77 P. Ćwikowski, *Język haseł przedmiotowych KABA wobec teorii Adama Łysakowskiego...*, p. 20.

78 Analogous codes began to be introduced in SHL KABA records in 2016 (NUKAT, Ustalenia - Pole 083. Symbol Klasyfikacji Dziesiątej Deweya.)

Table 4 puts side-by-side established headings and extended headings in SHL KABA that contain domain subheadings giving a connotation (in bold) and those that do not have this function. The records for established headings with an immanent connotation, fragments of which appear in the middle column, indicate how to identify the connotation (in other words, the domain) to which the heading belongs:

Heading of the record:

Domain term, e.g. 150 .. *la Prawo administracyjne*

Complement, e.g. 150 .. *la Decyzja (etyka)*

Domain subheading, e.g. 150 .. *la Celibat lx aspekt religijny*

Full reference (variant):

Domain term, e.g. 450 .. *la Filozofia wojny*

Complement, e.g. 450 .. *la Alimenty (prawo)*

Domain subheading, e.g. 450 .. *la Architektura lx aspekt polityczny*

Broader term (overarching), e.g. 150 *la Obraz ojca* - overarching term: 550 *hwg la Psychologia*.

This method of creating extended headings using connotations is not found in SHL NLP. The evolution towards a post-coordinated language appears to be much simpler for SHL NLP than for SHL KABA. According to Jadwiga Sadowska, who focuses mainly on SHL NLP, the principle of expressing aspect is formulated clearly by Łysakowski but “is not always easy to apply in practice”.⁷⁹ A fundamental difficulty, she writes, is drawing a line between the subject and the aspect. Przemysław Ćwikowski expresses a similar opinion: “these phenomena [connotations] are rather difficult to describe within the framework of Łysakowski’s theory, with its clear separation of the scope from the contents of a book, which creates a fairly serious issue outside the realm of theory”.⁸⁰

Another question regarding the transformation of subject headings in SHL NLP and SHL KABA into post-coordinated form is how

79 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 178.

80 P. Ćwikowski, *Język haseł przedmiotowych KABA wobec teorii Adama Łysakowskiego...*, p. 20.

to replace subheadings expressing aspect with descriptors. The solution that naturally suggests itself is to express the subheadings in the form of a “aspect descriptor” (Polish: *deskryptor ujęciowy*) using NLPD methodology.⁸¹ In the case of SHL NLP, in which this group of subheadings are also called “aspect subheadings”,⁸² the transformation raises certain problems (see Table 8 and notes on examples) which we discuss in the remainder of this article. In SHL KABA the transformation is much more complicated. An attempt to map SHL KABA subheadings giving a connotation and other domain subheadings and SHL NLP class subheadings to NLPD descriptors reveals that some of them (SHL KABA subheadings) can be transformed into aspect descriptors, and some into subject descriptors (Table 5).

The approach of comparing class subheadings in SHL NLP and domain subheadings in SHL KABA with subject and aspect descriptors in NLPD (see Table 5) can be used for transforming extended headings in both subject heading languages. However, apart from subheadings giving a connotation, other domain subheadings also exist in SHL KABA (see Table 3). These subheadings are more detailed than the class subheadings in SHL NLP, and an attempt to transform them into aspect descriptors in NLPD would cause significant generalisations of the meaning expressed in the extended headings in SHL KABA. With these subheadings, for the purposes of transformation it would be necessary to use subject descriptors and treat them as combinations of two subjects (see *Relationship between subjects*, p. 53). In the majority of cases the other domain subheading has a different scope of use than the subheading giving the connotation. For example, subheading 180 .. /x aspekt moralny gives an ethical connotation and can be used after all headings not possessing this connotation. By contrast, subheading 180 .. /x moralność can only be used after the names of categories of people.

81 NLPD methodology is not within the scope of my analysis. However, we touch on some aspects of it where I write “according to NLPD methodology”.

82 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 123

TABLE 5. COMPARISON OF SHL NLP CLASS SUBHEADINGS AND SHL KABA DOMAIN SUBHEADINGS WITH NLPD ASPECT AND SUBJECT DESCRIPTORS

Domain	SHL NLP subheading	SHL KABA subheading	Subject descriptor	NLPD ⁸³	Aspect descriptor
Anthropology	180 .. x antropologia	180 .. x aspekt antropologiczny			658 .. a Etnologia i antropologia kulturowa
Economics	180 .. x gospodarka	180 .. x aspekt ekonomiczny 180 .. x sytuacja gospodarcza (480 .. a Gospodarka)			658 .. a Gospodarka, ekonomia, finanse
Ethics	180 .. x etyka	180 .. x aspekt moralny 180 .. x moralność 180 .. x etyka 180 .. x sytuacja moralna		650 .. a Gospodarka	658 .. a Filozofia i etyka
Philosophy	180 .. x filozofia	180 .. x filozofia 180 .. x estetyka 180 .. x logika 180 .. x metafizyka		650 .. a Filozofia	658 .. a Filozofia i etyka
Physiology	180 .. x fizjologia	180 .. x aspekt fizjologiczny 180 .. x fizjologia		650 .. a Fizjologia* 650 .. a Fizjologia	
Genetics	180 .. x genetyka	180 .. x aspekt genetyczny 180 .. x genetyka		650 .. a Genetyka 650 .. a Genetyka	
History	180 .. x historia	180 .. x historia		650 .. a Historia	658 .. a Medycyna i zdrowie
Medicine	180 .. x medycyna	180 .. x aspekt medyczny 180 .. x aspekt zdrowotny		650 .. a Zdrowie	
Political science	180 .. x polityka	180 .. x aspekt polityczny 180 .. x polityka i rządy 180 .. x działalność polityczna		650 .. a Polityka wewnętrzna 650 .. a Polityka	658 .. a Polityka, politologia, administracja publiczna
Para-psychology	-----	180 .. x aspekt parapsychiczny		650 .. a Parapsychologia	
Psychology	180 .. x psychologia	180 .. x aspekt psychologiczny 180 .. x psychologia		650 .. a Psychologia	658 .. a Psychologia
Law	180 .. x prawo	180 .. x prawo 180 .. x status prawny			658 .. a Prawo i wymiar sprawiedliwości 658 .. a Prawo i wymiar sprawiedliwości
Religion	180 .. x religia	180 .. x aspekt religijny 180 .. x religia		650 .. a Religia	658 .. a Religia i duchowość
Sociology	180 .. x socjologia	180 .. x aspekt społeczny 180 .. x socjologia		650 .. a Społeczeństwo	658 .. a Socjologia i społeczeństwo

83 The descriptor columns give the terms in fields 6XX so as to differentiate subject descriptors from aspect descriptors; the planned label of the heading of the record for the aspect descriptor is 150 in NLPD (as a subject descriptor).

84 The descriptor 150 .. |a *Fizjologia* does not appear in NLPD. Instead, detailed descriptors such as 150 .. |a *Fizjologia człowieka*, 150 .. |a *Fizjologia zwierząt* etc. are used for the purpose of clarity and for transformations of SHL KABA. The existence of a descriptor *Fizjologia* is assumed, and its creation in NLPD will be proposed.

Subheadings giving connotations in SHL KABA correspond to aspect descriptors in NLPD. These descriptors have a generalising character, like class subheadings in SHL NLP. However, in some cases a subheading in SHL KABA giving a connotation cannot be replaced by aspect descriptor due to the subheading's level of detail. For example, subheading *180 .. |x aspekt fizjologiczny* does not have an equivalent aspect descriptor in NLPD. The closest aspect descriptor in terms of meaning would be *658 .. |a Medycyna i zdrowie*; however, this does not properly convey the meaning of the extended heading (see Table 5).

Some subheadings in SHL KABA have more than one scope of use, for example subject subheading *180 .. |x filozofia*. Two different solutions for the transformation are used in this case, depending on the situation:

After “titles of holy books and after proper headings, above all the names of domains of knowledge, for works on the fundamental theory of a given subject” (headings not possessing a philosophical connotation) - in such cases, except for transformations into a subject descriptor with the construction “Filozofia [przedmiot]”, one should use aspect descriptor *658 .. |a Filozofia i etyka* and the subject descriptor from the transformation of the topic of the extended heading

After “personal names, only individuals who are not philosophers, for works on the topic of their philosophical concepts” - in such cases one should use two subject descriptors, one from the transformation of the personal name and the other the subject descriptor *650 .. |a Filozofia*

SHL KABA also features some subheadings whose transformation into descriptor-based language can proceed in two different ways according to NLPD methodology. Thus the SHL KABA subheading can be replaced by either an aspect descriptor or a subject descriptor (see: Table 6, Comment 4; Table 7, Comment 5; and the conclusion below these two tables).

Before analysing of the possibility of transforming extended headings in subject heading languages into descriptor-based language, it is first necessary to carry out an analysis of the established headings indicating membership of the domain in question. In the case of esta-

blished headings with a specific connotation - in other words, where the aspect forms an immanent part of the meaning - the transformation is primarily subject to terminological criteria, that is to say, the occurrence of the term in literature and/or natural language. In the transformation (using NLPD methodology) of established subject headings that are broken down into two semantic elements (descriptors), once again the above-mentioned problem arises of choosing between a subject descriptor plus an aspect descriptor or two subject descriptors (see Table 6 and the description below).

TABLE 6. MODEL FOR TRANSFORMING ESTABLISHED HEADINGS IN SHL KABA INTO DESCRIPTORS ACCORDING TO NLPD METHODOLOGY⁸⁵

Established heading in SHL KABA	NLPD86	
	Subject descriptor	Aspect descriptor
150 .. a Plemiona	650 .. a Plemiona	
150 .. a Antropologia medyczna	650 .. a Antropologia medyczna	
450 .. a Choroby x antropologia		
450 .. a Choroby x aspekt antropologiczny		
150 .. a Zysk	650 .. a Zysk	
150 .. a Przemysł okrętowy	650 .. a Przemysł okrętowy	
450 .. a Budowa statku x aspekt ekonomiczny		
150 .. a Histereza (ekonomia)	650 .. a Histereza (ekonomia)	
150 .. a Przebaczenie	650 .. a Przebaczenie	
150 .. a Decyzja (etyka)	650 .. a Decyzja (etyka)	
150 .. a Etyka biznesu	650 .. a Etyka biznesu	
450 .. a Biznes x aspekt moralny		
150 .. a Epistemologia	650 .. a Epistemologia	
150 .. a Działanie (filozofia)	650 .. a Działanie (filozofia)	
450 .. a Filozofia działania		
450 .. a Działanie x filozofia		
150 .. a Wojna x filozofia	650 .. a Filozofia wojny	
450 .. a Filozofia wojny		
150 .. a Dojrzwanie płciowe	650 .. a Dojrzwanie płciowe	
450 .. a Dojrzwanie płciowe x aspekt fizjologiczny		
150 .. a Fizjologia człowieka	650 .. a Fizjologia człowieka	
450 .. a Człowiek x fizjologia		

85 For the sake of clarity, the column for subject descriptors contains terms arising from the transformation of SHL KABA according to NLPD methodology. These terms are often lacking in NLPD due to the more generalising nature of SHL NLP, the source of the vocabulary of NLPD. However, aspect descriptors are taken from NLPD, where they form a closed list.

86 See note 77.

150 .. la Genetyka ewolucyjna	150 .. la Genetyka ewolucyjna	
450 .. la Gatunki (biologia) lx evolution lx aspekt genetyczny		
150 .. la Komplementacja (genetyka)	650 .. la Komplementacja (genetyka)	
150 .. la Prawa Mendla	650 .. la Prawa Mendla	
550 .. lw g la Genetyka		
150 .. la Reformacja	650 .. la Reformacja	
150 .. la Medycyna lotnicza	650 .. la Medycyna lotnicza	
450 .. la Lot lx aspekt medyczny		
150 .. la Grypa	650 .. la Grypa	
150 .. la Syndrom przesunięcia czasu	650 .. la Syndrom przesunięcia czasu	
550 .. lw g la Medycyna lotnicza		
150 .. la Partie polityczne	650 .. la Partie polityczne	
150 .. la Architektura i polityka	650 .. la Architektura	658 .. la Polityka, politologia, administracja publiczna ⁸⁷
450 .. la Architektura lx aspekt polityczny	650 .. la Polityka	
150 .. la Autorytaryzm	650 .. la Autorytaryzm	
550 .. lw g la Nauki polityczne		
150 .. la Kolor lx aspekt parapsychiczny	650 .. la Kolor	
450 .. la Kolor i parapsychologia	650 .. la Parapsychologia	
450 .. la Kolory lx aspekt parapsychiczny		
150 .. la Psychologia humanistyczna	650 .. la Psychologia humanistyczna	
150 .. la Identyfikacja (psychologia)	650 .. la Identyfikacja (psychologia)	
150 .. la Obraz ojca	650 .. la Obraz ojca	
550 .. lw g la Psychologia		
150 .. la Prawo administracyjne	650 .. la Prawo administracyjne	
450 .. la Administracja publiczna lx prawo	650 .. la Zwierzęta	658 .. la Prawo i wymiar sprawiedliwości
150 .. la Zwierzęta lx prawo	650 .. la Prawo	
450 .. la Zwierzęta i prawo	650 .. la Obowiązek alimentacyjny	
150 .. la Obowiązek alimentacyjny		
450 .. la Alimenty (prawo)		
150 .. la Wiara	650 .. la Wiara	
450 .. la Wiara religijna		
150 .. la Celibat lx aspekt religijny	650 .. la Celibat kościelny	
450 .. la Celibat kościelny		
150 .. la Indianie lx religia	650 .. la Religia Indian	
450 .. la Religia Indian		
150 .. la Socjofizyka	650 .. la Socjofizyka	
150 .. la Konflikt (socjologia)	650 .. la Konflikt (socjologia)	
150 .. la Architektura i społeczeństwo	650 .. la Architektura	658 .. la Socjologia i społeczeństwo
450 .. la Architektura lx socjologia	650 .. la Społeczeństwo	
450 .. la Architektura lx aspekt społeczny		

87 Pairs of descriptors only one of which may be used, depending on the method of transformation chosen, are given in italics.

The model for transforming established headings in SHL KABA is based on the following principles:

1. Occurrence of the term in literature and/or natural language, in order to facilitate searches. In these descriptors, contrary to Łysakowski's requirement, the aspect forms an immanent part of the subject. The criterion of the term occurring in literature and/or natural language prevails
2. In the case of established headings with a complex structure (topic and subject subheading), the term given as a variant is used as the subject descriptor if said term occurs in literature and/or natural language, for example 650 .. |a *Filozofia wojny* from the transformation of established heading 150 .. |a *Wojna* |x *filozofia*
3. In the case of established headings with a complex structure (topic and subject subheading), if a variant exists which is a term occurring in literature and/or natural language and the subject subheading does not contain the name of a domain which can become an aspect descriptor, the names of the juxtaposed subjects are used as subject descriptors (see also *Relationship between subjects – juxtaposition*, p. 58), for example 650 .. |a *Kolor* and 650 .. |a *Parapsychologia* from the transformation of heading 150 .. |a *Kolor* |x *aspekt parapsychiczny*
4. In the case of juxtaposition of subjects, where the descriptor is not its own special name for the relationship (see *Relationship between subjects*, p. 53), the names of the juxtaposed subjects are used as the subject descriptors in the transformation, for example 650 .. |a *Architektura* and 650 .. |a *Polityka* from the transformation of heading 150 .. |a *Architektura i polityka*, or, if the established heading (or its variant) contains a domain subheading giving a connotation which can be changed into an aspect descriptor, a subject descriptor and aspect descriptor are used in the transformation, for example 650 .. |a *Architektura* and 658 .. |a *Polityka, politologia, administracja publiczna* from the transformation of heading 150 .. |a *Architektura i polityka*, 450 .. |a *Architektura* |x *aspekt polityczny*

TABLE 7. MODEL FOR TRANSFORMING EXTENDED HEADINGS IN SHL KABA INTO DESCRIPTORS ACCORDING TO NLPD METHODOLOGY

Extended heading in SHL KABA	NLPD ⁸⁸	
	Subject descriptor	Aspect descriptor
150 .. a Dotyk x aspekt antropologiczny	650 .. a Dotyk	658 .. a Etnologia i antropologia kulturowa
150 .. a Antysemityzm x aspekt ekonomiczny	650 .. a Antysemityzm	658 .. a Gospodarka, ekonomia, finanse
151 .. a Afryka Południowa x sytuacja gospodarcza	651 .. a Afryka Południowa 650 .. a Gospodarka	
150 .. a Ekonomia x aspekt moralny	650 .. a Ekonomia	658 .. a Filozofia i etyka
100 1. a Rousseau, Jean Jacques d (1712-1778) x etyka	600 1. a Rousseau, Jean Jacques d (1712-1778) 650 .. a Etyka	
150 .. a Alpińsi x moralność	650 .. a Alpińsi 650 .. a Etyka	
151 .. a Rosja x sytuacja moralna	650 .. a Etyka 651.. a Rosja	
150 .. a Ból x filozofia	650 .. a Ból	658 .. a Filozofia i etyka
100 1. a Austen, Jane d (1775-1817) x filozofia	600 1. a Austen, Jane d (1775-1817) 650 .. a Filozofia	
100 1. a Balzac, Honoré de d (1799-1850) x estetyka	600 1. a Balzac, Honoré de d (1799-1850) 650 .. a Estetyka	
100 1. a Miłosz, Oskar Vladislas Lubicz de d (1877-1939) x metafizyka	100 1. a Miłosz, Oskar Vladislas Lubicz de d (1877-1939) 650 .. a Metafizyka	
100 1. a Struve, Henryk d (1840-1912) x logika	100 1. a Struve, Henryk d (1840-1912) 650 .. a Logika	
150 .. a Emocje x aspekt fizjologiczny	650 .. a Emocje 650 .. a Fizjologia ⁸⁹	
150 .. a Histamina x aspekt fizjologiczny	650 .. a Histamina 650 .. a Fizjologia	
150 .. a Dzieci x fizjologia	650 .. a Dzieci 650 .. a Fizjologia	
150 .. a Inteligencja x aspekt genetyczny	650 .. a Inteligencja 650 .. a Genetyka	
150 .. a Rośliny strączkowe x genetyka	650 .. a Rośliny strączkowe 650 .. a Genetyka	
150 .. a Urbanistyka x historia	650 .. a Urbanistyka	658 .. a Historia
150 .. a Ubóstwo y 1990-	650 .. a Ubóstwo	658 .. a Historia
151 .. a Nigeria y 19 w.	651 .. a Nigeria	658 .. a Historia
150 .. a Podróże x aspekt medyczny	650 .. a Podróże	658 .. a Medycyna i zdrowie 658 .. a Medycyna i zdrowie ⁹⁰
150 .. a Ogień x aspekt zdrowotny	650 .. a Ogień 650 .. a Zdrowie	

88 See note 77.

89 See note 78.

90 See note 81.

150 .. a Aborcja x aspekt polityczny	650 .. a Aborcja	658 .. a Polityka, politologia, administracja publiczna
151 .. a Polska x polityka i rządy y 17 w.	651 .. a Polska 650 .. a Polityka wewnętrzna	
150 .. a Katolicy x działalność polityczna	650 .. a Katolicy 650 .. a Polityka	
150 .. a Drzewa x aspekt parapsychiczny	650 .. a Drzewa 650 .. a Parapsychologia	
150 .. a Alpinizm x aspekt psychologiczny	650 .. a Alpinizm	658 .. a Psychologia
100 0. a Abel c (postać biblijna) x psychologia	100 0. a Abel c (postać biblijna) 650 .. a Psychologia	
150 .. a Handel elektroniczny x prawo	650 .. a Handel elektroniczny	658 .. a Prawo i wymiar sprawiedliwości
150 .. a Bezrobotni x status prawny	650 .. a Bezrobotni	658 .. a Prawo i wymiar sprawiedliwości
150 .. a Alchemia x aspekt religijny	650 .. a Alchemia	658 .. a Religia i duchowość
151 .. a Europa x religia	651 .. a Europa 650 .. a Religia	
150 .. a Adopcja x aspekt społeczny	650 .. a Adopcja 650 .. a Społeczeństwo	
150 .. a Moda x socjologia	650 .. a Moda	658 .. a Socjologia i społeczeństwo

The model for transforming extended headings in SHL KABA is based on the following principles:

1. Subject domain subheadings not expressing aspect are transformed into subject descriptors, for example *650 .. |a Etyka*⁹¹ from the transformation of heading *150 .. |a Alpiniści |x moralność*
2. In the case of extended headings with the structure *151.. |a [geographical name] |x [subject subheading]*, the subject subheading is transformed into a subject descriptor and the geographical name is transformed into a geographical descriptor. As it is impossible to transform a topic expressed as a geographical name into a subject descriptor – since the geographical name acts as the subject (see *Subject expressed in the topic of the heading*, p. 10) – the term acting as the subject subheading prior to the transformation acts as the subject as far as possible, for example: *650 ..*

91 The term “moralność” is a variant of the descriptor (“ascriptor”) *150 .. |a Etyka* in NLPD. SHL KABA distinguishes between the established headings *150 .. |a Etyka* and *150 .. |a Moralność*. The adoption of this solution will probably be proposed in NLPD for the purpose of classifying libraries that currently use SHL KABA.

/a Gospodarka i 651 .. /a Afryka Południowa from the transformation of heading 151 .. */a Afryka Południowa /x sytuacja gospodarcza; 650 .. /a Etyka* and 651 .. */a Rosja* from the transformation of heading 151 .. */a Rosja /x sytuacja moralna; 650 .. /a Religia* and 651 .. */a Europa* from the transformation of heading 151 .. */a Europa /x religia*

3. In the case of subheadings which have different scopes of use depending on the topic they follow, various solutions are used for the transformation. For example, subheading 180 .. */x filozofia* after headings with no philosophical connotation is transformed into the aspect descriptor *Filozofia i etyka* (650 .. */a Ból* and 658 .. */a Filozofia i etyka* from the transformation of heading 150 .. */a Ból /x filozofia*), and after personal names it is transformed into the subject descriptor *Filozofia* (e.g. 600 1. */a Austen, Jane /d (1775-1817)* and 650 .. */a Filozofia* from the transformation of heading 100 1. */a Austen, Jane /d (1775-1817) /x filozofia*)
4. In the case of extended headings with a historical connotation (containing a chronological subheading), where the heading of the record has a label other than 155, the aspect descriptor 658 .. */a Historia* is used in the transformation
5. In all extended headings, a domain subheading giving a connotation may be replaced in the transformation by an aspect descriptor or the corresponding subject descriptor, for example: 650 .. */a Ból* and 650 .. */a Filozofia* from the transformation of heading 150 .. */a Ból /x filozofia; 650 .. /a Alpinizm; 650 .. /a Psychologia* from the transformation of heading 150 .. */a Alpinizm /x aspekt psychologiczny*

The table simulating the transformation of extended headings in SHL KABA into descriptors according to NLPD methodology (Table 7) shows the use of an aspect descriptor in each case where such a descriptor may be used (that is, where one exists for the domain in question and it meets the criteria for the transformation - see comment below Table 7). The choice of a different methodology (other than NLPD) for transforming this language into descriptor form makes it possible to use only subject descriptors (see Table 9). The aspect descriptor in NLPD methodology comes directly from SHL

NLP methodology, based on Łysakowski's theory, which has class subheadings with exactly the same function as aspect descriptors. The transformation of SHL NLP into NLPD is therefore a natural process, the next step in the evolution of the language (see Table 8). With the transformation of SHL KABA, by contrast, the direction of the evolution is a matter of conscious choice.

TABLE 8. MODEL FOR TRANSFORMING EXTENDED HEADINGS IN SHL NLP INTO NLPD

Extended heading in SHL NLP	NLPD ⁹²	
	Subject descriptor	Aspect descriptor
150 .. a Cyganie x antropologia	650 .. a Cyganie	658 .. a Etnologia i antropologia kulturowa
150 .. a Żydzi x gospodarka	650 .. a Żydzi	658 .. a Gospodarka, ekonomia, finanse
150 .. a Aborcja x etyka	650 .. a Aborcja	658 .. a Filozofia i etyka
150 .. a Matematyka x filozofia	650 .. a Matematyka	658 .. a Filozofia i etyka
150 .. a Oddychanie x fizjologia	650 .. a Oddychanie 650 .. a Fizjologia [...]93	
150 .. a Choroby psychiczne x genetyka	650 .. a Choroby psychiczne 650 .. a Genetyka	
150 .. a Rap x historia	650 .. a Rap	658 .. a Historia
150 .. a Temperatura x medycyna	650 .. a Temperatura	658 .. a Medycyna i zdrowie
150 .. a Polacy za granicą x polityka	650 .. a Polacy za granicą	658 .. a Polityka, politologia, administracja publiczna
150 .. a Sport x psychologia	650 .. a Sport	658 .. a Psychologia
150 .. a Zwierzęta x prawo	650 .. a Zwierzęta	658 .. a Prawo i wymiar sprawiedliwości
150 .. a Śmierć x religia	650 .. a Śmierć	658 .. a Religia i duchowość
150 .. a Małżeństwo x socjologia	650 .. a Małżeństwo	658 .. a Socjologia i społeczeństwo

The main problem when transforming SHL NLP class subheadings into descriptors is their ambiguity. Subheading *180 .. |x etyka* can mean ethics in the sense of the domain, or it can mean morality.⁹⁴ For users who are not familiar with the methodology underlying class subheadings, a heading with this subheading is ambiguous. Another example is subheading *180 .. |x archeologia*. After

92 See note 77.

93 NLPD does not have a separate descriptor *150 .. |a Fizjologia*. In the transformation of the extended heading in SHL NLP, one of the existing descriptors is used: *150 .. |a Fizjologia człowieka*, *150 .. |a Fizjologia roślin*, etc.

94 J. Sadowska, *Język hasel przedmiotowych Biblioteki Narodowej...*, p. 124.

a geographical name, according to *Poradnik BN* this subheading is used in the classification of documents “on the topic of archaeological excavations, and also on archaeological sites in the area in question”.⁹⁵ It is not therefore the aspect of the subject but rather the subject itself that can be located by means of a geographical descriptor.

Looking at the history of SHL NLP, in the 1990s we see an increase in the number of multi-word topics replacing constructions consisting of a topic and a class subheading. Instead of extended heading 150 .. *la Biznes i etyka*, the heading 150 .. *la Etyka biznesu* appeared. The new heading expresses the subject and the aspect together. According to Jadwiga Sadowska, there could be several reasons for the emergence of this type of subject heading, such as a mistaken understanding of Łysakowski’s concept or the lack of an appropriate subheading.⁹⁶ However, we can also see the emergence of multi-word topics as reflecting a tendency to bring the language of subject headings closer to natural language, in order to make searches easier.

The example “etyka biznesu” (“business ethics”) draws attention to a necessary stage in the process of transforming a pre-coordinated subject heading language into post-coordinated form. If a heading consisting of a topic and a subheading (even if it is a class/aspect/domain subheading) expresses an element of non-documentary reality existing on its own and having its own name, a separate subject descriptor should be created for it. This stage involves transforming established headings with complex structures into (multi-word) descriptors, and should precede the breaking down of extended headings. This applies to both?? the subject heading languages analysed here.

As mentioned earlier, subject heading languages can be transformed without using aspect descriptors and using only subject descriptors instead (Table 9).

95 *Poradnik...*, Part 7, p. 160.

96 *Ibidem*, p. 180.

TABLE 9. MODEL FOR TRANSFORMING EXTENDED HEADINGS IN SHL KABA INTO SUBJECT DESCRIPTORS ONLY

Extended heading in SHL KABA	Subject descriptor ⁹⁷
150 .. a Dotyk x aspekt antropologiczny	650 .. a Dotyk 650 .. a Antropologia
150 .. a Antysemityzm x aspekt ekonomiczny	650 .. a Antysemityzm 650 .. a Ekonomia
151 .. a Afryka Południowa x sytuacja gospodarcza	651 .. a Afryka Południowa 650 .. a Gospodarka
150 .. a Ekonomia x aspekt moralny	650 .. a Ekonomia 650 .. a Etyka
100 1. a Rousseau, Jean Jacques d (1712-1778) x etyka	600 1. a Rousseau, Jean Jacques d (1712-1778) 650 .. a Etyka
150 .. a Alpiniści x moralność	650 .. a Alpiniści 650 .. a Etyka
151 .. a Rosja x sytuacja moralna	650 .. a Etyka 651.. a Rosja
150 .. a Ból x filozofia	650 .. a Ból 650 .. a Filozofia
100 1. a Austen, Jane d (1775-1817) x filozofia	600 1. a Austen, Jane d (1775-1817) 650 .. a Filozofia
100 1. a Balzac, Honoré de d (1799-1850) x estetyka	600 1. a Balzac, Honoré de d (1799-1850) 650 .. a Estetyka
100 1. a Miłosz, Oskar Vladislas Lubicz de d (1877-1939) x metafizyka	100 1. a Miłosz, Oskar Vladislas Lubicz de d (1877-1939) 650 .. a Metafizyka
100 1. a Struve, Henryk d (1840-1912) x logika	100 1. a Struve, Henryk d (1840-1912) 650 .. a Logika
150 .. a Emocje x aspekt fizjologiczny	650 .. a Emocje 650 .. a Fizjologia
150 .. a Histamina x aspekt fizjologiczny	650 .. a Histamina 650 .. a Fizjologia
150 .. a Dzieci x fizjologia	650 .. a Dzieci 650 .. a Fizjologia
150 .. a Inteligencja x aspekt genetyczny	650 .. a Inteligencja 650 .. a Genetyka
150 .. a Rośliny strączkowe x genetyka	650 .. a Rośliny strączkowe 650 .. a Genetyka
150 .. a Urbanistyka x historia	650 .. a Urbanistyka 650 .. a Historia
150 .. a Ubóstwo y 1990-	650 .. a Ubóstwo 650 .. a Historia
151 .. a Nigeria y 19 w.	651 .. a Nigeria 650 .. a Historia
150 .. a Podróże x aspekt medyczny	650 .. a Podróże 650 .. a Medycyna
150 .. a Ogień x aspekt zdrowotny	650 .. a Ogień 650 .. a Zdrowie

97 Analogously to previous tables, this column contains descriptors with the label 650; see also note 77.

150 .. a Aborcja x aspekt polityczny	650 .. a Aborcja
	650 .. a Polityka
	651 .. a Polska
151 .. a Polska x polityka i rządy y 17 w.	650 .. a Polityka wewnętrzna
	650 .. a Katolicy
150 .. a Katolicy x działalność polityczna	650 .. a Polityka
150 .. a Drzewa x aspekt parapsychiczny	650 .. a Drzewa
	650 .. a Parapsychologia
150 .. a Alpinizm x aspekt psychologiczny	650 .. a Alpinizm
	650 .. a Psychologia
100 0. a Abel c (postać biblijna) x psychologia	100 0. a Abel c (postać biblijna)
	650 .. a Psychologia
150 .. a Handel elektroniczny x prawo	650 .. a Handel elektroniczny
	650 .. a Prawo
150 .. a Bezrobotni x status prawny	650 .. a Bezrobotni
	650 .. a Prawo
150 .. a Alchemia x aspekt religijny	650 .. a Alchemia
	650 .. a Religia
151 .. a Europa x religia	651 .. a Europa
	650 .. a Religia
150 .. a Adopcja x aspekt społeczny	650 .. a Adopcja
	650 .. a Społeczeństwo
150 .. a Moda x socjologia	650 .. a Moda
	650 .. a Socjologia

The second option for transforming a pre-coordinated language (see Table 9), in which subheadings expressing aspect are transformed into subject descriptors, after appropriate adjustment (e.g. changing subheading *180 .. |x aspekt społeczny* to the subject descriptor *650 .. |a Społeczeństwo*), leads to treating the designate of the extended heading as a relationship between subjects (see *Relationship between subjects*, p. 53).

RELATIONSHIP BETWEEN SUBJECTS

A specific type of subject is the relationship between two elements, which Jadwiga Sadowska describes, following Łysakowski, as a “relationship between subjects”.⁹⁸ If this is expressed in a single extended subject heading in a pre-coordinated language, it is most often recorded using a subject subheading (recorded in MARC format).

Łysakowski writes about the relationship between subjects in the context of parallel subjects “where the relationship between

98 J. Sadowska, *Hasła przedmiotowe w teorii Adama Łysakowskiego...*, p. 108.

objects is presented, [...], that is to say, a comparison (similarities, differences, the opposite) or true dependency (causal relationship, mutual dependence, influences, etc.).”⁹⁹ The fragment quoted describes two types of relationship expressing different kinds of connections between two elements:

Juxtaposition - a relationship of juxtaposition between two subjects, with or without specific context or aspect. This correlates to Łysakowski’s definition “comparison (similarities, differences, the opposite) or a real relationship ([...] mutual dependence [...])”¹⁰⁰

Dependency - a relationship of dependency of one subject on another subject. This correlates to Łysakowski’s definition “[...] true dependency (causal relationship, [...], influences, etc.)”¹⁰¹

The most common syntactic construction for expressing relationships of comparison in the pre-coordinated languages in question is the subject subheading “[x a [subject]” in SHL NLP and “[x i [subject]” in SHL KABA. A few cases of this type of construction are recorded in a single subfield of an established heading, for example 150 .. *la Kościół i państwo* (an established heading in SHL NLP). We may assume that such constructions were created in cases where the relationship between the elements is a subject in itself and is widely represented in documents in library catalogues. The example quoted above - (*150 .. la Kościół i państwo*) - combines different elements, at least one of which does not appear as an independent lexical unit in SHL NLP.¹⁰²

It is necessary to distinguish between syntactic structures connecting two subjects and multi-word headings consisting of two elements linked by the word “i” [“and”], used most often for terms that are closely related semantically and for antonyms, which according to Sadowska often express concepts that are presented together in

99 A. Łysakowski, *Katalog przedmiotowy...*, p. 34.

100 Ibidem, p. 34.

101 Ibidem, p. 34.

102 B. Włodarczyk, J. Woźniak-Kasperek, *Język Haseł Przedmiotowych Biblioteki Narodowej...*, p. 136.

documents.¹⁰³ Examples occur in both SHL KABA (for example 150 .. *|a Wiedza i erudycja*, 150 .. *|a Uniwersytety i uczelnie*) and SHL NLP (for example 150 .. *|a Antygeny i przeciwciała*, 150 .. *|a Kawiarnie i cukiernie*¹⁰⁴). Similar structures can be found in RAMEAU (for example 150 .. *|a Critique et interprétation*, 150 .. *|a Savoir et erudition*) and LCSH (for example 150 .. *|a Good and evil*, 150 .. *|a Learned institutions and societies*). The individual elements within such combinations do not appear as independent established headings. They may appear in the record of the established heading as a variant, for example the term *Evil* as a variant of established heading 150 ... *|a Good and evil*. The purpose of creating such structures is to avoid the dispersion of documents. The creators of the NLPD project shared this objective in preserving combinations of this type, for example the descriptors 150 .. *|a Legendy i podania* and 150 .. *|a Rodzaje i gatunki literackie*.

“Relationship between subjects” in Łysakowski’s theory refers to two subjects which the author proposes treating as main subjects and recording as topics; in this case, that means that the subject description should be multiple in nature.¹⁰⁵ In SHL NLP the connector “a” [“and”] is used between the two elements: recorded in MARC 21 format, we have the connector “a” together with the second element in a separate subfield for the factual description, for example 150 .. *|a Kościół |x a państwo*. Both elements in connections of this type are usually independent topics in all the languages in which they occur.

In both the subject heading languages discussed here, the above constructions can be used in reverse order, creating a multiple description. In SHL NLP methodology this is called a “reversal” of headings,¹⁰⁶ for example 151 .. *|a Polska |x a Francja* and 151 .. *|a Francja |x a Polska*. However, this has a different meaning from the principle of adding general headings to specific headings, which we mentioned earlier. Łysakowski argues for creating multiple descriptions

103 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 71.

104 Ibidem, p. 71.

105 A. Łysakowski, *Katalog przedmiotowy...*, pp. 34, 67-68.

106 J. Sadowska, *Język haseł przedmiotowych Biblioteki Narodowej...*, p. 211.

by creating separate catalogue cards, in which “each [element] becomes a topic on a separate catalogue card and at the same time the subheading (often generalised) of the second topic”.¹⁰⁷

In SHL KABA a relationship between two subjects is expressed by a combination of a topic and a subject subheading with the structure “i [subject]” and “i [geographical name]”,¹⁰⁸ for example: *100 1. |a Tusk, Donald |d (1957-) |x i stosunki międzynarodowe, 110 2. |a Unia Europejska |x i edukacja, 100 0. |a Napoleon |b I |c (cesarz Francuzów ; |d 1769-1821) |x i Europa, 110 2. |a Unia Europejska |x i Polska*. The structure in SHL KABA with the “i” starting the subject subheading is analogous to the structure in SHL NLP with the “a” described further above. The “i” also connects two subjects with a relationship between them. This structure in SHL KABA is modelled on similar structures in RAMEAU and LCSH: “et” in the natural language French and “and” in English can be translated as either “i” or “a”.

It should be noted that in all the languages discussed here, constructions with a subject subheading starting with “i” or “a” combine different types of headings (common name, personal name, name of collective body, geographical name) with just two types of heading in their topic: a common name or geographical name. A geographical name in the subheading expresses the subject entering into the relationship (the country as a state), not the location.

In the transformation of a structure with a geographical name into post-coordinated form, as in the example *110 2. |a Unia Europejska |x i Polska*, the application of the above method leads once again to the problem described earlier. The geographical name from the extended heading cannot be transformed into a geographical descriptor because it was used in the function of a subject, not a location. The same problem occurs when trying to transform a pre-coordinated structure expressing a relationship between countries. Such structures exist in both the subject heading languages discussed:

107 A. Łysakowski, *Katalog przedmiotowy...*, p. 68.

108 In the NUKAT catalogue database both constructions are described in a single record of the total indicative reference *i [...]*.

SHL NLP: 151 .. /a Polska /x polityka /z Francja

SHL KABA: 151 .. /a Polska /x stosunki zagraniczne /z Francja

Subject subheadings 180 .. /x polityka and 180 .. /x stosunki zagraniczne indicate a specific type of relationship between subjects, as opposed to a relationship that is not further defined and which is recorded using a subject subheading starting with “a” or “i”. This type of relationship consists of the juxtaposition of two elements, in the examples above two countries in specific contexts, the first political, the second international. When transforming this type of relationship from a pre-coordinated language into the post-coordinated NLPD, two subject descriptors and an additional aspect descriptor (658 .. /a Polityka, politologia, administracja publiczna) or subject descriptor (650 .. /a Polityka i 650 .. /a Stosunki zagraniczne) could appear. The subjects entering into political or foreign relations are countries expressed in a geographical name. The subjects in the relationship cannot be transformed into geographical descriptors as these are used to indicate the location of a subject, not the subject itself.

SHL NLP also has other structures described as “expressing a particular type of relationship between subjects”:¹⁰⁹ 651 [country] /x a [country] /x [type of relationship], for example 651.. Polska /x a Rosja /x gospodarka. An additional subject subheading expressing, according to the authors of the cited publication, “the type of relationship between subjects” can also be read as indicating the subject of these relations. This structure is thus an example of a multiple complex structure, of the type encountered more often in SHL KABA (see *Subject expressed in a general subheading*, p. 20). In this example the subject of the publication is relations between “Polska” [“Poland”] and “Rosja” [“Russia”], and the subject of these relations is economic. In this case the subject of the document is similar in its semantic scope to the examples 151.. /a Polska /x polityka /z Francja described earlier, but they differ in the way they are written in the syntax of SHL NLP. The effect of transforming this structure into

109 B. Włodarczyk, J. Woźniak-Kasperk, *Język Haseł Przedmiotowych Biblioteki Narodowej...*, p. 136.

NLPD would be the descriptors *65X .. /a Polska*, *65X .. /a Rosja*, *650 .. /a Gospodarka*, with the reservation that both geographical names express the subject, not the location of the subject.

Another example of a relationship of juxtaposition in SHL KABA is extended headings comparing two languages, in which the subheadings *180 .. /x gramatyka porównawcza* and *180 .. /x fonologia porównawcza* are used. These structures juxtapose two languages and, in the course of indexing, two “symmetrical” (reversed) extended headings are created. The use of a language as a subject subheading is unusual for SHL KABA: the established headings for the names of languages do not function as subheadings. For this reason SHL KABA methodology recommends creating combinations of subheadings in the authority file with the structure “*180 .. /x gramatyka / fonologia porównawcza /x język [name of language]*”, also known as “related structures”.

The recording of subject headings in MARC format was a breakthrough in the evolution of pre-coordinated languages. The choice of structure - a simple established heading (single or multi-word) or a complex structure divided into subfields - indicated the direction of further changes in the direction of post-coordination.

There is a difference between cases where, in the course of indexing a document, a relationship between two elements (as the subject of the document) is expressed in pre-coordinated grammar by the syntactical juxtaposition of elements that exist independently (established headings) and cases where that relationship is named by means of a single lexical unit. In the first case, in post-coordinated grammar the subject of the work is expressed in the indexing and reproduced in the search in the same way, that is by juxtaposing independent semantic elements (descriptors) - two of them if the relationship is “not further defined”, and three if the relationship is “concrete”. The relationship (as the subject of the document) is an implied value in this case. In the second case the relationship has its own special name and will be recorded and searched for as the subject of the work. Tables 10 and 11 give examples of the recording of relationships of juxtaposition (as the sub-

ject of the document). In some cases the choice of structure does not seem obvious (for example 150 .. |a *Kobiety i literatura*); this could equally well be recorded in the form of a topic with a subheading, with two descriptors created in the course of the transformation.

To enable users to search for headings in the card catalogue, recording relationships as subjects required creating multiple descriptions. Computerised catalogues using indexes also required the creation of reversed headings.¹¹⁰ Changing the syntax to post-coordinated form significantly reduces the number of access points that need to be created.

TABLE 10. EXPRESSION OF RELATIONSHIPS OF JUXTAPOSITION IN SHL NLP AND MODELLING OF THEIR TRANSFORMATION INTO A DESCRIPTOR LANGUAGE

Heading in SHL NLP	Descriptor for name of relationship	Descriptors for elements entering into the relationship
150 .. a Ojcowie i córki	150 .. a Ojcowie i córki	
151 .. a Polska x a Rosja x handel		151 ^{III} .. a Polska 151 .. a Rosja 150 .. a Handel
151 .. a Polska x polityka z Francja		151 .. a Francja 151 .. a Polska 150 .. a Polityka

TABLE 11. EXPRESSION OF RELATIONSHIPS OF JUXTAPOSITION IN SHL KABA AND MODELLING OF THEIR TRANSFORMATION INTO A DESCRIPTOR LANGUAGE

Heading in SHL KABA	Descriptor for name of relationship	Descriptors for elements entering into the relationship
100 0. a Augustyn c (św. ; d 354-430) x i kobiety		100 0. a Augustyn c (św. ; d 354-430) 150 .. a Kobiety
150 .. a Język polski x gramatyka porównawcza x język francuski		150 .. a Język polski 150 .. a Gramatyka porównawcza 150 .. a Język francuski
150 .. a Kobiety i literatura	150 .. a Kobiety i literatura	
150 .. a Kościół i państwo	150 .. a Kościół i państwo	
150 .. a Ojcowie i córki	150 .. a Ojcowie i córki	
150 .. a Relacja miłość-nienawiść	150 .. a Relacja miłość-nienawiść	
110 2. a Unia Europejska x i edukacja		150 .. a Edukacja 110 2. a Unia Europejska

110 It should be noted that the position of the lexical element in the extended heading in the subject heading language is closely linked to its meaning; the same term used as a topic has a different meaning when used as a subheading.

111 The label for the geographical descriptor in all geographical names in the right-hand column of Table 10 does not agree with the nature of the designate of the descriptor (see *Subject expressed in the topic of the heading*, p. 10).

The second type of relationship between subjects is one of dependency. Łysakowski describes this as a “causal relationship”, “influences, etc.”.¹¹²

In subject headings expressing a relationship of dependency, the elements constituting them are not equivalent. According to LCSH methodology:

constructions of this type are possible because the work being indexed focuses mainly on the effect, influence or relationship from the perspective of the main subject, represented by the topic itself, with a secondary emphasis on another subject, which is a subject having an effect or influence, represented by the subheading.¹¹³

The description of this type of structure contains elements that can be seen as a definition of a type of relationship:

- the differentiation of two subjects with a different degree of “exposure” in the document being catalogued, namely a primary subject and a secondary subject
- the dependency between the subjects, without which it is not possible to express the subject of the document

Among the subheadings used in these constructions (relationships of dependency), LCSH includes the following: *180 .. /a Effect of [...] on*, *180 .. /a [...] influences*, *180 .. /a Psychological aspect*, *180 .. /a Social aspect*. The last two examples – *180 ... /a Psychological aspect* and *180 ... /Social aspect* – can be viewed differently, namely as expressing the aspect in which the subject of the document expressed in the topic is presented (see *Aspect of the subject*, p. 33, for a detailed discussion of this issue).

SHL NLP and SHL KABA both have constructions expressing relationships of dependency. Such relationships are expressed in the form of a single extended subject heading (examples of such subheadings in SHL KABA: *150 .. /a dzieła* – [domain], *150 .. /a kariera* – [domain], *150 .. /a kolekcje* [type of collection], *150 .. /a rozszczenia wobec*

112 A. Łysakowski, *Katalog przedmiotowy...*, p. 34.

113 Library of Congress. *Subject Heading Manual* – <https://www.loc.gov/aba/publications/FreeSHM/freeshtm.html> [accessed 14.12.2019], H0310 – <https://www.loc.gov/aba/publications/FreeSHM/H0310.pdf> [accessed 14.12.2019].

[...],150 .. *la wkład do [...]*,150 .. *la zbiory specjalne* – [type of collection]; and in SHL NLP: 150 .. *la stosowanie* – [domain], 150 .. *la udział* [country, nationality], 150 .. *la wpływ na [...]*; 50 .. *la wpływ na [...]*) or in the form of two subject headings (examples from SHL KABA: 180 .. *lx wpływ*, 180 .. *lx w sztuce*, 180 .. *lx w literaturze*; and in SHL NLP: 180 .. *lx w sztuce*, 180 .. *lx w teatrze*, etc.) (Tables 12 and 13).

TABLE 12. EXPRESSION OF RELATIONSHIPS OF DEPENDENCY IN SHL NLP AND MODELLING OF THEIR TRANSFORMATION INTO A DESCRIPTOR LANGUAGE

Headings - 1 heading in SHL NLP	Headings - 2 headings in SHL NLP	Descriptors
150 .. <i>la Detektor promieniowania lx stosowanie lx medycyna</i>	150 .. <i>la Kobieta lx w sztuce</i> 155 .. <i>la Ekslibrisy lx tematyka</i>	150 .. <i>la Detektor promieniowania</i> 150 .. <i>la Medycyna</i> 150 .. <i>la Kobieta</i> 150 .. <i>la Ekslibrisy</i> 150 .. <i>la Tematy i motywy</i>
150 .. <i>la Sole lx wpływ na środowisko</i>		150 .. <i>la Sole</i> 150 .. <i>la Środowisko człowieka</i>

TABLE 13. EXPRESSION OF RELATIONSHIPS OF DEPENDENCY IN SHL KABA AND MODELLING OF THEIR TRANSFORMATION INTO A DESCRIPTOR LANGUAGE

Headings - 1 heading in SHL KABA	Headings - 2 headings in SHL KABA	Descriptors
	100 1. <i>la Andersen, Hans Christian</i> [d (1805-1875)] <i>lx wpływ</i> 150 .. <i>la Literatura polska ly 20 w.</i> <i>lx historia i krytyka</i>	100 1. <i>la Andersen, Hans Christian</i> [d (1805-1875)] 150 .. <i>la Literatura polska</i> 150 .. <i>la Wpływ i recepcja</i>
100 1. <i>la Claudel, Paul</i> [d (1868-1955)] <i>lx kariera lx dyplomacja</i>		100 1. <i>la Claudel, Paul</i> [d (1868-1955)] 150 .. <i>la Dyplomacja</i>
151 .. <i>la Stany Zjednoczone lx roszczenia wobec Niemiec</i>	150 .. <i>la Śmierć lx w literaturze</i> 100 1. <i>la Krasiński, Zygmunt</i> [d (1812-1859)] <i>lx tematy, motywy</i>	151114 .. <i>la Stany Zjednoczone</i> 151 .. <i>la Niemcy</i> 150 .. <i>la Roszczenia wojenne</i> 115 150 .. <i>la Śmierć</i> 100 1. <i>la Krasiński, Zygmunt</i> [d (1812-1859)] 150 .. <i>la Tematy i motywy</i>

The transformation of constructions expressing a relationship of dependency is identical to that used for juxtaposition, with one exception: apart from the two subjects, it is also necessary to name

- 114 B. Włodarczyk, J. Woźniak-Kasperek, *Język Hasel Przedmiotowych Biblioteki Narodowej...*, p. 136.
- 115 NLPD does not have the subject descriptor *Roszczenia wojenne* [14.06.2019]; it was proposed for the purpose of the transformation of SHL KABA.

the relationship itself. Where the relationship of juxtaposition is not defined in the course of the transformation, two independent elements are created. Where the relationship of juxtaposition is defined, its character is expressed in the additional element. With a relationship of dependency, it is always necessary to specify the type of relationship.

CONCLUSION

The main reason subject heading languages are incompatible with modern library catalogues is a particular feature of their grammar, namely their pre-coordinating syntax. Our analysis of the methodological sources and a comparison with the effects of using MARC format to record data - a fundamental shift in the development of these languages - reveals that some things have been done correctly and others incorrectly. Our findings indicate that a diachronic analysis is needed in order to determine the direction in which the languages in question will develop in future. Such an analysis enables us to understand the current state of the principles and methodological considerations, so that they can be corrected as necessary.

This analysis of the evolution of ISLs represents a starting-point for further research. The post-coordinated language NLPD is built on the basis of a rich vocabulary inherited from its two predecessors: its direct predecessor SHL NLP, and SHL KABA, initially planned as an “auxiliary” language. One of the main principles of the creation of NLPD has been the goal of making its vocabulary close to that of natural language (Polish), and this has been put into practice right from the outset. However, the compatibility of that vocabulary on an international level requires separate investigation.

Translated by Nick Ukiah

SUMMARY

The modern post-coordinated indexing language developed and used by the National Library of Poland since 2017 - the National Library of Poland Descriptors (NLPD) - replaces the traditional pre-

coordinated subject heading language of the National Library of Poland (SHL NLP). The vocabulary of NLPD is further enriched by transforming subject heading descriptions from the pre-coordinated subject heading language KABA (SHL KABA).

Transforming a pre-coordinated into a post-coordinated language primarily involves getting rid of the syntax used in the pre-coordinated language to rank the subject headings in a catalogue giving metadata in index form. The faceted presentation of the post-coordinated system allows the use of any desired combination of concepts.

The first stage in transforming the pre-coordinated languages in question is identifying the meanings expressed by the syntax (the position of lexical units determines their meaning) and recorded in MARC 21 format, originally created to meet the needs of card catalogues. For meanings generally referring to the subject matter of publications, we must distinguish elements such as simple, detailed subjects, implied subjects, the “aspect” (Polish: *ujęcie*) of subjects and different types of relationships between subjects. Correctly identifying these meanings enables us to move on to the second stage of the transformation process, which is recording those meanings as lexical units that can be used freely in NLPD.

KEYWORDS: National Library of Poland descriptors (NLPD), subject heading language transformation, pre-coordinated language, post-coordinated language, National Library of Poland (SHL NLP), KABA, MARC 21, syntax of pre-coordinated language, grammar of pre-coordinated language