Immutable ArrayBuffers for stage 2

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TC39

Recap: Proposed ArrayBuffer API

```
transfer(len?: number) :ArrayBuffer
transferToFixedLength(len?: number) :ArrayBuffer
resize(len: number) :void
slice(start?: number, end?: number) :ArrayBuffer
transferToImmutable() :ArrayBuffer
get immutable: boolean
get detached: boolean
get resizable: boolean
get byteLength: number
get maxByteLength: number
```

Recap: Immutable ArrayBuffer Flavor

~~transfer(len?: number) :ArrayBuffer~~
~~transferToFixedLength(len?: number) :ArrayBuffer~~
~~resize(len: number) :void~~
slice(start?: number, end?: number) :ArrayBuffer
~~**transferToImmutable() :ArrayBuffer**~~
get immutable: true
get detached: false
get resizable: false
get byteLength: number
get maxByteLength: same number

Status Update

- Many private positive comments
- No negative comments or objections
- Stage 1 spec text already stage 2 quality
- Moddable XS implementation!!!
- Progress on open questions…

Open#15: An optional length parameter?

Given

```
transfer(len?: number) :ArrayBuffer
transferToFixedLength(len?: number) :ArrayBuffer
```

do we want

```
transferToImmutable() :ArrayBuffer
```

or

```
transferToImmutable(len?: number) :ArrayBuffer
```

?

The second minimizes damage from surprise.

Open#9: zero-copy slice?

Given

```
slice(start?: number, end?: number) :ArrayBuffer
```

and

```
transferToImmutable() :ArrayBuffer
```

should we add

```
sliceToImmutable(start?: number, end?: number) :ArrayBuffer
```

?

Yes. Too hard to make this zero-copy

```
immuBuf.slice(s,e).transferToImmutable()
```

Open#10: `immutable` or `mutable` ?

Should the accessor property be

- `immutable` - booleans default to false

or

- `mutable` - pos names avoid double negatives

?

favor `immutable`

```
if (buf.immutable) ...
```

Open#16: throw, or silently do nothing?

Should trying to write data in an immutable ArrayBuffer via a TypedArray element set throw, even though trying to write out-of-bounds or to a detached ArrayBuffer does not?

Should TypedArray write methods (copyWithin, fill, reverse, set, etc.) throw when their backing ArrayBuffer is immutable but the targeted range is zero-length? If so, how early or late in the algorithm? The methods currently inspect arguments after ValidateTypedArray.

How early or late in SetViewValue against an immutable ArrayBuffer should an exception be thrown? It currently inspects arguments before IsViewOutOfBounds.

Likewise for abstract operations such as ArrayBufferCopyAndDetach (which currently checks IsSharedArrayBuffer, then newLength, then IsDetachedBuffer).

And also for Atomics functions.

Driven by implementor feedback.

But when in doubt, throw.

Moddable XS implementation throws.

Questions?

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Stage 2?

Stage 2

- [ ] committee approval
- [ ] spec reviewers selected
- [x] spec text written

Stage 1

- [x] committee approval