Invariance under R2.

After delooping:

High altitude low oxygen proof of
Invariance under knot mutations.
Assume "flip over" mutation and connectivity as shown.

The Inside Story. After delooping, all that remains is in

The Outside Story

Inside meets Outside.

Theorem. If two horizontal differentials are homotopic relative to the vertical differential, the two double complexes obtained are isomorphic.

Old techniques:
Many computers, long time, no counterexample.

Kh(T(7,6)).

In 1 day says
\[ \dim_j H_r \] is given by:

Old techniques:
\~1,000 years, \~1GGb RAM.

More formulas.

Cob:

Mat(C):

Complexes:
\[ \Omega = \left( \Omega^{-n-} \longrightarrow \Omega^{-n+1} \longrightarrow \ldots \longrightarrow \Omega^{n+} \right) \]

Morphisms:
\[ \ldots \longrightarrow \Omega_r^{-1} \longrightarrow \Omega_r^0 \longrightarrow \Omega_r^{r+1} \longrightarrow \ldots \]

Homotopies:
\[ \Omega_r^{r-1} \longrightarrow \Omega_r^0 \longrightarrow \Omega_r^{r+1} \longrightarrow \ldots \]
\[ F^{r-1} \longrightarrow F^r \longrightarrow F^{r+1} \longrightarrow \ldots \]
\[ G^{r-1} \longrightarrow G^r \longrightarrow G^{r+1} \longrightarrow \ldots \]

\[ F^r - G^r = h^{r+1}d^r + d^{r-1}h^r \]

Conjecture: (I. Frenkel, though he may disown this version)
1. Every object in mathematics is the Euler characteristic of a complex.
2. Every operation in mathematics lifts to an operation between complexes.
3. Every identity in mathematics is true up to homotopy at complex level.

http://www.math.toronto.edu/~drorbn/Talks/Utah-0506/