Unstable-Funcons-beta: Postponing [*]

The PLanCompS Project

`Postponing.cbs` | PLAIN | PRETTY

Postponing

[*Entity* postponing
Funcon postpone
Funcon postpone-after-effect
Funcon after-effect]

A funcon term can extend itself (e.g., with code to release the resources allocated to it) using general funcons for postponed execution. When a step from X to X' executes postpone(Y) (which computes null), the corresponding step of postpone-after-effect(X) gives postpone-after-effect(after-effect(X', Y)), so that normal termination of X' is followed by the effect of Y.

The control entity postponing(A) signals that the execution of the body of the abstraction A is postponed:

Entity $\_ \xrightarrow{\text{postponing}(\_:(\text{abstractions}(\Rightarrow \text{null-type}))?)} \_$

The funcon postpone(X) forms a closure from X and signals that its execution is postponed:

Funcon postpone($\_ : \Rightarrow$ values) : $\Rightarrow$ null-type

Rule
$$\frac{\text{given-value}(V) \vdash \text{closure give}(V, X) \xrightarrow{\text{postponing}(\ )} A}{\text{given-value}(V) \vdash \text{postpone}(X) \xrightarrow{\text{postponing}(A)} \text{null-value}}$$

Rule
$$\frac{\text{given-value}(\ ) \vdash \text{closure no-given } X \xrightarrow{\text{postponing}(\ )} A}{\text{given-value}(\ ) \vdash \text{postpone}(X) \xrightarrow{\text{postponing}(A)} \text{null-value}}$$

The funcon postpone-after-effect(X) handles each signal postponing(A) by adding it as an after-effect of X:

[*] Suggestions for improvement: `plancomps@gmail.com`.
Reports of issues: `https://github.com/plancomps/CBS-beta/issues`.

Funcon $\mathsf{postpone\text{-}after\text{-}effect}(\_ : \Rightarrow T) : \Rightarrow T$

Rule
$$\frac{X \xrightarrow{\mathsf{postponing}(\ )} X'}{\mathsf{postpone\text{-}after\text{-}effect}(X) \xrightarrow{\mathsf{postponing}(\ )} \mathsf{postpone\text{-}after\text{-}effect}(X')}$$

Rule
$$\frac{X \xrightarrow{\mathsf{postponing}(A)} X' \qquad A \leadsto \mathsf{abstraction}\ Y}{\mathsf{postpone\text{-}after\text{-}effect}(X) \xrightarrow{\mathsf{postponing}(\ )} \mathsf{postpone\text{-}after\text{-}effect}(\mathsf{after\text{-}effect}(X', Y))}$$

Rule $\mathsf{postpone\text{-}after\text{-}effect}(V : \mathsf{values}) \leadsto V$

The funcon $\mathsf{after\text{-}effect}(X, Y)$ first executes X. If X computes a value V, it then executes Y, and computes V:

Funcon $\mathsf{after\text{-}effect}(X : \Rightarrow T, Y : \Rightarrow \mathsf{null\text{-}type}) : \Rightarrow T$
$\leadsto \mathsf{give}(X, \mathsf{sequential}(Y, \mathsf{given}))$