

# Change Array by copy For Stage 2

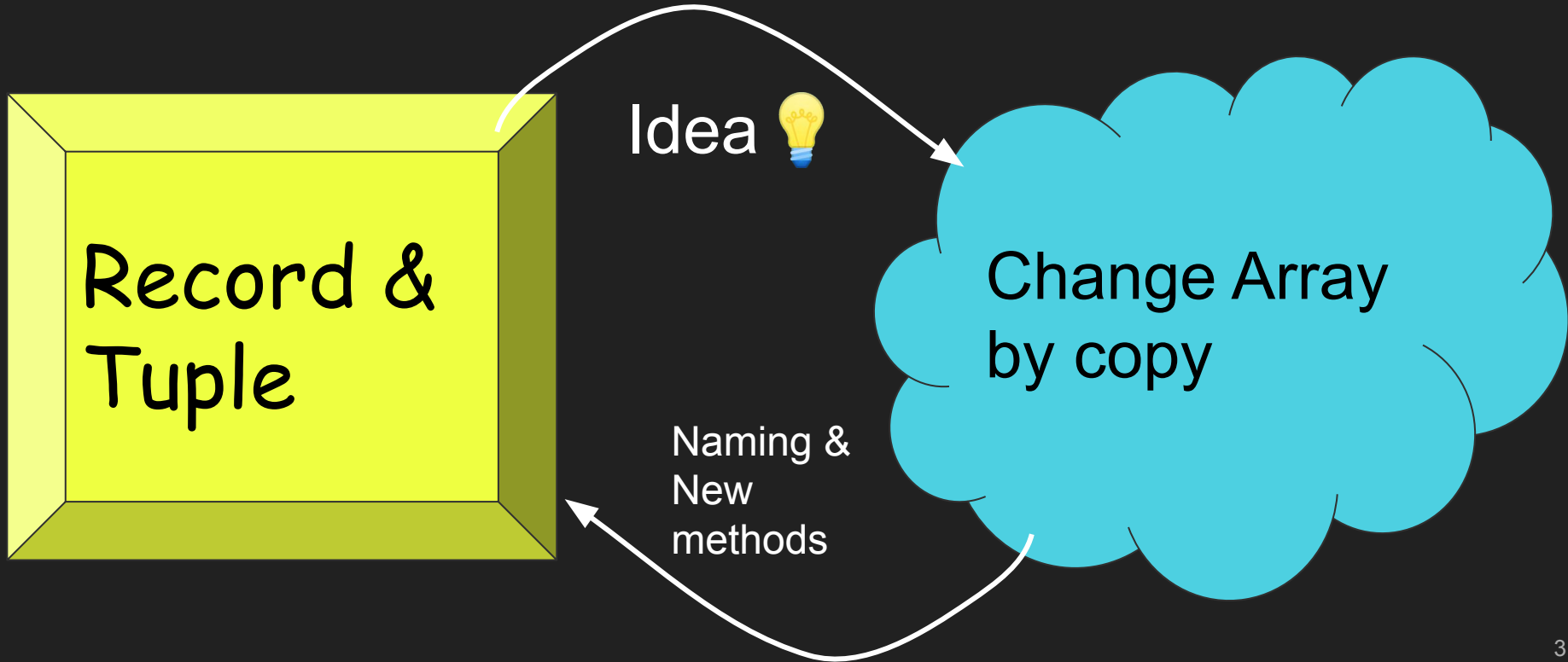
Ashley Claymore, Bloomberg

<https://github.com/tc39/proposal-change-array-by-copy/>

# High Level Summary

How do the `non-mutating methods`  
`inspired by Tuple.prototype` work out on  
`Arrays` and `TypedArrays`  
so all three could participate in a `common interface`?

# Interaction with Record & Tuple



# April 2021 Meeting

- 🕒 Past-tense pattern presented
  - `.sorted()`
  - `.popped()`
- 👍 Support for returning value without array holes
- 👁️ Concerns on  $O(n)$  performance not being clear from the name
  - `.pop`  $O(1)$  `.popped`  $O(n)$
- 📄 Large surface area to check for web compatibility
- 🎉 Stage 1

Array

.pop  
.push  
.shift  
.splice  
.unshift

.copyWithin  
.fill  
.reverse  
.sort

TypedArray

.set

Mutate

.concat  
.flat  
.flatMap

.entries      .keys  
.every        .lastIndexOf  
.filter        .map  
.find          .reduce  
.findIndex    .reduceRight  
.forEach      .slice  
.includes     .some  
.indexOf      .values  
.join

.subarray

.pop  
.push  
.shift  
.splice  
.unshift

.copyWithin  
.fill  
.reverse  
.sort

.set ?

## Mutate

.withPopped  
.withPushed  
.withShifted  
.withSpliced  
.withUnshifted

.withCopiedWithin  
.withFilled  
.withReversed  
.withSorted

.withAt ?

# Ergonomics!

Before:

```
const arr2 = [...arr].sort();    // Array specific
const arr3 = [...arr2];
arr3[arr2.length - 1] = 2;
```

After:

```
const list2 = list.withSorted(); // Generic Type
const list3 = list2.withAt(-1, 2);
```

# No Array Holes

```
[, , 2, , 3, , 1].slice().sort();  
> [1, 2, 3, empty × 4]
```

```
[, , 2, , 3, , 1].withSorted();  
> [1, 2, 3, undefined, undefined, undefined, undefined]
```



# No Species

```
class MyCustomArray extends Array {}  
let a = new MyCustomArray(3, 2, 1);
```

```
let a2 = a.withPopped();  
a2 instanceof MyCustomArray; // false
```

# Research required before Stage 3

- Should the set of new methods be reduced?
  - `.withShifted()` == `.slice(1)`
  - `.withUnshifted(...vs)` == `.withSpliced(0, 0, ...vs)`
  - `.withPopped()` == `.slice(0, -1)`
  - `.withPushed(...vs)` == `.concat([...vs])`
- What names should these methods have
  - Avoid increasing the difficulty of learning JS
  - Web compatible
  - Alternative prefix
    - Copy (`copyFilled`, `copySorted`, `copyPushed`, `copyCopiedWithin`)
    - To (`toFilled`, `toSorted`, `toPushed`, `toCopiedWithin`)

# Status

- Spec
  - <https://tc39.es/proposal-change-array-by-copy/>
- Polyfill
  - <https://github.com/tc39/proposal-change-array-by-copy/blob/main/polyfill.js>
- Issues
  - <https://github.com/tc39/proposal-change-array-by-copy/issues>

Queue?

Asking for Stage 2