

# SPRITE FLIPPING

## Sprite Flipping

In most 2D systems storage is a critically scarce resource. Especially on older platforms there was never enough space to put in all the graphics a developer wanted. A large part of game creation was coming up with creative ways to reduce the storage demands and cram more of everything into a very small space.

One technique used so frequently it became a de-facto standard was sprite flipping, where a sprite facing one direction was simply flipped to face the other. Only one copy needed to be stored, the game simply reversed it when required, a simple operation which incurred no real performance penalty.



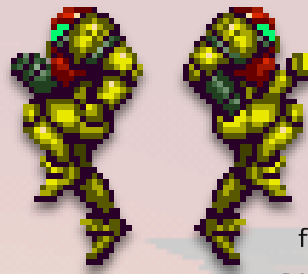
At first this made no difference. The player's craft in *Defender* looked the same no matter if it faced left or right, and in *Miner 2049'er* Bounty Bob was just as cheerful no matter how the player shuffled him around the stage.



But then games got a little more sophisticated, and the player's on-screen avatars looked different. They ran, they jumped, and they had weapons. Mega Man only had one shootin' arm, and it was his left one. Unless he was facing left (or was on the American cover of *Mega Man 4*) when it became his right arm.



Of course it made no difference to the player, as the game still played the same. And it was entirely unlikely any player who noticed the difference would actually care that a character's weaponry would change hands in every fighting game ever. It's possible that they're all just ambidextrous.



This technique was so common that when a designer actually drew new frames for a character, it was surprising. The first *Metroid* game used flipped sprites, but Samus had a half-heartedly re-drawn sprite in *Super Metroid*. It's just a few pixels, and it didn't extend to her legs: when jumping left she inexplicably led with her opposite leg and swung a different arm forward. It's clear that Nintendo drew the whole body once, then just tweaked the template rather than re-drawing it.

While common, horizontal sprite flipping was not universal.



Some games, like Konami's *Time Pilot '84*, flipped the sprites vertically because they used horizontal shadows.

Other games eschewed the sprite flipping entirely. Starved for storage in *Raiden*, Seibu flipped the left and right movement sprites in 1990. Twelve years later Cave's pre-rendered shooter *Ketsui* had storage to burn, and where Seibu used two flipped sprites, Cave used 14 different ones. No flipping required.

