

17-1/

$(\lambda (x) (+ x y))$
 $\Rightarrow (V \text{ fp } y)$

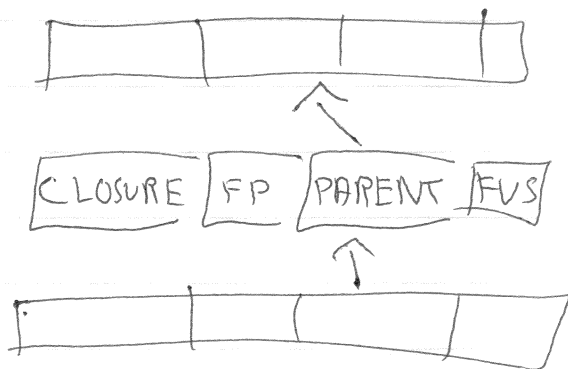
$(\lambda (x)$
 $(\lambda (z) (+ x y z)))$
 $\Rightarrow (V \text{ fp } 1 \ y)$
 $(V \text{ fp } 2 \ x \ y)$
 $\nwarrow \nearrow$
 $y \text{ in both!}$

2 + 3 = 5
 $N + M$ $N + P$ = $2N + M + P$
 \downarrow \downarrow \downarrow
 shared different in fp2 unique to fp2

let a = ... in let b = ... in ...
 the - program

clo-arg = $(V \text{ fp } 1 \ y)$
 $(V \text{ fp } 2 \ \text{clo-arg} \ x)$

$\frac{N + M}{1st} + \frac{1 + P}{2nd}$



$N + N + M + P = N + M + 1 + P \Rightarrow N = 1$
~~2N + M + P~~

17-2/

1st way

~~normal~~

```
(let ([fvo (v-r clo 0)]  
      [fvi (v-r clo 1)]  
      ... )  
  body )
```

body)

2nd way

```
(let ([fvi (v-r clo n-N)])
```

...

```
[parent (v-r clo 0)]
```

```
[fvi (v-r parent 3)]
```

...)

body)

1st — flat closure

time

2nd — linked (nested) closure

space