Stop Writing Unit Tests

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Generate Them!

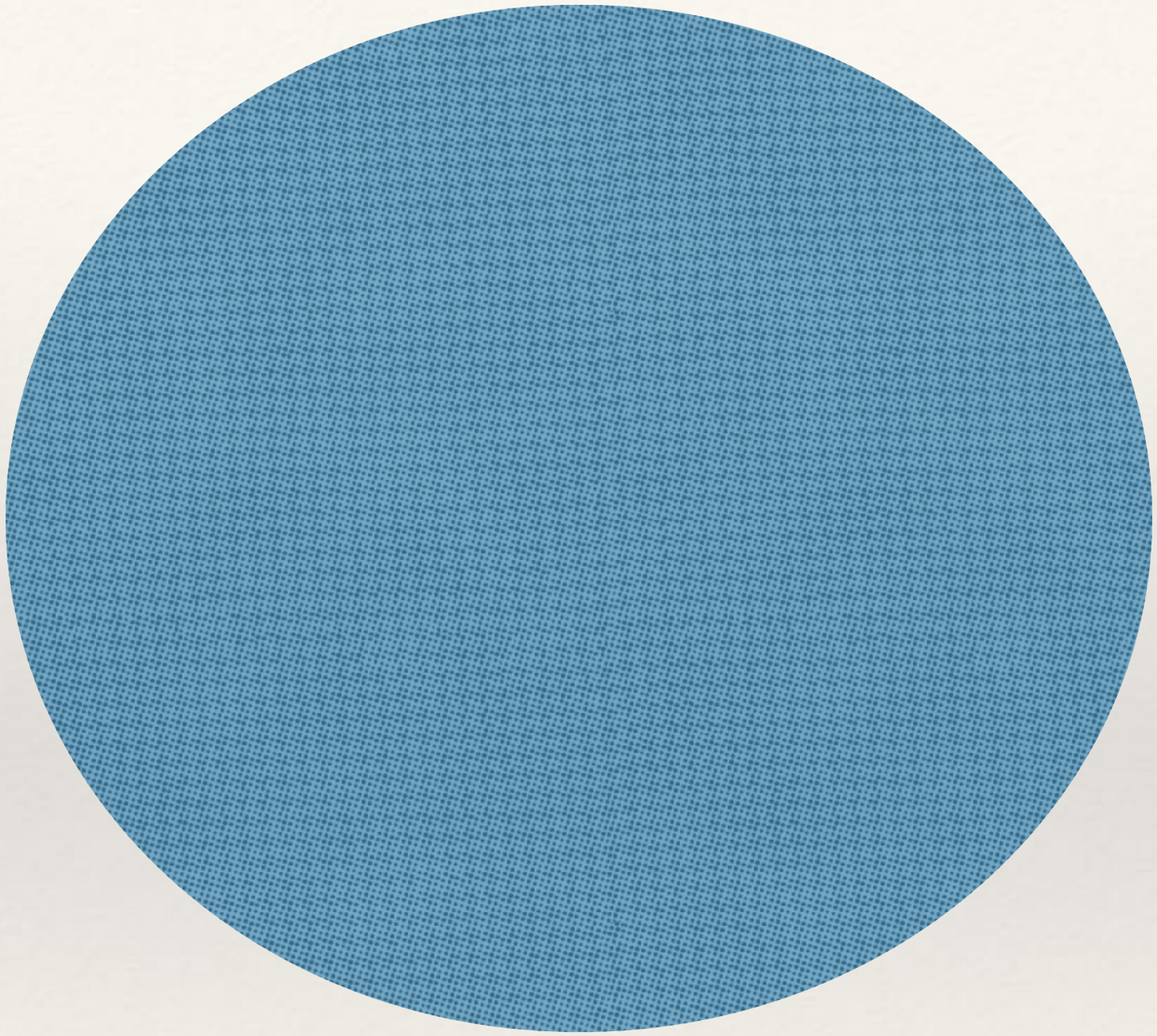
Testing Crutches

```
Foo

Bar

42

new Exception("BOOM")
```

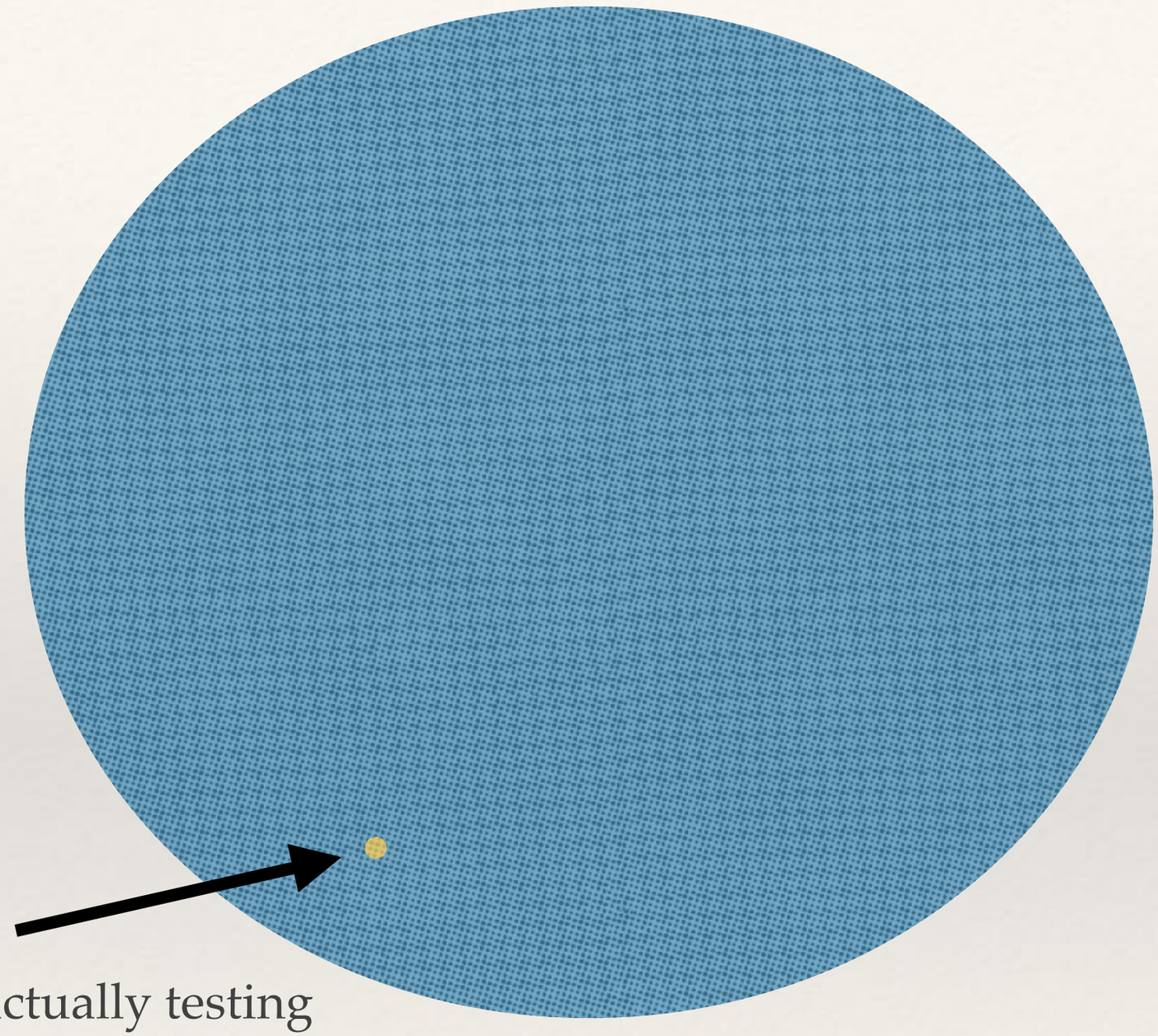
Testing Crutches

```
assert_to_my_stakeholder(
   dumb_call(42) == "cherry-picked answer")

assert(obvious_failure_failed)

assert(you_are_paid_way_too_much_for_this)
```

State Space



State Space



What you're actually testing

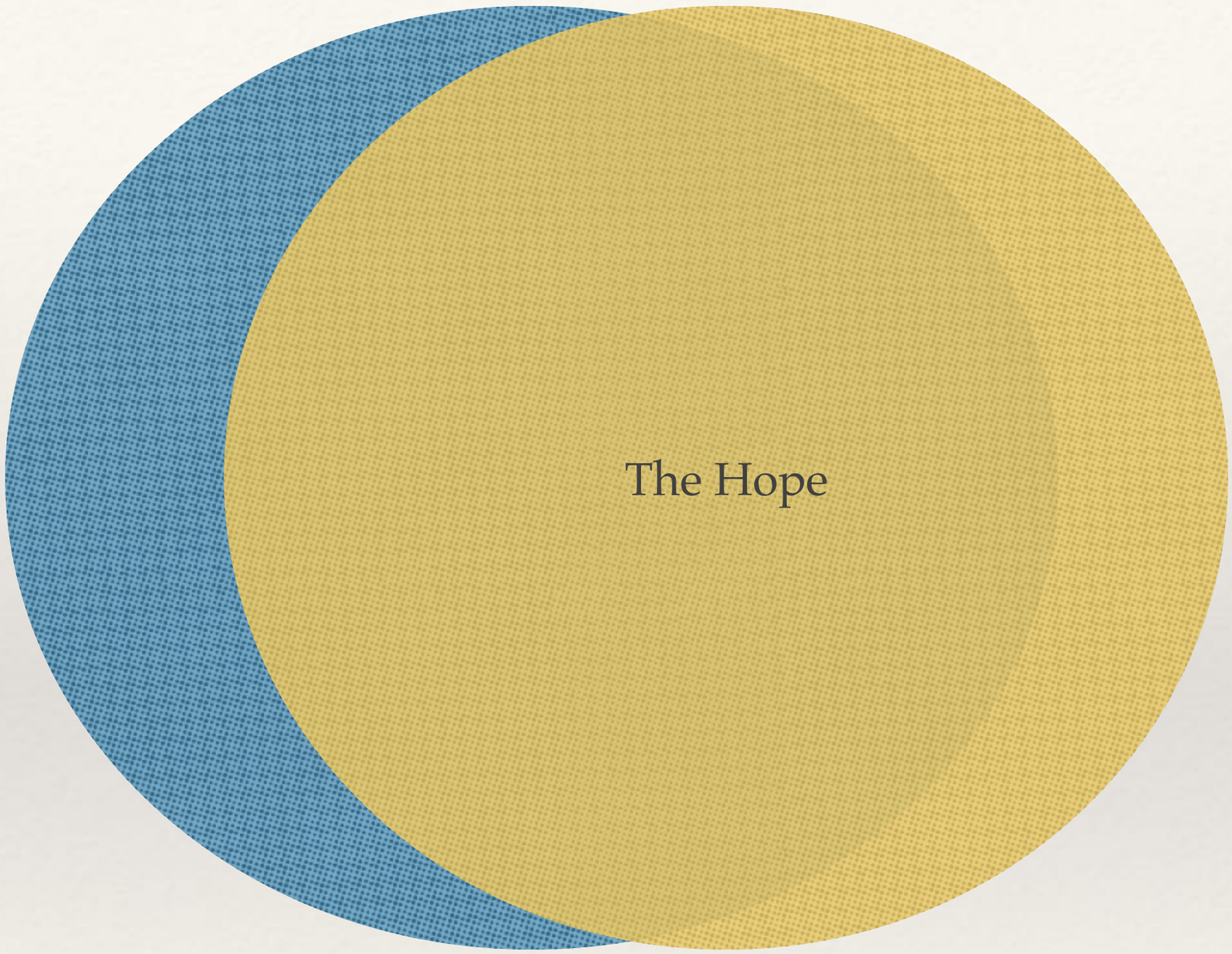
Synonyms for This Topic

- Property-based
- Random testing
- Generative testing

Names of Tools

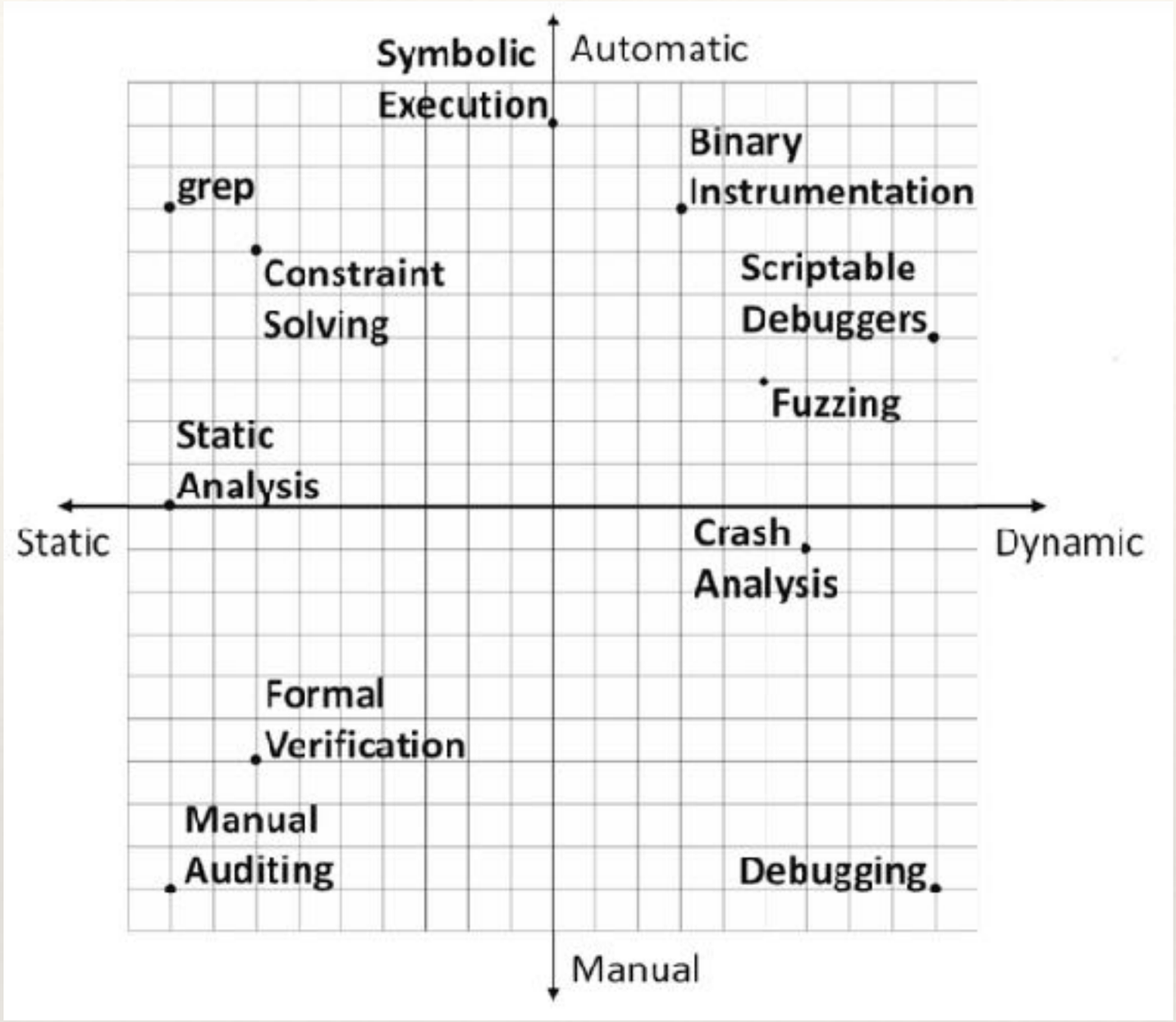
- Haskell (QuickCheck) 2000
- Erlang (eqc) 2006
- Python (Hypothesis)
- Clojure (test.check)
- Scala (ScalaCheck)

State Space



Approach

1. Think Carefully™ about properties or invariants
2. Code the properties
3. Synthesize input
4. Run the properties over the input



https://stackoverflow.com/questions/38891409/static-analysis-and-symbolic-execution-in-implementation

```
(defn f []
 (-> #{}
  (transient)
  (conj! -24)
  (persistent!)
  (conj 0)
  (conj 0)
  (conj 0)
  (conj 0)
  (conj 0)
  (conj 0)
  (conj 0)
  (transient)
  (conj! 23)
  (conj! 0)
  (conj! 0)
  (conj! 0)
  (conj! 0)
  (conj! 0)
  (conj! 0)
  (conj! 0)
  (conj! 0)
  (disj! 23)
  (persistent!)
  (conj 23)))
```

https://groups.google.com/forum/#!msg/clojure-dev/HvppNjEH5Qc/1wZ-6qE7nWgJ

Interactive Code