

# What's the difference between a nuclear physicist and a heavy drinker? Resolving the bracketing paradox

Zoë Belk

Linguistics (Supervisor: Ad Neeleman)

Division of Psychology and Language Sciences, UCL

zoe.belk@ucl.ac.uk



## Introduction: What is a bracketing paradox?

Bracketing paradoxes occur when the meaning of a word or phrase doesn't correspond to how it's pronounced. Well-known examples include **nuclear physicist** and **transformational grammarian**.

The meaning of the first phrase is "someone who does nuclear physics", not "a physicist who is nuclear" – *nuclear* and *physic(s)* form a semantic unit, represented as **[[nuclear physic] ist]**.<sup>4</sup>

However, for phonological reasons, the suffix *-ist* must attach only to *physic(s)* and not to *nuclear physics*. The appropriate phonological structure is **[nuclear [physic -ist]]**.<sup>4</sup>

→ There is evidence for both structures, so **how can we resolve this paradox?**

## A new variety of bracketing paradox

Examples like **hard worker** and **heavy drinker**, which are derived from verbs, have been argued to demonstrate a special relationship between adjective and noun.<sup>1,2</sup>

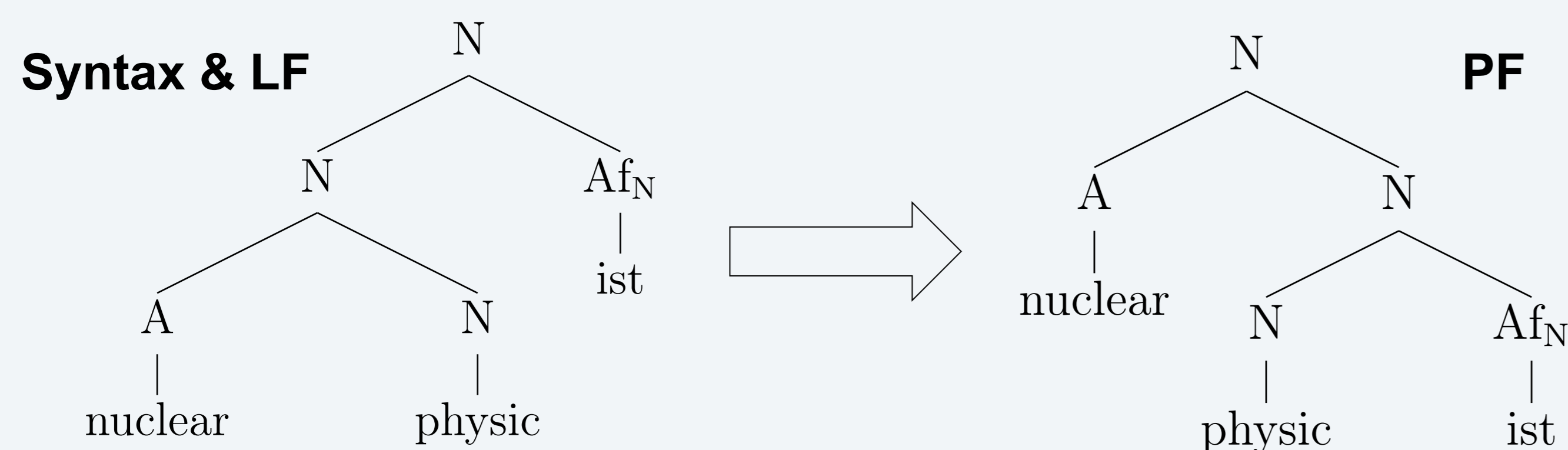
However, I argue that **these examples are bracketing paradoxes**, although different from traditional examples.

- One phonological form, but two meanings → at least one mismatch
- Both meanings are semantically compositional, *pace* Larson, Cinque
- There's evidence for both bracketings

How different is a *nuclear physicist* from a *heavy drinker*? **Can we use the same solution for both types of paradox?**

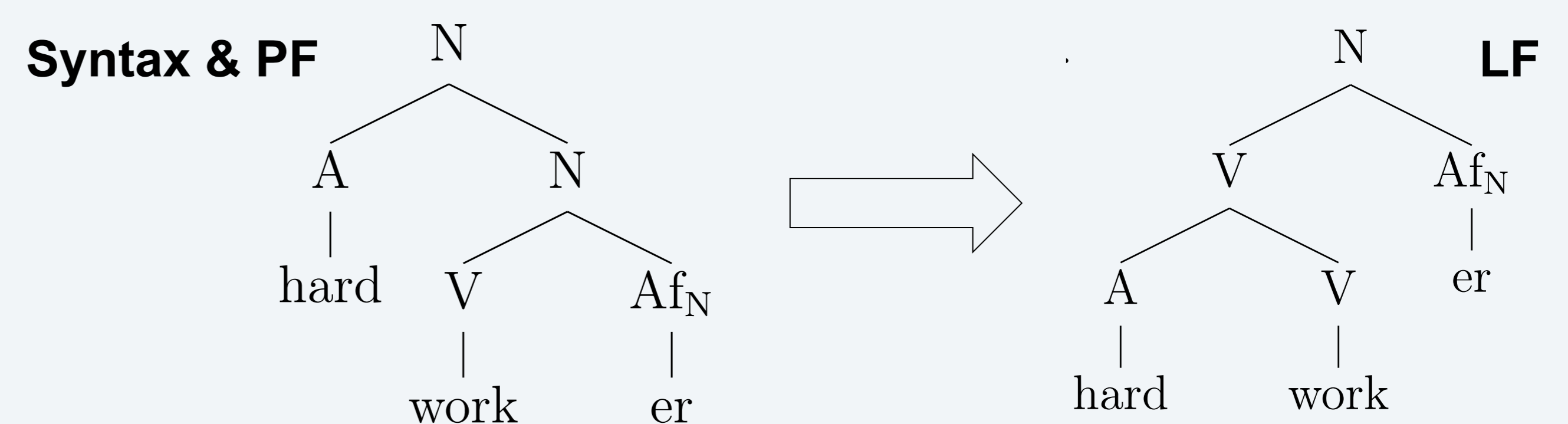
## Analysing traditional bracketing paradoxes

- Mismatch between syntax and PF
- Mapping Principle to associate the different structures<sup>3</sup>



## Analysing verbal bracketing paradoxes

- **No!** The affix must attach to the head of the word/phrase in the syntax  
→ **The only possible syntactic structure is below left**  
→ The mismatch is between syntax and LF
- I propose that the adjective can undergo **very local movement** (that doesn't leave a trace), as long as the **head doesn't change** and **c-command relations between non-heads remain intact**
- Adhering to these conditions, which I call **Information Preservation**, ensures that only the change below can occur:



## A primer on the Dutch declensional schwa

In Dutch, prenominal modifiers appear with a declensional schwa roughly in the following circumstances:

- Prenominal adjectives must be conjugated with a declensional schwa when they are part of a definite DP. In the absence of a determiner, they must not be conjugated

### Schwa:

de beroemd\*(-e) gitarist  
the famous(DECL) guitarist  
(definite)

### No schwa:

Hij speelt klassiek\*(-e) gitaar.  
he plays classical(DECL) guitar  
(indefinite)

But bracketing paradoxes show unexpected (and contrasting) behaviour:

### Traditional BPs:

de klassiek\*(-e) gitarist  
the classical(DECL) guitarist  
(definite)

### Verbal BPs:

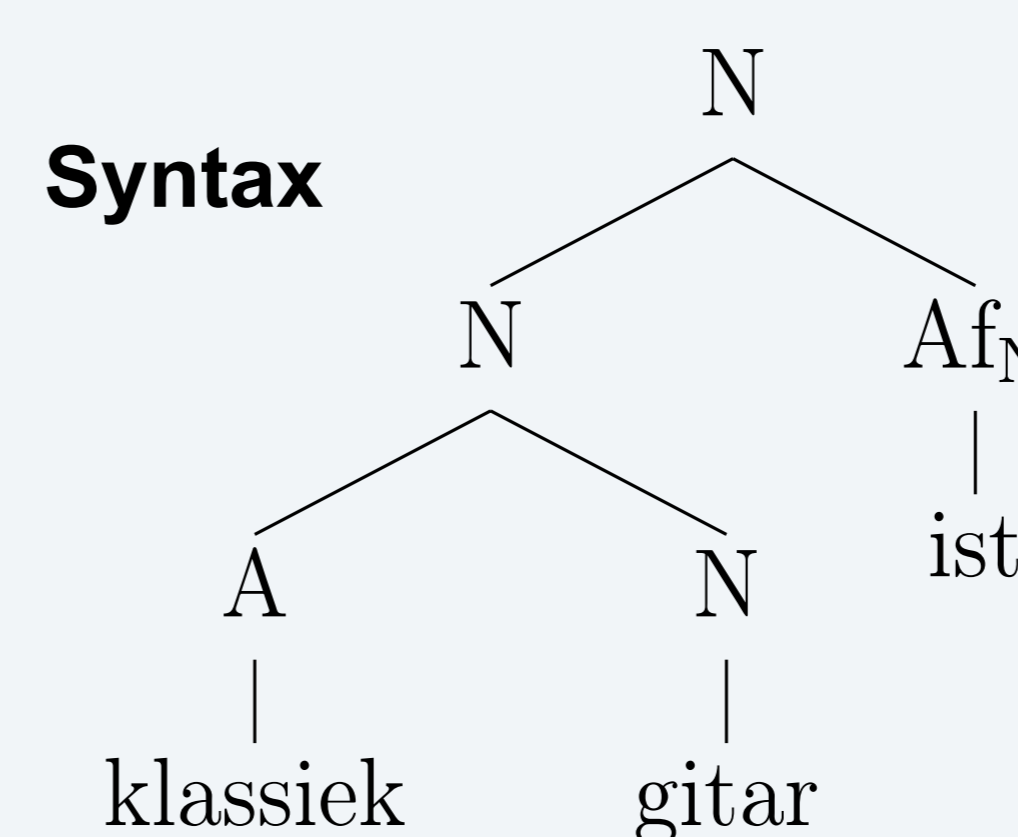
de hard\*(-e) werker  
the hard(DECL) worker  
(definite)

**Verbal bracketing paradoxes look just like other N+A combinations**, but **traditional bracketing paradoxes disallow a schwa** where we would otherwise expect it.

## The structure of Dutch bracketing paradoxes

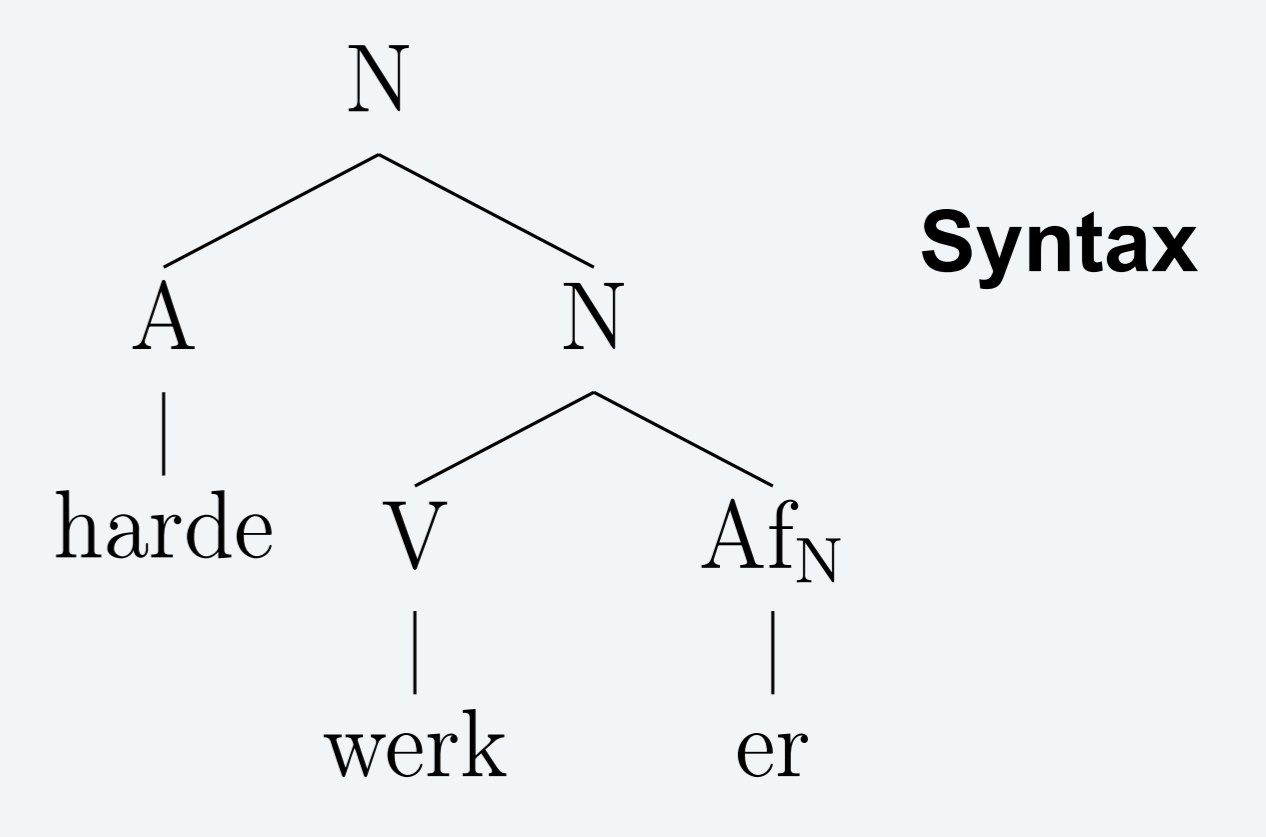
### Traditional BPs:

Syntactically, the modifier **does not require a schwa** because no determiner is present in the N+A constituent:



### Verbal BPs:

Syntactically, the modifier **requires a schwa**, as it is in the same configuration as normal N+A constituents:



The differences in the behaviour of the declensional schwa in traditional and verbal bracketing paradoxes is **exactly what we would expect** from the two analyses sketched above, and **cannot be explained by treating the two types of paradox uniformly**.

## Conclusions: So what?

The behaviour of the Dutch declensional schwa highlights **the different syntactic structures** of traditional and verbal bracketing paradoxes. The analyses presented here of the two types of paradox **predict exactly this difference**.

Bracketing paradoxes are at the intersection of **sound, meaning and syntactic structure**. They provide insight into how these different aspects of language interact. By looking at these interactions, we can begin to understand the principles of **language acquisition**, as well as what happens **when language breaks down**.

## References

- <sup>1</sup>Cinque, G. (2010). *The Syntax of Adjectives: A comparative study*. Cambridge, MA: MIT Press.
- <sup>2</sup>Larson, R. (1995). *Olga is a beautiful dancer*. M.s.
- <sup>3</sup>Sproat, R. (1988). Bracketing paradoxes, cliticization and other topics: The mapping between syntactic and phonological structure. In M. Everaert, M. Trommelen, and R. Huybregt (Eds.), *Morphology and Modularity*, pp. 339–360. Berlin: De Gruyter Mouton.
- <sup>4</sup>Williams, E. (1981). "On the notions 'lexically related' and 'head of a word'." *LI*. 12(2): 245–274