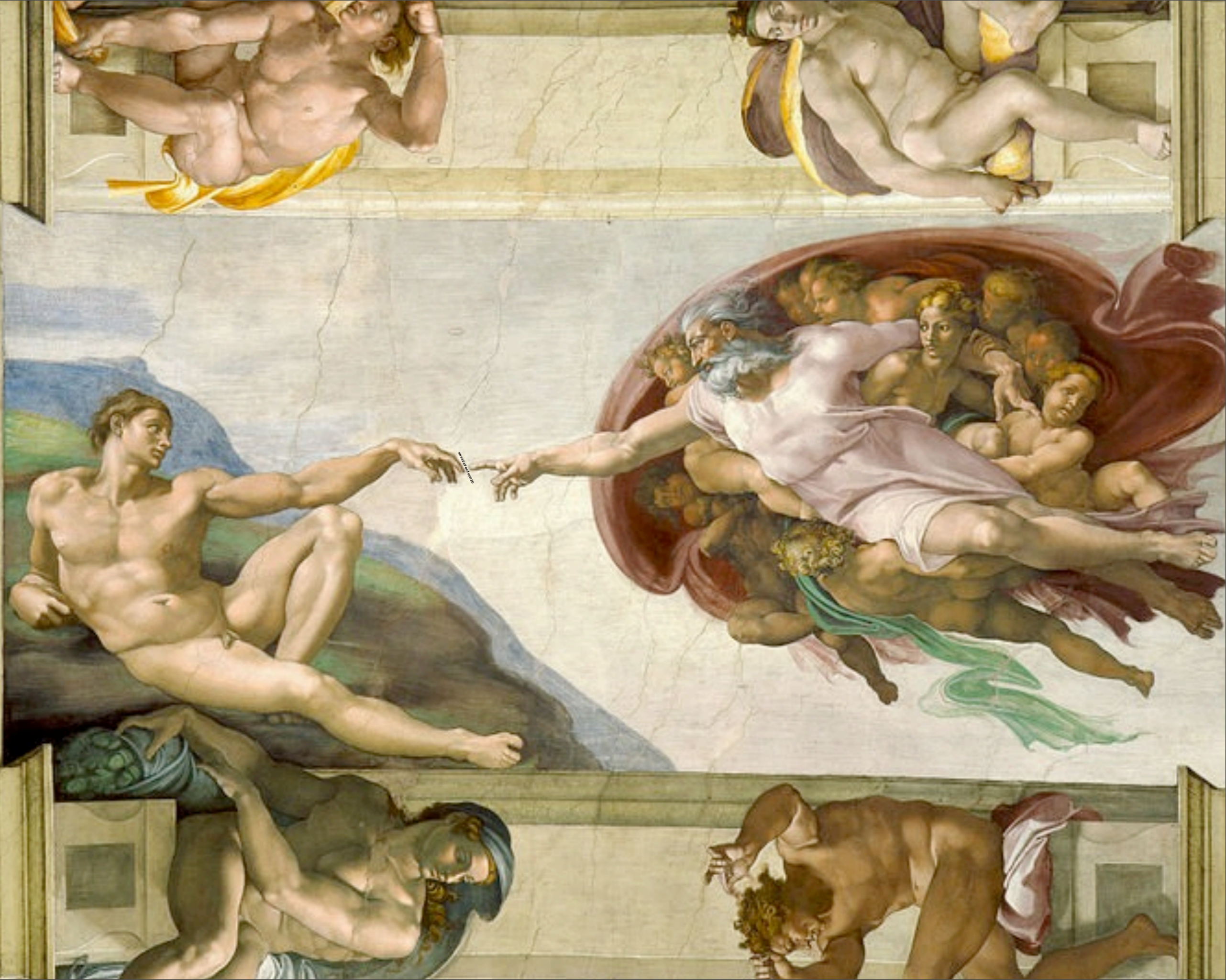


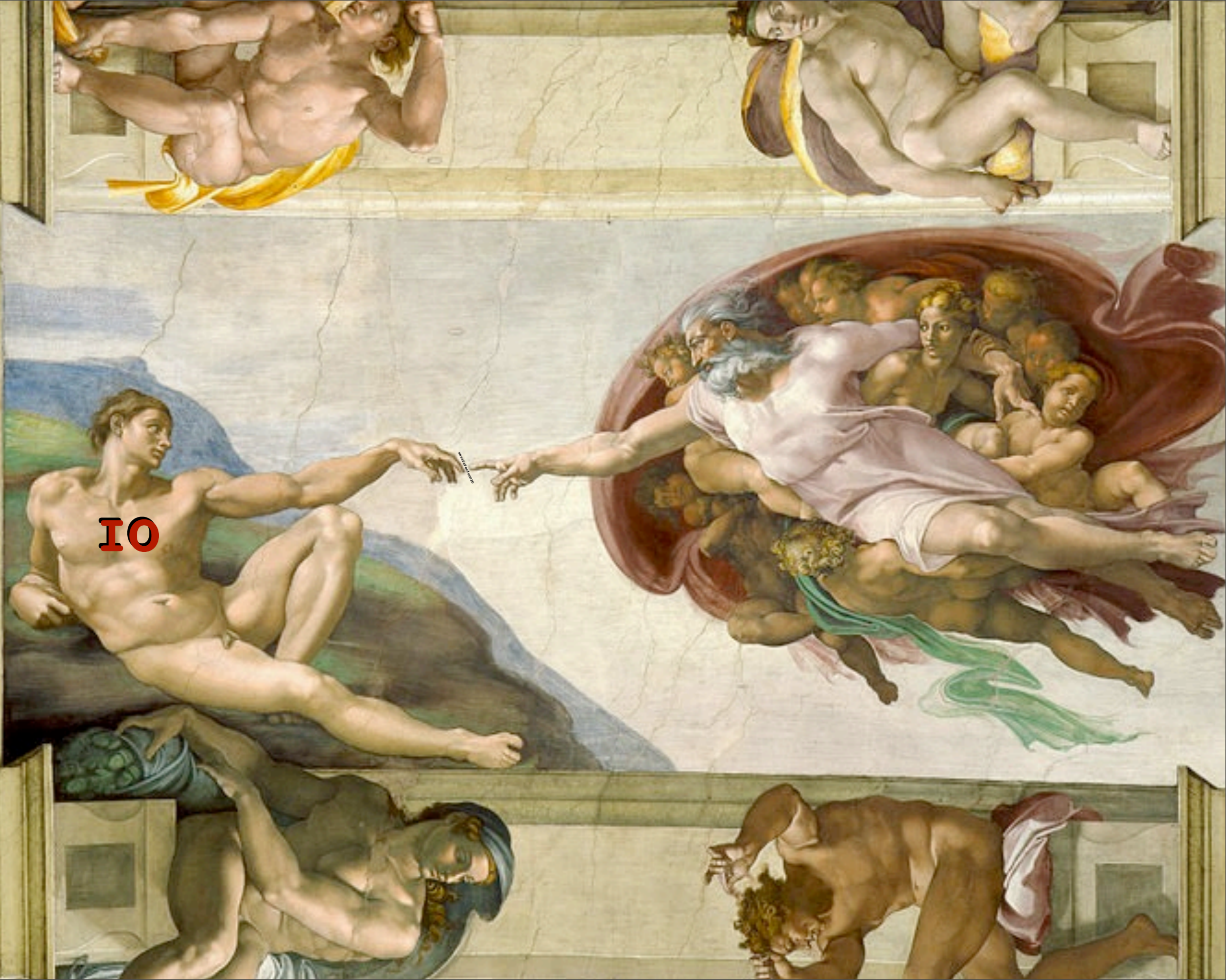
The Future of Haskell

Ben Lippmeier

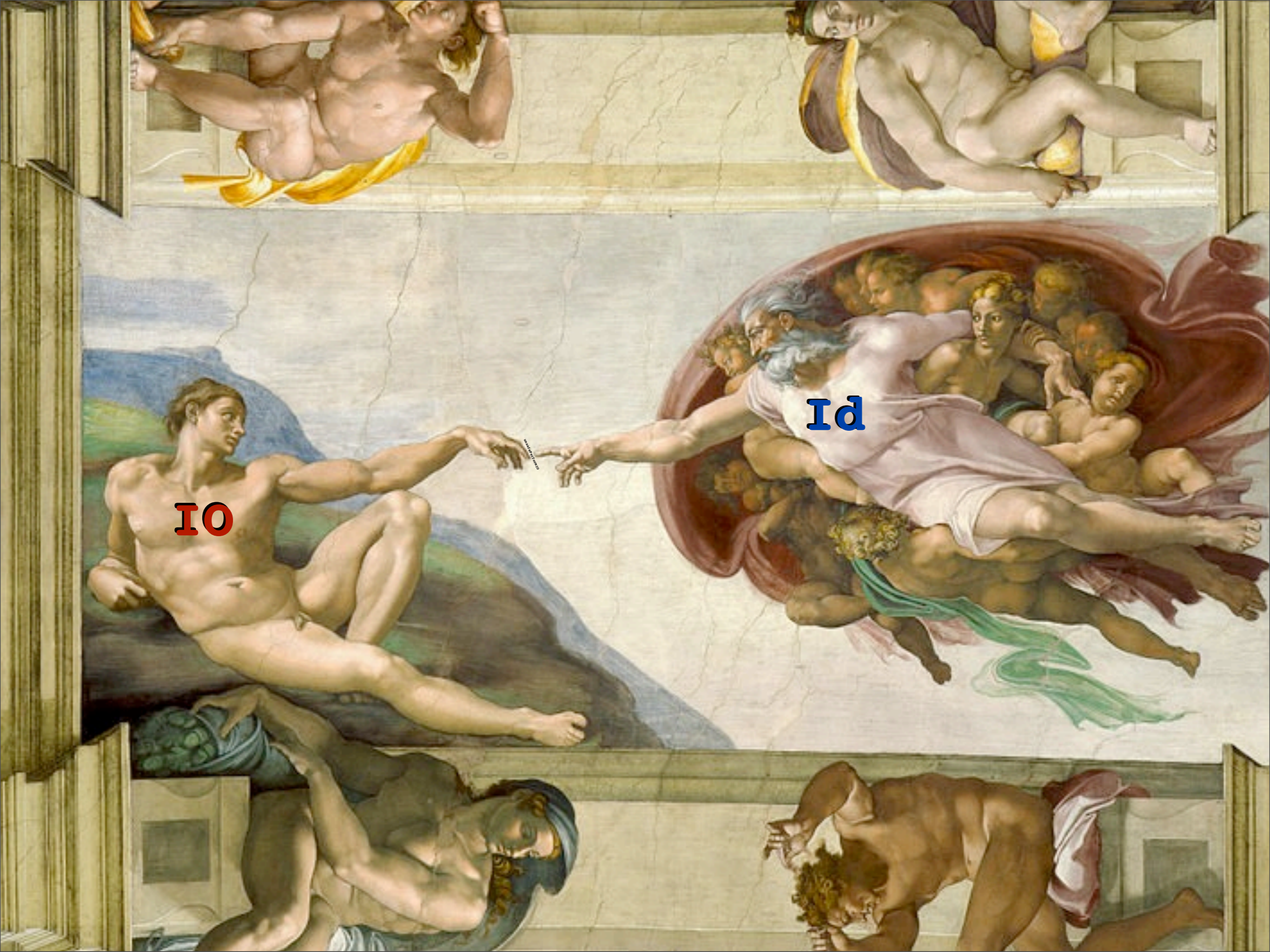
University of New South Wales

Haskell Symposium 2011/09/22





10



IO

Id

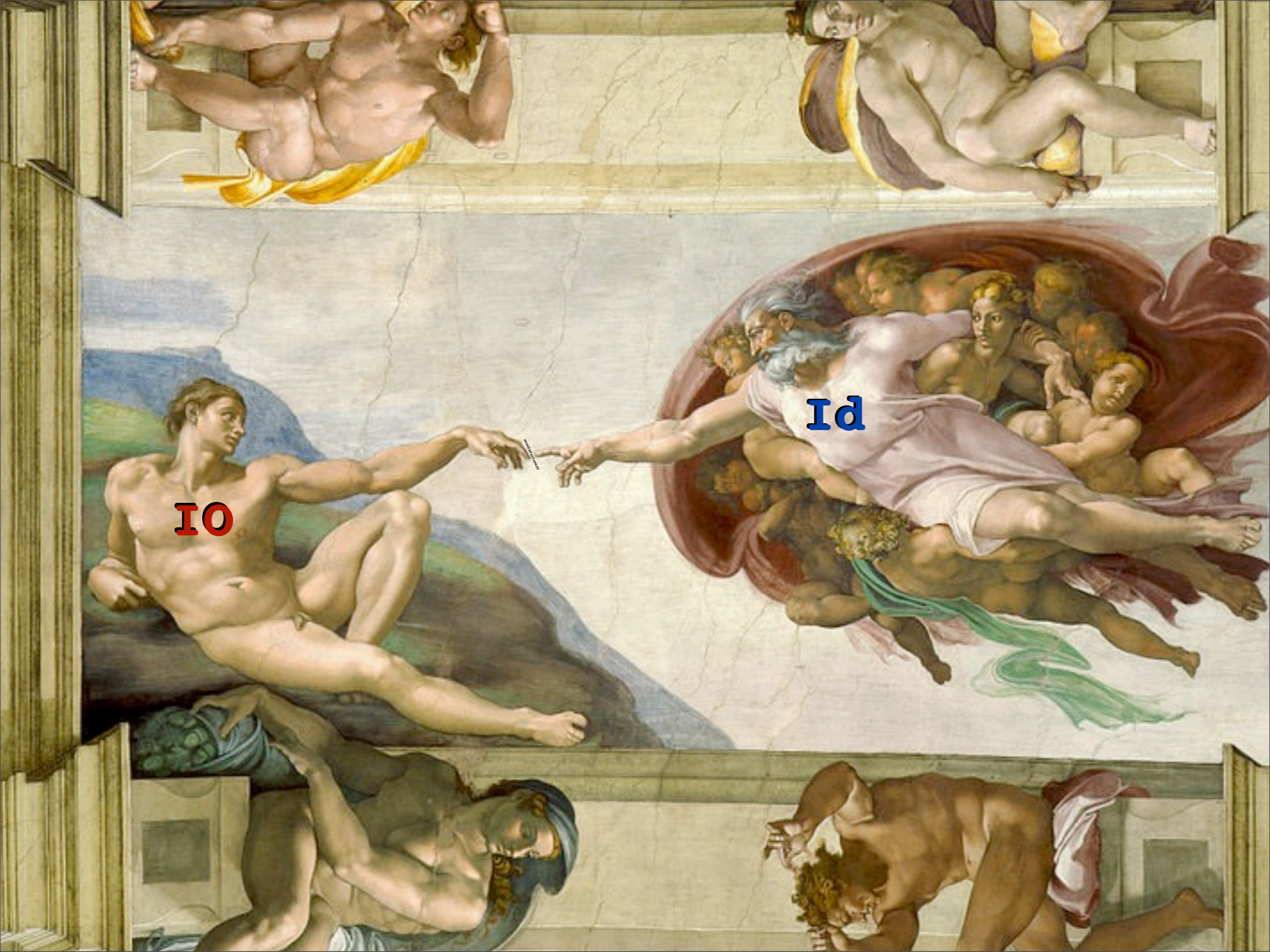
www.istock.com



unsafe performIO



Our Performance is safe



IO

Id

Repa code for force

```
force :: Shape sh => Array sh a -> Array sh a
force (ADelayed sh1 f)
  = unsafePerformIO
  $ do marr2      <- newMArr (size sh1)
      fillP f marr2
      unsafeFreezeMArr sh1 marr2
```

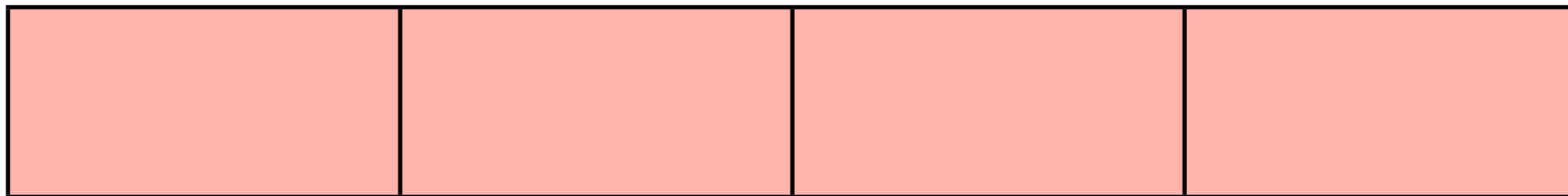

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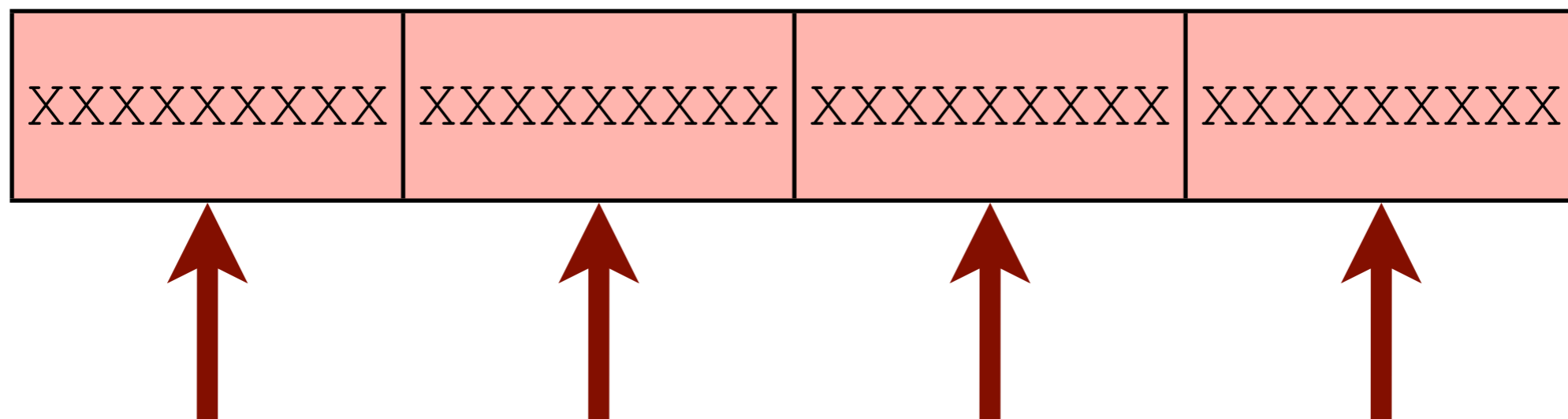
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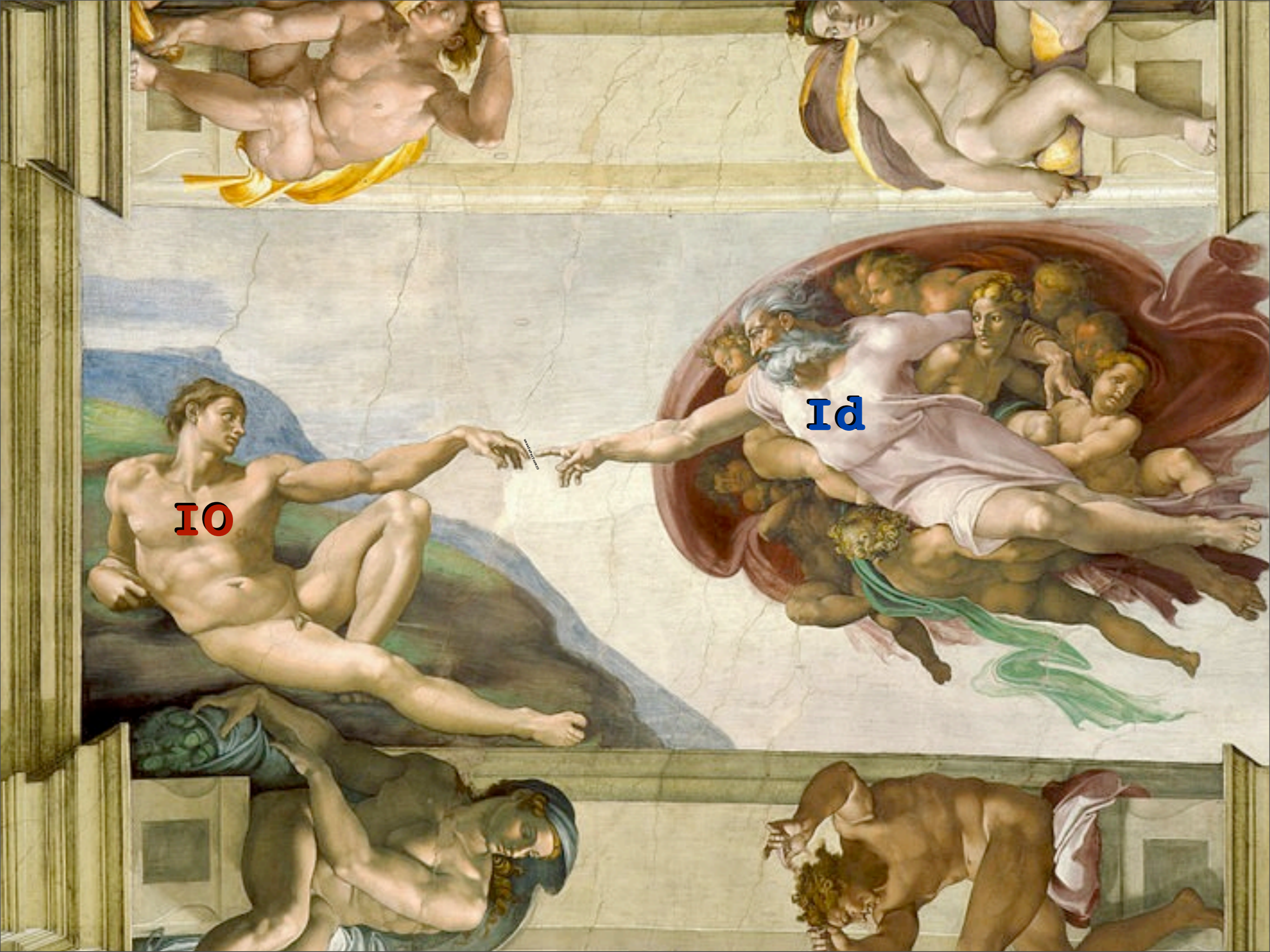
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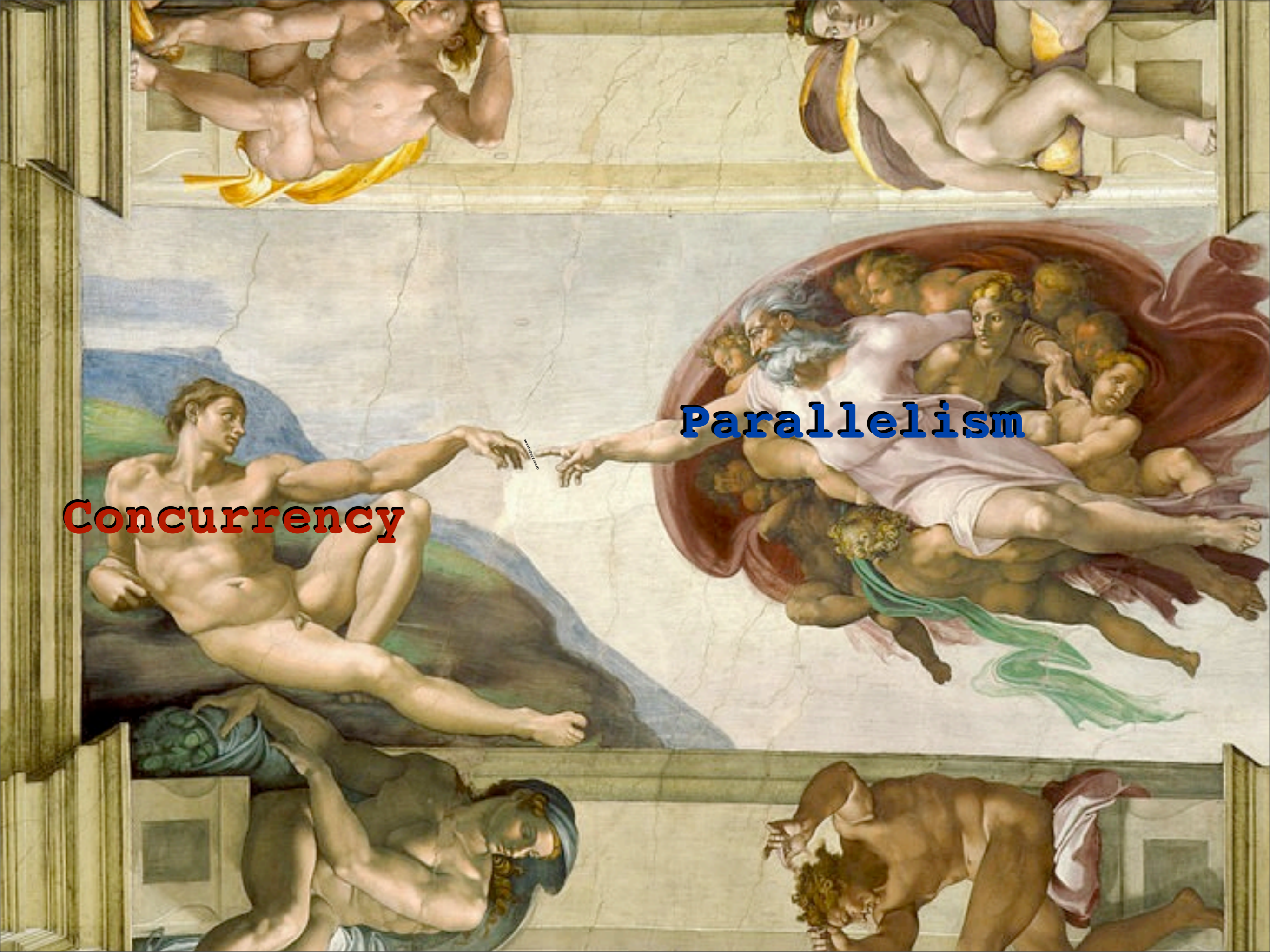
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```

```
XXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
```



IO

Id



Concurrency

Parallelism



source: David E Hunter

-fno-heuristics

- The GHC runtime system and libraries are mature enough to write efficient numerical code in the large.
- Vector, Repa and DPH are completely dependent on program transformation / partial evaluation.
- Perceived “fragility” of program transformation based approaches comes from:
 - Not understanding the simplifier.
 - Heuristic decisions made by the simplifier.
- Broken record: “control is more important than optimisation”

The missing monad

Id: Pure (invisible effects)

ST: Local write

IO: Impure (visible effects)

The missing monad

Id: Pure (invisible effects)

ST: Local write

??: Concurrent Independent Write

IO: Impure (visible effects)