

$$\mathit{lift}_{X,Y} : (X \rightarrow Y) \longrightarrow (X \rightarrow Y \times \mathbf{M})$$

$$f \longmapsto \begin{cases} \mathit{lift}_{X,Y} f : X \longrightarrow Y \times \mathbf{M} \\ x \longmapsto \langle x, \mathbf{id}_{\mathbf{M}} \rangle \end{cases}$$