In linguistics, theories come and go, but facts are in short supply

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Slides are downloadable from my homepage

Three interleaved topics

- **How to decide what is a fact** – e.g. ‘superiority’ as a VO phenomenon
- **When facts collide with a theory** – e.g. Slavic languages aren’t exceptional VO languages but regular Type 3 languages
- **When facts become coherent** – e.g. in the theoretical coverage & modelling of word order types – OV, VO, and the ‘missing link’ (i.e. T3)
How to deal with facts in SCIENCE

“In general we look for a new law by the following process. **First we guess it.**

Then we **compute the consequences** of the guess to see what would be implied if this law that we guessed is right.

**Then we compare the result** of the computation to **nature**, with **experiment** or **experience**, compare it directly with **observation**, to see if it works, and ....

[Richard Feynman (1918-1988), in a lecture in 1964]
How to decide what is a fact

Data vs. facts

A **linguistic fact** is a **valid generalization** over a set of **data**. The generalization is the characteristic function for the set of data. The members of the (subset of a potentially infinite) set are representative of the characteristic property of the fact.

**Facts** as **valid generalizations** are the result of **rigorous data assessment**. Valid generalizations are **objective, reproducible**, and (should have been) put to test in serious **falsification** trials.

A rare, exemplary attempt in linguistics – 10 years ago:


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How to decide what is a fact

Data vs. facts

A **linguistic fact** is a **valid generalization** over a set of **data**. The generalization is the characteristic function for the set of data. The members of the (subset of a potentially infinite) set are representative of the characteristic property of the fact.

**Facts** as **valid generalizations** are the result of **rigorous data assessment**. Valid generalizations are **objective, reproducible**, and (should have been) put to test in serious **falsification** trials. But, in reality, .....
How to decide what is a fact – the case of ‘superiority’

What are the facts behind ‘superiority’?

1st fact: An in-situ, wh-subject is ungrammatical in SVO.

1. a. What has shocked who(m)?
   b. *Who(m), did what shock e_i?

2. a. You should find out what has shocked who(m)
   b. *You should find out who(m), what has shocked e_i

No crossing by movement involved:

3. a. I don’t know who would be happy that *who won the prize
   b. It is unclear who thinks (that) *who saw us (Chomsky 1981: 236)

[wh-subject = wh-pronoun in the structural subject position]

How to decide what is a fact – the case of ‘superiority’

2nd fact: An in-situ wh-adverbial of a type higher than type <e> is ungrammatical in English.


4. a. *When did he leave his table why?
   b. Why did he leave his table when?
   c. What did they fix where/*how often?
   d. Where/how often did they fix what?
   e. *Who left why?
   f. *Why did who leave?

Note: The two facts (i.e. 1st & 2nd) are entirely independent of ‘movement’.
How to \textit{decide} what is a fact – the case of \textit{‘superiority’}

What is the \textit{standard explanation}? – account in terms of movement

\textbullet \quad \textbf{Chomsky} (1995:311): \textit{Minimal link condition (MLC)}

\hspace{1em} \text{Informally:} \quad \text{The attracted item must be the closest.}

\textbullet \quad \textbf{Chomsky} (1973:246): \textit{Superiority}

"No rule can involve X,Y in the structure [... X ...[... Z ... W Y V ...]...], where the rule applies ambiguously to Z and Y and Z is \textit{superior} to Y."

\textit{Superior} is defined as follows:

"Category A is superior to category B in the phrase marker if every major category dominating A dominates B as well but not conversely."

In the entirely \textit{derivational setting} of the \textit{M.P.} (Chomsky 1995), \textit{superiority’} has been replaced by a \textit{shortest move} requirement:

How to \textit{decide} what is a fact – the case of \textit{‘superiority’}

Is this \textit{derivational explanation} empirically \textit{adequate}?

No.

\textbullet \quad \textbf{Insufficient coverage}: see examples (1) and (4a,e).

\textbullet \quad \textbf{It overgenerates by incorrectly excluding variants}.

(1) \text{I don’t know \textit{who} would be happy that she/*\textit{who} won the prize} \hfill (Chomsky 1981: 236)

(4) a. \textit{Who} left the party \textit{when/*why}?  
   e. \textit{Who} did you tell that I had left \textit{when/*why}?
How to decide what is a fact – the case of ‘superiority’

Is this derivational explanation empirically adequate?

No.

• Insufficient coverage: see examples (1) and (4a,e).
• It overgenerates by incorrectly excluding variants (5b).

(5)  a. Which child read which book?
    b. Which book did [which man] read e₁?
    d* Which book did who read e₁?

Pesetsky (1987) tried to create a loop hole for superiority, viz. ‘discourse linking’. (5b) clearly violates the MLC and should be as unacceptable as (5d).

[On the other hand, (5c) should be fine under d-linking, but must be explained away].

How to decide what is a fact – the case of ‘superiority’

But first & foremost: MLC fails in OV. (Haider 1984 LI)

(6)  a. Es ist unklar, was damals wen schockiert hat
    it is unclear what then whom shocked has
    b. Es ist unklar, wen damals was schockiert hat
    it is unclear whom then what shocked has
    c. Es ist unklar, wer damals weshalb weggegangen ist
    it is unclear who then why left has
    d. Es ist unklar, weshalb damals wer weggegangen ist
    it is unclear why then who left has

‘Superiority’ misses an essential generalization: it is VO-specific.
How to decide what is a fact – the case of ‘superiority’

Superiority is a VO phenomenon. No superiority in OV

Here is the essential difference:

(7)  
a. \([_{TP} \text{wh}_1 [T^\circ \rightarrow [\text{V}_e] [V^\circ \rightarrow \text{wh}_2]]_{VP}]\) head-initial VP

b. \([_{VP} \text{wh}_1 \leftarrow [\text{V}_e \text{wh}_2 \leftarrow V^\circ]]\) head-final VPVO,

In VO, preverbal wh-phrases are on the non-canonical side.
In OV, any preverbal wh-phrase is on the canonical side.

In VO, subjects are in a pre-VP spec-position; in OV, subjects stay in their VP-internal base position (see later: canonical identification)

No in-situ wh-adverbials on the non-canonical side

Would you risk a bet on what follows? (data assessment)

Send a questionnaire to 22 native Dutch syntacticians and collect their judgements on superiority data (10 Dutch sentences, each with the second wh-item in situ).

Would you risk a bet on the percentage of uniform judgements per item?

'Ungrammaticality' = rejection above the 80% level? (i.e. by 18 of 22)
' Rater's coherence' = uniformity above the 80% level?

- What is your guess on the % level of shared judgements?
- Would you bet for or against the 80% level?


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Questionnaire data on Dutch superiority, gathered and shared by Gisbert Fanselow

22 Raters = Dutch professional syntacticians

- Each clause accepted by 36% up to 100%
- No clause dismissed by more than 74%
- 55% accept the critical clauses 2 & 7
Consequences we have to draw:

1. **Never** trust a syntactician’s data judgements. (S)he is always prejudiced because (s)he is theoretically biased.

2. You must stay sceptical on syntacticians’ judgements of criterial data. You should **carefully assess** these data or call for careful assessment.

3. You **always** find a subgroup (>1) of syntacticians who (dis)agree with your own data judgements.

4. Data assessment needs **reliable** procedures. Look what psychologists are doing already for at least a century!

5. Eclectically collecting **introspective** judgements is NO reliable procedure for assessing critical data, evidently.

❖ **How to decide what is a fact** – the case of ‘superiority’

- **Superiority** is a VO phenomenon.
- **Superiority** must not be confounded with processing effects (8b).

(8) a. **Was** hat sie **wen** gebeten [e, für sie zu erledigen]? [German]
   - what has she whom asked [for her to take-care-of]

   b. **Wen** hat sie **wen** gebeten [e, darüber zu informieren]? whom has she whom asked about-it to inform

A variant with an item fronted **across a non-distinct** item of the same functional category (e.g. wh-item) is always much more difficult to parse than the variant without crossing. This situation may damage acceptability, but it does not cause ungrammaticality.

How to decide what is a fact – the case of ‘superiority’

An interim summary (I)

<table>
<thead>
<tr>
<th></th>
<th>P.</th>
<th>S.</th>
<th>Expected judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>-</td>
<td>-</td>
<td>‘perfect’</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>+</td>
<td>‘unacceptable’</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>-</td>
<td>‘knotty’</td>
</tr>
<tr>
<td>German</td>
<td>-</td>
<td>-</td>
<td>‘perfect’</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>-</td>
<td>‘knotty’</td>
</tr>
<tr>
<td>Japanese</td>
<td>-</td>
<td>-</td>
<td>‘perfect’</td>
</tr>
</tbody>
</table>

P. = parsing effect: processing impediment (crossing)
S. = superiority – as a constraint of grammar

How to decide what is a fact – the case of ‘superiority’

An interim summary (II)

- Facts are **facts**, and theoretical interpretations are **guesses**. Keep the facts always distinct from the guesses (also in your writing).

- The specific grammatical properties of a given fact may be **language** specific, **type** specific, or **universal**: Keep in mind that this is not the fruit of **grammar theory** (*drosophila grammatica*).

- Do not accept claims on alleged facts in the absence of explicit data **assessment** criteria. **Informant consent** (naïve or professional) is not a valid criterion.
Next topic, same problem:

❖ When facts collide with theory – “Slavic is (not) VO”?

The ‘Slavic slides’ are based on:

❖ When facts collide with theory – Slavic is (not) VO.


(1) a. Mat’ podarila mal’čiku jabloko (Russian)
    mother gave (a) boy (an) apple
 b. Mutter gab einem Jungen einen Apfel (German)
 c. Mother gave a boy an apple (English)

❖ Evidently, the word order in (1a-c) is identical.
❖ It is less evident, how the respective structures differ.
When facts collide with theory – Slavic is (not) VO.

Different word orders, because of different structures:
(2) a. Mat’ *podarila jabloko mal’čiku<sub>Dat</sub>
    b. Mutter gab *den Apfel einem Jungen<sub>Dat</sub>
    c.*Mother gave the apple a boy

- In German, VP-internal DP-arguments may be scrambled.
- In Russian, VP-internal DP-arguments may be scrambled.
- In English, VP-internal DP-arguments must not be scrambled.

- In **OV**, VP-internal (DP-)arguments may be scrambled.
- In **VO**, VP-internal DP-arguments must not be scrambled.

When facts collide with theory – Slavic is (not) VO.

Different word orders, because of different structures:
(3) a. Mat’ jabloko *podarila mal’čiku
    b.*Mother an apple gave a boy

- In **Russian**, VP-internal DP-arguments may **precede** the head verb of the VP.
- In **English**, VP-internal DP-arguments must **not precede** the head verb of the VP.
- In **VO languages**, VP-internal DP-arguments must not be scrambled (nor object-shifted) **across** the head verb of the VP.
When facts collide with theory – *Slavic is (not) VO*

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

**Simple task:** Check the Slavic languages for these properties.

<table>
<thead>
<tr>
<th>Property</th>
<th>VO</th>
<th>OV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrambling</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Superiority</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Edge effect</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Opacity of preverbal phrases</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Variable Aux-V-order</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

“Free word order” of nominal arguments relative to the verb is the hallmark of Slavic languages.
When facts collide with theory – Slavic is (not) VO

Superiority? No!

a) Kdo co doporučil komisi? Czech

b) Co kdo doporučil komisi?

a) Ko je koga vidio? Bosnian/Croatian/Serbian

b) Koga je ko vidio?

Note on an intervening factor:

There may be order restrictions for the template of pronouns in multiple-wh-movement languages. This must not be equivocated with superiority.

When facts collide with theory – Slavic is (not) VO

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

- Edge effect  head-initial: yes  head-final: no

a. He has [much more often (*than I (thought))] won
b. Er hat [viel öfter (als ich (dachte))] gewonnen (German)

c. a [much more frequent (*than I thought)] phenomenon
d. ein [viel häufigeres (*als ich dachte)] Phänomen (German)

i. [ ...... \[x_p \ldots x^*_g (* ZP) \] \[y_p \rightarrow \ldots \] ]]  edge effect

ii. [ ...... \[x_p \ldots x^*_g (ZP) \] \[y_p \leftrightarrow Y^* \] ]]  no edge effect

When facts collide with theory – Slavic is (not) VO

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

- **Edge effect**
  - head-initial: yes
  - head-final: no

a.  Prošlom godu [_{VP} AdvP gorazdo bol’še (čem Igor’)] [_{VP} vyigrala tol’ko Maša ] [Rus.]

b.  Last year only Mary has [_{AdvP} much more (*than Igor) won]

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When facts collide with theory – Slavic is (not) VO

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

- **Edge effect**
  - head-initial: yes
  - head-final: no

c.  Prošle godine [_{VP} AdvP mnogo više (od Želimira)] [_{VP} radila samo Branka ] [B/C/S]

Last year, [much more than Želimir] worked only Branka

d.  W zeszłym roku [_{VP} AdvP dużo więcej (niż Jarek)] [_{VP} pracowała tylko Katarzyna ] [Po]

Last year, [much more than Jarek] worked only Katarzyna

**We conclude:** No edge effect, hence the adjuncts must be in the **canonical** directionality domain
When facts collide with theory – Slavic is (not) VO

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

- Opacity of preverbal phrases
  - VO: yes
  - OV: no

CED (condition on extraction domains; J. Huang 1982)

i. *Who* does [a picture of $t_i$] hang on the wall?
ii. Who did she describe [a picture of $t_i$]
iii. *Who* did she talk [about $t_i$]?
iv. *Who* would [about $t_i$] she never talk?
v. I am sure that [about these persons] she would never talk

When facts collide with theory – Slavic is (not) VO

- Opacity of preverbal phrases
  - VO: yes
  - OV: no

Extraction out of subjects

i. *S kem by* ty xotel čtoby govorit’ bylo by odno udovol’stvie? [Russian]
   with whom you wanted [that [to-speak —] were one pleasure]
   ‘With whom would you want [that [to speak _] were sheer pleasure]?’
   (A. Stepanov 2007: 93)

ii. *Mit wem* würde [darüber diskutieren zu dürfen] dich mehr freuen?
   with whom would to-be-allowed to discuss about it you please more
   With whom would it please you more to be allowed to discuss about it?
   [German]
When facts collide with theory – **Slavic is (not) VO**

- **Opacity of preverbal phrases**
  - VO: yes
  - OV: no

**Extraction out of a preverbal object**

1. Kakuju, Ivan [-1 mašinu] kupil svoej žene? (Russian)
   - which, Ivan [-1 car] bought his wife
   - ‘Which car did Ivan buy his wife?’

2. Japonskuju, Ivan [-1 mašinu] kupil svoej žene. (Japanese)
   - Japanese, Ivan [-1 car] bought for his wife
   - ‘A Japanese car, Ivan bought for his wife.’

**When facts collide with theory – **Slavic is (not) VO**

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

- **Variable Aux-V-order**
  - VO: no
  - OV: yes

1. that he will have observed it

2. dass er alles beobachten wollen wird (German)
   - that he everything observe want will

   i. dass er alles beobachten wird wollen
   ii. dass er alles wird beobachten wollen

In VO, the relative order is **strict**. In OV language with V-movement, the 3-2-1 order typically is in **variation** with other orders (e.g. Afrikaans, Dutch, Frisian, German); see Haider (2010).
When facts collide with theory – **Slavic is (not) VO**

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

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<th>OV</th>
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</table>

a. Kiedy widziałesz królika?  
when saw-PART-2S rabbit  
‘When did you see the rabbit?’

b. Kiedyś widział królika?

Embick & Izvorski (1997. ex. (27))

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When facts collide with theory – **Slavic is (not) VO**

Where ‘head-initial’ (VO) differs from ‘head-final’ (OV):

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</tr>
</thead>
<tbody>
<tr>
<td>Aux-V-order</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Ako pročel e knigata ...  
if read is book-the  
‘If he has read the book...’

Kad sreo budeš Petra...  
when met will Peter  
‘when you will meet Peter’

Embick & Izvorski (1997. ex. (10), (11))
When facts collide with theory – **Slavic is (not) VO**

**Interim Summary**

<table>
<thead>
<tr>
<th></th>
<th>vo</th>
<th>ov</th>
<th>Slavic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrambling</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
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<td>yes</td>
</tr>
</tbody>
</table>

We conclude: Slavic **does not share** VO-properties.
Final topic and the explanation for part I & II

- When facts become comprehensible – e.g. in the theoretical modelling & testing of word order types

- head-final \[[X_p \ldots X^\circ]\] \(\text{OV}'\)

- head-initial \[[X_p X^\circ \ldots ]\] \(\text{VO}'\)

- THIRD option, ‘flexible’ head positioning \(\text{T3}'\)

What we have to explain:
What is the grammar-theoretical source of these types?

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**Final topic – OV, VO, and T3**

- Universally right-branching phrases
- Universal condition on the identification of the dependents by the head: minimal mutual c-command under canonical directionality (\(\leftarrow / \rightarrow\))

SOV, SVO and the ‘third’ type

1. **SOV**  
   directionality: $\leftarrow$  
   
   $[X \leftarrow [Y \leftarrow [Z \leftarrow V^*]]_{vp}$

2. **SVO**  
   directionality: $\rightarrow$
   
   $[X [V_1 \rightarrow [Y [e_i \rightarrow Z]]]]_{vp}$

3. **The third type**  
   directionality: $\{ \leftarrow, \rightarrow \}$
   
   $[X \leftarrow [Y \leftarrow [Z \leftarrow V^*]]_{vp}$ $\Rightarrow$ SOV $\leftarrow$

   $[X \leftarrow [Y \leftarrow [V^* \rightarrow Z]]_{vp}$ $\Leftrightarrow \rightarrow$

   $[X \leftarrow [V_1 \rightarrow [Y [e_i \rightarrow Z]]]]_{vp}$ $\Leftrightarrow \rightarrow$

   $[X [V_1 \rightarrow [Y [e_i \rightarrow Z]]]] = SVO \rightarrow$

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**T3** - once more:

= canonical directionality is **underspecified** (flexible)

Hence, T3 comprises **three** sub-patterns:

a. $[XP \leftarrow [YP \leftarrow [ZP \leftarrow V]]]$ uniformly „$\leftarrow$“ (OV)

b. $[XP \leftarrow [YP \leftarrow [V \rightarrow ZP]]$ „$\rightarrow$“ and „$\leftarrow$“

c. $[XP \leftarrow [V_1 \rightarrow [YP \rightarrow [e_i \rightarrow ZP]]]]$ „$\rightarrow$“ and „$\leftarrow$“

c'. $[XP \leftarrow [V_1 \rightarrow [YP \rightarrow [e_i \rightarrow ZP]]]]$ uniformly „$\rightarrow$“ (VO)

**Prediction**

**T3** shares the **OV-properties** resulting from „$\leftarrow$“
**OV, VO and the Third type**

<table>
<thead>
<tr>
<th></th>
<th>OV</th>
<th>VO</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP YP ZP V</td>
<td>✓</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>XP YP V ZP</td>
<td>*</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>XP V YP ZP</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Scrambling  +  -  +
Edge effect -  +  -
Aux-V-variation +  -  +
Functional subject -  +  +/-
Subject-effects -  +  -

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**T₃ languages**

- (All) historical Indo-European languages (e.g. Latin, Old English, Old Norse, Sanskrit, …)
- Slavic languages
- Hungarian: T₃-VP + two functional layers above it *
- Most of the languages that are classified as exceptional SVO languages.

*) Note:
'Scrambling as the Base-generation of Random complement order'. In Corver & Riemsdijk (eds.): Studies on Scrambling: Movement and non-movement approaches to free word-order phenomena. Berlin: Mouton de Gruyter. (p. 221-256).
As a final footnote: **What is special about SVO subjects?**

SVO requires a *functional subject* position (Haider 2010: 69).

a. $[_{VP} DP_{Subj.} \leftrightarrow [_{V'} .... \leftrightarrow V^°]]$  
   **SOV** $V$-projection

b. $[_{VP} DP_{Subj.} \quad [_{V'} V^° \rightarrow ..... ]]$  
   **SVO** $V$-projection

c. $[_{FP} DP_i \quad [_{F^°} \rightarrow [_{VP} -1 [_{V'} V^° \rightarrow ..... ]]_{VP}]]$  
   external licensing in **SVO**

**Note:**
The ill-understood **EPP** property is a property of SVO clauses.

EPP = extended projection principle "*is the structural requirement that certain configurations ... must have subjects*" [Noam Chomsky (1981:27)].

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**Results**

1. As for the facts, *Superiority* phenomena are **SVO effects**.
   i. An SVO wh-subject is an *operator* in a spec-position
   ii. SVO does not provide *preverbal* slots for wh-adverbials
   iii. The residue is a *parsing* impediment, due to crossing

2. As for the *coverage* of facts: **Slavic** languages are typical **T3** languages, rather than highly exceptional **SVO** languages.

3. As for *understanding* the facts: The existence of **T3** languages is a collateral consequence of the directionality requirement (canonical licensing) that yields OV and VO. **T3** is the *underspecified* setting.