

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

$$\text{Contravact} : \mathbf{A} \times \mathbf{S} \rightarrow \mathbf{A}$$

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

$$\text{Contravact}(\text{Contravact}(a, y), x) = \text{Contravact}(a, x \circ_{\mathbf{S}} y).$$