

CG

an almost factual account of the
history of computer graphics

a long long time ago ...

before buzz ...

before quake ...

before microslot windows ...

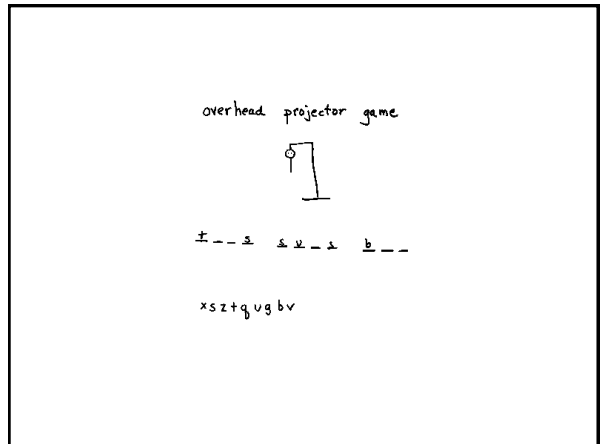
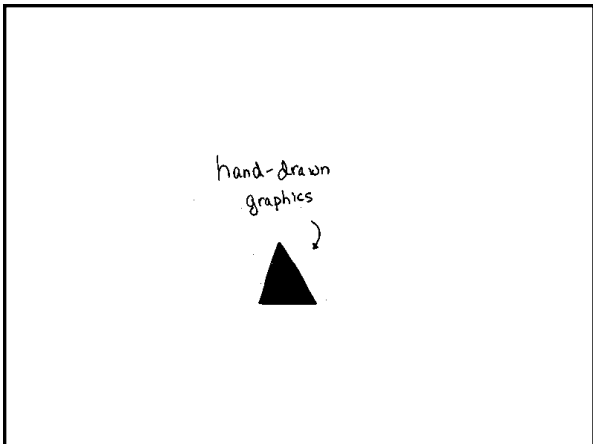
before most of you were born ...

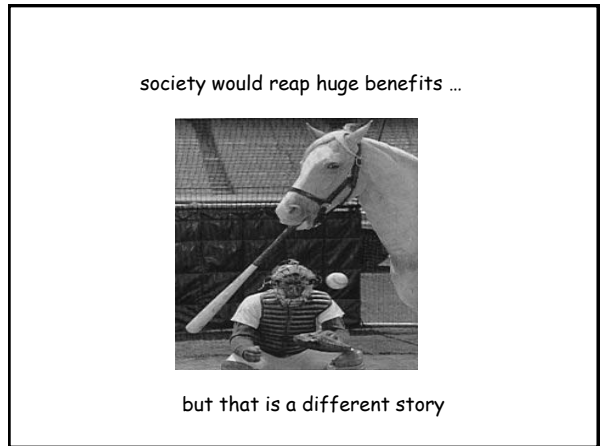
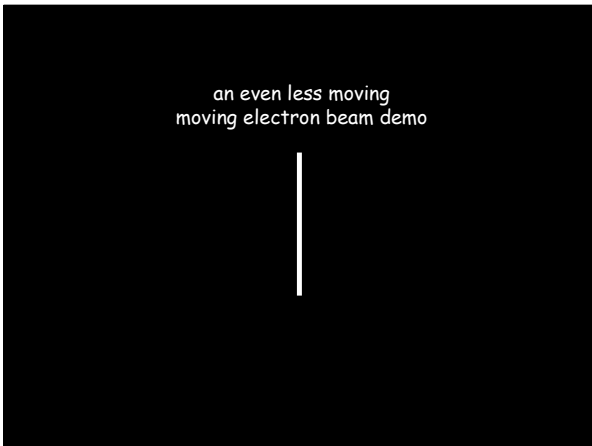
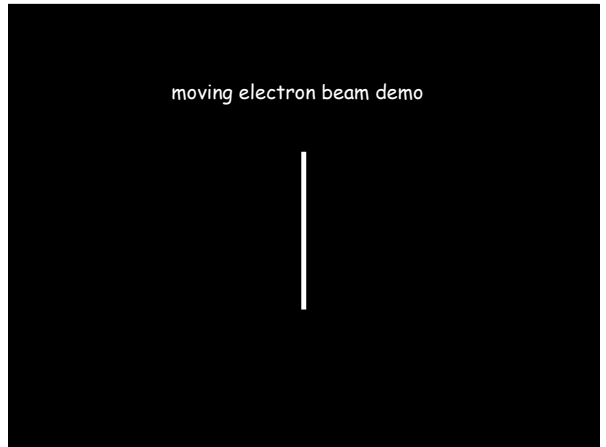
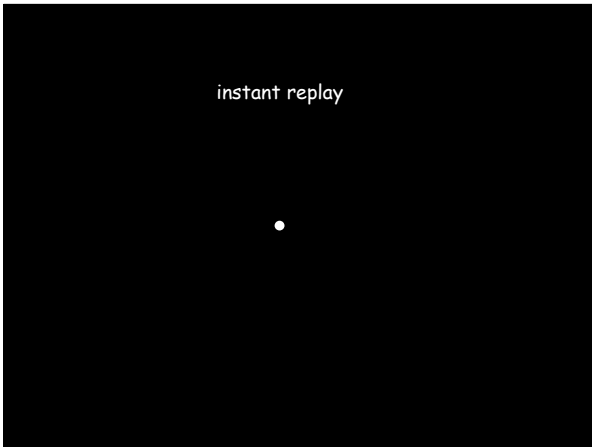
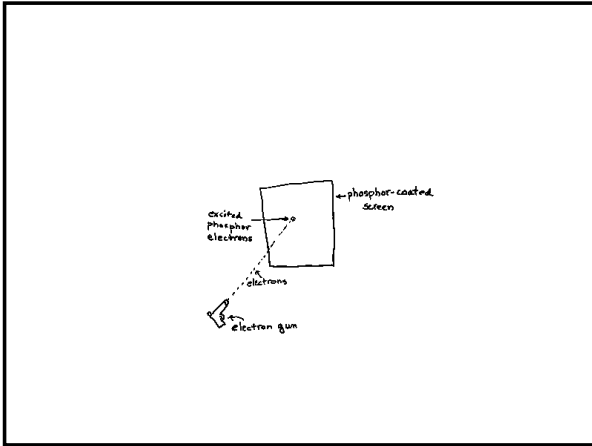
the world existed without computer graphics

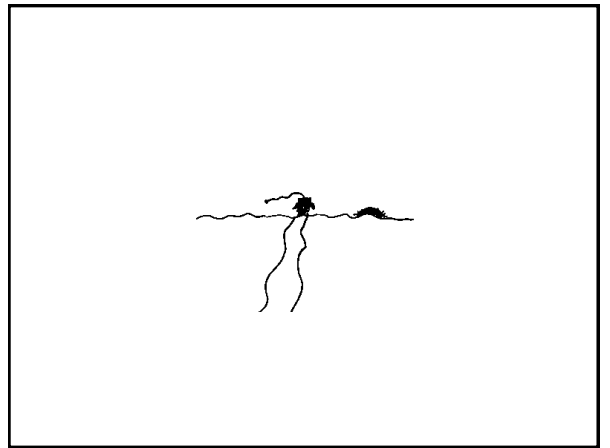
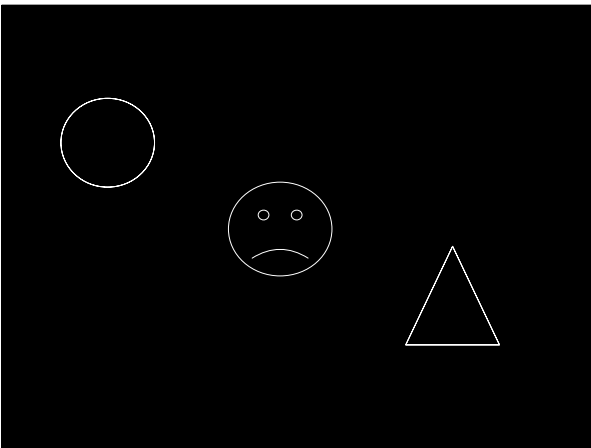
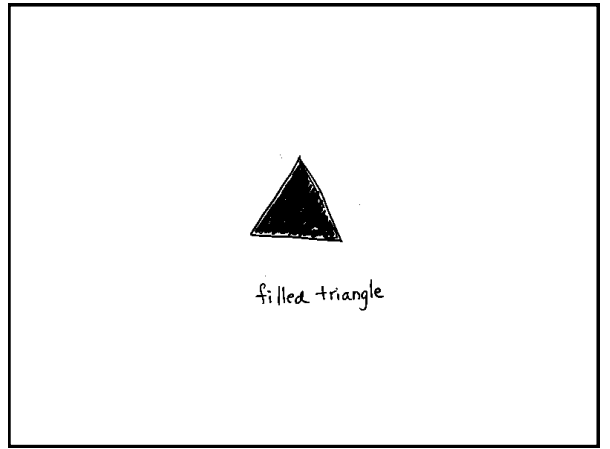
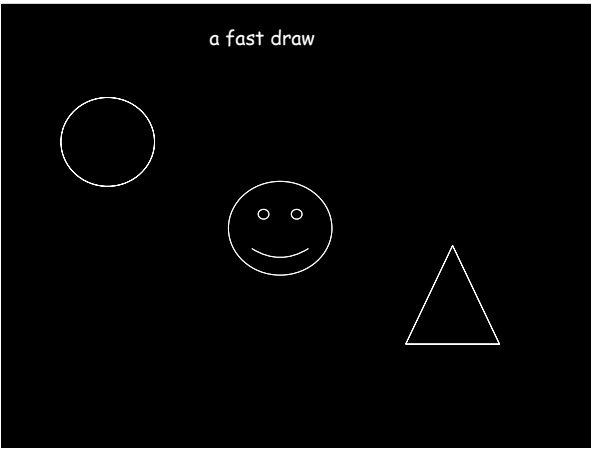
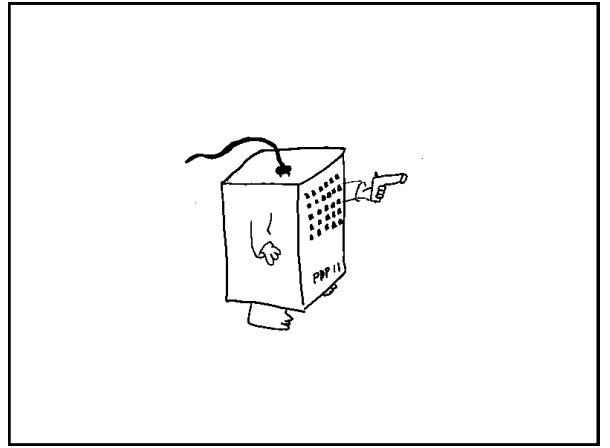
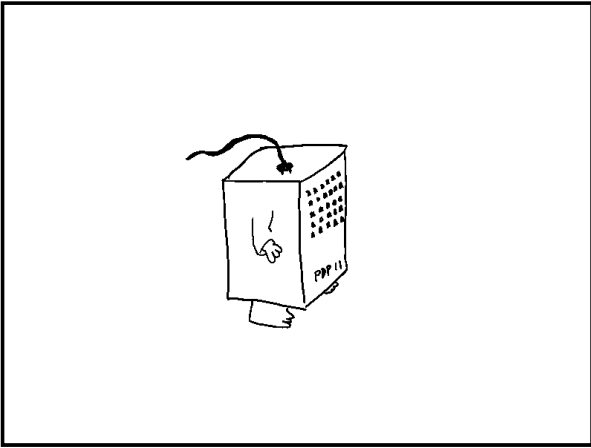
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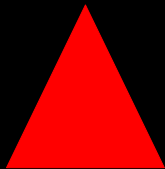
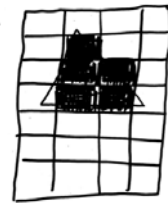
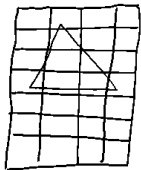
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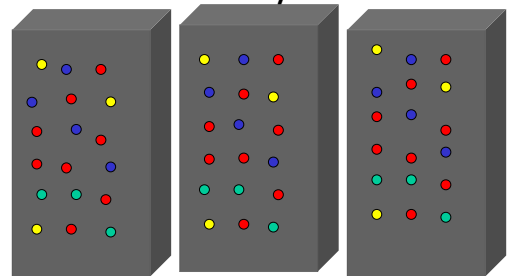




but wait ... there were lessons to be learned



and it only took

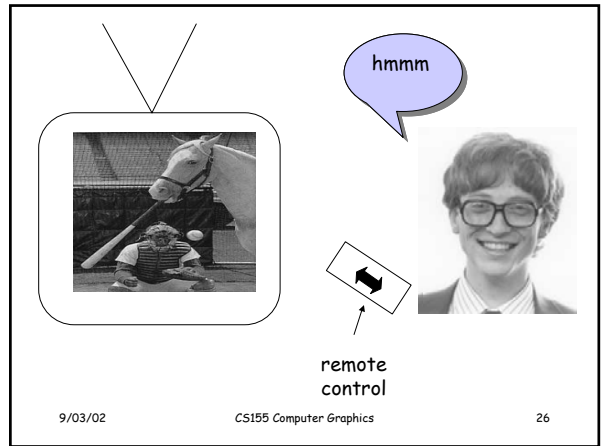


meanwhile
back in cambridge

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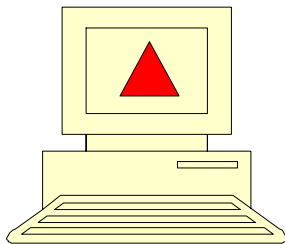


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and a few years later...

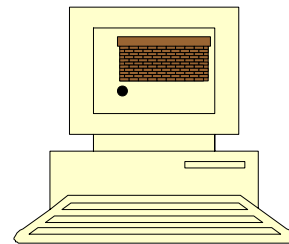


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and more



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meanwhile
back in hollywood

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compositing



steve yan



eric ong



joanna wu

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more compositing

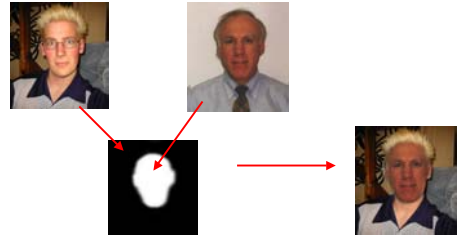


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compositing how to



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warping

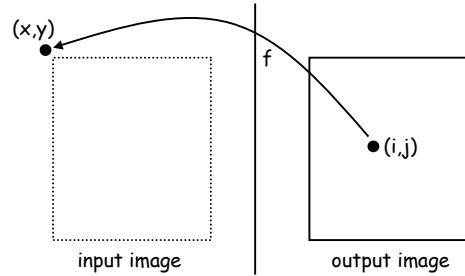


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warping how to



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warping in action



jason wither

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and more



steve diverdi

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morphing



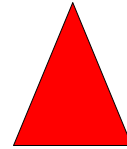
steve diverdi

morphing how to



meanwhile
back in utah

the lowly triangle



triangle mesh



triangle mesh



stanford michaelangelo project

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the graphics pipeline

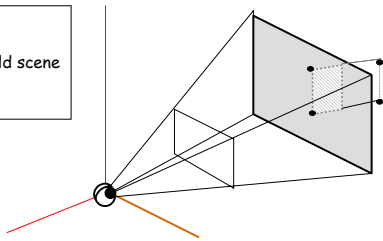
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graphics pipeline 1

1. build scene



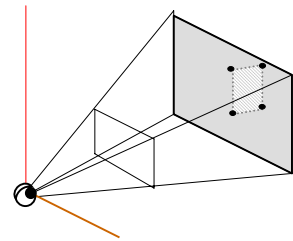
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graphics pipeline 2

2. clip



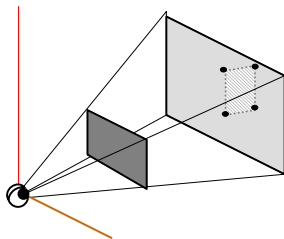
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graphics pipeline 3

3. project



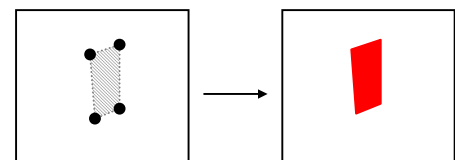
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graphics pipeline 4

4. rasterize



vertices in view plane

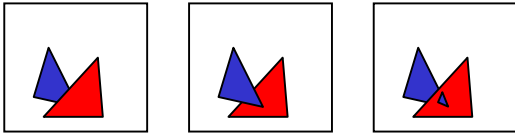
frame buffer

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hidden surface removal



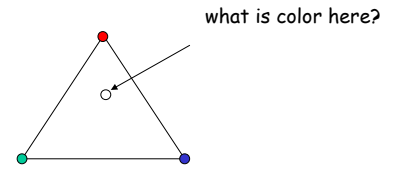
which is right?

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shading

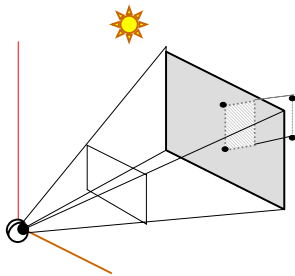


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illumination



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the holy grail

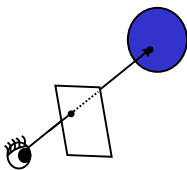
photo-realism

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ray tracing



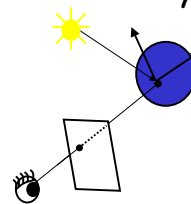
- cast ray through pixel into scene
- find intersection point (if any) that is closest to eye
- compute luminance at intersection

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ray tracing



- cast ray through pixel into scene
- find closest intersection (if any)
- compute luminance at intersection
 - direct illumination
 - reflections
 - refraction

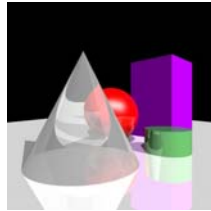
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ray tracing

```
<scene>
  <cone material="glass">
  <sphere color="red">
  <box color="purple">
  <floor material="marble">
</scene>
```



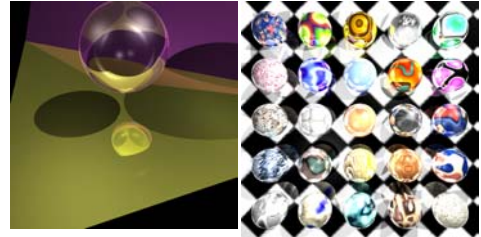
peter henry

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ray tracing



andrew mcdonnell

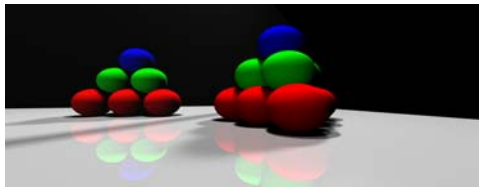
drew levin

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ray tracing



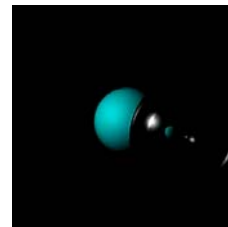
jason wither

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ray tracing in action



steve diverdi

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and more



rob adams

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the holy grail

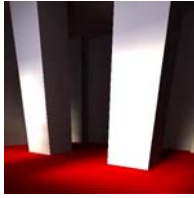
photo-realism

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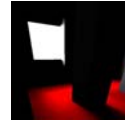
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global illumination



radiosity



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more 3d graphics

- modeling
 - splines
 - subdivision surfaces
- animation

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