Definition (Semantics of MCDP). Given an MCDP in algebraic form $\langle \mathcal{A}, \mathsf{T}, \boldsymbol{v} \rangle$,

the semantics $\varphi[\![\langle \mathcal{A}, \mathsf{T}, \boldsymbol{v} \rangle]\!] \in \mathbf{DP}$

is defined as follows:

$$\varphi[\![\langle \mathcal{A}, \mathsf{series}(\mathbf{T}_1, \mathbf{T}_2), \boldsymbol{v} \rangle]\!] := \varphi[\![\langle \mathcal{A}, \mathbf{T}_1, \boldsymbol{v} \rangle]\!] \ \odot \ \varphi[\![\langle \mathcal{A}, \mathbf{T}_2, \boldsymbol{v} \rangle]\!],$$

$$f_{\mathbb{L}}(\mathbf{T}_1, \mathbf{T}_2).$$

$$\mathbf{v}[\![\langle\mathcal{A},a,\boldsymbol{v}]\!]$$

$$\varphi[\![\langle \mathcal{A}, a, \boldsymbol{v} \rangle]\!] := \boldsymbol{v}(a), \quad \text{for all } a \in \mathcal{A},$$

 $\varphi[\![\langle \mathcal{A}, \mathsf{loop}(\mathsf{T}), \boldsymbol{v} \rangle]\!] := \varphi[\![\langle \mathcal{A}, \mathsf{T}, \boldsymbol{v} \rangle]\!]^{\dagger}.$