

Biology for  
linguists : obstacle or  
royal path to concept  
building?

*Patrick Sériot, May 18th 2017, Tartu*

A collage of Russian Orthodox churches. The top half shows a red brick church with a white spire and a golden dome. The bottom half shows a red brick church with a white spire and a green dome. A red banner with the word 'CRECLECO' in white capital letters is centered across the middle.

**CRECLECO**



LE CRECLECO  
EST LE MEILLEUR  
DES SITES!!!

**ACHTUNG**  
Sie verlassen jetzt  
**West-Berlin**  
~~WIE DENIE~~





I/ The biological metaphor:

Reasoning by analogies



Structuralism is not only  
Paris in the 1970s...



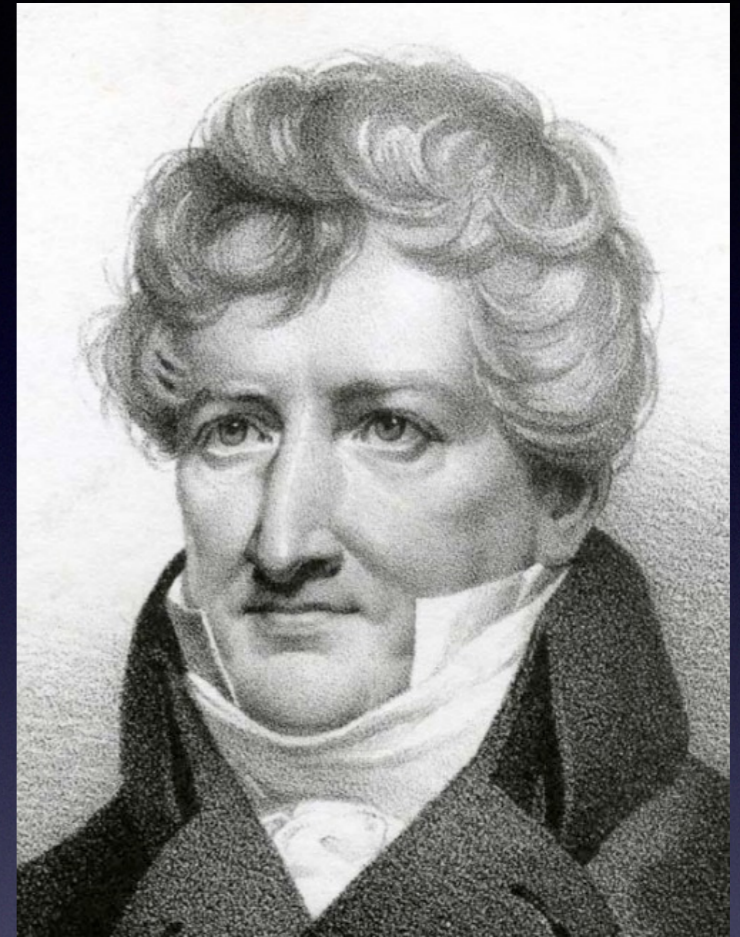
CASSIRER E. :  
"Structuralism in modern  
linguistic", Word, vol. 1, n°2,  
août 1945, p. 99-120.

Ernst Cassirer  
(1874-1945)





Etienne Geoffroy Saint-Hilaire  
(1772-1844)



Georges Cuvier  
(1769-1832)

The situation at the end  
of the 18th Century



how to interpret  
fossils?

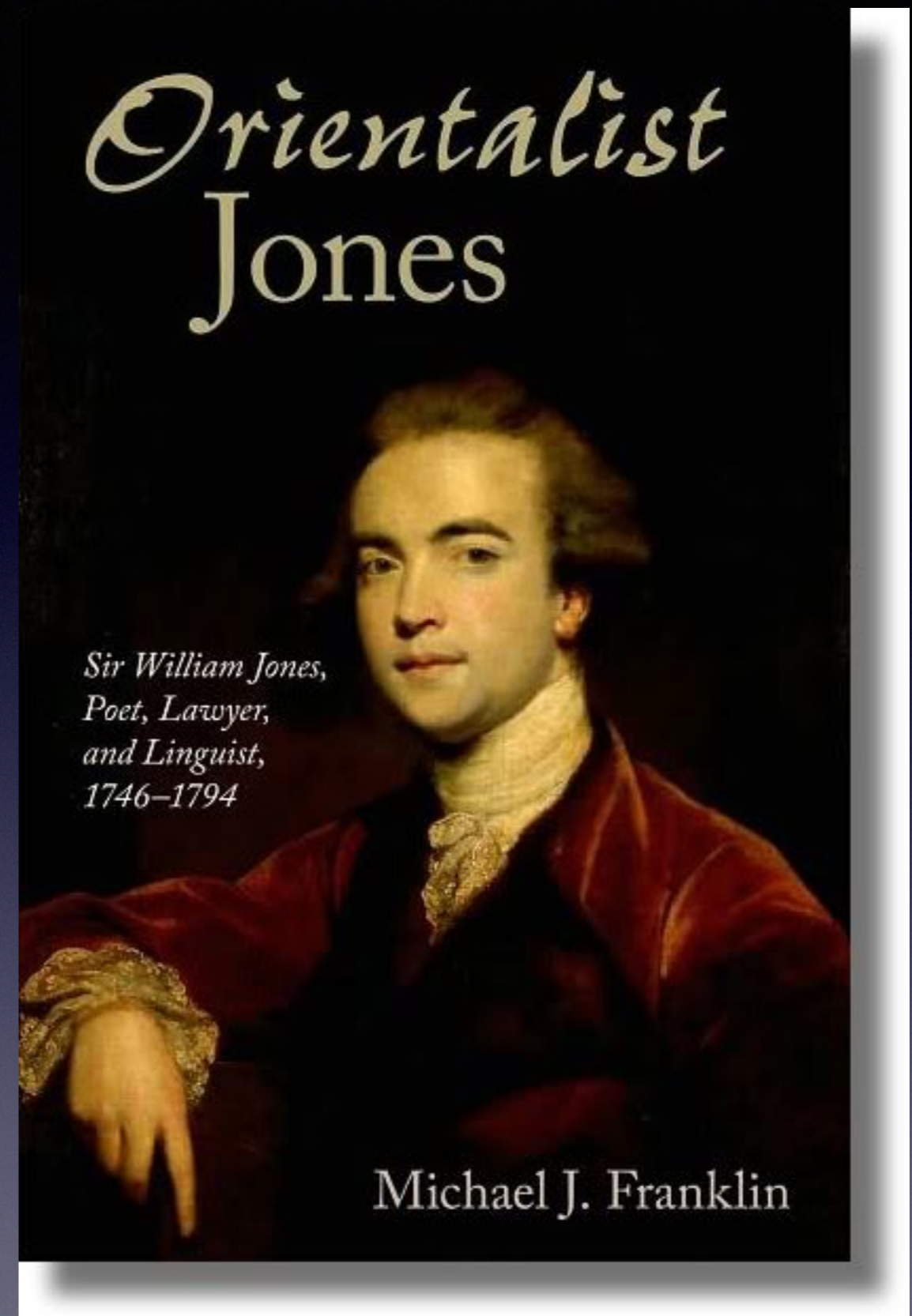


new civilizations

new languages

# Sir Williams Jones

1746-1794



The Sanskrit language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three, without believing them to have **sprung from some common source**, which, perhaps, no longer exists. (Jones, 1786, p. 34)

Jones William, 1786 : The Third Anniversary Discourse, on the Hindus, Delivered 2 February, 1786. Works I, pp. 19-34

the similarity can be explained only by natural descent from a **common ancestor**

-> monogenesis or polygenesis of languages?



18th Century :  
systematizing natural history meant  
properly **classifying** species of organisms  
according to **rational** principles



## disagreement about

- what sorts of **comparisons** between animals were acceptable
- which principles ought to underlie a rational system of animal **taxonomy** and guide the study of animal anatomy

= two competing and divergent philosophical views on the aims and methods of the life sciences

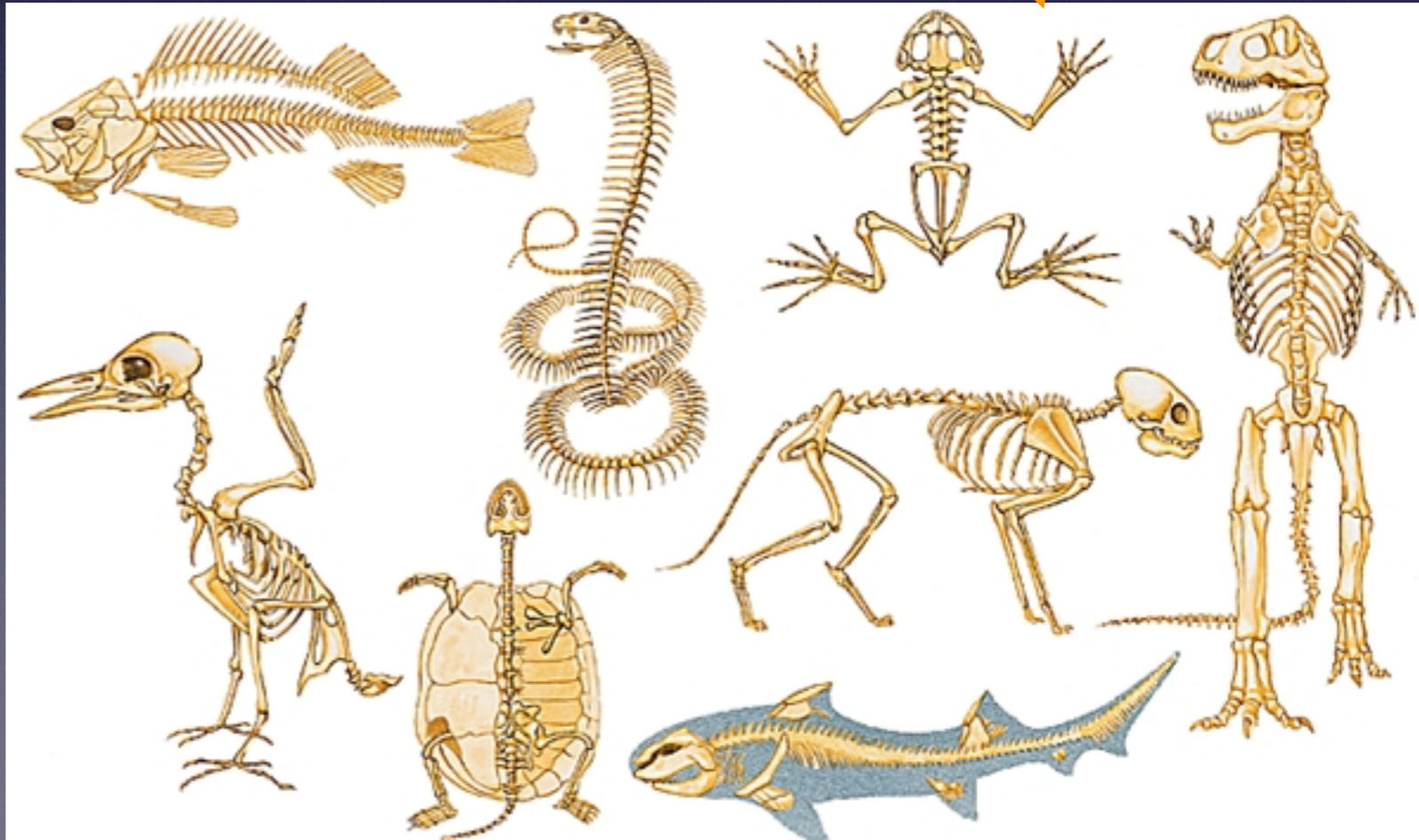
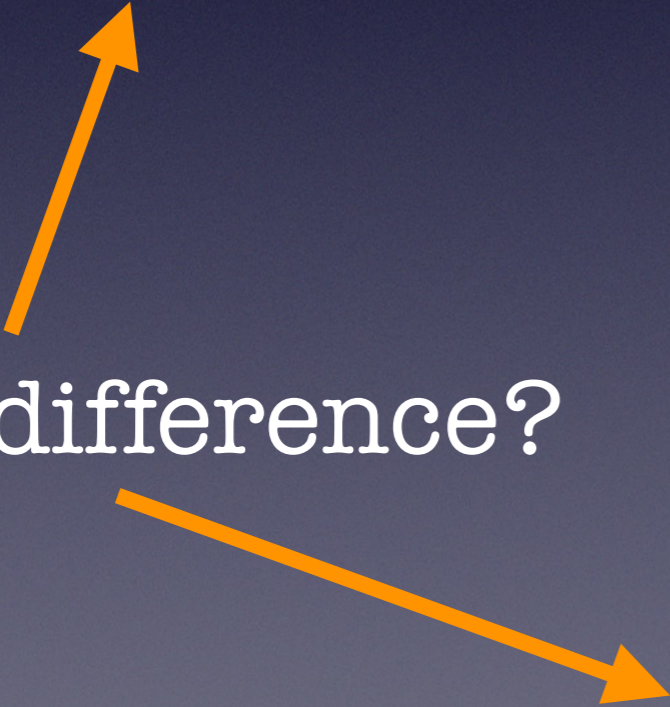
two distinct research programs



similarity



or difference?



# the structure of animals

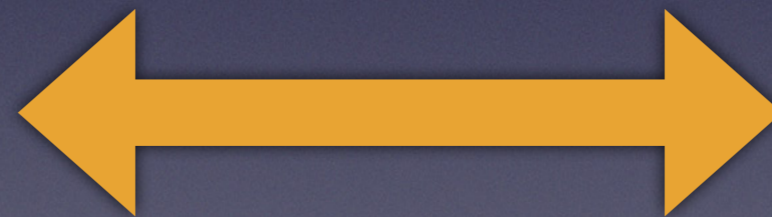
Cuvier

teleological or  
**functional** approach

Geoffroy St.-H.

emphasis on **morphology**

function



form

dispute about the role of **hypothesis**  
in scientific thinking

# the structure of animals

## Cuvier

animal structure was determined by **functional needs** of an animal or the "conditions of existence"

C. stuck to "positive facts" refused to flirt with hypotheses and unsupported ideas

## Geoffroy St.-H.

a **basic unified form** that was **modified** across all animal **forms**

the organization of vertebrated animals can be referred to as one uniform **type**

philosophical **hypotheses** instead of testable or demonstrated research

# two different scientific philosophies

## Cuvier

theory of the **correlation of parts**

animal structure are determined by an organism's **functional needs**

## Geoffroy St.-H.

theory of **analogues**

all animal structures = **modified forms** of one **unified plan**

## two different philosophies

### Cuvier

animal structure =  
determined by functional  
needs of an animal or the  
"conditions of existence"

"positive facts"

refused to flirt with  
hypotheses and  
unsupported ideas

### Geoffroy St.-H.

animal structure = basic  
unified form that was  
modified across all  
animal forms

philosophical  
hypotheses instead of  
testable or  
demonstrated research

# Cuvier

4 different « branches »  
composition was defined  
as the arrangement  
of parts

to imagine that all  
organisms consisted of  
the **same** organs  
arranged in the **same**  
manner was illogical  
and false

unity of composition  
= nothing more than  
a **vague analogy**

# Geoffroy St.-H.

describing nature by  
focusing on **similarities**  
instead of **differences**

**unity of composition**  
between mollusks and  
vertebrates

# Cuvier

4 different « branches »

**analogies** do not belong  
in real science

vertebrate and mollusk  
organ arrangement **differ**,  
whether by physical  
location or orientation  
in the body

# Geoffroy St.-H.



# Cuvier

analytical approach

# Geoffroy St.-H.

"philosophical resemblances"  
are more important than  
actual, observable  
similarities between animals

# Cuvier

proposed four separate categories, or embranchements (branches), in the animal kingdom that he identified by means of his two main principles :

- the conditions of existence and the correlation of parts
- • a corollary principle — the subordination of parts.

## II/ Eastern European structuralism

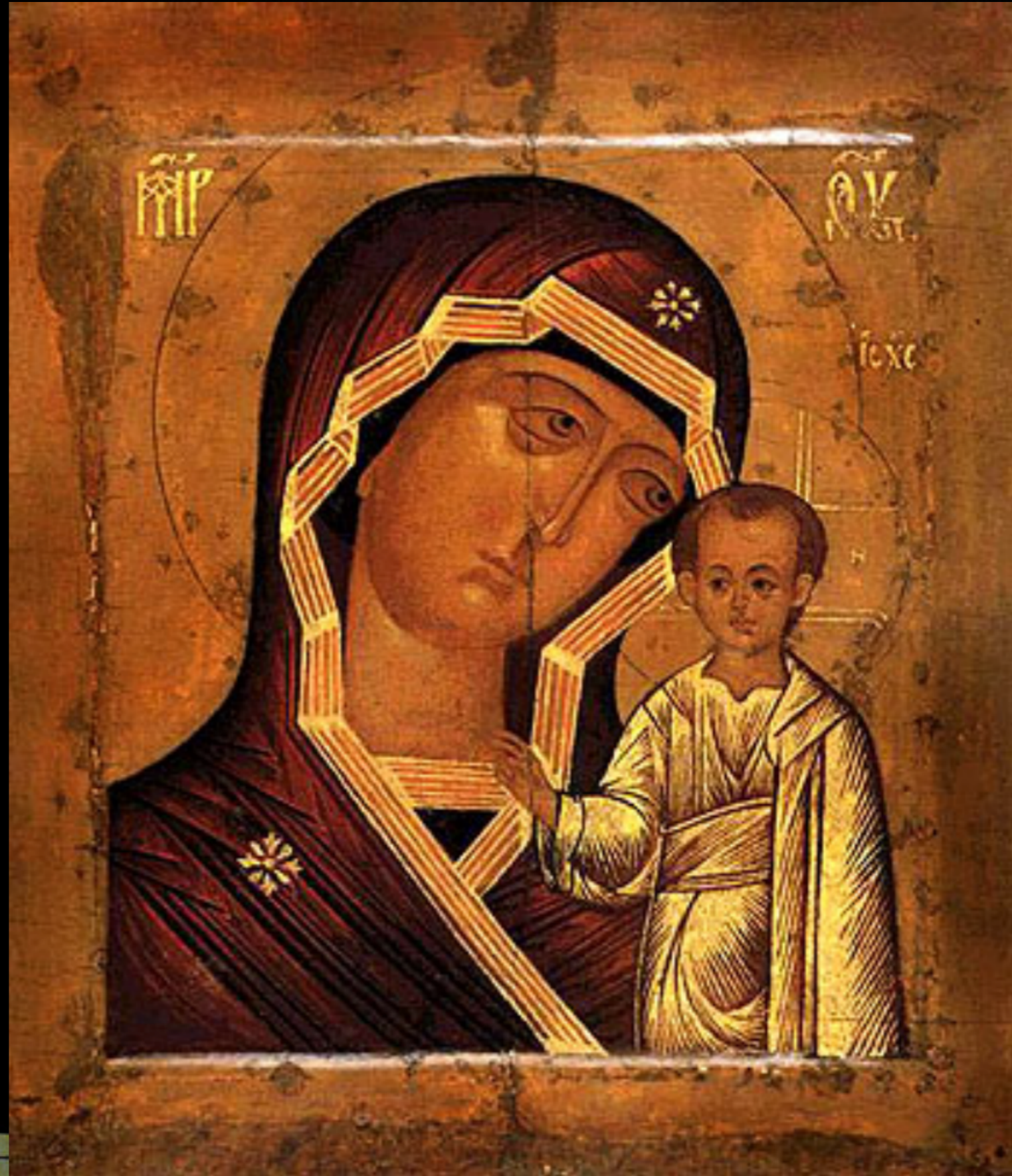
In Russian culture

everything is sign

but the relation between sign  
and referent is not simple



# Sinn und Bedeutung





ВАСИЛИЙ  
КАНДИНСКИЙ


*Точка и линия  
на плоскости*

АЗБУКА-КЛАССИКА





# sociology of science vs historical epistemology



who took the power  
on whom and when?

why did they write  
what they wrote  
there and at that moment?



an American scholar



русский филолог

What does «Russian» mean in «русский филолог»?

What is common between Russian emigre science and Russian science in the Soviet Union in the 1930s?

# буржуазная наука

разрыв

/

увязка



What is «bourgeois science»? Is it idealistic or materialistic?

# Saussure :

## разделение

- резкое разграничение
- резкое противопоставление
- разобщенность
- односторонне, абстрактное понимание языковых явлений
- размежевание

# ПРОТИВНИКИ. :

## СВЯЗЬ

- взаимодействие
- взаимопроникновение
- цельное, синтетическое рассмотрение языка во всей его сложности
- соответствие подлинной природе языковых явлений

the scandal of antinomies

Saussure **separates** langue  
from *time*



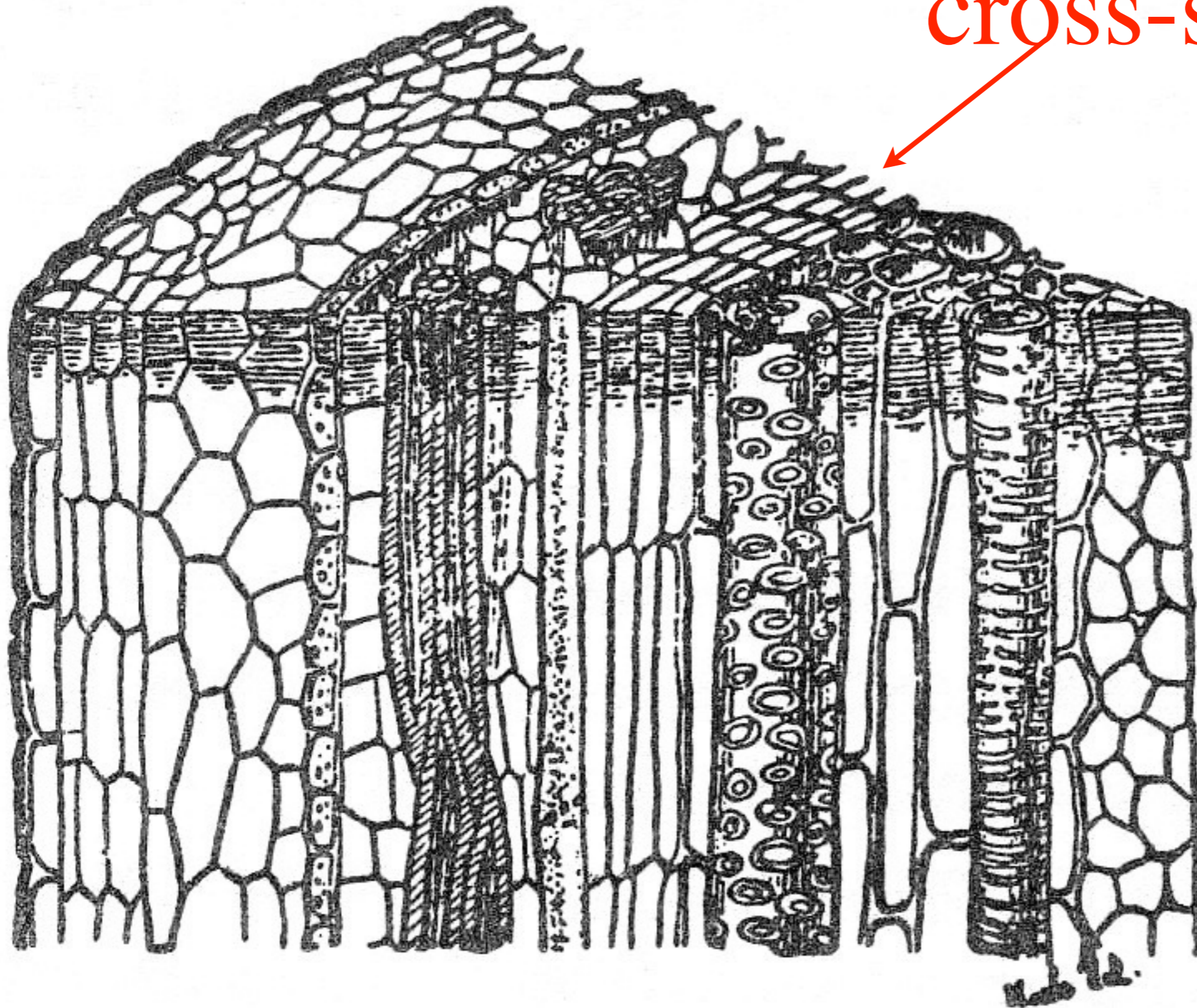
*A systematical misunderstanding:  
mistaking synchrony for a short  
diachrony*

Jakobson, Budagov...

*CLG*, p. 125 : synchrony / diachrony

cross-section

slice



A line has no thickness  
a surface has no depth



Prague, 1927



Brno 1933

There are as many «national» Jakobsons as there are  
cultures of reception

France :

Jean-Claude MILNER : «Le bonheur par la symétrie»,  
*Cahiers Cistre*, 5, 1978, p. 53-56.

« everything for him must become familiar for everybody,  
if only we adopt the point of view of **Reason**» (p. 53-54)

«...being certain, like Spinoza, like Voltaire or like any Jew from Central Europe, that nothing good can come from men constituted in **nations**», p. 56

"**Exoticism**, however, is not less when Jakobson speaks in Paris: to listen to him, we, the French, feel that we are entering a continent of mystery and wonder: Russia, still imbued with Byzantium, an inexhaustible cluster of language, gestures and beliefs." P. 53

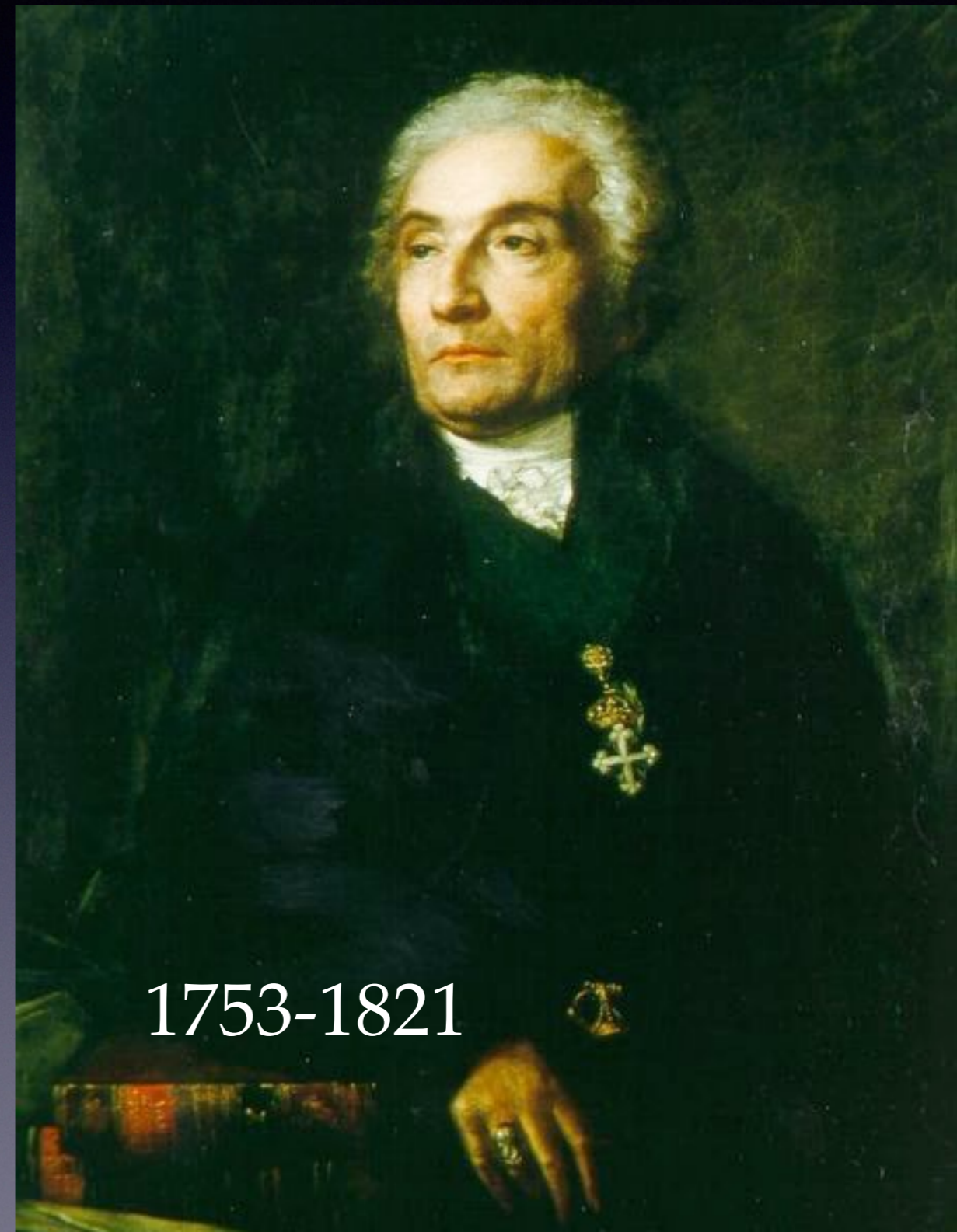
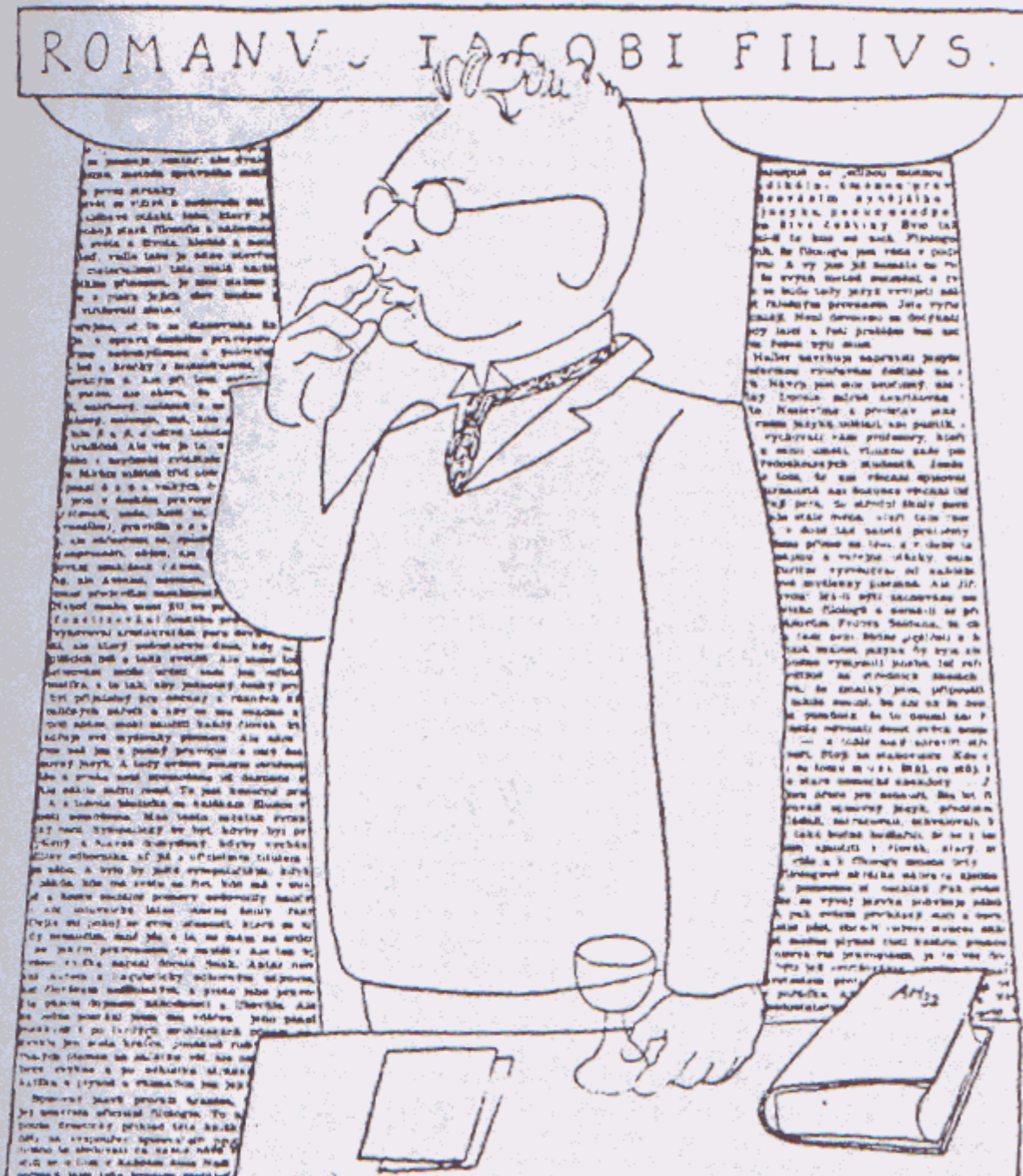
Russia :

The scientific activity of Roman Jakobson (1896-1982) was from the beginning the fruit of a thorough assimilation of the **principles of the Russian philological tradition**. (В.В. Иванов: Предисловие к *Избранным трудам Р. Якобсона*, М.: Прогресс, 1985, стр. 5)



# Jakobson cites J. de Maistre : «Don't let us speak of **chance** and of **arbitrary signs**»

// Marx? Vico?



1753-1821

Who is Jakobson's adversary?

# III/ The sources of typological thinking:

*similarity without a common ancestor*



"Schleicher's doctrine, this great **naturalist** in the field of linguistics, has been shaken for a long time, but there are still many **survivals**..  
""Sur la théorie des affinités phonologiques entre les langues" (1936), in SW-I, Mouton, 1971, p. 234

"Is it necessary today to recall that linguistics belongs to the **social sciences** and not to **natural history**? Is not this an obvious truism? ?  
(Ib.)

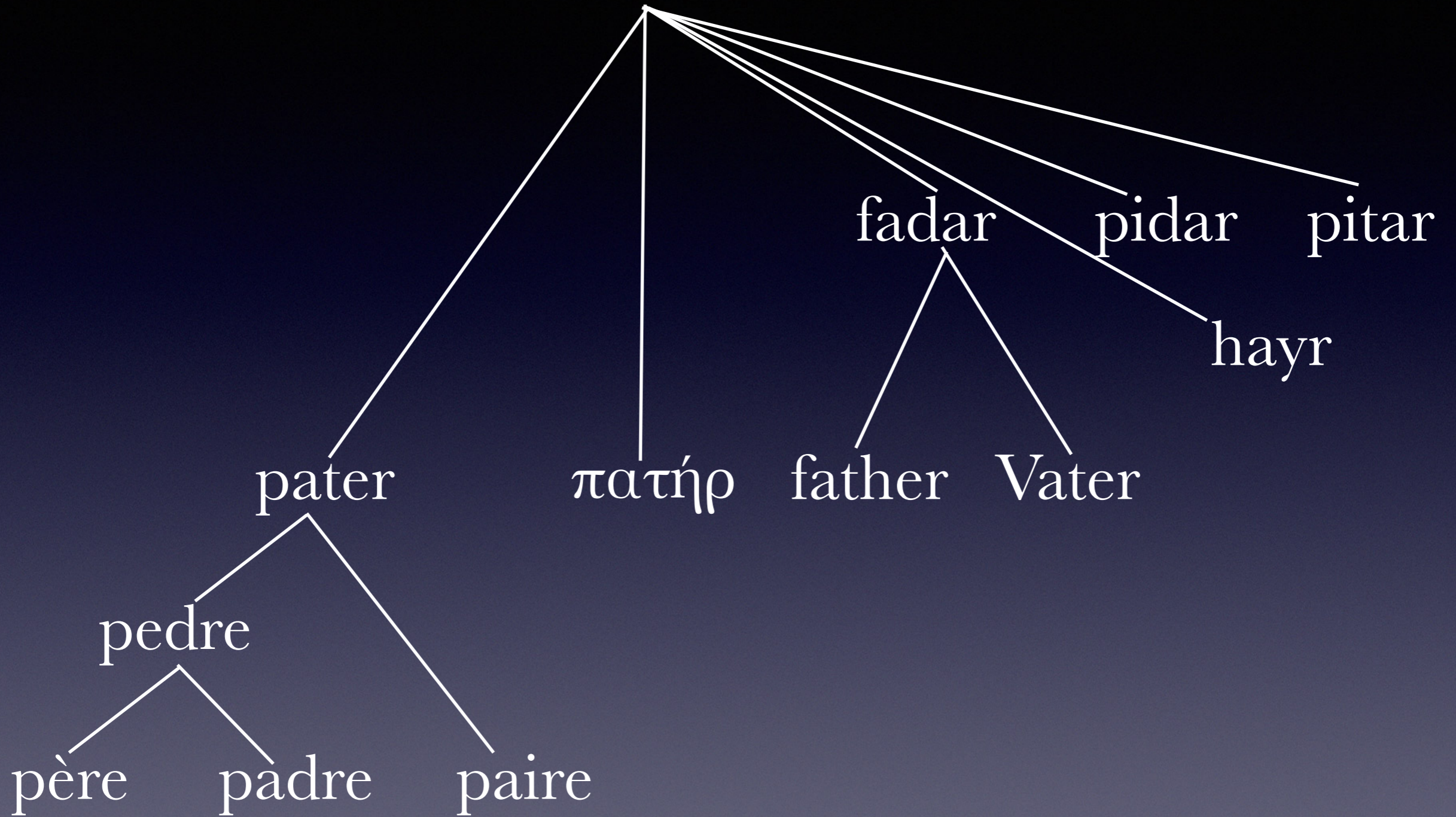
Jakobson's target is «orthodox evolutionism»

"It is the tendency to explain the phonic and grammatical **similarities** of two languages by their descent from a **common ancestor-language**, and to consider only the **similarities** likely to be explained in such a way, which remains without any Doubt the most stable element of the doctrine in question."

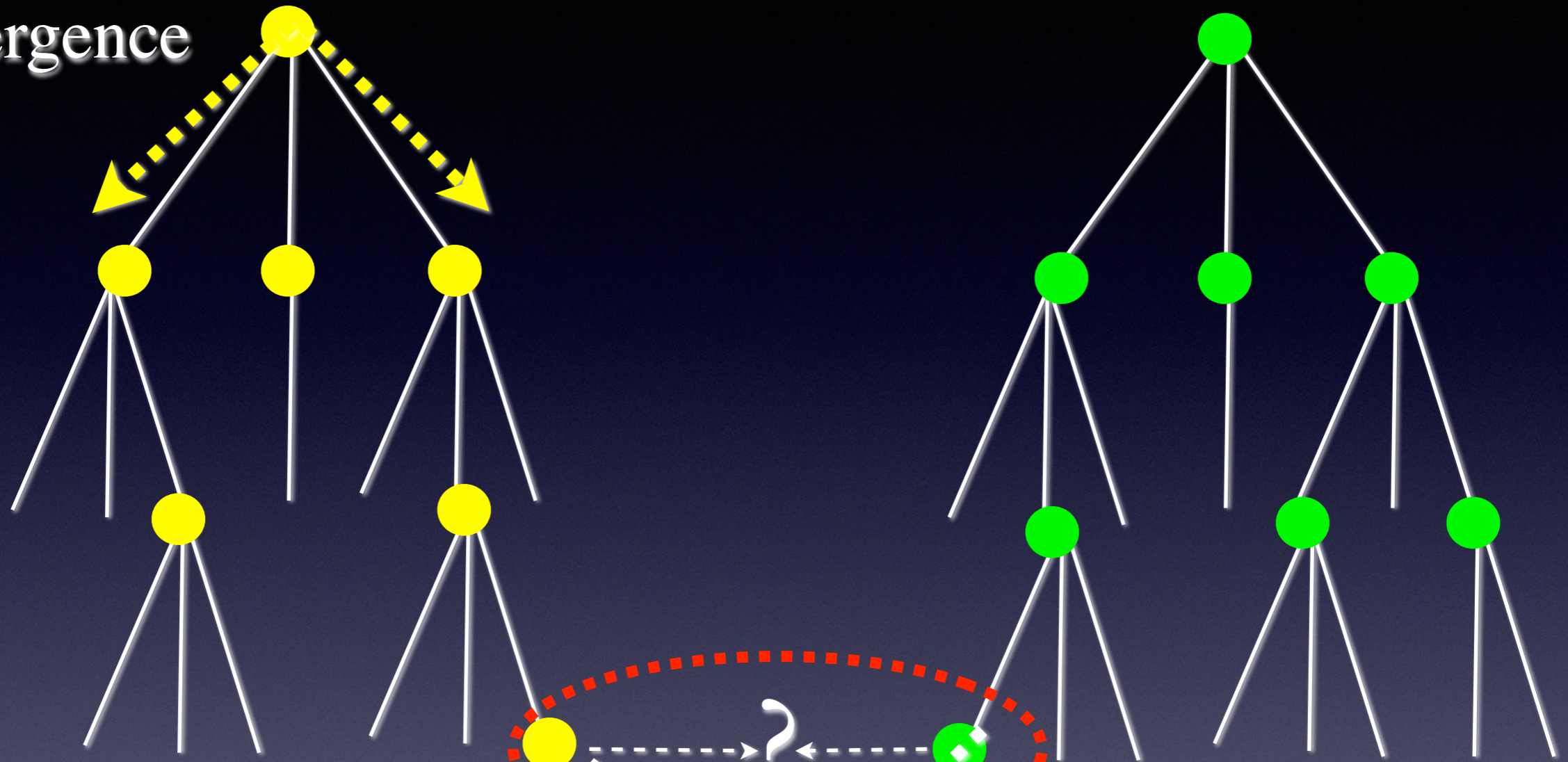
(1936 r.) [Sur la théorie des affinités phonologiques entre les langues, p. 234]

The **similarity** of structure is independent of the **genetic relationship** of the languages in question and can indifferently link languages of the same origin or of different ancestry. The similarity of structure does not therefore oppose, but is superimposed on the "**originary kinship**" of languages. (Ib., P. 236)

\* *ph<sub>2</sub>tēr*



divergence



convergence?

typology?



the biological metaphor is possible because the implicit model is  
natural sciences

biological species were defined by interfertility

*therefore*

languages were defined by intercomprehension

Jakobson refutes the dominant paradigm  
that explains all similarity between  
phenomena only through descent from a  
common ancestor.

= «mecanism» and «positivism»

«traditional science»

VS

«contemporary science»

the explanation of similarities by divergence from a  
common ancestor

for Jakobson



= vulgar  
materialism

for marxist linguists



= idealism

but the adversary is the same!

Soviet Union, years 1920-1930 :

All those who worked directly or indirectly with N. Marr were interested in analogies, comparisons, parallels, similarities, convergences and close ties between objects and domains apparently distant in time and space

= the same problematic as Jakobson!



1894-1939



1890-1955

e.g., R. Šor and O. Frejdenberg endeavored to draw **parallels** between the mythical subjects of ancient India and those of European medieval literature.

the problem :

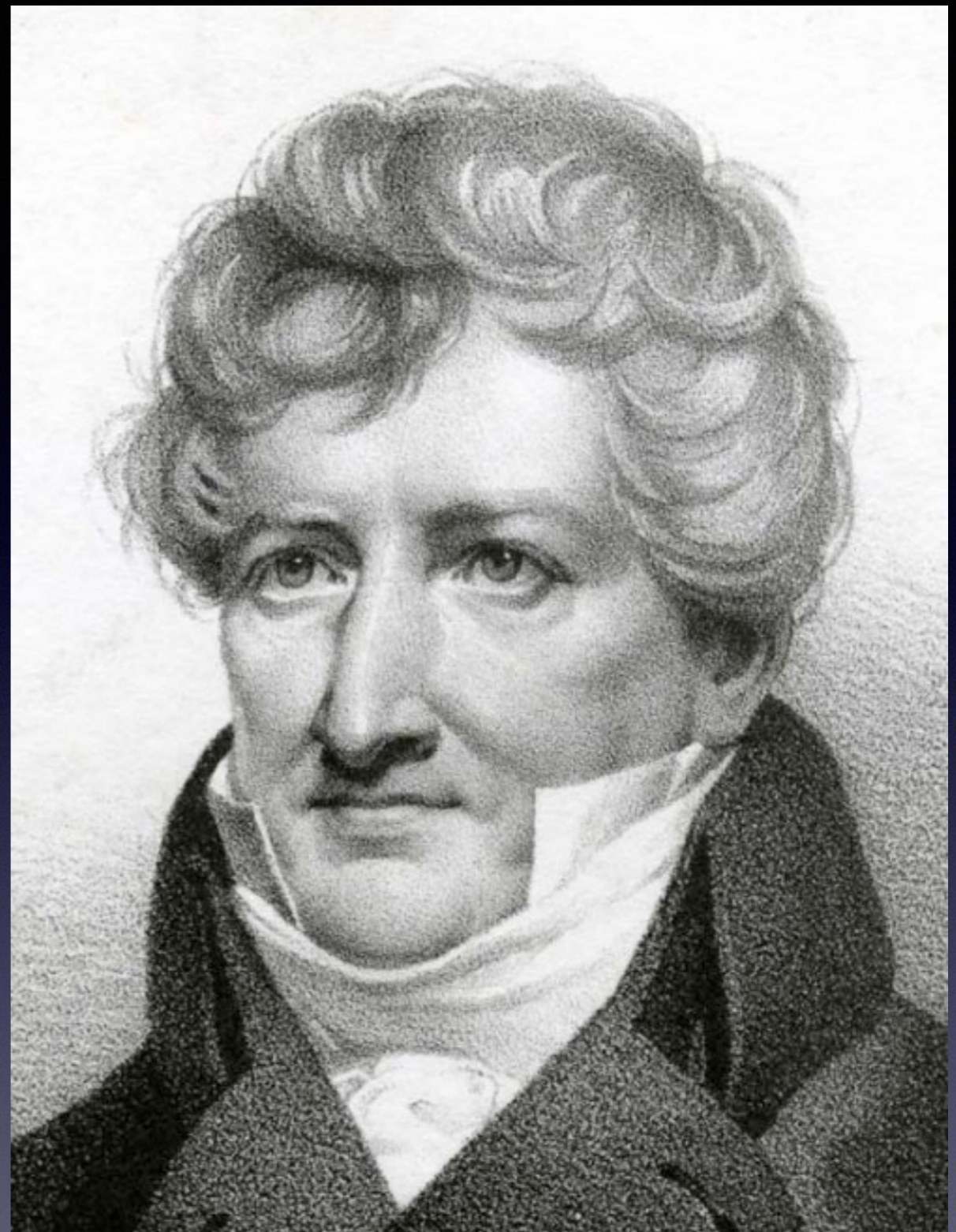
What is the value, the  
explanatory power of the  
resemblance of form?

*chance ?, cause? hidden plan?*

ou : why do similar things look like  
each other?



Ernst  
Cassirer  
(1874-1945)



Georges Cuvier  
(1769-1832)

CASSIRER E. : "Structuralism in modern linguistics", *Word*, vol. 1, n°2, août 1945, p. 99-120.

Cuvier

Trubetzkoy, Jakobson

```
graph TD; Cuvier --- Box; Trubetzkoy, Jakobson --- Box; subgraph Box [law of correlated parts in a whole]; end
```

law of correlated parts  
in a whole



let's go a little further



J.W. Goethe  
(1749-1832)

# die Formenlehre

*idealistic morphology :*

- two forms can resemble each other without any contact in time or space
- no similarity of form can be due to **chance**
- > there is a **hidden plan** which has to be uncovered and exposed

Goethe: Deep similarities are more important than superficial differences. These similarities can only be perceived if **analogies** are constantly sought, even between the apparently least related forms.

Plato: the **invisible** is more real and more perfect than the **visible**

Goethe : *alles Vereinzelte ist verwerflich*

Everything that is separated is reprehensible

Jakobson : *метод увязки*

the «method linking»

≠ Saussure

Linnaeus's classification, in Goethe's opinion, makes too much of superficial differences between species, and too little of their underlying similarities

These similarities can be perceived fully only if the natural historian searches constantly for analogies, even between the apparently most unrelated forms

The axiom of nature's unity is substantiated by the analogical method

Goethe himself frequently applies analogies and metaphors

he bases his novel Die Wahlverwandtschaften on the idea that human behaviour and chemical reactions may be in some ways analogous

## *Die Wahlverwandtschaften*

$AB + C \rightarrow A + BC$

Czech Russian. + Mordvinian.

$\rightarrow$  Czech. + Russian. Mordvinian.

he was far more interested in what organisms have in common than in what distinguishes them

-> the theory of the archetypal plant or 'Urpflanze', according to which the flowering plants (or possibly all plants) are constructed on a single model

-> the equivalent anatomical theory of the archetypal animal, the 'Typus' or 'Urtier', of which all vertebrate species (or possibly all animal species) are the endlessly varied manifestations

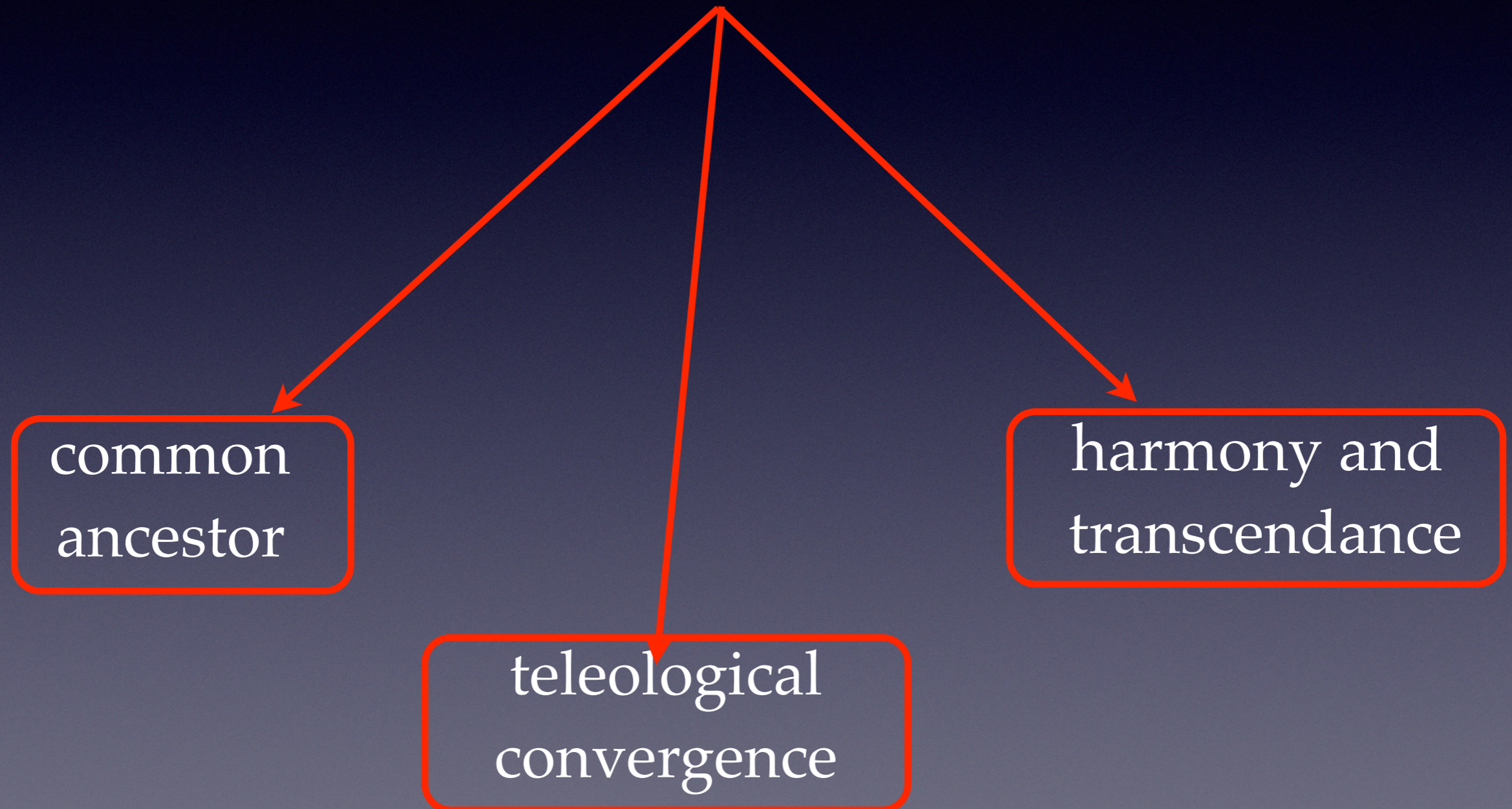
Goethe is not content merely to set up general models for animals and plants as wholes, but contends that their individual organs too are modeled on a **single prototype** — the vertebra in the higher animals, and the leaf in flowering plants.

‘just as art is always wholly present in each separate work of art, so also should science always show itself as a whole in each separate thing it does’  
Goethe, Die Schriften zur Naturwissenschaft



# III/ The Theory of Types

# How to explain and justify the similarity of objects that resemble each other?



doppelgangers

ДВОЙНИКИ



The **look-alikes** resemble each other without having a common origin

«An attempt has been made to classify languages according to the general features of their grammatical structure. [This classification] has been deprived of any practical or scientific utility; It is a game that no linguist could take advantage of». (Meillet, 1921, p. 76)



ALEKSANDR LJUBIŠČEV

1890-1972







*Это не случайно!*

It is not by chance!



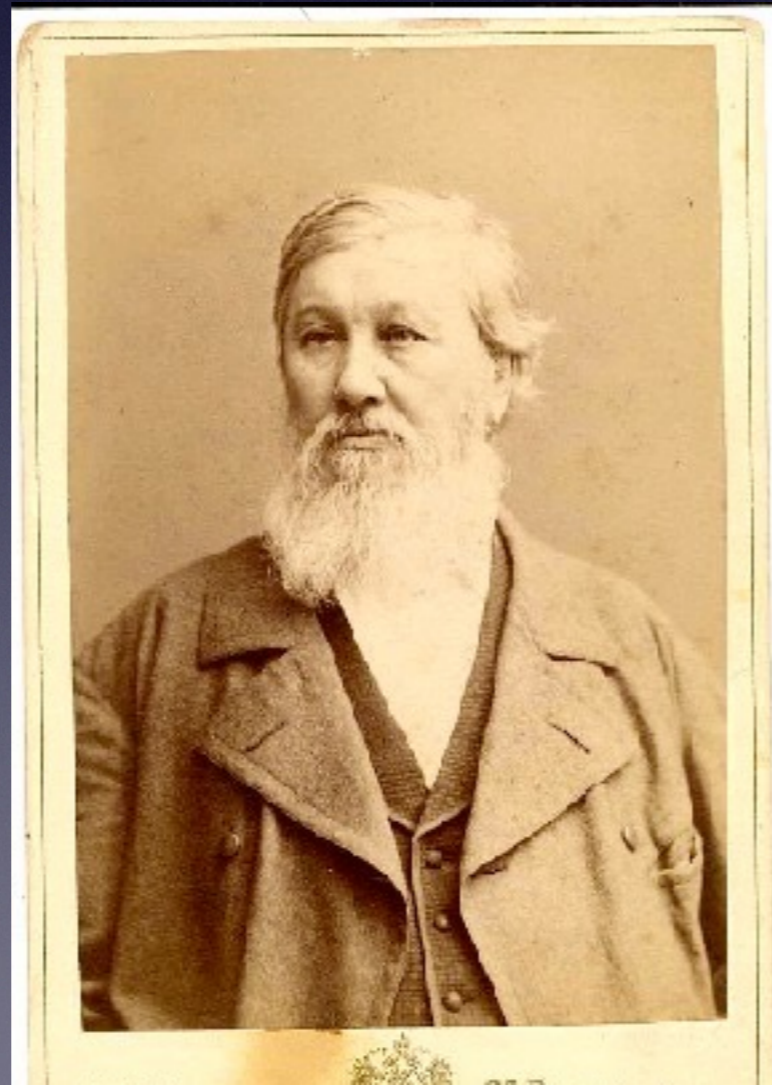
Jakobson :

orthogenesis

theory of closed types

L. Berg

G. Cuvier  
N. Danilevskij  
(1822-1885)

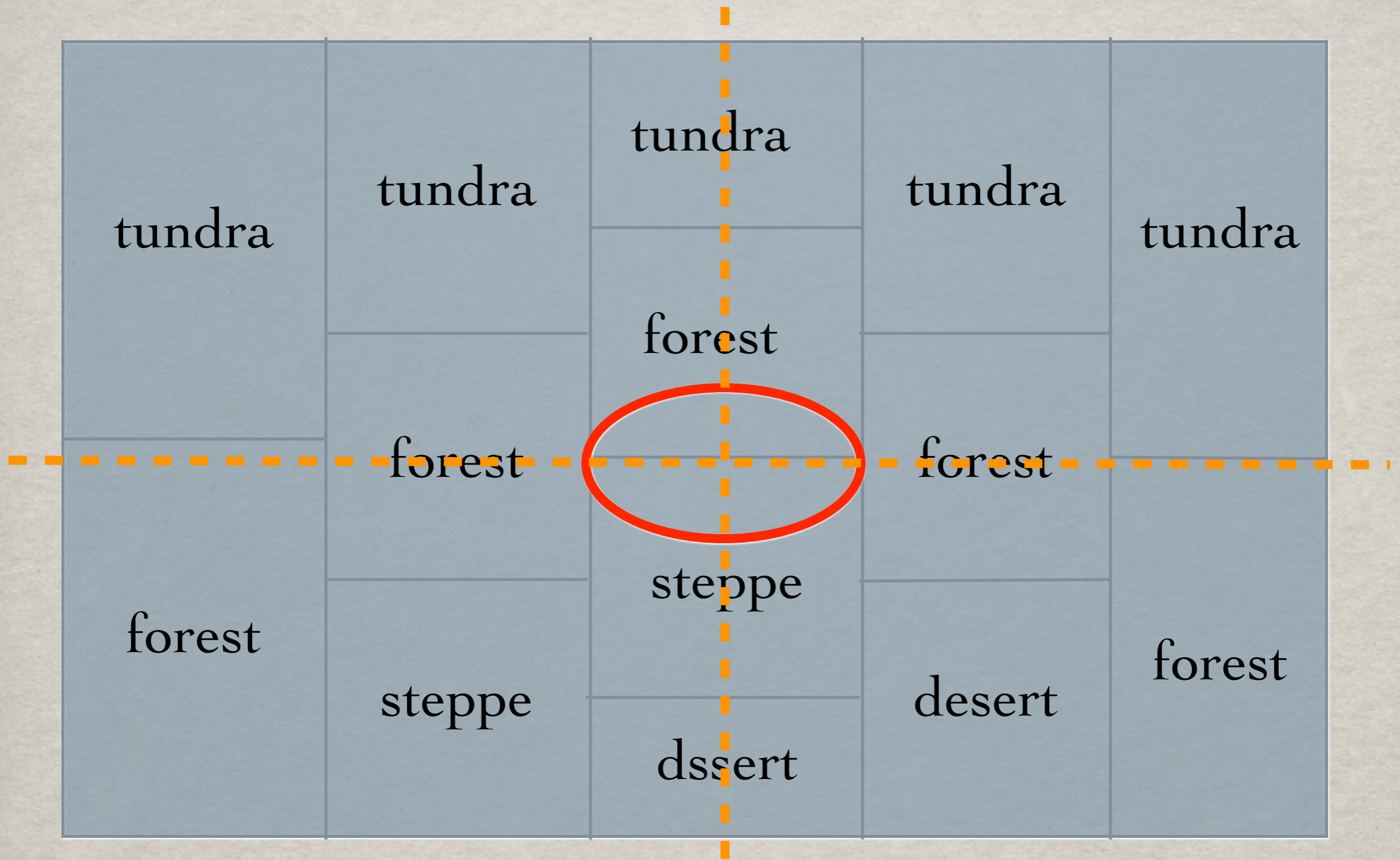


Goethe, the principal representative of **idealistic morphology**, thought that all plants ascend by "metamorphosis" to an ideal, primordial and archetypal proto-plant : *Urtypus*(= Geoffroy Saint-Hilaire).

-> Troubetzkoy and Jakobson share the Goethan concept of archetype, but add the very different principle of **closed type** borrowed from Cuvier.



П. Н. Савицкий, Н. С. Трубецкой, П. П. Сувчинский



geometry / geography

*Это не случайно!*

Pskov

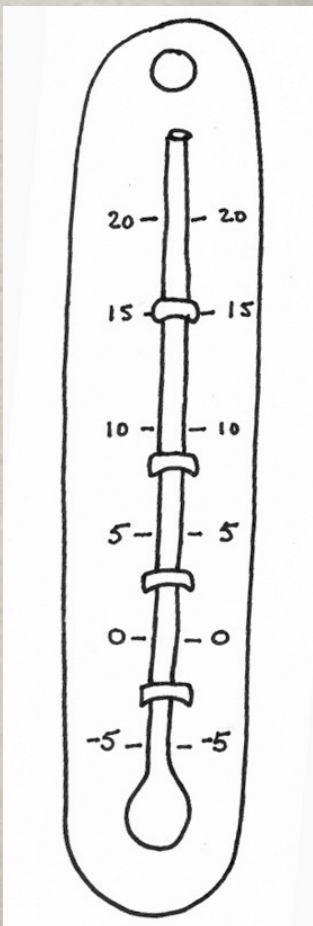
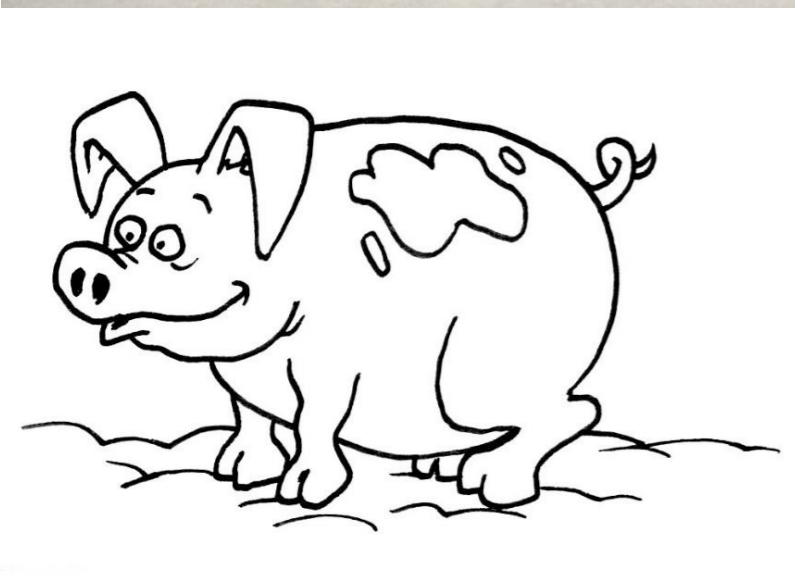
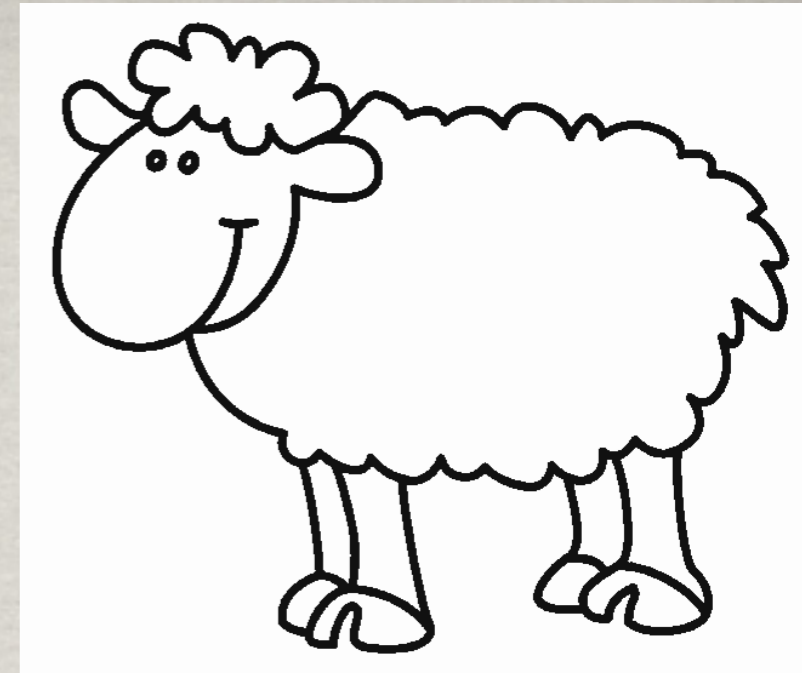


[g]

[ɣ]



Novočerkask



# IV/ Metaphor and Metonymy

# Paracelse (1493-1541) and sympathetic medicine



walnuts



## See kiirendab keeleõpet

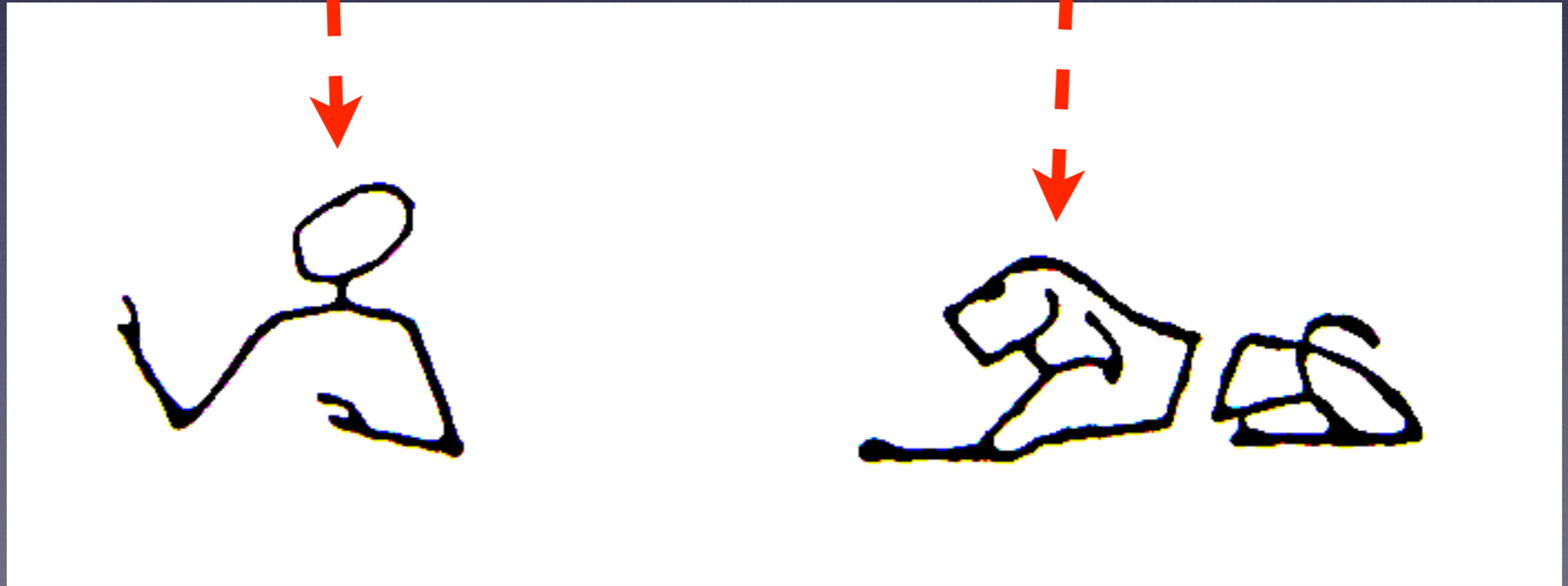
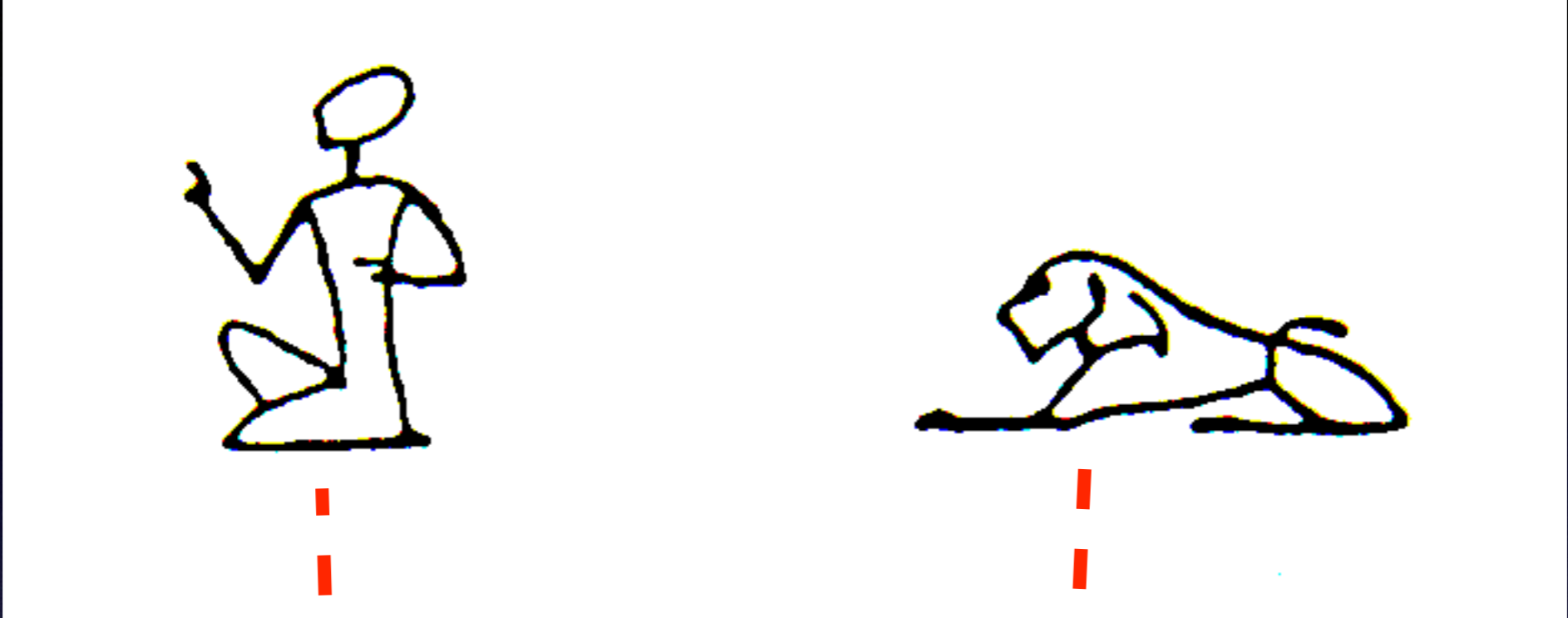


Jaapani teadlased avalikustasid koostisainete nimekirja, mis kiirendavad aju tööd. Üks neist parandab oluliselt keelelist võimekust. Nt võib inglise keelt omandada vaid...

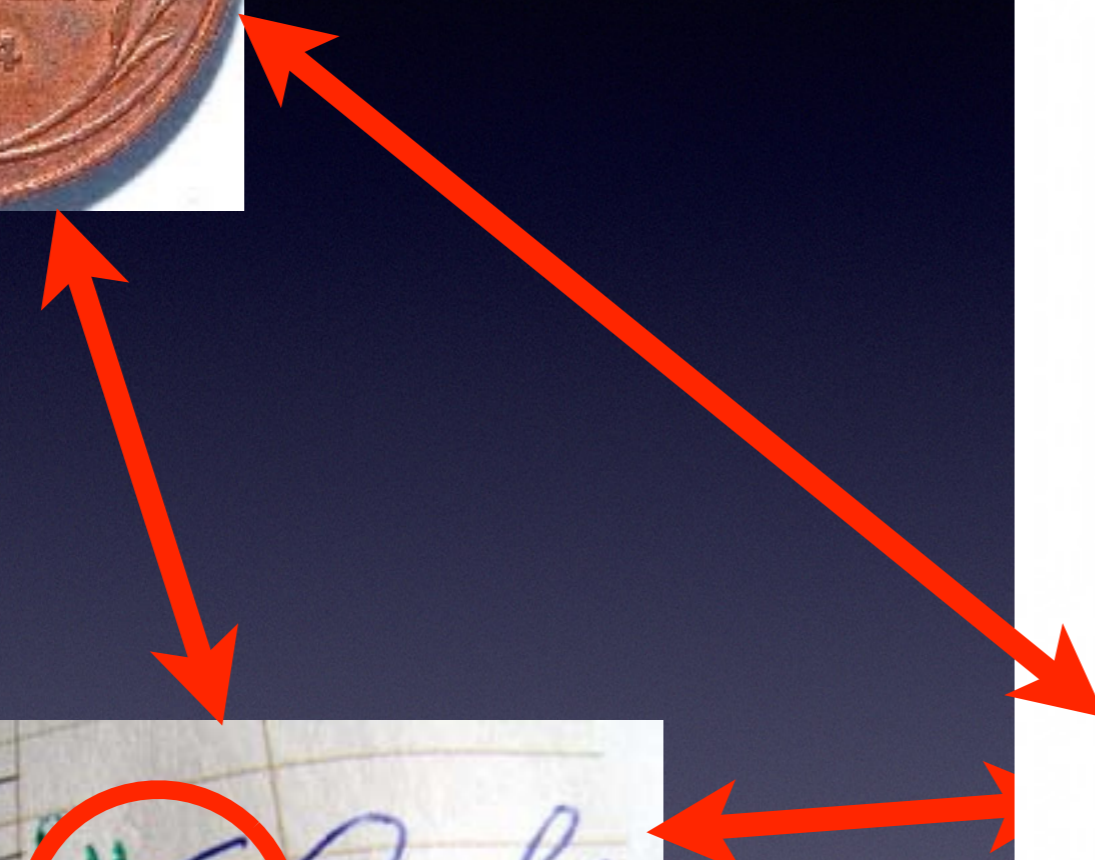
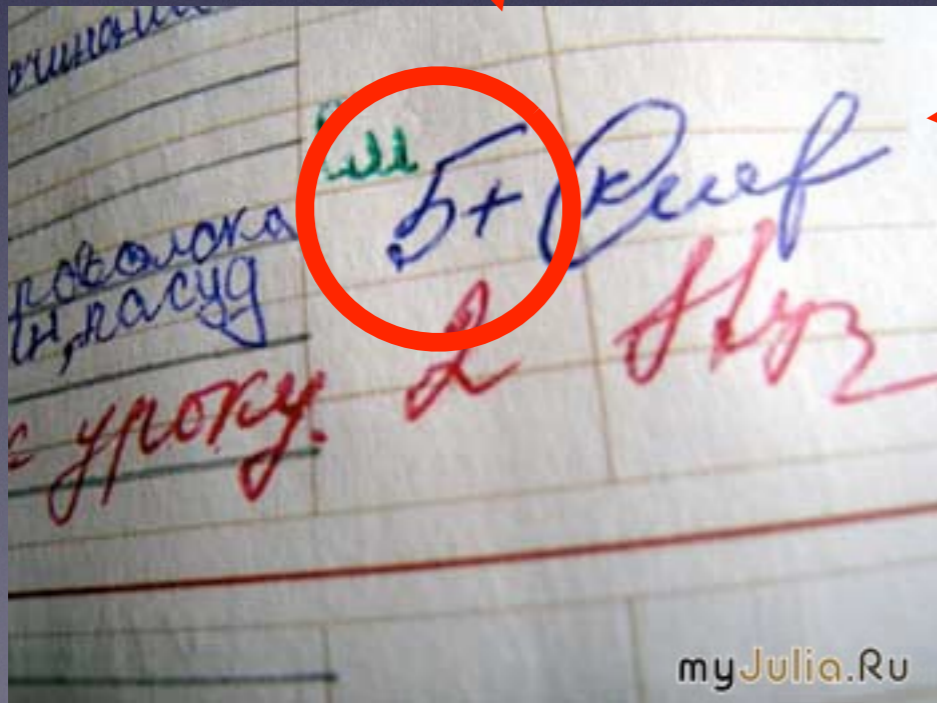


This enhances your language learning. Japanese scientists have published a list of chemical components that are speeding up the work of brain. One of these considerably improves the linguistic skillfulness. So one can acquire English language within ...









sympathetic magic



# magic and primitive cultures



sympathetic magic

by contact

by resemblance

James Frazer  
(1854-1941): *The Golden Bough*

IF we analyse the principles of thought on which magic is based, they will probably be found to resolve themselves into **two**: first, that **like produces like** or that an **effect resembles its cause** and, second, that things which have once been in **contact** with each other **continue to act on each other at a distance after the physical contact has been severed**. The former principle may be called the Law of Similarity, the latter the **Law of Contact or Contagion**. From the first of these principles, namely the **Law of Similarity**, the magician infers that he can produce any effect he desires merely by **imitating** it: from the second he infers that whatever he does to a material object will affect equally the person with whom the object was once in **contact**, whether it formed part of his body or not. Charms based on the Law of Similarity may be called Homoeopathic or Imitative Magic. Charms based on the Law of Contact or Contagion may be called Contagious Magic. (J.Frazer :*The Golden Bough*, chap. 3)

Jakobson 1956 :

«The principles underlying magic rites have been resolved by Frazer into two types : charms based on the law of **similarity** and those founded on association by **contiguity**. [...] This bipartition is indeed illuminating. (Two aspects of language...)

similarity  
↓  
metaphor

(paradigmatic axis)

contiguity  
↓  
metonymy

(syntagmatic axis)

1843 Richard Owen  
(1804-1892)

*Naturphilosophie* :

opposition analogy / homology

function

form

+

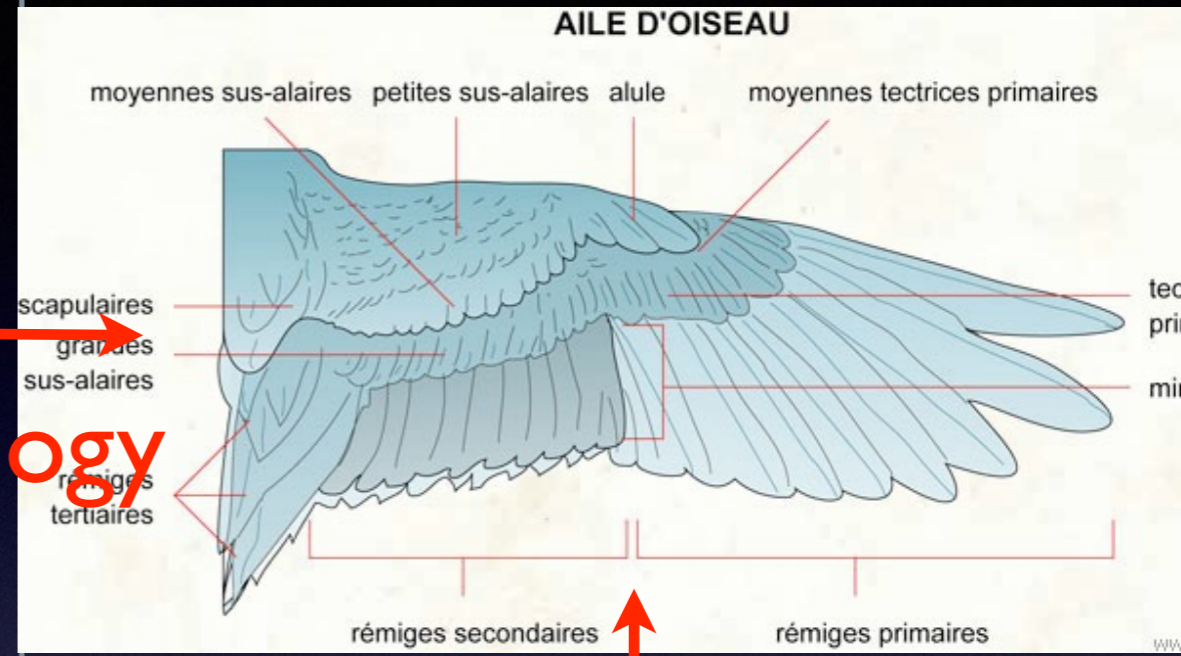
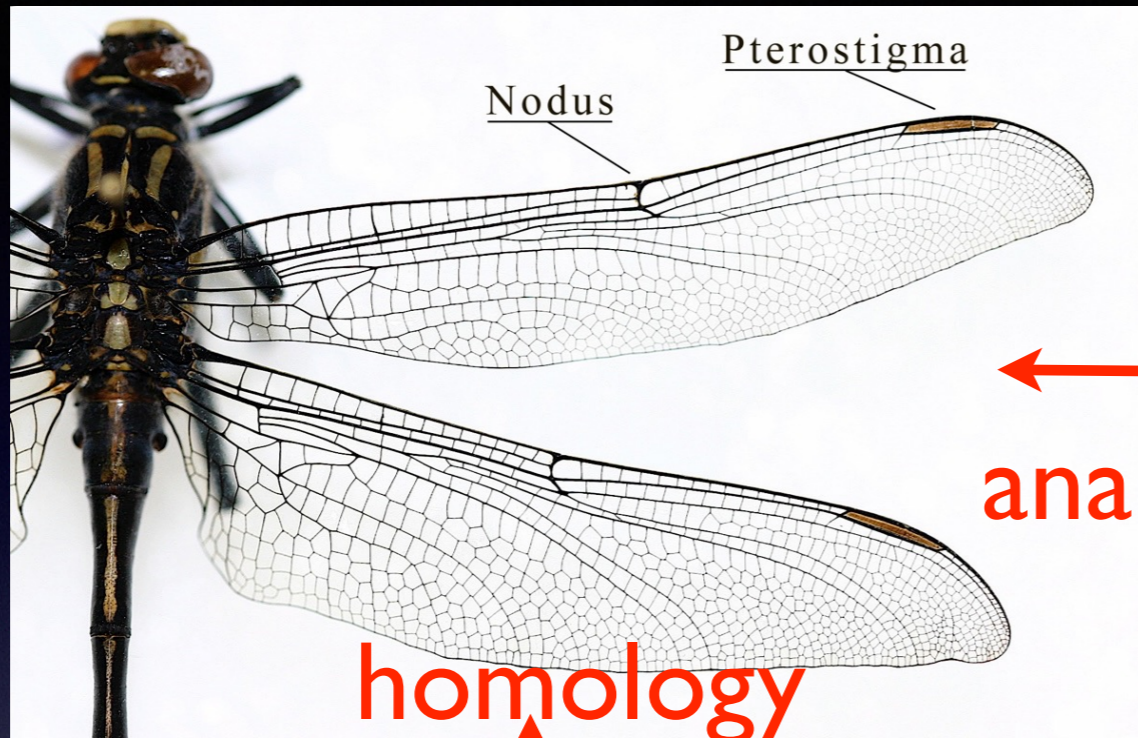
origin



origin

origin

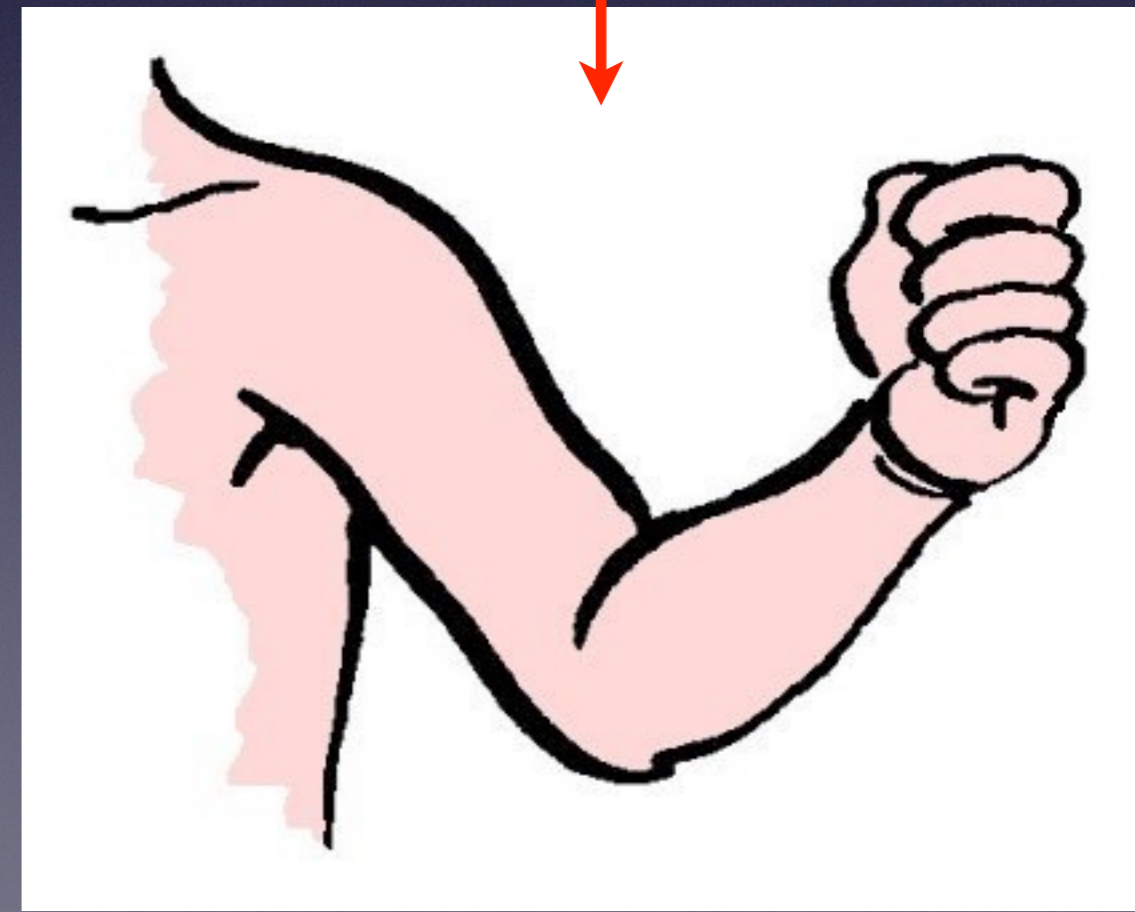
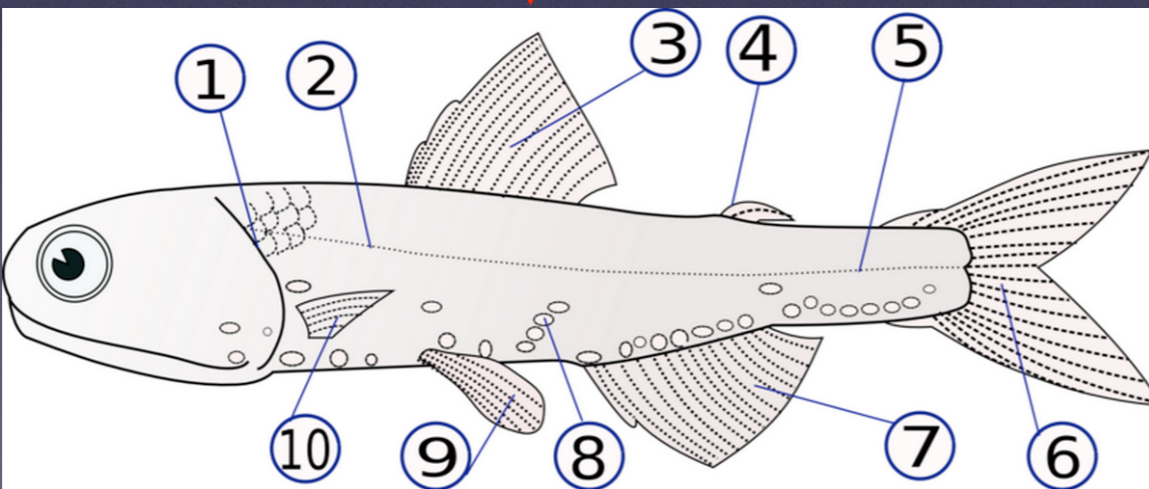
function



analogy

homology

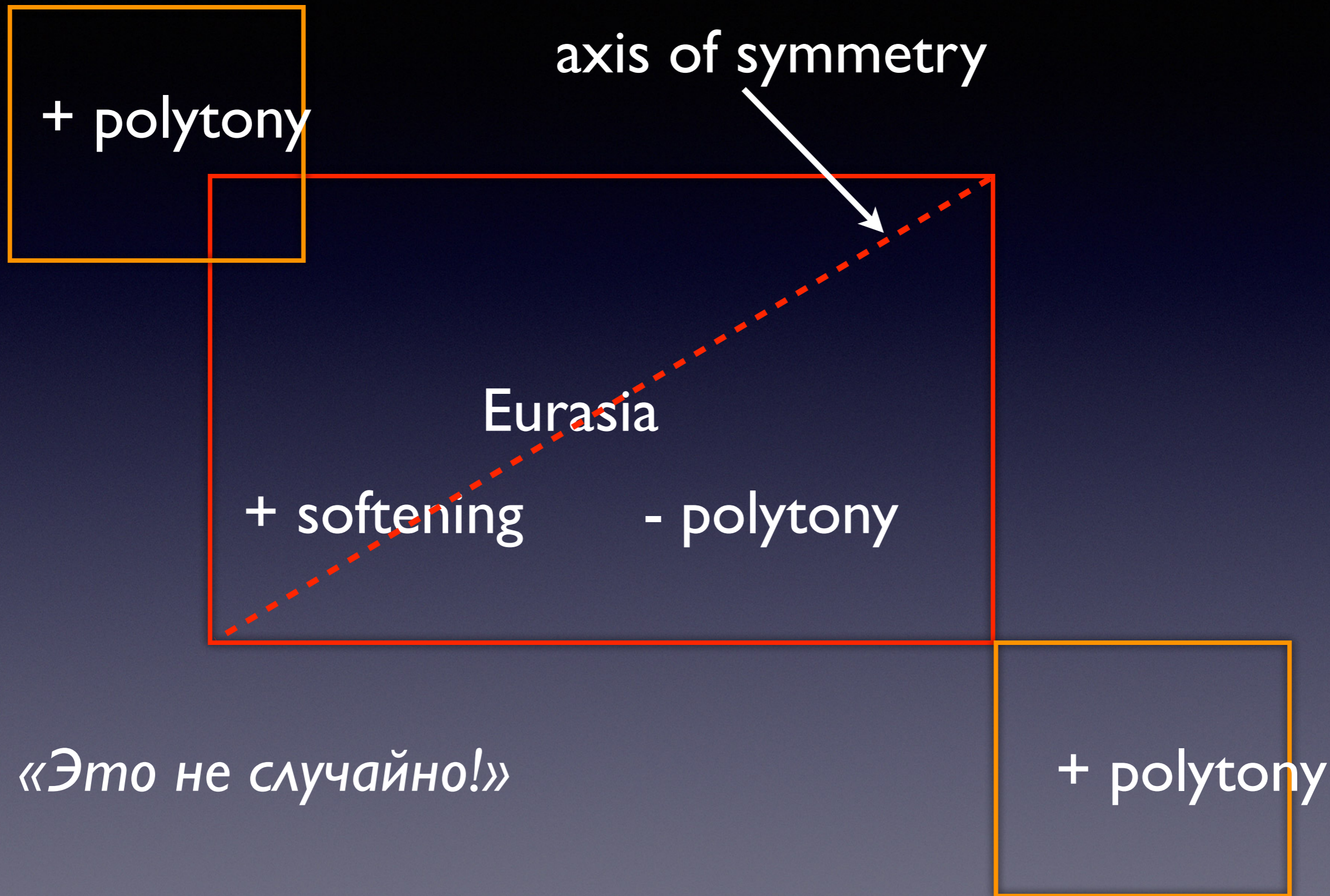
function



The similarity of function is more important  
than the apparent difference of form

analogy says more than homology

Jakobson :  
The Eurasian union  
of languages  
(1931)



# Europe

West

East

(Scand.)

+ article

(Balk.)

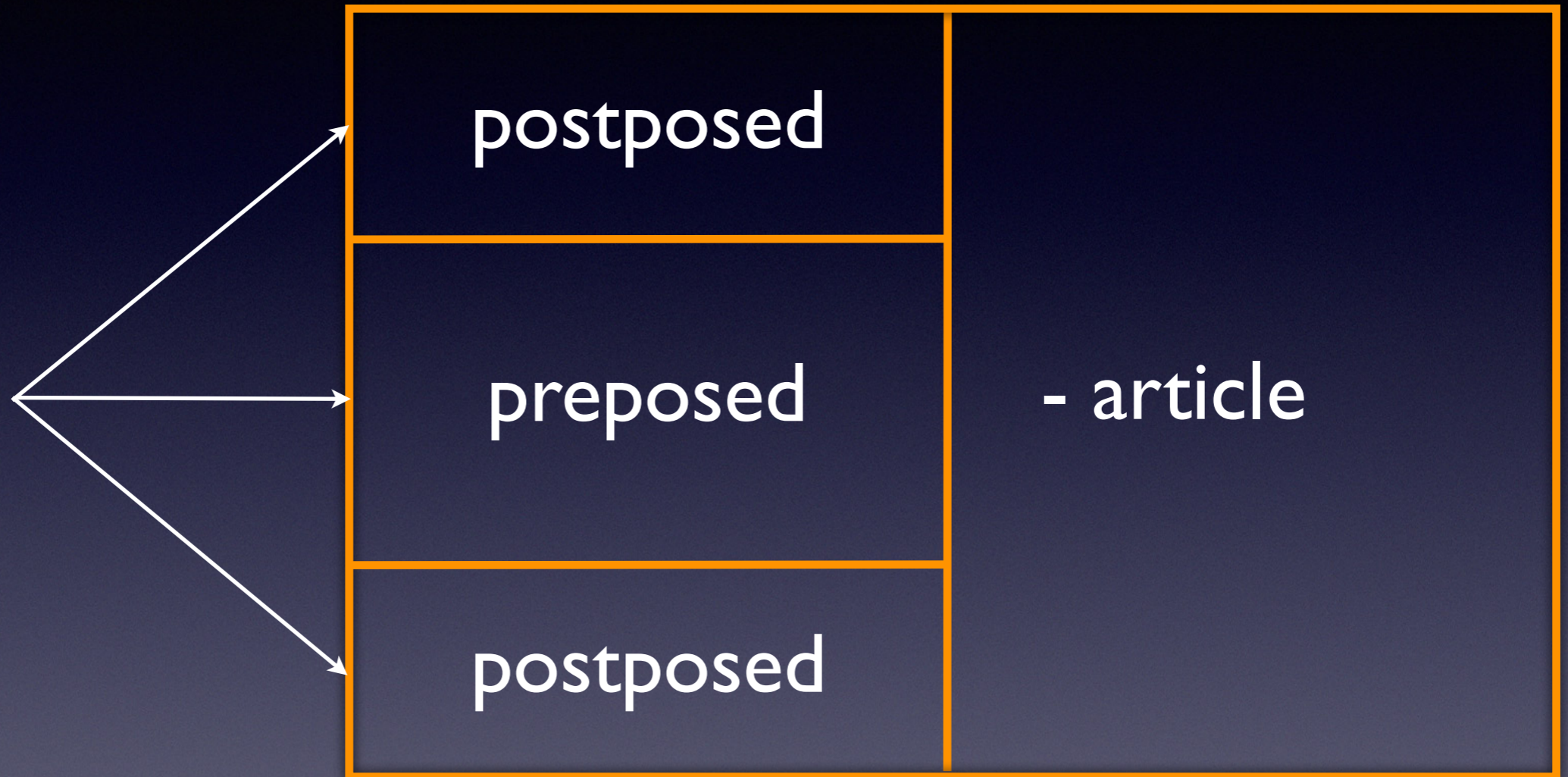
postposed

preposed

postposed

- article

«Это не случайно!»



Empedocle :

τὸ ὅμοιον τοῦ ὁμοίου ἐφίεσθαι



seul le semblable attire le semblable  
il simile attira il simile

like is only known by like / like produces like

подобное стремится к подобному

refers to? has a **link** with?

a dispute in physics in the 17-18th Centuries :

an anti-mechanistic theory :

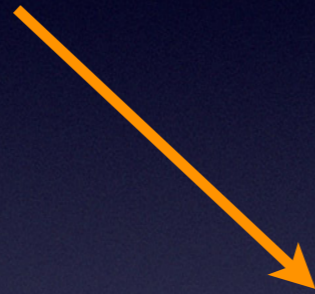
action at a distance (дальнодействие)

According to the notion of action at a distance, bodies interact without material intermediary, through the void, at any distance. An example of a force considered as distance action is the universal gravitation of Newton. On the contrary, in the conception of contact interaction, transmission can only be achieved by means of material intermediaries.

the object of the controversy = action without contact

from physics to linguistics :

action without contact in space



similarity without contact in time



inherited  
resemblance

acquired resemblance :

link of causality

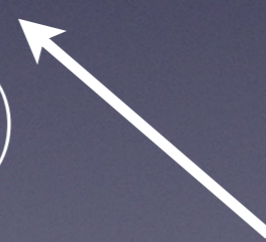
contact  
in space :  
areal ling.

general tendencies  
of evolution :

(It. neo-linguists)

teleological orientation

Jakobson & Trubetzkoy



Jakobson:

synthesis, or ambiguous mixture  
between

the Romantic values  
of *Naturphilosophie*

the principles of  
anti-positivist and  
anti-darwinian  
natural sciences

Its insistence on function to the detriment of origin  
reveals a fascination for the necessary relationship  
between **form** and **content**

We can point to a "mainstream" of intellectual thought in Russia in the years 1920-1930 (from Potebnja and Losev to Stalin through Marr):

*a form without a content is not a form*



the arbitrariness of the sign is impossible

The unity of Jakobson's thought in the years 1920-1930s is the idea of **contactless resemblance**.

- **cause** is replaced by **goal**



unions of languages are more real than language

families

- it is **magic by similarity** that underlies the metaphor



links without contact are more important

than 'mechanical' links

an axiological scale of values :

*in praesentia*

metonymy (=prose)

magic by contact

syntagmatic axis

divergence from a  
common ancestor

mechanic

causality

(phylogenesis)

chance

chaos

+

*in absentia*

metaphor (=poetry)

magic by similarity

paradigmatic axis

convergence

function

gola

nomogenesis

*zakonomernost'*

order

two types of laws:

zakon  
↑  
Gesetz

zakonomernost'  
↑  
Gesetzmäßigkeit



external law

internal law

# Jakobson :

- Everything is linked
- The invisible is more real than the visible
  - In the hidden plan, everything is order and harmony
    - Nothing happens just by chance
    - (просто так ничего не бывает)

Jakobson's texts in the interwar period are at the intersection of :

echoes of an anti-darwinian biology

essay on synthesis of the idealistic morphology of German romanticism with orthodox Neo-Platonism

How to overcome the crisis of positivism in Russia in the early 20th century?

=> We are still far from structuralism



строй ≠ structure

Bau

model

carpentry  
framework

ontology

≠

epistemology



Saussure: a structure can only function through a **lack**, an imbalance, it is the inverse of a totality or a fullness



zero sign

negative definition  
of the entities

The opposition is not East / West,  
not materialism / idealism, not  
We / They, but acceptance /  
rejection of the **autonomy of the  
signifier**, and of the **arbitrariness  
of the sign**

Our duty is never to abandon  
rational thought, even by studying  
neo-romantic currents

...And science can be joyful!

the end