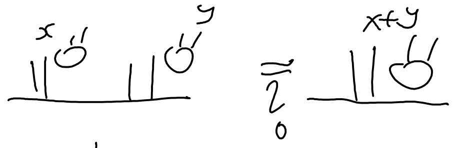
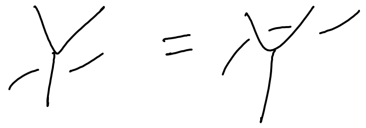
Once and for all what is the precise relationship between $\mathcal{A}$-style link relations and $\mathcal{A}^w$-style "V-equivalence"?



	mod link relations	mod conjugation
in $\mathcal{A}$	this is Duflo, $1+1=2$	False - There are no non-trivial local conjugators
in $\mathcal{A}^w$	?	This is K-V, 

There are two ways to view a diagram D in $\mathcal{A}(\uparrow_{\mathfrak{g}^*}\uparrow_{\mathfrak{g}})$ as an operator with values in $\mathcal{U}(\mathfrak{g})$:

"old way": It is an an element $T_D\in S(\mathfrak{g}^*)\otimes\mathcal{U}(\mathfrak{g})$ and therefore an operator $\mathcal{O}_D: S(\mathfrak{g})\to\mathcal{U}(\mathfrak{g})$ [Possibly by embedding measures on $\mathfrak{g}$ into $S(\mathfrak{g})$ this can be interpreted as integrating the measure $\mu\in S(\mathfrak{g})$ against T_D, which is interpreted as a function F_D on $\mathfrak{g}$ with values in $\mathcal{U}(\mathfrak{g})$]

$\mathcal{O}_{D_1}=\mathcal{O}_{D_2}$ on invariants in $S(\mathfrak{g})$ if $D_1=D_2$ modulo link relations.

"new way": D represents a function $F_D : \mathfrak{g} \to \mathcal{U}(\mathfrak{g})$ which can be integrated against numerical functions in $\mathrm{Fun}(\mathfrak{g})$:

$$f \in \mathrm{Fun}(\mathfrak{g}) \longmapsto \int_{\mathfrak{g}} F_D \cdot f \in \mathcal{U}(\mathfrak{g})$$

(the integral can be taken in a formal sense - it is "the integrand, modulo all images of divergence-free operators")

Thus we get

$$N_D : \mathrm{Fun}(\mathfrak{g}) \longrightarrow \mathcal{U}(\mathfrak{g})$$

$N_{D_1} = N_{D_2}$ on invariants in $\mathrm{Fun}(\mathfrak{g})$ if there exists a "tangential" differential operator $V : \mathrm{Fun}(\mathfrak{g}) \to \mathrm{Fun}(\mathfrak{g})$ [i.e., $V \in \mathcal{U}(I\mathfrak{g})$] such that

1. $VF_{D_1} = F_{D_2} V$
2. 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

$$\begin{tikzcd}
\mathcal{M}(\mathfrak{g}) \text{ "}\overset{?}{=}\text{" } \mathcal{S}(\mathfrak{g}) \arrow[dr, "\mathcal{O}_D"] \arrow[d, leftrightarrow, "?"] & \\
\mathrm{Fun}(\mathfrak{g}) \arrow[r, "N_D"'] & \mathcal{U}(\mathfrak{g})
\end{tikzcd}$$

Is there a common generalization? Is its domain some "Heisenberg Algebra" $\mathcal{U}(H\mathfrak{g})$?