How does quantifier raising work? Let us compute the meaning of "loved some princess". We have the following meanings:

$$\begin{aligned}
[\![\mathrm{TV}]\!] = [\![\text{loved}]\!] &= \lambda x \lambda y.\mathsf{Love}(x, y) \\
[\![\mathrm{NP}]\!] = [\![\text{some princess}]\!] &= \lambda Q.\exists z.\mathsf{Princess}(z) \wedge Q(z)
\end{aligned}$$

In addition, we define the following rule:

$$[\![\mathrm{VP}]\!] = \lambda s.[\![\mathrm{NP}]\!](\lambda o.[\![\mathrm{TV}]\!](s)(o))$$

Now we can plug in the meanings of "loved" and "some princess" for $[\![\mathrm{TV}]\!]$ and $[\![\mathrm{NP}]\!]$, respectively. For ease of exposition, we will do $[\![\mathrm{TV}]\!]$ first. This just plugs in s and o for x and y in $\mathsf{Love}(x, y)$, respectively:

$$\begin{aligned}
[\![\mathrm{VP}]\!] &= \lambda s.[\![\mathrm{NP}]\!](\lambda o.[\lambda x \lambda y.\mathsf{Love}(x, y)](s)(o)) \\
&= \lambda s.[\![\mathrm{NP}]\!](\lambda o.[\lambda y.\mathsf{Love}(s, y)](o)) \\
&= \lambda s.[\![\mathrm{NP}]\!](\lambda o.\mathsf{Love}(s, o))
\end{aligned}$$

Now we will do $[\![\mathrm{NP}]\!]$. First we plug in $\lambda o.\mathsf{Love}(s, o)$ for Q, and then we plug in z for o:

$$\begin{aligned}
[\![\mathrm{VP}]\!] &= \lambda s.[\lambda Q.\exists z.\mathsf{Princess}(z) \wedge Q(z)](\lambda o.\mathsf{Love}(s, o)) \\
&= \lambda s.\exists z.\mathsf{Princess}(z) \wedge [\lambda o.\mathsf{Love}(s, o)](z) \\
&= \lambda s.\exists z.\mathsf{Princess}(z) \wedge \mathsf{Love}(s, z)
\end{aligned}$$