WebGL crumbs

backed
by

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References

OpenGL Superbible (Fifth Edition)

Comprehensive Tutorial and Reference

Richard S. Wright, Jr. - Nicholas Haemel - Graham Sellers - Benjamin Lipchak

Addison-Wesley

OpenGL Shading Language (Third Edition)

Randi J. Rost, Bill Licea-Kane - Addison-Wesley

WebGL on mozilla

HTML5ROCKS Shader tutorial

Learning WebGL

WebGL Cheat Sheet

Goals

OpenGL → WebGL

OpenGL

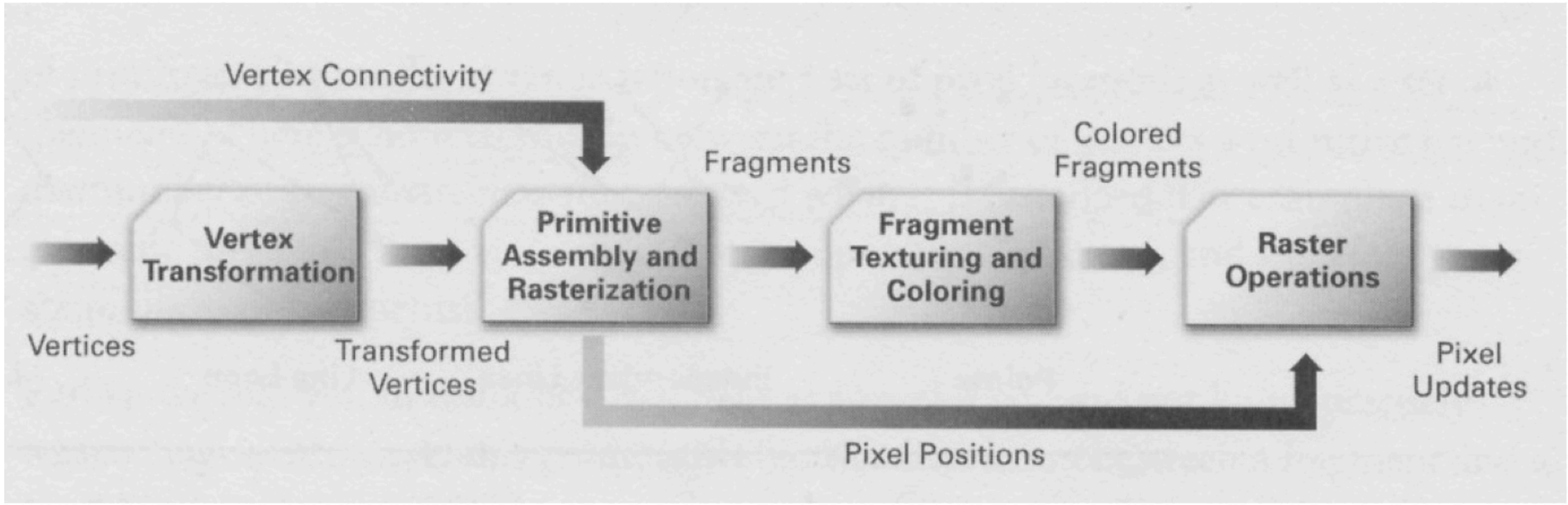
OpenGL 1.0 -> 1992
OpenGL 2.0 -> 2004

...

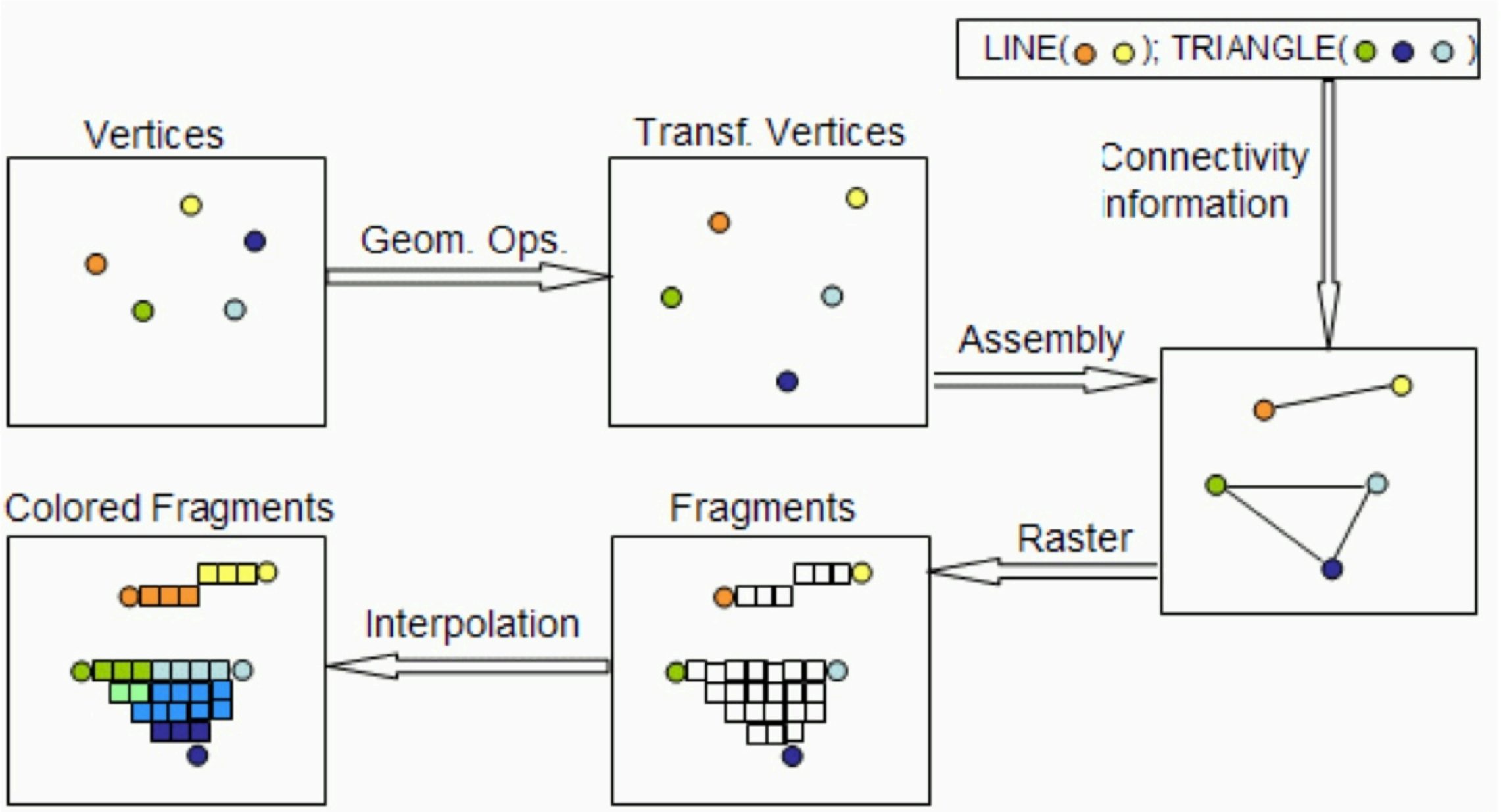
OpenGL 4.2 -> 2011

WebGL ≡ OpenGL ES 2.0

Fixed rendering pipeline

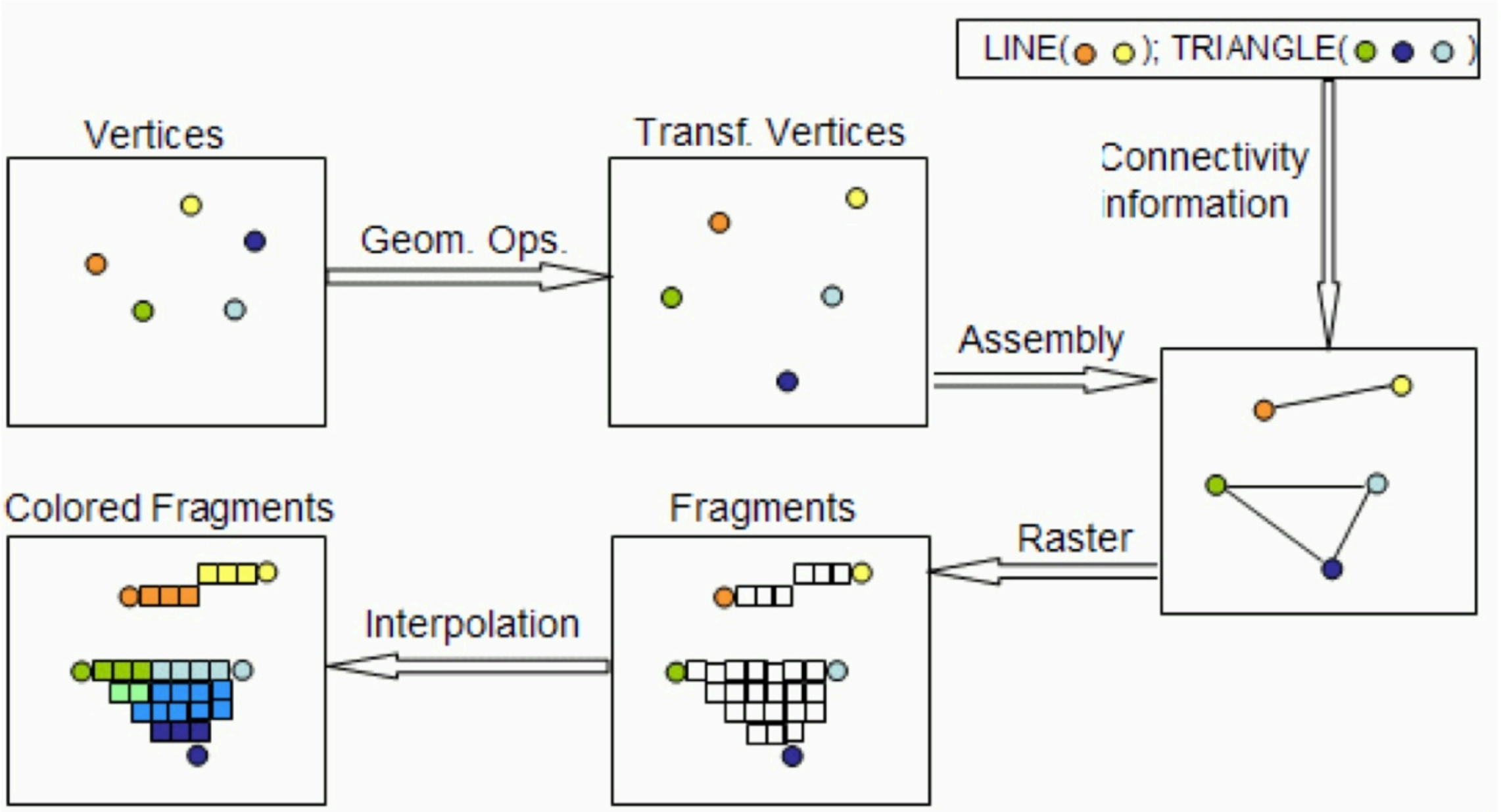


Fixed rendering pipeline



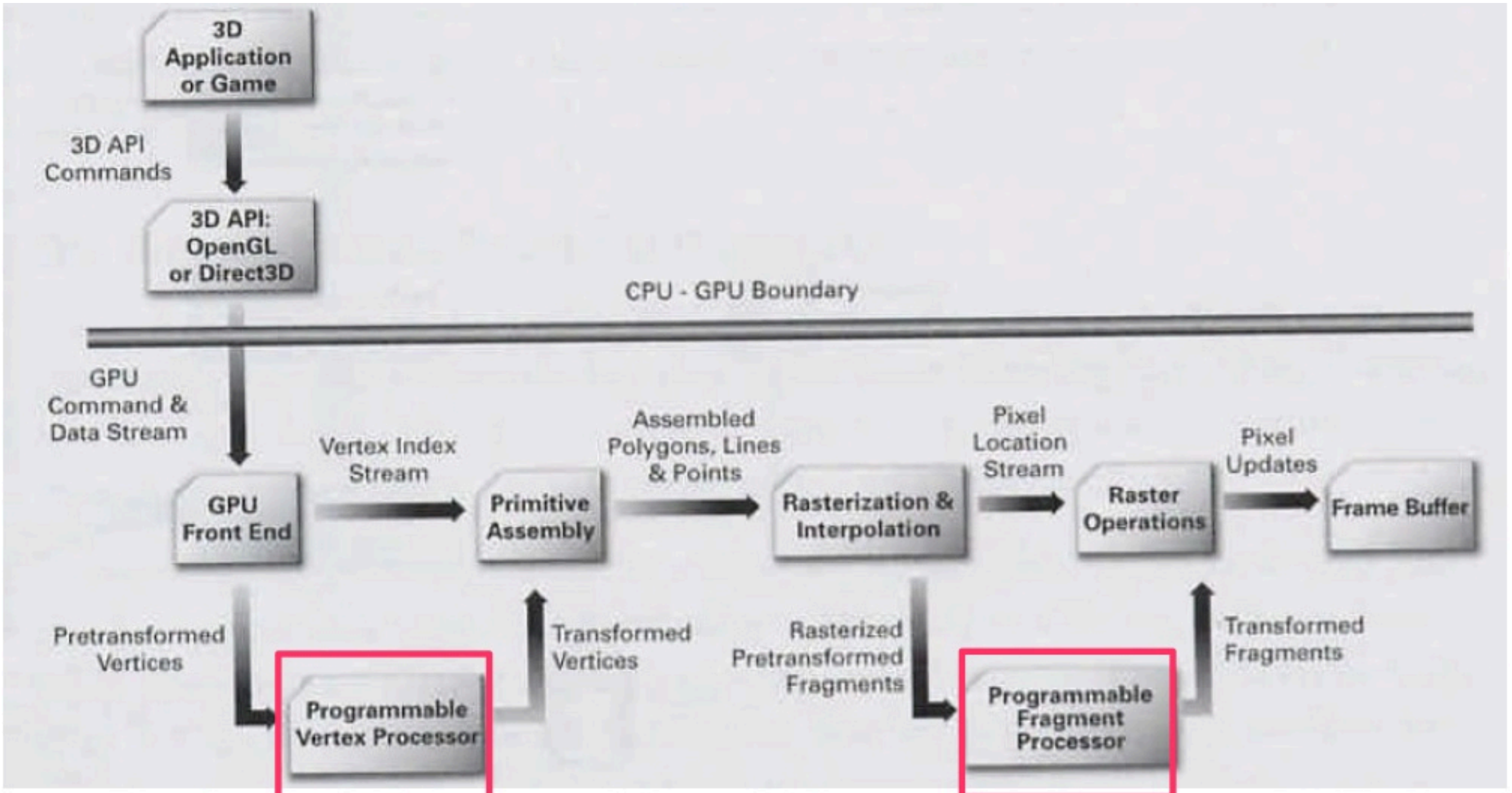
Fragment vs Pixel

Fixed rendering pipeline



Fixed pipeline limits

Programmable pipeline



A WebGL program

is made by 3 parts:

_ initialization

_ models definition

_ render loop

Vertex Shader

Vertex Shader

```
gl_Position
```

Fragment Shader

Fragment Shader

```
gl_FragColor
```

Shader Variables

Uniforms, Attributes and Varyings

Shader Variables

Uniforms are sent to both vertex shaders and fragment shaders and contain values that stay the same across the entire frame being rendered.

Attributes are values that are applied to individual vertices. They are only available to the vertex shader.

Varyings are variables declared in the vertex shader that we want to share with the fragment shader.

GLSL: OpenGL Shading Language

C-Like with additions

Compiled on the CPU through OpenGL driver

Executed in parallel on the GPU

GLSL: Data types

Scalars
float
int
uint
bool

Vectors
vec2
vec3
vec4
ivec2
ivec3
ivec4
uvec2
uvec3
uvec4
bvec2
bvec3
bvec4

Matrices
mat2
mat3
mat4
matmxn

Samplers

Structures

Arrays

Void

JavaScript Typed Arrays

ArrayBuffer

ArrayBufferView

DataView

Float32Array

Float64Array

Int16Array

Int32Array

Int8Array

Uint16Array

Uint32Array

Uint8Array

https://developer.mozilla.org/en/JavaScript_typed_arrays