Definition (Semigroup left action (preliminary version)). A *semigroup **left** action* of a semigroup $\mathbf{S}$ onto a set $\mathbf{A}$ is a map

$$\mathrm{Lact} : \mathbf{S} \times \mathbf{A} \to \mathbf{A}$$

such that, for all $a \in \mathbf{A}$,

$$\mathrm{Lact}(x, \mathrm{Lact}(y, a)) = \mathrm{Lact}(x \mathbin{⨾_{\mathbf{S}}} y, a).$$