Extended examples

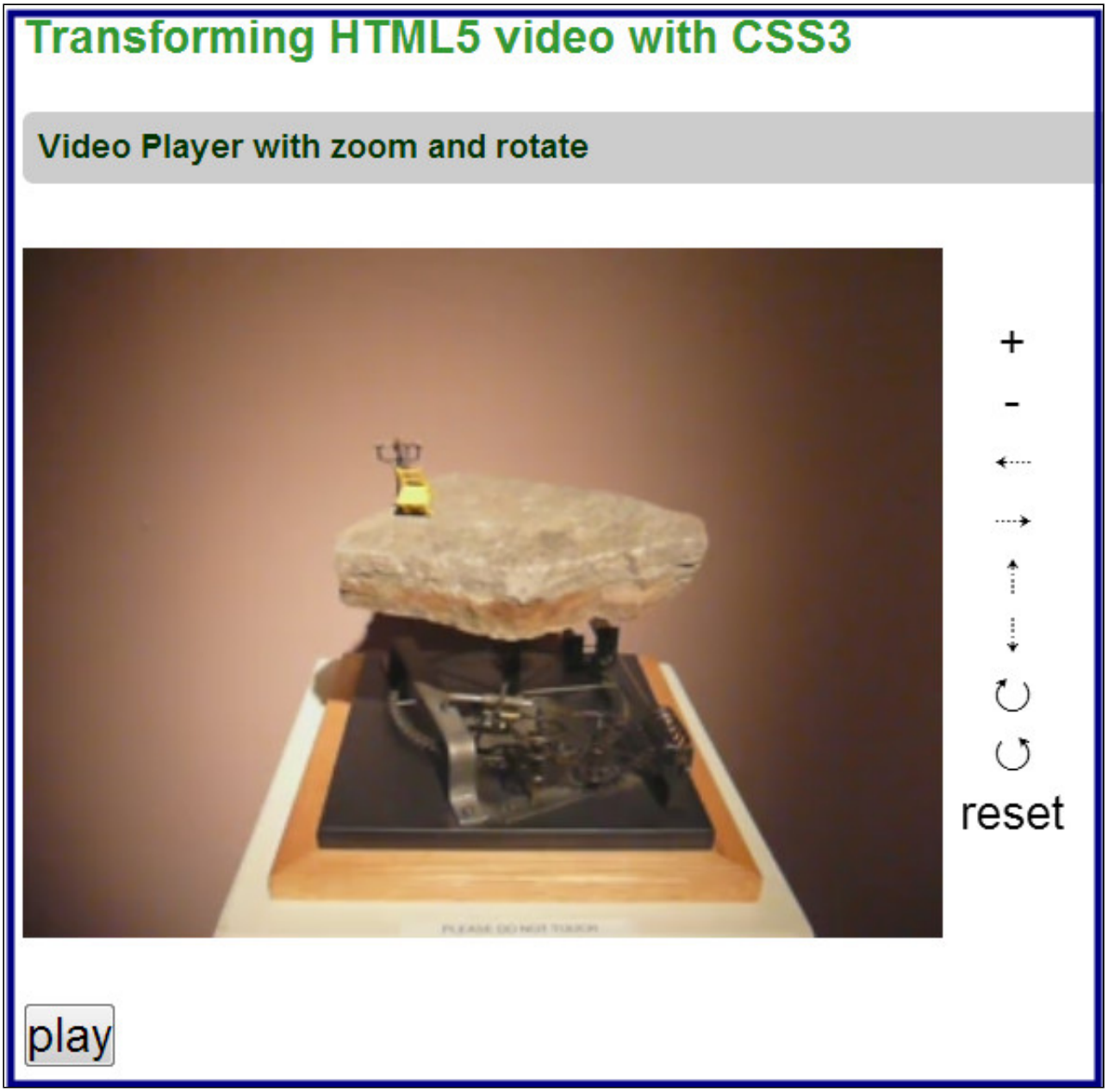
In this section, we propose six extended examples that use more JavaScript and more complex CSS manipulation. They might be a little hard to understand if you are a JavaScript beginner, but don't be afraid to try and test them, look at the code, etc.

Some examples are given "as is", such as the custom video player that uses SVG (at the end of the page), the most curious of you may look at the code.

EXAMPLE 1: A PLAYER SHOWING THE USE OF EVERY TYPE OF CSS3 TRANSFORMATION

Please see this example online, originally written by Chris Heilmann, and tuned by us ;) The editable source code is here at JS Bin.

Don't forget to click the JavaScript and CSS tabs at JS Bin in order to display the JavaScript code that creates the buttons on the right of the video, and the CSS3 that processes the different clicks and applies CSS3 transforms.



This example shows a lot:

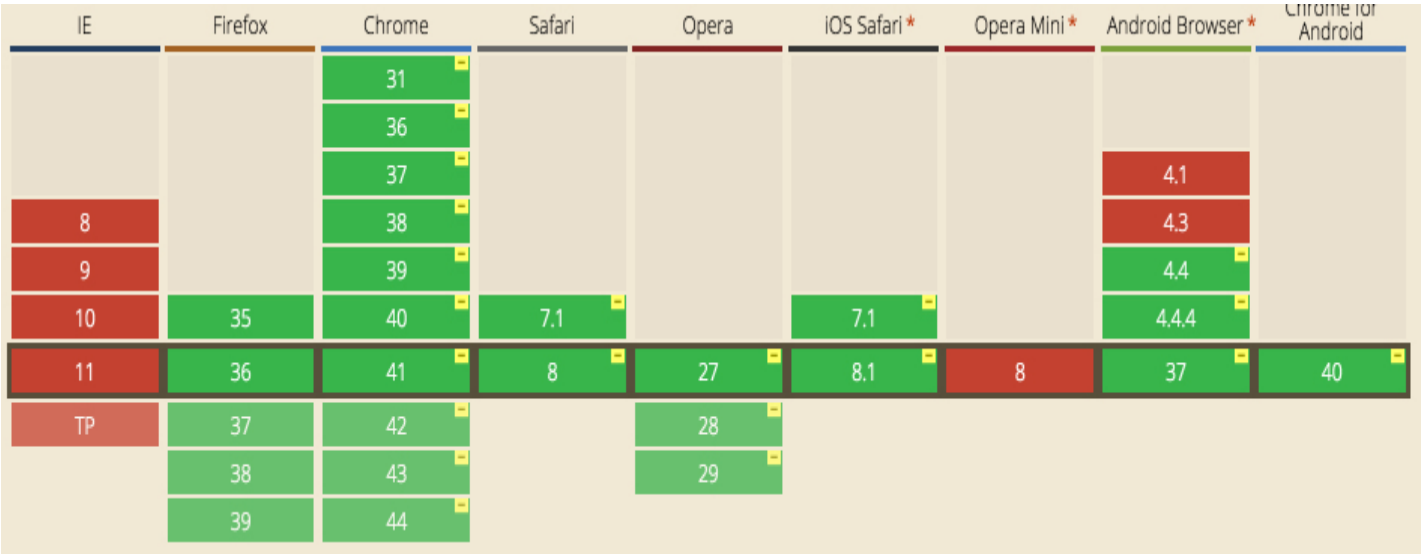
- It uses the HTML5 elements `<nav>`, `<footer>`, `<header>`.
- It shows the use of CSS3 2D transformations (scale, translate, and rotate).
- It shows how to handle DOM events using JavaScript and how to modify CSS properties of the `<video>` element from JavaScript.

EXAMPLE 2: APPLYING CSS3 FILTERS TO A VIDEO IN REAL TIME

Please see this example online. Play the video and then click on the video while it's playing. This will change in real-time the CSS class of the video element. Each class uses the `filter` property with different values.

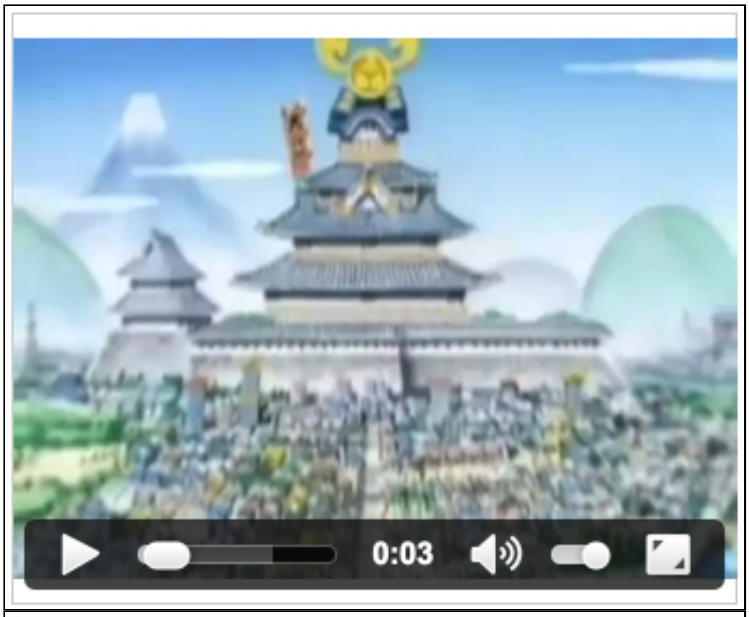
Note that CSS filters are not yet 100% supported by the major browsers. You still need to use prefixed versions of the CSS properties, as shown below (this table is taken fromcaniuse.com).

CSS filter support (green squares with a small yellow part in the top right corner) means that a prefix is needed, like `-webkit-filter`, or `-moz-filter` or `-o-filter`):



There is an up-to-date version of this table.

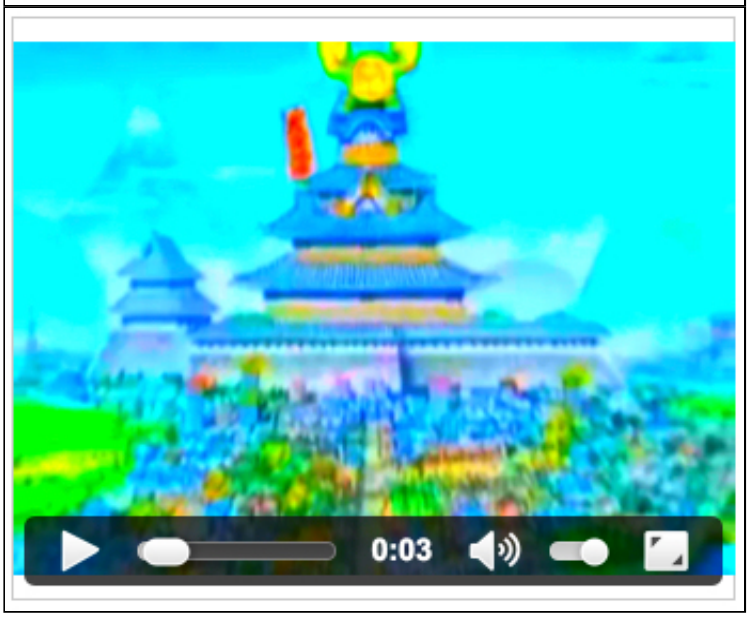
Below, you will find images obtained with different filter values:


0:03


0:03


0:03


0:03


0:03

Use `<video class="blur">` for example, to obtain a blurry video. This complete example changes the CSS class associated to the video element, on the fly in a`mouseclick` listener callback.

Here, we define the CSS classes used in the example:

```
.blur {
  filter: blur(3px);
}
.brightness {
  filter: brightness(5);
}
.contrast {
  filter: contrast(8);
}
.hue-rotate {
  filter: hue-rotate(90deg);
}
.hue-rotate2 {
  filter: hue-rotate(180deg);
}
.hue-rotate3 {
  filter: hue-rotate(270deg);
}
.saturate {
  filter: saturate(10);
}
.grayscale {
  filter: grayscale(1);
}
.sepia {
  filter: sepia(1);
}
.invert {
  filter: invert(1)
}
```

This extract from the source code explains how to set a `mouseclick` listener and how to change the value of a CSS class attribute on the fly:

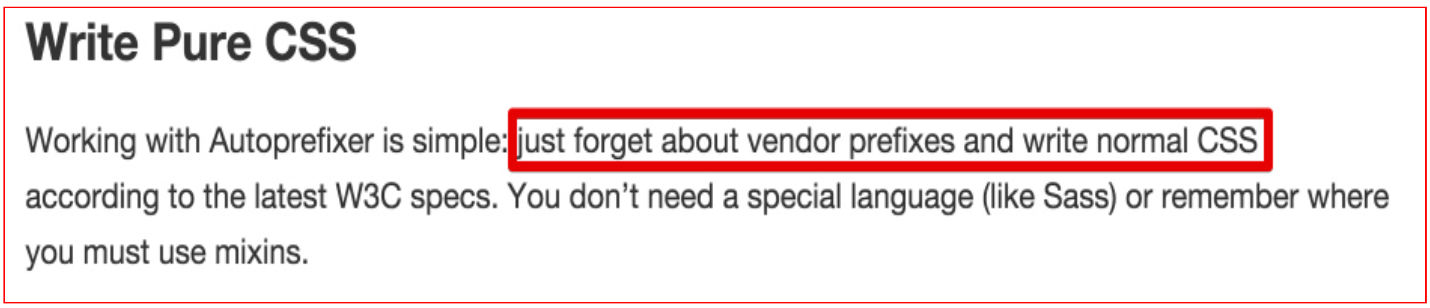
```
<video id="output" controls autoplay>
  <source src=http://html5doctor.com/demos/video-canvas-
magic/video.webm
        type=video/webm>
  <source src=http://html5doctor.com/demos/video-canvas-magic/video.ogg
        type=video/ogg>
  <source src=http://html5doctor.com/demos/video-canvas-magic/video.mp4
        type=video/mp4>
</video>
<script>
  var output = document.getElementById('output');
  var idx = 0;
  var filters = [
    'grayscale',
    'sepia',
    'blur',
    'brightness',
    'contrast',
    'hue-rotate', 'hue-rotate2', 'hue-rotate3',
    'saturate',
    'invert',
''];
function changeFilter(e) {
    var el = e.target;
    var effect = filters[idx++ % filters.length];

    if (effect) {
        el.classname = effect;
    }
    //Do not propagate + click will no more do play/stop on the video
    e.stopPropagation();
```

```
    e.preventDefault();
  }
output.addEventListener('click', changeFilter, false);
</script>
<style>
#output {
   width: 307px;
   height: 250px;
   background: rgba(255,255,255,0.5);
   border: 1px solid #ccc;
}
.blur {
   filter: blur(3px);
}
.brightness {
   filter: brightness(5);
}
...
</style>
```

Notes about "prefixed CSS properties" and a good tool that will add prefixes for you!

If you look at the previous CSS file, the CSS filter property is not prefixed (i.e like – `webkit-filter` instead of `filter`), whereas some browsers still require prefixes.

autoprefixer.js is a very practical tool. It's a simple library you can include in your HTML page that will add prefixes on the fly when needed. It uses the caniuse.com tables and also relies on the W3C specifications, so we recommend it!



Typical use: just add some lines of code to the `<head>` element of your HTML page.

```
<head>
  <script src="https://rawgithub.com/ai/autoprefixer-
rails/master/vendor/autoprefixer.js"></script>
<style type="unprocessed" id="AutoprefixerIn">%css%</style>
<style id="AutoprefixerOut"></style>
<script>
  AutoprefixerSettings = ""; // Specify here the browsers you
                    // want to target or leave empty
  document.getElementById("AutoprefixerOut").innerHTML =
        autoprefixer(AutoprefixerSettings || null)
        .process(document.getElementById("AutoprefixerIn")
              .innerHTML)
        .css;
</script>
</head>
```

EXAMPLE 3: HOW TO TRACK ALL POSSIBLE EVENTS AND MANIPULATE MANY PROPERTIES

This example also shows how to handle failures. See the code and play with this example online.

timeupdate 12.353
timeupdate 12.098
timeupdate 11.842
timeupdate 11.598
timeupdate 11.345
timeupdate 11.100
timeupdate 10.847
timeupdate 10.593
timeupdate 10.347
timeupdate 10.094
timeupdate 9.841
seeked

Here is an example of a piece of code for handling errors during video playback:

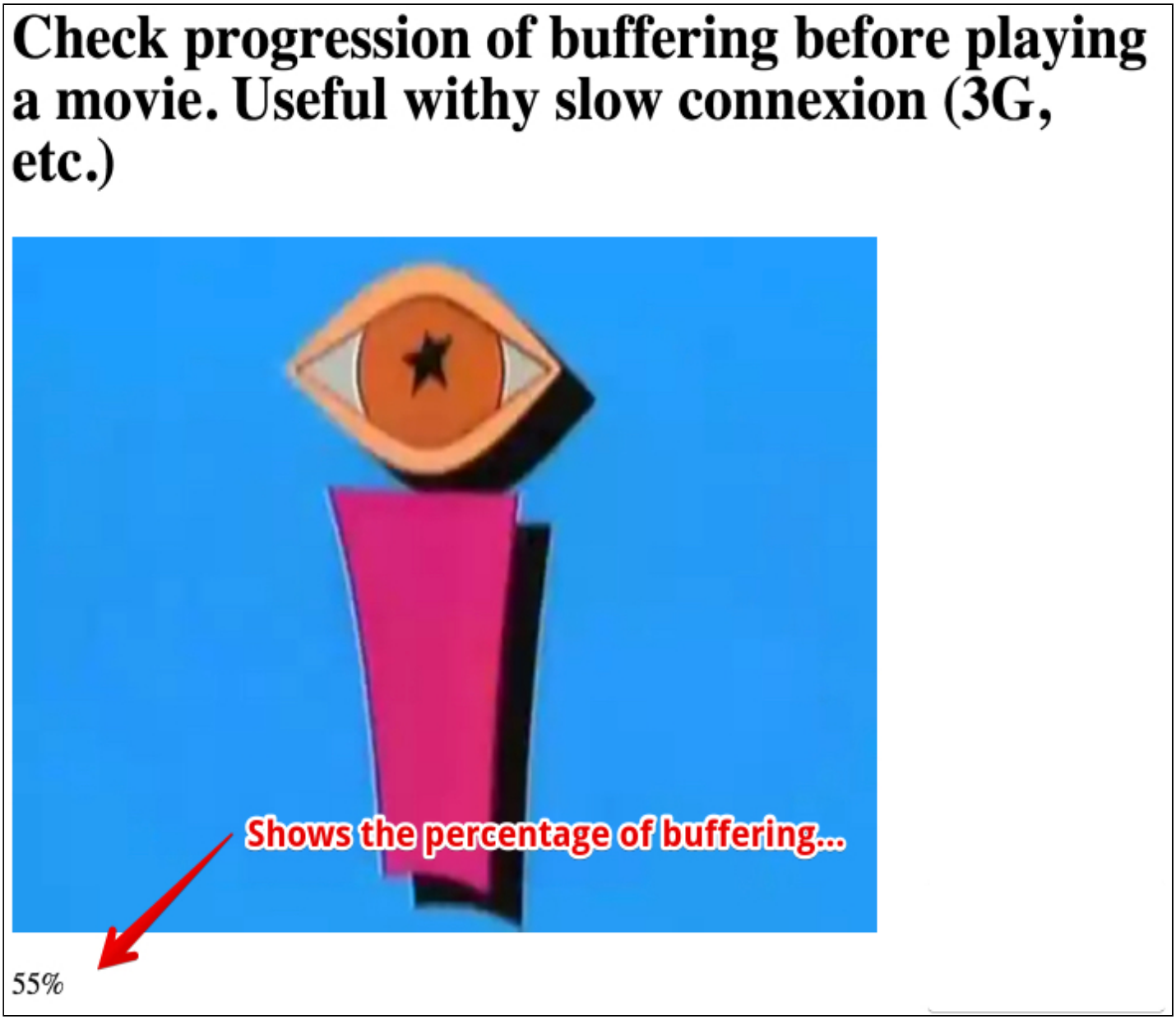
```
...
```

```
vid.addEventListener('error', function(evt) {
  logEvent(evt,'red');
}, false);
...
function logEvent(evt, color) {
  switch (evt.type) {
    ...
    case 'error':
      var error = document.querySelector('video').error;
      switch (error.code) {
        case error.MEDIA_ERR_ABORTED:
          note.innerHTML = "fetching aborted at the user's request";
          break;
        case error.MEDIA_ERR_NETWORK:
          note.innerHTML = "a network error caused the browser
                            to stop fetching the media";
          break;
        case error.MEDIA_ERR_DECODE:
          note.innerHTML = "an error occurred while decoding
                            the media";
          break;
        case error.MEDIA_ERR_SRC_NOT_SUPPORTED:
          note.innerHTML = "the media indicated by the src
                            attribute was not suitable";
          break;
        default:
          note.innerHTML = "an error occurred";
          break;
      }
      break;
  }
...
}
```

EXAMPLE 4: HOW TO DISPLAY A PERCENTAGE OF BUFFERING WHEN

USING A SLOW CONNEXION

See the example online here too.



Note that on mobile phones, the video does not start until the user presses the play control or clicks on the video picture. Using the "`canplaythrough`" event is a trick to call a function that starts the video player as soon as the page is loaded on desktop. This event is not supported by mobile devices, so if you try this example on a mobile, the video will not start automatically.

As the Apple Developer Web site explains it: "The `buffered` property is

a `TimeRanges`object: an array of start and stop times, not a single value. Consider what happens if the person watching the media uses the time scrubber to jump forward to a point in the movie that hasn't loaded yet—the movie stops loading and jumps forward to the new point in time, then starts buffering again from there. So the `buffered` property can contain an array of discontinuous ranges. The example simply seeks to the end of the array and reads the last value, so it actually shows the percentage into the movie duration for which there is data. "

```
<!doctype html>
<html lang="en">
 <head>
  <title>JavaScript Progress Monitor</title>
  <script>
   function getPercentProg() {
      var myVideo = document.getElementsByTagName('video')[0];
      var endBuf = myVideo.buffered.end(0);
      var soFar = parseInt(((endBuf / myVideo.duration) * 100));
      document.getElementById("loadStatus").innerHTML = soFar + '%';
   }
   // Will be called as soon as the page is ready on desktop computer,
   // Only when user clicks on play control or image on mobile
   function myAutoPlay() {
      var myVideo = document.getElementsByTagName('video')[0];
      myVideo.play();
   }

   function addMyListeners(){
      var myVideo = document.getElementsByTagName('video')[0];
      myVideo.addEventListener('progress', getPercentProg, false);
      // Calls autoplay only if device is adapted
      myVideo.addEventListener('canplaythrough', myAutoPlay, false);
   }
  </script>
</head>
<body onload="addMyListeners()">
```

```
    <h1>Check progression of buffering before playing a movie. Useful withy
      slow connexion (3G, etc.)</h1>
    <div>
     <video controls>
       <source src=http://html5doctor.com/demos/video-canvas-
magic/video.webm
            type=video/webm>
       <source src=http://html5doctor.com/demos/video-canvas-
magic/video.ogg
            type=video/ogg>
       <source src=http://html5doctor.com/demos/video-canvas-
magic/video.mp4
            type=video/mp4>
     </video>
     <p id="loadStatus">Buffering...</p>
    </div>
</body>
</html>
```

EXAMPLE 5: HOW TO USE SVG ELEMENTS AS EXTERNAL CONTROLLERS

This is the ultimate way of doing a real custom player: redesign your own controls using SVG shapes! This example is given "as is" for the more curious of you. An SVG course from W3C might be available on W3Cx one of these days. Stay tuned ;)

Try it online!

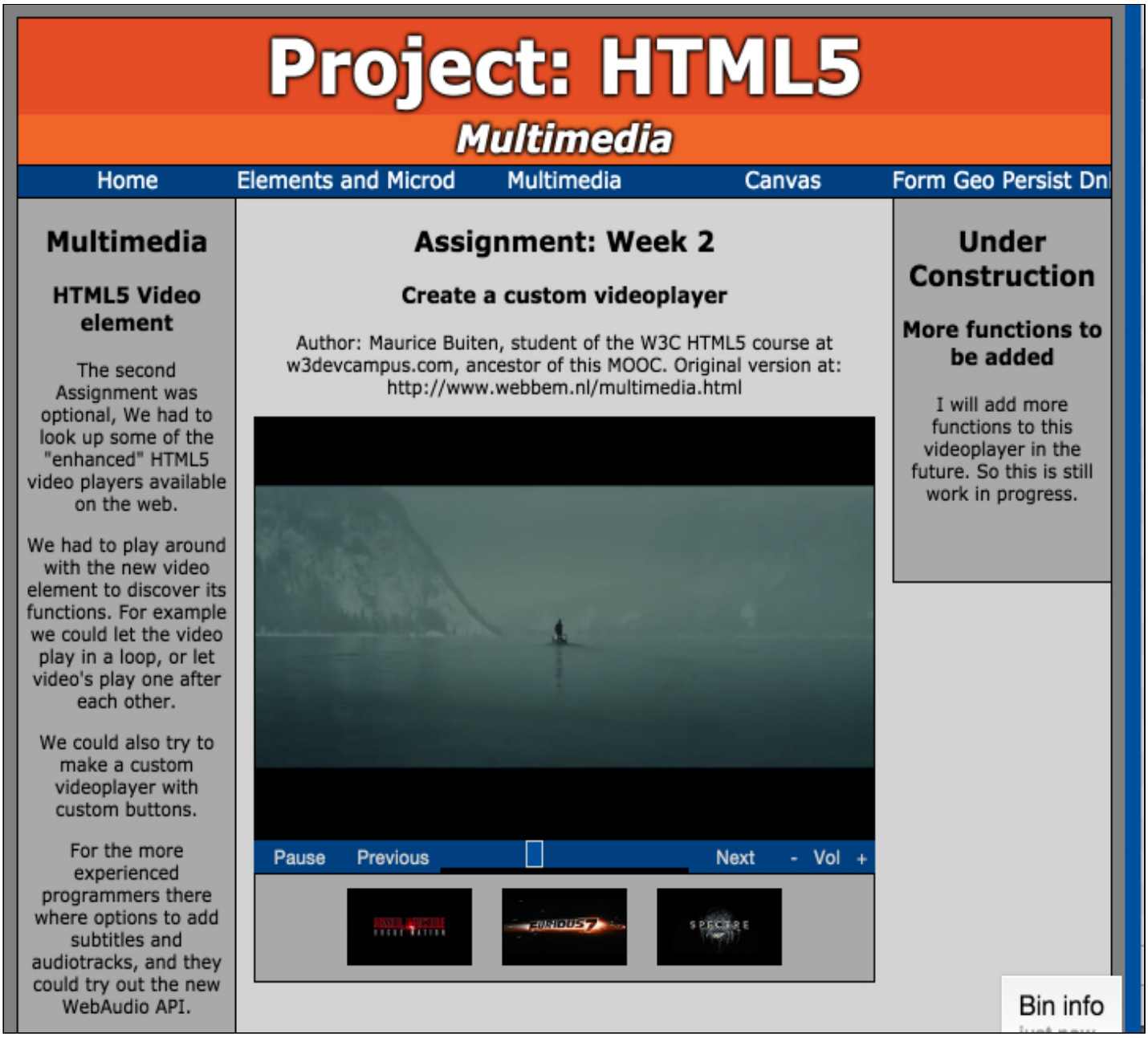
EXAMPLE 6: A CUSTOM VIDEO PLAYER WRITTEN BY A STUDENT WHO TOOK A PRECURSOR VERSION OF THIS MOOC

This is more an example than a tutorial. Maurice, a student who followed the precursor version of this MOOC at the w3devcampus.com Web site, had the assignment to write a custom video player with playlist, video thumbnails, custom play/pause/next/previous/volume controls, and present it in a Web page that used a nice layout based on the new structuring elements seen during Week 1.

Here is the online example on JS Bin, by Maurice Buiten, and here is the original version.

We recommend looking at the source code, you will learn many things related to the Week 1 course.

Screenshot:


Project: HTML5
Multimedia
Home
Elements and Microd
Multimedia
Canvas
Form Geo Persist Dn
Multimedia
HTML5 Video element
The second Assignment was optional, We had to look up some of the "enhanced" HTML5 video players available on the web.
We had to play around with the new video element to discover its functions. For example we could let the video play in a loop, or let video's play one after each other.
We could also try to make a custom videoplayer with custom buttons.
For the more experienced programmers there where options to add subtitles and audiotracks, and they could try out the new WebAudio API.
Assignment: Week 2
Create a custom videoplayer
Author: Maurice Buiten, student of the W3C HTML5 course at w3devcampus.com, ancestor of this MOOC. Original version at: http://www.webbem.nl/multimedia.html
Pause
Previous
Next
- Vol +
Under Construction
More functions to be added
I will add more functions to this videoplayer in the future. So this is still work in progress.
Bin info