

Closed, lang or gespannt? Describing Articulation of Dutch Vowels from a Polyconfrontative (and Didactic) Perspective

By analyzing the descriptions of Dutch vowels in the selected literature in four languages (Dutch, Polish, German and English), this paper addresses issues at the intersection of terminology and phonetics, while also placing them in the context of comparative research to provide a new broader perspective. The starting point are the articulatory features of vowels based on which the course of vocalic articulation is later described separately for every language. Material for the analysis comes from two sources per language. In the first part of the analysis, a question about the (lack of) quality of terminology used in the material is being answered, followed by indicating different interpretive traditions of vowel description in the given language, which are e.g. expressed by the use of terms such as “closed”, “lang” and “gespannt”. The second part of the analysis uses the multilingual nature of the corpus to provide a polyconfrontative view of the problem. It is being shown that the terms used in the descriptions in the four chosen languages are hardly international in nature which makes finding equivalents quite difficult. This lack of equivalence in the descriptions not only makes the language comparison harder but also impacts the didactics of pronunciation, as students of Dutch have to re-learn terminology in this language even if they learned it in Polish, English or German.

Keywords: terminology, describing vowel articulation, language comparison, Dutch, English, German, Polish

Geschlossen, lang oder gespannt? Die Beschreibung der Artikulation niederländischer Vokale aus einer polykonfrontativen (und didaktischen) Perspektive

Durch die Analyse der Beschreibungen niederländischer Vokale in der ausgewählten Fachliteratur in vier Sprachen (Niederländisch, Polnisch, Deutsch und Englisch), werden in diesem Beitrag Probleme an der Schnittstelle von Terminologie und Phonetik behandelt und gleichzeitig in den Kontext der vergleichenden Forschung gestellt, um eine neue, breitere Perspektive zu eröffnen. Ausgangspunkt sind die artikulatorischen Merkmale der Vokale, anhand derer der Verlauf der vokalischen Artikulation später für jede Sprache gesondert beschrieben wird. Das Material für die Analyse stammt aus zwei Quellen pro Sprache. Im ersten Teil der Analyse wird die Frage nach der (mangelnden) Qualität der im Material verwendeten Terminologie beantwortet, gefolgt von einem Hinweis auf unterschiedliche Interpretationstraditionen der Vokalbeschreibung in der jeweiligen Sprache, die sich z.B. in der Verwendung von Begriffen wie „geschlossen“, „lang“ und „gespannt“ ausdrücken. Der zweite Teil der Analyse nutzt die Mehrsprachigkeit des Korpus, um eine polykonfrontative Sicht auf das Problem zu ermöglichen. Es wird gezeigt, dass die in den Beschreibungen verwendeten Begriffe in den vier ausgewählten Sprachen kaum international sind, was die Suche nach Äquivalenten sehr schwierig macht. Dieser Mangel an Äquivalenz in den Beschreibungen erschwert nicht nur den Sprachvergleich, sondern wirkt sich auch auf die Didaktik der Aussprache aus, da Schüler der niederländischen Sprache die Terminologie in dieser Sprache neu lernen müssen, selbst wenn sie sie in Polnisch, Englisch oder Deutsch gelernt haben.

Schlüsselwörter: Terminologie, Vokalenartikulationsbeschreibung, Sprachvergleich, Niederländisch, Englisch, Deutsch, Polnisch

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1. Introduction

As Haspelmath states, standardization, expressed, among other things, through the use of common terminology, is highly beneficial not only for technology and economy, but also for many fields of science as terminology helps the scientists to communicate efficiently about their domain of study (2021: 35). Phonetics, as a scientific discipline, is no exception: it must have developed its own terminology over the years, the use of which should ensure efficient and qualitative communication regarding topics of interest within the discipline.¹ This should be considerably easier because that articulatory phonetics is one of the disciplines of linguistics that is closely related to the exact sciences: on the one hand, we have a biological basis in the form of the vocal tract and speech organs, and on the other hand, the sounds produced by those organs are real and physically measurable units. Still, the question that arises here is to what extent the above assumption works in practice, especially when we take in to consideration that terms can be interpreted from different perspectives even in the same language (Danielewiczowa 2018: 14, Jankowska 2020: 207) – and definitely when more languages are being compared.

Another important inspiration for this text comes from the own experiences of the author regarding the use of terminology in the didactic context, where one of the interlocutors is a student – that is, not a specialist. Specifically, this could be, for example, a first-year student participating in classes on practical phonetics, in which he or she more or less actively comes into contact with descriptions of sound production which are e.g. full of specific terms. At the same time, this didactic context is – again – multilingual in nature, as it involves, for example, switching between the students' native language and the foreign language or comparing the foreign language with other foreign languages the student already knows.

The starting point for the analysis will be the eight articulatory features of vowels and the terminology used in the description of those features. In order to limit the field of research, this text will focus on this relatively small but nevertheless very interesting field, namely the descriptions of Dutch vowels (and terminology used in those descriptions) in selected sources in four languages: Dutch, English, German and Polish. The main goal of the analysis will be to answer some questions, starting with the question of whether phonetics has indeed developed its own way when it comes to describing vowel articulation using specific terminology. Second, we will look at how qualitative the terminology used in the articulatory descriptions of vowels actually is. As an indicator of quality, we take, first, whether the terms associated with each feature accurately reflect the course of the articulatory phase in question, and, second, whether the terms

¹ An indication that this did happen (at least in part) is the existence of specialized dictionaries and compendia of phonetic terminology (Bose et al. 2016 for German, Trask 1996 for English, etc.).

conform to rules of forming good terminology (e.g., the unambiguity principle). We will first do that for every language separately and then we will look at the descriptions and terminology from polyconfrontative point of view, as it will help to relativize results in a more comprehensive and efficient way than the traditional confrontation or comparison of just two languages (Tworek 2004: 258). Here we will try to answer the question of whether the terms used in the chosen languages (Polish, Dutch, German, English) have an international character and can be considered equivalents, or whether we are dealing with different interpretive traditions that complicate finding equivalents and comparing descriptions. Finally, we return to the didactic aspect by answering the question of how the results of the analysis translate to the reality of pronunciation training within higher education and NVT (Nederlands als Vreemde Taal, Dutch as foreign language).

2. Articulatory description of vowels

Starting off, we should point out that articulatory description refers to the specific settings of the speech organs characteristic of a given sound (in this case: a vowel), as contrast to phonological description, which is based on the so-called distinctive features. This distinction is important because articulatory features are universal, i.e. language-independent, while distinctive features have a language-specific character. Therefore, the number of distinctive features may vary between languages: for example, in Polish there are four distinctive features of the vowels and in Dutch – five (Czerwonka-Wajda 2022: 49). For this reason, organizing the description around articulatory features makes the creation of corresponding descriptions easier which is especially important in the context of cross-linguistic comparisons.

For an articulatory description of vowels to be considered complete, eight parameters must be taken into account, some of which are realized in chronological order and others throughout the articulation of a given vowel. Let's start with the chronologically realized articulatory features as in table 1.

Articulatory feature	Comment
1. Direction of the airflow during articulation	In this regard, sounds are generally divided into expiratory and inspiratory. In the first case, the airflow moving from the lungs to the outside is modified by the position of the speech organs, and in the second – the airflow is moving toward the lungs. In a normal course of articulation (no problems with articulatory apparatus, no articulation during crying, etc.) vowels are expiratory.
2. Voicing	In this regard, sounds are generally divided into voiced (vocal cords vibrate during articulation) and voiceless (vocal cords do not vibrate during articulation). With normal articulation (no problems with articulator, no whispering, etc.), vowels are voiced.

Articulatory feature	Comment
3. Orality/Nasality	In this regard, sounds are generally divided into oral (soft palate and uvula in raised position, airflow goes out in its entirety through the oral cavity) and nasal (soft palate and uvula in lowered position, airflow goes out partly through the nasal cavity and partly through the oral cavity). Most vowels are oral, but there are also languages with nasal vowels (e.g., French).
4. Tongue backness (horizontal dimension)	This articulatory characteristic is of much importance for the articulation of vowels: the airflow entering the oral cavity is modified by the activity of the particular part of the dorsum (tongue back), the pre-, medio- or postdorsum, which will be moved towards the palate. On this basis, vowels are generally divided into three major groups: front (predorsal), central (mediopredorsal), and back (postdorsal) vowels.
5. Tongue height (vertical dimension)	Airflow in the oral cavity is further modified by the vertical position of the part of the dorsum that is active in the articulation of a given vowel. Depending on how high up the particular part of the dorsum goes, we can generally distinguish high, medium and low vowels.
6. Shape of the lip	Before the air leaves the oral cavity, it is modified by the position of the lips, which actually arises directly from the position of the corners of the mouth. There are generally three possible shapes of the lips: if the corners of the mouth are close(er) together, we are dealing with rounded lips (and the vowel is then called rounded). If the corners of the mouth are far (further) apart, we are dealing with spread lips (and the vowel is then called spread or not rounded). The last position is the so-called neutral position, where the corners of the mouth are not moved (the vowel is then called nor round, nor spread, not rounded or neutral).

Tab. 1. Chronologically realized articulatory features

The last two features, being vowel tenseness and vowel duration, break the chronological scheme of the course of articulation that we have covered so far, as they are realized throughout the process of vowel production. Consequently, the literature on this subject often establishes a link between these two features, i.e., longer articulation time is associated with more tenseness and shorter articulation time – with less tenseness (where this should be considered only as a tendency and not a rule, since there are also tense vowels which are short and lax vowels which are long). However, some sources choose to characterize vowels only in terms of one feature, namely duration. From an articulatory perspective, it is not appropriate because, first, the duration of a vowel is highly dependent on the rate of speech and, second, because simply lengthening the articulation time is not enough to give the vowel the correct sound (e.g., lengthening of an [ɛ] will not make it sound like a tense [e]). Therefore, both features will be treated separately in table 2.

Articulatory feature	Comments
7. Tenseness	This articulatory feature is the result of the muscles responsible for the position of the articulatory organs getting tense during the production of a given vowel. If the muscles become (more) tense, then we are dealing with tense vowels and if there is no (or hardly any) tension, then we are dealing with lax vowels. This classification is important in some languages (e.g., English, German) in which tension is a distinctive feature, i.e., vowels form pairs with respect to tension (e.g., tense [i] vs. lax [ɪ], tense [o] vs. lax [ɔ], etc.).
8. Duration	This articulatory characteristic of vowels is associated with the time for which a given articulatory position must be held to produce a given vowel. Traditionally, a distinction is made in that regard between long and short vowels, this dichotomy being important in some languages (e.g. Czech) in the sense that duration is also a distinctive feature, i.e. vowels form pairs relative to shorter or longer articulatory time (e.g. short [a] vs. long [a:]). Yet, there are no top-down measurements: realistically, one should be able to recognize longer and shorter pronounced vowels in the pronunciation of a given speaker.

Tab. 2. Articulatory features realized throughout the process of vowel production

3. Terminology for description of articulation of Dutch vowels – material analysis

Before we proceed to the analysis of the collected material, it is necessary to mention how the to be analyzed sources have been chosen. Due to limited publication space, the number of sources has been reduced to two per language, with one publication being a classic monography for the language combination in question. The other publication is either a recent publication or a text used in a didactic context, i.e. when working with students of Dutch in a particular country. It has also been taken into account that the sources include descriptions and terminology used in phonetic – rather than phonological – context. Further, as stated in de introduction, the material analysis will be first done for every language separately and after the analysis for individual languages is completed, a comparative analysis will be carried out.

3.1 Dutch

Dutch descriptions of vowel articulation come from the following two sources: the classical monography by Rietveld and van Heuven (2001; hereinafter abbreviated as AF) and the chapter „De klankleer van het Nederlands” from the most recent electronic edition of *Algemene Nederlandse Spraakkunst* (2020; ANS). Table 3 sums up description of eight articulatory features als presented in section 2, including terminology

used in those descriptions. If an articulatory feature has not been mentioned at all, is it is also stated („not mentioned”).

Articulatory feature	Description
1. Direction of the airflow during articulation	AF: mentioned → “egressief”
	ANS: not mentioned
2. Voicing	AF: mentioned as one of “minor features” → “stemhebbendheid, stemhebbend”
	ANS: not mentioned
3. Orality/Nasality	AF: orality not mentioned, nasality mentioned indirectly (only in transcription)
	ANS: orality not mentioned, nasality mentioned → “genasaleerde lange versies van inheemse klinkers”
4. Tongue backness (horizontal dimension)	AF: mentioned → “voorklinkers, centrale klinkers, achterklinkers”
	ANS: mentioned → primarily as oppositon “voorklinkers-achterklinkers”, than extended with [ə] as “centrale klinker”
5. Tongue height (vertical dimension)	AF: mentioned → “hoog, laag; hoge en lage klinkers”; additionally: “hoog = gesloten, laag = open”
	ANS: mentioned, but primary feature is de opening level → “gesloten (ook wel hoog), half gesloten (ook hoog-midden), half open (ook laag-midden), open (ook laag)”
6. Shape of the lips	AF: mentioned → opposition “geronde vs. ongeronde klinkers”
	ANS: mentioned → primarily as opposition “gerond vs. ongerond”, than extended to “onggerond, neutraal, gespreid”
7. Tenseness	AF: mentioned → “gespannen, ongespannen klinkers”; secondarily tenseness is described as irrelevant – describing duration is enough
	ANS: mentioned → “gespannen, ongespannen klinkers”; secondarily tenseness is described as irrelevant – describing duration is enough
8. Duration	AF: mentioned but only as “minor feature” → “korte, lange klinkers”; at one point in the text we come across adjective “halflang”
	ANS: not mentioned as a separate feature – duration is only described in relation to tenseness → “korte (ongespannen), half-lange (gespannen), lange (gespannen) klinkers”

Tab. 3. Material from Dutch sources

As we can see, both Dutch sources do not pay much attention to the first three articulatory features. It is probably caused by the fact that those features aren't distinctive in Dutch: all basic Dutch vowels are expiratory, voiced and oral (the nasal ones can only be found in French loan words). When it comes to the articulatory features being also the distinctive ones, we can observe a tendency to primarily describe them in terms of two opposed terms (e.g. *geronde vs. ongeronde klinkers*, *gespannen vs.*

ongespannen klinkers) which seems to be a rather phonological way of describing vowels. Only secondarily are those oppositions being extended with third option in ANS (e.g. [ə] as “centrale klinker”; lip position divided in “ongerond, neutraal, gespreid”). Quite interesting is the feature tongue height, where both sources use two different sets of terms to describe the vertical dimension, putting the equals sign between them (“hoog = gesloten, laag = open”). But most interesting are definitely the descriptions of tenseness and duration. When discussing tenseness both AF and ANS consider this feature less important than duration. Apparently, however, the authors forgot this when describing duration itself, because AF describes duration as a “minor feature” and does not go beyond introducing the contrast “kort/lang” (only in one place “halflang” suddenly appears, without any further explanation of the meaning of the term). Same goes for ANS where duration has no further characterization; it is described only in connection with tense, which had previously been identified as irrelevant to the description.

3.2 English

English descriptions of vowel articulation come from the following two sources: chapter “The sounds of Dutch – phonetic characterization” from the classical monography “The phonology of Dutch” by Booij (1995; PD) and from a more didactically oriented book by Collins en Mees “The Phonetics of English and Dutch” (1996; PED). Table 4 sums up description of eight articulatory features also presented in section 2, including terminology used in those descriptions. If an articulatory feature has not been mentioned at all, it is also stated (“not mentioned”).

Articulatory feature	Description
1. Direction of the airflow during articulation	PED: not mentioned
	PD: not mentioned
2. Voicing	PED: mentioned only in the general introduction to vowels → vowels are “typically voiced”
	PD: not mentioned
3. Orality/Nasality	PED: orality not mentioned, nasality mentioned → nasal vowels
	PD: orality not mentioned, nasality mentioned → nasal vowels
4. Tongue backness (horizontal dimension)	PED: mentioned → primarily as opposition front-back vowels, than extended with [ə] as central vowel
	PD: mentioned → front, central, back vowels
5. Tongue height (vertical dimension)	PED: not mentioned, instead we have degree of opening → close, close-mid, open-mid, open
	PD: not mentioned, instead we have degree of opening → close, half close, half open, open

Articulatory feature	Description
6. Shape of the lips	PED: mentioned → spread, neutral, rounded vowels
	PD: mentioned indirectly → feature “rounded +/-” is only presented in a summary table with all features of vowels
7. Tenseness	PED: not mentioned
	PD: not mentioned
8. Duration	PED: mentioned → long, short vowels + relativity of this feature is also mentioned; there are also alternative terms present: checked (= short) en free (= long) vowels
	PD: mentioned indirectly in a summary table with all features of vowels → long, short vowels; relativity of this feature is also mentioned, followed by description of allofonic variation of duration before <r>

Tab. 4. Material from English sources

English sources do not pay much attention to the first two articulatory features, as those aren't distinctive in Dutch. When it comes to orality/nasality, both PED and PD mention the nasal vowels, indicating their status as loan vowels from French. An interesting point in the English sources seems to be the tongue height: the vertical dimension is not being described in terms of how high the particular part of tongue back is pulled upward. Instead we have a less direct approach based on the opening degree of the articulation space in the oral cavity – additionally with two different sets of terms for the middle degrees (close-mid, open-mid in PED vs. half close, half open in PD). Of course both ways of describing the vertical dimension are to some point related (i.e. the higher a certain part of the tongue ridge is pulled upward, the smaller the opening degree, i.e. less space in the oral cavity for air to pass through), but a description based on opening degree has is clearly less precise: the terms open/closed can also be associated with, for example, closing or opening of the mouth during articulation. For the shape of the lips we have a different approach in both sources: PED gives us three options, dividing vowels in spread, neutral and rounded, while PD doesn't mention the lips in the vowel description at all. Lastly, it should be indicated that both sources do not at all mention tenseness in the descriptions. Instead they concentrate on the duration (long, short vowels) or, as PED, introduce yet another division in checked and free vowels.

3.3 German

German descriptions of vowel articulation come from the following two sources: the classical comparative monography “Kontrastive Phonemik Deutsch-Niederländisch, Niederländisch-Deutsch” by Morciniec (1994; KPND) and from a publication by Werner en Müller “Phonetik international: Niederländisch” (n.d.; PIN), published for teaching purposes at no longer existing Dutch Department of Universität Leipzig.

Table 5 sums up description of eight articulatory features als presented in section 2, including terminology used in those descriptions. If an articulatory feature has not been mentioned at all, is it is also stated (“not mentioned”).

Articulatory feature	Description
1. Direction of the airflow during articulation	KPDN: not mentioned
	PIN: not mentioned
2. Voicing	KPDN: not mentioned
	PIN: not mentioned
3. Orality/Nasality	KPDN: orality not mentioned, nasality mentioned → “nasale, orale Vokale”
	PIN: not mentioned
4. Tongue backness (horizontal dimension)	KPDN: mentioned → “vordere, zentrale, hintere Vokale”
	PIN: mentioned indirectly in a table with summary table with features of vowels, without further explanation → “vorn, zentral, hinten”
5. Tongue height (vertical dimension)	KPDN: mentioned → in general: “hohe, mittlere, tiefe Vokale”; in detail: “hoch, halbhoch, halbtief, tief”
	PIN: not mentioned, instead we have degree of opening → “geschlossene, halb geschlossene, mittlere, halb offene, offene Vokale”
6. Shape of the lips	KPDN: mentioned → primarily as oppositum “gerundete vs. ungerundete Vokale”, than extended with [ə] as a vowel “mit neutraler Lippenstellung”
	PIN: not mentioned
7. Tenseness	KPDN: mentioned → “gespannte, ungespannte Vokale“
	PIN: mentioned → “gespannte, ungespannte Vokale“
8. Duration	KPDN: mentioned → “kurze, lange Vokale”; than extended with allofonic variation with three degrees of duration: “kurz, halblang, lang”
	PIN: mentioned → “kurze, halblange, lange Vokale”

Tab. 5. Material from German sources

German sources do not at all pay attention to the first two articulatory features, as those – as we already mentioned – aren’t distinctive in Dutch. When it comes to orality/nasality, only KPDN distinguishes between “orale” and “nasale Vokale”. Both KPDN and PIN use the same terminology to describe the horizontal dimension of the tongue movement (“vordere, zentrale, hintere Vokale”), but for the description of the vertical dimension we can observe a different approach. KPDN describes the vowels in terms of height (four degrees of it) while PIN chooses for a less direct approach based on the opening degree of the articulation space in the oral cavity (with five degrees). For the shape of the lips we have a different approach in both sources: KPDN gives us primarily two options, dividing vowels in “gerundete” and “ungerundete Vokale”, than adding the [ə] as a vowel “mit neutraler Lippenstellung”, and PIN doesn’t mention the lips at

all in the vowel description. When it comes to tenseness and duration, both sources use the same terminology, describing both features separately.

3.4 Polish

Polish descriptions of vowel articulation come from the following two sources: the classical monography “Wymowa języka niderlandzkiego” by Prędoła (1998; WJN) and a recently published monography “Wymowa samogłosek niderlandzkich przez osoby polskojęzyczne. Teoria, praktyka i dydaktyka” by Czerwonka-Wajda (2022; WSN) which, as the title states, is more didactic-oriented. Table 6 sums up description of eight articulatory features also presented in section 2, including terminology used in those descriptions. If an articulatory feature has not been mentioned at all, it is also stated (“not mentioned”).

Articulatory feature	Description
1. Direction of the airflow during articulation	WJN: not mentioned
	WSN: mentioned → “ekspiracyjny”
2. Voicing	WJN: not mentioned
	WSN: mentioned → “dźwięczny”
3. Orality / Nasality	WJN: not mentioned
	WSN: mentioned → “samogłoski ustne, nosowe”
4. Tongue backness (horizontal dimension)	WJN: mentioned → “samogłoski przednie, środkowe, tylne”
	WSN: mentioned → “samogłoski predorsalne, mediodorsalne, postdorsalne”
5. Tongue height (vertical dimension)	WJN: mentioned → “samogłoski wysokie, średniowysokie, średnie, niskie”
	WSN: mentioned → “samogłoski wysokie, średnie, niskie”
6. Shape of the lips	WJN: mentioned → opposition “samogłoski zaokrąglone vs. niezaokrąglone”
	WSN: mentioned → in general: “samogłoski zaokrąglone, rozciągnięte, neutralne”; in detail: there is also a relation between lip position and tongue height (e.g. [i] is more spread than [ɛ])
7. Tenseness	WJN: mentioned indirectly → in the description of some vowels (e.g. [e]) it is pointed out that those are produced with more tenseness than Polish vowels
	WSN: mentioned → in general: “samogłoski napięte, nienapięte”; in details the nature of tenseness is explained (vowels can be less or more tense)
8. Duration	WJN: mentioned → in general: “samogłoski krótkie, półdługie, długie”; in detail: the allofonic variation in the duration of vowels is described
	WSN: mentioned → in general: “samogłoski krótkie, półdługie, długie”; in detail: the allofonic variation in the duration of vowels is described

Tab. 6. Material from Polish sources

The first thing that catches the eye when we analyse the material from both Polish sources, is the different approach to the first three articulatory features, which aren't distinctive: WJN doesn't mention them at all even though they are an important part of the pronunciation of Dutch vowels. WSN on the other hand is oriented towards articulatory phonetics and describes the articulation of Dutch vowels in great detail from the start. This can also be seen in the descriptions of the shape of the lips where WJN only presents two positions ("samogłoski zaokrąglone, niezaokrąglone"), while WSN mentions three ("samogłoski zaokrąglone, rozciągnięte, neutralne"). Another interesting point is how WSN describes the horizontal dimension of the tongue movement as it abandons the use of terms such as front, central and back vowels. This was a conscious decision of the author who considered these terms to be insufficiently precise because they can refer not only to the use of a particular part of the tongue back, but also to the part of the oral cavity space where articulation takes place. Instead, following the example of some German-language publications (e.g. Tworek 2012: 95), the terms predorsal/mediodorsal/postdorsal are introduced, which much more precisely define which part of the tongue back is being pulled up during the articulation of certain groups of vowels. When it comes to tenseness, WSN is again more accurate in the description than WJN. On the other hand, both sources are evenly detailed about describing duration of Dutch vowels.

4. Description of articulation of Dutch vowels – a polyconfrontative comparison

After we described the material for all the languages separately, a polyconfrontative comparison can be carried out. For better clarity and to easier interlingual comparison of data, it was chosen to present the data again in the form of a table, but this time each table will consist of five columns. The first one contains the name of the articulatory feature and in the remaining four – the terminology taken from the eight sources in Dutch, English, German and Polish, respectively (only followed by shortened description when necessary). If an articulatory feature is not mentioned, abbreviation NM will be used.

Let us move on to the analysis of the first three articulatory features: direction of the airflow during articulation, voicing and orality/nasality, which can be found in Table 7.

Articulatory feature	NL	EN	DE	PL
1. Direction of the airflow	AF: "egressief" ANS: NM	PED: NM PD: NM	KPDN: NM PIN: NM	WJN: NM WSN: "ekspiracyjny"
2. Voicing	AF: minor feature, "stemhebbendheid, stemhebbend" ANS: NM	PED: typically voiced PD: NM	KPDN: NM PIN: NM	WJN: NM WSN: "dźwięczny"

Articulatory feature	NL	EN	DE	PL
3. Orality/ Nasality	AF: nasality mentioned in transcription only, orality NM ANS: orality NM; “genasaleerde lange versies van inheemse klinkers”	PED: orality NM; nasal vowels PD: orality NM; nasal vowels	KPDN: “nasale, orale Vokale” PIN: NM	WJN: NM WSN: “samogłoski ustne, nosowe”

Tab. 7. Direction of the airflow during articulation, voicing and orality/nasality

As we can see, the general tendency in the analysed sources is to disregard describing the articulatory features which aren't distinctive. This may be due to the influence of phonological traditions as phonology only describes phonemes in terms of distinctive features. The two sources, that generally seem break out of this pattern, are AF and WNS – both definitely phonetically oriented. Amongst the non-distinctive features, nasality appears to be the most mentioned one, but only because Dutch borrowed some words from French (e.g. *genre*, *chanson*, *restaurant*) together with nasal vowels which they contain. If it weren't from that, this articulatory feature would probably be as absent from the descriptions as orality.

The following articulatory features will also be distinctive features – therefore, the material for the analysis will be more extensive and varied. It can be very well seen in the exploration of the next articulatory feature, dorsality, of which the results are collected in Table 8.

Articulatory feature	NL	EN	DE	PL
Dorsality	AF: “voorklinkers, centrale klinkers, achterklinkers” ANS: “voorklinkers-achterklinkers” + [ə] as “centrale klinker”	PED: front-back vowels + [ə] as central vowel PD: front, central, back vowels	KPDN: “vordere, zentrale, hintere Vokale” PIN: only indirectly; “vorn, zentral, hinten”	WJN: “samogłoski przednie, środkowe, tylne” WSN: “samogłoski predorsalne, medio-dorsalne, postdorsalne”

Tab. 8. Dorsality

First of all it should be noted that most of the sources follow the path of dividing Dutch vowels into three groups, naming them front, central and back vowels. At the same time two sources (ANS and PED) are taking a little bit different approach by primarily relying on the typically phonological dichotomy front vs. back vowels and only secondarily bringing attention to the one element of the system that refracts this opposition: the central [ə]. Putting aside whether it is better to describe dorsality in

terms of two of three options, it would be first of all advisable to consider whether the terms front, central and back accurately reflect the course of this stage of vocal articulation, as they are more connected to describing the part of the oral cavity than the movement of the tongue back itself. And this is where last source, WNS, takes a different approach: it still divides vowels into three categories but chooses to name them differently: “samogłoski predorsalne, mediodorsalne, postdorsalne”. As we already stated, the author claims to have made a conscious decision to use this particular terms, as they more accurately reflect which part of the tongue back is being pulled up during the articulation of certain groups of vowels.

The next articulatory feature in question is tongue height. The results of analysis of this feature by source and language are presented in Table 9.

Articulatory feature	NL	EN	DE	PL
Tongue height	AF: “hoog, laag; hoge en lage klinkers; also: hoog = gesloten, laag = open” ANS: primary feature is degree of opening; “gesloten (ook wel hoog), half gesloten (ook hoog-midden), half open (ook laag-midden), open (ook laag)”	PED: NM, instead degree of opening; close, close-mid, open-mid, open PD: NM, instead degree of opening; close, half close, half open, open	KPDN: in general: “hohe, mittlere, tiefe Vokale”; in detail: “hoch, halbhoch, halbtief, tief” PIN: n.m., instead degree of opening; “geschlossene, halb geschlossene, mittlere, halb offene, offene Vokale”	WJN: “wysokie, średniowysokie, średnie, niskie” WSN: “samogłoski wysokie, średnie, niskie”

Tab. 9. Tongue hight

The attempt to describe movement of the tongue in the vertical dimension (up-down) from the articulatory perspective is perhaps the most interesting of the articulatory features discussed so far. First, we can clearly see that we are dealing with two traditions of description. The first one, to be found in KPDN, WJN and WNS, describes the hight directly, stating how high a particular part of the tongue back is being pulled upwards. The second one, Anglo-Saxon, is derived from the work of Jones (1962) and phonological descriptions (e.g., Chomsky/Halle 1968), and characterizes height by relating it to the opening degree of articulatory space in the oral cavity. This type of description, less accurate as we already stated in 3.2, can be found in both English-language sources, which is not surprising, but, interestingly, also in one of the German ones (PIN). But most interestingly, both Dutch sources seem to be in between the two traditions: we are dealing there with a combination of both sets of terms, even with an equality sign between them. A second issue that requires attention, is specifying the

degrees of opening or height. Again, differences can be noted: in some descriptions we have only two degrees of opening (AF: “gesloten, open”), in other – four (PED, PD), and in yet other – five (PIN with “geschlossene, halb geschlossene, mittlere, halb offene, offene Vokale”). The same goes for degrees of height: from two (AF), over three (WSN) to four (WJN). The last point, and at the same time also a terminological problem, is that, even if we are dealing with a consistent number of degrees of opening (four in both English-language sources) their names differ partially (PED: close, close-mid, open-mid, open vs. PD: close, half close, half open, open). These are certainly disadvantages from a didactic perspective.

The last of the chronologically realized articulatory features is the shape of the lips. The results of analysis of this feature by source and language are collected in Table 10.

Articulatory feature	NL	EN	DE	PL
Shape of the lips	AF: “geronde vs. ongeronde klinkers” ANS: primair oppositie “gerond vs. ongerond”, secundair “ongerond, neutraal, gespreid”	PED: spread, neutral, rounded vowels PD: only indirectly; rounded +/-	KPDN: primarily “gerundete vs. ungerundete Vokale” + [ə] as a “Vokal mit neutraler Lippenstellung” PIN: NM	WJN: “samogłoski zaokrąglone vs niezaokrąglone” WSN: “samogłoski zaokrąglone, rozciągnięte, neutralne”

Tab. 10. Comparison of shape of the lips

When comparing the descriptions of the shape of the lips during articulation, it is especially noticeable how their accuracy varies. Some sources do not mention the the shape of the lips in the description (PIN) or do that only indirectly (PD), other limit themselves exclusively to the opposition rounded vs. unrounded (AF, WJN) or start from this opposition, only to specify later that unrounded is an umbrella term, which in fact includes two positions (spread and neutral; ANS, WJN). Finally, some sources not only mention three positions of the lips, but also further indicate that the degree of rounding/spreading of the lips may vary depending on other articulatory features (PED, WSN).

The last two articulatory features, which are being realised during the whole articulation of the vowel, are tension and duration. The results of analysis of those feature by source and language are collected in Table 11.

When it comes to tenseness, descriptions vary to the certain degree between languages. The first observation to be made is that in both English sources, tenseness is not addressed at all in the description. This is probably due to the strong embedding of both sources in the Anglo-Saxon phonological tradition, which, although familiar with the tense/lax opposition, regards it as secondary or even marginal when describing

vowels and replaces it with the long/short opposition. We again see the influence of this tradition in both Dutch-language sources as well: both mention the opposition of “gespannen/ongespannen” but at the same time characterize tension as irrelevant for the description of vowel articulation.

Articulatory feature	NL	EN	DE	PL
Tenseness	AF: “gespannen, ongespannen klinkers”; also: tension is not relevant, duration is ANS: “gespannen, ongespannen klinkers”; also: tension is not relevant, duration is	PED: NM PD: NM	KPDN: “gespannte, ungespannte Vokale” PIN: “gespannte, ungespannte Vokale”	WJN: some Dutch vowels (like [e]) have more tension than their closest Polish vowels WSN: “samogłoski napięte” (with more tension) and “nienapięte” (with less tension)
Duration	AF: “minor feature”; “korte, lange klinkers; halflang” ANS: only in relation with tension; “korte (ongespannen), half-lange (gespannen), lange (gespannen) klinkers”	PED: long, short vowels; alternatively: checked (= short) and free (= long) vowels PD: indirectly; long, short vowels; allophonic variation before <r> is also mentioned	KPDN: “kurze, lange Vokale”; allophonic variation is also mentioned with three degrees: “kurz, halblang, lang” PIN: “kurze, halblange, lange Vokale”	WJN: “samogłoski krótkie, półdługie, długie”; allophonic variation is also mentioned WSN: “samogłoski krótkie, półdługie, długie”; allophonic variation is also mentioned

Tab. 11. Comparison of tension and duration

Amongst the German and Polish sources, which do see tenseness as a relevant part of vowel articulation, attention is drawn to the way in which the role of tenseness is being described in WSN. The author clearly indicates that she is not in favor of using the opposition lax/tense, mainly because the muscles of the articulatory organs are always tense to some extent (otherwise the articulatory organs could not be set in motion). In an articulatory description, it is better to use the term less/more tense vowel. Therefore, this perspective is incorporated in the articulatory descriptions of vowels in WNS.

Comparing descriptions of duration also brings a few interesting observations. Let us first note that most sources point out that duration is a relative characteristic (i.e., mainly dependent on speech rate), and that they apply a classification of Dutch vowels into 3 degrees of duration (short, half-long and long), linking those degrees to the position in which the vowel appears in the word. This is certainly an advantage for descriptions from an articulatory and didactic perspective.

On the other hand, there are also problematic passages in the descriptions. We already mentioned a problem discussing tenseness in the Dutch sources. Both PED and PD claim duration to be a more important feature than tenseness. But at the same AF describes duration as a “minor feature” and gets no further than introducing the contrast short/long, and in ANS duration is described only in connection with tenseness, which had previously been identified as irrelevant to the description. Why the authors did this, is difficult to explain. The English sources are also difficult to follow when it comes to duration. In PED, the authors first describe the relativity of the feature duration, then the opposition long/short, to finally conclude that it is not really necessary to introduce this opposition, since a division into checked vowels, which are short, and free vowels, which are long, suffices. In PD, on the other hand, duration appears as a basis for the division of vowels only indirectly, in one of the tables, without further characterization. Only later, in a separate subsection on allophonic variation, the issue of vowel duration is discussed further.

5. Discussion and conclusion

Let us now recapitulate the results of the analysis, looking at the questions, which we formulated in the introduction. The first question whether phonetics has developed its own way and terminology to describe vowel articulation, must be answered negatively, at least to some extent. In the analyzed descriptions of vowel articulation a strong influence of phonological traditions can be seen, for example like not taking articulatory features which aren't distinctive into account in the description. Another form of phonological influence can be limiting options in the description of a particular articulatory feature to the opposition of two terms (or primarily presenting such a opposition and only later expanding it with more options). This phonological impact is strongest in English sources, but is also evident in other languages, and makes those descriptions less suited for purposes of teaching pronunciation. In fact, in only one of the sources were the descriptions definitely phonetically oriented (WSN).

The next question concerned the quality of terminology found in the articulatory descriptions of vowels, which translates into the quality of the descriptions themselves. Here we took two quality indicators: how accurately the terms used reflect the course of the articulatory phase in question and whether the terms comply with the rules of forming good terminology. Regarding these indicators, we see that some terms used to describe the articulation of vowels do not accurately reflect what happens during this process. For example, the terms related to lip position, i.e. “unrounded/ungerundet/niezaokrągłony”, do not allow us to distinguish between lips in a spread and neutral position. Also problematic is describing the pronunciation of a vowel as “long/lang/długa” or “short/kort/kurz/krótka” without considering whether it is also being produced with more or less tension of the muscles. On top of that terms related to dorsality, i.e., “front/forward/przedni”, “central/zentral/środkowy”, “back/hinter/tylny”, do not

adequately describe the movement of the tongue on the horizontal axis – they may as well be linked to the the part of the oral cavity in which articulation takes place. This makes those terms ambiguous, while a key feature of good terminology is unambiguity. We see the same problem in the case of English/Dutch terms “open/closed/open/gesloten”: students, as non-specialists, usually associate them primarily with closed or open mouth and are confused about how vowels can be articulated with the mouth closed. The last concern is connected to multiple terms functioning in parallel (e.g. in the English sources we come across terms close-mid and half close) and/or considered synonymous (in the Dutch sources there is an equal sign between terms closed and high and in English – between short and checked and between long and free). This again contradicts rules of good terminology which indicate that it is better not to form new terms when common terms already exist.

The next aspect of the descriptions that should be addressed in the analysis was the polyconfrontative aspect. Comparing eight sources in four languages shows very well, how big differences in the way of describing and the used terminology can be. On the one hand we are dealing with different traditions of describing articulation of vowels: in the English sources we can, as we already stated, definitely observe phonological influences and Dutch often is in between English and German/Polish, using two sets of terms which are claimed to be interchangeable. On the other hand there are also differences between sources in one language: from preciseness of description in general, over the amount of options provided per feature to using different terms for the same feature. In connection with this, it should be noted that there is a very low ratio of Latin terminology in the analyzed descriptions (only in the WSN did terms occur that were linked to the Latin name for the tongue back, i.e., the dorsum: “pre-, medio-, postdorsalny”). This results in a general lack of internationalisms in the terminology and in the articulatory descriptions of vowels. This is an interesting observation because Latin terminology is generally common not only in linguistics but also in phonetics/phonology: for example, terminology for the description of consonants is largely based on Latin names of speech organs. This complicates finding equivalents if, for example, we want to compare the articulation of vowels in two or more languages.

The conclusion of the polyconfrontative analysis of the material, even from a limited number of sources, is clear: describing to articulation of vowels is a complex problem. Descriptions are under strong influence of phonology, terminology used is not always qualitative and unambiguous enough and the descriptions itself remains language-specific. In practice, this means that the description of the same vowel looks different from one language or even one source to another, and sometimes the descriptions are so varied that without the symbols of the International Phonetic Alphabet it would be difficult to realize that it is the same vowel. Let us take the articulatory characteristic of [e] in two sources as an example: in PD which is the most phonologically oriented and in WSN which is the most phonetically oriented.

Articulatory feature	ENG (PD)	PL (WSN) [eng. translation]
1. Direction of the airflow during articulation	—	“ekspiracyjna” [‘expiratory’]
2. Voicing	—	“dźwięczna” [‘voiced’]
3. Orality/Nasality	—	“ustna” [‘oral’]
4. Tongue backness (horizontal dimension)	front	“predorsalna” [‘front’]
5. Tongue height (vertical dimension)	half close	“średniowysoka” [‘medium-high’]
6. Shape of the lips	[-] rounded	“rozciągnięta” [‘spread’]
7. Tenseness	—	“(bardziej) napięta” [‘(more) tense’]
8. Duration	long	“wariant półdługi (podstawowy), długi oraz krótki” [‘half-long, long and short variant’]

Tab. 12. Comparison of articulatory characteristic of [e] in PD and WSN

Let us finally address the didactic aspect by answering the question about the application of the results of the analysis for teaching situation: what do the results of the analysis mean for pronunciation training, also within NVT in higher education? Based on our small sample, we can say that a student of Dutch, that has studied/studies any other language, has to relearn the articulatory description of vowels and its terminology – at least partially – when studying Dutch. But this actually works for every language student and with each new language. And it goes deeper: at the point where the student wants to compare phonetic systems of Dutch with any other language (for example, within a paper or BA-/MA-thesis), he or she must first find his or her way through the descriptions of the articulation of vowels with all its specificities, to be sure that the units of comparison are the same. And this is rarely an easy way – all the greater, therefore, is the role of teachers of (Dutch) phonetics who can guide interested students through their field.

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