Genuine equivariant operads

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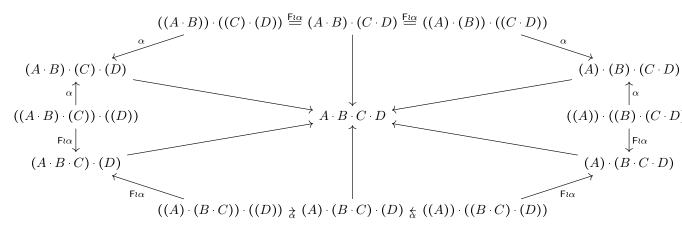
Given $\operatorname{Fin} : \mathcal{V} \to \mathcal{V}$ with suitable isomorphisms α , we define the associators by

$$(A \cdot B) \cdot (C) \xrightarrow{\alpha} A \cdot B \cdot C \xleftarrow{\alpha} (A) \cdot (B \cdot C)$$

and the unit morphisms by

$$(A) \cdot () \xrightarrow{\alpha} A$$
 $() \cdot (A) \xrightarrow{\alpha} A$

The associativity "pentagon" axiom follows from



The identity axiom is

$$((A) \cdot ()) \cdot ((B)) \xrightarrow{\alpha} (A) \cdot () \cdot (B) \xleftarrow{\alpha} ((A)) \cdot (() \cdot (B))$$

$$\downarrow \qquad \qquad \qquad \downarrow \text{Finit} \alpha$$

$$(A) \cdot (B) = A \cdot B = (A) \cdot (B)$$

The symmetry morphism is defined in the obvious way as $\otimes(\tau)$ for τ the isomorphism $(A, B) \simeq (B, A)$ in $\Sigma_2 \wr \mathcal{V}$.

The inverse law is then simply automatic and the coherence of symmetry with unit is naturality of α , as in the diagram

$$\begin{array}{ccc}
(A) \cdot () & \xrightarrow{\tau} & () \cdot (A) \\
\downarrow^{\alpha} & & \downarrow^{\alpha} \\
A & \xrightarrow{\tau} & A
\end{array}$$

Lastly, associativity coherence is then ensured by the diagram (where the center triangle commutes since it is in the image of $\Sigma_3 \wr \mathcal{V}$)

