Problem: exposing uninitialized built-in objects
let arrayish = Array[Symbol.create]();
let dateish = Date[Symbol.create]();
let proxyish = Proxy[Symbol.create]();
let buffish = Uint32Array[Symbol.create]();
let nodeish = HTMLElement[Symbol.create]();
YOU WOULDN'T LIKE BZ
WHEN HE'S ANGRY
• Uninitialized instances of built-in classes have to be implemented for every type in the entire Web platform.

• Uninitialized states have to be specified for every type in the entire Web platform.

• Requires lots of "am I properly initialized?" checks in methods.
**Solution:** both allocator and constructor get arguments
new C(x, y, z)

⇒

do {
  let obj = C[Symbol.create](x, y, z);
  obj[Construct](x, y, z)
}

- Builtins do all their work in the allocator. Constructors are noops.
- Impossible to observe uninitialized objects.
- Abstractable by WebIDL to avoid spec boilerplate.
- Abstractable by WebIDL implementations to avoid implementation boilerplate.
Object[Symbol.create] = function() {
  return Object.create(this.prototype);
};

Array[Symbol.create] = function(...args) {
  let a = %CreateArray%(...args);
  Object.setPrototypeOf(a, this.prototype);
  return a;
};
class Stack extends Array {
    top() {
        if (this.length === 0) {
            throw new Error("empty stack");
        }
        return this[this.length - 1];
    }
}

class Substack extends Stack {
    meep() { return "moop"; }
}
let PointType = new StructType(
{
  x: uint32,
  y: uint32
});

let ColorPointType = new StructType(
{
  x: uint32,
  y: uint32,
  color: string
});
class Point {
  static [Symbol.create]() {
    return new PointType();
  }
  constructor(x, y) {
    this.x = x;
    this.y = y;
  }
}

class ColorPoint extends Point {
  static [Symbol.create]() {
    return new ColorPointType();
  }
  constructor(x, y, color) {
    super(x, y);
    this.color = color;
  }
}
class Point {
    constructor(x, y, {this = new PointType();
        this.x = x;
        this.y = y;
    }
}

class ColorPoint extends Point {
    constructor(x, y, color) {
    }
}
class Point {
  constructor(x, y) {
    if (new^) {
      this = new PointType();
    }
    this.x = x;
    this.y = y;
  }
}

class ColorPoint extends Point {
  constructor(x, y, color) {
    if (new^) {
      this = new ColorPointType();
    }
    super(x, y);
    this.color = color;
  }
}

... super.draw() ...
let Point = new StructType({
  x: uint32,
  y: uint32,
}, {
  constructor: function(x, y) {
    this.x = x;
    this.y = y;
  }
});
struct Point {
    x: uint32,
    y: uint32,
    constructor(x, y) {
        this.x = x;
        this.y = y;
    }
}
Implication: allocator signatures have to track constructor signatures
• Exotic types are exotic; this isn't a new issue.

• Only comes up when allocation needs arguments and subclasses don't extend parameter list.

• Userland protocols have to deal with this anyway!
class Point {
  constructor(x, y) {
    if (new^) {
      this = new PointType();
    }
    this.x = x;
    this.y = y;
  }
}

class ColorPoint extends Point {
  constructor(x, y, color) {
    if (new^) {
      this = new ColorPointType();
    }
    super(x, y);
    this.color = color;
  }
}

... super.draw() ...

ISSUE