DEMOing: An Emerging Artform or Just Another Digital Craft?

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>>1984

20 Years in the Evolution of Proudly Presenting

>>2002

A DEMO is a software program that renders a several minutes long collage of 3D animation, sound, music and text on a personal computer. DEMOs mix graphics programming with cutting-edge graphics and experimental music to create an audio-visual eye-candy. DEMOs are a bit similar to electronic music video clips. The main difference being that in a DEMO, each frame is generated in real-time, as it is played-back for the viewer on his computer by custom code that uses the functionality built into high-end graphics cards. DEMOs are designed to wow the viewer, to show off a creative use of computer graphics and sound by the DEMO authoring crew -- a team of young and mainly European software developers, graphic artists and electronic musicians. DEMOs are designed for dedicated DEMO parties and DEMO competitions, held across Europe and are download-able over the Internet for free.

In this text we argue that DEMOing (coined after PAINTing) is a unique art form with deep and rich cultural, formalistic, and esthetic roots in the computer underground movement of the early 80s'.

Old-School DEMOs ::
Early History ::
A Hacker ::
Art Form is Born ::

To start our journey into the land of the DEMO we have to go back, way back. Just close your eyes and imagine that it is 1981. Personal computers are just starting to emerge from the computer hobbyist underground; cheap multi-GIGA-size hard-drives and RAM are about 15 years away into the future. Software is packaged and delivered to users in one or more floppy disks. In the Apple II system, the operating system was also crammed on the floppy, alongside a software title, and was loaded to RAM as you booted up your machine. Most software titles and specifically games normally spanned one to three floppies. The title's splash screen would appear after the initial OS boot and before the user could interact with it. In the U.S. most titles were sold and distributed via computer hobby stores, hobbyist groups meetings and mail orders directly from the publisher. Outside the U.S. it was very hard to get software at all.

Enter the crackers. [1] A Cracker would obtain a legitimate title, remove any copying protection measures applied to it by the publisher and distribute it for free to their local friends, computer user groups. Some would also set up BBSs (Bulletin Board Systems) in the basements of their homes and post the broken title for downloading over dial-up. [2] Sure, piracy hurts software sales to some extent but I'm convinced that it caused more good than harm to the software industry by infecting otherwise perfectly 'normal' people with

"Jonny looks around, confused, his train of thought disrupted. He collects himself, and stares at the teacher with a steady eye. 'I want to code demos,' he says, his words becoming stronger and more confidant as he speaks. 'I want to write something that will change people's perception of reality. I want them to walk away from the computer dazed, unsure of their footing and eyesight. I want to write something that will reach out of the screen and grab them, making heartbeats and breathing slow to almost a halt. I want to write something that, when it is finished, they are reluctant to leave, knowing that nothing they experience that day will be quite as real, as insightful, as good. I want to write demos.'"

-- Grant Smith
<http://www.oldskool.org/demos/explained/whatisademo>

the PC Germ and thus breaking computing into the mainstream. Did you become hooked to software by a CD 'borrowed' from a friend? Piracy certainly didn't hurt game publisher Electronic Arts, which became a multi-billion company hailed as the next Disney. People also tend to forget that in many countries outside the U.S., one often could not even buy a given software title at all since there were no local computer stores and there was no easy way to shop internationally. At least that was the case in my small birth-place country, Israel. Without the bootlegs and the BBSs, millions of people around the world would have never gotten into this geek-thing at all. I personally know about five software industry people who got attracted to computers at an early age by games I would let them copy for free. Today, all software titles are readily available for purchase online or at your favorite office supplies store, so there's little excuse left for bootlegging. [3]

complete bastard DEMO software needs to fit side-by-side with the legitimate host software on the cracked floppy, and floppies had total storage space in the range of 4KB to 64KB (compared to about 1.2MB in today's standard floppy disk and about 760MB in a single CD-ROM). From the cracker's perspective, it all boiled down to getting the greatest and latest game for your favorite computer platform, cracking it quickly, designing and writing your DEMO in days, patching it in, testing that the original software still worked, and uploading the final disk image quickly to a few leading BBSs across the US so it could be downloaded by anyone with a computer and a modem. If everything worked smoothly, and nobody else had beaten you to it, you would get the satisfaction of having your A.K.A name in front of thousands of computer enthusiasts like you all over the world. It seems that these numerous challenges only contributed to the creativity and ingenuity of the DEMO makers: In the mid 80s, the cut-
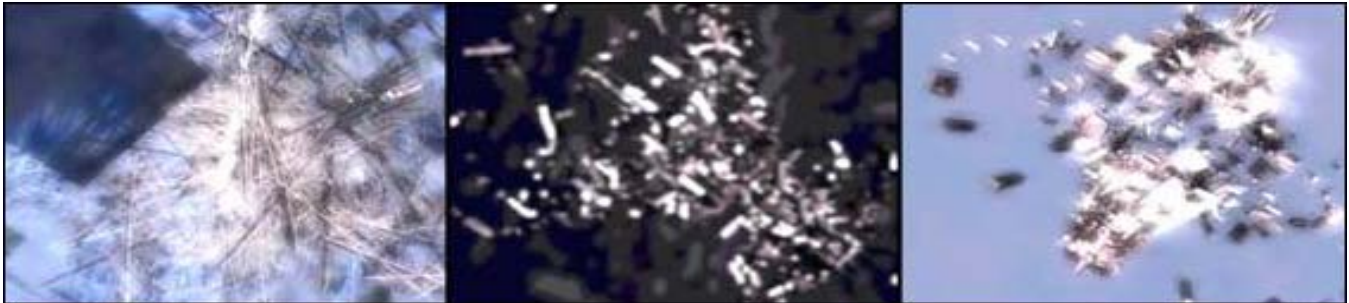
The mostly teenage crackers had gone through the trouble of doing all this to impress kids like me around the globe with their technical wizardry and coolness. So, how would all these kids, booting up the newest, just released cracked game, be able to attribute its availability to the Apple Rebel and Hot Rod and the infamous MotherBoard BBS? [4] Enter the DEMO. The old-school DEMO was a piece of custom software code [5] and content that crackers would write and attach to the boot sector of a pirated software title floppy. The software would execute as soon as the floppy booted on a computer and would display a page attributing the cracker crew's alias names. Short, cute, and catchy aliases akin to the ones used in Hip Hop culture. Names like The Intern, First Class, MPG, Desert Storm, DJ Clue and The 2-live Crew. After a few seconds delay, the DEMO and the 'legitimate' original title would start up. Performing this neat feat required at times a fairly sophisticated understanding of the underlying disk operating system, assembly language, and the hardware platform involved. In the early 80s, DEMOs were fairly modest and consisted of a text information page -- appropriately named 'title page' -- containing credits, shoutouts and dial-up numbers to free software BBSs. Title pages rapidly evolved to include graphics, animation, and music as crackers began to compete with each other for reputation and credibility in the computer underworld scene. The challenge being: who would be the first to create and distribute the most impressive audio-visual DEMO for the hottest new game just out?

This new, unprecedented form of expression had almost absolute artistic and creative freedom; the only constraint being the available space on the floppy and the multimedia capabilities of the target computing platform. Remember, the

ting edge in personal computer sound, graphics, compression, text effects and animation was to be found in DEMOs. In addition, a new breed of title page writers would specialize in the art of DEMO creation and let others in their crew focus on cracking.

Some DEMOs contained original graphics and music; some appropriated graphics, animations, and music elements from the cracked host title and used them in a new and innovative configuration or mix. Some copied the title's software publishing company logo and subverted it in a humorous way. [6] Some would add short prose, similar to the intro text that opens up a motion picture -- "Somewhere, in a galaxy far away..." -- and some would politely ask you to support the software movement by purchasing the title if you enjoyed it or to use it productively, seeding the shareware software publishing model. It is a shame that most of the great classic DEMOs are by now probably forever lost without ever being systematically researched, cataloged, or archived. [7]

The DEMO scene also drove innovation in media software tools: one of the first multimedia authoring software packages for a personal computer -- before groundbreaking titles such as HyperCard, [8] PaintShop and VideoWorks were even conceived -- was a DEMO creation kit for the Apple II. This nameless tool allowed you to start from an empty bitmap or load a bitmap image drawn in another paint software package, specify rectangular and non-rectangular regions on the bitmap's surface, assign an animation loop, and optionally a sound loop on the region bits, add new text regions, type text into them, set a font face from one of the bundled fonts and draw color shapes and lines. A pretty impressive feat for a model 1982 software running on a text

terminal and having, according to today's standards, pretty rudimentary raster and vector graphics modes with no real font support. [9] Finally, you used the tool to install your new creation and the custom animation software run-time on a target floppy -- now boot it up, cross your fingers, and hope to see your DEMO, an unbroken copy of the operating system and the original software title all loading and running smoothly together as expected.

:: New School DEMOs Mature to Become a New Digital Art Form ::

Now close your eyes again and fast forward back to 2002. Cheap PCs with lots of RAM, hard-disk capacity, and hi-fi stereo sound capabilities are abound world-wide, and millions of computer enthusiasts and gamers have very fast machines with dedicated 3D graphics and high resolution color monitors. Computer software titles are now readily available in retail stores and via the almost ubiquitous Internet. (Gaming) software is a $XX billion a year business. CG animation is prevalent in many hot kid flicks. Napster is RIP. Organizations such as RIAA, Disney and MPAA basically dictate the copyright laws of the U.S., and cracking software is a federal felony that can get you in jail for the best years of your life -- definitely not a way to impress your friends anymore.

You would imagine that all of the above would spell the end of the DEMO scene, but in reality the opposite is happening. A new breed of DEMOs, which I take the liberty to name New School DEMOs, is quietly becoming a major artistic form of expression in the computer underground. DEMOs gave up their original hosts and are now distributed via the Internet and in special 'DEMO Parties' annually held all over Europe. [10] New School DEMOs are not attached to software titles anymore. They exist independently as executable software packages. The DEMO creators now come from a new generation of hard-core software hackers [11] who are deep into the C programming language, esoteric audio formats, computer graphics, and 3D frameworks such as OpenGL and Microsoft Direct 3D. The motivation remains to gain reputation among friends, fellow DEMO crews, and the computer underground. However, there's a new twist: building a great DEMO is a new way for an aspiring 3D artist to get into The Biz, that is, the computer games business. Watching a New School DEMO unfolding on your computer can be a real eye-opening, inspiring experience -- being completely untainted by any direct commercial interests or by the latest art world fad, a New School DEMO is designed to create an engaging and highly personal audio-visual experience that utilizes your computer resources and graphics card to the max. Conceptually, a good DEMO is designed to suck you in and it won't let you go until it is over -- don't Press ESC just yet! Some DEMOs look like electronic music video clips you've probably seen on TV before -- an ambient psychedelic four-minute trip through an alien kaleidoscope world, but many of them have new, raw, and refreshing esthetic qualities that you probably have not experienced before. A good DEMO needs to contain something fresh -- a new subject matter, a new animation technique or, even better, a fresh combination of known techniques and classic subject matters. [12]

Technically, the DEMO is a short video clip where the frames are generated in compiled, custom C code written by the DEMO maker. However, unlike traditional digital video clips of CG animation, the code renders the clip frame by frame using a 3D software framework run-time. [13] Each frame is rendered to the screen using the viewer's Graphics Card 3D capabilities. The code uses pre-generated raw media materials such as bump maps, 3D mashes and paths, surfaces, textures, MP3 sound snippets, bitmaps and fonts. In some cases, the code also generates the clip's soundtrack on the fly. The code also synchronizes the animation with the soundtrack, in many cases modifying the 3D camera position and the scene lighting with each music beat or measure. A great DEMO must use these elements in a creative way -- producing a unique and impressive artistic expression that is being generated and unfolding for you, on your personal computer, each time you view it, by the artist's code and aesthetic vision. It may take up to a few months for a team of digital graphic artists, computer musicians, and software hackers to create a great DEMO from start to finish. Good DEMOs have better graphics than anything you'll get on the PlayStation 2 gaming platform. Interestingly enough, unlike the Old School, the New School DEMO scene is currently mainly happening in Europe with very few significant works coming out of America. Semi-annual DEMO parties are being held all over Europe and mainly in Holland, Germany, Denmark and France. Most DEMO web portals are European-based. The DEMO party brings a new social aspect to the art form since many DEMOs are specially designed for such an event. Some parties contain real-time DEMO creation competitions where participating artists must create the best DEMO they can, from scratch, over a limited period of time, say 24 hours.

If you've read this far into this text, then you'll probably ask yourself: well, this is all very good but what's the relationship between the Old School and the New School? Where's the common thread? One starts to see the evolutionary pattern by looking carefully into the world of New School DEMOs. One type of New School DEMOs is called Intros. An Intro is a DEMO that must be packaged into less than 16K or 64K self-executable code. This is the size of a typical JPEG image on your favorite website's homepage. When viewed, it must blow you away both aesthetically and technically. Creating an engaging and original several-minute video clip with a sound track and compressing it to a size of a JPEG is definitely a feat that requires considerable talent, time, and effort. But how did the DEMO makers ever get the idea to impose such constraints in the first place? Now that you are empowered with the knowledge of this text, you can clearly see that the roots of the Intro DEMO competitions lie in the days of Old School DEMOs, where DEMO builders had to work within these technical constraints. Intro DEMOs are therefore Retro Old-School-style DEMOs. [14]

Another thread linking the old with the new is the highly creative and non-standard usage of textuality. Legacy CG video clips use very little to no text. However, both Old School and New School DEMOs heavily use text in a similar fashion. Text is highly stylized, uses non-standard, customized fonts, and text animation is a must for every DEMO. Textual content typically includes shout-outs to friends, family members, fellow crackers and DEMO makers, a private joke, a girl-

friend's name, a cool BBS or a website and, most important-ly and a must-have, animated credits for the aliases of the people who put the DEMO together. After all, that's what it is all about. The text is not supplemental to the graphics -- it is not an add-on patched to a 3D CG clip; on the contrary, it is integral to the DEMO and sets its tone and aesthetic style, typically having its own dedicated Intro and Outro scenes.

In addition, almost all New School DEMO makers use monikers and aliases -- Old School-style -- short, witty, and completely anonymous. The reason to conceal the real name has long vanished since New School DEMO makers are not pirating software anymore and, as we have stated, would like to build a personal reputation to get into The Biz. What's in play here are the traces of the Old Masters' style as it continues to be expressed through this implicit quota-tion by a new generation of artists.

Lastly, our final clue lies in the content of several New School DEMOs -- they intentionally perform audio-visual quotation of the style and the content of some Old School classics. In the DEMO scene, copying is not an issue of law but of creativity and reputation -- you may and should copy anything you want and use it as raw material for your new creation, as long as you make the end-result original. DEMOs today are an emerging art form that is unique and interesting in the way it combines new kinds of artistic ideas, subject matters, and techniques. An art form that requires a high level of technical, digital media craftsmanship and mas-tery, and in many cases involves a collaborative team of artists and software developers.

It is mainly happening in the computer art underground, beyond the reach of paralyzing mainstream agendas and interests, created by talented and dedicated young people. We can all look up to the DEMO Scene, get some inspiration and perhaps even some ideas about how to keep the digital art movement evolving, so that it can produce autonomous, vital, and fresh forms of artistic expression in the 21st centu-ry and beyond.

In this text, we have tried to show that DEMOs are unique audio-visual, virtual constructs with deep formalistic and aesthetic roots in the computer underground movement of the 80s. No words can fully describe them, and you definitely need to experience them first hand -- all you need is a PC, Internet connection and a decent 3D video card. The DEMOs are all free, just download from the Web and check them out today.

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[1] Crackers remove software protection, known today as DRM measures. Phreaks crack the phone system. Hackers break into computer systems.

[2] (Remember, it is 1981 -- so it is still legal to write about copy protection circumvention)

[3] OK, I admit it, I've gone soft over the years

[4] http://apple.duke.net/hackers.html

[5] In many cases involving a small, custom disk-loader

[6] A technique commonly used today by many artists. For samples see the ADBUSTERS magazine at http://www.adbusters.org/

[7] Relics do exist in the form of Emulators, Disk Images, and Web museums. This webpage contains screen shots of hundreds of Apple II title pages: http://artscene.textfiles.com/intros/APPLEII/.thumbs.html

[8] http://www.wikipedia.org/wiki/HyperCard

[9] Another cool tool used in title-page authoring was a disk editor that enabled you to scan a floppy for raster graphics, export them as a file to another floppy and replace them with another bitmap.

[10] Are the kids in America too busy playing Playstation 2 and copying Eminem MP3s? Have they gone too soft, are they too spoiled or are there other reasons for this geo-graphical imbalance?
http://ms.demo.org/
http://www.mlab.uiah.fi/~eye/demos/
http://www.ojuice.net/
http://www.oldskool.org/demos/explained/
If you only want one URL to get started on the DEMO scene, you need this one: http://www.scene.org/

[11] Read -- a young software developer without an E degree

[12] CG text book examples, or subject matter used in clas-sic 80s' DEMOs. In hip-hop culture, the music doesn't need to be original and is most likely to contain samples from clas-sic 70s' R&B and Soul -- but it absolutely has to be fresh.

[13] Typically being OpenGL or Microsoft Direct3D.

[14] I don't claim to be the first one to discover this. These two article mention this history:
http://www.mlab.uiah.fi/~eye/demos/
http://artscene.textfiles.com/intros/APPLEII/

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