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.

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*.