A new cut elimination method is obtained here by “proof mining” (unwinding) from the following non-effective proof that begins with extracting an infinite branch $B$ when the canonical search tree $T$ for a given formula $E$ of first order logic is not finite. The branch $B$ determines a semivaluation so that $B \models \bar{E}$.

(*) Every semivaluation can be extended to a total valuation.
For every derivation $d$ of $E$ and every model $\mathcal{M}$, $\mathcal{M} \models E$.
This is a contradiction showing that $T$ is finite, $\exists \ell T < \ell$. A primitive recursive function $L(d)$ such that $T < L(d)$ is obtained using instead of (*)

(**) For every $r$ if the canonical search tree $T^{r+1}$ with cuts of complexity $r + 1$ is finite, then $T^r$ is finite.
Here reduction of $(r + 1)$-cuts does not introduce new $r$-cuts but preserves only one of the branches. (Received July 28, 2006)