

Symbols As WeakMap Keys

For Stage 3

Agenda

- Timeline
- Motivation
- Symbol restrictions
- Stage 3 reviews

Timeline

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|------------|---|
| May 2018 | Issue #1194 on ECMA262 "Symbols can't be used as WeakMap keys" - <i>discussion around semantics for registered and well-known symbols in comments</i> |
| June 2020 | For Stage 1, accepted - <i>as an alternative to the Box primitive from Record & Tuple</i> |
| July 2020 | For Stage 2, unsuccessful |
| April 2021 | For Stage 2, accepted |
| May 2021 | For Stage 3, unsuccessful - lack of motivation if Box was going to ship with R&T |
| Oct. 2021 | Update - 'ObjectPlaceholder' (Box) alternative approach discussion |
| Dec. 2021 | Update - ' ObjectPlaceholder and Symbols as WMK comparison ' |
| Jan. 2022 | Update - 'Update and usage of registered and well-known symbols ' |
| June 2022 | For Stage 3 |

Motivation




- Primitive-only upcoming features
 - Record & Tuple (Stage 2)
 - Callable boundary in Shadow Realms (Stage 3)
- Box/ObjectPlaceholder is not part of Record & Tuple anymore

```
import { makeRef, deref } from "???"; // <- requires Symbols as WeakMap keys

const node = #{
  id: "foo",
  element: makeRef(document.querySelector("#foo")),
};

typeof node.element === "symbol";
typeof deref(node.element) === "object";
```

Symbol restrictions

-  Unique symbols *can be used as WeakMap keys*
 - `Symbol()`
 - The main motivated target for this proposal
-  Registered symbols ***cannot** be used as WeakMap keys*
 - `Symbol.for(...)`
 - Allows implementations to continue to choose whether or not to collect registered symbols
-  Well-known symbols *can be used as WeakMap keys*
 - `Symbol.iterator`, ...
 - Non-distinguishable from unique symbols without a list of well-known symbols

Possible Stage 0 proposal: Symbol predicates

- `Symbol.isRegistered`
 - Existing library: [inspect-js/is-registered-symbol](#)
- `Symbol.isWellKnown`
 - Existing library: [inspect-js/is-well-known-symbol](#)
- *Why not a `isValidWeakMapKey` predicate?*
 - Forward compatibility issue
 - The predicate cannot change behaviour over time
 - Impossibility to evolve definition of WeakMap Keys in the future

Stage 3 reviews

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Stage 3?