

Readonly Collections

snapshot(), diverge(), readOnlyView()

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tc39 October 2019





Avoid needless mutability



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Principle of Least Authority (POLA)



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Defensive Programming



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Defensive Programming

Functional Programming



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ROM





ES3 everything mutable



ES3 everything mutable

Object.freeze for API surface



ES3 everything mutable

Object.freeze for API surface

ES6 all collections mutable



ES3 everything mutable

Object.freeze for API surface

ES6 all collections mutable

This proposal



*Query and update,
causes mutations*

Map



*Query and update,
causes mutations*

Map

*Query only,
Always sees the same state*

FixedMap



*Query and update,
causes mutations*

Map

*Query only,
sees mutations*

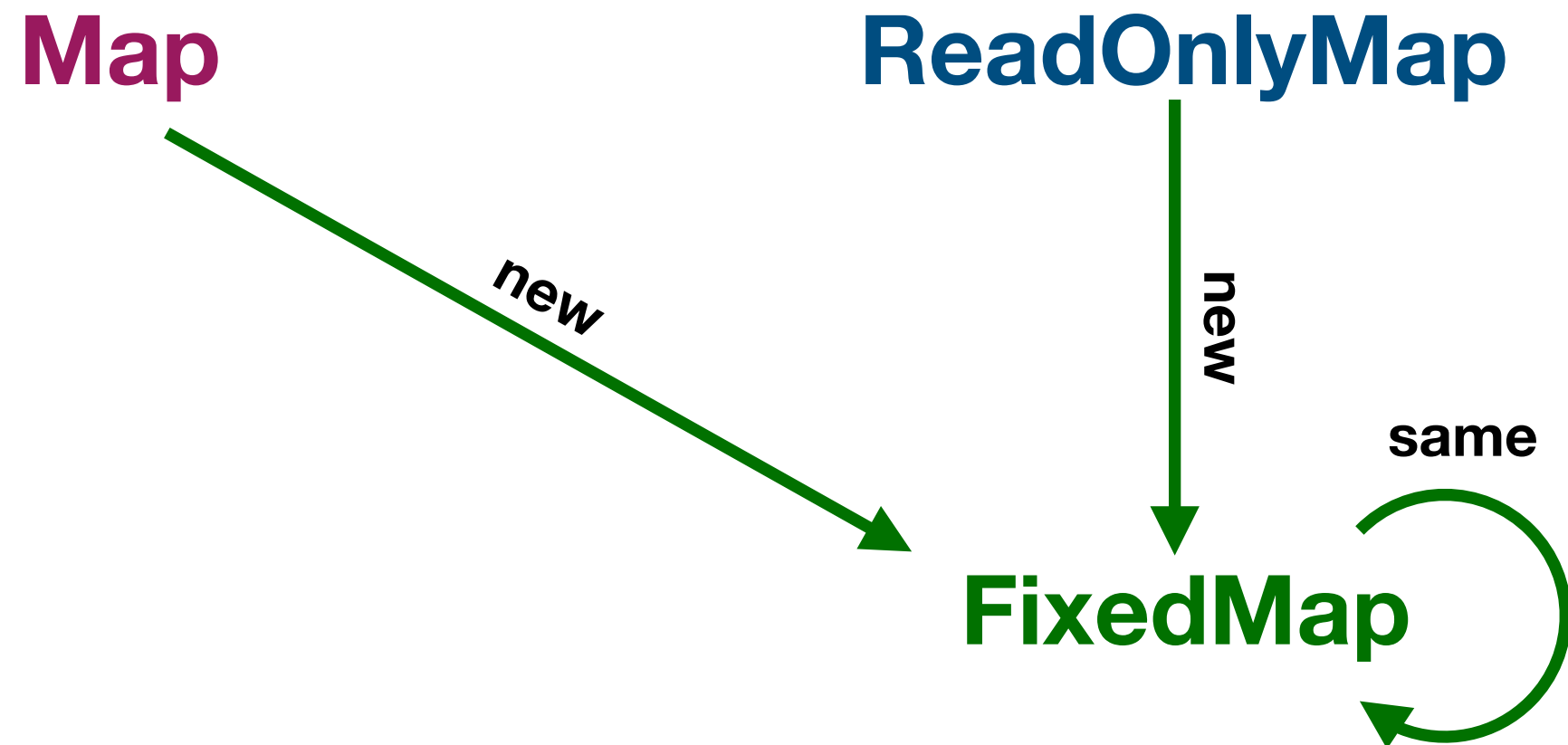
ReadOnlyMap

*Query only,
Always sees the same state*

FixedMap

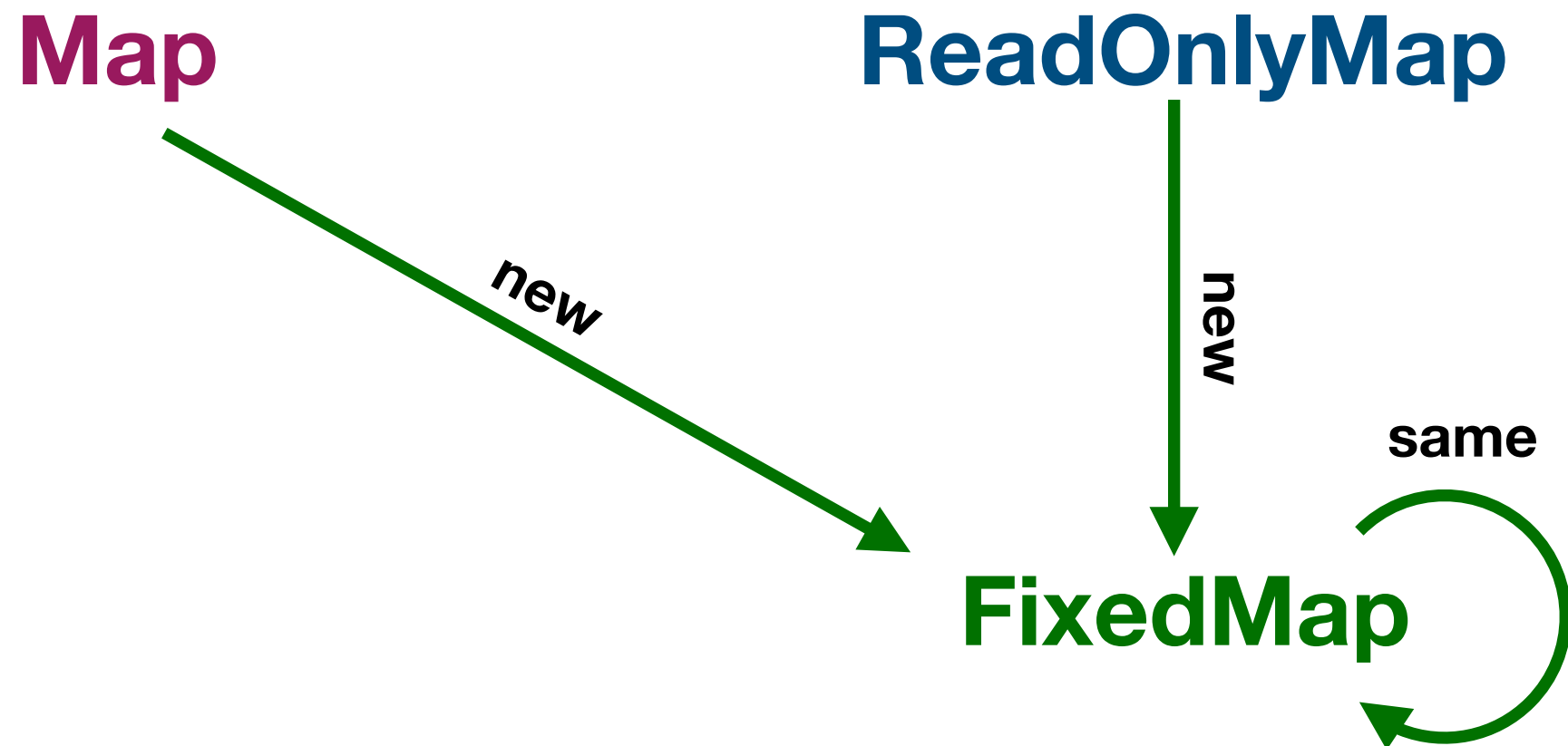


m.snapshot() —> obeys FixedMap
always be the state of m *now*



m.snapshot() —> obeys FixedMap
always be the state of m *now*

const fm = m.snapshot();
fm.get(8) *now same as* fm.get(8) *later*



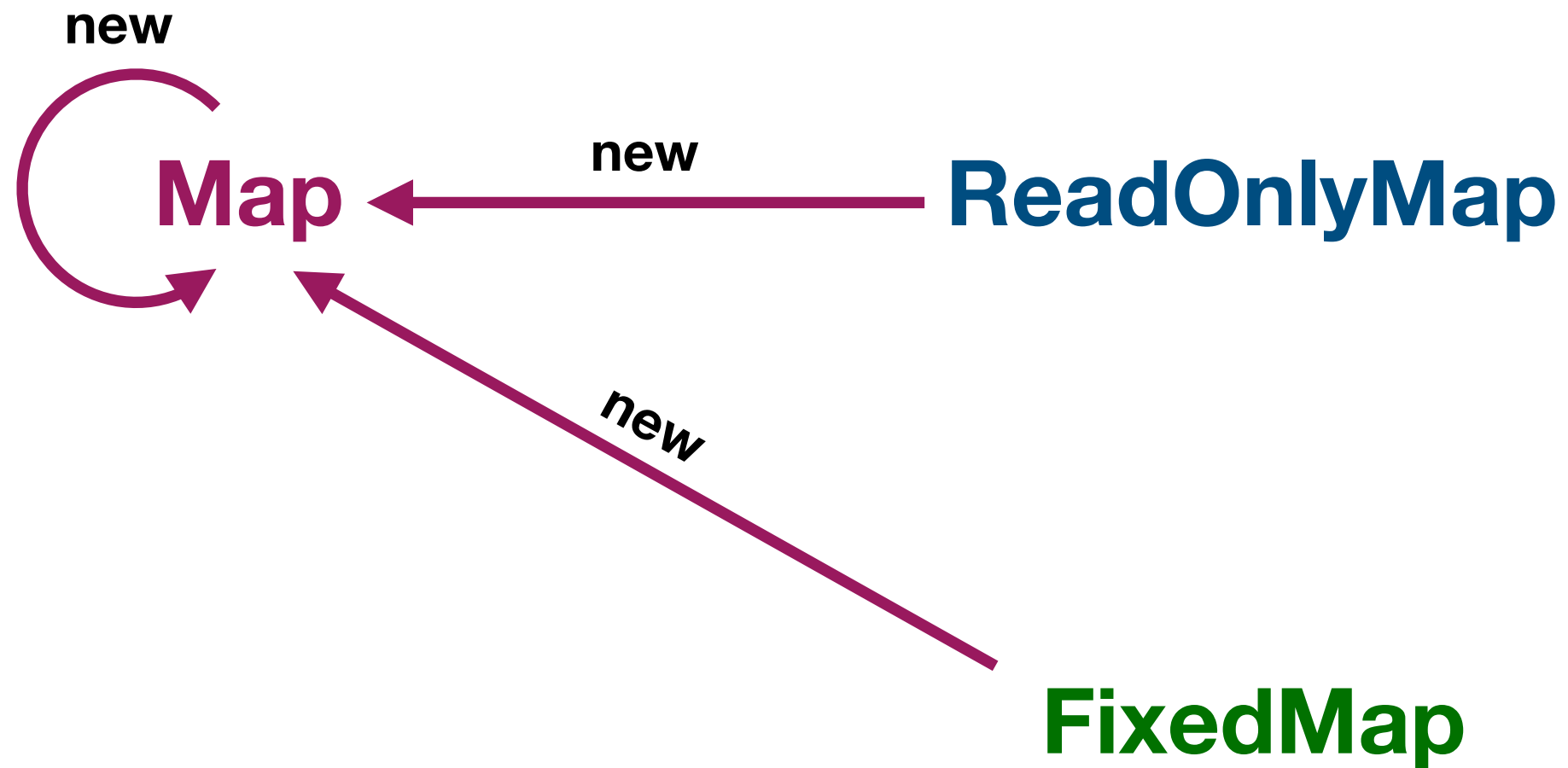
Map

ReadOnlyMap

FixedMap

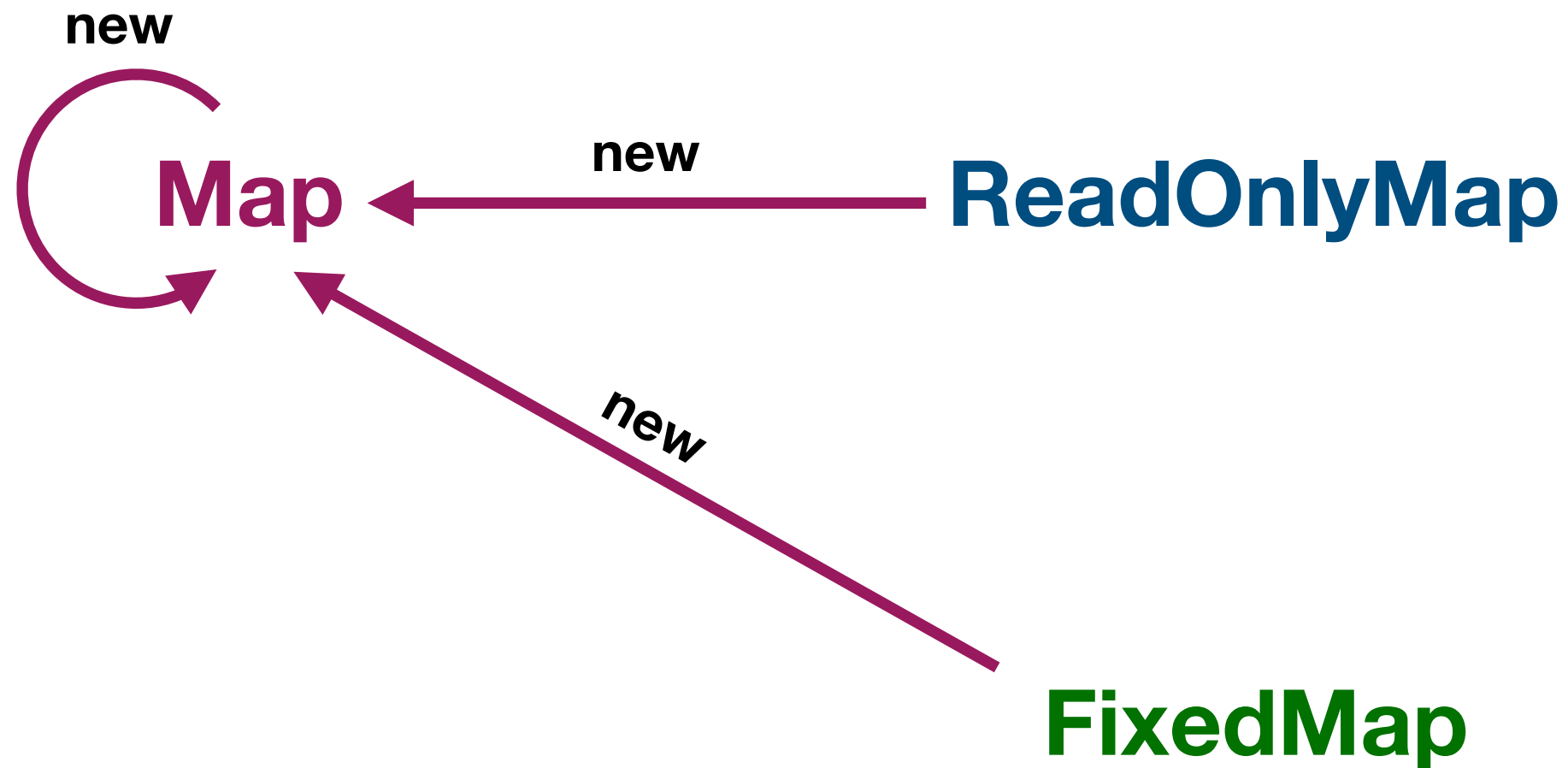


m.diverge() —> a fresh Map
starting from state of m *now*



m.diverge() —> a fresh Map
starting from state of m *now*

```
const mm = m.diverge();  
mm.set(8, 'x'); m.get(8) !== mm.get(8)
```



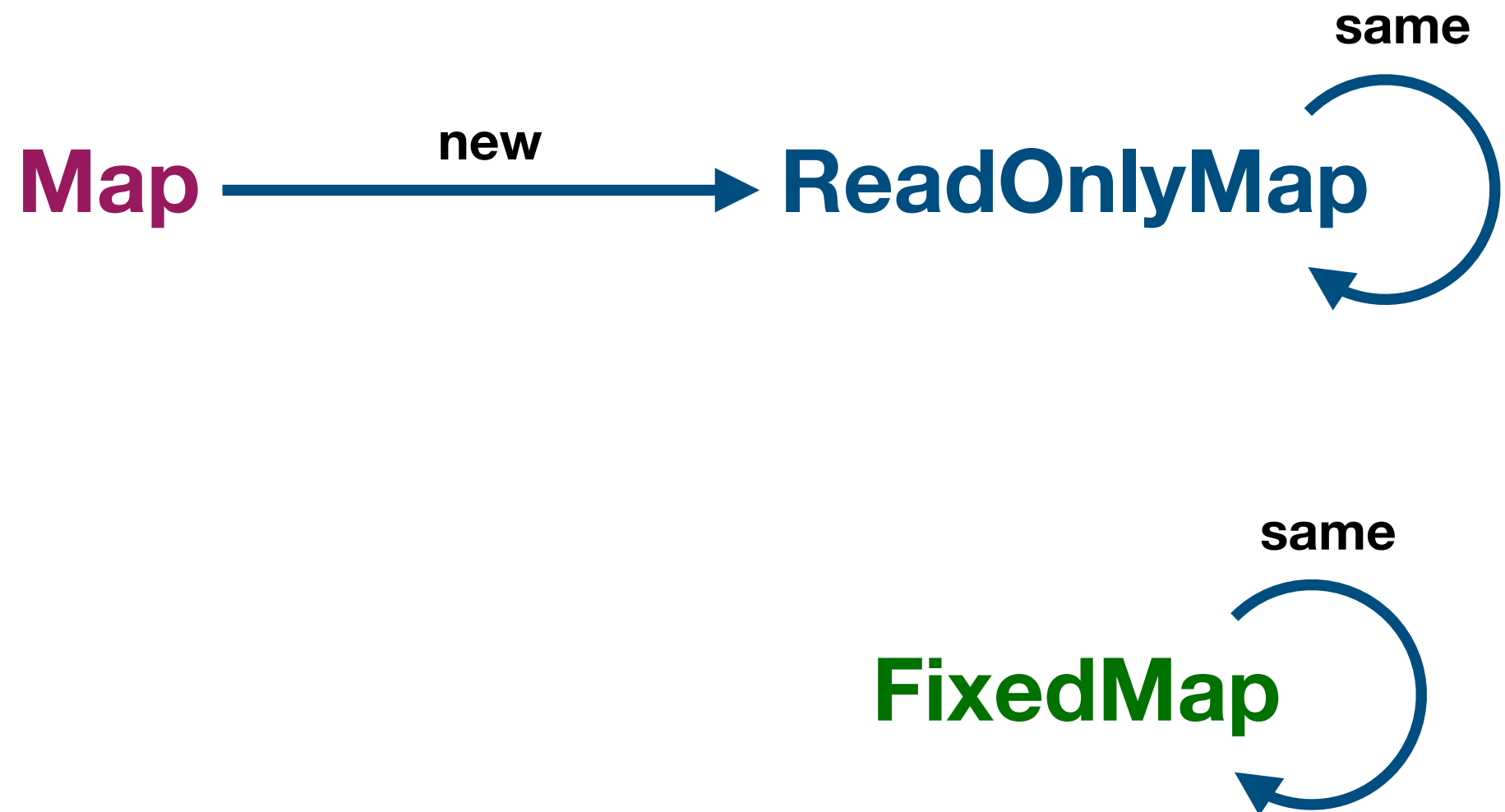
Map

ReadOnlyMap

FixedMap

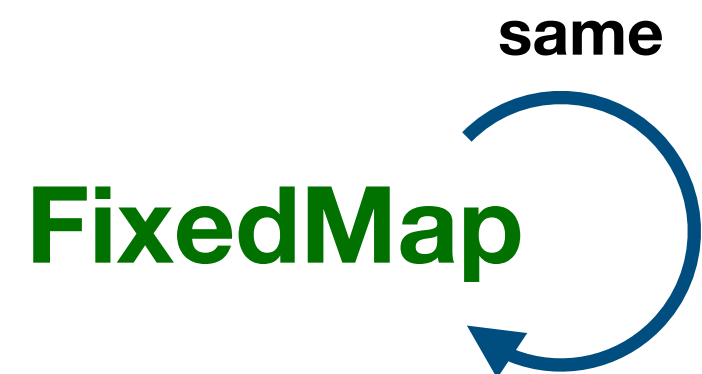
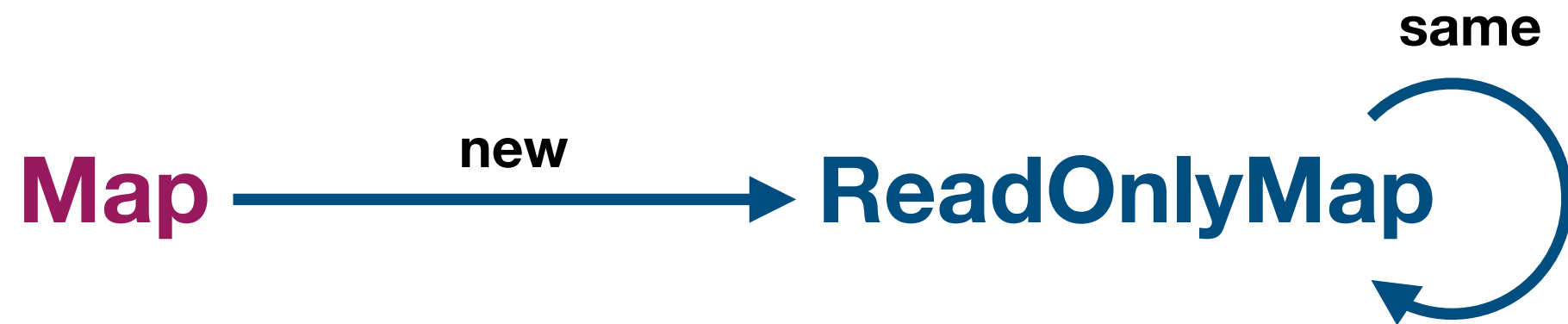


m.readOnlyView() —> obeys ReadOnlyMap
only view *continuing* state of m



m.readOnlyView() —> obeys ReadOnlyMap
only view *continuing* state of m

```
const rov = mm.readOnlyView();  
mm.set(8, 'y'); rov.get(8) —> 'y'
```





Map, Set

snapshot
diverge
readOnlyView



Map, Set

snapshot
diverge
readOnlyView

WeakMap, WeakSet

snapshot?
diverge?
readOnlyView



Map, Set

snapshot
diverge
readOnlyView

WeakMap, WeakSet

snapshot?
diverge?
readOnlyView

Typed Arrays

snapshot
diverge
readOnlyView



Map, Set

snapshot
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readOnlyView

WeakMap, WeakSet

snapshot?
diverge?
readOnlyView

Typed Arrays

snapshot
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readOnlyView

ArrayBuffer

snapshot
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Map, Set

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WeakMap, WeakSet

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SAB

Normal Arrays

snapshot?
diverge?
readOnlyView?



Map, Set

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WeakMap, WeakSet

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SAB

Normal Arrays

snapshot?
diverge?
readOnlyView?

Objects

NO!



Not Included:

Fixing in place

Ownership transfer

Detaching



Questions?

