software studio

events & listeners

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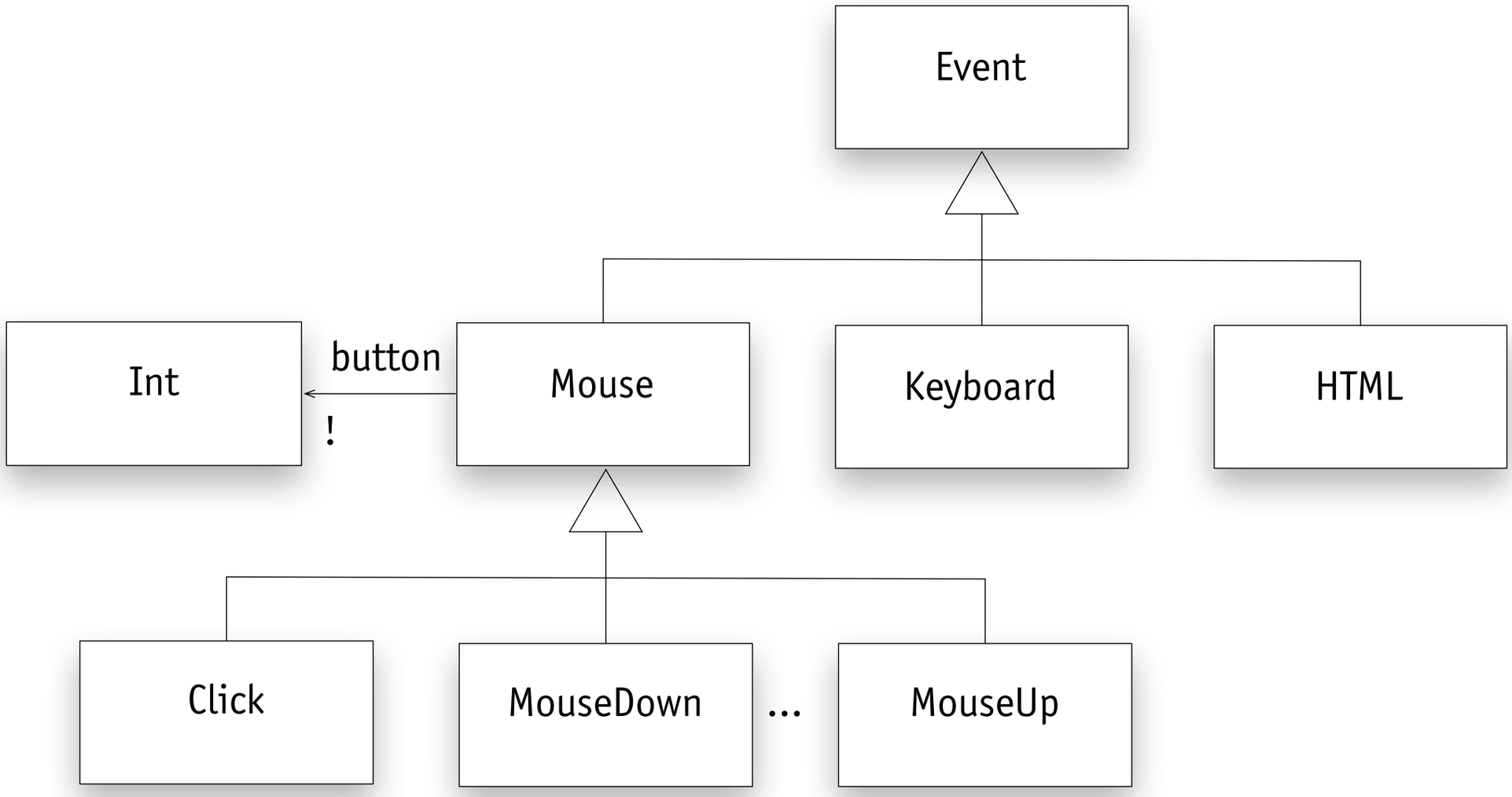
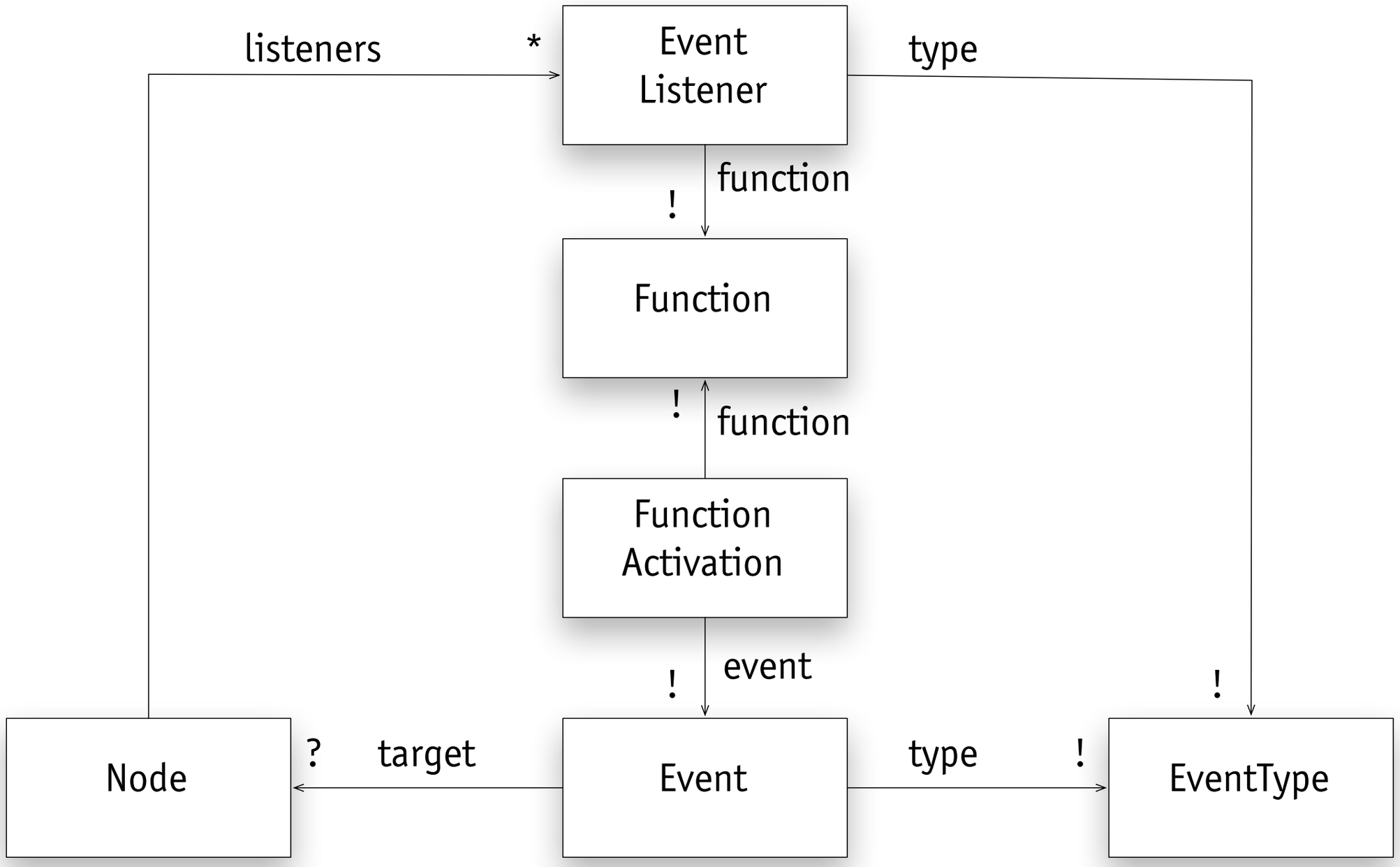
event classification



› this OM classifies events, not event types (hence button)

events & listeners



› what constraints apply that are not shown in the diagram?

attaching listeners in standard DOM

execute handler when document DOM is ready

› window.onload = handler

› window.addEventListener (‘load’, handler)

execute handler when element is clicked

› element.onclick = handler

› element.addEventListener (‘click’, handler)

attaching listeners in JQuery

execute handler when document DOM is ready

› $(document).ready(handler) or just $(handler)

execute handler when element is clicked

› element.click(handler)

› element.bind('click', handler)

execute handler depending on event type

› element.bind({keydown: handler1, keyup: handler2})

can also trigger event manually

› element.trigger('myevent')

listener uses event property

```
<head>
    <script>
    $(function () {
        $(document).bind('mousemove',
           function(e){
                $('#log').text("x: " + e.pageX
                              + ", y: " + e.pageY)});
    })
    </script>
</head>
<body>
<div id=log></div><br>
</body>
```

- how many listeners here? (clue: more than one)

listener acts on global variables

```
<head>
    <script>
    $(function () {
        var ds = $('#dollars');
        var es = $('#euros');
        var EUROS_PER_DOLLAR = 0.755;
        var convert = function (x, rate) {
                                return (x * rate).toFixed(2);};
        ds.change(function () {
            es.val(convert(ds.val(), EUROS_PER_DOLLAR));});
        es.change(function () {
            ds.val(convert(es.val(), 1/EUROS_PER_DOLLAR));});
    });
   </script>
</head>
<body>
Dollars:<input id=dollars></input><br>
Euros:<input id=euros></input>
</body>
```

listener uses local variable

```
<head>
    <script>
    $(function () {
        var b = $('#button');
        b.click(
            (function (i) {
                return (function () {
                    i += 1;
                    $(this).text("Pressed " + i + " times");
                });
            }) (0));
    })
    </script>
</head>
<body>
<button id=button>Press me!</button>
</body>
```

element created with listener

```
<head>
    <script>
    $(function () {
        var fromTo = function (from, to, f) {
            for (var i = from; i <= to; i = i+1) f(i);
            };

        fromTo(0,3, function (i) {
            var bi = $("<button>"); bi.text(i);
            $('body').append(bi);
            bi.click(function () {
               $('#log').text("Pressed " + i);});});});
    })
    </script>
</head>
<body>
<div id=log>...</div>
</body>
```

what's wrong with this?

```
<head>
    <script>
    $(function () {
       for (var i = 0; i <= 3; i += 1) {
            var bi = $("<button>"); bi.text(i);
            $('body').append(bi);
            bi.click(function () {
               $('#log').text("Pressed " + i);});});
        };
    })
    </script>
</head>
<body>
<div id=log></div>
</body>
```

event propagation

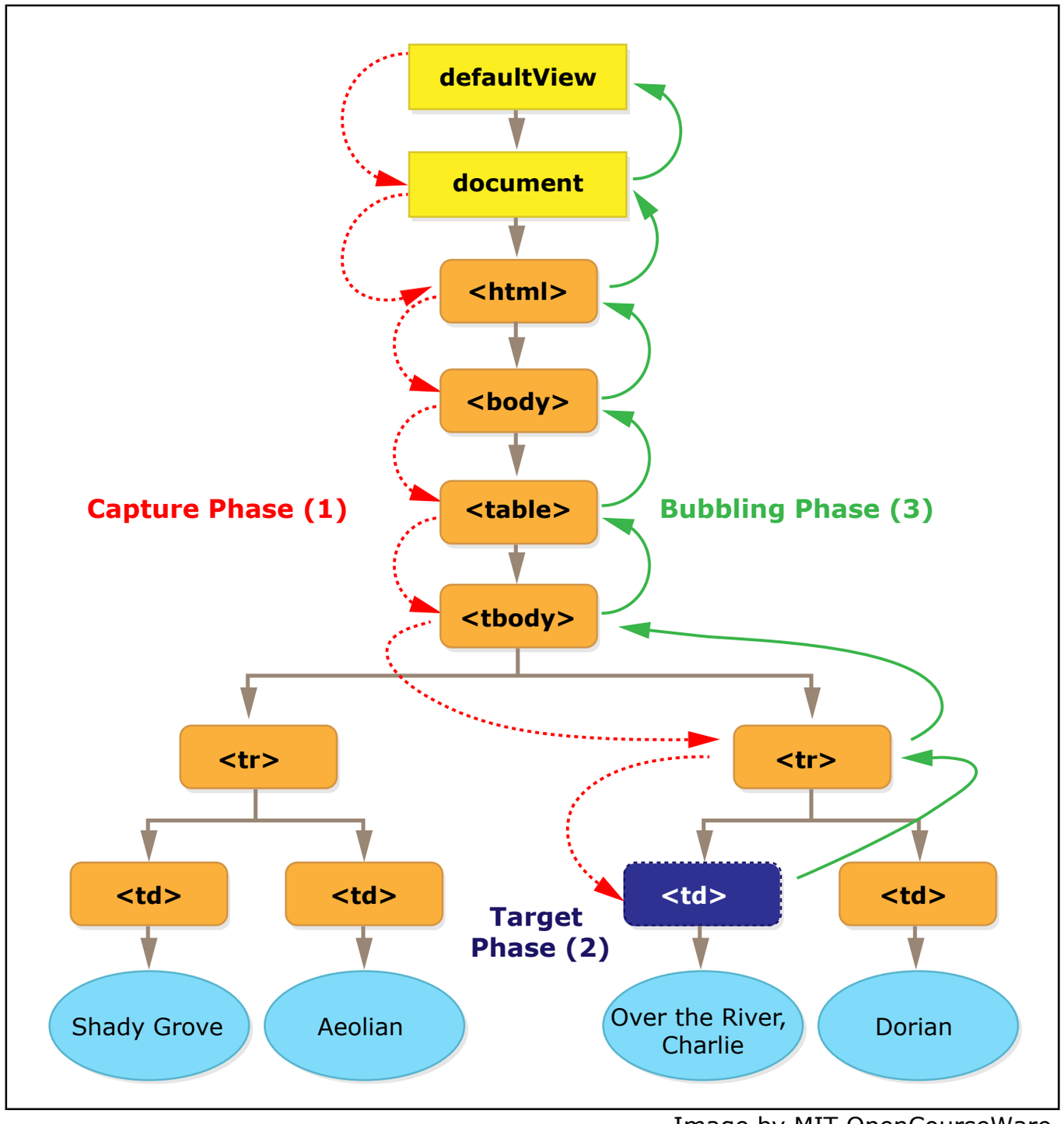


Image by MIT OpenCourseWare.

- Netscape: capturing
- Microsoft: bubbling
- W3C: support both
- IE8: still only bubbling
- JQuery, bubbling only
- end bubbling with event.stopPropagation()

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