Minimizing representations

Which parts of descriptions need to be explicitly represented?

Only those parts which are more specific than the requirements of the signature. Less specific parts just describe all ontologically possible objects and thus are semantically irrelevant.

$\Rightarrow$ user display: more transparent, compact output

$\Rightarrow$ internal data structure: speed up due to smaller data structures

We refer to such representations as *unfilled*.

Unfilling in ConTroll

In ConTroll all representations except those displaying the appropriateness conditions are unfilled:

Displaying appropriateness conditions:

```
?- show_approp(phrase).
```

$$\Rightarrow \begin{bmatrix} \textit{phrase} & \\ \textsc{phon} & \textit{ne\_list} \\ \textsc{synsem} & \textit{synsem} \\ \textsc{dtr}1 & \textit{sign} \\ \textsc{dtr}2 & \textit{sign} \end{bmatrix}$$

Testing well-formedness w.r.t. the signature:

```
?- check((phrase,
          phon:ne_list,
          synsem:synsem,
          dtr1:sign,
          dtr2:sign)).
```

$\Rightarrow$ *phrase*

Examples for unfilling (check)

```
?- check((phrase,
          phon:ne_list,
          synsem:synsem,
          dtr1:word,
          dtr2:sign)).
```

$$\Rightarrow \begin{bmatrix} \textit{phrase} & \\ \text{DTR1} & \textit{word} \end{bmatrix}$$

```
?- check((phrase,
          phon:ne_list,
          synsem:synsem,
          dtr1:sign,
          dtr2:synsem:category:head:noun)).
```

$$\Rightarrow \begin{bmatrix} \textit{phrase} & \\ \text{DTR2} & \begin{bmatrix} \textit{sign} & \\ \text{SYNSEM} & \begin{bmatrix} \textit{synsem} & \\ \text{CATEGORY} & \begin{bmatrix} \textit{cat} & \\ \text{HEAD} & \textit{noun} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Example for unfilling (query)

```
?- query((phon:[she,walks])).
```

$$
\Rightarrow \begin{bmatrix} \textit{phrase} & \\
\text{PHON} & \left\langle \boxed{1}\ \textit{she} \mid \boxed{2}\langle\ \textit{walks}\rangle \right\rangle \\
\text{SYNSEM} & \begin{bmatrix} \textit{synsem} & \\
\text{CATEGORY} & \begin{bmatrix} \textit{cat} & \\ \text{HEAD} & \boxed{3}\begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{fin}\end{bmatrix} \\ \text{SUBCAT} & \langle\rangle \end{bmatrix} \\
\text{CONTENT} & \boxed{4}\begin{bmatrix} \textit{walk-rel} & \\ \text{ARG1} & \boxed{5}\begin{bmatrix}\textit{index} & \\ \text{GENDER} & \textit{fem} \\ \text{NUMBER} & \textit{sing}\\ \text{PERSON} & \textit{third}\end{bmatrix}\end{bmatrix}
\end{bmatrix} \\
\text{DTR1} & \begin{bmatrix}\textit{word} & \\
\text{PHON} & \langle \boxed{1}\rangle \\
\text{SYNSEM} & \boxed{6}\begin{bmatrix}\textit{synsem} & \\
\text{CATEGORY} & \begin{bmatrix}\textit{cat} & \\ \text{HEAD} & \begin{bmatrix}\textit{noun} & \\ \text{CASE} & \textit{nom}\end{bmatrix}\\ \text{SUBCAT} & \langle\rangle\end{bmatrix}\\
\text{CONTENT} & \begin{bmatrix}\textit{nom-obj} & \\ \text{INDEX} & \boxed{5}\end{bmatrix} \\
\text{CONTEXT} & \begin{bmatrix}\textit{conx} & \\ \text{BACKGR} & \left\langle \begin{bmatrix}\textit{female-rel} & \\ \text{ARG1} & \boxed{5}\end{bmatrix}\right\rangle\end{bmatrix}
\end{bmatrix}
\end{bmatrix}\\
\text{DTR2} & \begin{bmatrix}\textit{word} & \\
\text{PHON} & \boxed{2} \\
\text{SYNSEM} & \begin{bmatrix}\textit{synsem} & \\
\text{CATEGORY} & \begin{bmatrix}\textit{cat} & \\ \text{HEAD} & \boxed{3} \\ \text{SUBCAT} & \langle \boxed{6}\rangle\end{bmatrix}\\
\text{CONTENT} & \boxed{4}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$