

interview by Dave Kramer

At 35, Lion Entertainment President Douglas Grounds is too young to be a baby boomer, but too old to be a part of the so-called Gen X crowd. But who cares, his company makes cool software for the Macintosh, right? Grounds is no stranger to programming game software -- he's been doing it for 10 years.

His first Macintosh game was a conversion of Might & Magic I. In March 1993, he started Lion Entertainment and, as he puts it, "by default was made president." The company is more than 20 people strong and has offices in Austin, Texas, and San Jose, Calif. Grounds himself is a Mac fan. "We've worked on a lot of platforms, but my own personal favorite is and remains the Macintosh," he says.

MacDoom Review: I'll start with a softball question. How'd Lion get selected to port Doom to the Macintosh? And what does your company do when it's not making ultra-violent PC games work on the Mac? Is MacDoom a departure for your company, or is it business as usual?

Douglas Grounds: I first met [id Software CEO] Jay Wilbur at the Summer CES in 1994, and had previously met Ron Chaimowitz from GT Interactive at the Computer Game Developer's Conference in April 1994. I expressed interest in doing the conversion of Doom to the Macintosh. After providing Jay with

our credentials, we negotiated a contract to do the conversion and got busy...

We've done a variety of titles, not just violent ones. We did the conversion of Mario Teaches Typing (CD-ROM) from the PC to Macintosh. We've done two originals: AD&D Slayer and DeathKeep, both AD&D titles, for Strategic Simulations. Neither is that violent, although they share Doom's 3D point of view.

Right now we're working on conversions of Wing Commander IV for both Macintosh and 3DO, and have just shipped Wing Commander III for the Power Macintosh. We're hoping to work with id Software in the future, for both the Hexen and Quake conversions for the Macintosh.

MDR: What were some of the more interesting technical issues involved in creating MacDoom? Obviously, striving for WAD file compatibility was important. So, did someone at id Software just give you guys the DOOM2.WAD file and say, "Make something that'll play that"?

DG: [id Software's] John Carmack and John Romero are both great programmers. The code was provided to us in C, and we never touched a big portion of it. Jason Mann, a fellow Lion-ite, did a great job implementing all of the network and modem connection to work with the PC version.

The hardest part was figuring out what would make the PowerPC version run fast enough even though it was moving 4 times the number of pixels as the PC version did in its high resolution (640x400 vs. 320x200). Apple and Motorola sponsored a "Games Kitchen" in February 1995, which we attended. Between suggestions by Eric Traut of Apple Computer, and a great tip from Rob Barris (who works at Quicksilver but was attending the kitchen), we finally got the speed we needed.

The WAD file compatibility had basically been programmed in from the beginning by Carmack and Romero. I just didn't fool with it.

MDR: OK, here's one that's not so easy. Shortly after Doom II (aka MacDoom) was released, there was a bit of a backlash on some of the Mac gaming newsgroups. Many criticized the port for sluggish game play (albeit on generally low-end or low memory machines), limited keyboard mapping, and lack of certain features, such as recording of demos. How do you answer these types of comments?

DG: As far as sluggish game play goes, I think a lot of users don't realize that a 68040 running at 25 MHz, an expansive OS, third-party extensions, and QuickTime music (versus hardware music cards such as the SoundBlaster on the PC) create an uphill battle for the Macintosh version. I programmed and played the game on my Duo 280 - a 33 MHz '040. I know exactly how fast it

runs, and think it compares favorably to a 486DX2/66 PC if you turn off music and extensions. Thus far, the Macintosh version is the only version of Doom II that I know of that runs in 640 x 400 resolution, and we've timed it at between 20-30 frames/second on a "lowly" 6100/60.

Version 1.0.2, released only a month or so after the product, was completely recompiled using Motorola's optimizing compiler for PowerPC, giving a full 3-4 frame/second increase and was optimized for the 604 [PowerPC processor] (although that won't hurt the speed on a 601 or 603). We were certainly very conscious of frame rate all through the development. I will say that in our tests with the frame rate throttle removed we estimated that Doom II was achieving a frame rate of over 100 frames/second on a 9500/120. It was essentially unplayable. So yeah, I think Doom runs pretty fast on the Macintosh.

The limited keyboard mapping was an attempt to work around a hardware problem in the Apple keyboards, as well as avoid the problem that the PC version has. Apple keyboards will only recognize a maximum of 4 keys held down simultaneously, plus the 5 modifier keys (shift, option, command, caps lock and control). Test it for yourself: Go to the Key Caps desk accessory and hold down ASDF. Press any other key while holding those down. Doesn't register. Now, hold down SDFG. Only three register! We basically picked common keyboard sets that did not interfere with "hard coded" keys, and that did not have problems with the hardware limitations. Additionally, the PC version will actually let you re-use a "hard coded" key. Set up fire to be Tab, for instance, which is the Automap key and see how it plays. Basically, we were trying to help, not hurt, the whole experience.

As far as recording of the demos, it was not as great a priority as the other stuff we were doing like (1) high and medium resolutions, (2) PC-to-Mac compatibility over modems and IPX, (3) optimizing the blitting, rendering, and memory routines, and various other fun stuff. Plus, the change of the program's structure from the DOS command line to Mac OS caused difficulties with implementing the demo playbacks.

MDR: One thing that MDR strives for is the coverage of Doom WAD editing tools. Right now, there aren't any for the Mac. Do you believe the sort of cult following that's built up around the PC and Unix versions of Doom will port over to the Mac platform as well?

DG: I hope and think someone, somewhere will convert at least one of the WAD editors to the Macintosh. I'm still waiting to play BARNEY.WAD, too!

MDR: On the more technical side, are some of the more advanced hacks (such as those implemented on PCs with DeHackEd, which actually alters the Doom executable) feasible with MacDoom? Will the MacDoom engine, as

implemented by Lion, support this sort of tinkering?

DG: I doubt it. Remember, Doom II is actually a "fat" application, so you would have to figure out how to hack into both versions. I really don't know what DeHackEd did to the DOOM executable, so it's hard for me to speculate too much.

MDR: Will Lion or id Software release specifications for these sorts of hacks, or is it up to the MacDoom community to figure them out on their own?

DG: Lion will certainly not do so, as we have no right to release any information regarding the source code, or specific technical implementation details.

MDR: Overall, Doom II for Mac's compatibility with "homebrew" PC WADs is very good. Still, some inexplicably crash the Mac version of the game. These are generally rare, and seem to be limited to files that either attempt to patch the music, which is a MIDI track in QuickTime Musical Instruments format on the Mac. Why the format change between Mac and PC? Is there a way to get these levels to work, with or without the music? (Simply turning off music in MacDoom doesn't seem to do it.)

DG: There are Macintosh-specific WAD file collections available on CD, and I hope that someone will port an editor soon. Between that and the large number of WAD files that do work, there should be plenty to play. Without debugging each one, it's hard to speculate. But I know I've crashed the PC version using "homebrew" WADs, too.

Music files (QuickTime movies) were used instead of "patches" so that they could be replaced easily by enterprising young MacDoom heads. Anyone using a WAD editor could remove the music patches and include a new QuickTime MIDI movie instead.

MDR: OK, here's a grounder. What happened with the Doom port, which I believe was the first one attempted and is now due from Lion somewhere around year's end -- as Ultimate Doom. Isn't this putting the cart before the horse? And, if you can say, will there be any interface changes or improvements based on what you've learned doing the Doom II port?

DG: We've done the conversions of Doom II and Ultimate Doom in the order that they were given to us. In fact, Ultimate Doom was not even released for the PC until after we had started working on Doom II for the Macintosh.

There will be a number of minor improvements for Ultimate Doom, although it will seem almost the same from the user's perspective as Doom II was.

MDR: I've noticed some original Doom 'detritus' in the Doom II engine and WAD file. (For instance, some of the Doom art is embedded in the game and WAD file, visible using ResEdit and various PC WAD tools.) Why is all of this in there? And, what is the reason for saving games in Episode/Map form (e.g., E1/M1), which would seem to be another Doom carryover?

DG: All the graphic files in the resource fork can be potentially used. Doom II for the Macintosh will actually play the original Doom I shareware WAD if you can obtain a copy. The WAD file, however, is the exact same one that shipped with Doom II for DOS.

MDR: So, what's the status of Ultimate Doom for Mac, or can't you talk about it?

DG: Patience, Luke...

MDR: Is there anything else you'd like to share with the MacDoom gaming community?

DG: Lion Entertainment's mission is to develop the "best games available anywhere." We're really trying to do that on all platforms, and especially the Macintosh and Power Macintosh. I hope people enjoy the games we convert, and those we create "from scratch".

Secondly, I would recommend everyone who enjoys gaming on the Macintosh to purchase a copy of a game if you play it. Without that support, this recent glut of titles we're all enjoying won't last long! The Macintosh community is smaller than the Windows/DOS community to begin with, and a high piracy rate will shut off the flow of titles completely.

Third: Get a Power Macintosh if you don't already have one. Soon. It's the future!

or more on keyboard mapping, see this month's edition of Tricks & Traps (click arrow):

Douglas Grounds can be reached at Lion.Doug@eworld.com. Do not send him tech support questions, however; these should be directed to GT Interactive at (970) 522-1797.