Scientific ideology in grammar theory

When metaphors are mistaken for ontologies

Conference on *Ideology in Grammar*, April 11-12th 2014

Hubert Haider, Dept. of Linguistics, Univ. Salzburg
Univ. Salzburg

12.4.2014   1

part I = Background

- From ´*Ideology*´ to ´*Scientific Ideology´* in linguistics
- On the negative heuristics of scientific theories
- Productive vs. unproductive negative heuristics

    and

- English as an inapt model language for Universal Grammar

12.4.2014   2

UNIVERSITÄT SALZBURG

part II = "*If you have a hammer, … *"

- An exemplary case of a negative heuristics: Generative Grammar (in particular MP)
- Slavic languages – a challenge for the negative heuristics of MP
- An empirical survey in Slavic – predicted, but refuted
- Summary

12.4.2014   3

UNIVERSITÄT SALZBURG

Science *vs.* **Ideology** (notably by Karl **Popper** and Imre **Lakatos**)

Ideology

i. "Pseudo-scientific system that pretends to science but essentially lacks the requisite rational methodology."

ii. "The uncritical and stubborn adherence to a position, *protecting it from confuting evidence* by developing *ad hoc hypotheses*, clearly indicate an ideological conception."

(Richards 1993: 103)

Robert J. Richards (1993). Ideology and the history of science. *Biology and Philosophy* 8 (1):103-108.

12.4.2014   4

Conf. on Language & Ideology, Univ. Salzburg, April 2014

2

Scientific ideology? - Contradiction in terms?

No, since (**ii.**) is independent of (**i.**)

i.   "Pseudo-scientific system that pretends to science but essentially lacks the requisite rational methodology."

ii.   "The (uncritical and stubborn) adherence to a position, *protecting it from confuting evidence* by developing *ad hoc hypotheses*, clearly indicate an ideological conception."

12.4.2014   5

Scientific ideology? - Contradiction in terms?

Paul Feyerabend carries it to the extreme. He explicitly endorses that **science** is **"just another ideology"**.

For him, the common belief that science proceeds *in a neutral and objective way* is an indication of just how great an ideological grip it has on people's minds.

Paul Feyerabend 1975. How to defend society against science. *Radical Philosophy* 11 (3).

12.4.2014   6

Conf. on Language & Ideology, Univ. Salzburg, April 2014

3

UNIVERSITÄT SALZBURG

The 'ideological way'

In defending their favorite theory, scientists may either ***ignore anomalies*** or they may try to ***explain them away*** by inventing **ad hoc *auxiliary hypotheses*** to make the anomalies consistent with the theory.

> The overall conclusion seems to be that **all forms of know-ledge**, including scientific knowledge, are **infected by 'ideology'** in the sense that there is no neutral, objective body of know-ledge that is **not infected** by the **purpose-relative concepts of a group of inquirers**.

Mike Fuller (1996). Is Science an Ideology? Philosophy Now 15:9-12.

12.4.2014   7

UNIVERSITÄT SALZBURG

How to counteract scientific ideology?

Check for '**progressive problem shifts**' by '**independent evidence**' (demarcation criterion by I.Lakatos)

○ "A given fact is **explained scientifically** only if a **new fact** is **predicted** with it [....]

○ The idea of growth and the concept of empirical character are soldered into one."

I.Lakatos   1978. *The Methodology of Scientific Research Programmes: Philosophical Papers, Volume 1. Cambridge University Press.* p. 34f.

1973. Science and pseudoscience (broadcast transcript). URL: http://www.lse.ac.uk/philosophy/About/lakatos/scienceandpseudoscience.aspx

12.4.2014   8

UNIVERSITÄT SALZBURG

How to counteract scientific ideology?

Check for '**progressive problem shifts**' by '**independent evidence**' (demarcation criterion by I.Lakatos)

o "A given fact is **explained scientifically** only if a **new fact** is **predicted** with it [....]

o The idea of growth and the concept of empirical character are soldered into one."

Examples of pseudoscience according to Lakatos:

Ptolemaic astronomy, neoclassical economics, sociology, psychiatry, Freudian psychoanalysis, Lysenko's biology, 20th century *Soviet* Marxism, astrology, and Darwin's theory. For a defense of Darwin's theory, see Canguilhem, G. 1988. Ideology and Rationality in the History of the Life Sciences, MIT Press, Cambridge, and R. J. Richards (1993).

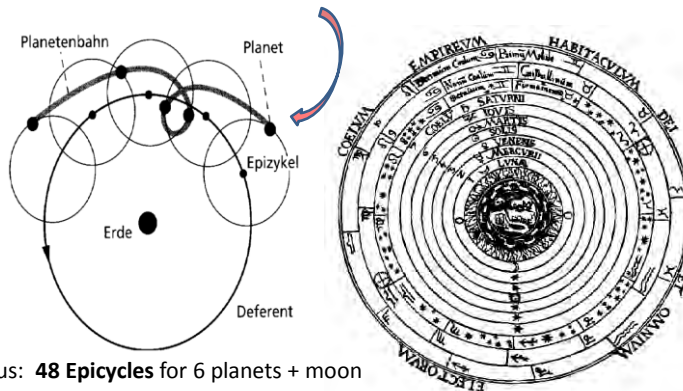12.4.2014   9

Ptolemaic astronomy

'**Virtual conceptual necessity**' in ptolemaic astronomy:

Celestial bodies are **perfect** bodies and move uniformly on **perfect** pathways.

Perfect pathway ? – A circle!   **Centre point + radius**.

• Celestial spheres and celestial bodies are perfectly **ballshaped**
• The planets move in **circles** (on circles = epicycles) around the earth

Copernicus: **48 Epicycles** for 6 planets + moon

12.4.2014   10

Theories are not killed by refutation. They are replaced and given up.

Duhem accepts the conventionalists' position that no physical theory ever crumbles merely under the weight of "refutations," but claims that it still may crumble under the weight of "continual repairs, and many tangled-up stays" when "the worm-eaten columns" cannot support "the tottering building" any longer[31]; then the theory loses its original simplicity and has to be replaced. But falsification is then left to subjective taste or, at best, to scientific fashion, and leaves too much leeway for dogmatic adherence to a favorite theory. . . .

Popper set out to find a criterion which is both more objective and more hard-hitting. He could not accept the emasculation of empiricism, inherent even in Duhem's approach, and proposed a methodology which allows experiments to be powerful even in "mature" science. Popper's

UNIVERSITÄT SALZBURG

Imre Lakatos. 1978. *The Methodology of Scientific Research Programmes*: Vol.1. Cambridge Univ. Press p. 22

12.4.2014   11

Negative Heuristic: The "Hard Core" of the Programme.

All scientific research programmes may be characterized by their "*hard core*." The negative heuristic of the programme forbids us to direct the *modus tollens* at this "hard core." Instead, we must use our ingenuity to articulate or even invent "auxiliary hypotheses," which form a *protective belt* around this core, and we must redirect the *modus tollens* to these. It is this protective belt of auxiliary hypotheses which has to bear the brunt of tests and get adjusted and re-adjusted, or even completely replaced, to defend the thus-hardened core. A research programme is successful if all this leads to a progressive problemshift, unsuccessful if it leads to a degenerating problemshift.

UNIVERSITÄT SALZBURG

Imre Lakatos (1978). *The Methodology of scientific research programmes: Philosophical Papers, Volume 1*. Cambridge: Cambridge University Press. p.191

Modus tollens

If A implies B
 and
not-B
 then
not-A

12.4.2014   12

Conf. on Language & Ideology, Univ. Salzburg, April 2014

6

UNIVERSITÄT SALZBURG

Sophisticated versus Naive Methodological Falsificationism. Progressive and Degenerating Problemshifts.   Lakatos 1978:182

Progressive scientific programmes are those which have (most of) their **predicted** facts **confirmed** (= *progressive problemshift*) - What really counts are **unexpected**, stunning **predictions** -,

but

degenerating scientific programmes are those which have most of their **predicted** facts **refuted** (= *degenerating problemshift*).

In degenerating programmes, theories are fabricated mainly in order to **accommodate** *known* facts.

12.4.2014   13

UNIVERSITÄT SALZBURG

An (un)ideological (illposed?) **question:**

Which language comes **closest** to ‚**Universal Grammar'**?

- **Lingua adamica**!   (as the chat medium of God and Adam)

- **Biblical Hebrew**!   (as the language of the Bible)

- **Classical Arabic**!   (as the language of the Koran)

- **Latin**!   (as the academic language until the 19th c.)

- **Englisch**!   (as the language of *Syntactic Structures*)

12.4.2014   14

Conf. on Language & Ideology, Univ. Salzburg, April 2014

7

English serves as the model language (drosophila grammatica?)

> "*Every p-theory* [= present day grammar theory$_{H.H.}$] *was developed by a native speaker of **English** and in the first place overwhelmingly justified for and exemplified by **English**.*"
>
> (**Dixon**, Robert M.W. (2011). *I am a linguist*. Leiden: Brill. p. 182).

Ironically, **English** is the **most exceptional** language in the Germanic family:

- *Germanic 'Verb-second'* only in wh-clauses (but not in declarative clauses)
- Verb-fronting (V2, ´V-to-I´) only for finite auxiliaries, not for main verbs
- instead: *do*-support (no other language known!)
- No infinitival morphology
- therefore: no infinitival modals (no other language known!)
- No passive with intransitive verbs (unavailability of suitable expletives)
- .....   (see Haider 2010. The syntax of German. p.9)

12.4.2014   15

English serves as the model language (drosophila grammatica?)

If English is the '*universal' language*,

this is the **universal bird**:

Rockhopping penguin

12.4.2014

Conf. on Language & Ideology, Univ. Salzburg, April 2014

8

Part II – Scientific ideology in grammar theory

UNIVERSITÄT
SALZBURG

Exemplary case for a negative heuristic: *Generative grammar* (MP)

Some of the "**hard core**" assumptions:

☞ **Universal** format of **phrase structures**:
[$_{XP}$ Spec [X° Complement]]

☞ **Universal** format of **clause structure**

☞ **Universal** and **obligatory** functional **subject position**
[... [$_{AgrS-P}$ **XP$_i$** [Agr-S° [..... [$_{VP}$ **e$_i$** [V° ....]]]]]]

☞ **Word order differences** are accounted by **movement only**

[For each of these assumptions there is **substantive counterevidence**]

12.4.2014   17

UNIVERSITÄT
SALZBURG

☞ "Word order differences are accounted **by movement only**"
= freedom of movement explains **freedom of phrase ordering**

"*More of the world's languages are like Russian than are like English.*" (Dixon 2011:183)

"What to do about? Generate the words in a fixed order, then have a 'scrambling' rule saying that they can be put in any order." (Dixon 2011:183).

But:
"Why impose word order and then dis-impose it?
The answer is: because the p-theory demands it."
(Dixon 2011:183).

'**Movement**' as '**epicycle**' for saving the core assumption?

12.4.2014   18

UNIVERSITÄT SALZBURG

☞ "Word order differences are accounted **by movement only**"

Movement as **epicycle** for saving the core assumptions?

▪ Movement is merely a **metaphor,** a **façon de parler.**

> **Test**? - If you believe in '**movement**', ask yourself
>
> - *what is the **velocity** of* a scrambled phrase (i.e. v_{scr})?
> - is v_{scr} greater than the velocity of topicalized phrase?
> - what is the **force** that *propels* the alleged movement ?
> - does an item move in **a straight line** or along an arc?

Stupid questions? – Then you regard it merely as a metaphor.

12.4.2014   19

UNIVERSITÄT SALZBURG

Let's move, let's scramble!

Mat' podarila mal'čiku jabloko.   [Russian]

Epicyles?

= Show me independent evidence for your claim!

12.4.2014   20

Conf. on Language & Ideology, Univ. Salzburg, April 2014

10

UNIVERSITÄT
SALZBURG

What we are talking about:

Russian

mother gave boy$_{DAT}$ *apple*$_{AKK}$

a. Mat' podarila mal'čiku jabloko.

b. Mat' mal'čiku podarila jabloko.

c. Mat' mal'čiku jabloko podarila.

Same order of arguments!

d. Mat' jabloko podarila mal'čiku.

e. Mat' podarila jabloko mal'čiku.

f. Mal'čiku podarila jabloko mat'.

g. ……

12.4.2014

21

UNIVERSITÄT
SALZBURG

West Slavic: e.g. Polish

that Basia showed Jarek her house

a. że Basia *pokazuje* Jarkowi swój dom.

b. że Basia Jarkowi *pokazuje* swój dom.

c. że Basia Jarkowi swój dom *pokazuje*.

d. że Jarkowi Basia *pokazuje* swój dom.

e. że Basia *pokazuje* swój dom Jarkowi.

f. ….

12.4.2014

22

Conf. on Language & Ideology, Univ. Salzburg, April 2014

11

South Slavic: e.g. Bosnian/Croatian/Serbian

that Peter wrote Mary a letter

a. da Petar *piše* Mariji pismo.

b. da Petar Mariji *piše* pismo.

c. da Petar Mariji pismo *piše*.

d. da Mariji Petar *piše* pismo.

e. da Petar *piše* pismo Mariji.

f. …..

12.4.2014

23

What **defenders** of **the theory** say**:**

Russian is but a **'hyper-mobile'** counterpart of English.

In other words:

Russian, and all the other Slavic languages are **exceptional SVO** languages.

Does **this predict any new facts about Slavic** languages, except for the observed data that motivated the auxiliary hypothesis?

Yes - Slavic languages pattern like SVO in other respects.
But, is this empirically **correct?**

12.4.2014

24

Conf. on Language & Ideology, Univ. Salzburg, April 2014

12

UNIVERSITÄT SALZBURG

Are **Slavic** languages '**hyper-mobile**' **SVO** languages?

Simple task: check the Slavic languages **systematically** for SVO properties.
see: **Haider & Szusich** (in press), **Szusich & Haider** (in press).

Where '**head-initial**' (VO) differs from '**head-final**' (OV):

	VO	OV
▪ **Scrambling**	no	yes
▪ **Superiority**	yes	no
▪ **Edge effect**	yes	no
▪ **Opacity** of preverbal phrases	yes	no
▪ **Variable Aux-V-order**	no	yes

12.4.2014   25

UNIVERSITÄT SALZBURG

Where '**head-initial**' (VO) differs from '**head-final**' (OV):

	VO	OV
▪ **Scrambling**	no	yes
▪ Slavic		yes

Auxiliary hypotheses needed for ruling out movement in languages like English, but admitting it in Slavic languages.

12.4.2014   26

Conf. on Language & Ideology, Univ.
Salzburg, April 2014

13

UNIVERSITÄT SALZBURG

❖ **Superiority**

a. It is unclear [*what* has shocked *whom*]
b. *It is unclear [*whom*$_i$ *what* has shocked e$_i$]
c. *What* has shocked *whom*?
d. **Whom*$_i$ has w*hat* shocked e$_i$?

Explanation in MP: **'shortest' move**.

Note: This explanation is refuted. No *superiority* effects in **OV**.

12.4.2014   27

UNIVERSITÄT SALZBURG

❖ **Superiority? No!**

a) **Kdo   co** doporučil komisi?   **Czech**
   who$_{NOM}$ what$_{AKK}$ recommended (to the) committee$_{DAT}$

b) **Co kdo** doporučil komisi?

a) **Ko** je **koga** vidio?   **Bosnian/Croatian/Serbian**
   who is whom seen

b) **Koga** je **ko** vidio?

Auxiliary hypothesis: The diverting factor is scrambling.

Note on an independent factor: In **mutiple-wh movement** languages there may be order restrictions for the **series** of **pronouns** (cf. Bulgarian). This must not be equivocated with superiority.

12.4.2014   28

UNIVERSITÄT SALZBURG

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. [……   [$_{XP}$ … X° (* <u>ZP</u>)] [$_{YP}$ Y° $_{\rightarrow}$ ….]]]   edge effect

ii. [……   [$_{XP}$ … X° (<u>ZP</u>)] [$_{YP}$ …. $_{\leftarrow}$Y°]]] no edge effect

H. Haider 2004. Pre-and postverbal adverbials in VO and OV. *Lingua* 114 (6): 779-807.

12.4.2014   29

UNIVERSITÄT SALZBURG

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

a. Prošlom godu [$_{VP}$ [$_{AdvP}$ **gorazdo** *bol'še* (**<u>čem Igor</u>**')]   [Russian]
                              [**vyigrala** tol'ko Maša]]

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

    Auxiliary hypothesis: none; facts have been ignored.

12.4.2014   30

Conf. on Language & Ideology, Univ. Salzburg, April 2014

15

UNIVERSITÄT SALZBURG

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

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

    Last year, only Branka has worked much more than Želimir

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

    Last year, only Katarzyna has worked much more than Jarek

Auxiliary hypothesis: none; facts have been ignored.

12.4.2014   31

UNIVERSITÄT SALZBURG

		VO	OV
▪	**Opacity of preverbal phrases**	**yes**	**no**

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

i.   * **Who$_i$** does **[**a picture of **t$_I$]** hang on the wall?

ii.   Who$_i$ did she describe **[**a picture of t$_i$ **]**

iii.   **Who$_i$** did she talk [about **t$_i$**]?

iv.   * Who$_i$ would [about t$_i$] she never talk?

v.   I am sure that [about these persons] she would never talk

12.4.2014   32

Conf. on Language & Ideology, Univ. Salzburg, April 2014

16

UNIVERSITÄT SALZBURG

	VO	OV
▪ **Opacity** of preverbal phrases	yes	no

Extraction out of subjects

i. ***S kem by*** ty xotel <u>čtoby govorit'</u> 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 [<u>darüber diskutieren zu dürfen</u>] 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]

Auxiliary hypothesis: none; facts have been ignored.

12.4.2014   33

UNIVERSITÄT SALZBURG

	VO	OV
▪ **Opacity** of preverbal phrases	yes	no

Extraction out of a preverbal object

i. Kakuju$_i$ Ivan [**-$_i$** mašinu] *kupil* svoej žene?   Russian
   which$_i$ Ivan [-$_i$ car] *bought* his wife
   'Which car did Ivan buy his wife?'

ii. Japonskuju$_i$ Ivan [**-$_i$** mašinu] *kupil* svoej žene.
   Japanese$_i$ Ivan [-$_i$ car] *bought* for his wife
   'A Japanese car, Ivan bought for his wife.'

Auxiliary hypothesis: perhaps not a genuine case of extraction.

12.4.2014   34

Conf. on Language & Ideology, Univ. Salzburg, April 2014

17

UNIVERSITÄT SALZBURG

Where '**head-initial**' (VO) differs from '**head-final**' (OV):

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

i. that he _**will**_ _have observed_ it

ii. dass er es **beobachtet haben** _wird_   [German]

iii. dass er es _wird_ **beobachtet haben**

iv. dass er es **beobachtet** _wird_ **haben**

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).

12.4.2014   35

UNIVERSITÄT SALZBURG

Where '**head-initial**' (VO) differs from '**head-final**' (OV):

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

a.   **Byl** bych   **koupil** knihy.   Czech
      been would-1sg bought books
      'I would have bought books.'

b.   **Koupil** bych **byl** knihy.

Embick & Izvorski (1997)

12.4.2014   36

Conf. on Language & Ideology, Univ. Salzburg, April 2014

18

UNIVERSITÄT SALZBURG

Where '**head-initial**' (VO) differs from '**head-final**' (OV):

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

a. Kiedy **widziałeś** królika?   **Polish**
   when saw-PART-2S rabbit
   'When did you see the rabbit?'

b. Kiedyś **widział** królika?

Embick & Izvorski (1997)

12.4.2014   37

UNIVERSITÄT SALZBURG

Where '**head-initial**' (VO) differs from '**head-final**' (OV):

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

Ako **pročel** e knigata   ...   **Bulgarian**
if   read   is book-the
'If he has read the book...'

Kad   **sreo** budeš Petra...   **Bosnian/Croatian/Serbian**
when met will   Peter
'When you meet Peter...'

Embick & Izvorski (1997)

12.4.2014   38

Conf. on Language & Ideology, Univ. Salzburg, April 2014

19

Interim Summary

	VO	OV	Slavic
Scrambling	no	yes	yes
Superiority	yes	no	no
Edge effect	yes	no	no
Opacity of preverbal phrases	yes	no	no
Variable V-Aux-order	no	yes	yes

We, viz. **Haider & Szucsich (in press),** conclude:

Slavic does not share the characteristics of VO-languages.

12.4.2014   39

Progressive problem shift – Are the contrasts predictable ?

Not in the MP model.

Parametric account (Haider 2013)

No universal template for phrase structures. There is a parametric ‚choice' for the head-position:

❖ **head-final** $[_{XP} …. X°]$ ‚OV'

❖ **head-initial** $[_{XP} X° ….]$ ‚VO'

❖ **THIRD option**   ‚**flexible**' head positioning   ‚T3'   ☞

12.4.2014   40

Conf. on Language & Ideology, Univ. Salzburg, April 2014

20

Details in:

- Haider, H. (2013). *Symmetry breaking in Syntax*. Cambridge Univ. Press.

   Dowloadable:

- Haider, H. (Ms): *Type III - theoretical and typological modelling - an invitation to empirical assessment.*

- Haider H. & Luka Szucsich (in press). Scrambling and V-positioning in Slavic languages – exceptionally VO or regular T3? In: *The German Middle Field in a Comparative and Diachronic Perspective*. R. Hinterhölzl, K.Bentzen, A.Speyer & L.Szucsich (eds.) Berlin: Mouton de Gruyter.

- Luka Szucsich & H.Haider (in press). Freie Wortstellung in slavischen Sprachen und die VO/OV-Unterscheidung. *Linguistische Beiträge zur Slavistik*. München: Otto Sagner. (Specimina Philologiae Slavicae).

12.4.2014   41

OV, VO and the Third type

	OV	VO	3rd
XP YP ZP **V**	☑	*	☑
XP YP **V** ZP	*	*	☑
XP **V** YP ZP	*	☑	☑
Scrambling	+	-	+
Superiority	-	+	-
Opacity-effects	-	+	-
Edge effect	-	+	-
Aux-V-variation	+	-	+

12.4.2014   42

T3 languages

- The historical Indo-European languages (e.g. Latin, Old English, Old Norse, Sanskrit, …)
- The Slavic languages
- Most of the languages that are classified as exceptional SVO languages.

12.4.2014   43

Summary

- Modern grammar theory, in particular Generative Grammar since 1995, has become a stronghold of scientific ideology.

- The negative heuristics of Generative Grammar (M.P.) in the confrontation with diverse counter-evidence has produced mainly signs of degenerating problemshifts.

- The continuously produced auxiliary hypotheses did not lead to the discovery of new facts but produce new counter-evidence.

- Antidote? – Do not accept pseudo-explanations: "A given fact is **explained scientifically** only if a **new fact** is **predicted** with it [....] (I. Lakatos).

12.4.2014   44

Conf. on Language & Ideology, Univ. Salzburg, April 2014

22

How to avoid scientific ideology?

(in the words of I. Lakatos 1973)

"To sum up:

- The hallmark of empirical progress is not trivial verifica-tions. [...]

- So-called 'refutations' are not the hallmark of empirical failure, as Popper has preached, since all [research$_{H.H.}$] programmes grow in a permanent ocean of anomalies.

- What really counts are [...] unexpected, stunning predic-tions: a few of them are enough to tilt the balance;

- Where theory lags behind the facts, we are dealing with miserable degenerating research programmes."

12.4.2014   45

Conf. on Language & Ideology, Univ. Salzburg, April 2014

23