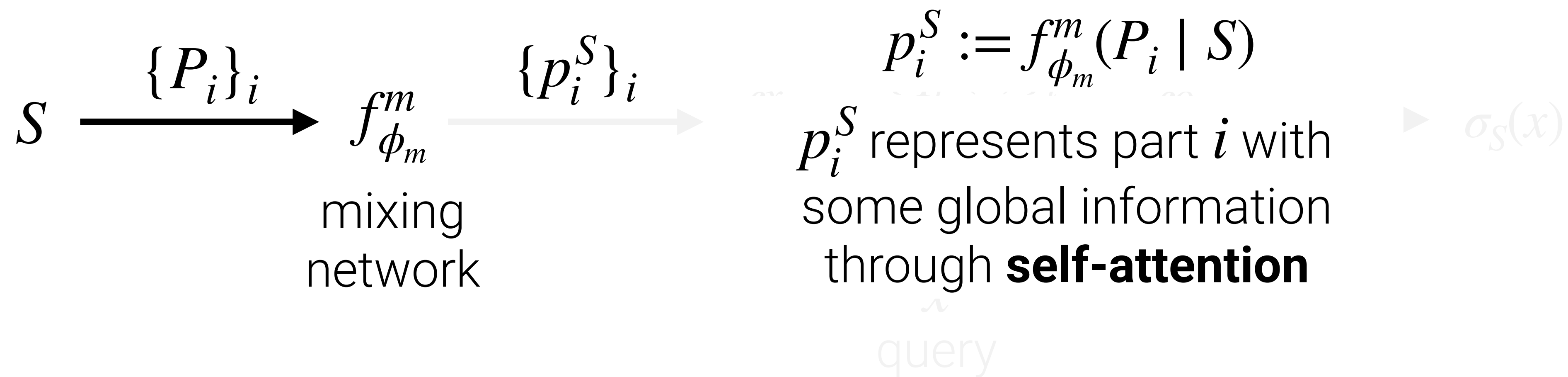# Method - Generalizable Shape Network

We approximate the object's occupancy $\sigma(x) \approx \sigma_S(x) := f_\theta(x \mid S)$ where f_θ is a neural network given shape parameters.

$$S \xrightarrow{\{P_i\}_i} f^m_{\phi_m} \xrightarrow{\{p^S_i\}_i} \quad \blacktriangleright \quad \sigma_S(x)$$

mixing
network

$$p^S_i := f^m_{\phi_m}(P_i \mid S)$$

p^S_i represents part i with some global information through **self-attention**

query

Method - Generalizable Shape Network

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$$S \xrightarrow{\{P_i\}_i} f^m_{\phi_m} \xrightarrow{\{p^S_i\}_i} f^x_{\phi_x} \xrightarrow{\{q^S_i(x)\}_i} f^o_{\phi_o} \longrightarrow \sigma_S(x)$$

mixing
network

part query
network

The network f^x query
a given point x with a
learned indicator