A N I M A T I O N
F O U N D A T I O N

IK AND FK

IK vs. FK - 1st in a two part series on IK and FK systems

When we use computers to animate there are a lot of functions that we take for granted. The software just works and we never really get to the bottom of how and why it works. Two examples of this are the Inverse Kinematics and Forward Kinematics systems found in most 3D packages. Skeletal systems made up of a hierarchy of joints is what animators predominately use for the basic structure of their characters. Kinematics is a great feature that speeds up animation and adds a realistic feel to characters that need articulated joints. In this two part series on IK and FK we will take a look at these two types of systems. We'll also try solve some of those annoying problems that these systems cause.

Lets take a look at a basic skeleton. In all of our examples we will be using a two joint skeleton to keep things simple. Take a look at figure 1. A skeleton system is a hierarchy of joints that has a root or point of articulation and a effector. When using FK, you rotate a joint into a position, specifying the rotational value of each joint. Animation is created by setting keyframe at these positions and allowing the computer to interpolate between these rotations.
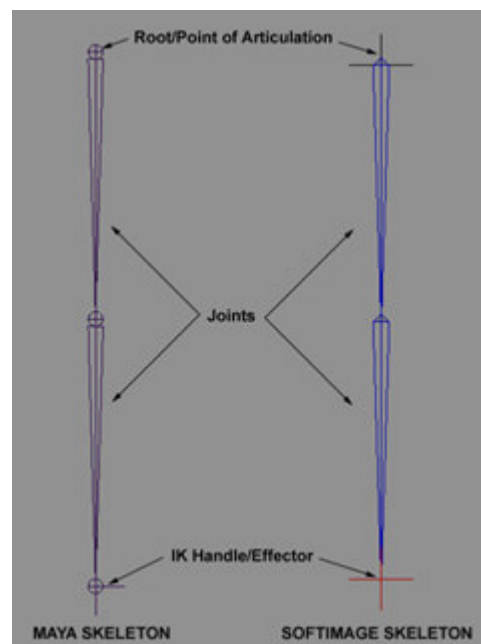

Figure 1

When we use IK we can see some distinct differences between the two techniques. Let's take a closer look at some of these differences.

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