

CONTINUATIONS\

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General form: (call/cc f) creates a continuation for that statement and applies f to it.\

So f is some function that wants one argument (say its formal parameter name in f is c).\

When (c x) is executed in f, the original (call/cc f) evaluates to x and control continues from that statement.\

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Specific form: (the only kind in my tutorial examples so far---bad idea); We write "our own f", a one-parameter function that "captures the continuation", gives it a name we can use, as demonstrated in the lectures. That is, (call/cc (lambda (k) \'85.)), where our home-grown function can call k itself, put it in some global variable, etc.\

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Now hold my beer and watch this...\

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Two functions A, B: sub-Numbers etc refer to events in sequence listed below.\

```

\ f1 define (A whereB)
  2
  . . .
  \
  (set! whereB (call/cc whereB) )\
  7      3      6  V\
                X\
;; the call\
(A B)\
1\
-----\

```

```

define(B whereA)\
  4 ^\
  X \
  . . .\
  (whereA ret-val)
5 \

```

Note: triple pun in A: whereB is its formal parameter, thus a local variable changed by set!, and a function to be applied to the continuation created by call/cc.\

- 1. A is called with arg B.\
- 2. whereB <-B by binding.\
- 3. later in A, continuation created, passed to whereB, which is B.\
- 4. the call to B binds the continuation to whereA.\
- 5. later in B, whereA is called with argument ret-val.\
- 6. the continuation whereA takes us to point X in A, with the call/cc form evaluating to ret-val.\
- 7. finally, whereB is set! to ret-val.\

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Now if B uses a statement exactly like A's call/cc to call whereA, then you can see A and B are handing off control to each other, each passing its "start me here when you're ready" continuation to the other. See final exam 2013 for runnable code example.

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