Variables as Paths

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In path semantics the construction of the relationship between values and types is motivated by the idea that a "path" is anything that is made by choice and consistency emerges from referring to previous choices. For variables there is a similar idea, but instead of going from types to values and a value representing that choice, one does the opposite and "erases" the value to create a variable. A variable refers to the choice of erasing something, without revealing directly what was erased. Therefore, one can think of a variable as a kind of path representing an atomic function mapping a value to the empty type.

Consider the following where the concrete value `1` is replaced by a variable `a`:

```
f(1)
f(a)
        a := 1
```

One can think of this as an atomic function:

```
a(1) → ()
```

When using this atomic function, one can refer to the path taken as `[a] ()` and reduce it to `a`:

```
f(1)
f([a] ())
f(a)
```

It makes sense in the following ways:

- The variable only makes sense if it can have a value
- The variable used in a given context must represent a unique value
- The variable is "not really there", unlike a value that is "the thing we put there"
- The variable name is irrelevant: The end result means the same if `a` is replaced by `b`

These things are matching perfectly with the meaning of atomic functions by the process of "erasing".

When observing how atomic functions together with the concept of a path can explain the meaning of both values and variables, this should leads to a deeper understanding of what path semantics is all about. It seems to be consisting of two profound patterns. One is about having some "choice" that is about the method of communication, and a resulting "result" that confirms something that is already known or universally true when given enough time to think about it.

```
[choice] result = path
```

The “result” part has a lifting property that makes it possible to extract a hidden pattern. The extracted information that has the same form as the level above, where it is extracted from. The same idea is repeated over and over to create a web of ever-more abstract ideas.