The horizontal composition of 1-cells: $(X, \psi_{T,X}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}', T')$ with $\psi_{T,X} : T'X \rightarrow XT$

The horizontal composition of 1-cells:

 $(X, \psi_{T,X}) : (\mathcal{A}, T) \to (\mathcal{A}', T') \text{ with } \psi_{T,X} : T'X \to XT \text{ and}$ $(Y, \psi_{T',Y}) : (\mathcal{A}', T') \to (\mathcal{A}'', T'') \text{ with } \psi_{T',Y} : T''Y \to YT',$

The horizontal composition of 1-cells:

$$(X, \psi_{T,X}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}', T')$$
 with $\psi_{T,X} : T'X \rightarrow XT$ and $(Y, \psi_{T',Y}) : (\mathcal{A}', T') \rightarrow (\mathcal{A}'', T'')$ with $\psi_{T',Y} : T''Y \rightarrow YT'$, is given by:

$$(Y,\psi_{T',Y})(X,\psi_{T,X}) = (YX,\psi_{T,YX}) = (YX, \frac{\overrightarrow{\psi_{T',Y}}}{|\underbrace{\psi_{T,X}}|}).$$

The horizontal composition of 1-cells: $(X, \psi_{T,X}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}', T')$ with $\psi_{T,X} : T'X \rightarrow XT$ and $(Y, \psi_{T',Y}) : (\mathcal{A}', T') \rightarrow (\mathcal{A}'', T'')$ with $\psi_{T',Y} : T''Y \rightarrow YT'$, is given by:

$$(Y,\psi_{T',Y})(X,\psi_{T,X}) = (YX,\psi_{T,YX}) = (YX, \frac{\overrightarrow{\psi_{T',Y}}}{|\underbrace{\psi_{T,X}}|}).$$

• The vertical and horizontal composition of 2-cells is given as in \mathcal{K} .

The horizontal composition of 1-cells: $(X, \psi_{T,X}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}', T')$ with $\psi_{T,X} : T'X \rightarrow XT$ and $(Y, \psi_{T',Y}) : (\mathcal{A}', T') \rightarrow (\mathcal{A}'', T'')$ with $\psi_{T',Y} : T''Y \rightarrow YT'$, is given by:

$$(Y,\psi_{T',Y})(X,\psi_{T,X}) = (YX,\psi_{T,YX}) = (YX, \frac{\overrightarrow{\psi_{T',Y}}}{|\underbrace{\psi_{T,X}}|}).$$

- The vertical and horizontal composition of 2-cells is given as in \mathcal{K} .
- The identity 1-cell on a 0-cell (\mathcal{A}, T) is given by: $(Id_{\mathcal{A}}, id_{T}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}, T)$.

The horizontal composition of 1-cells: $(X, \psi_{T,X}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}', T')$ with $\psi_{T,X} : T'X \rightarrow XT$ and $(Y, \psi_{T',Y}) : (\mathcal{A}', T') \rightarrow (\mathcal{A}'', T'')$ with $\psi_{T',Y} : T''Y \rightarrow YT'$, is given by:

$$(Y,\psi_{T',Y})(X,\psi_{T,X}) = (YX,\psi_{T,YX}) = (YX, \begin{array}{c} T'' Y X \\ \hline \psi_{T',Y} \\ | \\ \hline \psi_{T,X} \\ \hline \end{array}).$$

- The vertical and horizontal composition of 2-cells is given as in \mathcal{K} .
- The identity 1-cell on a 0-cell (\mathcal{A}, T) is given by: $(Id_{\mathcal{A}}, id_{T}) : (\mathcal{A}, T) \rightarrow (\mathcal{A}, T)$.
- The identity 2-cell on a 1-cell $(X, \psi_{T,X}) : (\mathcal{A}, T) \to (\mathcal{A}', T')$ is given by id_X .