

80 Años de los *Grundzüge der Phonologie*.

N. S. Trubetzkoy.

Presentación de la Nueva traducción y versión crítica

Martes 15 de octubre de 2019

Principios de fonología

N.S. Trubetzkoy

Nueva traducción y versión crítica de  
Esther Herrera Zendejas y Michael Herbert Knapp



EL COLEGIO DE MÉXICO

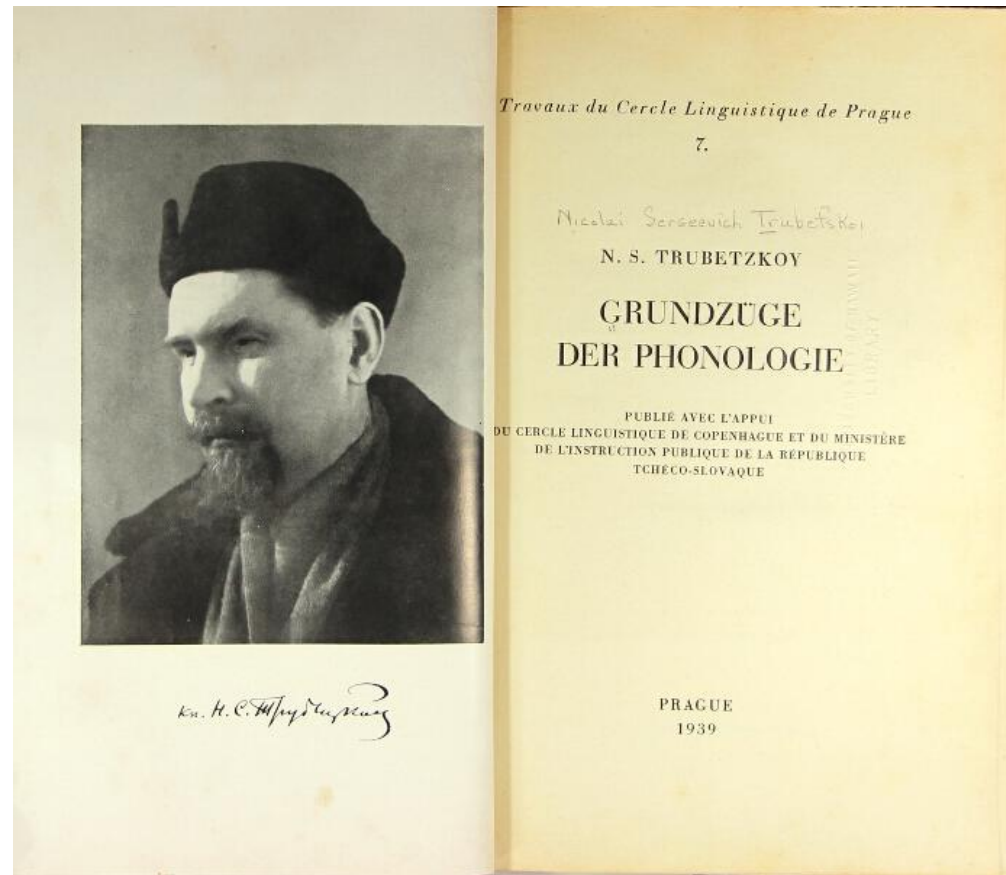
Contributions of  
N. S. Trubetzkoy  
to Phonological Theory

B. Elan Dresher  
University of Toronto

1.

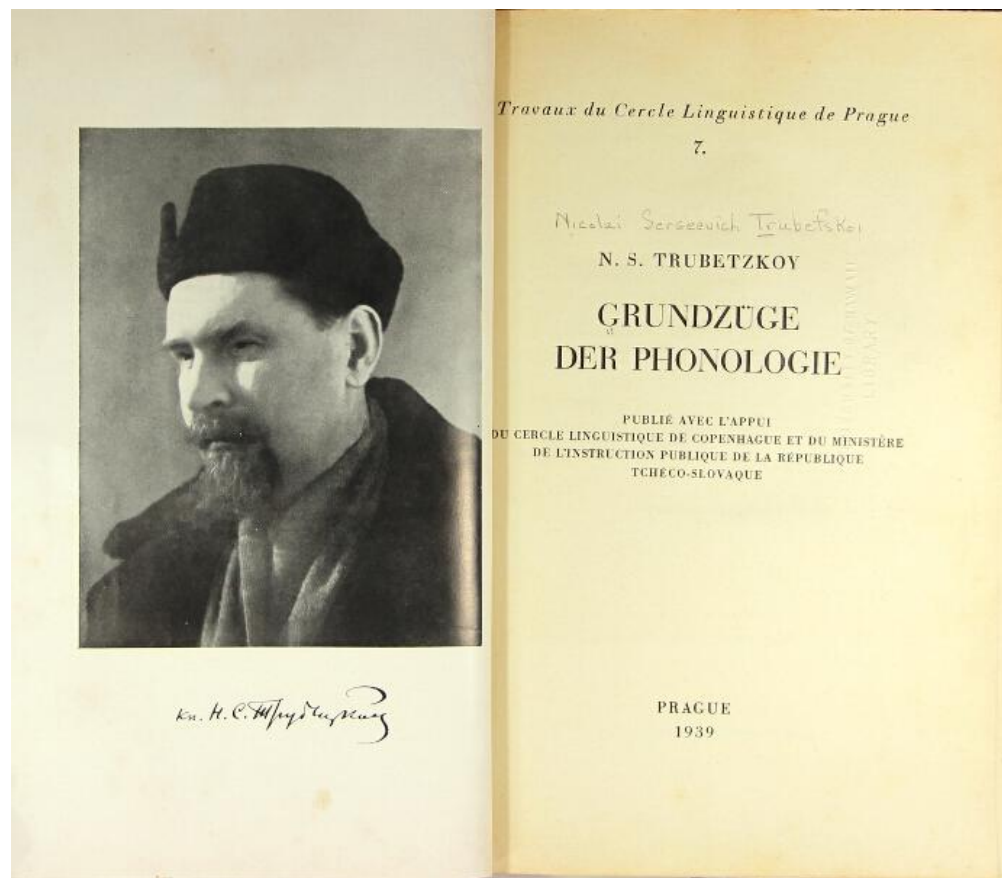
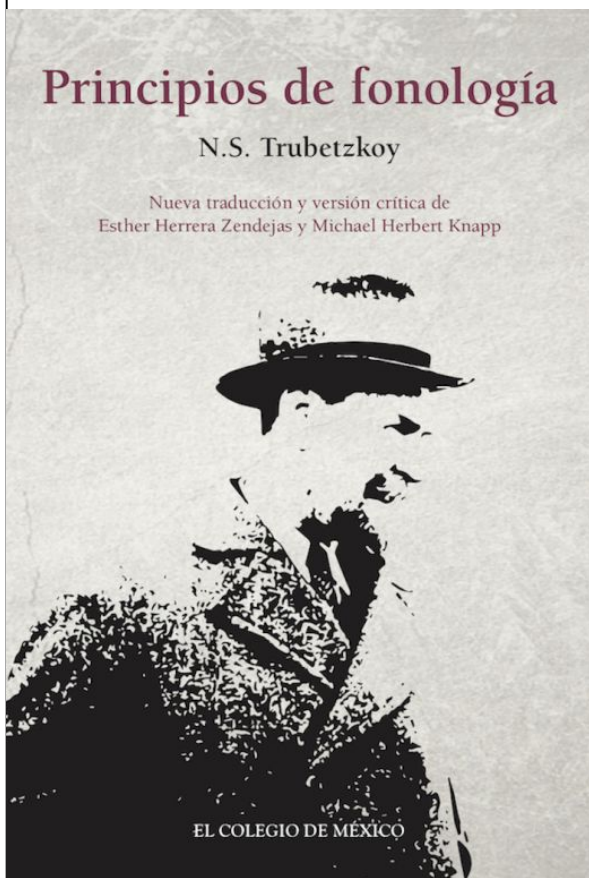
# *Introduction*

# Trubetzkoy's *Grundzüge der Phonologie*



N. S. Trubetzkoy's *Grundzüge der Phonologie* (1939) was the greatest work in phonology ever published when it appeared, and it remains very important to this day.

# Trubetzkoy's *Principios de fonología*



In time for its 80<sup>th</sup> anniversary we now have a wonderful new critical edition and translation into Spanish by Esther Herrera Zendejas and Michael Herbert Knapp.



# Introduction

I will try to show why this book is so fundamental to the field of phonology, and to linguistic theory more generally.

At one level, we can look at the book as the first systematic and comprehensive presentation of a structuralist approach to phonology.

At another level, it is a sourcebook of phonological ideas and analyses that can be mined productively, even by those working in other theoretical frameworks.

One of the things that make this book great is the sheer number of ideas and analyses of many different phonological systems.

# Introduction

Many of the ideas Trubetzkoy introduced or expanded on in the *Grundzüge* have entered the phonological mainstream, though not always in the form that he intended.

Also, because the book was published posthumously and the author never had a chance to check the proofs or make revisions, not everything in it is perfectly clear or consistent.

The new Spanish edition is a big step forward in this regard, for the editors have clarified some terms and data and presented the phonological examples in a manner that is more congenial to modern readers than previous editions.

# Introduction

I should add that Trubetzkoy worked very closely with Roman Jakobson in the Linguistic Circle of Prague.

It is not always possible to know which ideas are due to Trubetzkoy and which to Jakobson, who continued to develop their theory after Trubetzkoy's death.



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Nevertheless, it was Trubetzkoy who set out the Prague approach to phonology in a comprehensive way in his 1939 book.

# Introduction

The plan of this talk is as follows:

- 1. Introduction
- 2. Phonology versus phonetics
- 3. Trubetzkoy's theory of phonological oppositions
- 4. Feature theory and markedness after Trubetzkoy
- 5. Other ideas pioneered by Trubetzkoy
- 6. Conclusion

2.

*How phonology differs  
from phonetics*



# Phonology versus phonetics

Trubetzkoy clearly established in what ways phonology (*la fonología*) is a different enterprise from phonetics (*la fonética*).

While not the first to make this distinction, he showed more comprehensively than had been done before how phonology and phonetics have different aims and methodologies.

Trubetzkoy defines phonetics as:

*["la ciencia del lado material (de los sonidos) del habla humana."] (2019: 36)*

*"the science concerned with the material aspect (of the sounds) of human speech." (1969: 10)*

# Phonology versus phonetics

That is, phonetics studies **all** the acoustic and articulatory properties of speech sounds using the methods of the natural sciences.

Phonology, on the other hand, is different:

[“De todo sonido, el fonólogo tiene que considerar *solo aquello que cumple una función determinada en el sistema lingüístico.*”] (2019: 37)

“The phonologist needs to consider only that aspect of sound *which fulfills a specific function in the system of language.*” (1969: 11)

# Phonology versus phonetics

In other words, phonology is interested in the **contrastive function** of phonetic properties, and in how sounds are related to each other in different languages.

Phonology uses the same methods as are used in the study of grammatical systems, that is, of general linguistics.

The boundary between phonology and phonetics remains a contentious issue, and there are widely divergent views among contemporary phonologists about this.

# Phonology versus phonetics

Some phonologists (Boersma 1998; Pierrehumbert, Beckman, & Ladd 2000; Hayes, Kirchner, & Steriade 2004) hold that the phonology makes use of detailed phonetic information, and cannot be fruitfully studied apart from phonetics.

Others (Fudge 1967; Hale & Reiss 2000, 2008; Odden 2006; Blaho 2008; Samuels 2011; Reiss 2017) go the other way and posit that phonology is ‘substance-free’.

By ‘substance-free’ they mean that the formal mechanisms of phonology are not concerned with the phonetic content of the representations they manipulate (see Hall 2014 for discussion).

# Phonology versus phonetics

Some people erroneously believe that Trubetzkoy was against phonetics, particularly because he is famous for saying that “phonology is to phonetics like the science of economics is to numismatics” (he (2019: 37) credits Jakobson for this).

But his theory is not substance free: much of the *Grundzüge* is devoted to a comprehensive survey of phonetic properties that laid the foundations for future theories of phonetic features.

Further, Trubetzkoy’s classification of phonological contrasts (what he calls ‘oppositions’) is not purely formal but involves phonetic ‘substance’, as we will see.

In the end, Trubetzkoy did much to establish phonology as a distinct field and set its course for the rest of the 20<sup>th</sup> century.



3.

*Trubetzkoy's theory of  
phonological oppositions*

# Phonemes are contrastive units

Trubetzkoy built on Ferdinand de Saussure's (1972 [1916]: 166) dictum that

'dans la langue il n'y a que des différences ... sans termes positifs'

That is, the basic sound units of phonology, the **phonemes**, are **contrastive** units.



This means that to know the phonological content of a phoneme, it is not enough to study its phonetics: we have to know what other phonemes it is in contrast with.

# Phonemes and distinctive features

For Trubetzkoy, determining what other phonemes a phoneme contrasts with is just the first step in a phonological analysis.

He was interested in what **ways** phonemes contrast with each other, and this requires analyzing phonemes further.

A fundamental contribution of the *Grundzüge* is the idea that the phonological representations of speech sounds are composed of what later became known as **distinctive features**.

Though there are different ideas about what features are, much of the vocabulary and ways of describing features can be traced back to Trubetzkoy's book, and the various ways he classified contrasts among phonemes.

# Oppositions

An important concept that is fundamental to Trubetzkoy's theory is that of an **opposition** [oposición].

Every phoneme of a language enters into an opposition with every other phoneme.

p	pf	t	ts		k	
b		d			g	
	f		s	ʃ	x	h
	v		z			
m		n			ŋ	
			l		r	

# Oppositions

An important concept that is fundamental to Trubetzkoy's theory is that of an **opposition** [oposición].

Every phoneme of a language enters into an opposition with every other phoneme. Thus, an opposition is a relation between a **pair** of phonemes.

<b>p</b>	pf	t	ts		k	
<b>b</b>		d			g	
	f		s	ʃ	x	h
	v		z			
m		n			ŋ	
			l		r	



# Oppositions

We are most accustomed to think of contrasts between sounds that are phonetically close to each other,

p

pf

t

ts

k

b

d

g

f

s

ʃ

x

h

v

z

m

n

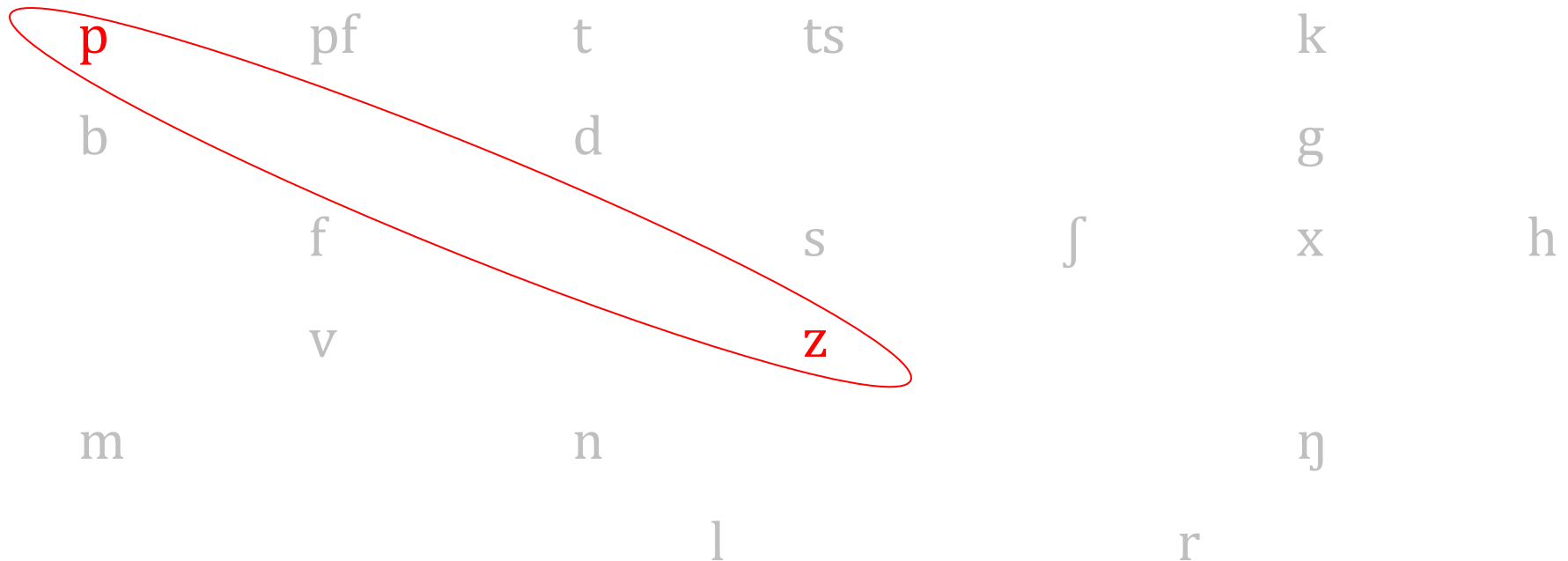
ŋ

l

r

# Oppositions

We are most accustomed to think of contrasts between sounds that are phonetically close to each other, but the notion of an opposition applies to **every** pair of phonemes,



# Oppositions

We are most accustomed to think of contrasts between sounds that are phonetically close to each other, but the notion of an opposition applies to **every** pair of phonemes, even this one.

p	pf	t	ts	k			
b		d		g			
	f		s	ʃ	x	h	
	v		z				
m		n					ŋ
			l		r		

# Types of Oppositions

## Bilateral / Multilateral

Trubetzkoy classifies oppositions in terms of their “basis of comparison” [*la base de comparación*], those properties that the opposition members **share**: whether the shared properties are unique to those two members or not. (1969: 68; 2019: 109)

[“En las oposiciones *bilaterales* ... el conjunto de propiedades que los dos términos de la oposición tienen en común solo es propia a esos dos términos ...”]

“In the case of **bilateral** oppositions ... the sum of the properties common to both opposition members, is common to these two opposition members alone.”

# Types of Oppositions

## Bilateral / Multilateral

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[“la base de comparación de una oposición *multilateral* no se limita exclusivamente a los dos términos de la oposición en cuestión”]

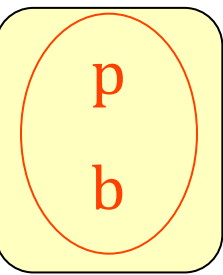
“The basis of comparison of a **multilateral** opposition, on the other hand, is not limited exclusively to the two respective opposition members.”



# Example of a bilateral opposition

An example of a **bilateral** opposition is **p ~ b** in the language below, which shows the consonants of standard German.

They are the only **bilabial stops** in this language, so the basis of comparison is unique to them alone.



*bilabial  
stops*

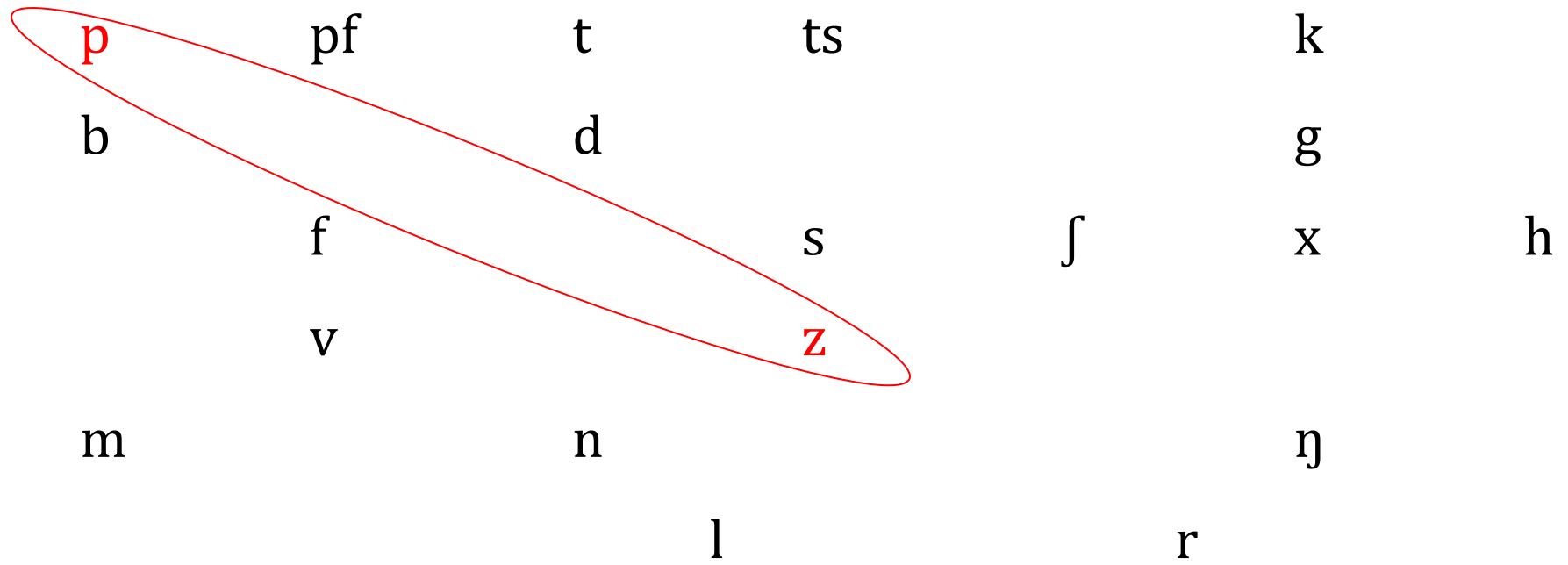
p	pf	t	ts	k		
b		d		g		
	f		s	ʃ	x	h
	v		z			
m		n			ŋ	
			l		r	

# Example of a multilateral opposition

The opposition between **p** ~ **z** is **multilateral**: let us assume that they have the following features:

**p** is **obstruent**      **bilabial**      **stop**      **voiceless**

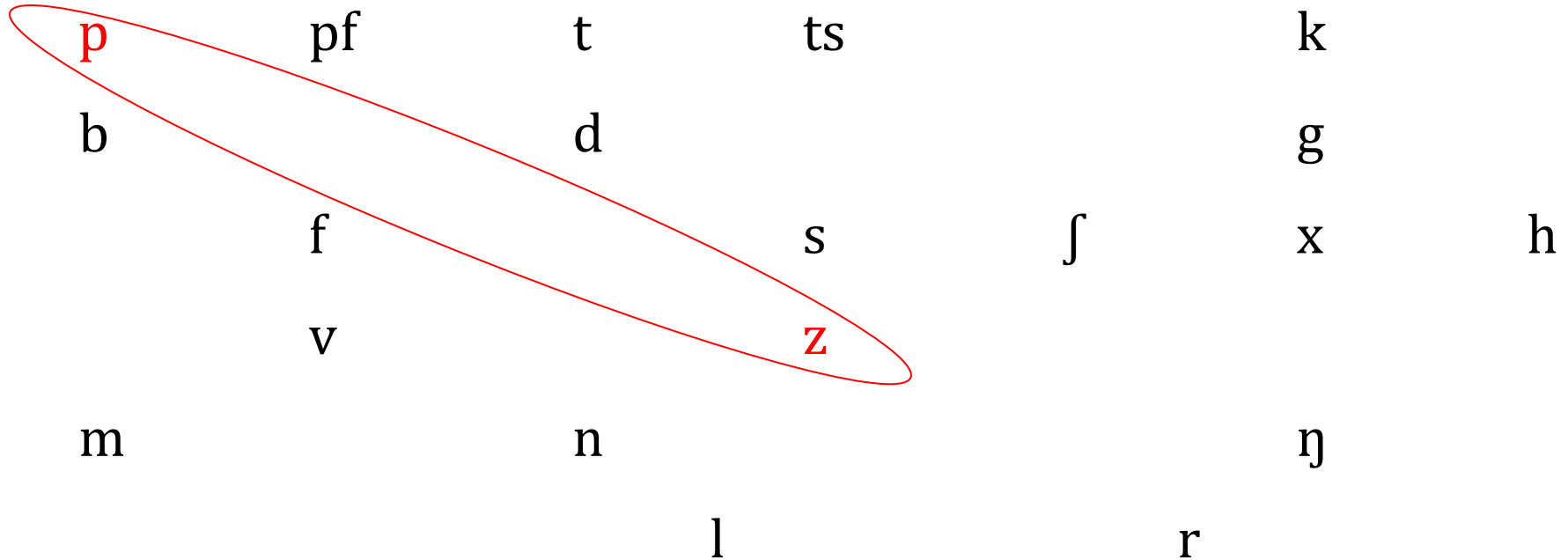
**z** is **obstruent**      **alveolar**      **fricative**      **voiced**



# Example of a multilateral opposition

The only feature they share is **obstruent**.

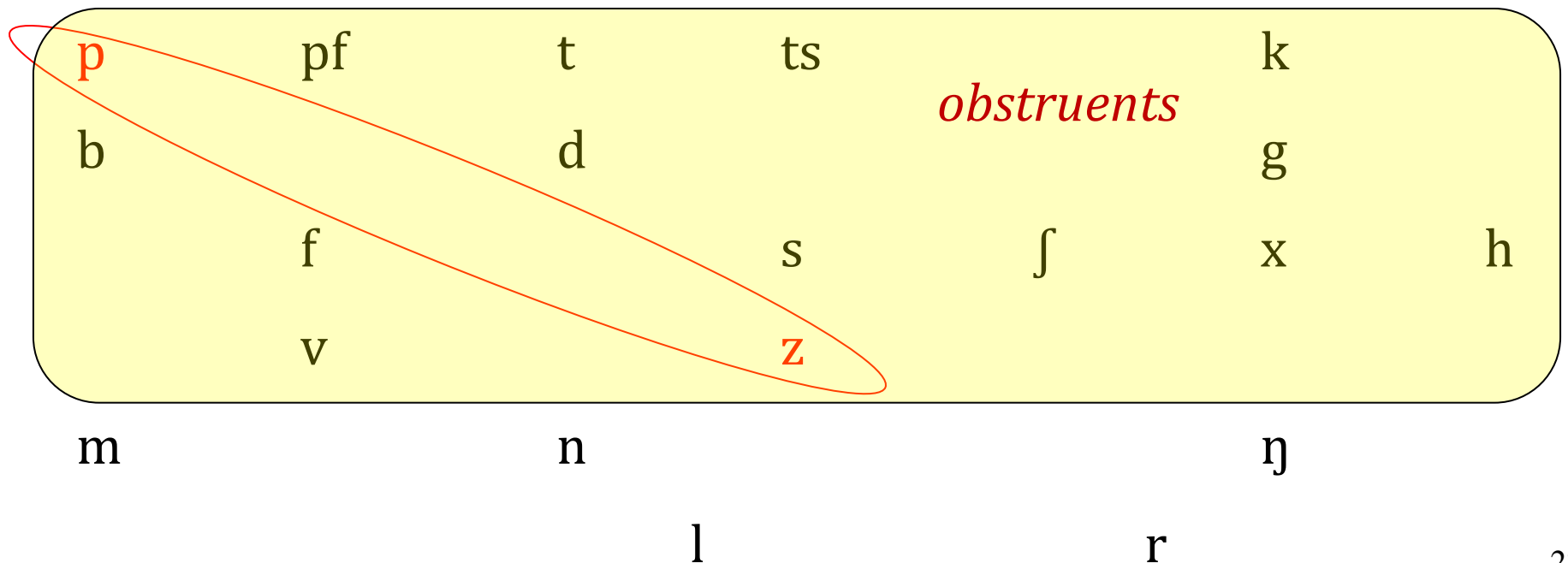
<b>p</b>	is	<b>obstruent</b>	<b>bilabial</b>	<b>stop</b>	<b>voiceless</b>
<b>z</b>	is	<b>obstruent</b>	<b>alveolar</b>	<b>fricative</b>	<b>voiced</b>



# Example of a multilateral opposition

The only feature they share is **obstruent**.

But this property is shared by many other phonemes in this language, making **p ~ z** a **multilateral** opposition.



# Bilateral and multilateral oppositions

At this point I have to confess that my demonstration of bilateral and multilateral oppositions was not quite correct.

The problem is that I **assumed** that **p** and **z** have these features:

<b>p</b>	is	<b>obstruent</b>	<b>bilabial</b>	<b>stop</b>	<b>voiceless</b>
<b>z</b>	is	<b>obstruent</b>	<b>alveolar</b>	<b>fricative</b>	<b>voiced</b>

However, Trubetzkoy (2019: 110; 1969: 68) stipulates that, in comparing the opposition members,

**[“Es evidente que para ello se deben utilizar solo las propiedades fonológicas pertinentes.”]**

“Of course, only the phonologically distinctive properties are to be considered.”

# Bilateral and multilateral oppositions

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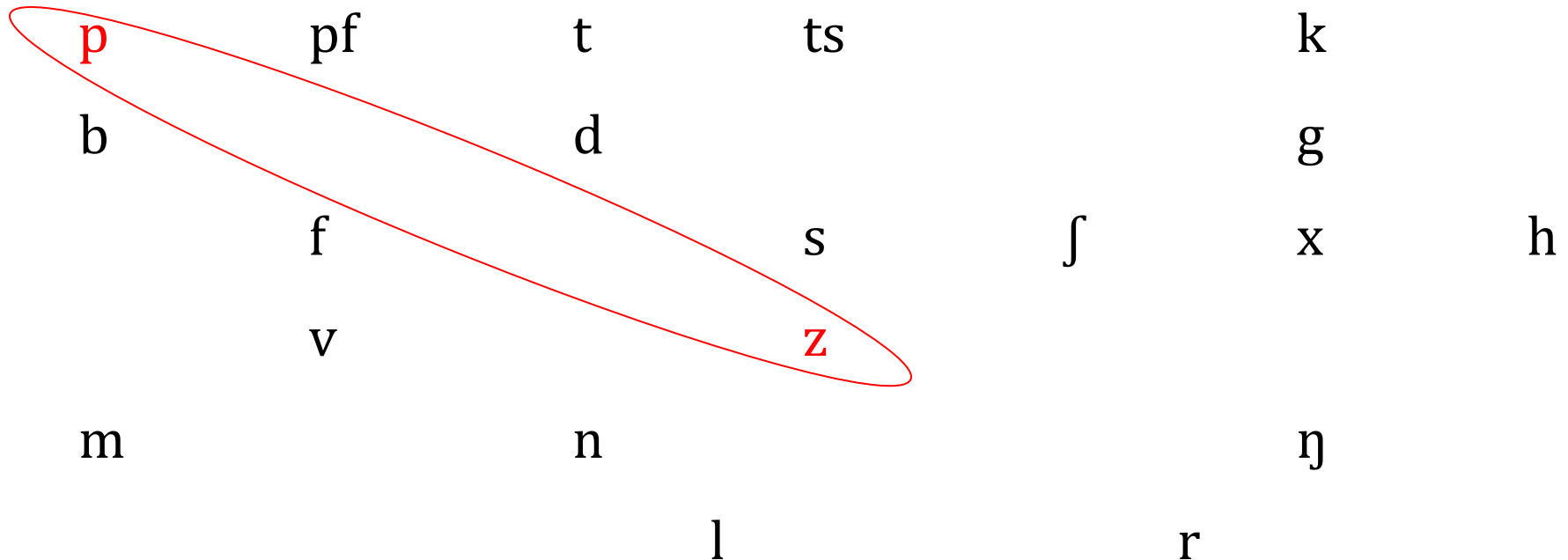
<b>p</b>	is	<b>obstruent</b>	<b>bilabial</b>	<b>stop</b>	<b>voiceless</b>
<b>z</b>	is	<b>obstruent</b>	<b>alveolar</b>	<b>fricative</b>	<b>voiced</b>

This means that **before** we can properly evaluate whether an opposition is bilateral or multilateral, we need to already know what the **distinctive** properties of each phoneme are.

# Bilateral and multilateral oppositions

So what are the distinctive features of **p** and **z**? How do we determine what they are?

Unfortunately, Trubetzkoy does not tell us explicitly how to do this, and this, in my opinion, is the biggest lacuna in his theory.



# Bilateral and multilateral oppositions

Though he is not consistent, he does give us some hints as to how to determine what the distinctive features are.

In the example we looked at, the issue of how we compute distinctive features may not seem overly important; by almost method, it is likely that  $p \sim b$  will be a bilateral opposition and  $p \sim z$  will be a multilateral one.

However, Trubetzkoy presents examples to show that we cannot determine this in general simply by inspecting the phonemic inventory of a language.



# Contrast depends on point of view

Trubetzkoy's greatest insight into the nature of contrast is contained in a 1936 article addressed to psychologists and philosophers, where he wrote that the correct classification of an opposition “depends on one's point of view”; but “it is neither subjective nor arbitrary, for the point of view is implied by the system.” (Trubetzkoy 2001: 20)



The way the system implies the correct ‘point of view’ is by its **behaviour**, by the way the different phonemes relate to each other.

# Constant and suspendible oppositions

An aspect of phonological behaviour that is important to Trubetzkoy is whether oppositions are **constant** [constantes] or **neutralizable** [neutralizables].

In a **constant** opposition either phoneme can appear in any environment.

A **neutralizable** opposition is one in which there are some phonological contexts in which the phonemes are not in contrast.

An example is the **t ~ d** opposition in German which are in contrast in **buntes ~ bundes** ('colourful.N' ~ 'federation.G'; in syllable-final position, only [t] may occur and they are both pronounced [**bunt**]).

# The German opposition $h \sim x$

Consider again the consonants of German, shown below.

According to Trubetzkoy (1969: 69), German **h** does not take part in any bilateral oppositions.

p	pf	t	ts		k	
b		d			g	
	f		s	ʃ	x	h
	v		z			
m		n			ŋ	
			l		r	

# The German opposition $h \sim x$

In particular, it is not in a bilateral opposition with **x**; Trubetzkoy proposes the following distinctive features:

**h** is **obstruent**    **laryngeal**    **fricative**    **voiceless**

**x** is **obstruent**    **velar**    **fricative**    **voiceless**

p	pf	t	ts		k
b		d			g
	f		s	ʃ	<b>x</b> <b>h</b>
	v		z		
m		n			ŋ
			l		r

# The German opposition $h \sim x$

The features they share are **obstruent**, **fricative**, and **voiceless**.

<b>h</b>	is	<b>obstruent</b>	<b>laryngeal</b>	<b>fricative</b>	<b>voiceless</b>
<b>x</b>	is	<b>obstruent</b>	<b>velar</b>	<b>fricative</b>	<b>voiceless</b>

p	pf	t	ts	k
b		d		g
	f		s	ʃ
	v		z	<b>x</b> <b>h</b>
m		n		ŋ
		l		r

# The German opposition $h \sim x$

These features are shared by other phonemes as well, so the opposition is **multilateral**.

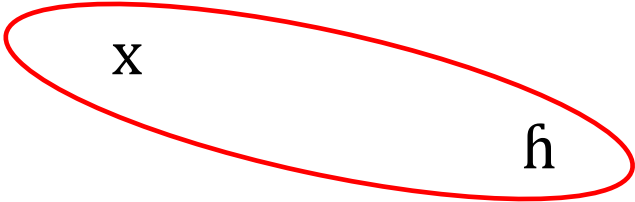
<b>h</b>	is	obstruent	laryngeal	fricative	voiceless
<b>x</b>	is	obstruent	velar	fricative	voiceless

p	pf	t	ts	k
b		d		g
	f	<i>voiceless fricatives</i>	s	ʃ
	v		z	x
m		n		ŋ
		l		r

# The Czech opposition $\text{h} \sim \text{x}$

Looking at the Czech consonant inventory, one might suppose that Czech  $\text{h}$  is similarly isolated. Comparing  $\text{h}$  and  $\text{x}$ :

p	t	c	k
b	d	č	g
	ts	tʃ	
f	s	š	x
v	z	ž	h
m	n	ň	
	r	ř	
	l		
		j	



# The Czech opposition $\text{h} \sim \text{x}$

We might think their distinctive features are similar to German:

$\text{h}$  is obstruent laryngeal fricative voiced

$\text{x}$  is obstruent velar fricative voiceless

p	t	c	k
b	d	ʧ	g
	ts	tʃ	
f	s	ʃ	x
v	z	ʒ	h
m	n	ɲ	
	r	ɹ̩	
	l		
		j	

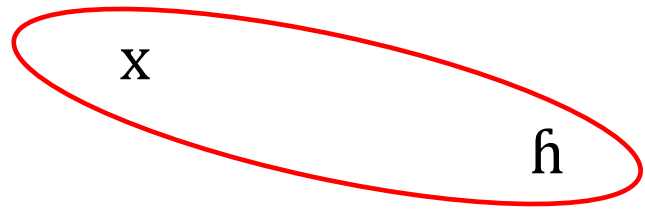


# The Czech opposition $h \sim x$

If so, then the features they share are **obstruent** and **fricative**.

$h$	is	<b>obstruent</b>	laryngeal	<b>fricative</b>	voiced
$x$	is	<b>obstruent</b>	velar	<b>fricative</b>	voiceless

p	t	c	k
b	d	ʧ	g
	ts	tʃ	
f	s	ʃ	x
v	z	ʒ	h
m	n	ɲ	
	r	ɾ	
	l		
		j	



# The Czech opposition $\text{h} \sim \text{x}$

The  $\text{h} \sim \text{x}$  opposition thus appears to be multilateral.

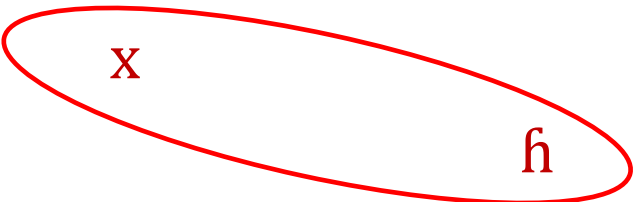
$\text{h}$	is	obstruent	laryngeal	fricative	voiced
$\text{x}$	is	obstruent	velar	fricative	voiceless

p	t	c	k
b	d	ʧ	g
	ts	tʃ	
f	s	ʃ	x
v	z	ʒ	h
m	n	ɲ	
	r	ɾ	
	l		
		j	

# The Czech opposition $\acute{h} \sim x$

However, Trubetzkoy (124) proposes that Czech **h** (or more properly, voiced **ĥ**), forms a **bilateral** opposition with **x**.

p	t	c	k
b	d	č	g
	ts	tʃ	
f	s	š	x
v	z	ž	ĥ
m	n	ň	
	r	ř	
	l		
		j	



# The Czech opposition $\acute{h} \sim x$

The reason is that the distinction between these phonemes can be **neutralized**, for they behave phonologically like a voiced-voiceless pair, like the other such pairs in Czech.

p  
b

t  
d

c  
č

k  
g

f  
v  
m

s  
z  
n  
r  
l

š  
ž  
ň  
ř  
j

x ħ

# The Czech opposition $\acute{h} \sim x$

That is, in certain positions voiced sounds are devoiced to their voiceless partner: **b** becomes **p**, **d** becomes **t**, and similarly for the other circled pairs, including **h** which becomes **x**.

p  
b

t  
d

c  
č

k  
g

f  
v

s  
z

š  
ž

x h

m

n

ň

r

ř

l

j

# The Czech opposition $\acute{h} \sim x$

According to Trubetzkoy: “The  $\acute{h}$  in Czech thus does not belong to a special laryngeal series, which does not even exist in that language.”

p  
b

t  
d

c  
č

k  
g

f  
v

s  
z

š  
ž

x ħ

m

n

ň

r

ř

l

j

# The Czech opposition $\text{h} \sim \text{x}$

“It belongs to the guttural series, for which, from the standpoint of the Czech phonological system, only the fact that lips and tip of tongue do not participate is relevant”. (1969: 124)

p  
b

t  
d

c  
č

k  
g

ts

tʃ

f  
v

s  
z

ʃ  
ž

x  
h

m

n

ɲ

r

ř

l

j

# The Czech opposition $\text{ħ} \sim \text{x}$

Therefore, the opposition between  $\text{ħ} \sim \text{x}$  is **bilateral**: they are the only phonemes that are **guttural** and **fricative**.

p  
b

t  
d

c  
č

k  
g

ts

tʃ

f  
v

s  
z

ʃ  
ž

x  
ħ

*guttural  
fricatives*

m

n

ɲ

r

ř

l

j



# Bilateral versus multilateral oppositions

The German and Czech examples demonstrate that for Trubetzkoy, it is the **phonological behaviour** of the phonemes that is the key to the analysis of their distinctive features.

The distinctive features, in turn, determine whether an opposition is bilateral or multilateral.

Though this is a fundamental aspect of Trubetzkoy's theory, it did not have a big influence on phonological theory, for reasons I will discuss later.

# Privative / gradual / equipollent oppositions

Another type of classification proposed by Trubetzkoy considers the relationship between the members of an opposition.

- In a **privative** [**privativa**] opposition, one member has a **mark** [**una marca**] (the **marked** [**marcado**] member), and in the other the mark is absent (the **unmarked** [**no marcado**] member).
- In a **gradual** [**gradual**] opposition, the members have various degrees or gradations [**diferentes grados o niveles**] of the same property.
- In an **equipollent** [**equipolente**] opposition, both members are logically equivalent: they are neither considered as two degrees of one property (gradual), nor as the absence or presence of a property (privative).

# Privative oppositions

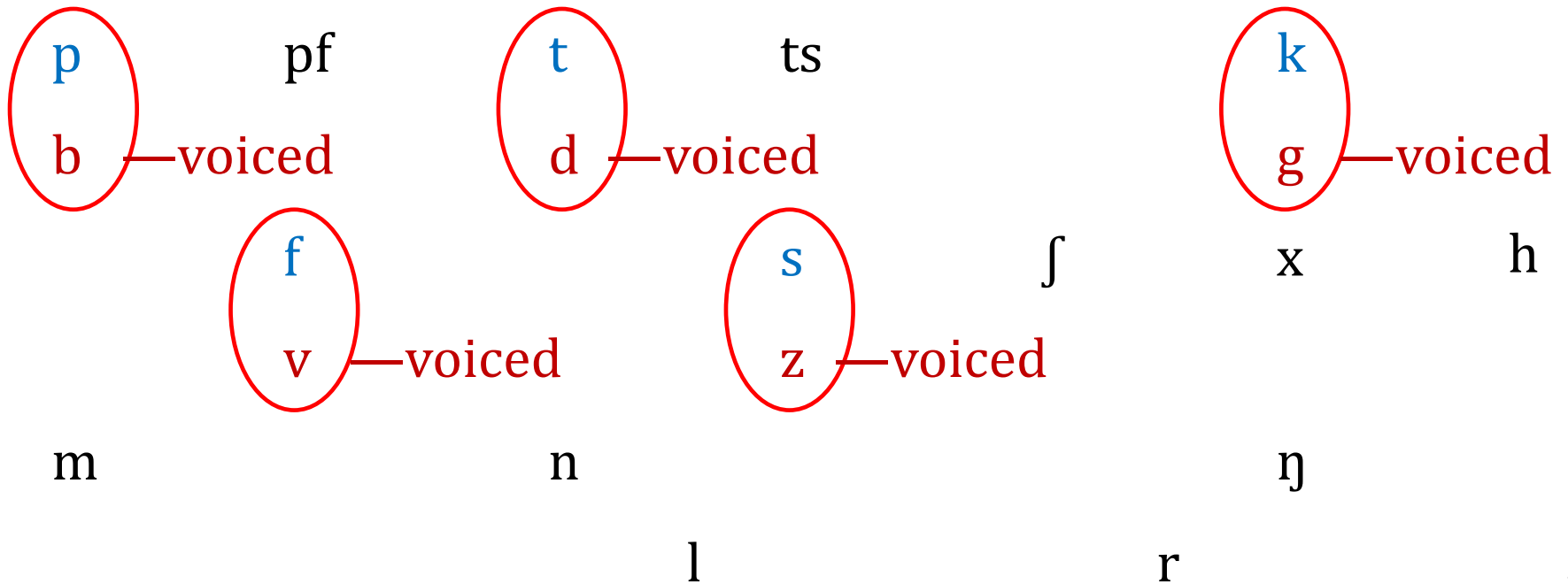
An example of a **privative** opposition in German is **p** ~ **b**, in which **b** is **voiced** and **p** lacks voicing.

Here, **b** is the **marked** member of the opposition, **p** is **unmarked**.

<b>p</b>	pf	t	ts	k		
<b>b</b> —voiced		d		g		
	f		s	ʃ	x	h
	v		z			
m		n			ŋ	
			l		r	

# Privative oppositions

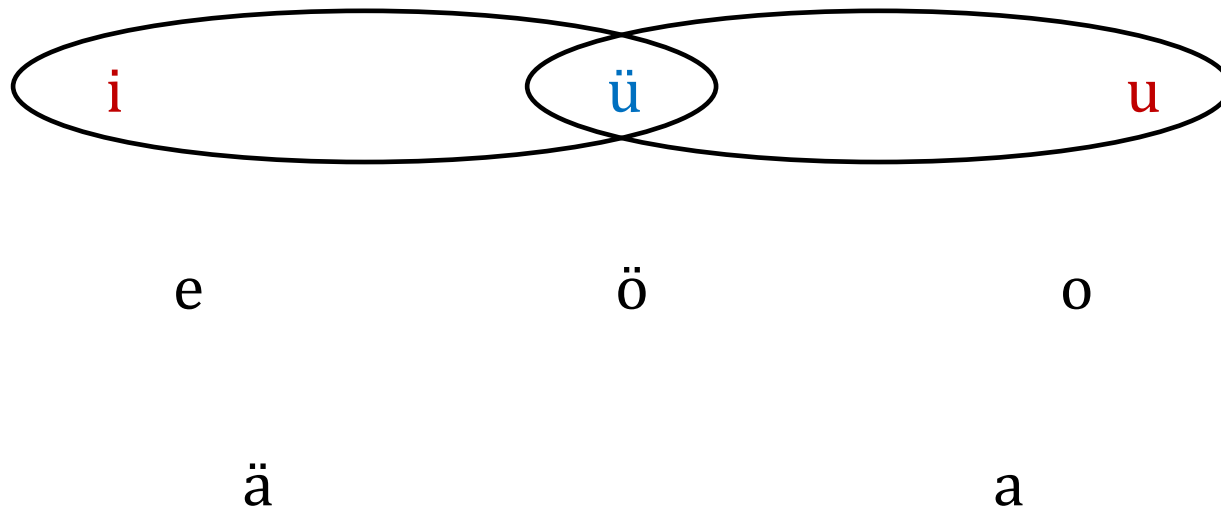
The same goes for  $t \sim d$ ,  $k \sim g$ ,  $f \sim v$ , and  $s \sim z$ .



# Gradual oppositions

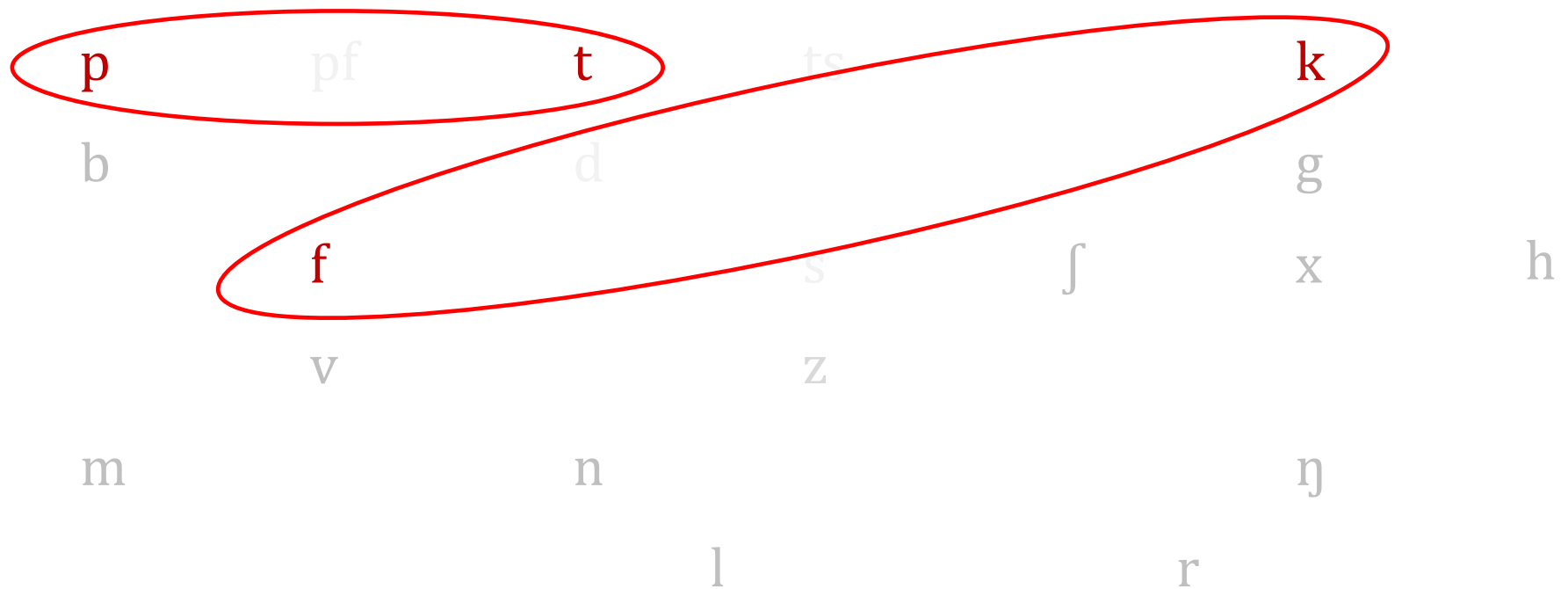
For examples of a **gradual** opposition, Trubetzkoy gives German **i** ~ **ü** and **ü** ~ **u**, which have different degrees of timbre.

**i** and **u** are the **extreme** or **external** members of their oppositions, and **ü** is the **mid** member.



# Equipollent oppositions

Most oppositions are **equipollent**. Trubetzkoy gives **p** ~ **t** and **f** ~ **k** as examples.



# Privative / gradual / equipollent oppositions

Trubetzkoy emphasizes that, as with the bilateral ~ multilateral distinction, we can only determine what type an opposition is in the context of its phonemic system and distinctive properties.

Thus, we saw that the **p** ~ **b** opposition in German is **privative**, with **b** being **marked** as **voiced** and **p** being **unmarked**.

But Trubetzkoy points out that phonetically speaking, these sounds are different not only in voicing but also in tension.

## Privative

**p**

**b**

**marked**  
**voiced**

# Privative / gradual / equipollent oppositions

In German, tension is ignored, but there are languages in which it is a distinctive property and voicing is ignored; in such languages, **p** is marked as **fortis** and **b** is **lenis** and **unmarked**.

It is also possible, according to Trubetzkoy, to have a language in which **both voicing** and **tensing** are operative, in which case the opposition is **equipollent**.

Privative

Privative

Equipollent

**p**

**b**

marked  
voiced

**p**

**b**

marked  
fortis

**p**

**b**

fortis      voiced



# Privative / gradual / equipollent oppositions

Therefore, Trubetzkoy writes that it is necessary to distinguish between what an opposition **potentially**, or **logically**, can be, and what it **actually** is in a given language.

We have seen that Trubetzkoy analyzes the German **i ~ ü** and **ü ~ u** oppositions as **gradual**.

However, Trubetzkoy writes that this is not the case in every language that has these three vowels.

## German

<p><b>Gradual Gradual</b> i — ü — u</p>		
---	--	--

# Privative / gradual / equipollent oppositions

He observes (1969: 102–3; 2019: 156) that /**ü**/ is closer to /**i**/ than it is to /**u**/ in the vowel system of Polabian.

The evidence is that the opposition between **i** ~ **ü** is **neutralized** in certain contexts, whereas the opposition **ü** ~ **u** is **constant**.

Therefore, the **i** ~ **ü** opposition is **privative**, and **ü** is **marked**.

## German

## Polabian

Gradual Gradual  
i ——— ü ——— u

front back  
Privative  
i ..... ü ——— u  
marked  
rounded

# Privative / gradual / equipollent oppositions

In Finnish, the main distinction is between unround /i/ and rounded /**ü**/ and /**u**/.

This is because vowel harmony **neutralizes** the opposition **ü ~ u**; the opposition between **i ~ ü** is **constant**.

Now, the **ü ~ u** opposition is **privative**, and **u** is **marked**.

## German

## Polabian

## Finnish

Gradual Gradual  
i ——— ü ——— u

front back  
Privative  
i ..... ü ——— u  
marked  
rounded

unround rounded  
Privative  
i ——— ü ..... u  
marked  
back

# Privative / gradual / equipollent oppositions

We thus see that similar inventories can show differences in privativity and markedness.

It is important to emphasize that these differences are not due to any phonetic differences in the vowels of these languages.

Rather, it is the way these sounds **behave phonologically** that is decisive for Trubetzkoy.

## German

## Polabian

## Finnish

Gradual Gradual  
i ——— ü ——— u

front back  
Privative  
i ..... ü ——— u  
marked  
rounded

unround rounded  
Privative  
i ——— ü ..... u  
marked  
back

4.

*Feature theory and  
markedness after Trubetzkoy*

# Feature theory after Trubetzkoy

Aspects of Trubetzkoy's classification of oppositions went on to play important roles in phonological theory, though not quite in the ways he intended.



The theory of features was carried forward by Roman Jakobson and his colleagues (Jakobson 1941; Jakobson, Halle, & Fant 1952; Jakobson & Halle 1956).

Jakobson made a number of fundamental changes to the theory that had a big influence on subsequent developments (see Battistella, to appear).

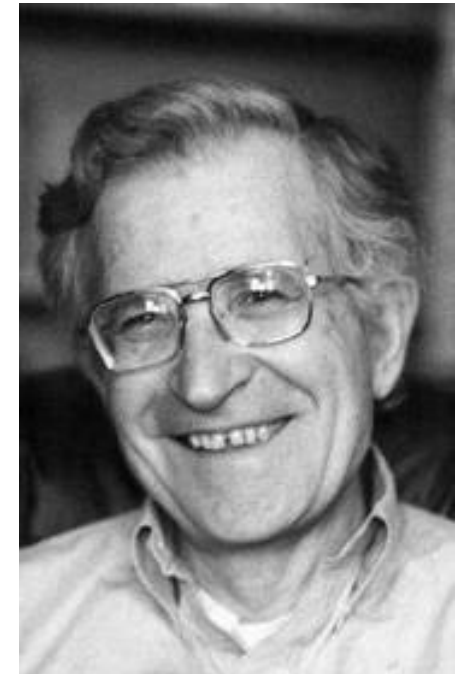
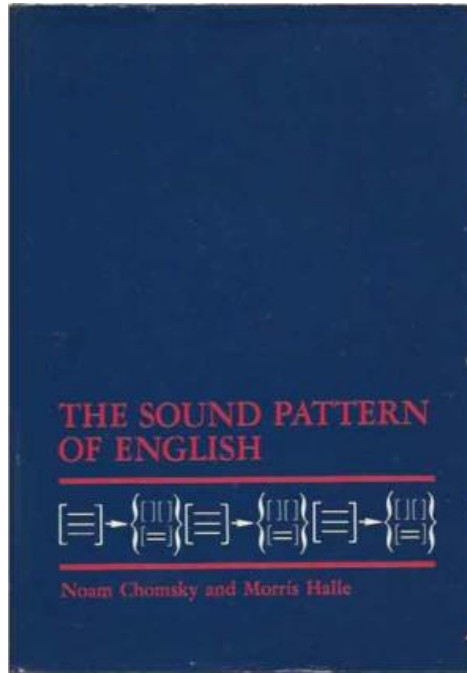
# Feature theory after Trubetzkoy

First, Jakobson came to the view that all oppositions are **binary** and **privative**; over time the notion of gradual and equipollent oppositions fell out of use.

Another consequential change was that Jakobson proposed that phonological markedness relations are **universal** (Jakobson 1941).

This is a big departure from Trubetzkoy's position, which, as we have seen, is that privativity and markedness may **vary** across languages, and must be decided on a **language-particular** basis.

# Features in generative phonology



Noam Chomsky and Morris Halle's *Sound Pattern of English* (1968), commonly called *SPE*, is a founding document of generative phonology, and built on Jakobson's approach to feature theory.



# Features in Generative Grammar

Chomsky & Halle adopted Jakobson's view that all features are binary and that markedness is universal.

Thus, the *SPE* markedness theory classifies segments (phonemes) as either unmarked (u) or marked (m) for particular features.

These markedness values are intended to be universal and applicable to every language that has the segment in question.

# Markedness in *SPE*

As an initial attempt to assign markedness values to vowels, Chomsky & Halle (1968: 409) propose the chart below.

In the case of the feature [back], they assign – or + to some vowels (retaining only here Trubetzkoy's equipollent category)

	a	i	u	æ	ɒ	e	o	y	ɨ	œ	ø	ʌ
low	u	u	u	m	m	u	u	u	u	m	u	u
high	u	u	u	u	u	m	m	u	u	u	m	m
back	u	–	+	m	u	–	+	–	+	m	–	+
round	u	u	u	u	m	u	u	m	m	m	m	m
Complexity	0	1	1	2	2	2	2	2	2	3	3	3

# Markedness in *SPE*

Every vowel receives a measure of **complexity** by assigning a cost of 0 to u and 1 to m, -, or +.

Thus they derive that the simplest 3-vowel system is /**a, i, u**/, as proposed by Jakobson (1949) and Jakobson & Halle (1956).

	a	i	u	æ	ɒ	e	o	y	ɨ	œ	ø	ʌ
low	u	u	u	m	m	u	u	u	u	m	u	u
high	u	u	u	u	u	m	m	u	u	u	m	m
back	u	-	+	m	u	-	+	-	+	m	-	+
round	u	u	u	u	m	u	u	m	m	m	m	m
Complexity	0	1	1	2	2	2	2	2	2	3	3	3

# Markedness in *SPE*

Later, they make adjustments to ensure that the simplest 5-vowel system adds /e, o/ rather than the other vowels with complexity 2.

	a	i	u	æ	ɒ	e	o	y	ɨ	œ	ø	ʌ
low	u	u	u	m	m	u	u	u	u	m	u	u
high	u	u	u	u	u	m	m	u	u	u	m	m
back	u	-	+	m	u	-	+	-	+	m	-	+
round	u	u	u	u	m	u	u	m	m	m	m	m
Complexity	0	1	1	2	2	2	2	2	2	3	3	3

# Markedness in other phonological theories

Markedness and privativity have continued to play important roles in linguistic theory, though there are many different views as to how they work.

Many generative phonologists have modified the *SPE* view that all features are binary, arguing that some features are privative with only a marked value (see Hall 2007).

Others maintain that **all** features are privative (see van der Hulst 2016 for a review).

I will give one brief example of a theory that builds markedness and privativity directly into phonological representations.

# Markedness in Element Theory

Element Theory (Backley 2011) is an offshoot of Government Phonology, developed by Kaye, Lowenstamm, & Vergnaud (1985).

Rather than binary features, the basic building blocks of segments are **elements**.

Vowels, for example, are built out of the elements **|I|**, **|A|**, and **|U|**; by themselves, they represent the vowels /i/, /a/, and /u/.

As in *SPE*, these are considered to be the simplest vowels.

## Three-vowel system

/i/

/a/

/u/

|I|

|A|

|U|

# Markedness in Element Theory

Other vowels are considered to be combinations of the basic elements.

Thus, the vowel /e/ has the elements |I A| and /o/ has |U A|.

These vowels are more complex, hence more marked, than the simple vowels.

## Five-vowel system

/i/

|I|

/e/

|I A|

/a/

|A|

/o/

|U A|

/u/

|U|

5.

*Other ideas pioneered by  
Trubetzkoy*



# A wellspring of phonological ideas

As I mentioned at the outset, Trubetzkoy's book is a treasure trove of phonological ideas that have proved to be influential.

Some of these ideas were ahead of their time, in the sense that it was only later that they became important in phonological theory.

Here I will briefly mention only a few of these.

# Prosodic markers

I have discussed some of Trubetzkoy's segmental features for vowels and consonants, but a major section of his book is devoted to prosodic properties [**'de las propiedades prosódicas'**].

The section contains extensive discussion of the syllable and the mora [**sílaba y mora**], syllabicity, syllable nuclei, and other aspects of syllable structure that were systematically studied only many years later, and are still being studied today.

Also the notion of syllable quantity [**la cantidad**], including contrasts between short and long vowels and between simple and geminate consonants.

# Prosodic markers

This section also includes interesting remarks on tone, what Trubetzkoy calls ‘tone register’ [**registro tonal**], and on stress and accent [**el acento**].

Tone and other prosodic markers were studied by J. R. Firth and linguists of the London School (Battaner Moro 2005) starting in the late 1930s, and *SPE* has a detailed analysis of English stress.

However, systematic study of tone and stress as prosodic domains within generative phonology only began in the 1970s with Autosegmental (Leben 1973, Goldsmith 1976) and Metrical phonology (Lieberman & Prince 1976, Halle & Vergnaud 1987, Hayes 1995).

# Statistics and phoneme frequencies

Finally, I will mention two other areas where Trubetzkoy's book was ahead of its time.

In the section on phonological statistics, Trubetzkoy considers various ways of counting phonemes and assessing the functional load of phonological contrasts.

He also has an interesting discussion of how to compute actual versus expected frequencies of phonemes; such computations have become important recently in deciding whether a pattern is the result of a constraint or is simply random (Frisch et al. 2004).

Statistics have become much more important in phonology with the advent of online databases and more sophisticated statistical tools (Durand et al. 2014).

# Boundary signals

The second part of Trubetzkoy's book is devoted to *Grenzsignale*, that is to boundary signals [**señales demarcativas**].

A boundary signal is something in a language that indicates the beginning or end of a linguistic unit (a syllable or word or phrase).

For example, in German, the sequence **consonant + h** can only occur at the boundary of two words, e.g. **ein haus** 'a house', and never within a single word.

In many languages, stress is fixed to occur on a particular syllable or mora (say, the first or last syllable, or the second mora); stress thus serves as a boundary signal in those languages.

# Boundary signals

Some languages have vowel harmony [**armonía vocálica**], which requires all or some vowels to agree with respect to some feature (e.g. back, or round, or high).

Since vowel harmony is typically confined to a certain domain (e.g. the word), it functions as a boundary signal.

Boundary signals are important in the study of the interface between phonology and morphosyntax (see Scheer 2011).

And it has been argued that infants can use statistical learning to identify boundaries in their language (Saffran et al. 1996).

6.

*Conclusion*

# Conclusion

To conclude, I have tried to show that Trubetzkoy's book has been very influential in the history of phonology, and linguistics more generally.

I have also suggested that while specific terms and concepts introduced or developed by Trubetzkoy have been adopted, his theory of contrast was not included in the theory of generative phonology of Chomsky & Halle (1968) and its later variants.

Nevertheless, I believe that Trubetzkoy's insights into the nature of contrast still have much to offer to contemporary phonological theory (Dresher 2009, Dresher et al. 2018), and this is what I will talk about tomorrow.



C EL COLEGIO  
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¡Gracias!  
Thank you!



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**M** DE MÉXICO

80 Años de los *Grundzüge der Phonologie*.

N. S. Trubetzkoy.

Presentación de la Nueva  
traducción y versión crítica

