

B.3 Other Additional Features

B.3.1 The `__proto__` pseudo property.

B.3.1.1 Object.prototype.__proto__

The initial value of the `__proto__` property of the Object prototype object is a data property whose initial value is `null`. This property initially has the attributes { `[[Writable]]: true`, `[[Enumerable]]: true`, `[[Configurable]]: true` }.

Manipulations of this property as tracked by the Boolean valued primordial internal variable `UnderscoreProtoEnabled`. The default initial value of `UnderscoreProtoEnabled` is `true` only if this property is initially present on the primordial Object prototype object.

NOTE Any modification of this property or its attributes causes `UnderscoreProtoEnabled` to be set to `false`.

B.3.1.2 Changes To Internal Methods

The definition of the `[[Get]]` internal method given in 8.12.3 is replaced with the following:

1. If P is the string value "`__proto__`" and `UnderscoreProtoEnabled` is `true`, then
 - a. Let $desc$ be the result of calling the `[[GetProperty]]` internal method of O with property name P .
 - b. If $desc$ is not `undefined` and was create by step 1.a to describe the property defined in B.3.1.1 then,
 - i. Return the value of the `[[Prototype]]` internal property of O .
2. Continue by executing the steps of 8.12.3 starting with step 1.

The definition of the `[[Put]]` internal method given in 8.12.5 is replaced with the following:

1. If P is the string value "`__proto__`" and `UnderscoreProtoEnabled` is `true` and O is not the standard built-in Object prototype object, then
 - a. Let $desc$ be the result of calling the `[[GetProperty]]` internal method of O with property name P .
 - b. If $desc$ is not `undefined` and was create by step 1.a to describe the property defined in B.3.1.1 then,
 - i. If the type of V is neither Object or Null, return
 - ii. Set the value of the `[[Prototype]]` internal property of O to V .
 - iii. Return.
2. Continue by executing the steps of 8.12.5 starting with step 1.

The definition of the `[[Delete]]` internal method given in 8.12.7 is replaced with the following:

1. If `UnderscoreProtoEnabled` is `true` and P is the string value "`__proto__`" and O is the standard built-in Object prototype object, then
 - a. Set `UnderscoreProtoEnabled` to `false`.
2. Continue by executing the steps of 8.12.7 starting with step 1.

The definition of the `[[DefineOwnProperty]]` internal method given in 8.12.9 is replaced with the following:

1. If `UnderscoreProtoEnabled` is `true` and P is the string value "`__proto__`" and O is the standard built-in Object prototype object, then
 - a. If any attribute contained in $Desc$ is not present or has a different value from the corresponding attribute in { `[[Writable]]: true`, `[[Enumerable]]: true`, `[[Configurable]]: true` } then,
 - i. Set `UnderscoreProtoEnabled` to `false`.
2. Continue by executing the steps of 8.12.9 starting with step 1.

Allen Wirfs-Brock 2/9/12 5:02 PM

Comment [1]: The section and algorithm reference in this draft are based upon the ES5.1 spec. When the corresponding sections of this document are stable, this section will need to be updated.

Allen Wirfs-Brock 2/9/12 5:04 PM

Comment [2]: This is anticipating new specification material related to Module loaders and establishing a primordial environment. The basic assumption is that a module loader must be able to disable this feature. This seems to suggest that the ability to do so must exist in the module loader APIs even if this feature is not present in an implementation.

Allen Wirfs-Brock 2/9/12 3:55 PM

Comment [3]: Note that `Object.defineProperty(obj, '__proto__', desc)` nor any other call of `[[DefineOwnProperty]]` does not modify `[[Prototype]]`.

B.3.1.3 proto Object Initialisers

Definitions of two algorithms in 11.1.5 are replaced with the following:

The production *PropertyNameAndValueList* : *PropertyAssignment* is evaluated as follows:

1. Let *obj* be the result of creating a new object as if by the expression **new Object()** where **Object** is the standard built-in constructor with that name.
2. Let *propId* be the result of evaluating *PropertyAssignment*.
3. If *propId.name* is the string value "**proto**" and *UnderscoreProtoEnabled* is **true** and *IsDataDescriptor(propId.descriptor)* is **true**, then
 - a. Let *v* be *propId.descriptor.value*.
 - b. If *desc* be *propId.descriptor*
 - c. If the type of *v* is either Object or Null,
 - i. Set the value of the *[[Prototype]]* internal property of *O* to *V*.
 - ii. Return.
4. Call the *[[DefineOwnProperty]]* internal method of *obj* with arguments *propId.name*, *propId.descriptor*, and **false**.
5. Return *obj*.

The production

PropertyNameAndValueList : *PropertyNameAndValueList* , *PropertyAssignment*
is evaluated as follows:

1. Let *obj* be the result of evaluating *PropertyNameAndValueList*.
2. Let *propId* be the result of evaluating *PropertyAssignment*.
3. Let *previous* be the result of calling the *[[GetOwnProperty]]* internal method of *obj* with argument *propId.name*.
4. If *previous* is not **undefined** then throw a **SyntaxError** exception if any of the following conditions are true
 - a. This production is contained in strict code and *IsDataDescriptor(previous)* is **true** and *IsDataDescriptor(propId.descriptor)* is **true**.
 - b. *IsDataDescriptor(previous)* is **true** and *IsAccessorDescriptor(propId.descriptor)* is **true**.
 - c. *IsAccessorDescriptor(previous)* is **true** and *IsDataDescriptor(propId.descriptor)* is **true**.
 - d. *IsAccessorDescriptor(previous)* is **true** and *IsAccessorDescriptor(propId.descriptor)* is **true** and either both *previous* and *propId.descriptor* have *[[Get]]* fields or both *previous* and *propId.descriptor* have *[[Set]]* fields
5. If *propId.name* is the string value "**proto**" and *UnderscoreProtoEnabled* is **true** and *IsDataDescriptor(propId.descriptor)* is **true**, then
 - a. Let *v* be *propId.descriptor.value*.
 - b. If *desc* be *propId.descriptor*
 - c. If the type of *v* is either Object or Null,
 - i. Set the value of the *[[Prototype]]* internal property of *O* to *V*.
 - ii. Return.
5. Call the *[[DefineOwnProperty]]* internal method of *obj* with arguments *propId.name*, *propId.descriptor*, and **false**.
6. Return *obj*.