Once and for all, what is the precise relationship between $\mathcal{A}$-style link relations and $\mathcal{A}^\mathcal{W}$-style "V-equivalence"?

\[
\begin{array}{c|c|c}
\text{mod link relations} & \text{mod conjugation} \\
\hline
\text{in } \mathcal{A} & \text{this is Duflo, } 1+1=2 & \text{False—there are no non-trivial local conjugates} \\
\text{in } \mathcal{A}^\mathcal{W} & 2 & \text{This is } k-V \\
\end{array}
\]

There are two ways to view a diagram $D$ in $\mathcal{A}(\mathcal{G}, \mathcal{G})$ as an operator with values in $U(\mathcal{G})$:

"Old way": It is an an element $T_D \in S(\mathcal{G}) \otimes U(\mathcal{G})$ and therefore an operator $\Theta_D : S(\mathcal{G}) \to U(\mathcal{G})$ [possibly by embedding measures on $\mathcal{G}$ into $S(\mathcal{G})$ this can be interpreted as integrating the measure $\mu \otimes S(\mathcal{G})$ against $T_D$, which is interpreted as a function $F_D$ on $\mathcal{G}$ with values in $U(\mathcal{G})$.]

$\Theta_D = \Theta_{D'}$ on invariants in $S(\mathcal{G})$ if $D = D'$ modulo link relations.
"New way": D represents a function \( F_0 : \mathcal{G} \to \mathbb{U}(\mathcal{G}) \) which can be integrated against numerical functions in \( \text{Fun}(\mathcal{G}) \):
\[
F \in \text{Fun}(\mathcal{G}) \mapsto \int_\mathcal{G} F \cdot f \in \mathbb{U}(\mathcal{G})
\]
(the integral can be taken in a formal sense—it is "the integrand, modulo all images of divergence-free operators")
Thus we get
\[
N_0 : \text{Fun}(\mathcal{G}) \to \mathbb{U}(\mathcal{G})
\]
\(N_0 = N_0\) on invariants in \( \text{Fun}(\mathcal{G}) \) if there exists a "tangential" differential operator \( \mathbf{V} : \text{Fun}(\mathcal{G}) \to \text{Fun}(\mathcal{G}) \) [i.e., \( \mathbf{V} \in \mathbb{U}(\mathcal{G}) \)] such that
1. \( \mathbf{V} F_0 = F_0 \mathbf{V} \)
2. \( \mathbf{V} \) satisfies some divergence condition.

**A Key Question:** What exactly is the relationship between these two constructions? Is one stronger than the other? Can we "complete" the triangle
\[
\begin{align*}
\mathcal{M}(\mathcal{G}) & \xrightarrow{\mathbf{z}} \mathcal{S}(\mathcal{G}) \\
\mathcal{S}(\mathcal{G}) & \xrightarrow{\Theta_0} \mathcal{U}(\mathcal{G}) \\
\text{Fun}(\mathcal{G}) & \xrightarrow{N_0} \mathcal{U}(\mathcal{G})
\end{align*}
\]
Is there a common generalization? Is its domain some "Heisenberg Algebra" $U(H)$?