X-Ray: A Photorealistic Rendering System

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Computer graphics

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- Volume defined by density values (binary or not) at discrete points in a 3D scalar field (voxels).

Rendering Algorithms

A major distinction in graphics algorithms: real-time vs off-line rendering.

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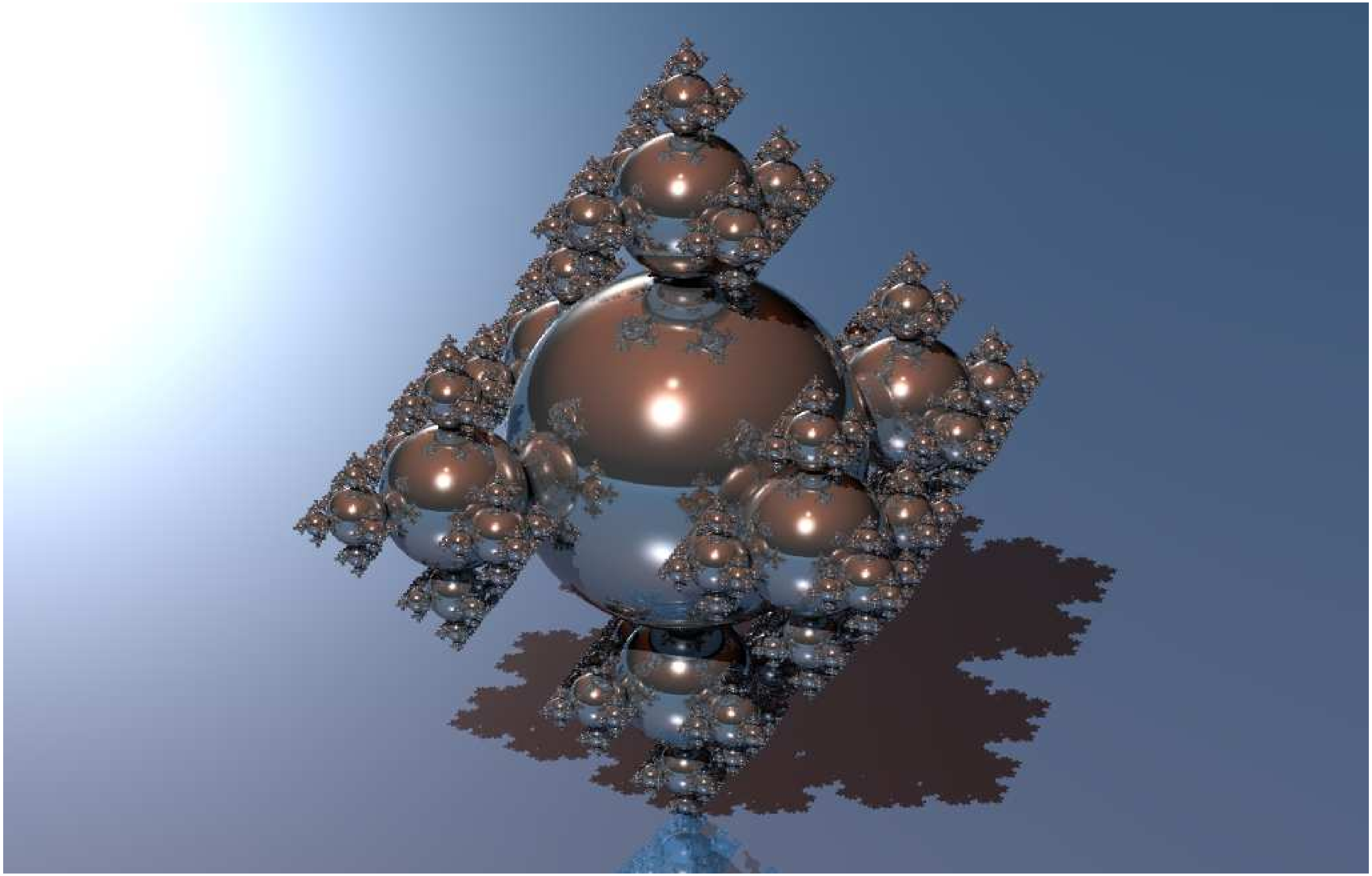
“*The most widely used algorithm?*”

Ray Tracing



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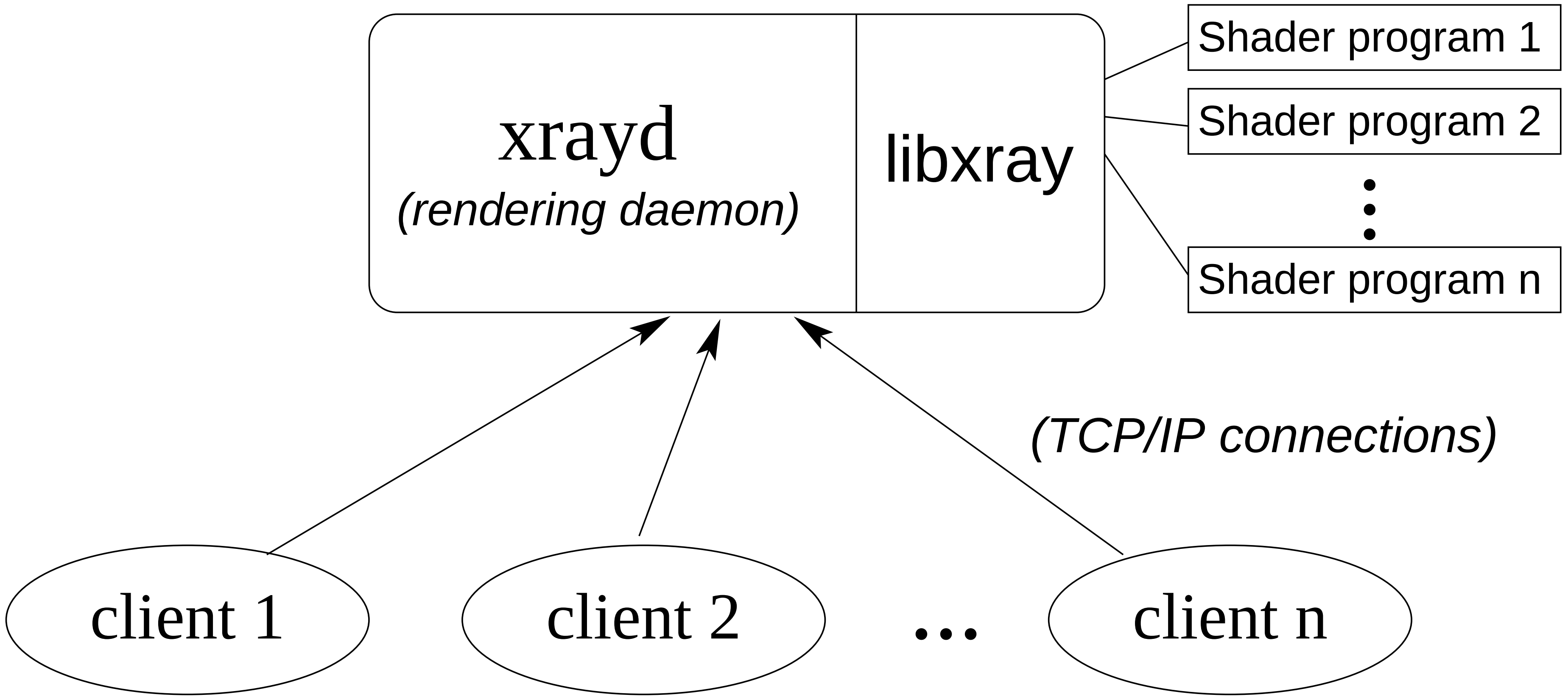
- Free Software, released under the GNU General Public License.

X-Ray Architecture

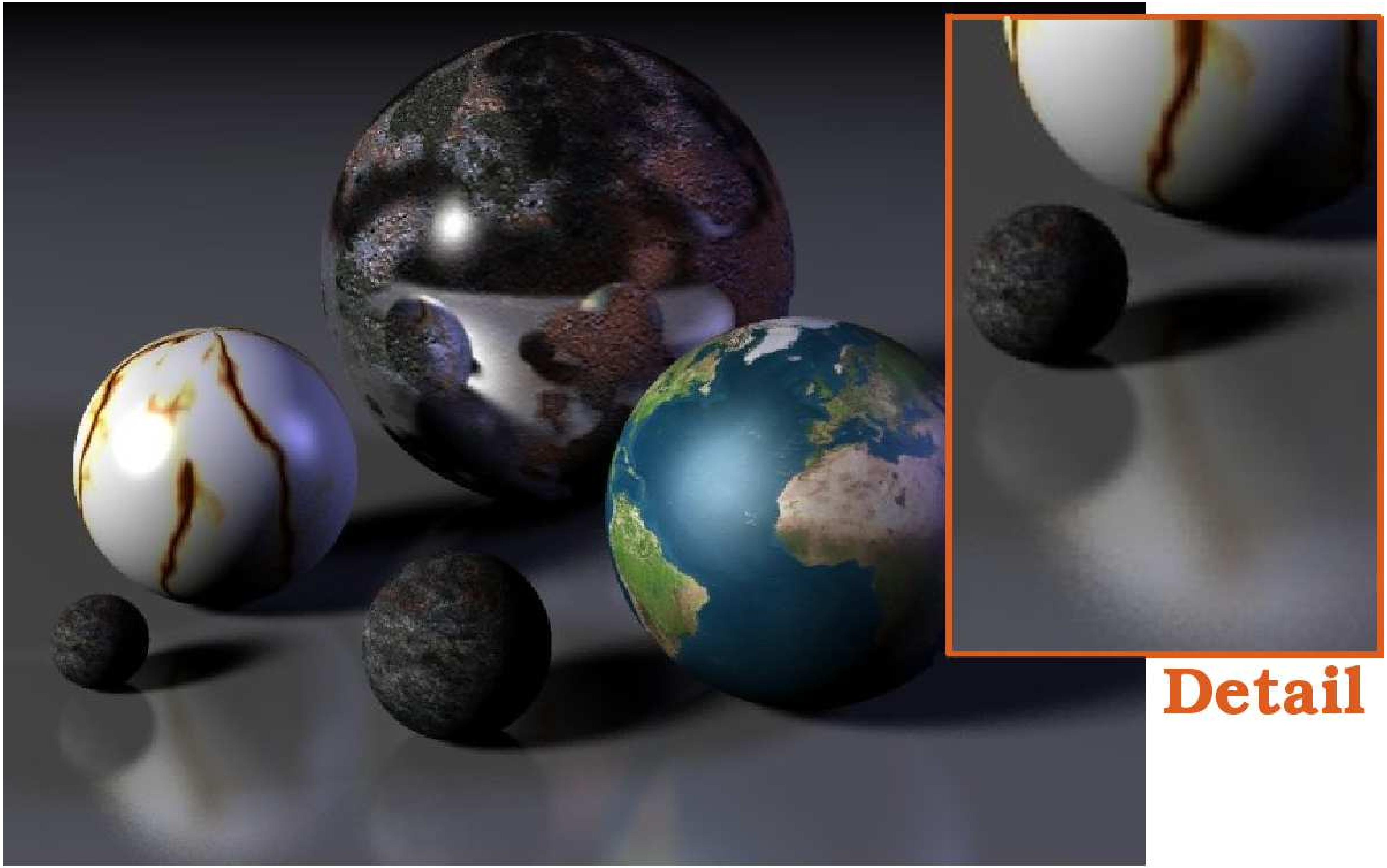


Scene Description

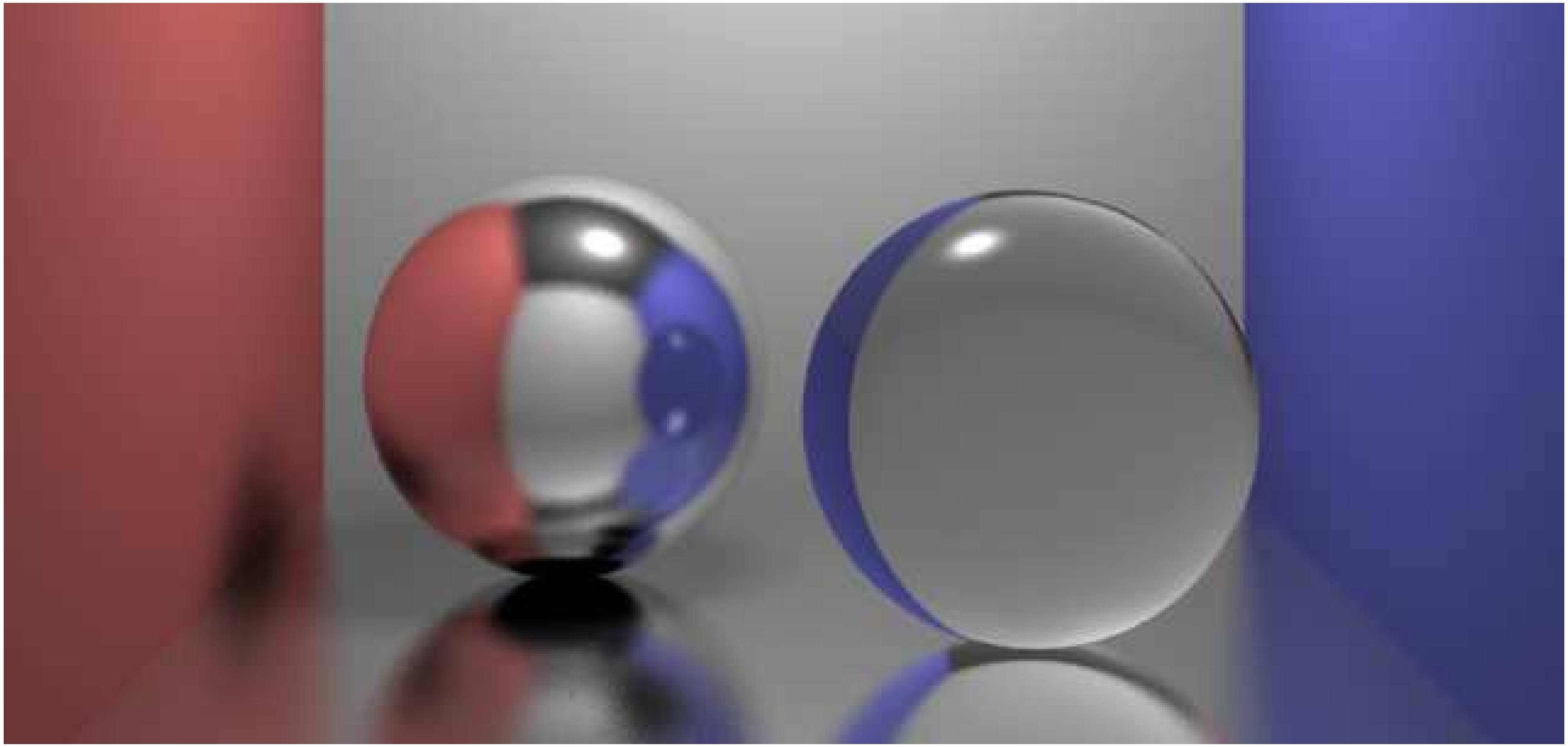
A custom XML file format was designed, as a scene input format for X-Ray.

```
<scene name="example scene">
  <mat-list>
    <material name="Material01" shader="phong.cc"/>
      <attr name="diffuse" val="1, 0.3, 0.1" tex="foo.png"/>
      <attr name="shininess" val="50"/>
    </material>
  </mat-list>
  <object name="ball">
    <matref ref="Material01"/>
    <xform pos="0, 0, 0"/>
    <sphere rad="1"/>
  </object>
  <light name="light01" type="point" pos="-10, 6, -10"/>
  <camera name="cam01" pos="0, 5, -8" target="0, 0, 0" fov="45"/>
</scene>
```

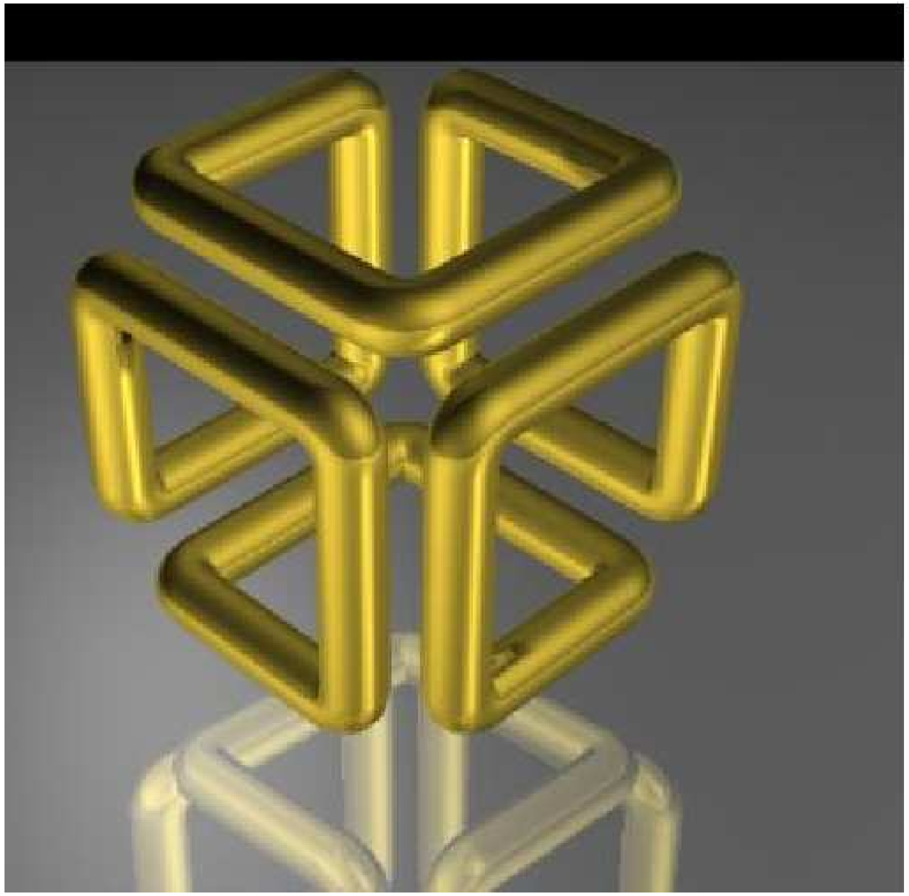
Sample Renderings (1)

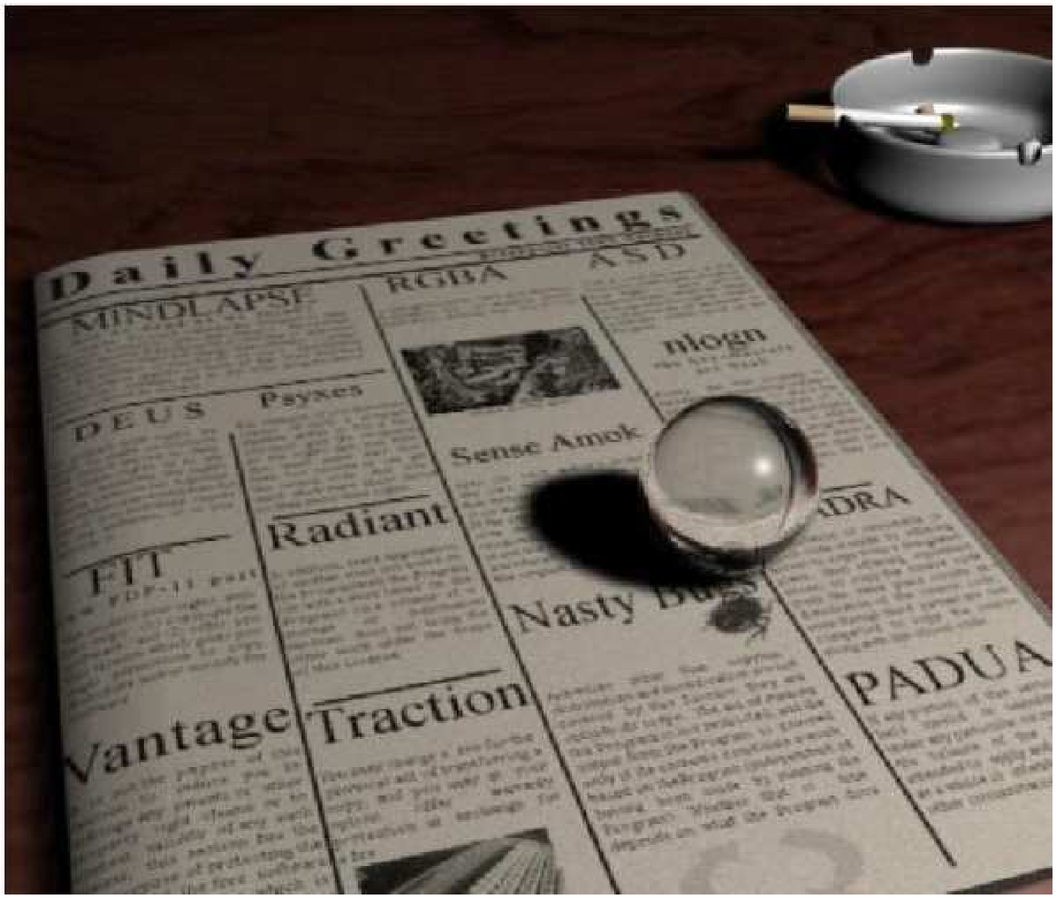


Sample Renderings (2)



Sample Renderings (3)





The End