

# Game physics starts to get real

By *srlinuxx*

Created *14/05/2005 - 2:50pm*

Submitted by srlinuxx on Saturday 14th of May 2005 02:50:15 PM Filed under [Gaming](#) [1]

Part of the appeal of computer games is that they can take you places and show you things you would never find on Earth.

But increasingly game makers want their creations to match the real world in one crucial respect. Namely the physics used to underpin the action, reaction and interaction of every element in the game world.

Not long ago games action was notoriously uniform. Fire a rocket and the resulting explosion would look the same every time. The scenery may not even be damaged.

But better physics means you can let the computer work out what happens when rockets are fired at zombies, bunnies or rebounding surfaces. It will be different every time.

The physics in ground-breaking games such as *Half-Life 2* and *Doom III* is only the beginning.

Limits on the processing power and computer memory available to game makers means that only relatively large rigid bodies were modelled effectively in these recent titles.

This means that you get a good idea of what happens when grenades meet packing crates or circular saw blades interact with zombies. What you get is everything splitting or shattering into relatively large chunks.

It does mean that it is hard to model the interaction of anything smaller than those chunks or such things as liquids.

But even this offers a huge range of possibilities so much so that in *Half-Life 2* players get a gravity gun that lets them take advantage of the realistic action/reaction and interaction of objects. Many of the puzzles in the game that held up the progress of its central character Gordon Freeman revolved around exploiting physics.

The gravity gun was one of the many factors that made *Half-Life 2* fun to play despite its linear plot.

David O'Meara, chief executive of physics software firm Havok, said *Half-Life 2* offers a hint of what is to come.

"*Half-Life 2* is the standard now in terms of what the consumers sees," he said. "But it was developed over a number of years and the standard of physics today is not what the consumer sees."

Already there are games that can model interactions using elements as small as bullets and realistically show what happens when they hit a foot or ankle, said Mr O'Meara.

The next big change is modelling interactions between objects and environments made of particles - effectively big molecules.

This will give game designers unprecedented freedom to build worlds and have the objects, animals and people in them react to each other like their real world equivalents.

The next generation of consoles and powerful desktop PCs will give designers the scope to model entire worlds of such small elements, said Mr O'Meara, although there were going to be moments when other things, such as animation of faces have prior calls on memory and processing power.

There are also more firms producing physics engines, such as Ageia, Meqon and others, that developers can use to give games a more realistic feel.

"There are games coming out where we know what's been achieved and it is at least as startling as what has been seen in Half-Life 2," he said.

[Full Story](#) [2].

[Gaming](#)

---

**Source URL:** <http://www.tuxmachines.org/node/943>

**Links:**

[1] <http://www.tuxmachines.org/taxonomy/term/69>

[2] <http://news.bbc.co.uk/2/hi/technology/4530631.stm>