How it started

• Some 15 years ago I wanted some more feedback.
• So I figured out a way to visualize boxes, kerns, glue, etc.
• Some aspects were tricky, like stretch and shrink (no \vphantom{\vphantom{T}}\vphantom{\vphantom{E}}-TEX yet), fillers, leaders, etc.
• I gave some presentations and it was nice to see the puzzled faces.
• As unboxing does not work, it is somewhat interfering.
• When not enabled there is no overhead but we did disable it at some places.

Do we need it

• I wonder if anyone ever used it.
• Some of the helpers are quite handy, like \ruledhbox.
• So these had to be provided anyway, so: where to stop?
All kinds of debugging

• We have more debugging, much shows up when writing new code.
• Think of fonts, math, graphics, characters, etc.
• Some make no sense in MKIV, so they're gone, but new ones show up.
• In due time this will all be normalized (as most lives in modules).
Why we kept it

- When cleaning up the code I had to decide to keep it or redo it as it could be done MKIV-ish.
- But as we already had some LUA based extras it made sense to redo it.
- The old code is still there as module (also because it had some more funstuff).

How it worked

- In MKII primitives are overloaded.
- So effectively, when enabled, \hspace{1cm} cum suis become macros.
- We use rules (and leaders) to visualize properties.
- Some constructs interfere so we need to compensate side effects.
Breskens 2012

Visual debugging

How it works

• The basics were a rather trivial quick job as we had a lot in place already.
• Interpreting the node list and injecting visualizers.
• We use colors, rules and text but much can be overlayed.
• Control over what gets visualized at the end.
• Control over what gets shown by using layers.
• As usual most time went into visualization choices and optimization.
• Some visualizers interfered with (hardcoded) expectations in the backend.
• When I decided to use layers I had to adapt some other code (mostly out of efficiency).
• There is room for more (but first I want the bitlib of LUA 5.2).
Details 1

\texttt{\textbackslash ruledhbox\{j\}}
\texttt{\textbackslash ruledhbox\{jj\}}
\texttt{\textbackslash ruledhbox\{jjj\}}
\texttt{\textbackslash ruledhbox\{jjjj\}}
\texttt{\textbackslash ruledhbox\{jjjjj\}}
Details 2a

take boxes

\texttt{\textbackslash \text{ruledhbox\{take boxes\}}}

Details 2b

\texttt{some depth too}

\texttt{\textbackslash ruledhbox\{some depth too\}}
Details 3a

\showmakeup \hbox{again an hbox}
Details 3b

multiple boxes

\ruledvtop{\ruledvbox{\ruledhbox{multiple boxes}}}
Details 3c

\showmakeup \hbox{multiple boxes}
Details 3c

\showmakeup \vbox{\hbox{multiple boxes}}
Details 3d

\showmakeup \vtop{\vbox{\hbox{multiple boxes}}}

HS: 3.814
why use 's
\showstruts why \strut use \strut's
Details 5

\showglyphs glyphs
Details 6

\enabletrackers[visualizers.whatsit]glyphs \righttoleft glyphs