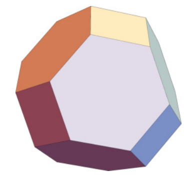
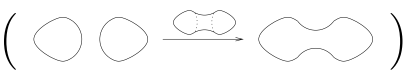
Khovanov: $K(L)$ is a chain complex of graded $\mathbb{Z}$-modules;
$V=\operatorname{span}\langle v_+,v_-\rangle$; $\deg v_\pm=\pm1$; $q\dim V=q+q^{-1}$;

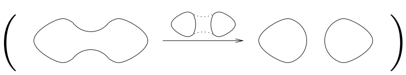
The Jones polynomial: $\bigcirc^k\mapsto(q+q^{-1})^k$
$J:\slashoverback\mapsto q\,\smoothing-q^2\,\hsmoothing$, $J:\backoverslash\mapsto -q^{-2}\,\hsmoothing+q^{-1}\,\smoothing$,

$$K(\bigcirc^k)=V^{\otimes k};\quad K(\slashoverback)=\text{Flatten}\left(0\to \underset{\text{height }0}{K(\smoothing)\{1\}}\to \underset{\text{height }1}{K(\hsmoothing)\{2\}}\to 0\right);$$

$$K(\backoverslash)=\text{Flatten}\left(0\to \underset{\text{height }-1}{K(\hsmoothing)\{-2\}}\to \underset{\text{height }0}{K(\smoothing)\{-1\}}\to 0\right);$$

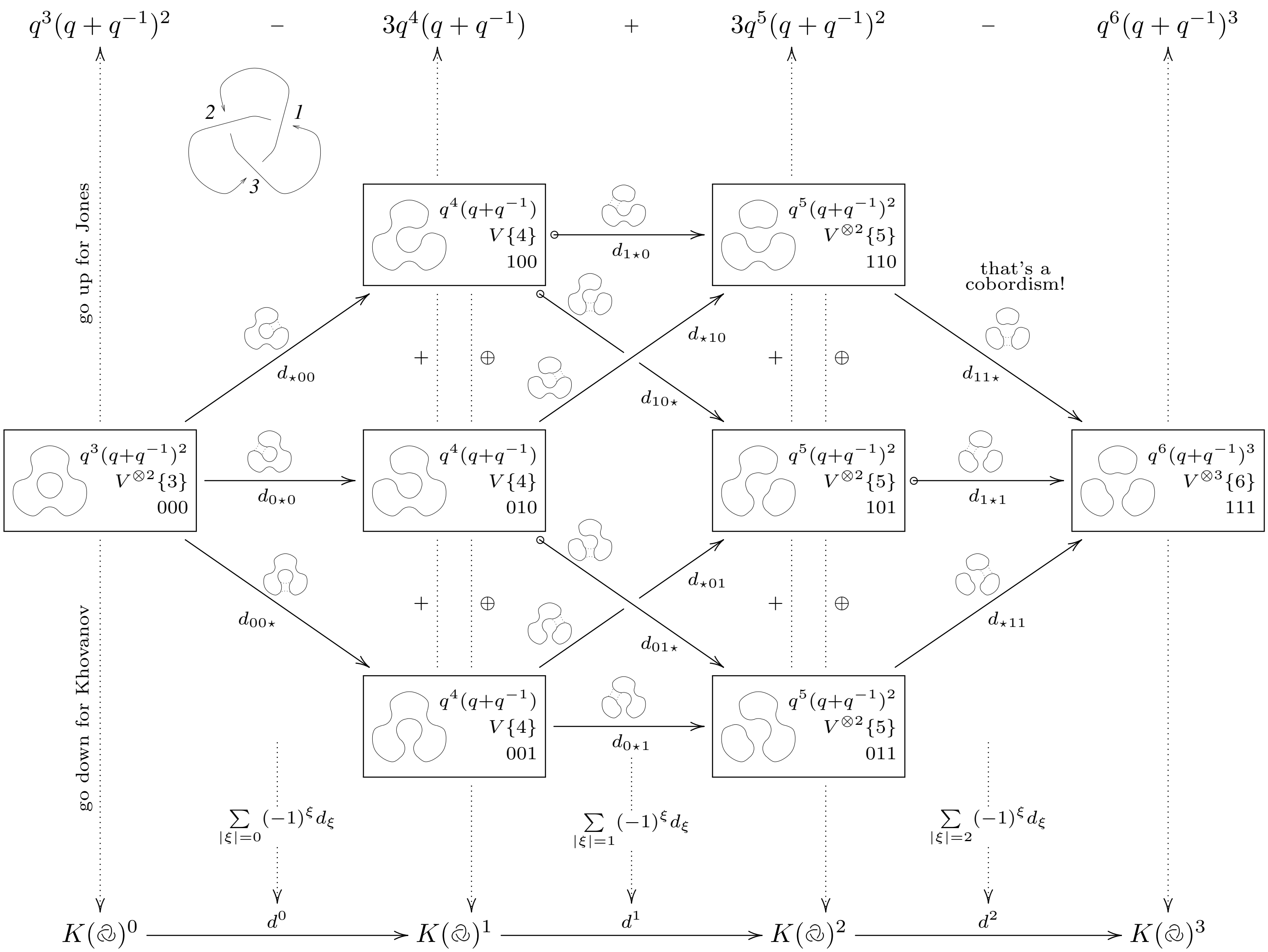

A Polytope


$\longrightarrow(V\otimes V\overset{m}{\to}V)$ $m:\begin{cases}v_+\otimes v_-\mapsto v_- & v_+\otimes v_+\mapsto v_+\\ v_-\otimes v_+\mapsto v_- & v_-\otimes v_-\mapsto 0\end{cases}$


$\longrightarrow(V\overset{\Delta}{\to}V\otimes V)$ $\Delta:\begin{cases}v_+\mapsto v_+\otimes v_-+v_-\otimes v_+\\ v_-\mapsto v_-\otimes v_-\end{cases}$


Mikhail Khovanov

Example: $= q+q^3+q^5-q^9.$



(here $(-1)^\xi:=(-1)^{\sum_{i<j}\xi_i}$ if $\xi_j=\star$) $= K(\text{trefoil})$.

Theorem 1. The graded Euler characteristic of $K(L)$ is $J(L)$.
Theorem 2. The homology $\operatorname{Kh}(L)$ of $K(L)$ is a link invariant.
Theorem 3. $\operatorname{Kh}(L)$ is strictly stronger than $J(L)$: $J(\bar5_1)=J(10_{132})$ yet $\operatorname{Kh}(\bar5_1)\neq\operatorname{Kh}(10_{132})$.
Theorem 4. Kh extends to a functor defined on the category of 2D cobordisms in $\mathbb{R}^4$ between links in $\mathbb{R}^3$.

References. Khovanov's arXiv:math.QA/9908171 and arXiv:math.QA/0103190 and my
`http://www.math.toronto.edu/~drorbn/papers/Categorification/`.