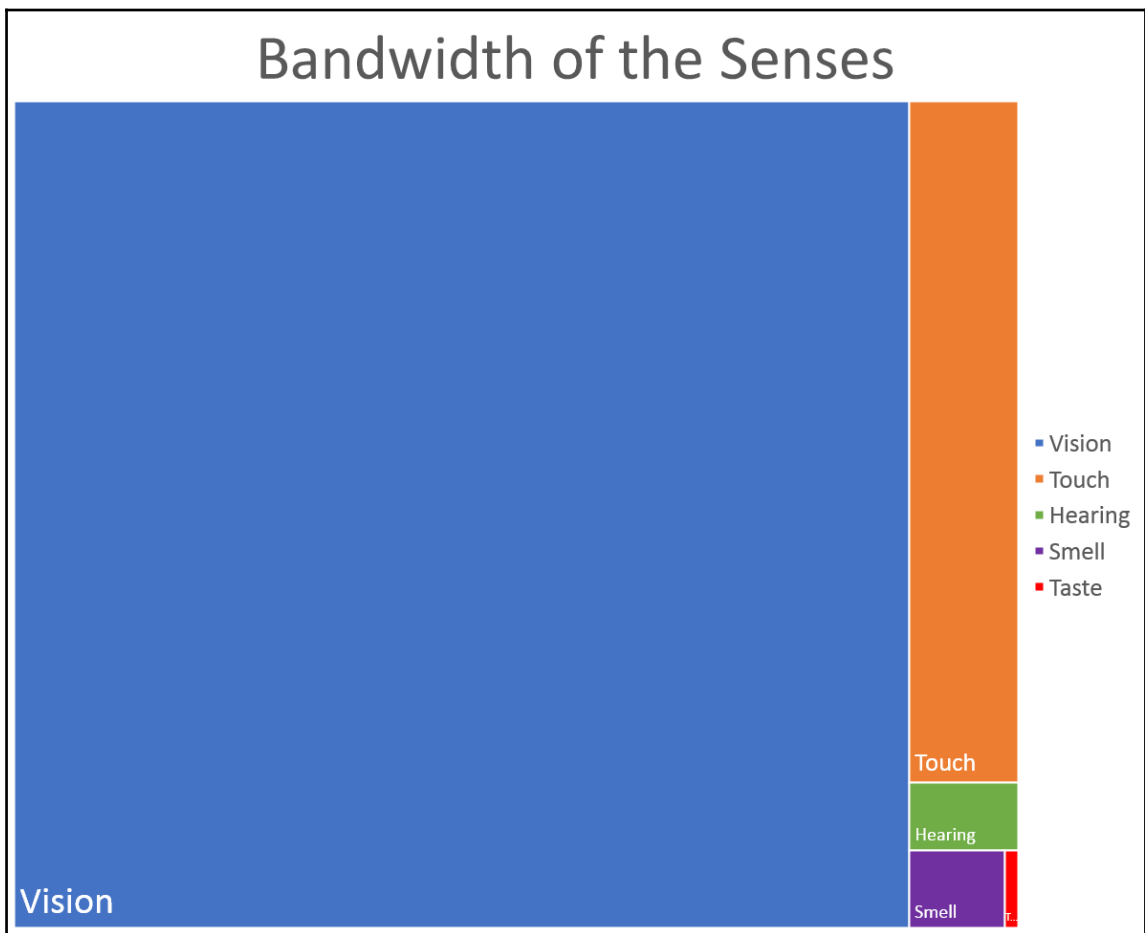
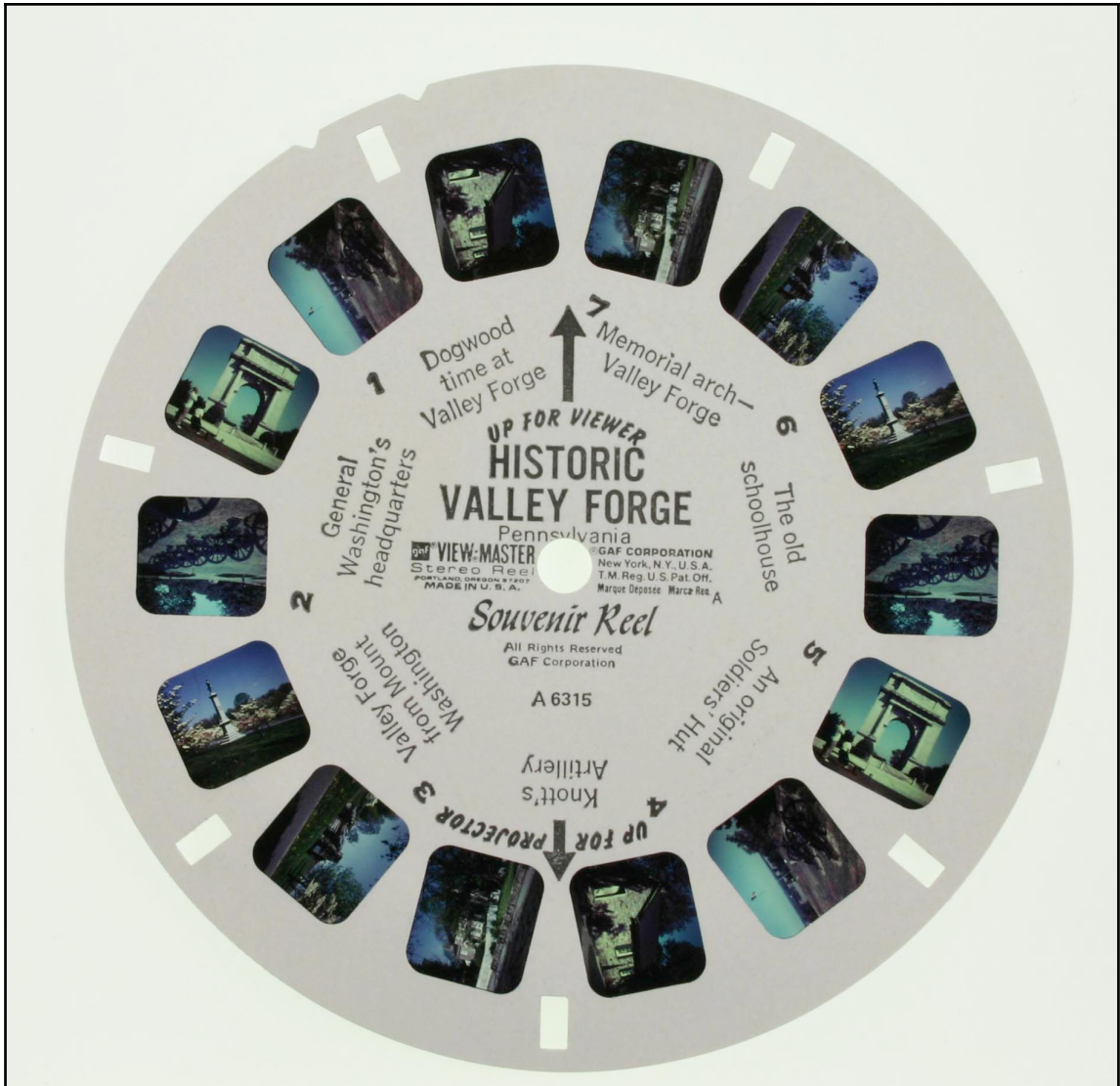


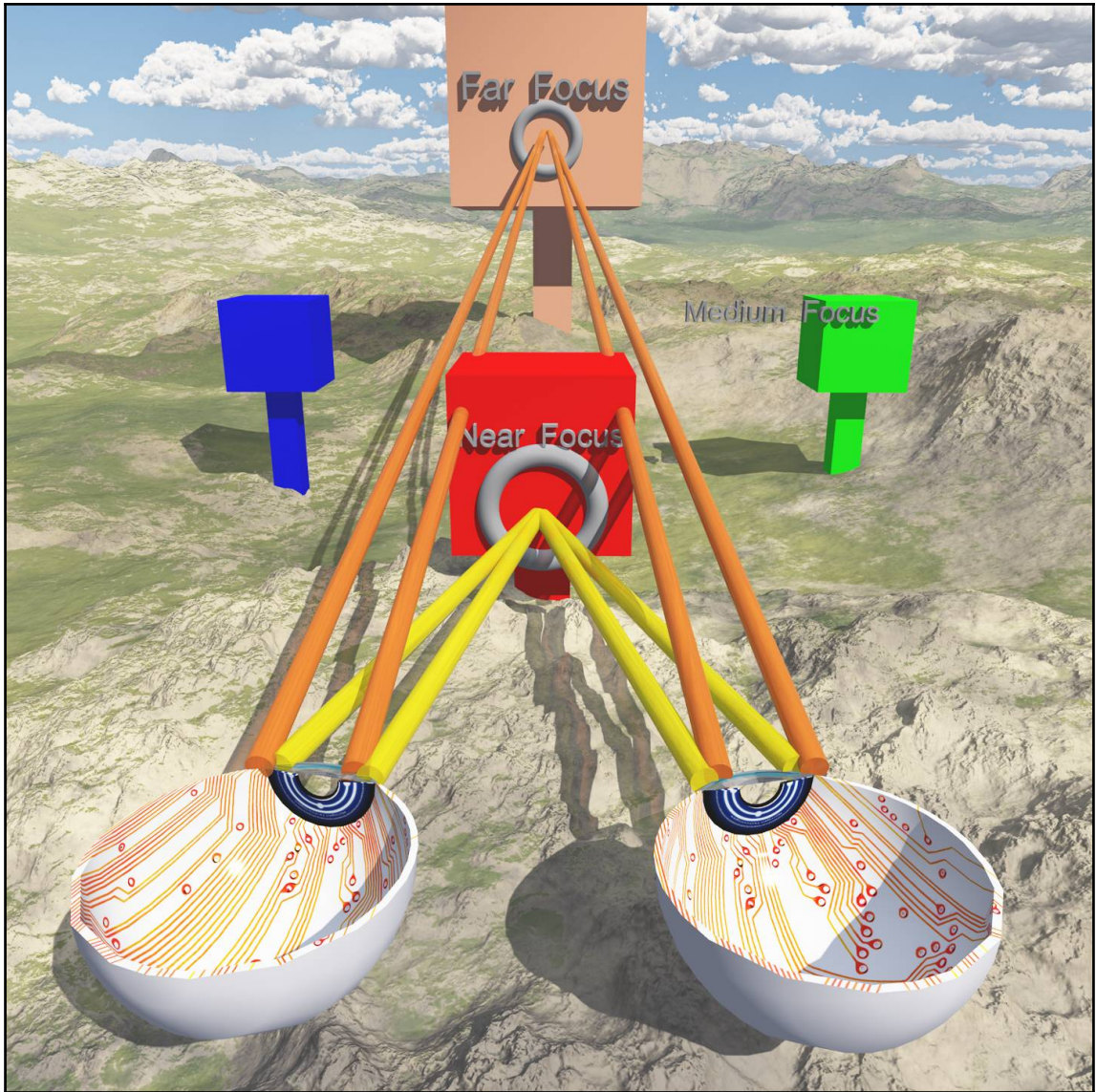
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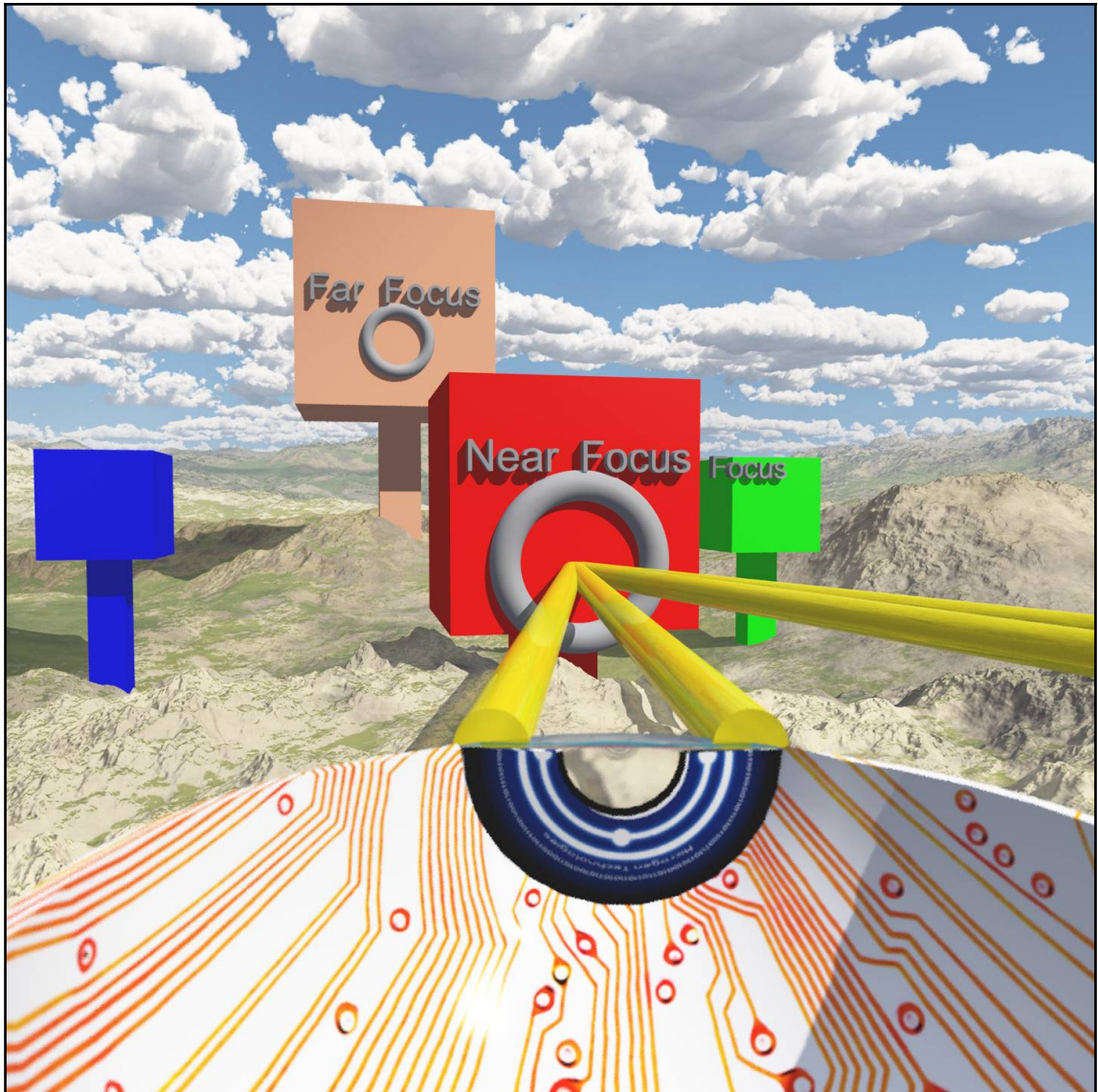
Chapter 1: What is Virtual Reality, Really?

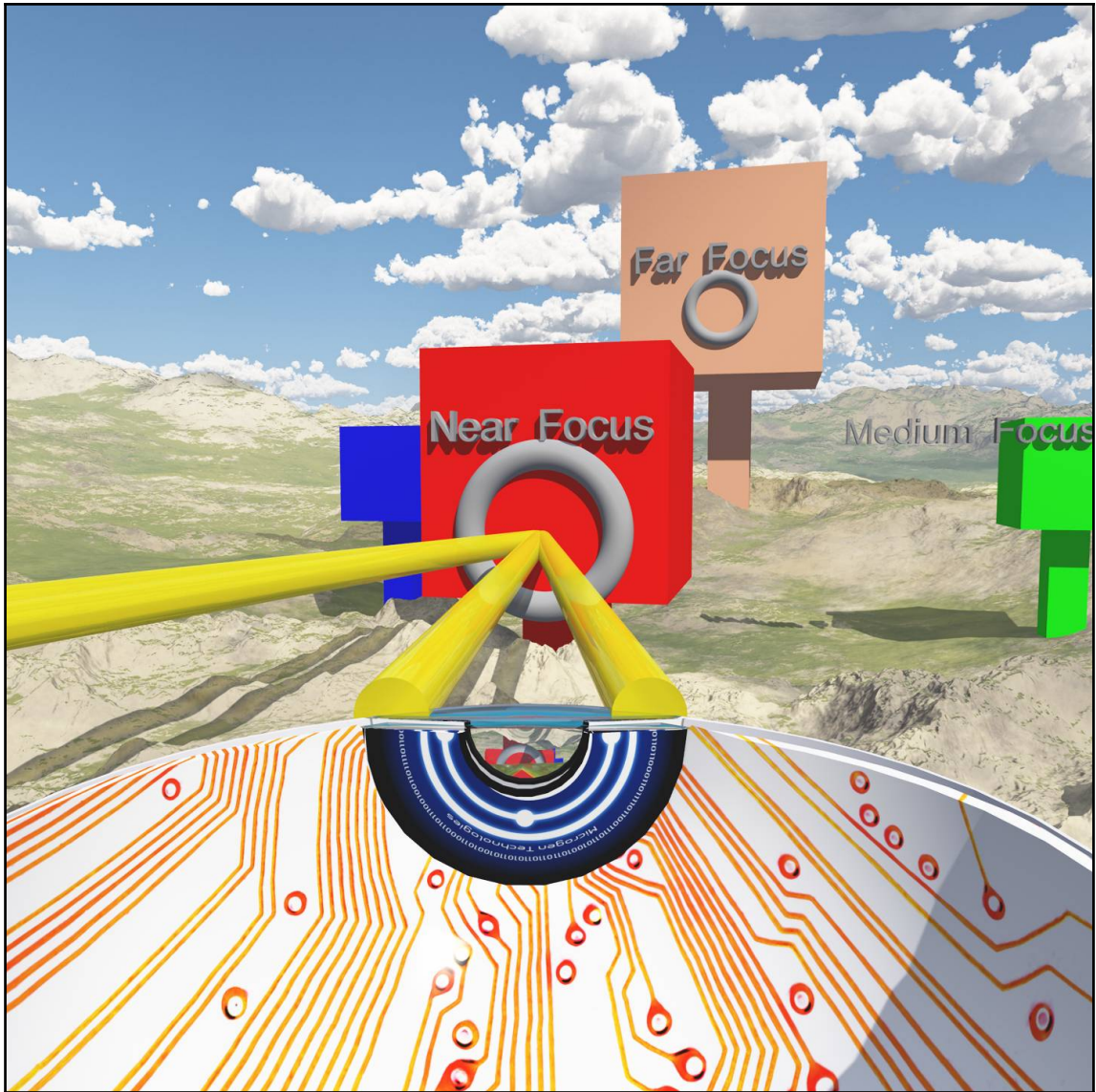


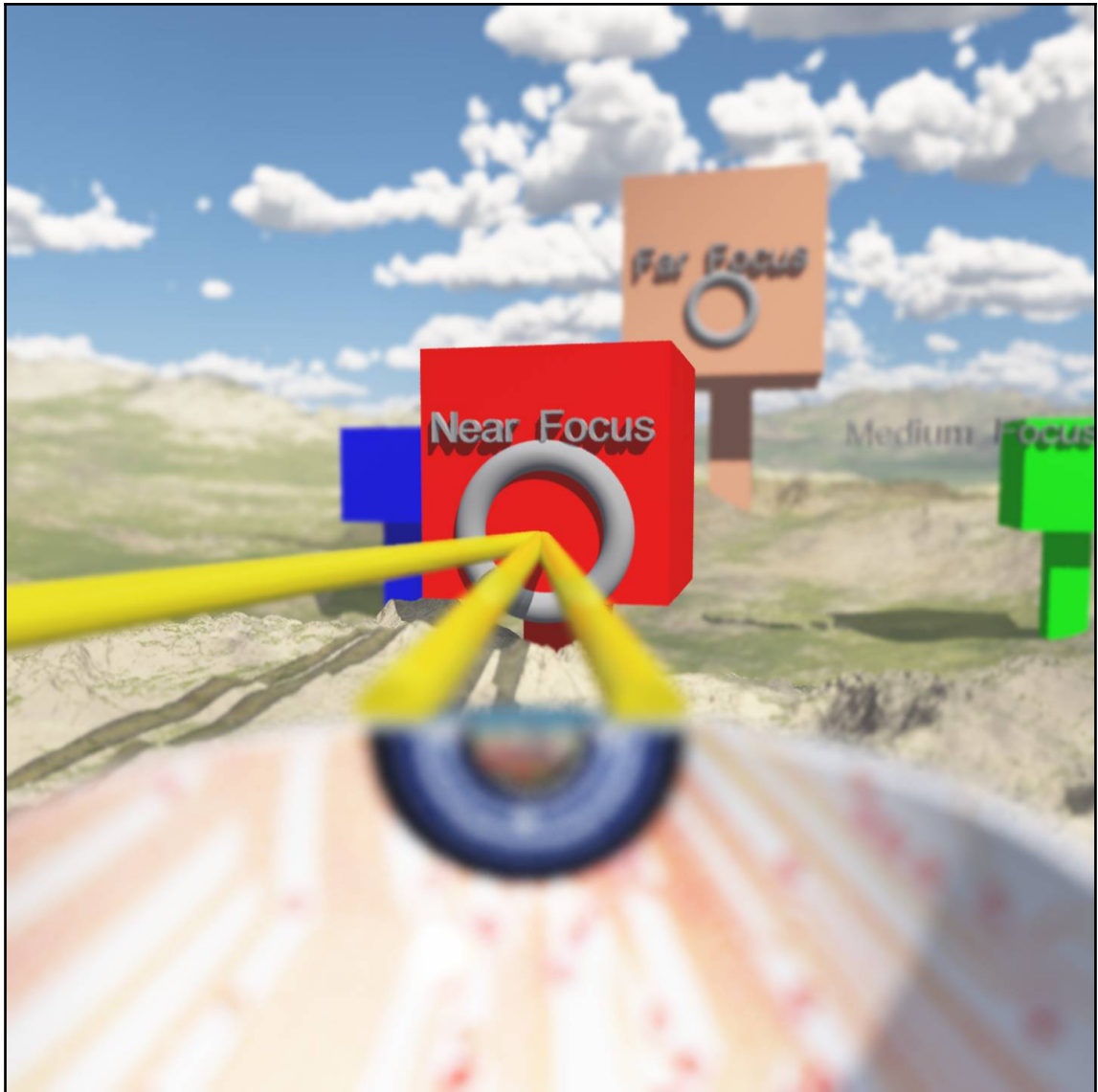


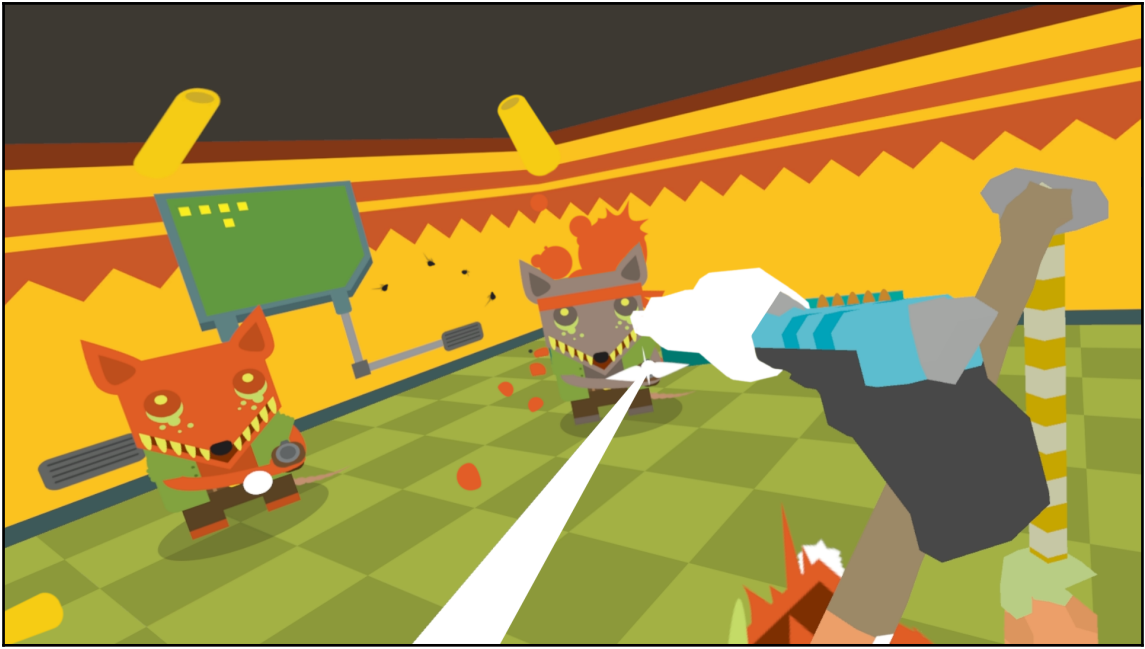


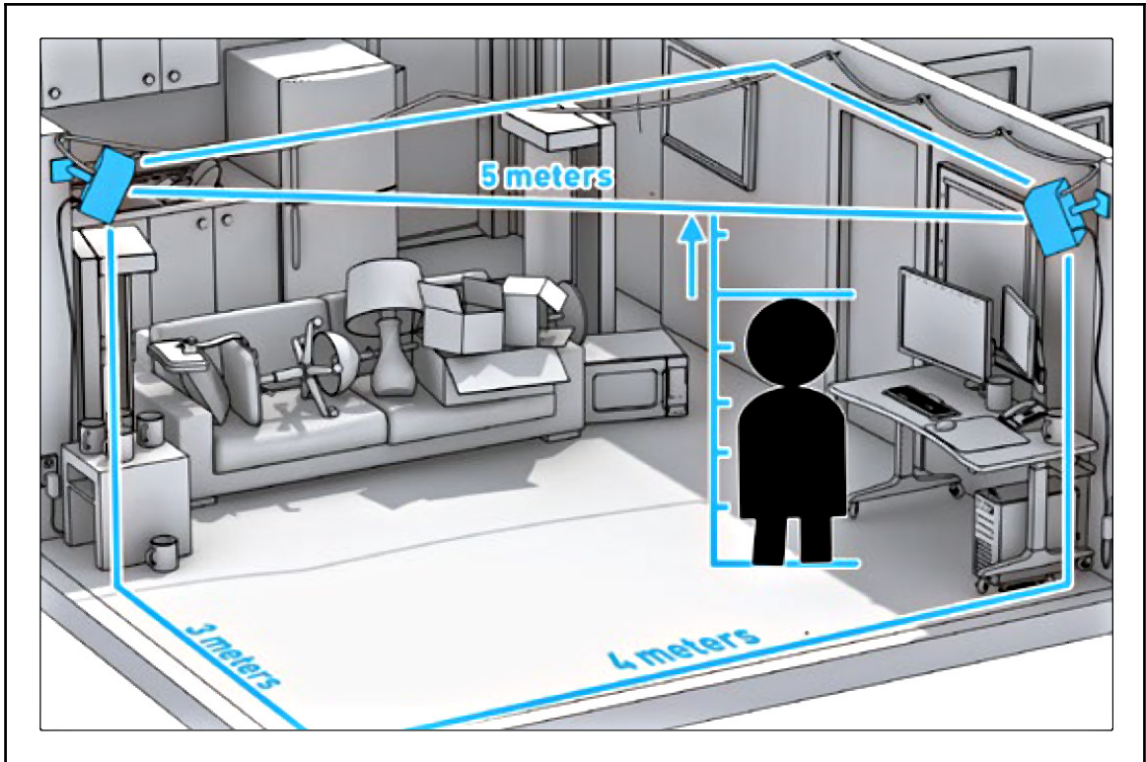


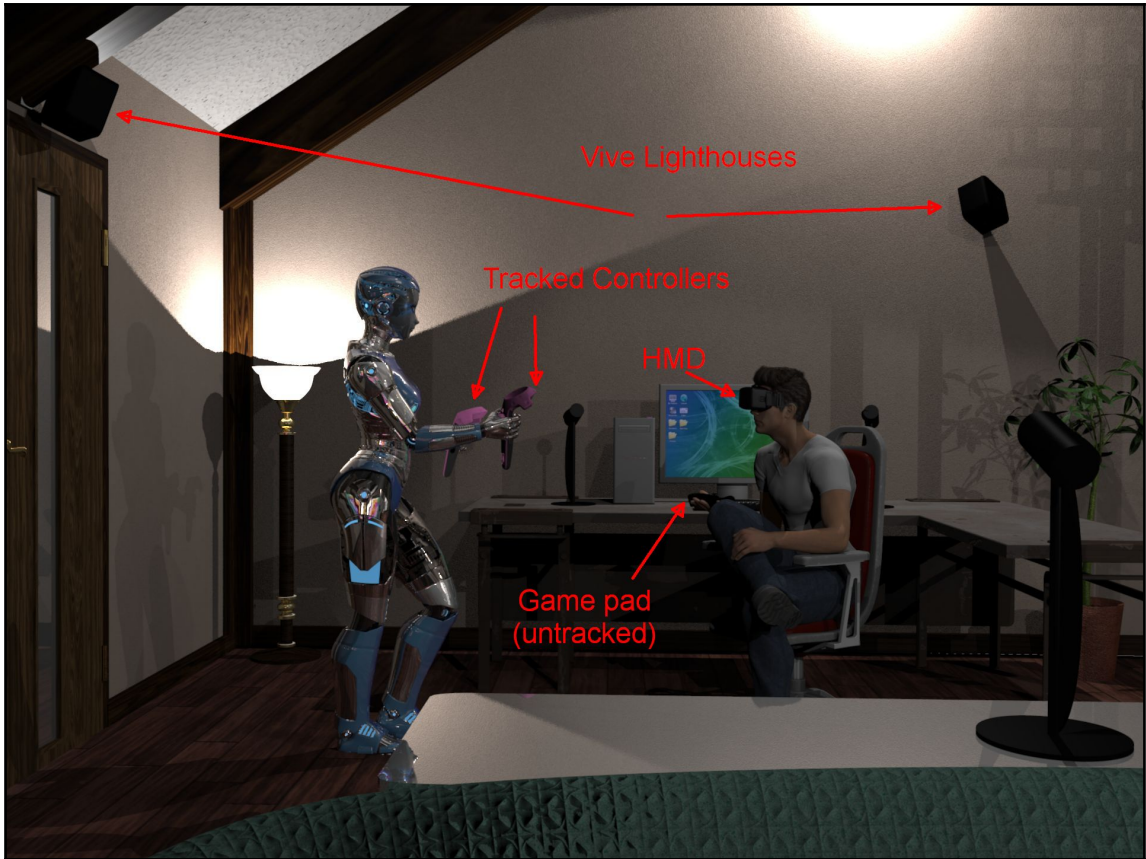






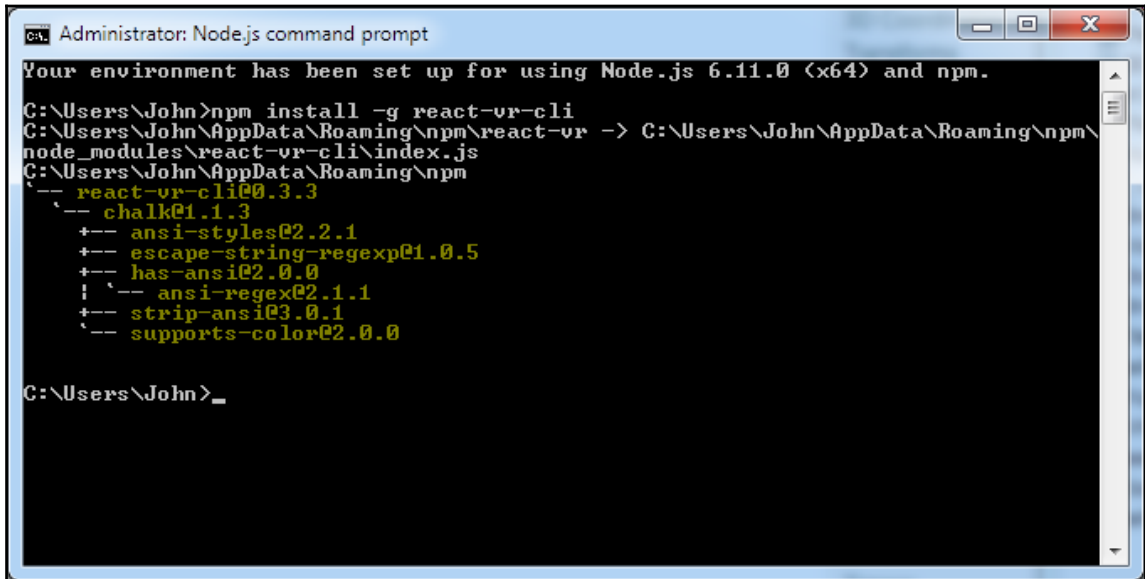




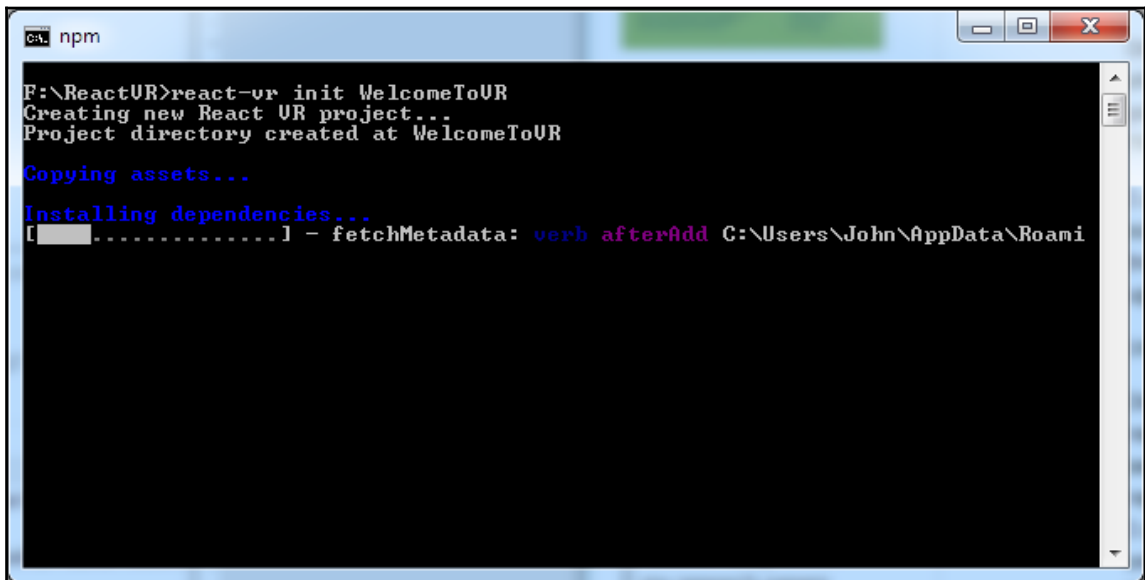




Chapter 2: Flatland and Beyond: VR Programming



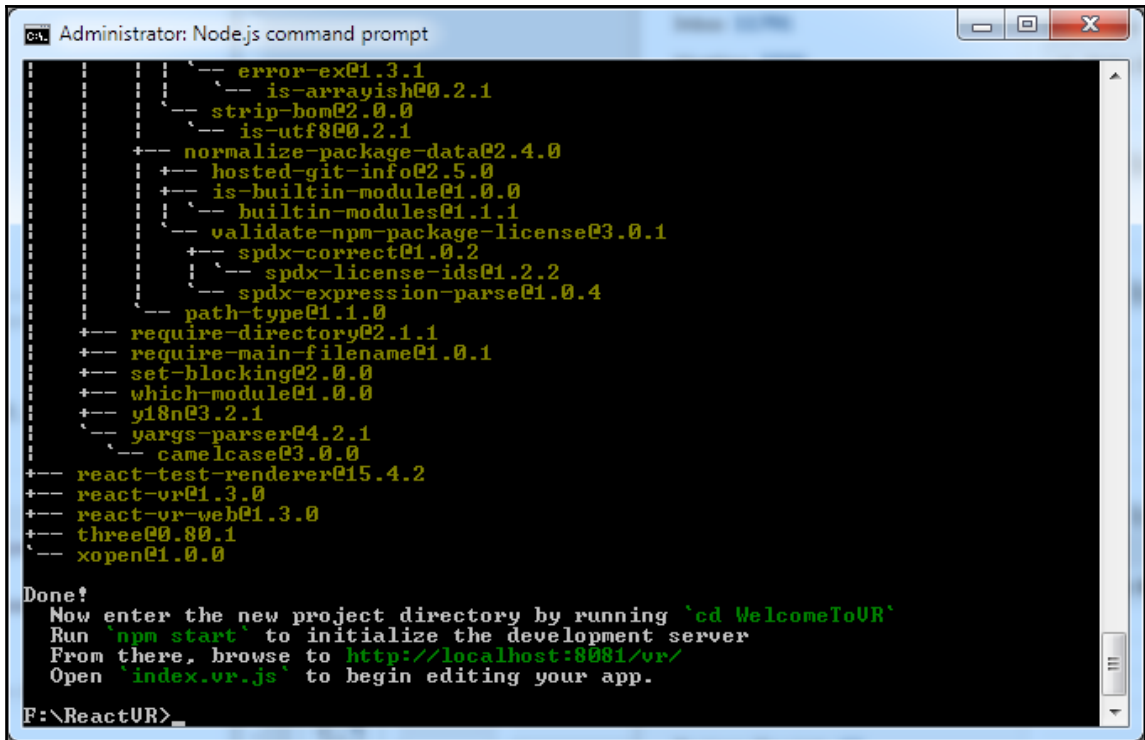
```
Administrator: Node.js command prompt
Your environment has been set up for using Node.js 6.11.0 (x64) and npm.
C:\Users\John>npm install -g react-vr-cli
C:\Users\John\AppData\Roaming\npm\react-vr -> C:\Users\John\AppData\Roaming\npm\node_modules\react-vr-cli\index.js
C:\Users\John\AppData\Roaming\npm
├─ react-vr-cli@0.3.3
│  └─ chalk@1.1.3
│     ├── ansi-styles@2.2.1
│     ├── escape-string-regexp@1.0.5
│     ├── has-ansi@2.0.0
│     └─┬─ ansi-regex@2.1.1
│       ├── strip-ansi@3.0.1
│       └─ supports-color@2.0.0
C:\Users\John>_
```



```
npm
F:\ReactUR>react-vr init WelcomeToUR
Creating new React VR project...
Project directory created at WelcomeToUR

Copying assets...

Installing dependencies...
[████████████████████] - fetchMetadata: verb afterAdd C:\Users\John\AppData\Roami
```

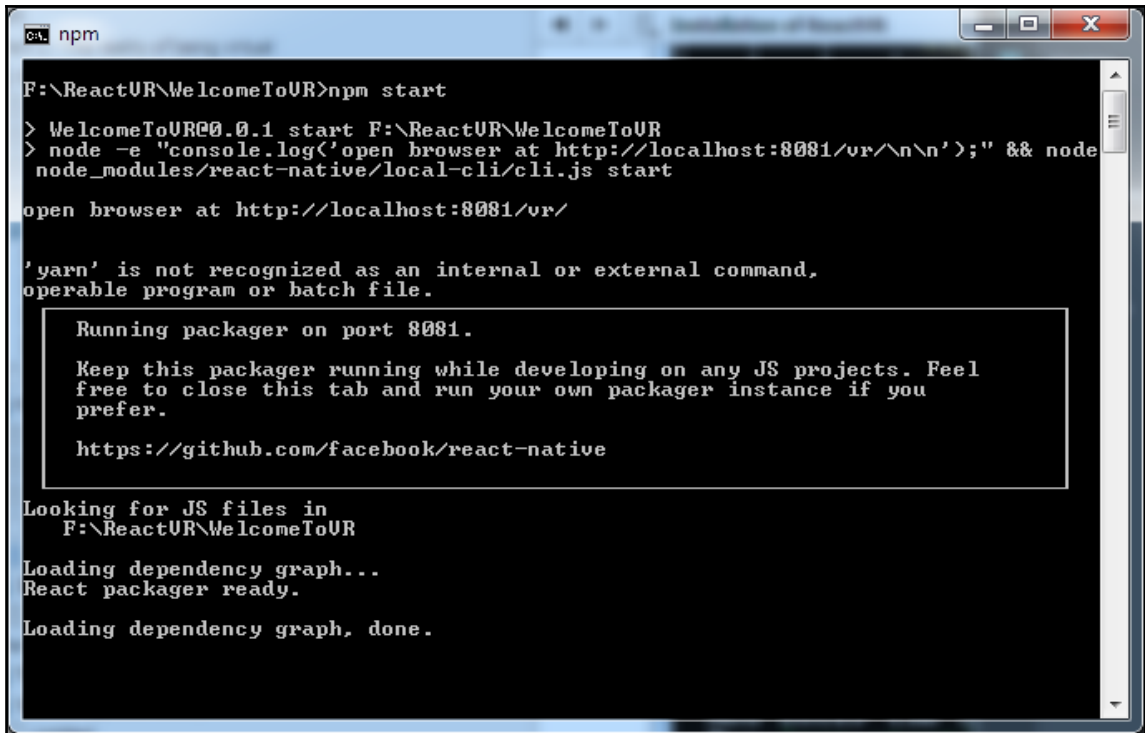


```
Administrator: Node.js command prompt

  -- error-ex@1.3.1
  -- is-arrayish@0.2.1
  -- strip-bom@2.0.0
  -- is-utf8@0.2.1
+-- normalize-package-data@2.4.0
+-- hosted-git-info@2.5.0
+-- is-builtin-module@1.0.0
  -- builtin-modules@1.1.1
  -- validate-npm-package-license@3.0.1
  -- sdpdx-correct@1.0.2
  -- sdpdx-license-ids@1.2.2
  -- sdpdx-expression-parse@1.0.4
  -- path-type@1.1.0
+-- require-directory@2.1.1
+-- require-main-filename@1.0.1
+-- set-blocking@2.0.0
+-- which-module@1.0.0
+-- y18n@3.2.1
  -- yargs-parser@4.2.1
  -- camelcase@3.0.0
+-- react-test-renderer@15.4.2
+-- react-vr@1.3.0
+-- react-vr-web@1.3.0
+-- three@0.80.1
-- xopen@1.0.0

Done!
Now enter the new project directory by running `cd WelcomeToUR`
Run `npm start` to initialize the development server
From there, browse to http://localhost:8081/vr/
Open index.vr.js to begin editing your app.

F:\ReactUR>
```



```
ca npm
F:\ReactUR\WelcomeToUR>npm start
> WelcomeToUR@0.0.1 start F:\ReactUR\WelcomeToUR
> node -e "console.log('open browser at http://localhost:8081/vr/\n\n');" && node
node_modules/react-native/local-cli/cli.js start
open browser at http://localhost:8081/vr/

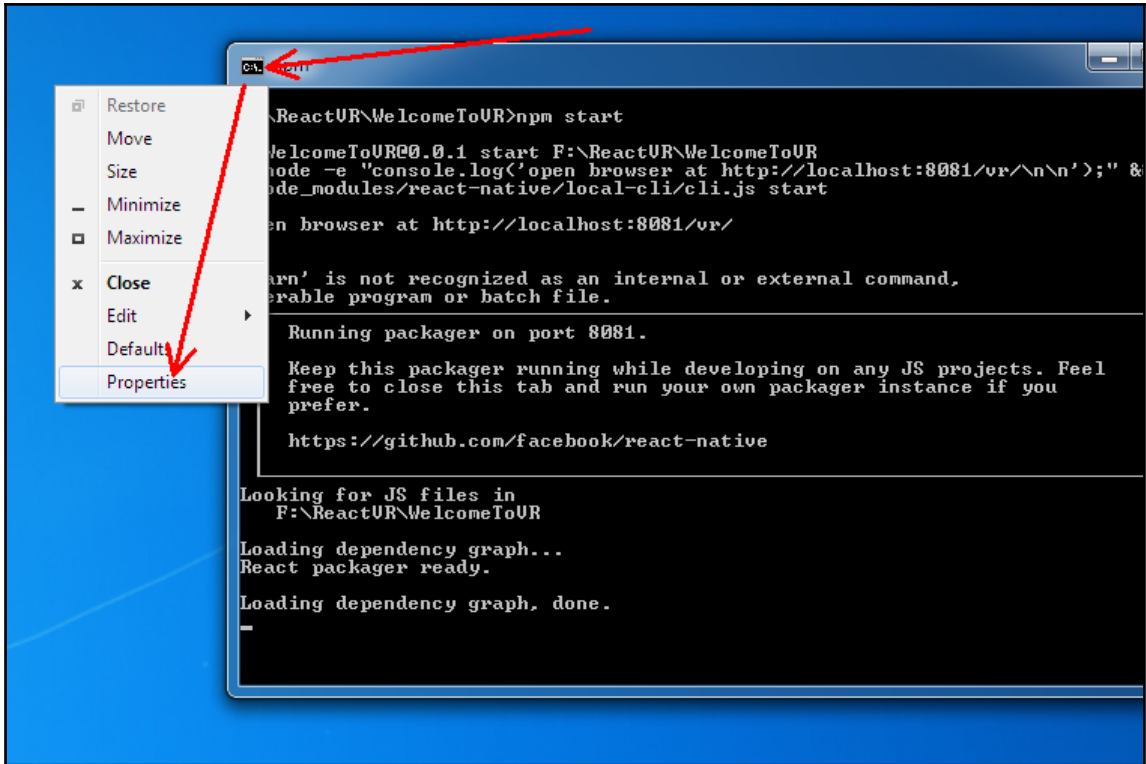
'yarn' is not recognized as an internal or external command,
operable program or batch file.

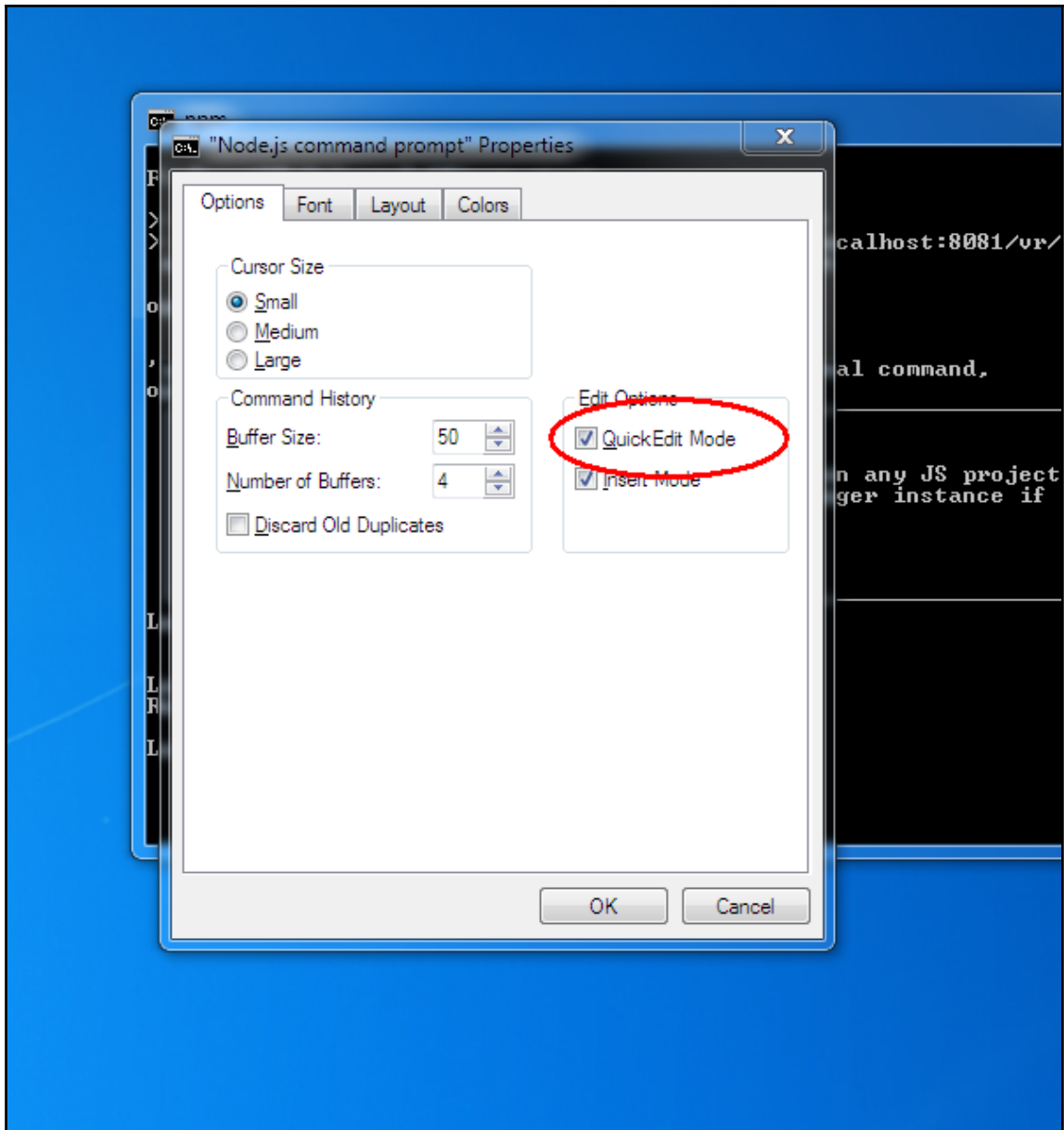
Running packager on port 8081.

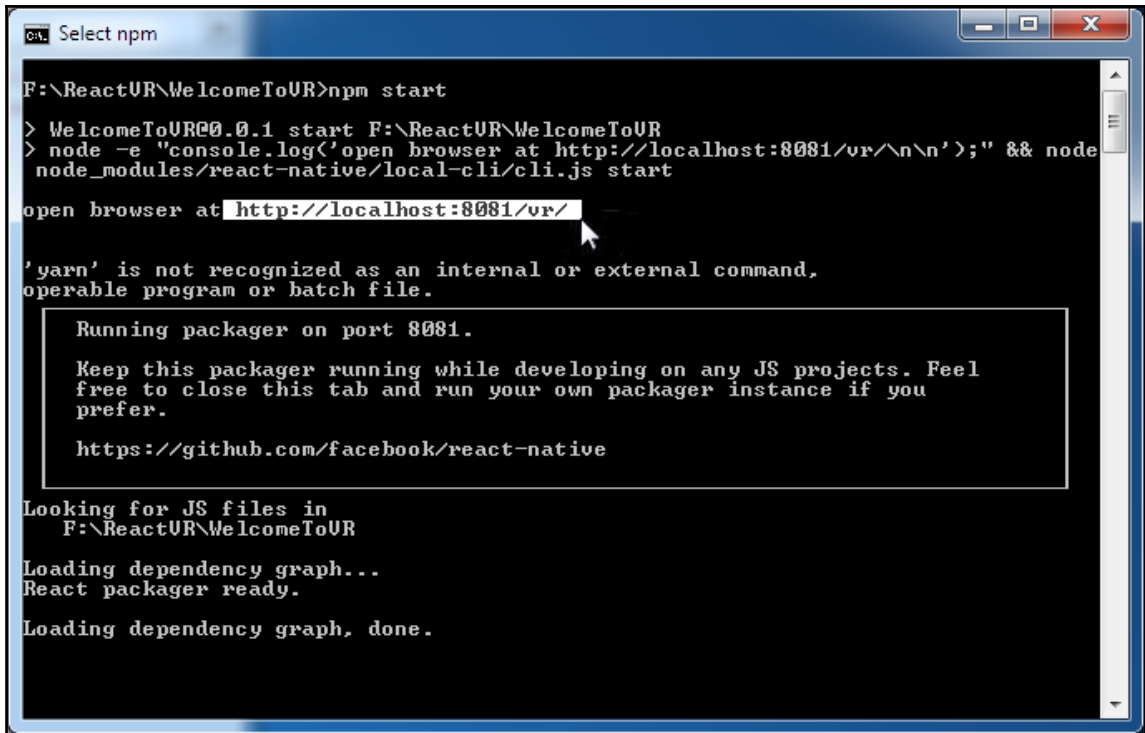
Keep this packager running while developing on any JS projects. Feel
free to close this tab and run your own packager instance if you
prefer.

https://github.com/facebook/react-native

Looking for JS files in
F:\ReactUR\WelcomeToUR
Loading dependency graph...
React packager ready.
Loading dependency graph, done.
```







```

Select npm
F:\ReactUR\WelcomeToUR>npm start
> WelcomeToUR@0.0.1 start F:\ReactUR\WelcomeToUR
> node -e "console.log('open browser at http://localhost:8081/vr/\n\n');" && node
node_modules/react-native/local-cli/cli.js start
open browser at http://localhost:8081/vr/

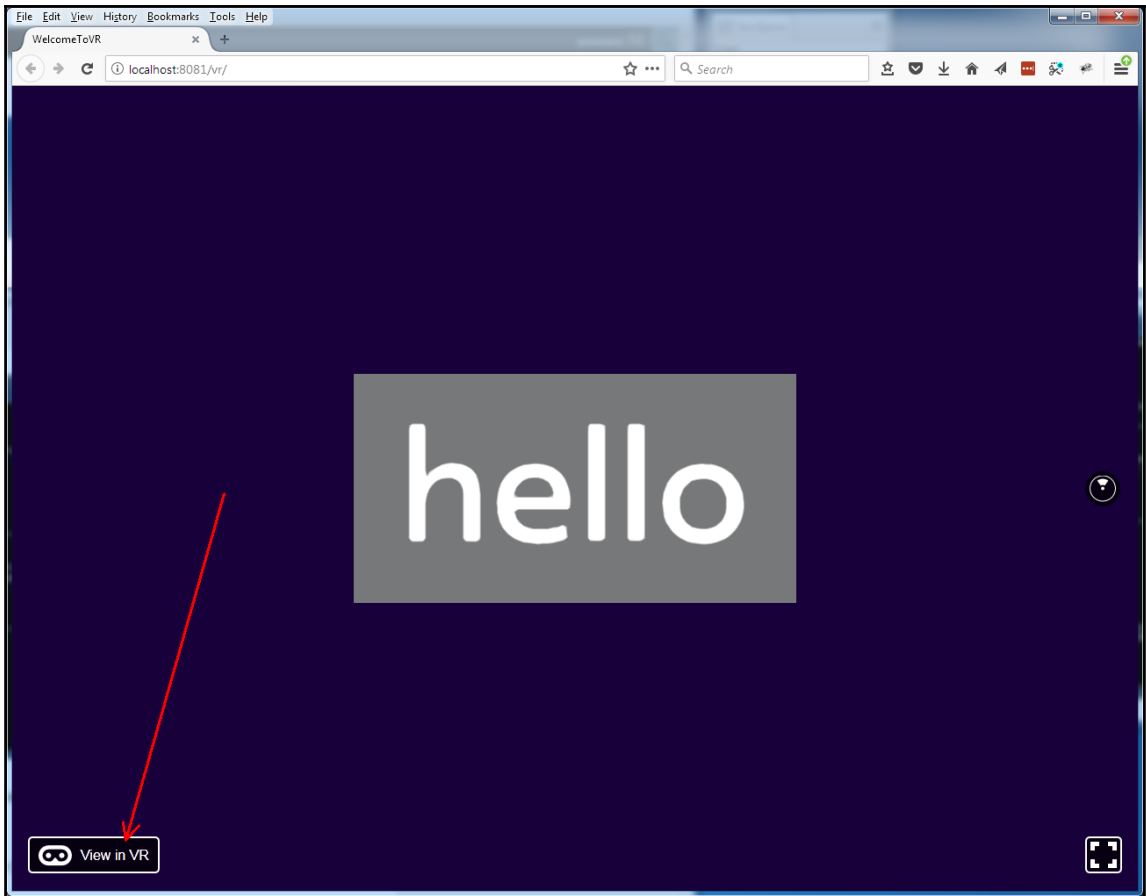
'yarn' is not recognized as an internal or external command,
operable program or batch file.

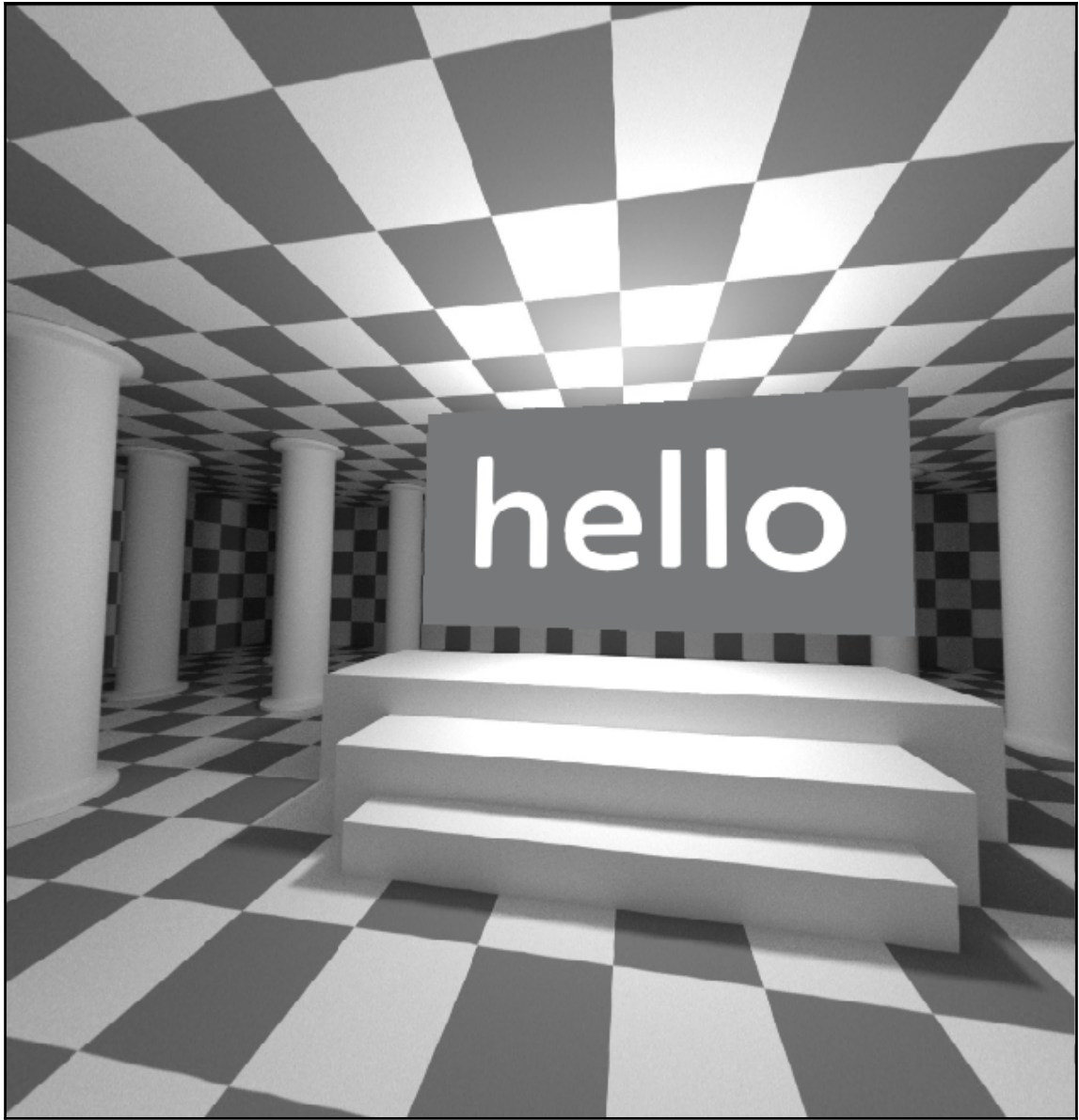
Running packager on port 8081.

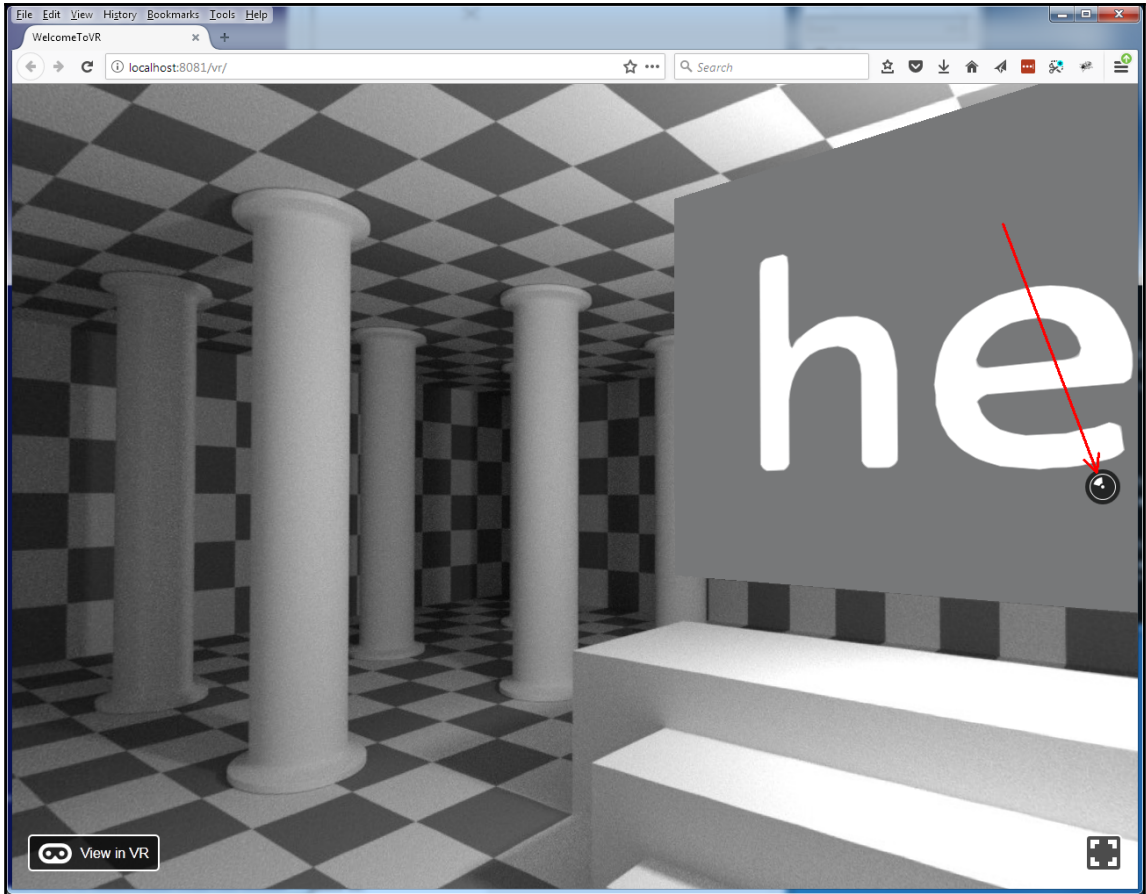
Keep this packager running while developing on any JS projects. Feel
free to close this tab and run your own packager instance if you
prefer.

https://github.com/facebook/react-native

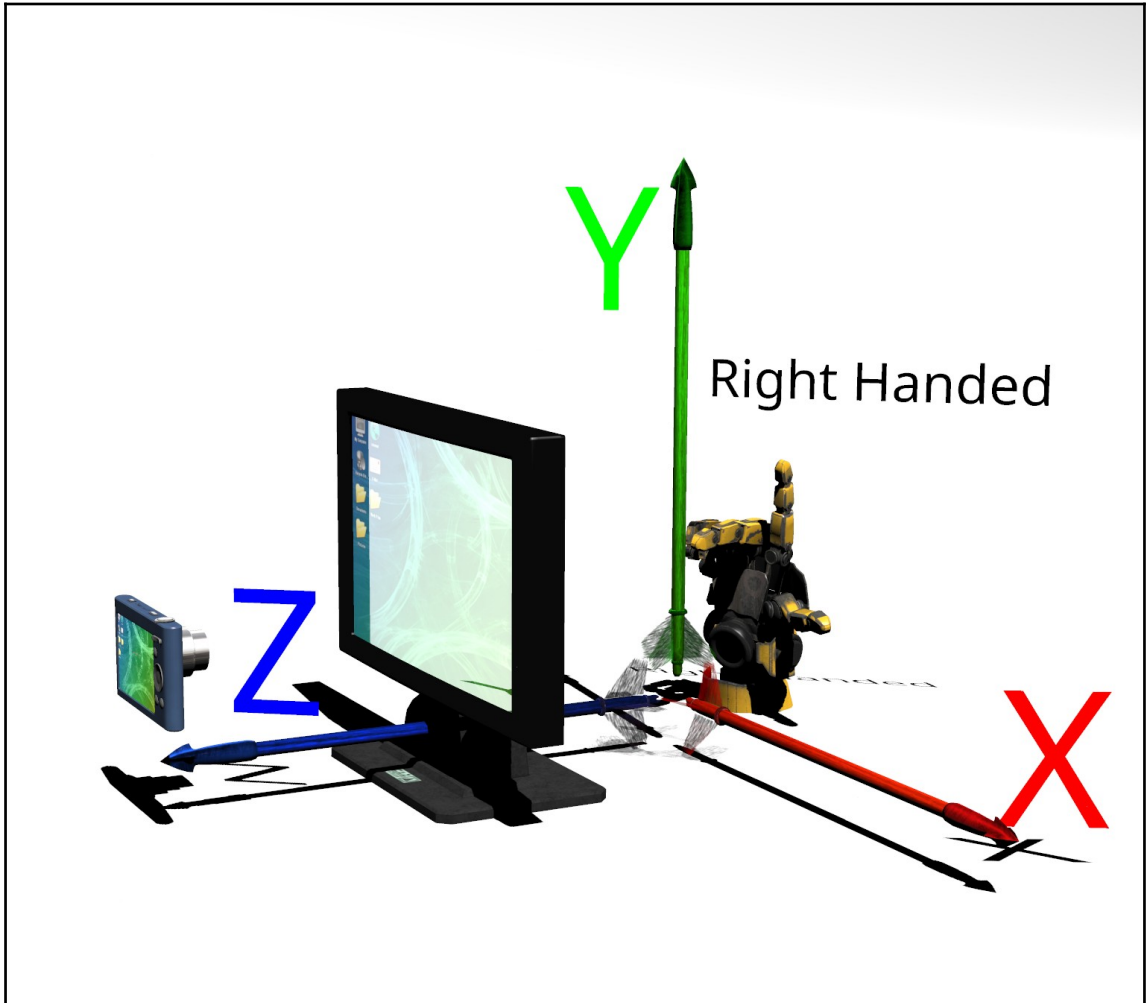
Looking for JS files in
F:\ReactUR\WelcomeToUR
Loading dependency graph...
React packager ready.
Loading dependency graph, done.
```

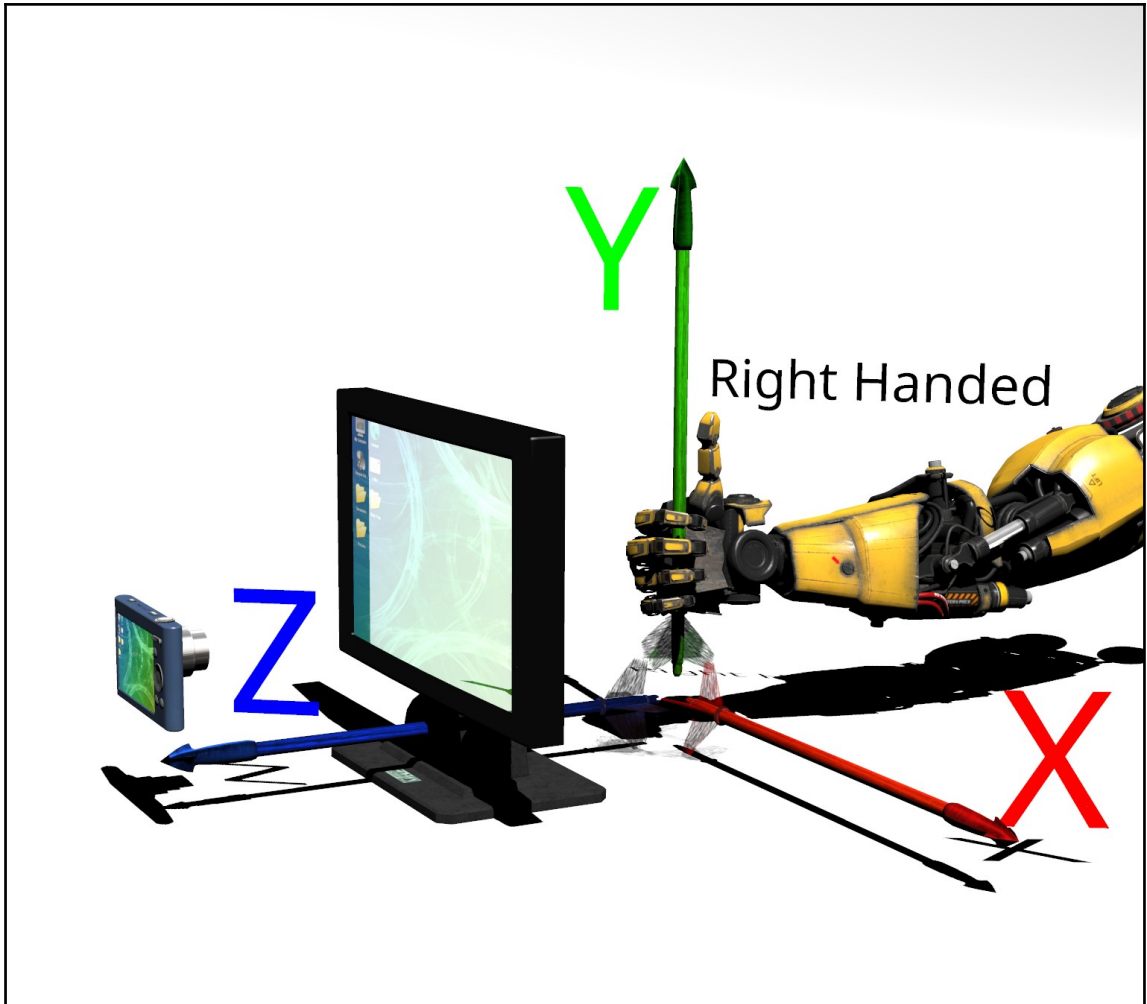


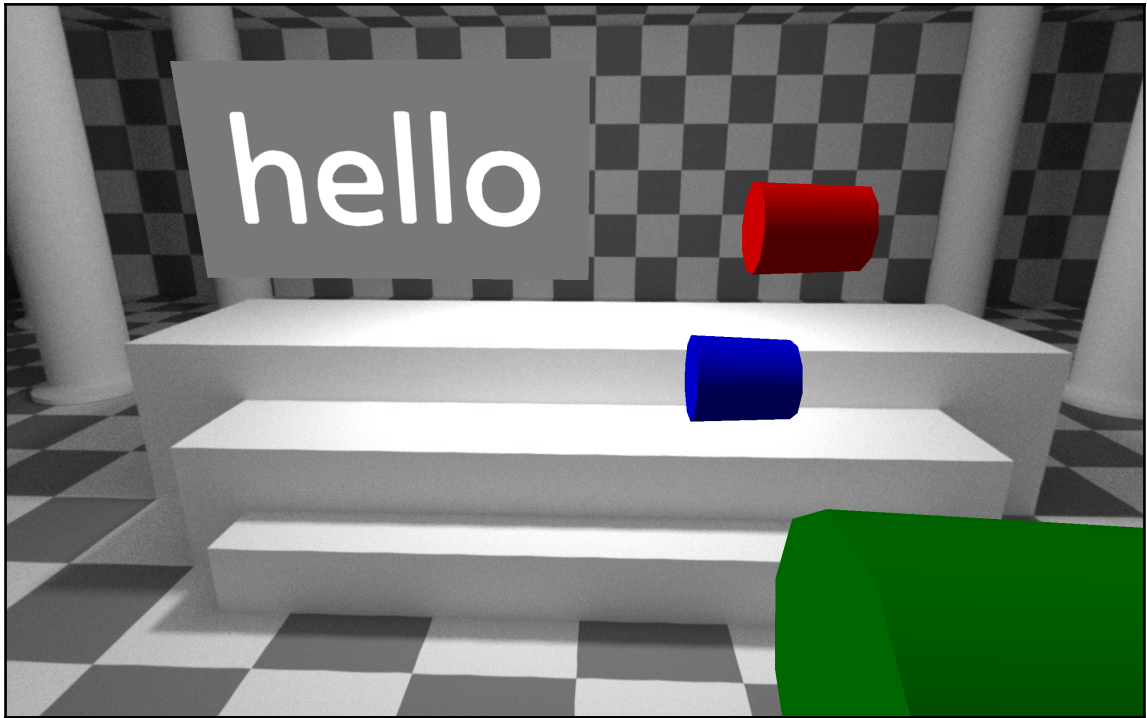




Chapter 3: 3D or Reality in Dimensions Other than X and Y







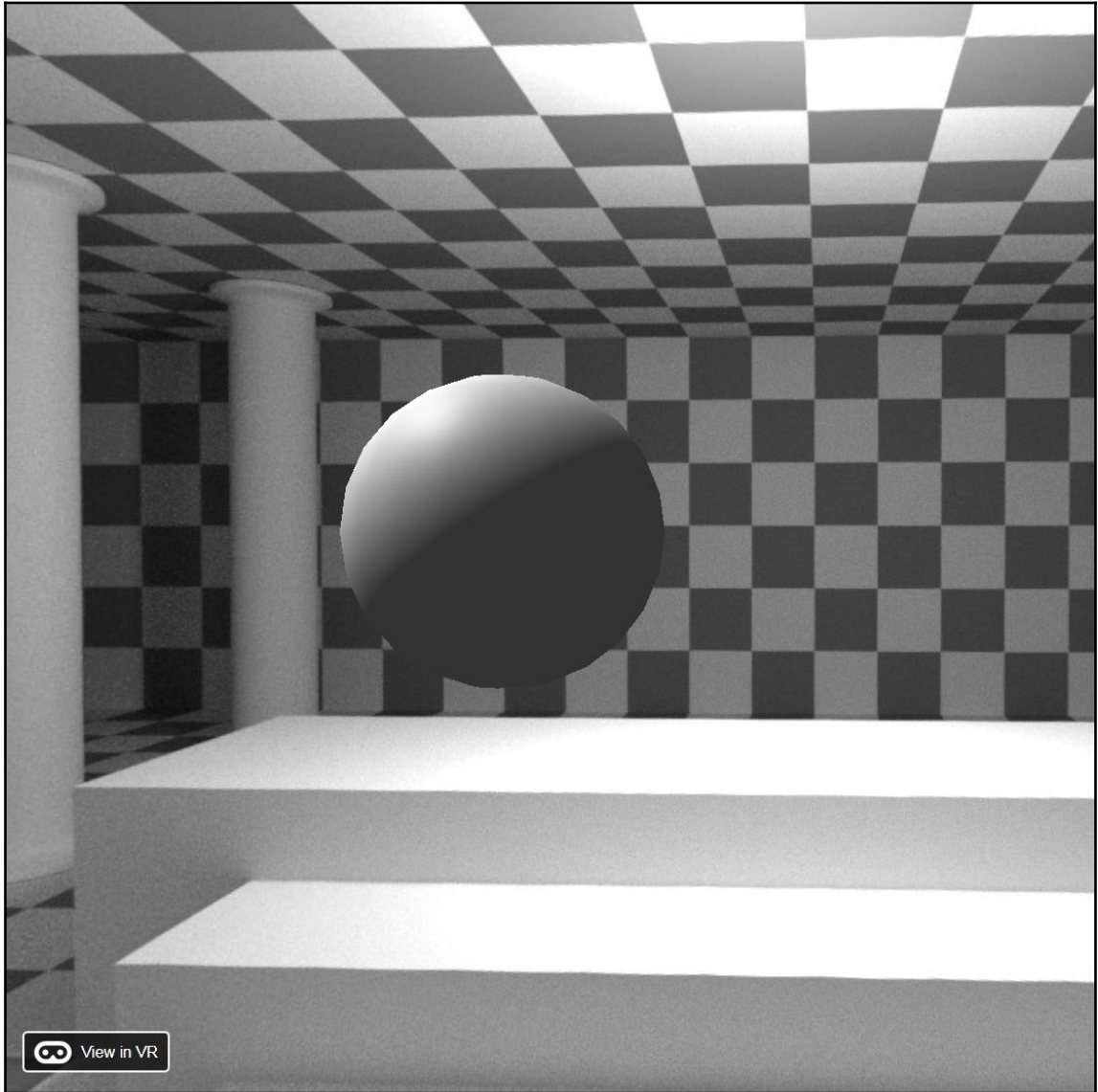
rend·er·ing

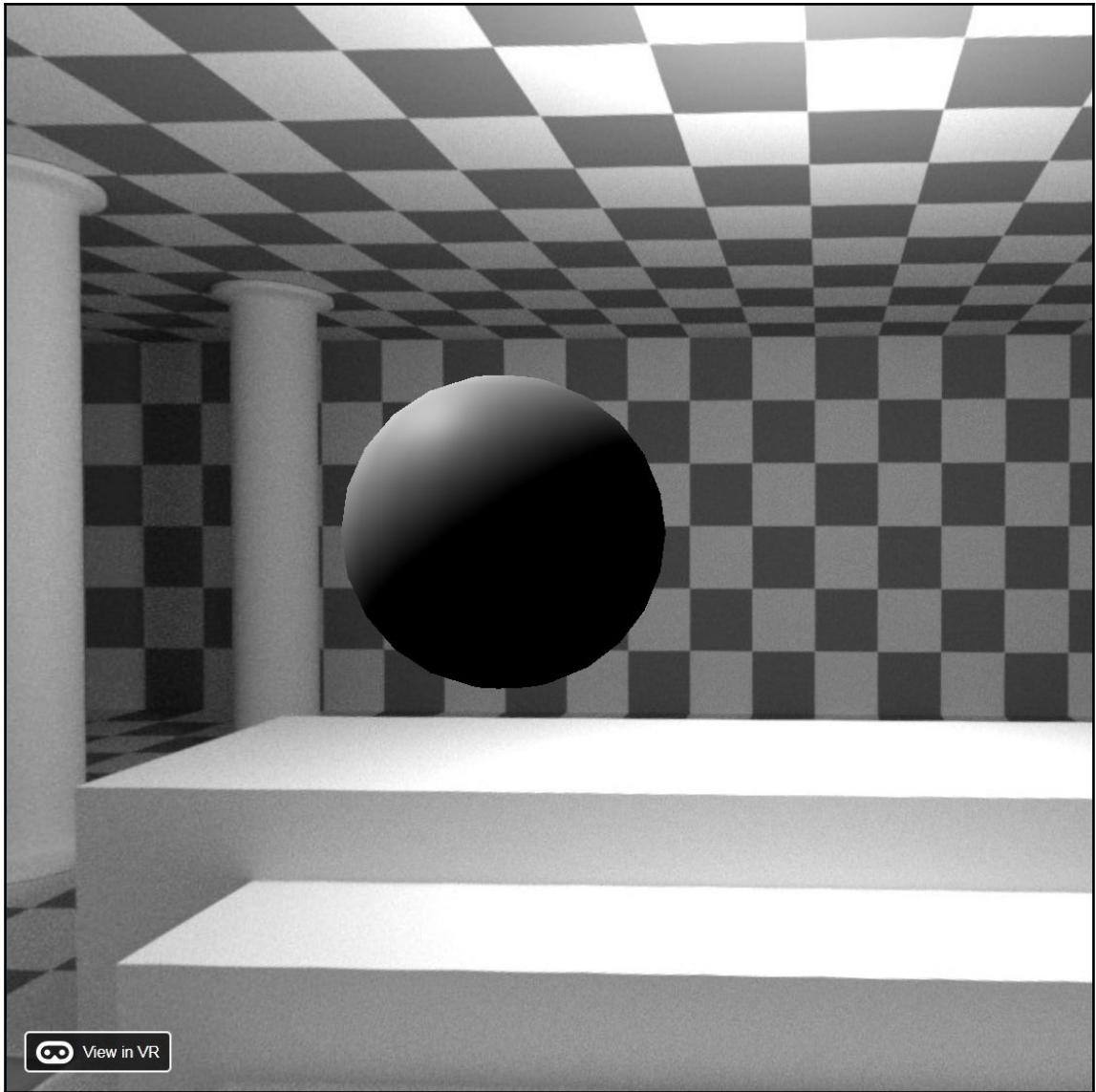
[ˈrend(ə)riŋɡ] 

NOUN

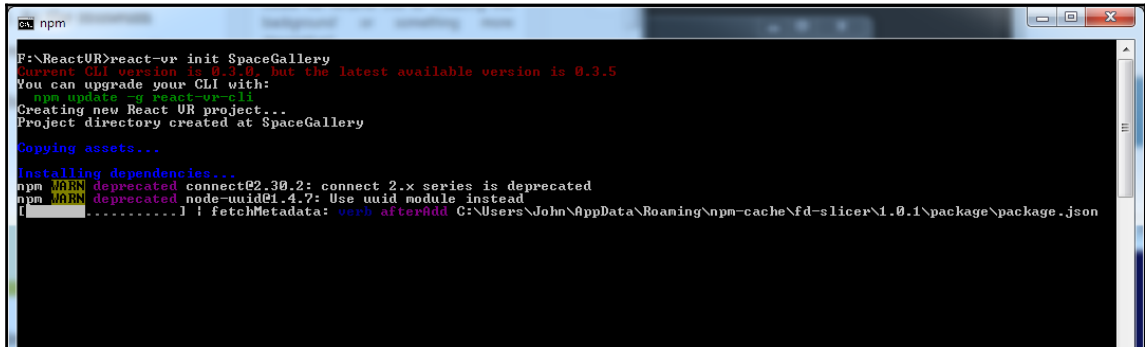
1. a performance of a piece of music or drama:
"her fine rendering of "Che farò senza Eurydice" was enough to win her strong commendation"
2. the action of applying plaster to a wall.
3. the action of giving, yielding, or surrendering something:
"the rendering of dues"

Chapter 4: The React VR Library





Chapter 5: Your First VR App



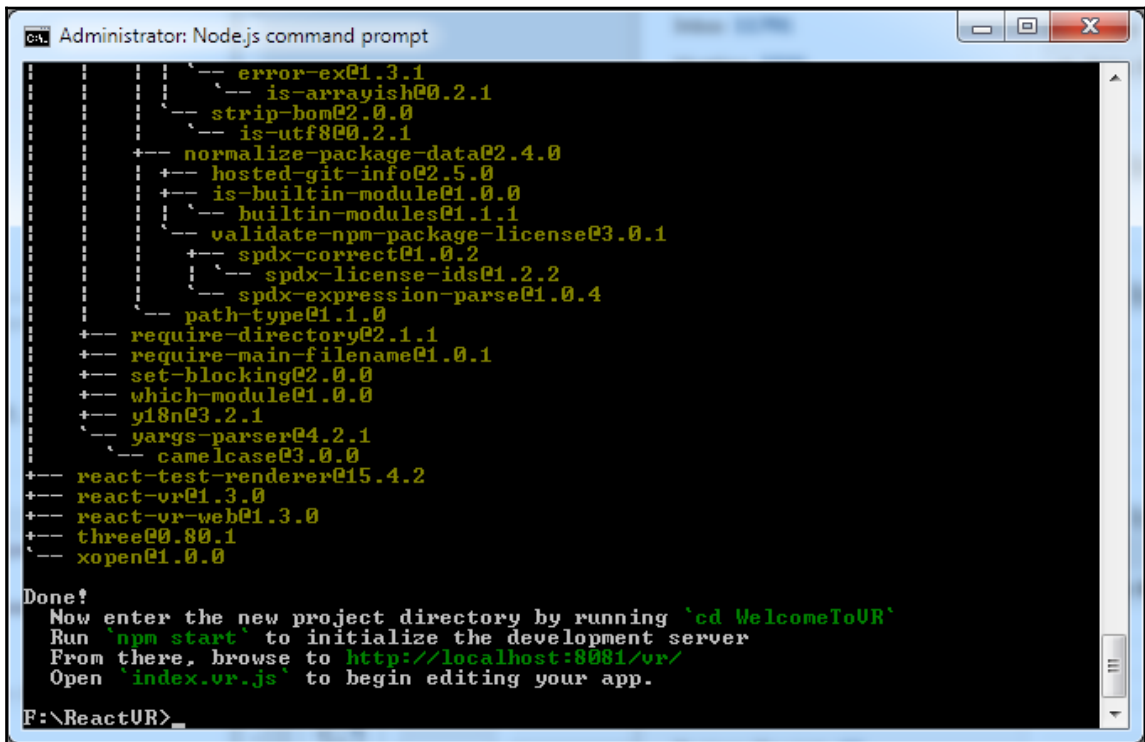
```

C:\> npm
F:\ReactVR>react-vr init SpaceGallery
Current CLI version is 0.3.0, but the latest available version is 0.3.5
You can upgrade your CLI with:
  npm update -g react-vr-cli
Creating new React VR project...
Project directory created at SpaceGallery

Copying assets...

Installing dependencies...
npm WARN deprecated connect@2.30.2: connect 2.x series is deprecated
npm WARN deprecated node-uuid@1.4.7: Use uuid module instead
[.....] | FetchMetadata: web after add C:\Users\John\AppData\Roaming\npm-cache\fd-slicer\1.0.1\package\package.json
  
```

Current CLI version is 0.3.0, but the latest available version is 0.3.5
 You can upgrade your CLI with:
 npm update -g react-vr-cli

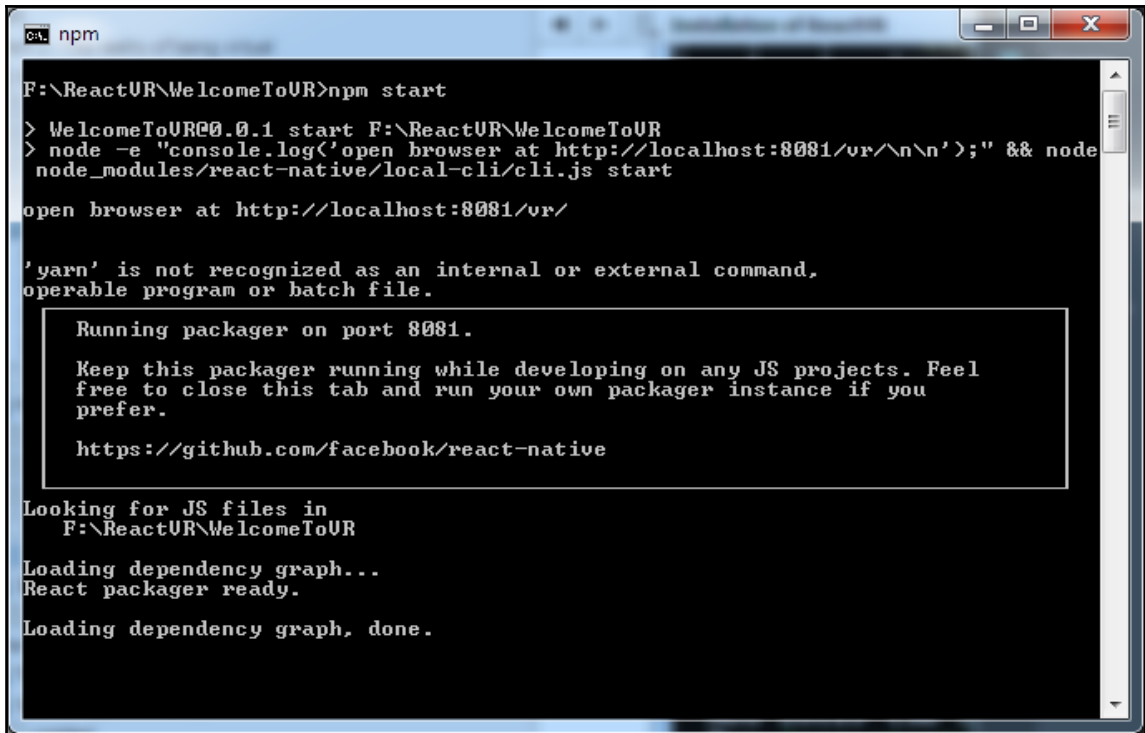


```

Administrator: Node.js command prompt
  -- error-ex@1.3.1
  -- is-arrayish@0.2.1
  -- strip-bom@2.0.0
  -- is-utf8@0.2.1
+-- normalize-package-data@2.4.0
+-- hosted-git-info@2.5.0
+-- is-builtin-module@1.0.0
+-- builtin-modules@1.1.1
+-- validate-npm-package-license@3.0.1
+-- spdx-correct@1.0.2
+-- spdx-license-ids@1.2.2
+-- spdx-expression-parse@1.0.4
+-- path-type@1.1.0
+-- require-directory@2.1.1
+-- require-main-filename@1.0.1
+-- set-blocking@2.0.0
+-- which-module@1.0.0
+-- y18n@3.2.1
+-- yargs-parser@4.2.1
+-- camelcase@3.0.0
+-- react-test-renderer@15.4.2
+-- react-vr@1.3.0
+-- react-vr-web@1.3.0
+-- three@0.80.1
+-- xopen@1.0.0

Done!
Now enter the new project directory by running `cd WelcomeToUR`
Run `npm start` to initialize the development server
From there, browse to http://localhost:8081/vr/
Open `index.vr.js` to begin editing your app.

F:\ReactVR>
  
```



```
ca npm
F:\ReactUR\WelcomeToUR>npm start
> WelcomeToUR@0.0.1 start F:\ReactUR\WelcomeToUR
> node -e "console.log('open browser at http://localhost:8081/vr/\n\n');" && node
node_modules/react-native/local-cli/cli.js start
open browser at http://localhost:8081/vr/

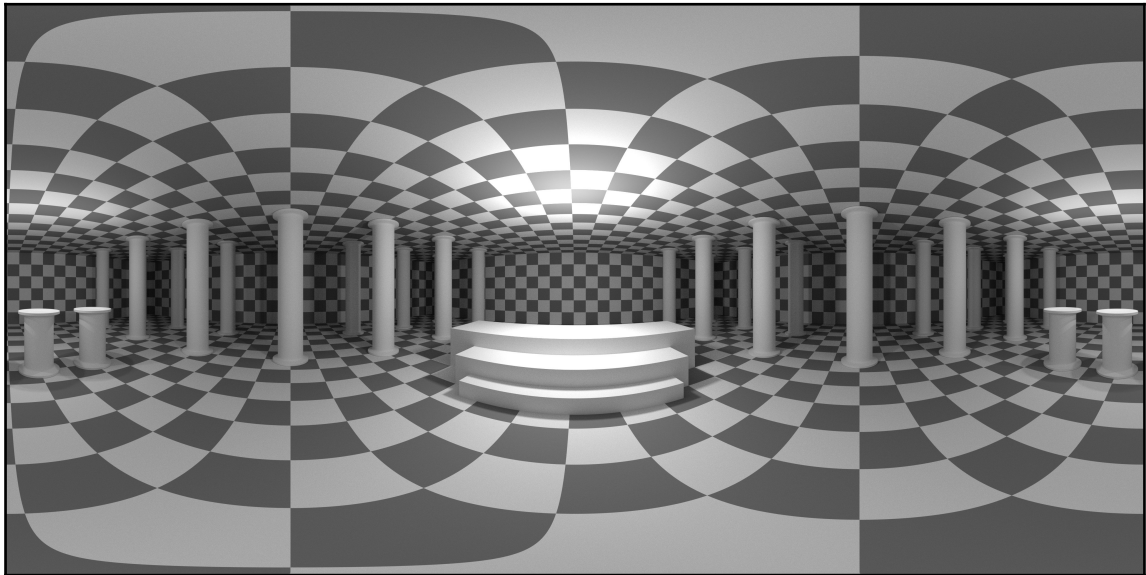
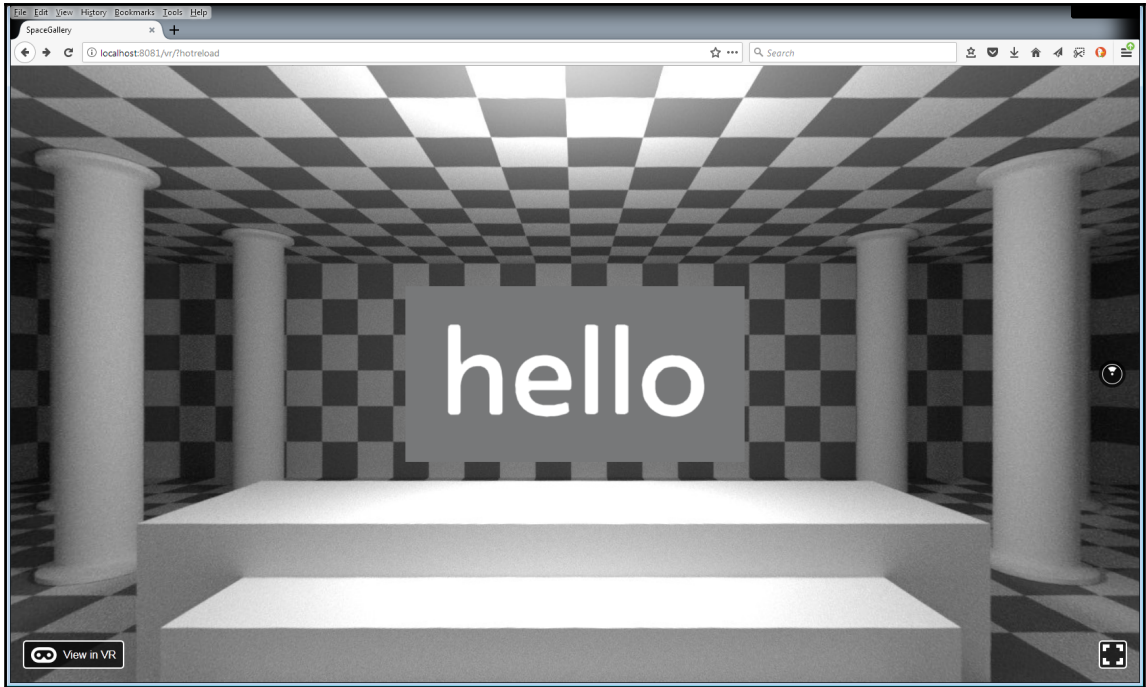
'yarn' is not recognized as an internal or external command,
operable program or batch file.

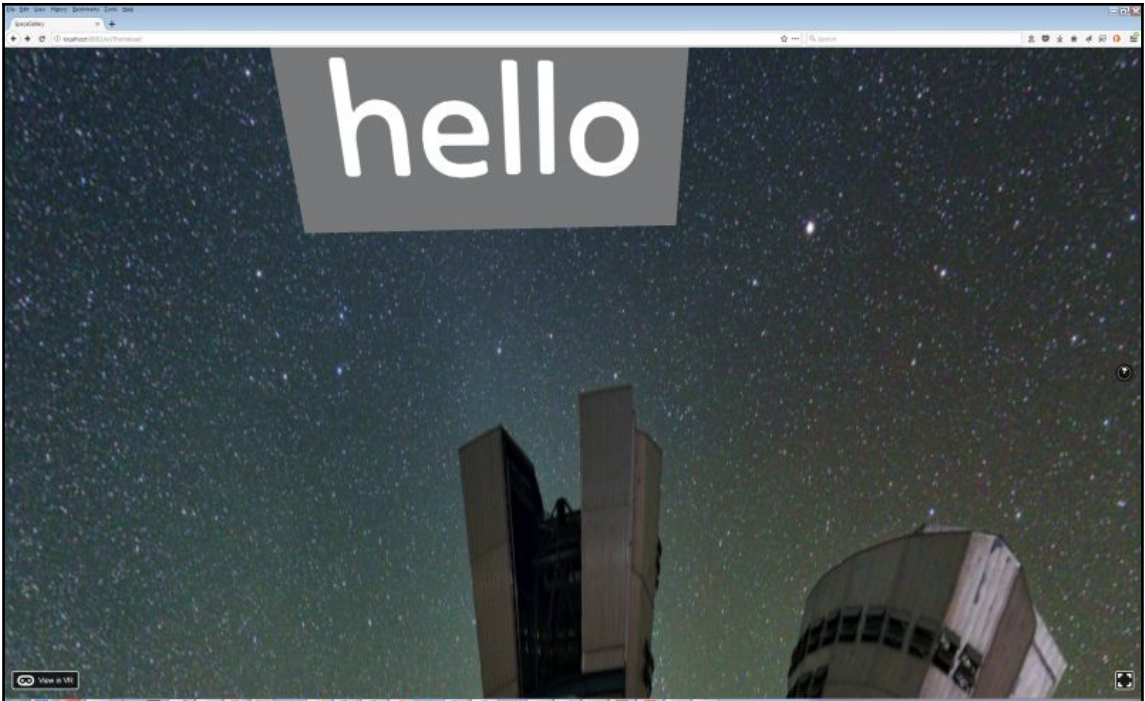
Running packager on port 8081.

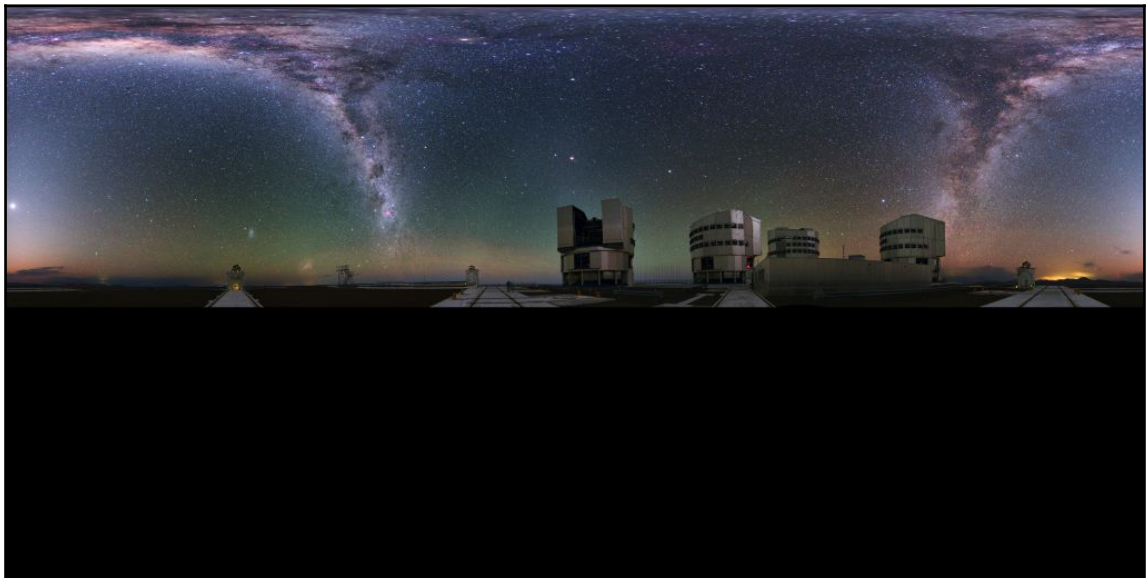
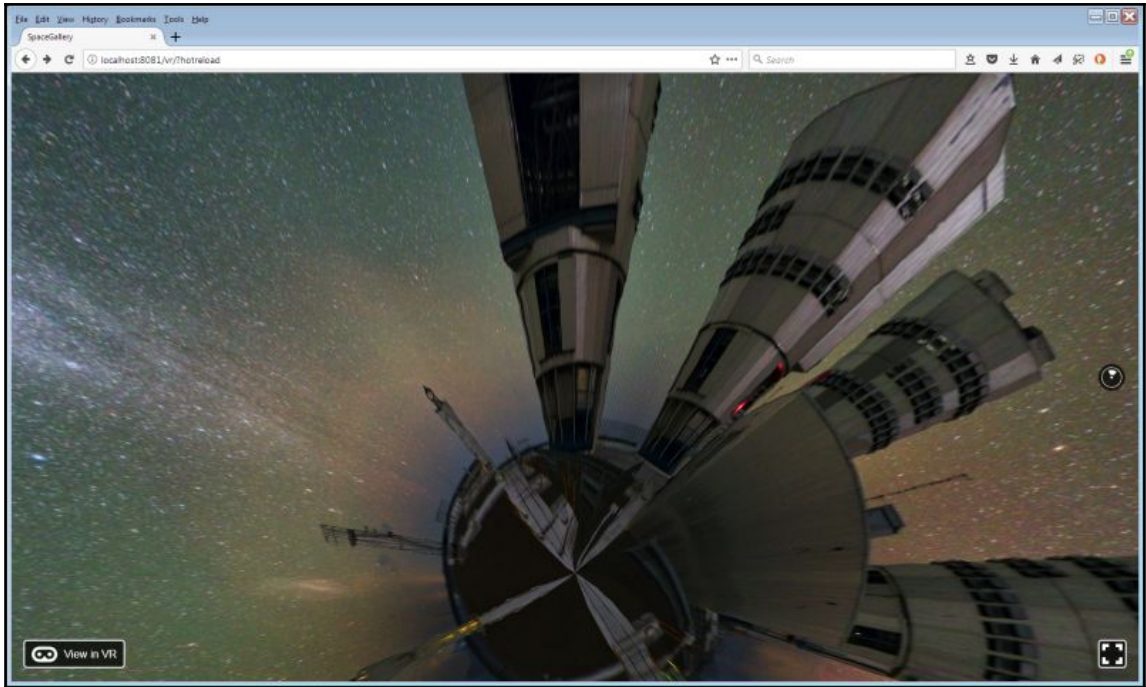
Keep this packager running while developing on any JS projects. Feel
free to close this tab and run your own packager instance if you
prefer.

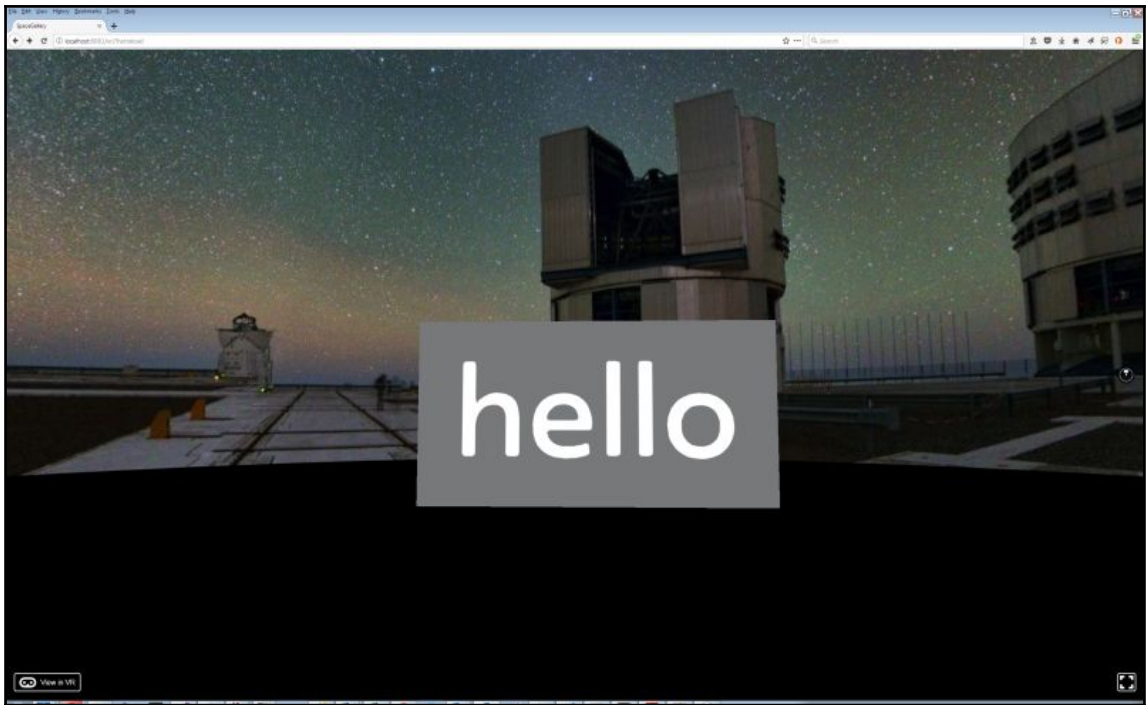
https://github.com/facebook/react-native

Looking for JS files in
F:\ReactUR\WelcomeToUR
Loading dependency graph...
React packager ready.
Loading dependency graph, done.
```





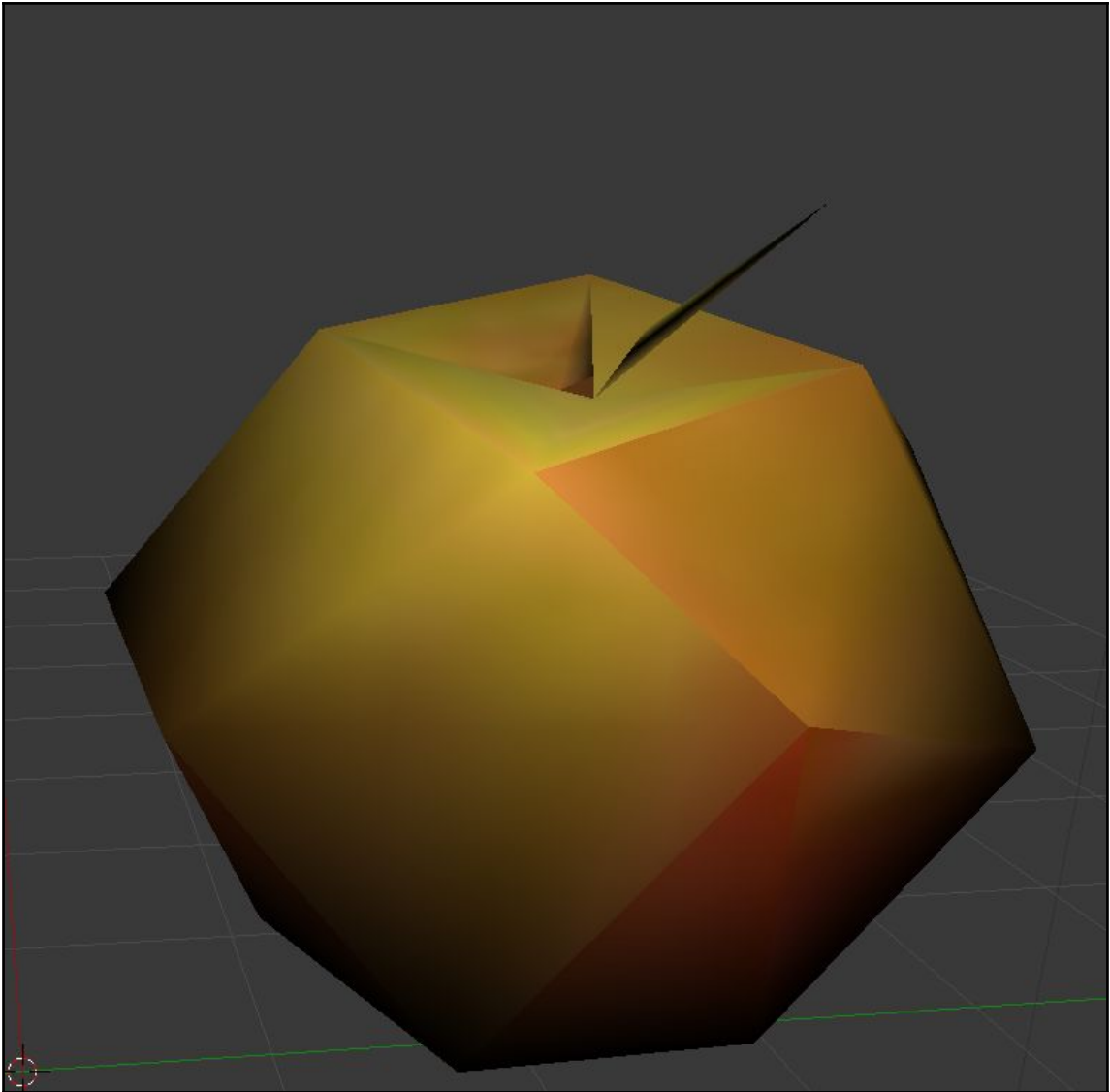


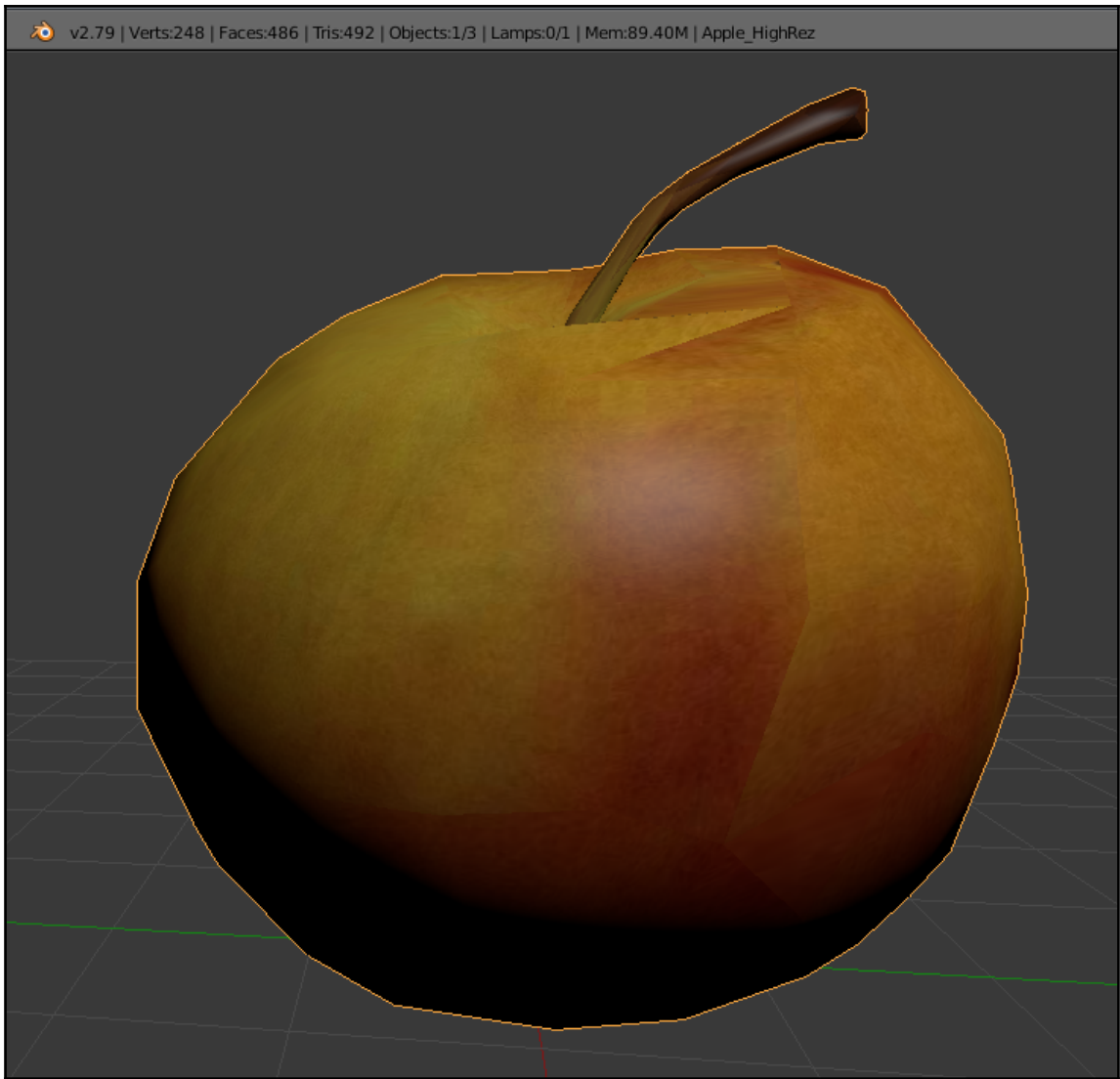


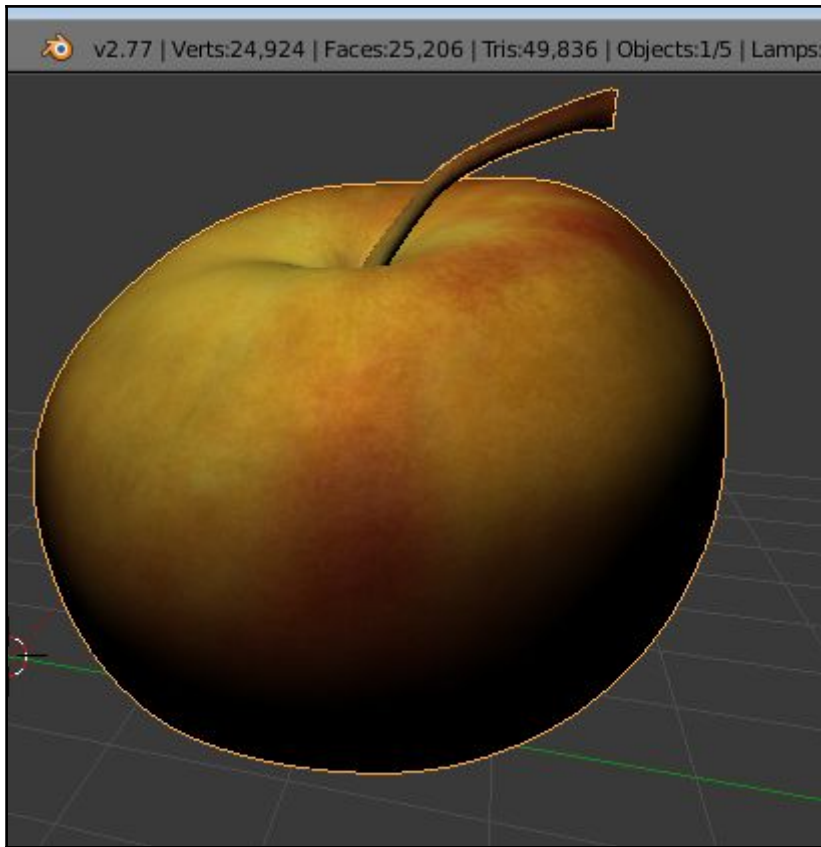
```
cmd Select npm  
F:\ReactUR\SpaceGallery>npm start  
> SpaceGallery@0.0.1 start F:\ReactUR\SpaceGallery  
> node -e "console.log('open browser at http://localhost:8081/vr/');"  
open browser at http://localhost:8081/vr/  
_
```

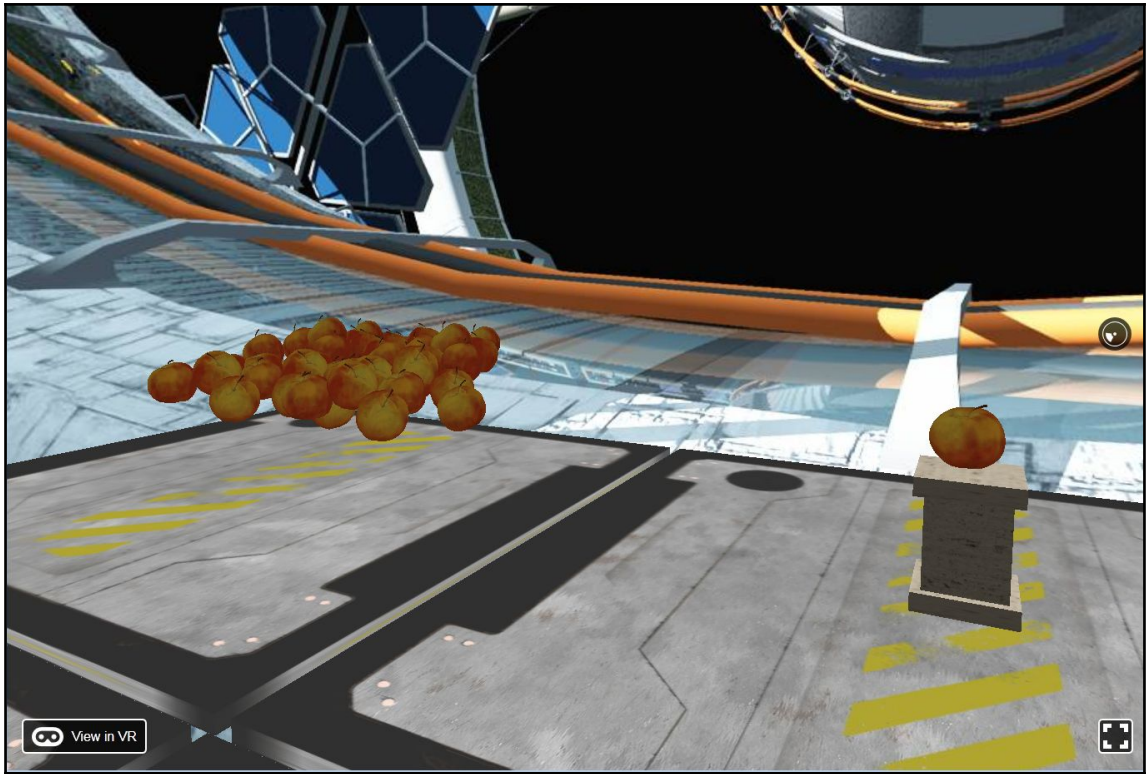
Chapter 6: Working with Poly and the Gon Family

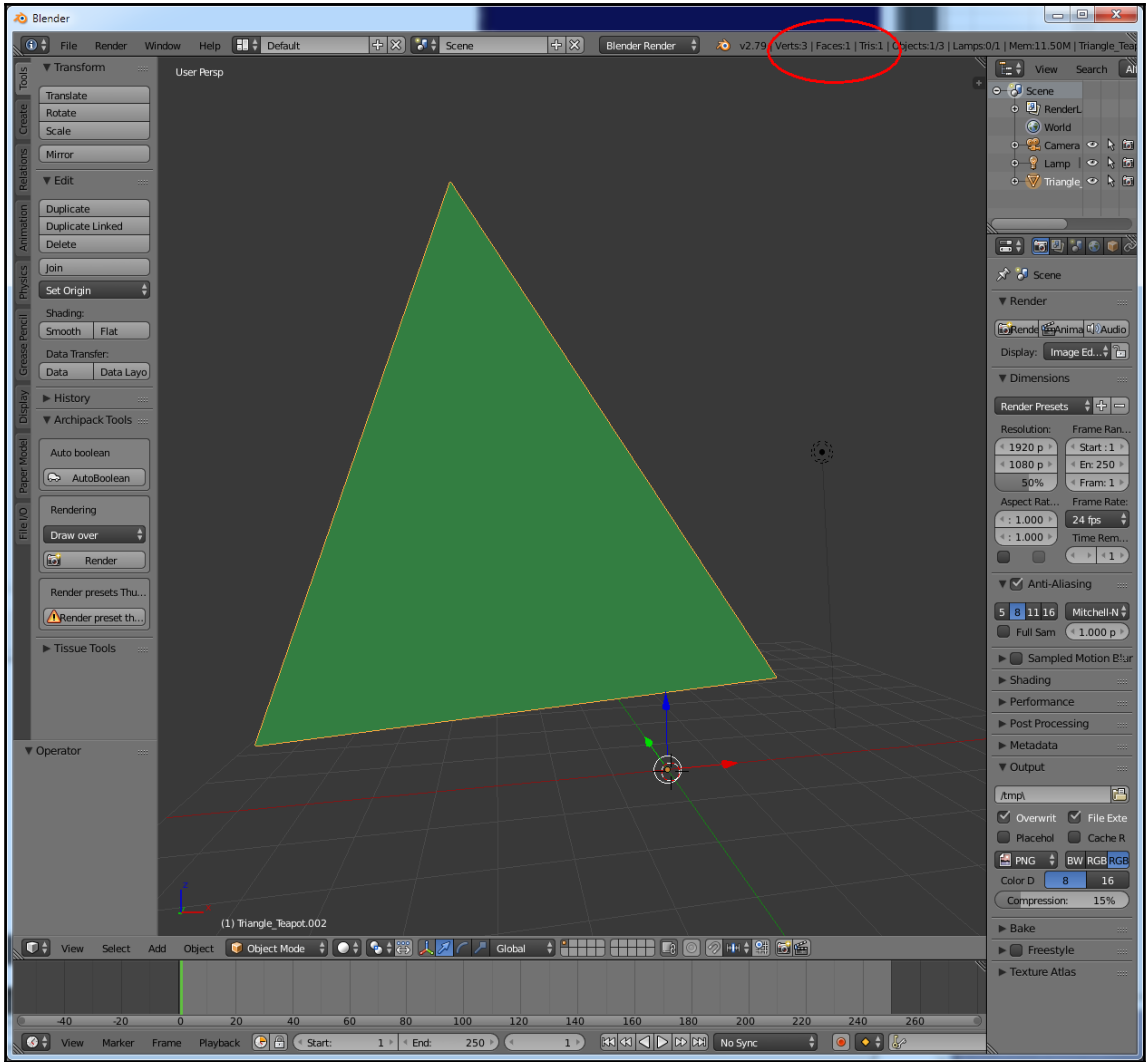


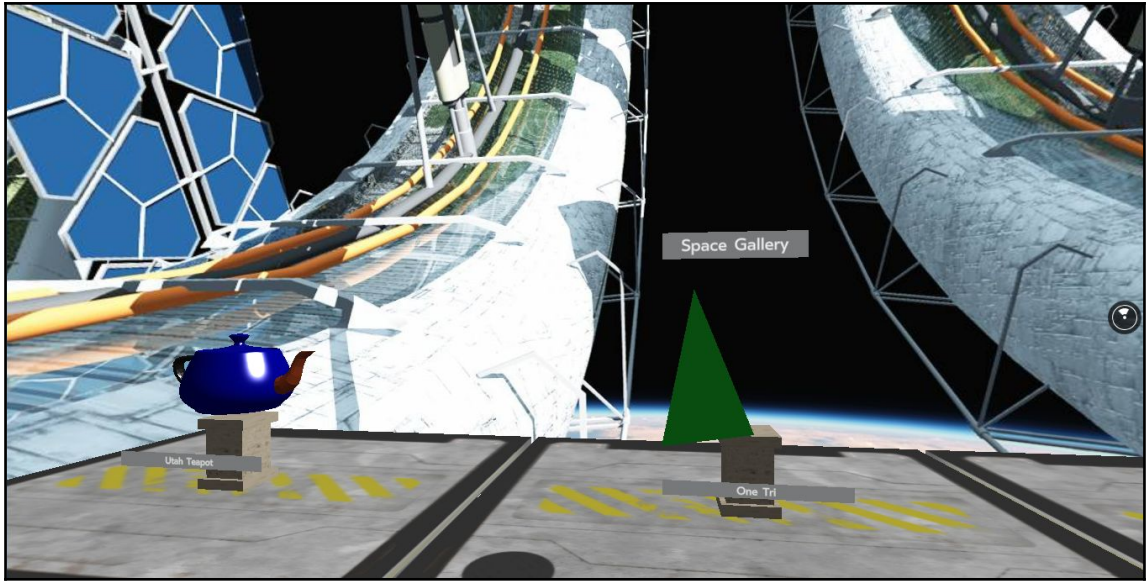


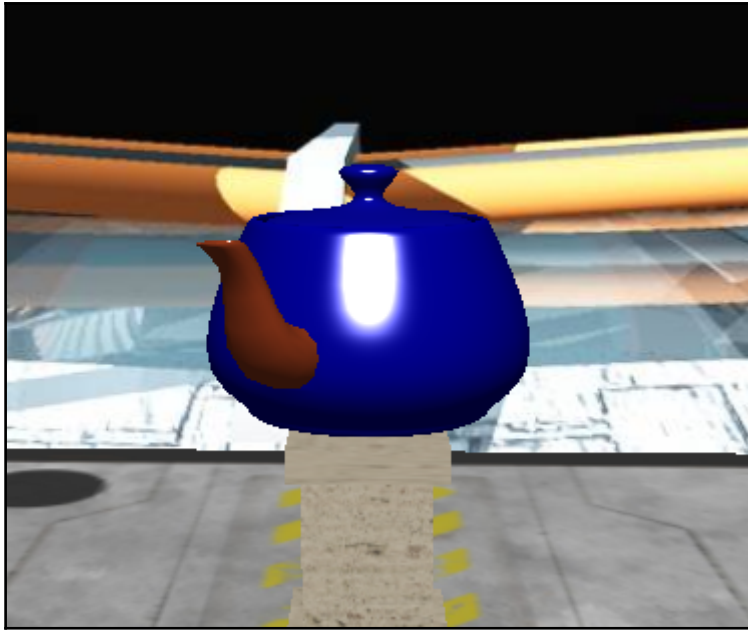




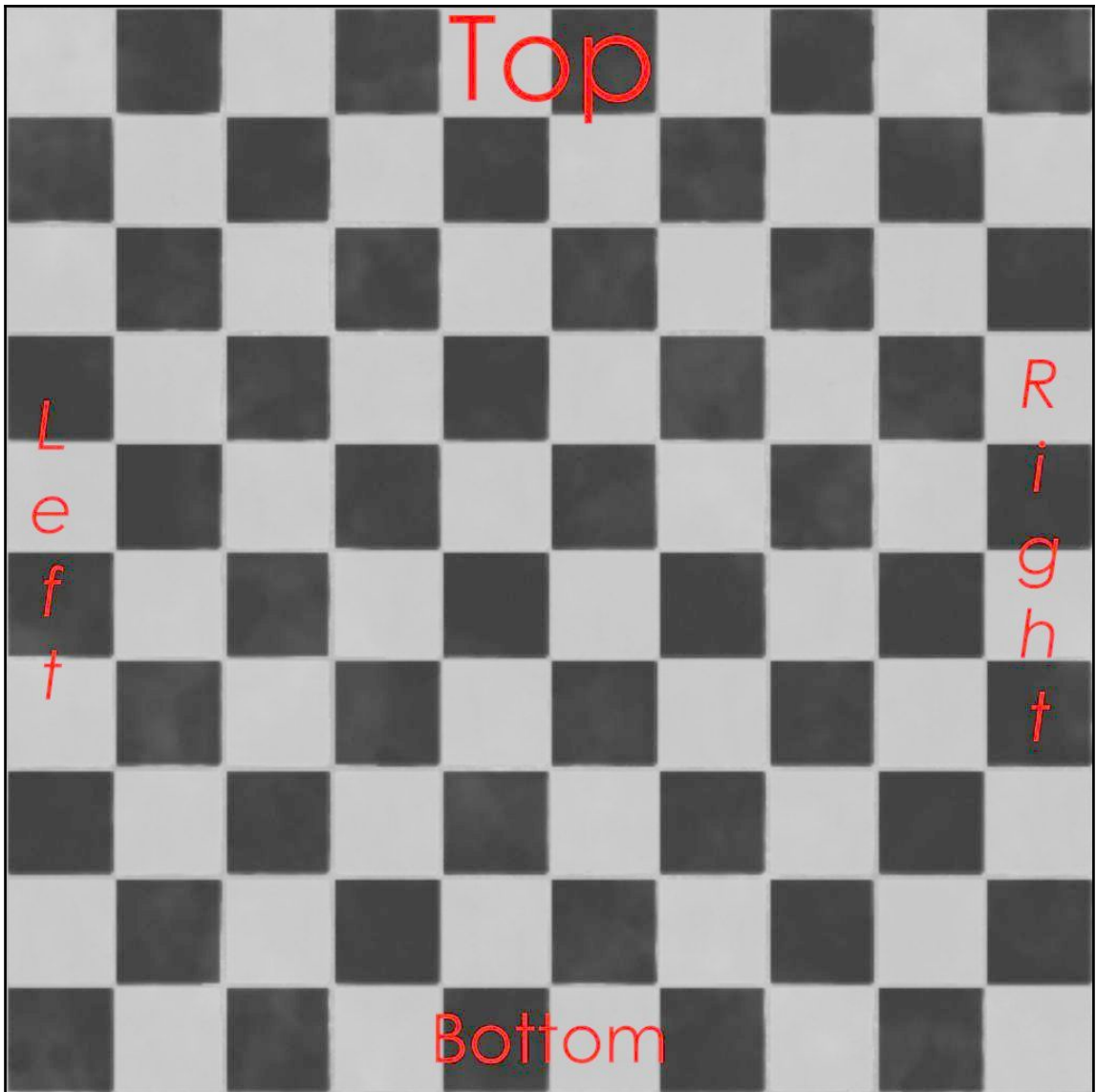


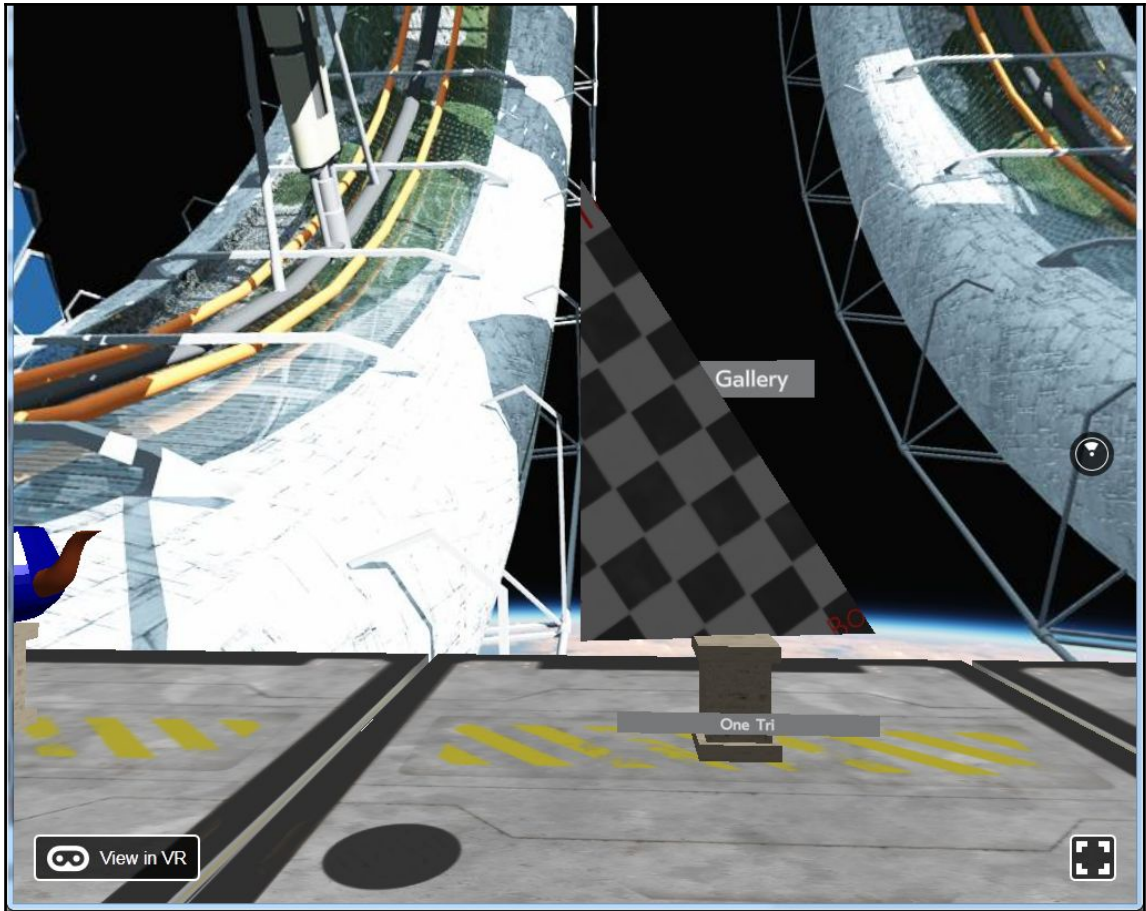


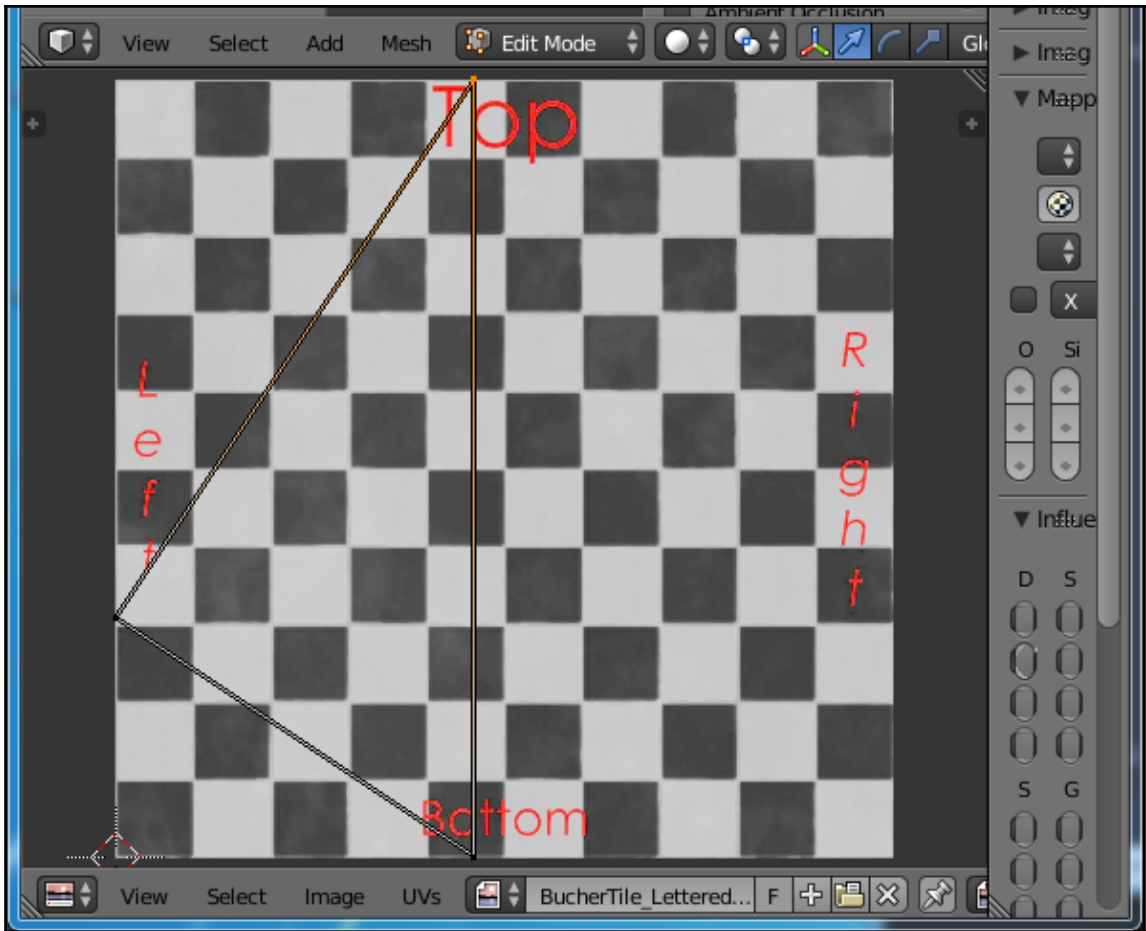






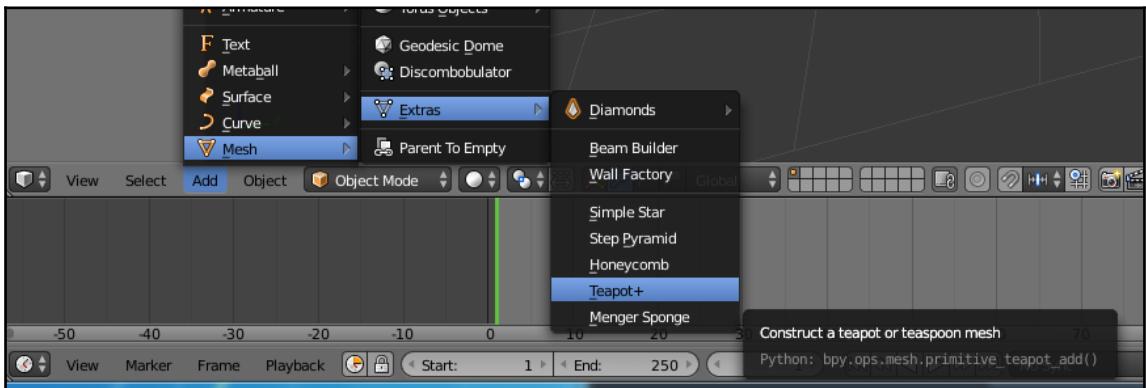
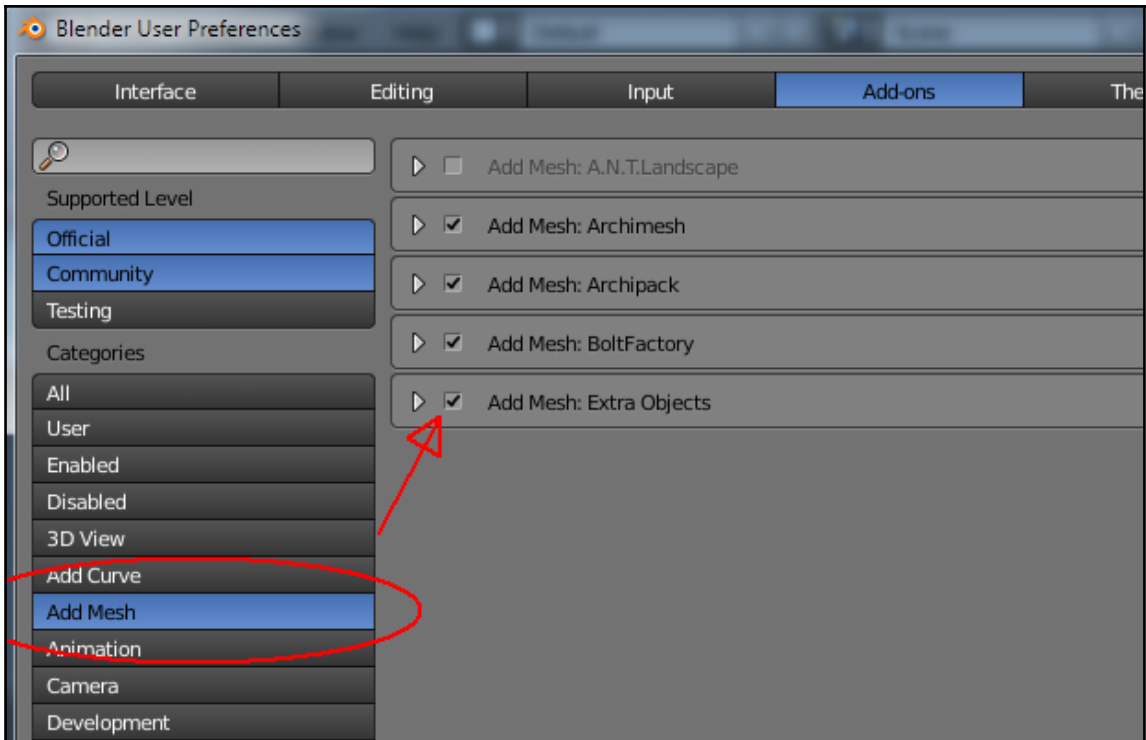


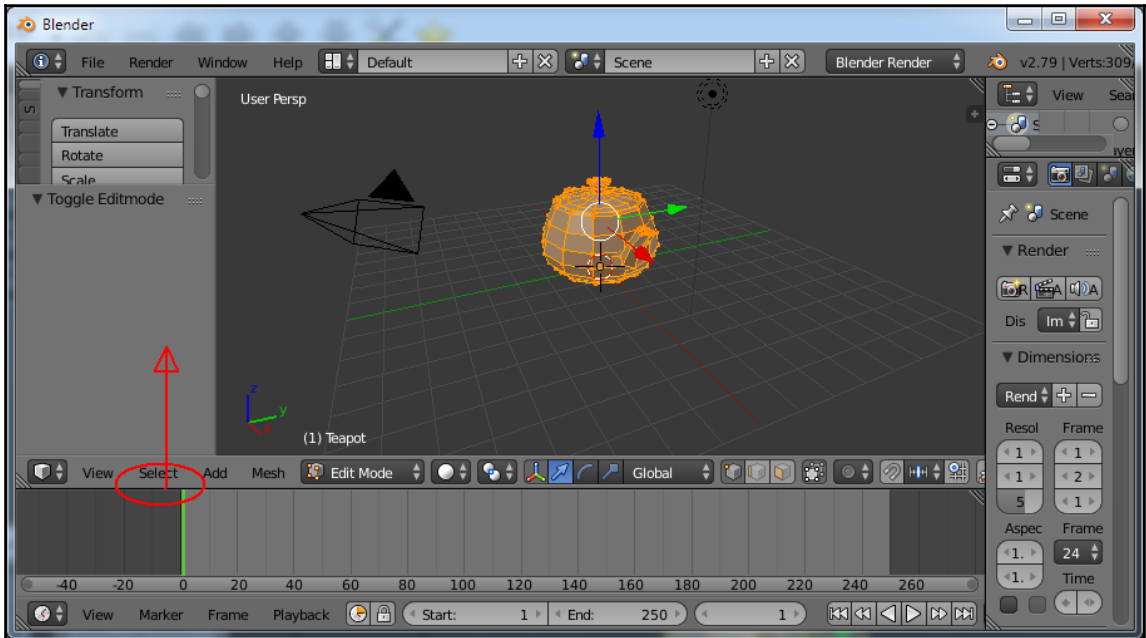
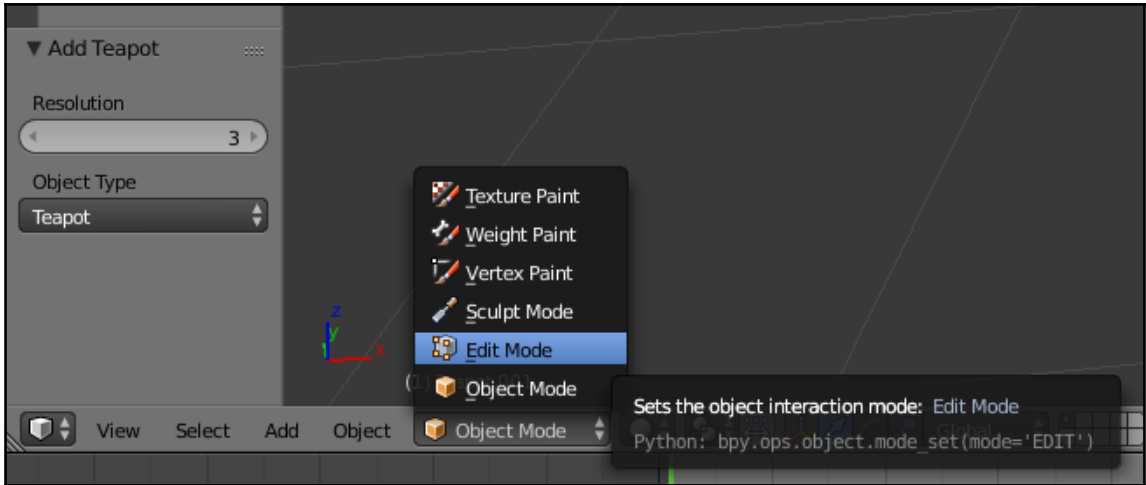


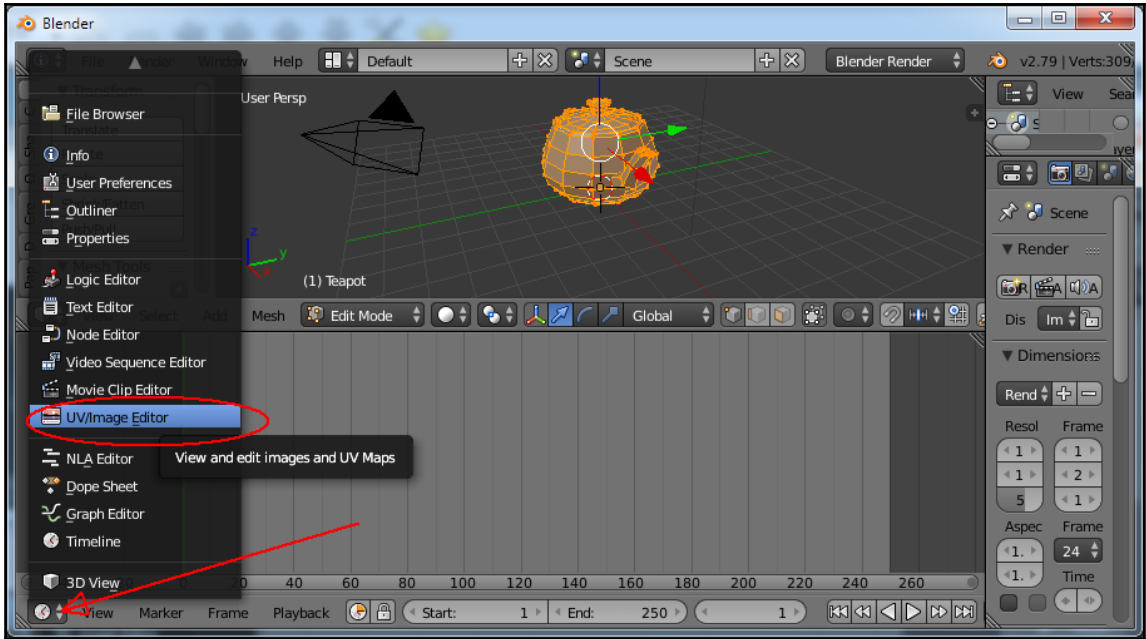


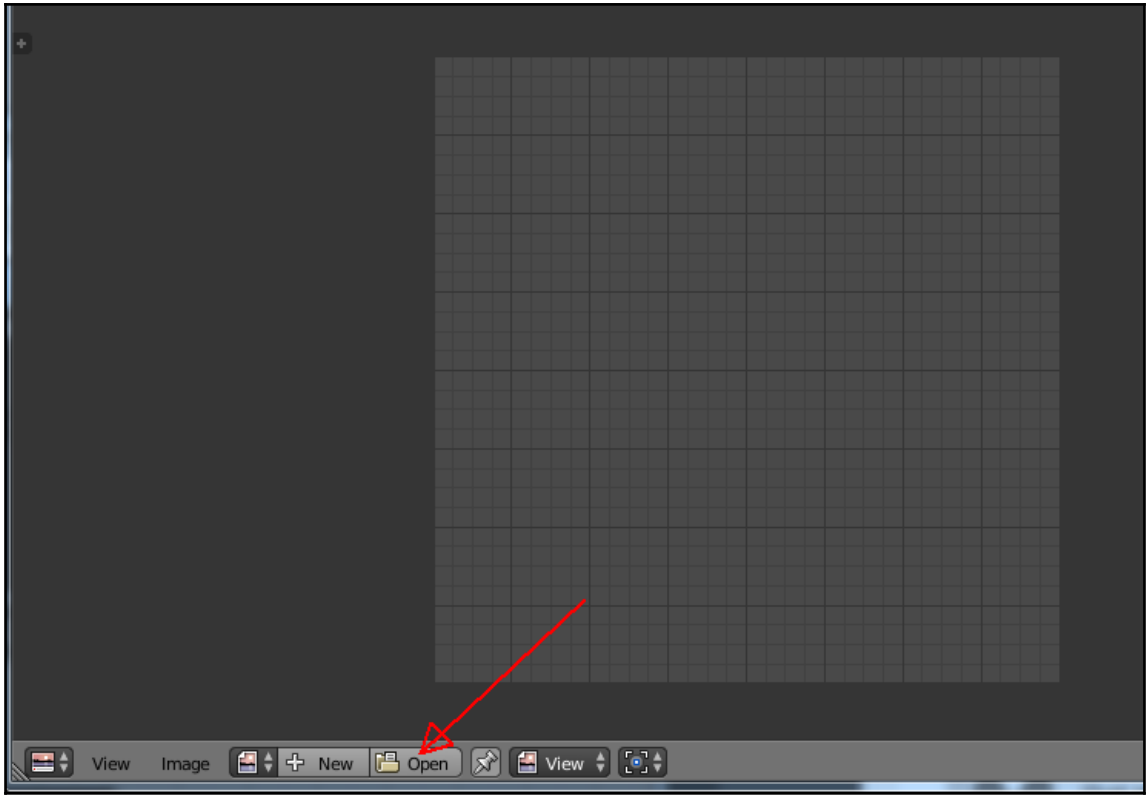
Chapter 7: Sitting Down with a (Virtual) Teapot

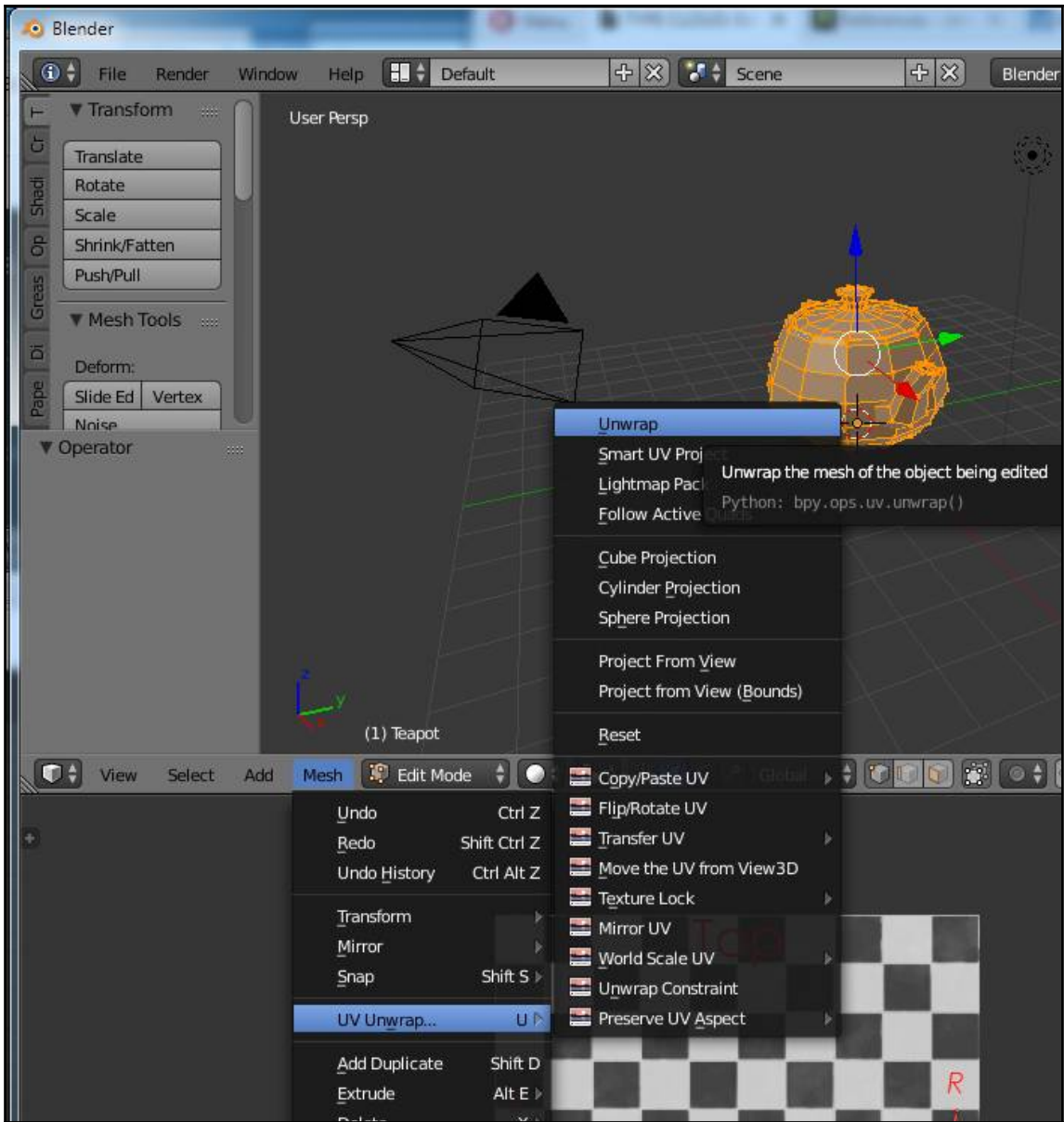


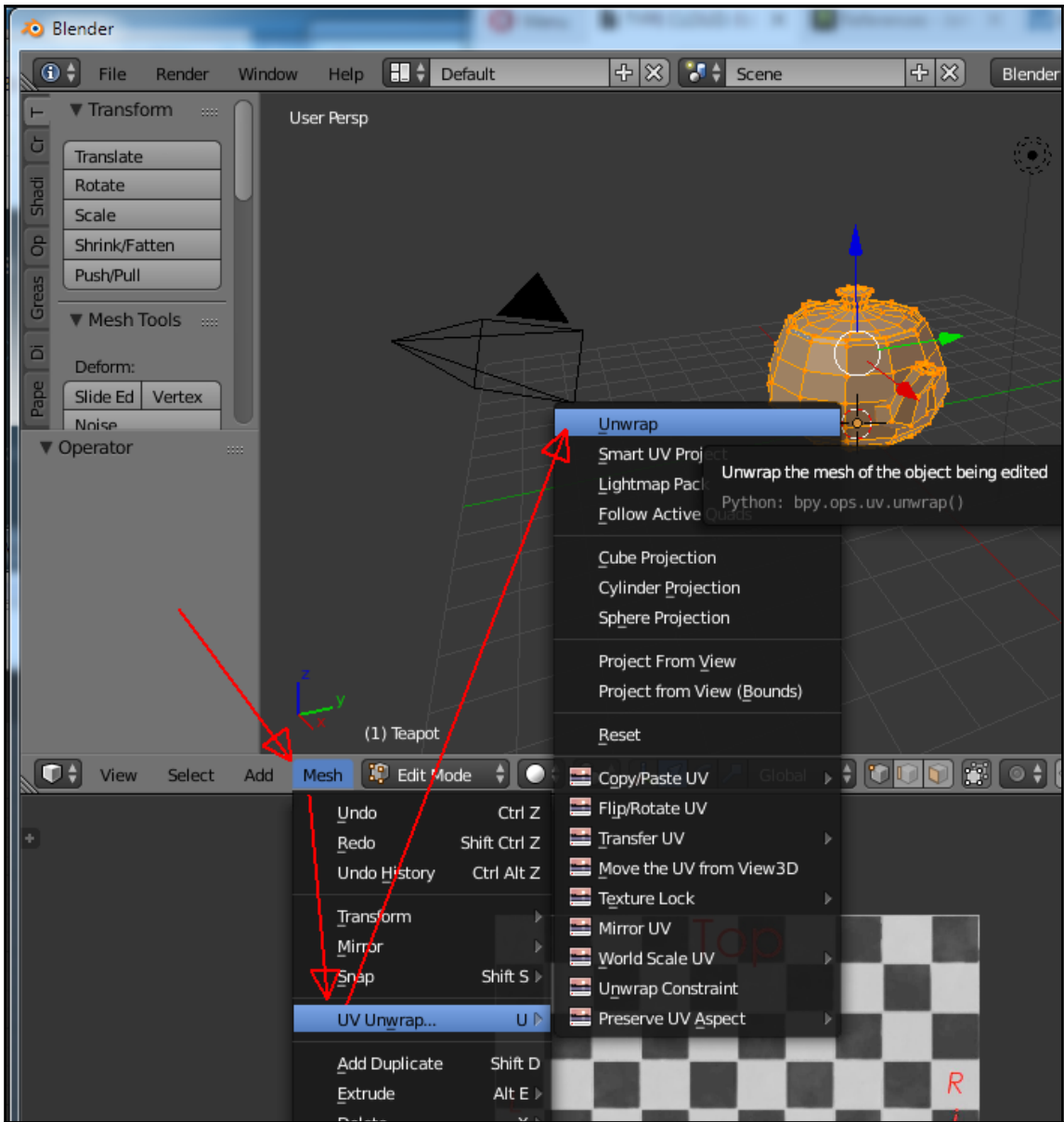


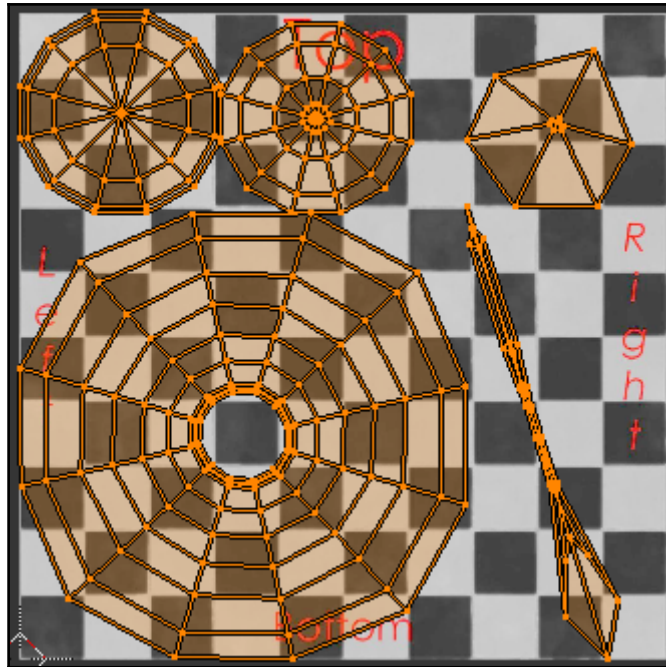


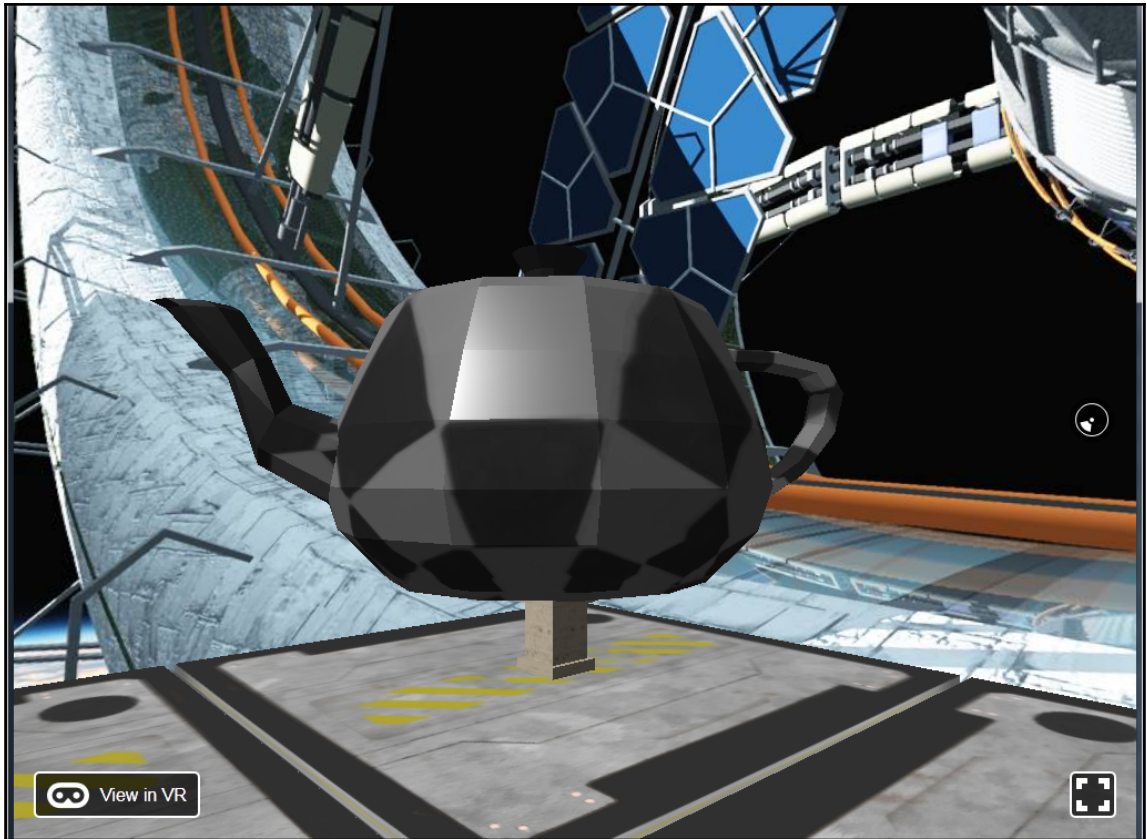


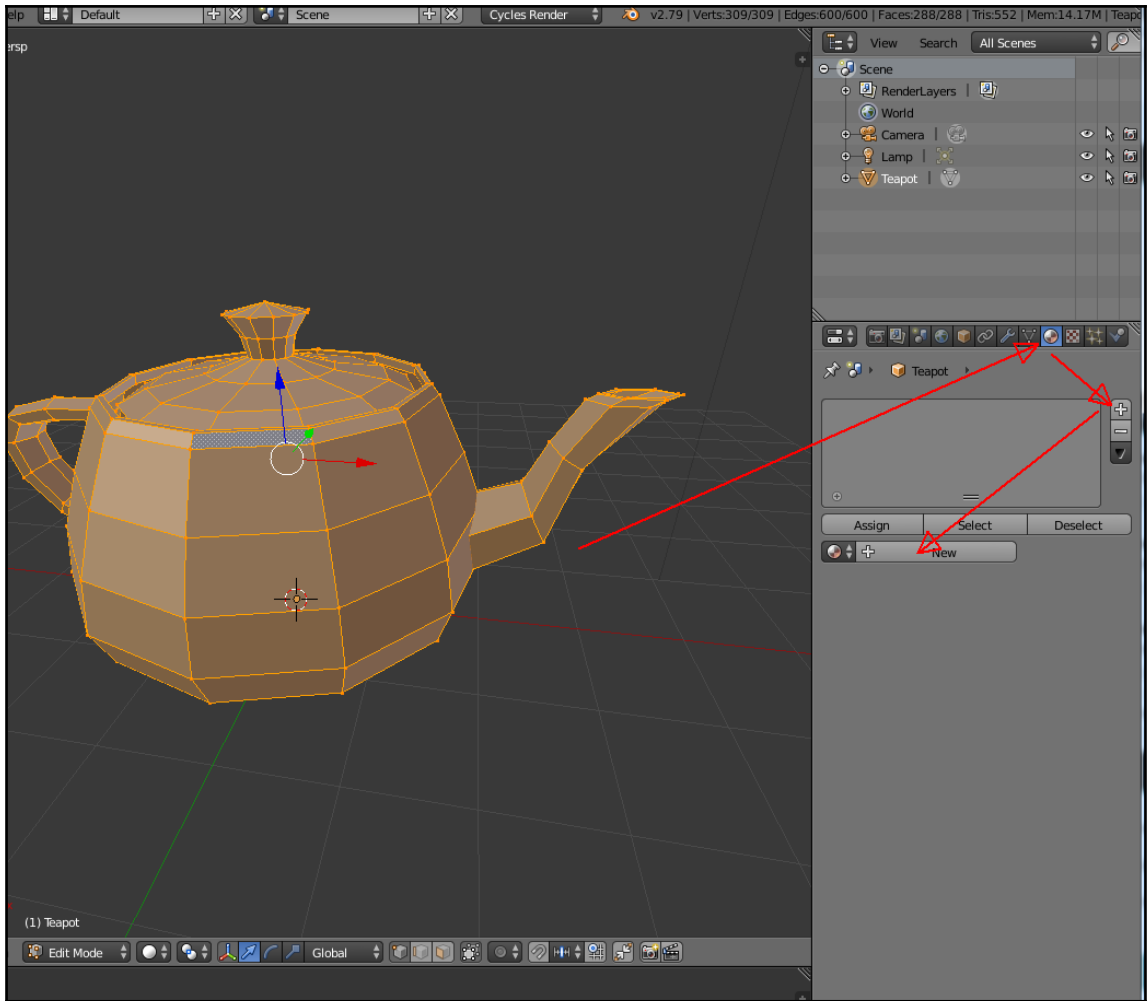


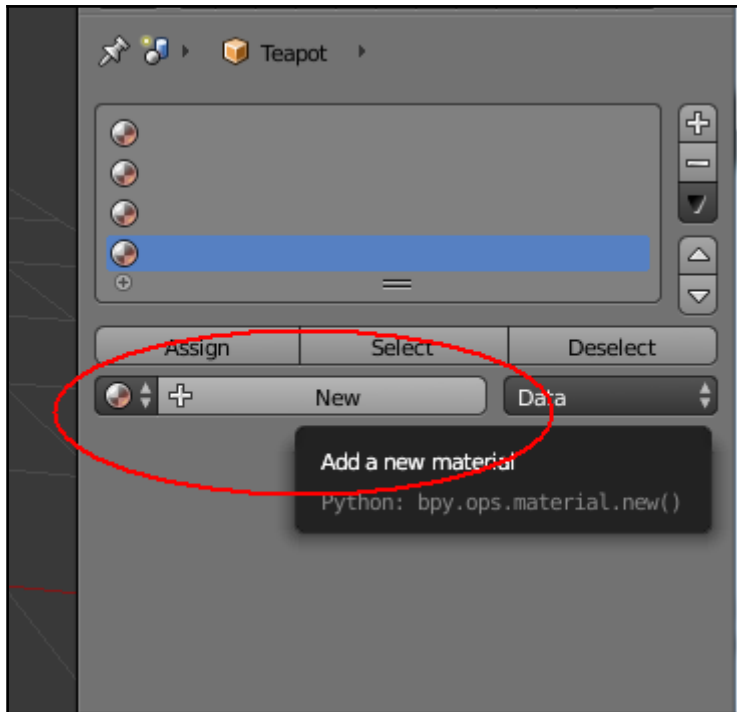


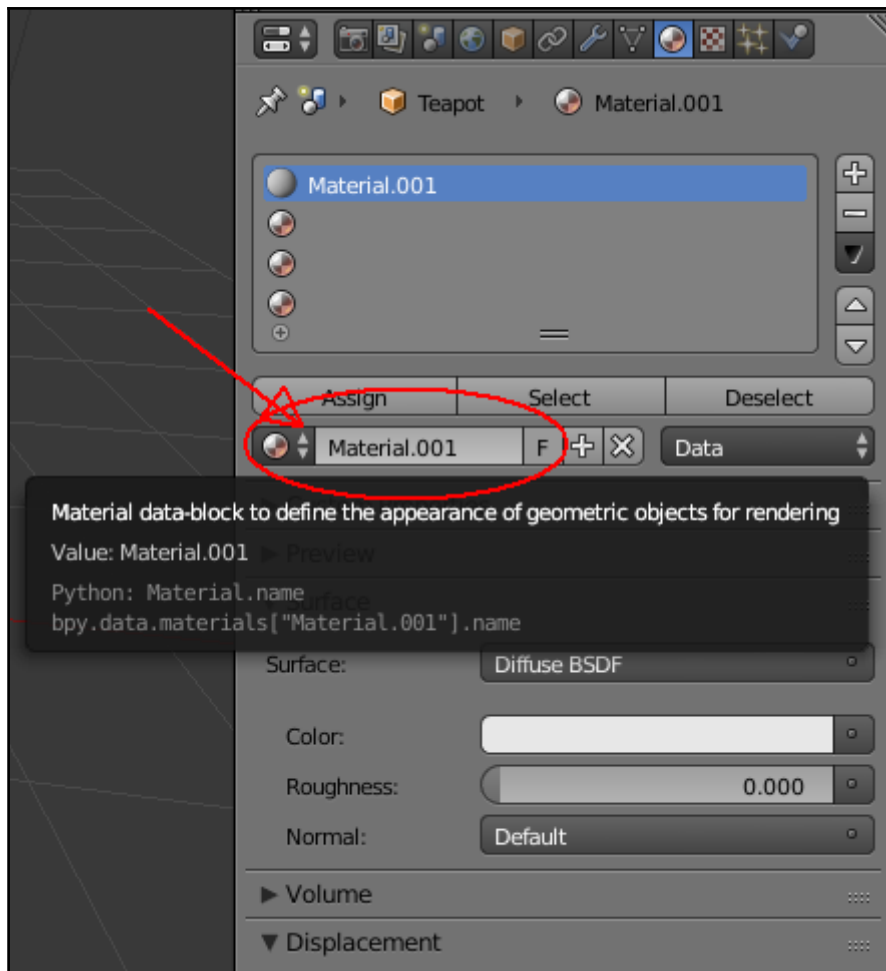


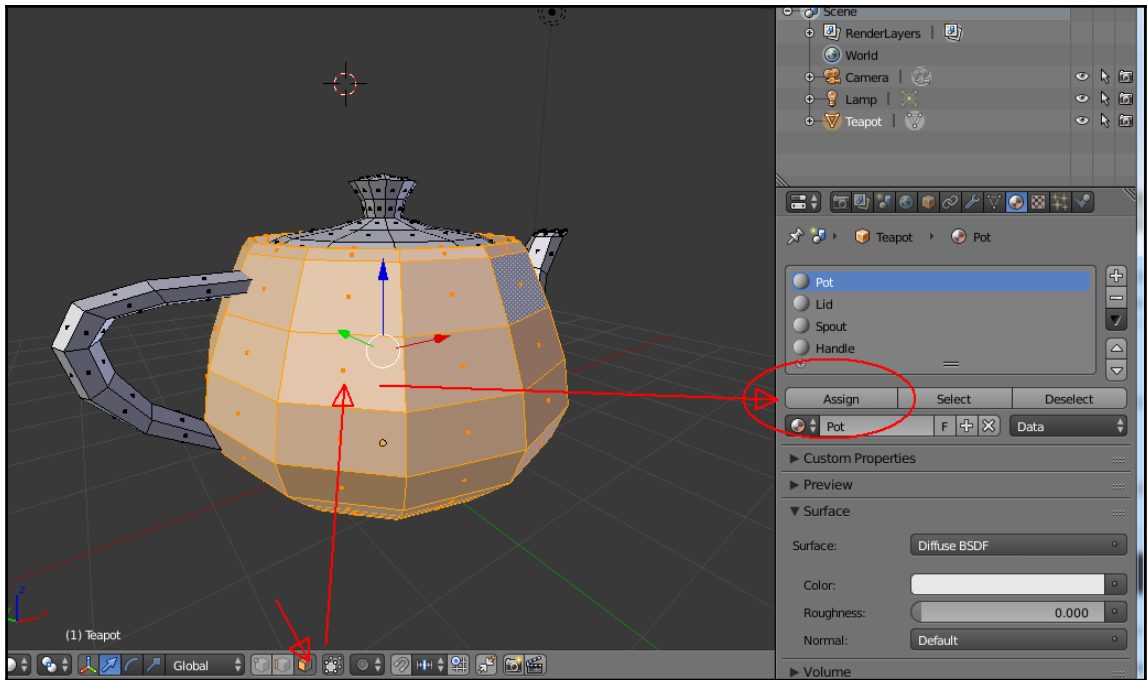


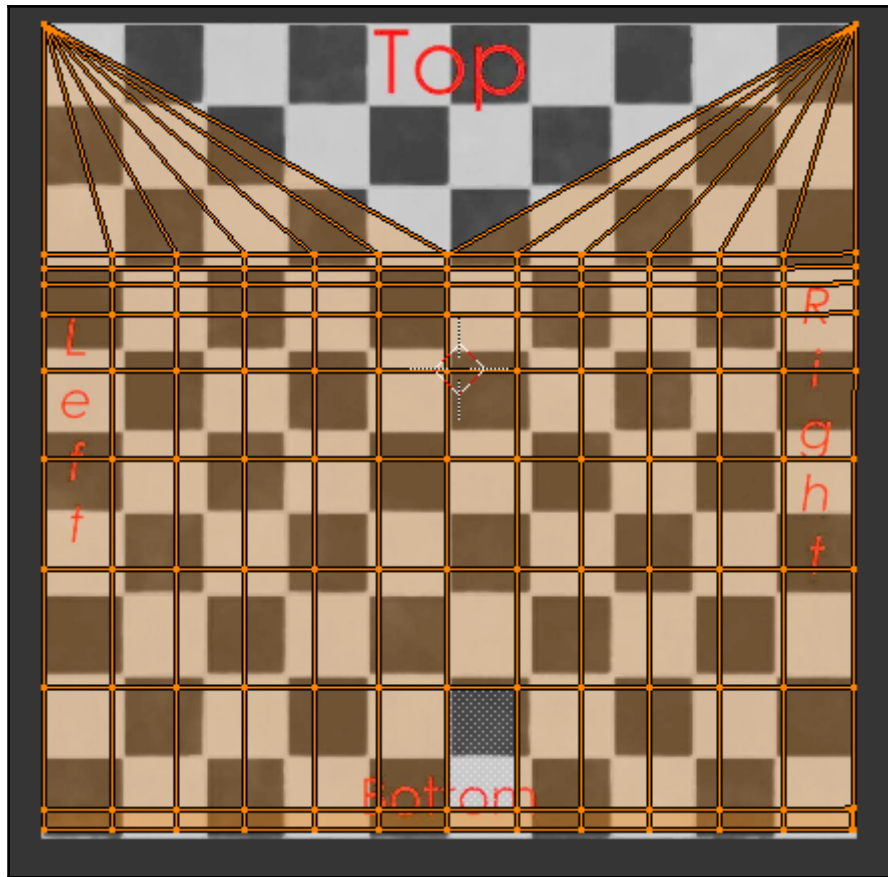


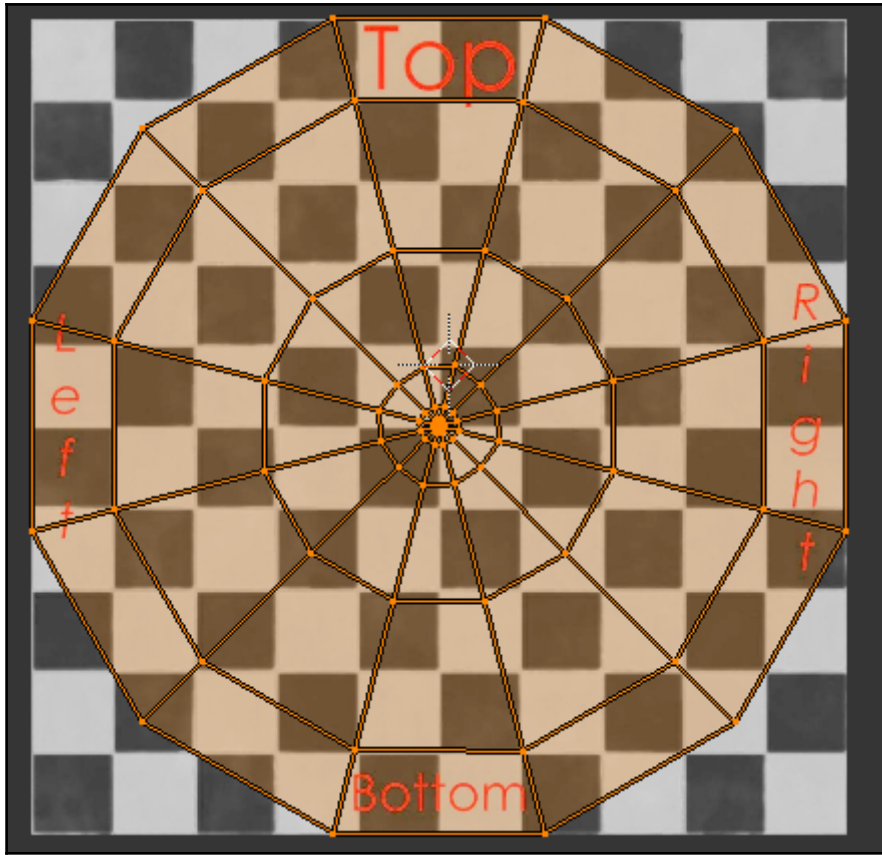


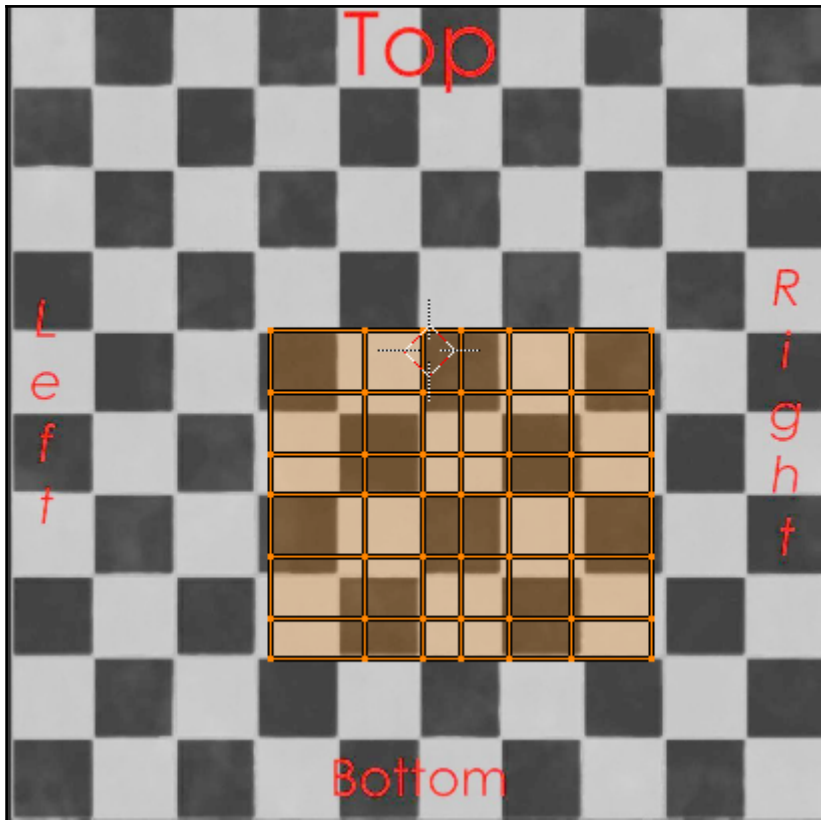


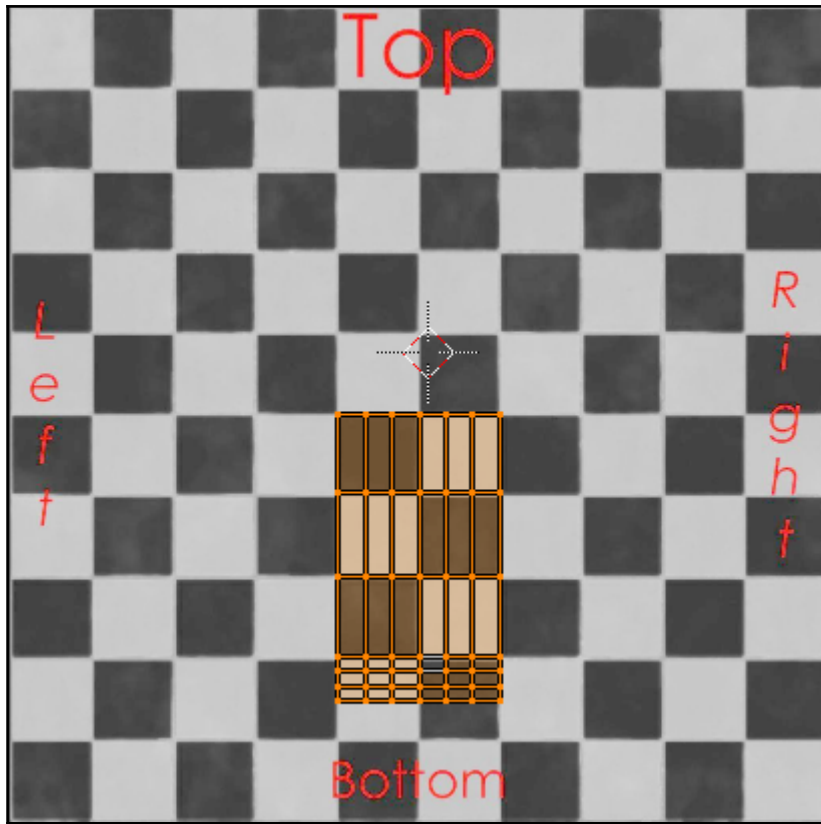


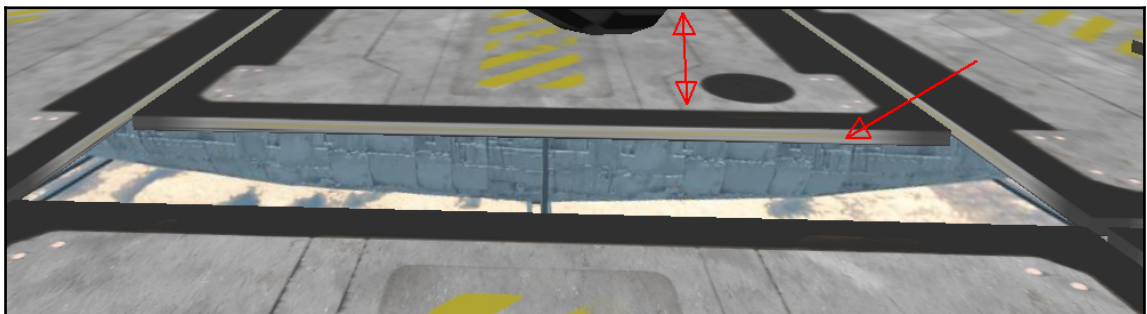
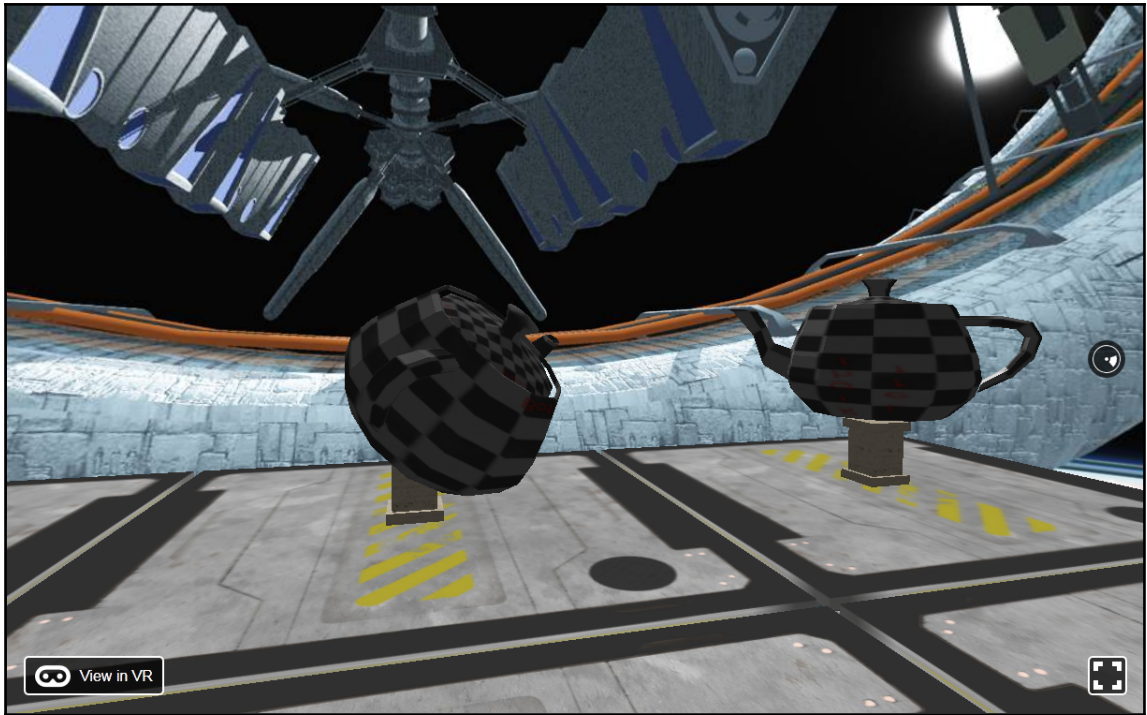


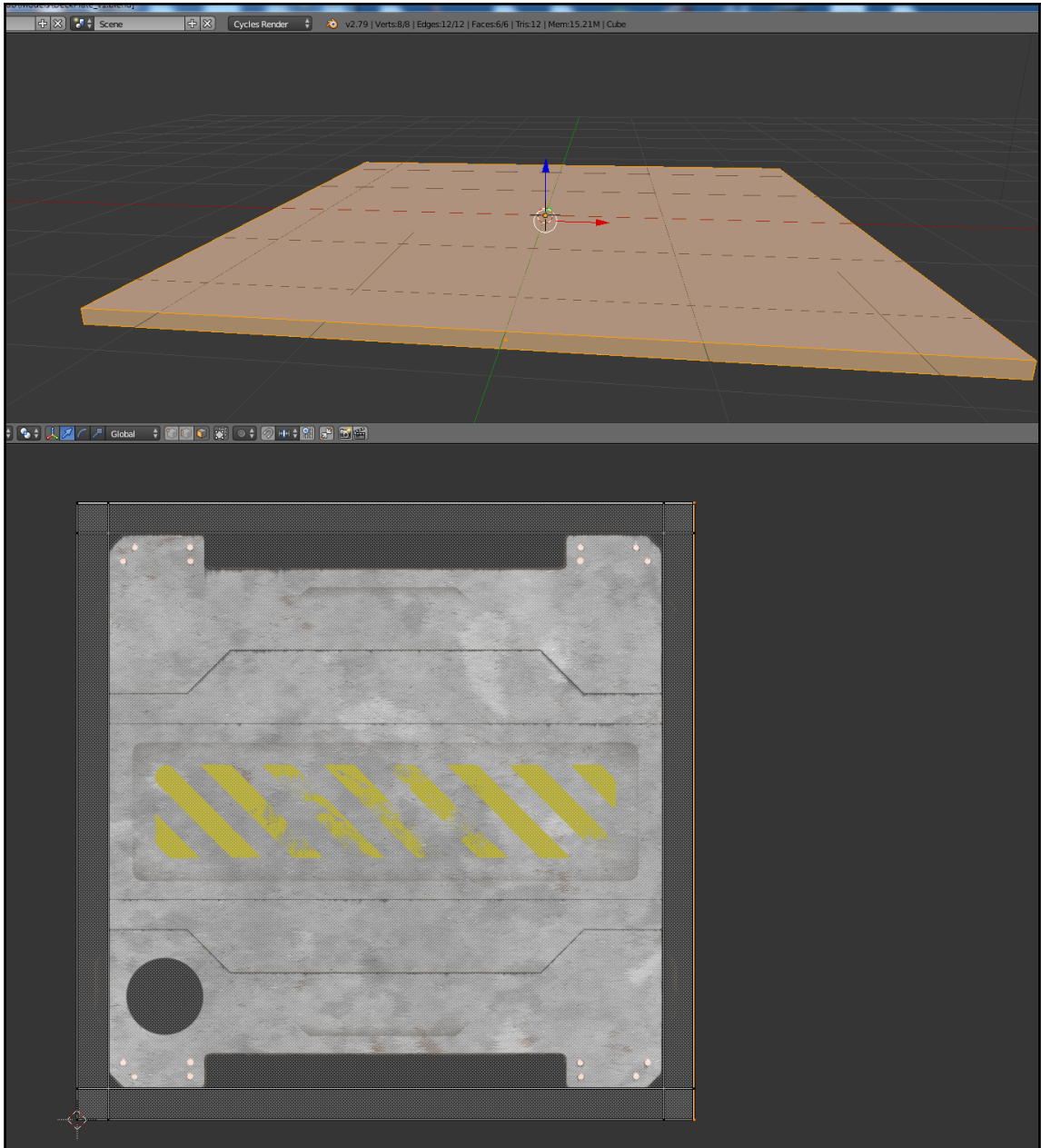


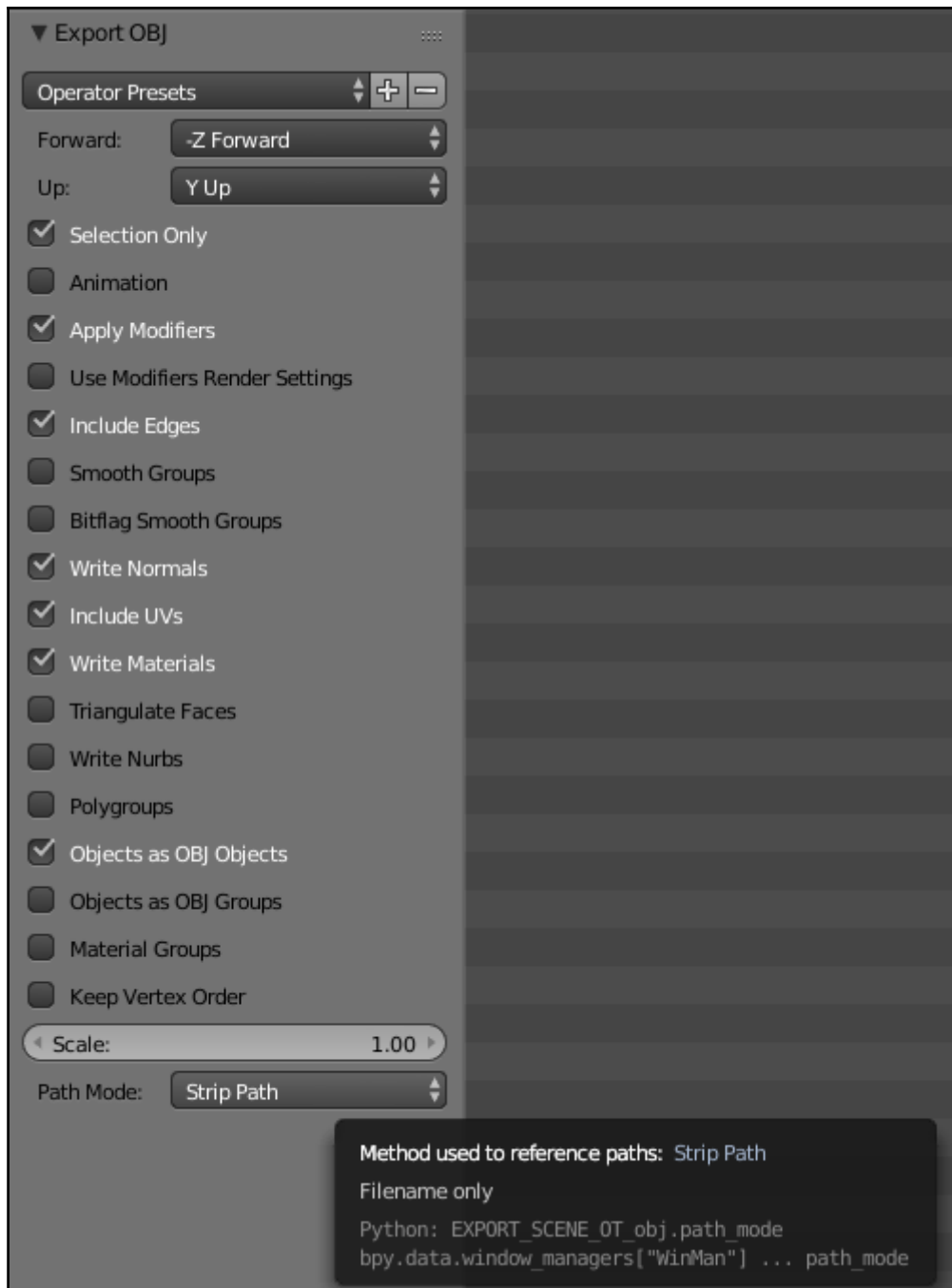




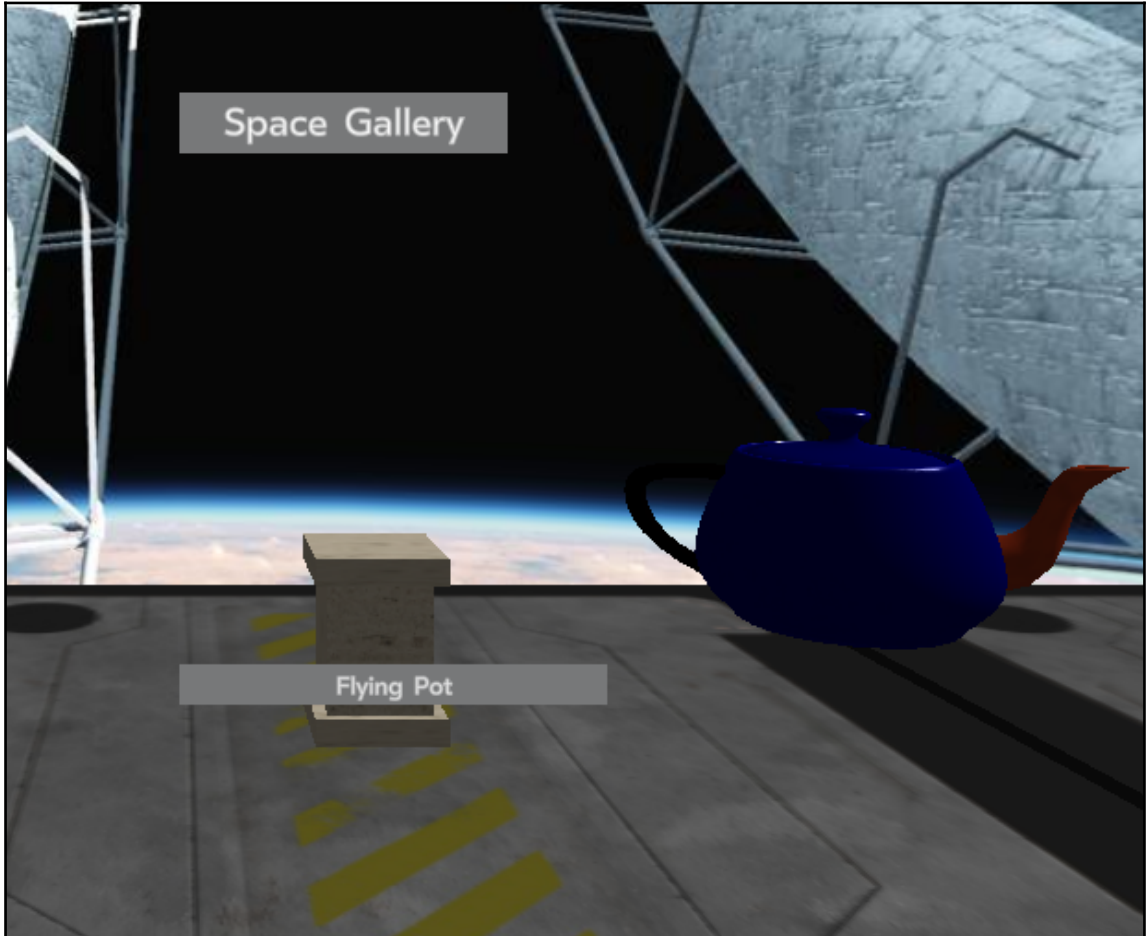






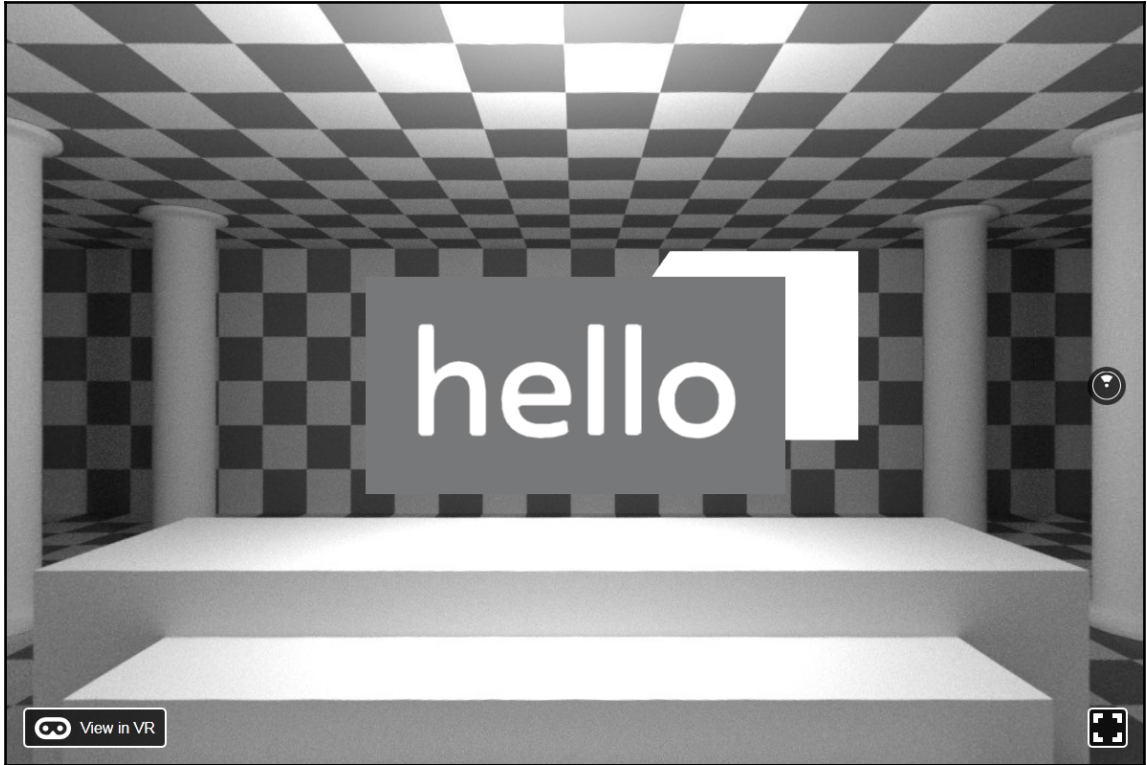


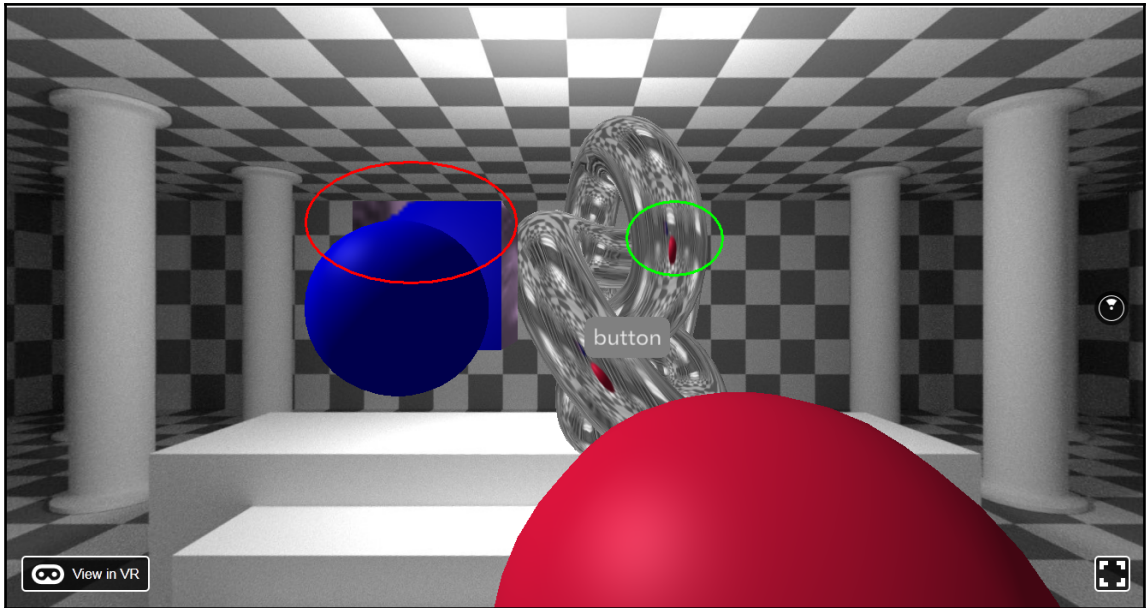
Chapter 8: Breath Life in Your World





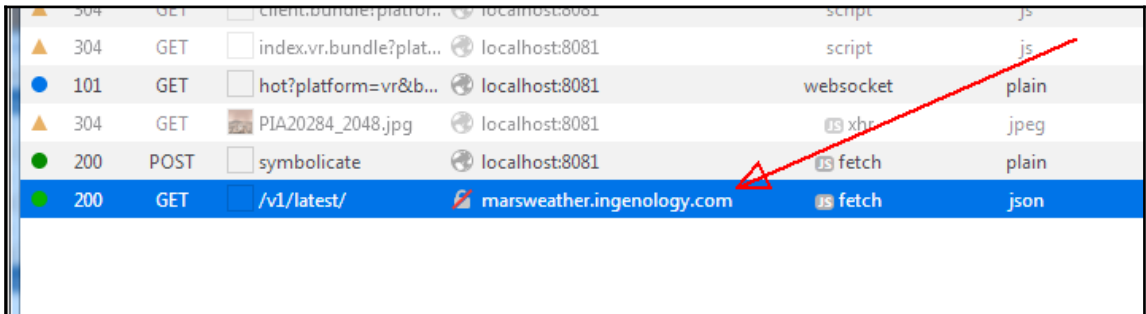
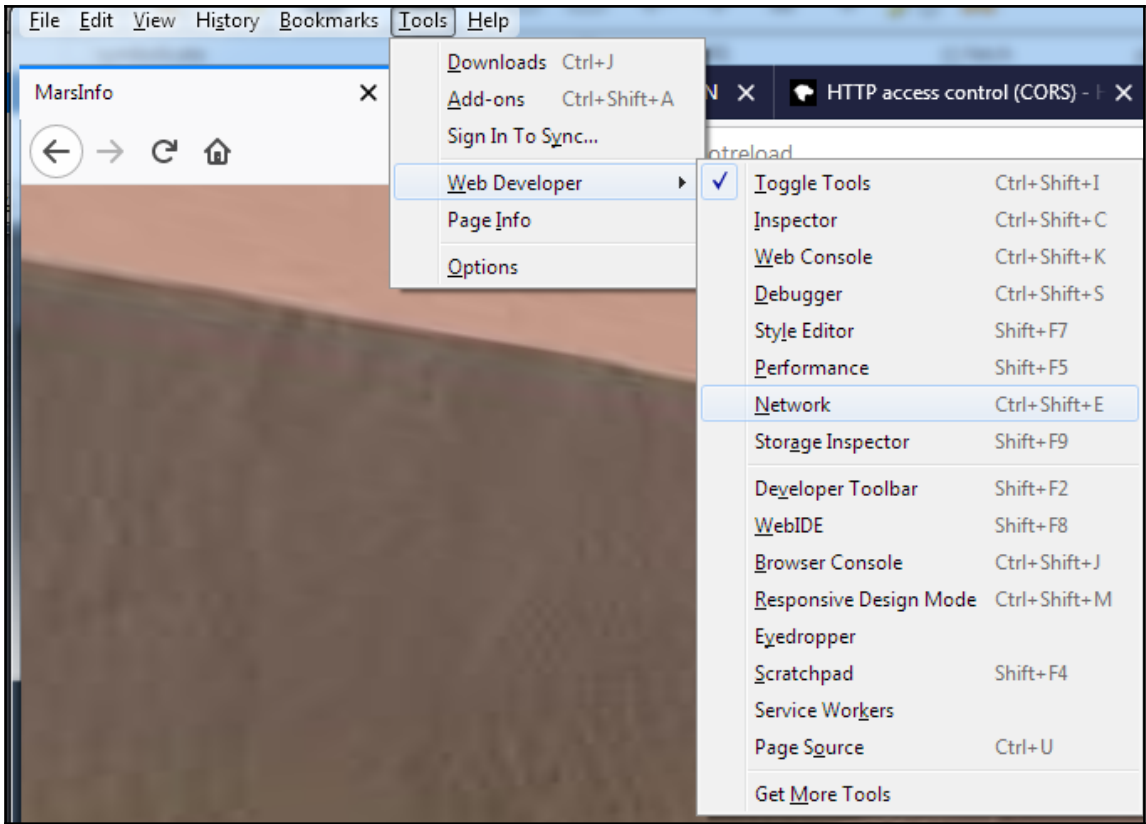
Chapter 9: Do it Yourself—Native Modules and three.js





Chapter 10: Bringing in the Real Live World





```
Render() main thread, photo collection: {...}
  photos: [...]
    [0...99]
      0: {...}
        camera: Object { id: 20, name: "FHAZ", rover_id: 5, ... }
        earth_date: "2015-12-18"
        id: 529979
        img_src: "http://mars.jpl.nasa.gov/msl-raw-images/proj/msl/redops
        rover: {...}
          cameras: Array [ {...}, {...}, {...}, ... ]
          id: 5
          landing_date: "2012-08-06"
          launch_date: "2011-11-26"
          max_date: "2017-10-03"
          max_sol: 1834
          name: "Curiosity"
          status: "active"
          total_photos: 321721
          __proto__: Object { ... }
          sol: 1197
          proto : Object { ... }
```

The screenshot displays the 'Headers' tab of a web browser's developer tools. The request URL is `https://mars.jpl.nasa.gov/msl-raw-images/proj/msl/redops/ods/surf ...` and the method is `GET`. The status code is `200 OK`. The response headers are expanded, showing the following list:

- `accept-ranges: bytes`
- `access-control-allow-methods: GET`
- `access-control-allow-origin: *`
- `access-control-max-age: 3000`
- `cache-control: max-age=36000`
- `content-length: 424689`
- `content-type: image/jpeg`
- `date: Wed, 04 Oct 2017 19:27:29 GMT`
- `etag: "b87376ad0829cc392b10bdccd7fce3ed"`
- `last-modified: Sat, 19 Dec 2015 21:30:13 GMT`
- `server: AmazonS3`
- `via: 1.1 e30ae5b3d9f6779a9b8bc992fa...9.cloudfront.net (CloudFront)`
- `x-amz-cf-id: FNzKS-XlyeqWYpxPowC3bjiUhxLynqYwwgKius_VF86DBUB4yWC1A==`
- `x-cache: RefreshHit from cloudfront`
- `X-Firefox-Spdy: h2`

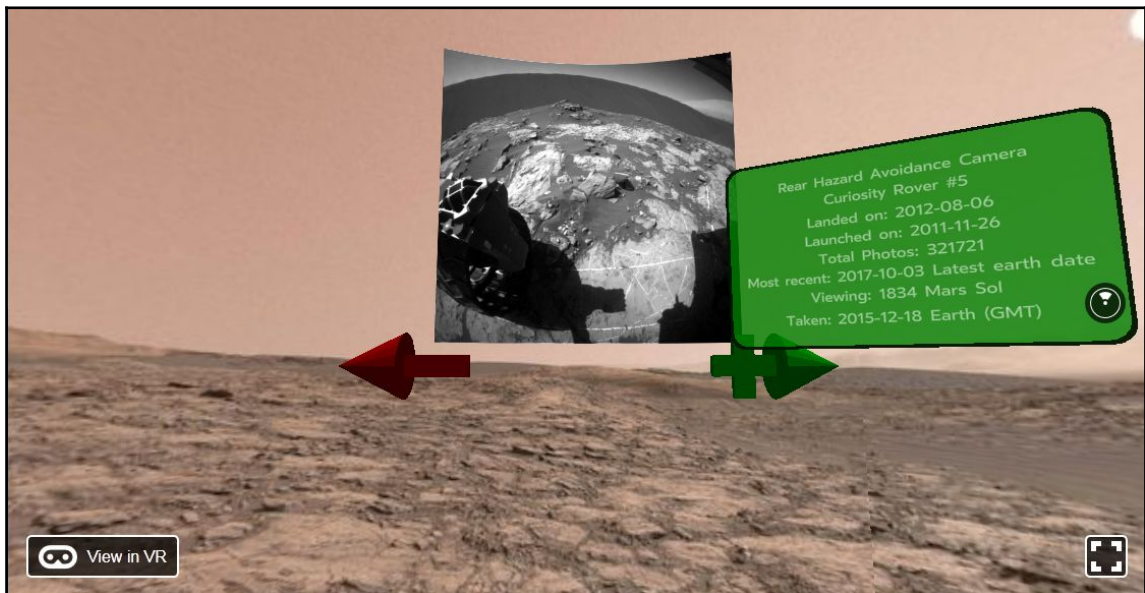
The 'Request headers' section is also visible, showing:

- `Accept: */*`
- `Accept-Encoding: gzip, deflate, br`
- `Accept-Language: en-US,en;q=0.5`
- `Connection: keep-alive`
- `Host: mars.jpl.nasa.gov`
- `Origin: http://localhost:8081`
- `Referer: http://localhost:8081/vr/?hotreload`
- `User-Agent: Mozilla/5.0 (Windows NT 6.1; W...) Gecko/20100101 Firefox/58.0`

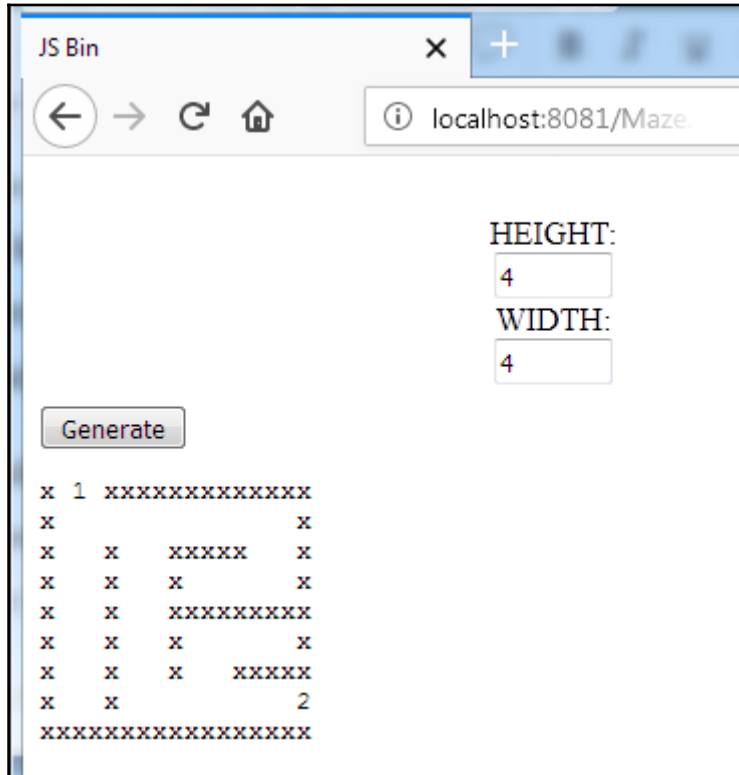
The `access-control-allow-origin: *` header is circled in red in the original image.

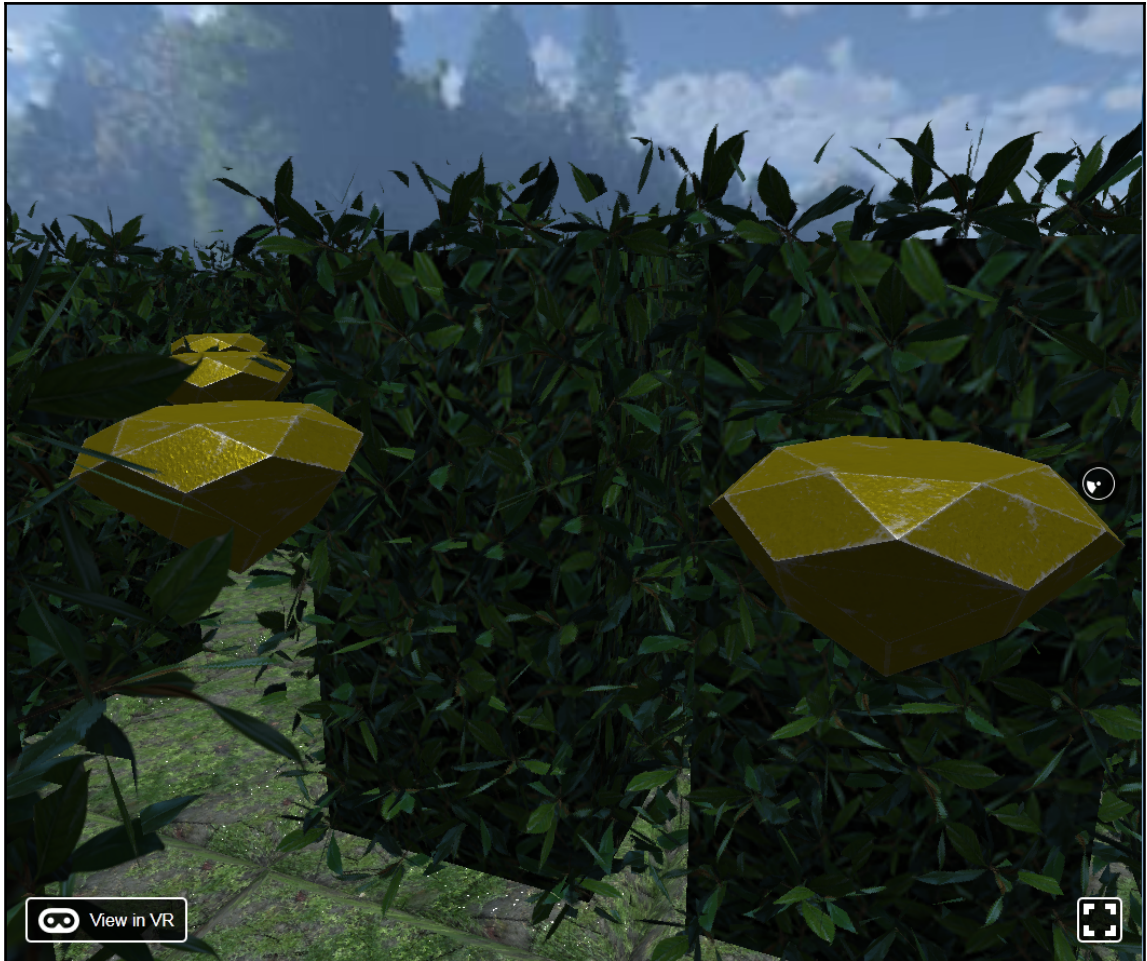

```
Running application "MarsInfo" with appParams: {"initialProps": {}, "rootTag": 1}. __DEV__
Render() main thread, photo collection: { ... }
  photos: []
    length: 0
    __proto__: Array []
  __proto__: Object { ... }
```

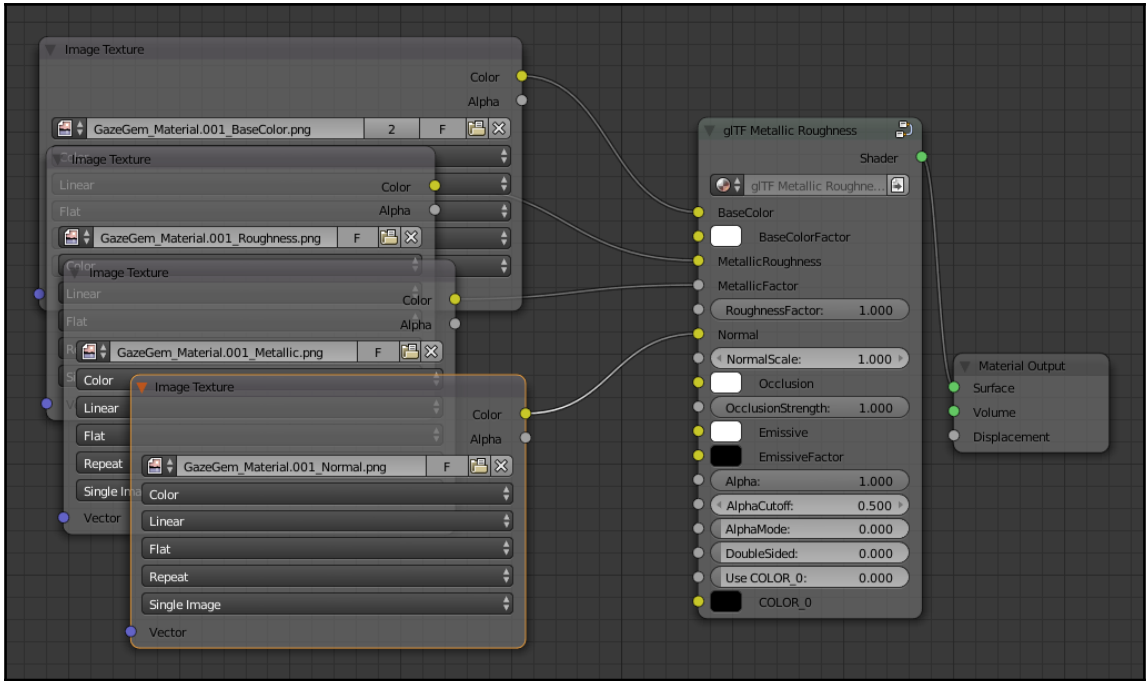
```
Render() main thread, photo collection: { ... }
  photos: [ ... ]
    [0..99]
      0: { ... }
        camera: Object { id: 20, name: "FHAZ", rover_id: 5, ... }
        earth_date: "2015-12-18"
        id: 529979
        img_src: "http://mars.jpl.nasa.gov/msl-raw-images/proj/msl/redops
        rover: { ... }
          cameras: Array [ { ... }, { ... }, { ... }, ... ]
            id: 5
            landing_date: "2012-08-06"
            launch_date: "2011-11-26"
            max_date: "2017-10-03"
            max_sol: 1834
            name: "Curiosity"
            status: "active"
            total_photos: 321721
            __proto__: Object { ... }
          sol: 1197
```

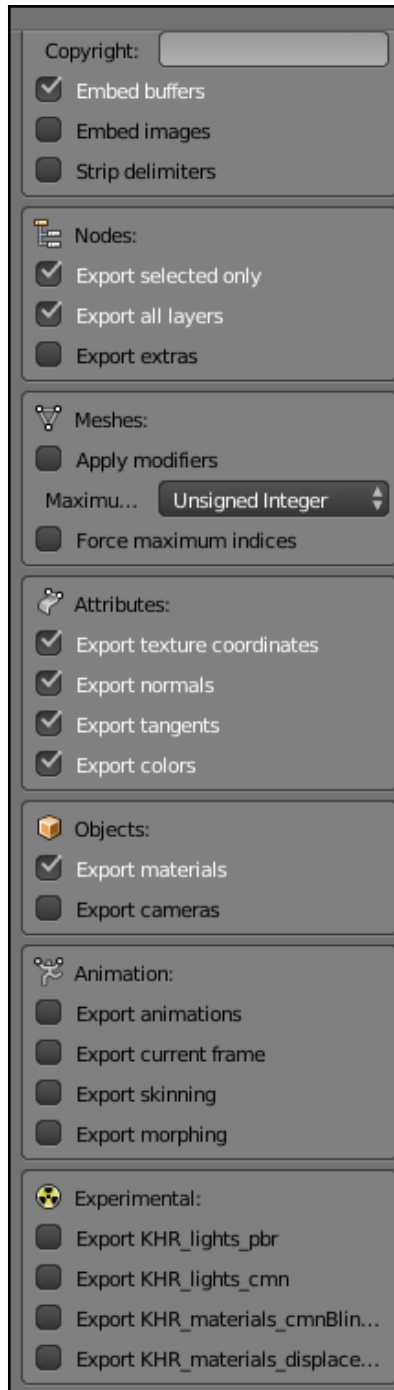


Chapter 11: Take a Walk on the Wild Side









Chapter 12: Publishing Your App, and Where to Go From Here

```
Current CLI version is 0.3.0, but the latest available version is 0.3.5
You can upgrade your CLI with:
npm update -g react-vr-cli
```

```
F:\ReactUR\WalkInAMaze>npm install eslint
npm WARN react-native@0.48.4 requires a peer of react@16.0.0-alpha.12 but none was installed.
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.1.2 (node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.1.2: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})

+ eslint@4.9.0
added 157 packages in 33.425s

F:\ReactUR\WalkInAMaze>eslint --init
? How would you like to configure ESLint? Use a popular style guide
? Which style guide do you want to follow? Airbnb
? Do you use React? Yes
? What format do you want your config file to be in? JavaScript
Checking peerDependencies of eslint-config-airbnb@latest
? The style guide "airbnb" requires eslint@^4.9.0. You are currently using eslint@4.8.0.
Do you want to upgrade? Yes
Local ESLint installation not found.
Installing eslint-config-airbnb@latest, eslint@^4.9.0, eslint-plugin-import@^2.7.0, eslint-plugin-jsx-a11y@^6.0.2, eslint-plugin-react@^7.4.0
npm notice save eslint is being moved from dependencies to devDependencies
npm WARN react-native@0.48.4 requires a peer of react@16.0.0-alpha.12 but none was installed.
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.1.2 (node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.1.2: wanted {"os":"darwin","arch":"any"} (current: {"os":"win32","arch":"x64"})

+ eslint@4.9.0
+ eslint-plugin-react@7.4.0
+ eslint-config-airbnb@16.1.0
+ eslint-plugin-import@2.7.0
+ eslint-plugin-jsx-a11y@6.0.2
added 152 packages and updated 1 package in 41.19s
Successfully created .eslintrc.js file in F:\ReactUR\WalkInAMaze
ESLint was installed locally. We recommend using this local copy instead of your globally-installed copy.
F:\ReactUR\WalkInAMaze>
```

```
F:\ReactUR\WalkInAMaze>npm run bundle
> WalkInAMaze@0.1 bundle F:\ReactUR\WalkInAMaze
> node node_modules/react-vr/scripts/bundle.js

Loading dependency graph, done.
Loading dependency graph, done.
bundle: start
bundle: finish
bundle: Writing bundle output to: F:\ReactUR\WalkInAMaze\vr\build\index.bundle.js
bundle: Done writing bundle output
bundle: start
bundle: finish
bundle: Writing bundle output to: F:\ReactUR\WalkInAMaze\vr\build\client.bundle.js
bundle: Done writing bundle output
Production versions were successfully built.They can be found at F:\ReactUR\WalkInAMaze\vr\build
F:\ReactUR\WalkInAMaze>
```