Space Capsule

Astron Belt is typical of the new generation of arcade games, which use laser discs (see below) to provide a moving background to the game being played. Because discs are random access devices, it is possible to move directly from one scene to another — a confrontation with an alien ship that results in an explosion, for example. To the player, this represents a big step towards realism. The images on the laser disc can either be motion pictures from real life, or computer generated animation. Astron Belt also offers stereo sound and even a vibrating seat that reacts to low frequencies in the audio circuit

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their original form.

When we discussed flight simulation (see page 201), we noted that all arcade games are simulations of one sort or another, either of a real-life situation, like a game of table tennis or a car race, or a fantasy, such as Space Invaders, PacMan or Frogger. Over the dozen years that arcade games have been in existence, these two broad bases have expanded into parallel streams of development, though the fantasy/space games are much more common.

We looked at the two original games — Pong and Space Invaders — earlier, but it is worthwhile tracing their development. The first of the bat and ball games to set man against machine was Breakout and its variants, in which the player hits a ball against a wall of bricks. Each brick disappears from the screen as it is hit, and the object is to remove them all without losing the ball. Following on from this we have golf, snooker/pool and pinball 'simulations'. Generally speaking the more attention the programmer pays to replicating the forces found in the real world (for example gravity, wind or surface resistance, mis-hitting), the better the game will be.

But these criteria do not apply to fantasy games. Here, the player is actually competing against the person who programmed the machine to play the game in question, and playing entirely by *his* rules, in a universe of *his* creation. The first stage after Space Invaders was to introduce different types of aliens that attack in different ways at random intervals. After this, it was necessary to introduce mobility into the player's 'screen token', which led to the introduction of games like Defender, accepted among the *cognoscenti* as the best of all the games of this type.

Fixed line games, like the original Space Invaders, continued in development, and became games like Missile Command and its derivatives, in which the object is to defend one's base against an attack by Inter-Continental Ballistic Missiles. Maze/chase games such as PacMan evolved from the original car race games, where the objective was to steer a car-shaped token around a course as often as possible in the time allowed, without crashing into the walls. There was no real element of competition in these games — even allowing for the random oil slicks that appeared by magic — and so the next step was to turn the 'time trial' into a chase. The original car track now became a maze, and the tokens changed into fruit, light bulbs and the like.

Car chase games went towards a pseudo three-dimensional representation of the course, viewed from the car, or behind it, with the ever-changing road coming at the player. A very similar method is used in the more realistic of the flight simulation games.

Lastly come the traditional board games, like draughts, chess and backgammon. These are confined to home computer applications, because they typically take a much longer time to play, and the graphic representation takes second place to the games algorithms themselves in the program.

The only real technical departure lies in the method of graphics generation used. All the early games, and most of the current ones, use raster scan graphics, but some, notably Asteroids, use vector scanning methods whereby only the images on the screen — not the dark areas — get scanned by the electron beam.

So the next time you pass an amusement arcade crowded with vastly complicated games, or lean against one in a bar, remember that the computer that is inside driving it is probably far more complex and more powerful than any in use in the home or the small office, that it uses many of the same techniques, and is supported by some of the most talented programmers in the world today.