

Sega Decision Challenges Legality of Disassembly

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A decision handed down on 3 April 1992 by the U.S. District Court in the Northern District of California has potentially far reaching implications for anyone using the disassembly of object code in reverse engineering efforts. The case involved Japanese video game maker Sega Enterprises, Inc. and Accolade, Inc., a California company making game cartridges compatible with Sega's Genesis video games. The court ruled that Accolade had infringed Sega's copyright by making copies of Sega's object code in the course of disassembling it to reverse engineer the game cartridge interface.

In deposition testimony, Accolade's engineers stated that they disassembled the copyrighted object code from Sega's game cartridges, translated it to assembly language, made intermediate copies of the code, "embellished" it, and wrote their own game programs based on the information they derived from the disassembly. Apparently a key element used by Accolade's cartridges was a code string that enabled the game to be played on a Sega console and also caused the console to display the sign-on message: "Produced by or under license from Sega Enterprises Ltd."

The judge, Barbara A. Caulfield, wrote, "If the process of reverse engineering software entails the duplication of the copyrighted work and the recasting or transformation of the object code into a form more intelligible to humans, it may infringe upon the copyright holder's exclusive rights." The judge rejected Accolade's argument that Sega had to establish substantial similarity between Accolade's final product and Sega's copyrighted code and that intermediate copies do not provide basis for infringement.

The judge also rejected arguments based on the "fair use" doctrine, stating that, "The copying at issue here was undertaken by Accolade for financial gain and was aimed at the creation of a competitive product which will adversely impact the value of the copyrighted work. Such commercial use is presumptively not 'fair use.'" The judge contrasted the Copyright Act, which she noted does not provide an explicit exception for intermediate copying of software for reverse engineering purposes, with the Semiconductor Chip Protection Act, which specifically exempts copying of masks in the course of reverse engineering.

While legal experts are split on whether the decision is well written, there are some questionable areas. At one point the judge says, "Accolade could have 'peeled' the microchips... or programmed in a 'clean room,' but instead chose to disassemble, reproduce and enhance (Sega's) software." The reference to "peeling"

Sega's chips seems to imply a fundamental misunderstanding of the functional relationship of the firmware and the processor in a system like the Sega video game console. Exposing a chip to derive information residing in a ROM mask would still require copying the code.

The classic clean-room technique requiring one team of engineers to develop a specification from disassembled code and another to develop a product from that specification (in a "clean room") without ever seeing the copyrighted material would also seem to involve incidental copying in a manner proscribed by this decision. Although it might be possible, in some cases, to derive a functional specification without resorting to disassembly, there are situations where no reasonable amount of input and output analysis would yield a satisfactory description of the function being performed.

The technical confusion evidenced by the "peeling" comment is one possible point of attack for appeals. Another weakness in the decision is the fact that the judge declined to address the issue of whether Accolade's final products are substantially similar to Sega's copyrighted works, a traditional test for copyright violation. Instead the judge invokes what appears to be the "fruit of a poisonous tree" doctrine of criminal law, ruling that any result of a process that violates a copyright is tainted.

The initial injunction granted by the decision is particularly onerous, essentially preventing Accolade from manufacturing, shipping, distributing or selling any affected product. It also prohibits Accolade from using any information they might have derived from their reverse engineering efforts in future products. The Appellate Court has subsequently modified the injunction to allow products already on the shelves to be sold.

We certainly have not heard the last shot fired in this battle. There are several possible points of attack to appeal this decision, including the flawed technical aspects and the refusal by the judge to look at the final product for infringement. Even if these aspects are upheld, questions remain. If a print-out of a disassembly is prohibited, what about the same data stored in memory or on disk, or even a real-time trace?

Should this decision stand and become precedent, it may put a powerful weapon in the legal arsenal of copyright holders to hinder or prevent competitors from producing compatible products. Some legal experts see the possibility of this decision supporting Intel's efforts to protect its microcode. Nevertheless, this case highlights the murky and often contradictory state of the law with respect to intellectual property in the high-tech domain. Ultimately, the responsibility may fall on our lawmakers to modify outdated intellectual property laws to better reflect the unique character of these technologies. ♦