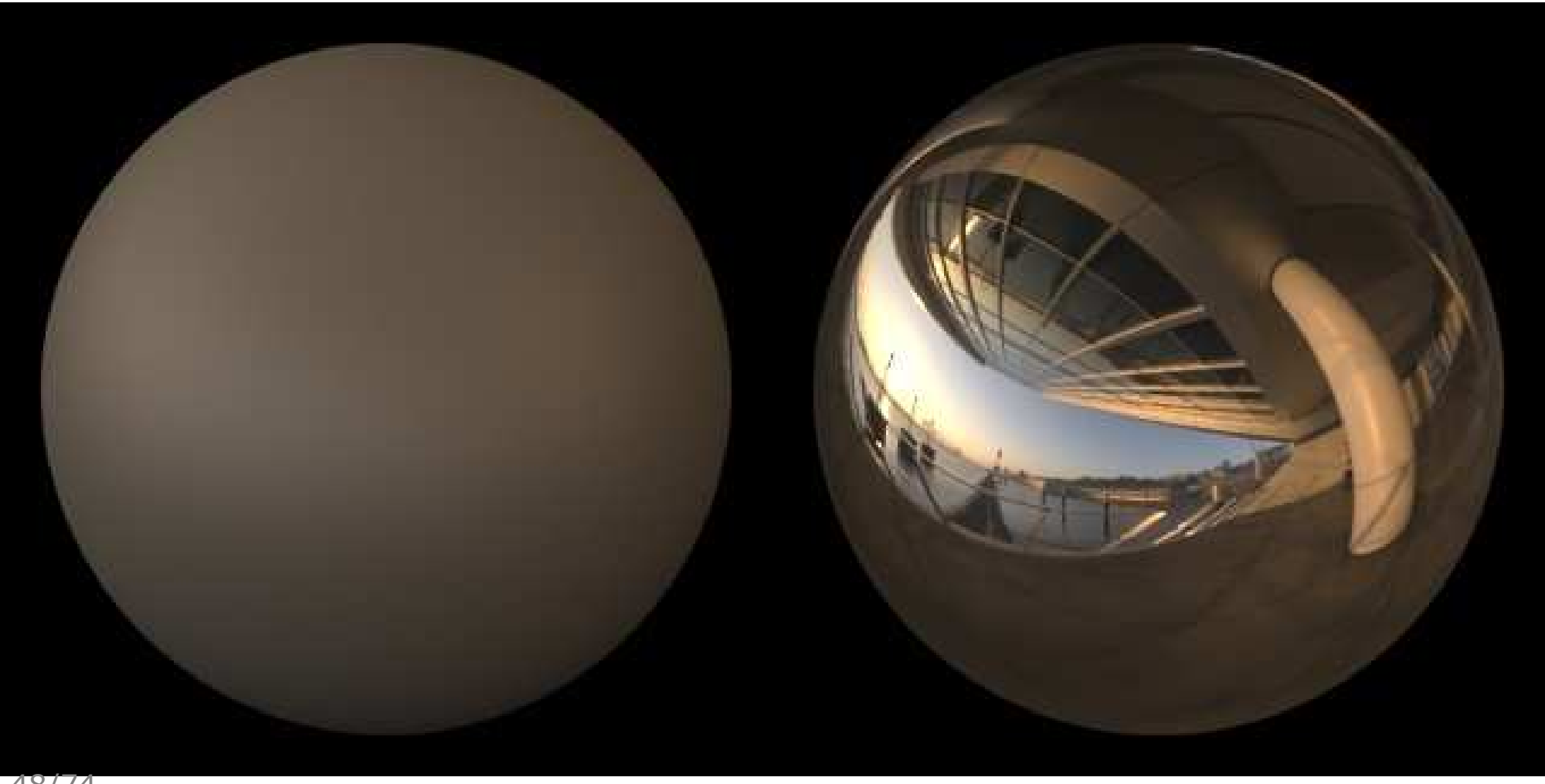
How can we achieve the below reflection ?



Possible Solution ?

We could create a model with all artefacts needed

But this would make the rendering VERY costly

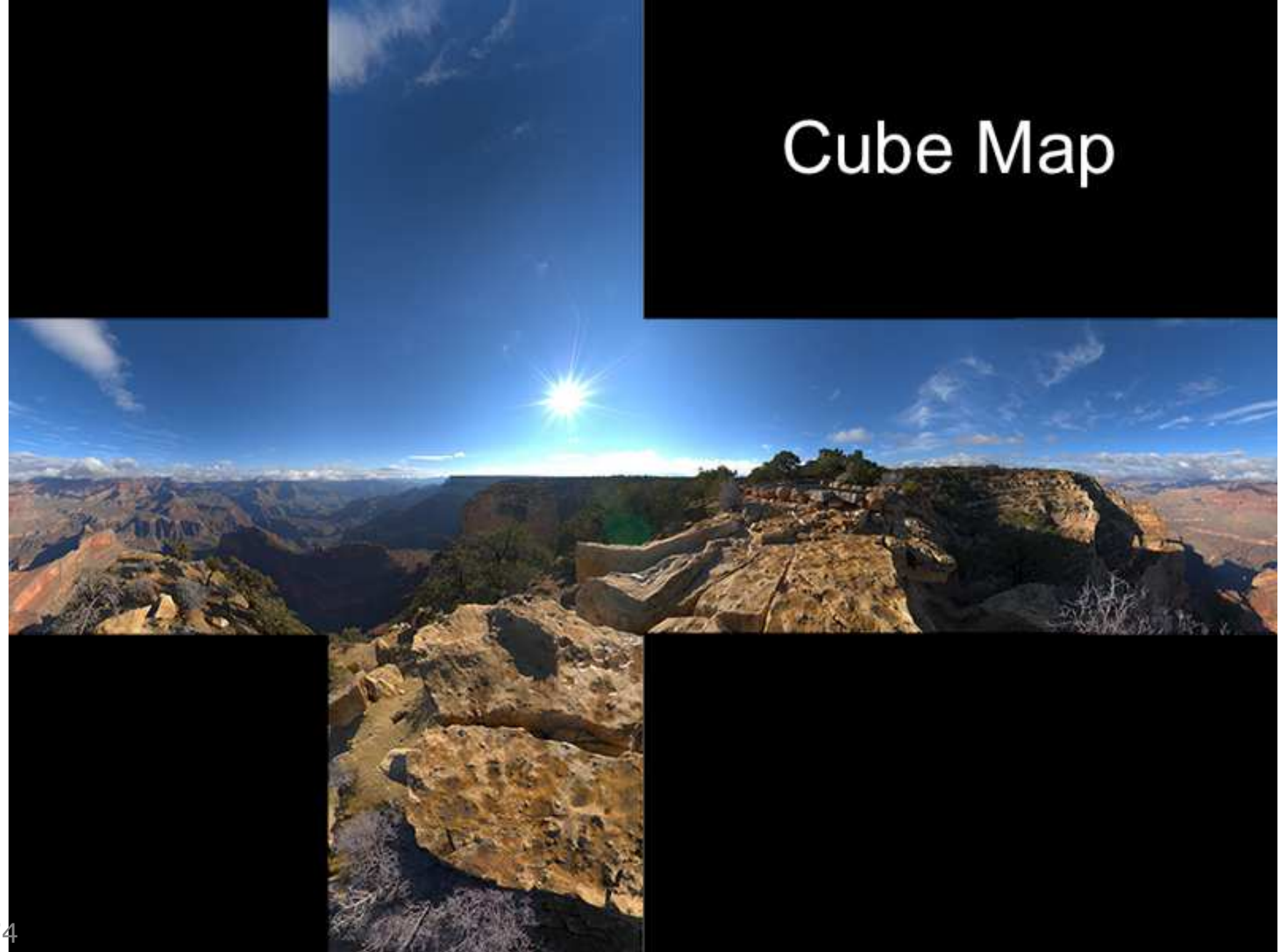
Especially if we wanted an elaborate reflection...

Environment Map

One answer is to use an "Environment Map"
A flat 2D image containing all reflection pixels
(A bit like a texture map, but for reflections !)

This image is basically what the world looks like,
from the point-of-view of the mirrored artefact

Easiest way to capture this is to take 6 photos:
UP, DOWN, LEFT, RIGHT, FRONT, BACK...


Cube Map

Applying a Cube Map

Basic principle: put mirrored artefact INSIDE cube

Bounce a ray off the mirror and onto the cube map

Calculate where the reflected ray intersects with it

The cube map is conceptually positioned at infinity

If there are any artefacts near the mirror,

the colour of these override the environment map

Problem

Although cube maps are a quick and simple way
To achieve an environment reflection on a surface
They are a fairly crude mechanism

You have probably already sensed
That a flat sided cube does not provide
A particularly good all-round view...

"Corner" problem: those steps are straight !

Solution: Spherical Map

More Complex Algorithm

Obviously, calculating a ray intersection with a spherical envelop that surrounds a model

AND THEN
Mapping that intersection point onto a flat 2D texture map

Is going to be a bit more complex than the flat sides of a cube...