The Variables:

$$\begin{pmatrix} b_1\backslash a_1 & x_{12} & x_{13} \\ y_{12} & b_2\backslash a_2 & x_{23} \\ y_{13} & y_{23} & b_3\backslash a_3 \end{pmatrix}, \quad \xi_-, \alpha_-, \beta_-, \eta_-.$$

We short "x_1" for either of x_{12}, x_{23} and "x_2" for x_{13}. Weights are intuitive on yb and 3-complementary on ax: wt: $b \to 0$, $y_1 \to 1$, $y_2 \to 2$, $a \to 3$, $x_1 \to 2$, $x_2 \to 1$. Weights are 3-complementary on the dual (greek) variables.

In $m[ij \to k]$:

At $\epsilon = 0$: $\ldots, \xi_1\eta_1 b, \xi_2\eta_2 b, \xi_1'\xi_1'' x_2, \eta_2\xi_1 y_1, \alpha\xi_i x_i \ldots$

At ϵ/ϵ^2: $\ldots, \xi_1\eta_1 a, \xi_2\eta_2 a, \ldots$

In $\Delta[i \to jk]$:

At $\epsilon = 0$: $\ldots, \eta_i b y_i, \ldots$

The Synthesis Equation.

$$Z_0 \sim V, \quad \partial_\lambda Z_\lambda \sim \sum Q^{-1}_{ab}(\partial_{ab}Z_\lambda + (\partial_a Z_\lambda)(\partial_b Z_\lambda)) =: S(Z)$$

In the best case S is nilpotent on V so Z_λ is a polynomial in λ.

The General Heisenberg Integrand.

$L = Q + V = Q + V_0 + V_{\geqslant 1} = Q + \sum_d \epsilon^d V_d$, where

$$Q \sim -\sum_{c:(s,i,j),\alpha} x_i^\alpha \left(p_i^\alpha - T^{s\alpha} p_{i+}^\alpha + (T^{s\alpha} - 1) p_{j+}^\alpha\right) + x_j^\alpha \left(p_j^\alpha - p_{j+}^\alpha\right),$$

$$V_0 \sim p_i^{\alpha_3} x_{(i/j)+}^{\alpha_1} x_{(i/j)+}^{\alpha_2}, \text{ with } \alpha_1 = (1\ 0), \alpha_2 = (0\ 1), \alpha_3 = (1\ 1).$$

L is subject to some stable conditions:

1. L is weight-balanced, with wt $p^\alpha = \alpha$ and wt $x^\alpha = -\alpha$.
   - Should follow from both Lie reasons and Burau reasons.
2. $\deg_x V_0 - \deg_p V_0 \geqslant 1$.
   - For V_0, this is "V_0 is only trees and wheels".
   - Comparing to $\mathcal{A}^w$, $p \sim$ "outgoing leg", $x \sim$ "incoming leg".
3. $\deg_p V \leqslant 1 + \deg_\epsilon V$.
   - Only holds for the connected case (taking a log).
   - Reflects "a connected arrow diagram with k out arrows must have at least $k - 1$ cobracket vertices".

Some unstable conditions can be assumed too, if working mod ϵ^{d+1}:

1. $\deg_x V_1 \leqslant \deg_p V_1$.
   - Or else, given V_0, the ϵ^1 integral vanishes. Yet terms with $\deg_x V_1 > \deg_p V_1$ may influence the $\epsilon^{>1}$ integrals.