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:

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$$\operatorname{cries}(\mathsf{T}_1,\mathsf{T}_2),oldsymbol{v}
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$$\mathsf{series}(\mathsf{T}_1,\mathsf{T}_2),oldsymbol{v}
angle]:=q$$

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

$$egin{aligned} & \varphi \llbracket \langle \mathcal{A}, \mathsf{par}(\mathsf{T}_1, \mathsf{T}_2), oldsymbol{v}
angle
rbracket : & \varphi \llbracket \langle \mathcal{A}, \mathsf{T}_1, oldsymbol{v}
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bracket : & \varphi \llbracket \langle \mathcal{A}, \mathsf{T}_1, oldsymbol{v}
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bracket : & \varphi \llbracket \langle \mathcal{A}, \mathsf{T}_2, oldsymbol{v}
angle
bracket, \\ & \varphi \llbracket \langle \mathcal{A}, \mathsf{loop}(\mathsf{T}), oldsymbol{v}
angle
bracket : & \varphi \llbracket \langle \mathcal{A}, \mathsf{T}, oldsymbol{v}
angle
bracket^\dagger. \end{aligned}$$

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