Strictness Scoping

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VMs need to do parsing & static checks in single pass
...
without building an AST (lazy compilation)
Backtracking is not an option (at least not for V8)
Easy in ES5

‘use sloppy’;
function f(x, x) { ‘use strict’ }
More difficult in ES6

`use sloppy`;

```javascript
function f(g = (o) => { with (o) {} }) { 'use strict' }
```
More difficult in ES6

`use sloppy';

function f(g = function(h) {
    { function h() {} } return h
}) {
    `use strict`
}
Much more difficult in ES6

- The directive can affect _arbitrary_ code
- Nested arbitrarily deep
- Would need to defer any sort of mode-specific decisions in the parser for code that occurs in parameters
- With arrow functions, we do not even know (in time) whether we are inside parameters
Even worse with arrows

‘use sloppy’;
let f = (g = () => { /* ? */ ... }, ...) => { ‘use strict’ }
Categories of mode specific logic

1. Mode-specific errors (e.g., ‘with’, ‘delete’, for-in, octals, ‘let’, variable name validity, parameter conflicts)
   => Easy to defer, at least in principle, but may have measurable cost.

2. Special handling of eval (scoping, variable modes)
   => Not an issue, cannot depend on local directive in same parse

3. Actual divergence in parsing/scoping (e.g., Annex B function scoping, parsing of `yield`)
   => Hairy, affect downstream decisions, would have to transitively defer.
Analysis

- It’s a pain to implement
- It costs performance (parsing is a bottleneck!)
- ...for many programs not using the feature (e.g. ES5)
- Paints us into a corner (will affect any mode-related design decision we ever going to make in the future)
- And all that for an edge case
Suggestion

Make it an error to have a ‘use strict’ directive in a function with a non-simple parameter list.
Possible Variations

- Only an error when outer mode is not strict already (refactoring trap?)
- Only when parameter list contains expressions (too complicated a rule?)