A97

Grinning Evil Death

A blood-spattered tale of modern-day pest control

by

Mike McKenna & Bob Sabiston

The animation *Grinning Evil Death* tells a tale of breakfast, blood, super heroes, and roaches. A kid, munching cereal and watching TV, learns that an alien space pod is bound for Earth. The pod crashes into the kid's city, and a giant cybernetic roach emerges. The Roach proceeds to wreak havoc in the city, breaking power lines and kicking cars. Donning the powerful Ring of Sarcasm from his cereal box, the kid leaps from his window to do battle with the Roach.

Grinning Evil Death displays a variety of *physical* or *dynamic* simulations. In the opening sequence, cereal puffs pour from above into a breakfast bowl, then leap into the air to bounce from object to object. In fact, the motion of the puffs was simulated to fall under gravity, and to bounce away from collisions obeying the laws of physical motion. The movement of the puffs is therefore automatically determined by the simulation. The role of creativity in such a system is modifying the physical parameters of the objects and the environment. For example, the animator controls how bouncy the puffs are at various times in the animation; at the beginning they fall into the bowl and stop, then they begin to bounce very actively.

Another simulated character in *Grinning Evil Death* is a giant mechanical cockroach. The Roach is also under the influence of Newtonian physics, and in order to support and propel the body, simulated motors in the Roach's joints supply forces, much as muscles do. The geometric design of the Roach is based on studies of the physiology of the cockroach. Similarly, the control mechanisms used to govern walking are modeled after the nervous system of the cockroach, using simulated "pacemakers" and "reflexes." The computer generates all of the movement of the Roach.

The 2D cel animation, on the other hand, is drawn frame by frame. The cels are drawn by the animator into the computer using a pressure-sensitive tablet. The animator flips through the sequential drawings to observe and refine the motions. Different cel layers can be blurred to simulate the focus effects of a multi-plane camera, giving a stronger sensation of depth, and allowing "focus-pull" effects. The cel layers are matted with 3D computer renderings to mix the action of the two.

MIT Media Lab
20 Ames St./Room E15-023
[illegible]ridge MA 021349

phone: 617/253-0661
fax: 617/258-6264