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

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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 physicist] [[ist]].

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]].

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. 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

Syntax & LF

\[
\begin{array}{c}
\text{N} \\
\text{A} \\
\text{A}\text{Ns} \\
\text{N} \\
\text{N} \\
\text{PF} \\
\text{A} \\
\text{N} \\
\text{A}\text{Ns} \\
\text{N} \\
\text{A} \\
\text{A}\text{Ns} \\
\end{array}
\]

A primer on the Dutch decensional schwa

In Dutch, prenominal modifiers appear with a decensional schwa roughly in the following circumstances:
• Prenominal adjectives must be conjugated with a decensional 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)

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:

Syntax

\[
\begin{array}{c}
\text{N} \\
\text{A}\text{Ns} \\
\text{N} \\
\text{A} \\
\text{N} \\
\text{A}\text{Ns} \\
\end{array}
\]

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

Syntax

\[
\begin{array}{c}
\text{A} \\
\text{N} \\
\text{A}\text{Ns} \\
\text{A} \\
\text{N} \\
\text{A}\text{Ns} \\
\end{array}
\]

The differences in the behaviour of the decensional 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 decensional 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