DemoScene Computer Art Subculture

(Concepts & Applications)

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Chapter 1

Introduction to Demoscene

The **demoscene** is a computer art subculture that specializes in producing demos, which are non-interactive audio-visual presentations that run in real-time on a computer. The main goal of a demo is to show off programming, artistic, and musical skills.

The demoscene first appeared during the 8-bit era on computers such as the Commodore 64, ZX Spectrum and Amstrad CPC, and came to prominence during the rise of the 16/32-bit home computers (the Amiga and the Atari ST). In the early years, demos had a strong connection with software cracking. When a cracked program was started, the cracker or his team would take credit with a graphical introduction called a "crack intro" (shortened *cracktro*). Later, the making of intros and standalone demos evolved into a new subculture independent of the software (piracy) scene.

Concept

Screen shot from Second Reality, a famous demo by Future Crew.

Prior to the popularity of IBM PC compatibles, most home computers of a given line had relatively little variance in their basic hardware, which made their capabilities practically identical. Therefore, the variations among demos created for one computer line were attributed to programming alone, rather than one computer having better hardware. This created a competitive environment in which demoscene groups would try to outperform each other in creating amazing effects, and often to demonstrate why they felt one machine was better than another (for example Commodore 64 or Amiga versus Atari 800 or ST).

Demo writers went to great lengths to get every last bit of performance out of their target machine. Where games and application writers were concerned with the stability and functionality of their software, the demo writer was typically interested in how many CPU cycles a routine would consume and, more generally, how best to squeeze great activity onto the screen. Writers went so far as to exploit known hardware errors to produce effects that the manufacturer of the computer had not intended. The perception that the demo scene was going to extremes and charting new territory added to its draw.

Recent computer hardware advancements include faster processors, more memory, faster video graphics processors, and hardware 3D acceleration. With many of the past's challenges removed, the focus in making demos has moved from squeezing as much out of the computer as possible to making stylish, beautiful, well-designed real time artwork - a directional shift that many "old school demosceners" seem to disapprove of. This can be explained by the break introduced by the PC world, where the platform varies and most of the programming work that used to be hand-programmed is now done by the graphics card. This gives demo-groups a lot more artistic freedom, but can frustrate some of the old-schoolers for lack of a programming challenge. The old tradition still lives on, though. Demo parties have competitions with varying limitations in program size or platform (different series are called compos). On a modern computer the executable size may be limited to 64 kB or 4 kB. Programs of limited size are usually called intros. In other compos the choice of platform is restricted; only old computers, like the 8-bit Commodore 64, or the 32-bit Amiga or Atari ST, or mobile devices like handheld phones or PDAs are allowed. Such restrictions provide a challenge for coders, musicians and graphics artists and bring back the old motive of making a device do more than was intended in its original design.

History

Game Music IV on the Commodore 64 by Charles Deenen (also known as "The Mercenary Cracker" (TMC)) was perhaps one of the very first demos ever produced. Though TMC dated all his productions to 1991, this demo is known to have been produced in 1985.

The earliest computer programs that have some resemblance to demos and demo effects can be found among the so-called display hacks. Display hacks predate the demoscene for several decades, with the earliest examples dating back to the early 1950s.

Demos in the demoscene sense began as software crackers' "signatures", that is, crack screens and crack intros attached to software whose copy protection was removed. The first crack screens appeared on the Apple II computers in the late 1970s and early 1980s, and they were often nothing but plain text screens crediting the cracker or his group. Gradually, these static screens evolved into increasingly impressive-looking introductions containing animated effects and music. Eventually, many cracker groups started to release intro-like programs separately, without being attached to pirated software. These programs were initially known by various names, such as *letters* or *messages*, but they later came to be known as *demos*.

Simple demo-like music collections were put together on the C64 in 1985 by Charles Deenen, inspired by crack intros, using music taken from games and adding some homemade color graphics. In the following year the movement now known as the demoscene was born. The Dutch groups 1001 Crew and The Judges, both Commodore 64-based, are often mentioned as the earliest demo groups. Whilst competing with each other in 1986, they both produced pure demos with original graphics and music involving more than just casual work, and used extensive hardware trickery. At the same time demos from others, such as Antony Crowther (Ratt), had started circulating on Compunet in the United Kingdom. On the ZX Spectrum, Castor Cracking Group released their first demo called *Castor Intro* in 1986. The ZX Spectrum demo scene was slow to start, but it started to rise in the late 1980s, most noticeably in Eastern Europe.

Competition

The demoscene is a largely competition-oriented subculture, with groups and individual artists competing against each other in technical and artistic excellence. In the early days, this competition came in the form of setting records, like the number of "bobs" (blitter objects) on the screen per frame, or the number of DYCP (different Y Character position) scrollers on a C64. These days, there are organized competitions, or compos, held at demoparties, although there have been some online competitions as well. It has also been common for diskmags to have voting-based *charts* which provide ranking lists for the best coders, graphicians, musicians, demos and other things. However, the respect for charts has diminished since the 1990s.

Party-based competitions usually require the artist or a group member to be present at the event. The winners are selected by a public voting amongst the visitors and awarded at a prizegiving ceremony at the end of the party. Competitions at a typical demo event include a *demo compo*, an *intro compo* (usually 64K), a *graphics compo* and a *music compo*. Most parties also split some categories by platform, format or style.

There are no criteria or rules the voters should be bound by, and a visitor typically just votes for those entries that made the biggest impression on him or her. In the old demos, the impression was often attempted with programming techniques introducing new effects and breaking performance records in old effects. Over the years, the emphasis has moved from technical excellence to more artistic values such as overall design, audio-visual impact and mood.

The demoscene constitutes the most part of its own audience, with the opinions of the community itself considered the most valid. For example, it is often considered *lame* to win large events with works that appeal to the non-demomaking masses but do not adhere to good demoscene aesthetics. However, most of the demos regarded as the best of all time have appealed both to the demomaking community itself and a larger audience.

In the recent years, an initiative to award demos in an alternative way arose by the name of the Scene.org Awards. The essential concept of the awards was to avoid the subjectivity of mass-voting at parties, and select a well-renowned jury to handle the task

of selecting the given year's best productions on several aspects, such as Best Graphics or Best 64k Intro.

Impact

A demo running on a TI-86 calculator

Although demos are still a more or less obscure form of art even in the traditionally active demoscene countries, the scene has had an impact on areas such as computer games industry and new media art.

A great deal of European game programmers, artists and musicians have come from the demoscene, often cultivating the learned techniques, practices and philosophies in their work. For example, the Finnish company Remedy Entertainment, known for the Max Payne series of games, was founded by the PC group Future Crew, and most of its employees are former or active Finnish demosceners. Sometimes demos even provide direct influence even to game developers that have no demoscene affiliation: for instance, Will Wright names demoscene as a major influence on the Maxis game Spore, which is largely based on procedural content generation.

Certain forms of computer art have a strong affiliation with the demoscene. Tracker music, for example, originated in the Amiga games industry but was soon heavily dominated by demoscene musicians. Currently, there is a major tracking scene separate from the actual demoscene. A form of static computer graphics where demosceners have traditionally excelled is pixel art.

Over the years, desktop computer hardware capabilities have improved by orders of magnitude, and so for most programmers, tight hardware restrictions are no longer a common issue. Nevertheless, demosceners continue to study and experiment with creating impressive effects on limited hardware. Since handheld consoles and cellular phones have comparable processing power or capabilities to the desktop platforms of old (such as low resolution screens which require pixel-art, or very limited storage and memory for