Chapter XI

Defeating the Virtual Defense in Child Pornography Cases

by Susan S. Kreston

I. Introduction

The Supreme Court decision of *Ashcroft v. Free Speech Coalition*[1] has led child pornography prosecutors to reexamine and anticipate how they will prove the elements in these cases. Specifically, *Ashcroft* and its progeny now require the government to prove that (1) the image is that of a real child, as opposed to one that is entirely computer-generated or virtual; and (2) the defendant possessed the requisite scienter to commit the crime, that is, that the defendant knew that the image was real. As in *Ashcroft*, California prosecutors are required to establish that the image depicts a person under the age of 18.[2] This chapter will discuss how these cases can continue to be vigorously and successfully prosecuted in light of the virtual defense.[3]

II. Proving the Child Is Real

A. When the Defendant Offers No Evidence Regarding Computer-Generated Images

The government must first be prepared for the scenario where the defendant simply throws out the possibility that the images were computer-generated without offering evidence to that effect. Under the "speculation" fact pattern, case law continues to support the proposition that mere or unsupported speculation regarding the images does not require the government to call a graphics expert to address this issue.[4] Rather, the government must simply build a sufficient evidentiary foundation to support the trier of fact's finding that the images were of real children. Obviously, the easiest way to defeat this defense is to call a witness who is personally familiar with the victimized child. While some progress is being made in identifying sexually exploited children[5] and calling or offering to call law enforcement personnel who worked on their cases,[6] the majority of the children in the visual depictions are currently unknown and unidentified.[7] If the only cases to be prosecuted were those with identified victims, the number of perpetrators of child sexual victimization to escape justice would escalate exponentially. In sum, it would be a surrender to child pornographers. As such, other ways must be found to defeat the digital defense of the virtual image.

Of paramount importance in preparing for the digital defense is the choice of images charged. The prosecutor should choose only the images that leave the jury with no obvious questions as to whether the pictures or videos are of real children. Not only should the content of the images be considered, but their form must be weighed. For example, if given the choice between charging thumbnail images and full images, full images would be preferred as the jury will be better able

to examine them. The quantity of images should also be considered because it is far more difficult for a defendant to claim that hundreds of images are virtual rather than only two or three.

Other ways to defeat the claim of virtual images may include the prosecution calling any of the following types of witnesses: a child pornography historian,[8] pediatrician,[9] or law enforcement expert.[10] It may also be proved by internal evidence of the photograph,[11] other Web sites the defendant has visited,[12] whether the defendant was secretive and surreptitious in his trading or sale of the images,[13] statements or e-mails the defendant may have made or composed,[14] and finally, the introduction of "other acts" evidence[15] if present and admissible.

B. Proving the Case When the Defendant Does Offer Evidence Regarding Computer-Generated Images: Doing the Math

1. Movies or video

In *Ashcroft,* the Court singled out the film *Final Fantasy* as an example of computer-generated film at its best. First, the point must be made that the images in *Final Fantasy* are far from virtually indistinguishable from real people. While it is unquestionably a state-of-the-art animated film, no reasonable juror would confuse it for a film with real actors. Putting that aside, it then becomes an issue of calculating the time, money, and expertise that went into making that film. *Final Fantasy* was approximately 90 minutes in length. It was comprised of more than 130,000 frames at 25 frames per second, and it cost $115 million. It took four years to produce, using 200 animators, 200 Graphix Octane Workstations, and 1,100 custom-designed CPUs. The average cost of each second of the film was more than $20,000, and the average output of each worker was under eight seconds of film per year. It should further be noted that the human skin depicted in *Final Fantasy* is restricted primarily to the face, neck, arms, and hands, and the sequences with close-up views of these areas constitute only a small percentage of the film. This indicates that the time and expense needed to create the frames depicting human skin were even greater than the values estimated above.

2. Individual pictures or JPGs

When it comes to still images, the numbers are just as compelling.[16] A digital image is essentially a grid of numbers, where each number represents the brightness of each picture element, or pixel, in the image. An eight-bit image can have 256 brightness values, with any color being made by combining different amounts of red, green, and blue light. Since a digital image is simply a grid of numbers, it is conceivable that an artist could create a computer-generated image by "painting" a grid of numbers to represent anything that could be captured with a digital camera. But each color image has 17 million possible colors for each pixel. A 4 x 6 image at 300 dots per inch (dpi) will have more than two million pixels. Current digital cameras are more than four megapixels (four million pixels per image). Thus, there are more than 67 thousand billion numbers for a color four-megapixel image. While not all the possible numbers (colors) would realistically have to be considered, nevertheless, serious thought would have to be put into each of the values to be used, especially when illumination and edges are considered. If the creator spent 10 seconds thinking about each pixel value and worked a 40-hour week, it would take more than five years to complete a single 4 x 6 still color image.

The time-consuming nature of this endeavor is what gave rise to computer graphics, which were developed to generate images of 3-D objects with realistic illumination conditions. Even using today's best technology, it is difficult to create realistic images of people. The difference between a real picture and a computer-generated picture are still discernable to the human eye. The problems of creating a virtually indistinguishable human image include: (1) rendering correct portions and form of the body; (2) expressions on the face; (3) the color and texture of human skin, made particularly difficult as skin is a subsurface scattering material that both absorbs and reflects light; and (4) the interaction with light with all these features.[17] Finally, and most telling, a computer cannot be programmed to reflect the randomness that is the cornerstone of real people and their images.[18]

The time, expertise, and resources needed to even attempt to create a virtual image are overwhelming and completely unwarranted when similar images that are real are readily available and infinitely less expensive or free. Unfortunately, in the area of child pornography, those images and the children who are sacrificed to make them are present in abundance.

3. Either way, it's a question for the trier of fact

Regardless of whether the defense offers evidence concerning computer-generated images, courts believe final determination lies with the judge or jury as trier of fact. Recently, the Fifth Circuit so held in *United States v. Slanina*:[19]

> *Free Speech Coalition* did not establish a broad requirement that the Government must present expert testimony to establish that the unlawful image depicts a real child. Three circuits that have considered this issue take the same position. *See United States v. Kimler,* 335 F.3d 1132, 1142 (10th Cir.), *cert. denied,* ___ U.S. ___, 124 S.Ct. 945 (2003), 157 L.Ed.2d 759; *United States v. Deaton,* 328 F.3d 454, 455 (8th Cir. 2003) (per curiam) (citing *United States v. Vig,* 167 F.3d 443, 449-50 (8th Cir. 1999)); *United States v. Hall,* 312 F.3d 1250, 1260 (11th Cir. 2002), *cert. denied,*
> 538 U.S. 954 (2003), 155 L.Ed.2d 502. "Juries are still capable of distinguishing between real and virtual images; and admissibility remains within the province of the sound discretion of the trial judge." *Kimler,* 335 F.3d at 1142. Therefore, the Government was not required to present any additional evidence or expert testimony to meet its burden of proof to show that the images downloaded by Slanina depicted real children, and not virtual children.[20]

State courts have arrived at similar conclusions.[21]

For a brief period in 2004, the First Circuit required that the government provide more evidence than the images themselves to carry its burden that the images were real.[22] But that decision was vacated, and the final decision[23] made no mention of any additional requirement other than that the government produce the images. Subsequent decisions have noted that currently no federal circuit requires more than the images to support and sustain a conviction.[24] It must be noted that, to date, no wholly computer-generated child pornography image has been produced that is virtually indistinguishable from a real image.[25] Experts in the relevant community have searched for such an image and come away empty-handed. If such

> an image existed, it would be showcased by every pedophile in the country being prosecuted for child pornography. As one commentator has noted, "Every computer generation has its own mythology, and this generation's is the existence of virtually indistinguishable images that are wholly computer generated."[26]

III. Proving That the Defendant Knew That the Images Were of Real Children

Now the prosecution must navigate the second hurdle: proving that the defendant had the requisite degree of knowledge to commit the crime.

This issue first came to the fore in a pair of cases out of the Southern District of New York, *United States v. Reilly*[27] and *United States v. Pabon-Cruz.*[28] In *Reilly,* the defendant was allowed to withdraw his guilty plea to receiving child pornography, having successfully asserted that the state failed to offer any proof at the plea that he knew the images of the children were real.[29] There the court addressed the scienter requirement, stating that the government would have to prove that a person charged with possessing child pornography actually knew that the materials contained depictions of real minors engaged in sexually explicit conduct.[30]

In *Pabon-Cruz,* the same court was faced with a similar claim but with different facts. Pabon-Cruz had not entered a defective guilty plea, he had been found guilty by a properly instructed jury that he did have the requisite knowledge.[31] The court further rejected the defendant's claim that the state could not prove the requisite scienter, stating:

> The argument that it is theoretically possible that every image Pabon received and distributed had been simulated, and that unless he had been present for their production (and there is no evidence he ever was involved in producing any pornography of any kind) Pabon could not have actually "known" that they were real, demands an epistemological certainty that the law has never required. Drug couriers are convicted every day of "knowingly" distributing illegal drugs that they had never field-tested or personally sampled, and which theoretically could have been counterfeit. In those cases, it is enough for the factfinder [sic] to conclude that the defendant believed that the package contained real narcotics, and that the circumstances were such that the defendant's belief was well supported and turned out to be accurate.[32]

The court also drew parallels between this scienter requirement and that of another criminal statute.[33] The court referred to Judge Learned Hand's writing on the subject of the burden of proof in cases of receiving stolen property, citing:

> The receivers of stolen goods almost never "know" that [the goods] have been stolen, in the sense that they could testify to it in a court room [sic]. The business could not be so conducted. ... [T]hat the jury must find that the receiver did more than infer the theft from the circumstances has never been demanded, so far as we know; and to demand more would emasculate the statute.[34]

United States v. Marchand[35] gives the most detailed instruction thus far in how the government may prove its case of the requisite scienter in child-pornography prosecutions. The court listed seven areas of evidence that it reviewed in coming to its decision.

> 1) the appearance of the images; 2) the number of images; 3) the number and identity of Web sites the defendant accessed; 4) the language used in the Web sites; 5) the mode and manner by which the defendant viewed and stored the images; 6) the defendant's state of mind; and 7) the available computer technology and manual skill required to create realistic virtual images, including a small sample of such images posted on the internet and created with the software most frequently discussed by the Defense.[36]

The court noted that knowledge may be proven through direct or circumstantial evidence of actual knowledge, or a finding of willful blindness, or both.[37] A defendant acts knowingly if he acts with deliberate disregard of the truth, as one cannot avoid responsibility for an offense by deliberately ignoring what is obvious.[38] Having determined this, the court went on to discuss the particular evidence it considered in rendering its decision. That evidence included:

> [T]he details of each image, the staple that appeared in one of the images, a file name that includes the age of the child, the large number of images and the substantial number of separate Web sites from which the pictures were downloaded, the fact that certain images showed the same child over and over again as part of a series, the very real facial expressions of the children (sometimes multiple children in the same image), the extremely detailed close-up of an erect male penis with veins engorged, one video of child sex abuse in progress, and the background in the photographs depicting highly detailed furniture, rumpled bedding, general household clutter, and extremely realistic lighting effects.[39]

The court reviewed the evidence before it, highlighting the appearance and number of images, the defendant's statements to the police and his state of mind, and the state of technology in coming to its conclusion that:

> [I] t is the appearance of the pictures themselves, the Defendant's own words, the lack of evidence that it is feasible to create large numbers of life-like, virtual, nude, prepubescent children with correct levels of sexual development, and the lack of evidence that it is feasible to create virtual, anatomic, sub-dural [sic] sexual arousal, the number of web sites which the Defendant visited, and the evidence presented regarding the Defendant's state of mind, that are most probative to a fact finder when assessing the Defendant's knowledge. In this case, the evidence proves beyond a reasonable doubt that the Defendant knew that at least one of the pictures contained an image of a real child engaged in sexually explicit activity. The level of accurate detail in every picture, such as lighting, hair growth, and visible vein engorgement, along with obvious indicators such as the visible staple in one of the pictures, *inter alia,* convinces this Court that the Defendant could not have believed that each and every picture was created without using a real child. The facts in this case also prove beyond a reasonable doubt that Dr. Marchand was aware of the high probability that the pictures depicted real minors and that he deliberately ignored the truth and was not merely foolish or negligent in failing to realize that the images portrayed real children. If the Defendant did not have actual knowledge that real children were portrayed, then he deliberately avoided knowing the truth.[40]

IV. Conclusion

Ashcroft has defined the prosecution's burden of proof in child pornography cases as proof beyond a reasonable doubt that the image charged is that of a real child. Subsequent case law has grafted the *X-citement Video*'s scienter rationale onto *Ashcroft,* requiring additionally that the state prove beyond a reasonable doubt that the defendant knew the images were of real children. Case law has identified seven factors that may be looked to in assessing scienter and has rejected claims that this element must be proven to an absolute degree of epistemological certainty. Case law has also denied any refuge to those who would turn a blind eye to the reality of the origin of the images and to those who choose to be deliberately indifferent to that same issue.

While this two-tier test of prosecutorial viability places additional strain on the already-stretched resources of both law enforcement and prosecutors, these elements of proof do not pose insurmountable barriers to aggressive, successful prosecutions. To paraphrase the court in *Marchand,* the prosecution can still prove, beyond a reasonable doubt, each element of the crime of child pornography. While *Ashcroft* now imposes a heavy burden on the government in its proofs, that burden can, nevertheless, be satisfied.[41]

ENDNOTES

1. *Ashcroft v. Free Speech Coalition* (2002) 535 U.S. 234.
2. Penal Code §§ 311.11(a), 311.4(c), 311.4(d); see *People v. Kurey* (2001) 88 Cal.App.4th 840 (apparent age and actual appearance are forms of evidence allowable for proof of fact of victim's minority status).
3. For a fuller, annotated treatment of this issue, see Susan S. Kreston, *Defeating the Virtual Defense in Child Pornography Prosecutions,* 4 J. High Tech. L. 49 (2004), available online at *http://www.jhtl.org/publications/V4N1/JHTL_Kreston_Article2.pdf.*
4. See, e.g., *United States v. Farrelly* (6th Cir. 2004) 389 F.3d 649.
5. See *United States v. Marchand* (D.N.J. 2004) 308 F. Supp.2d 498, 504 (discussing Federal Bureau of Investigation's Child Exploitation and Obscenity Reference File).
6. *Id.* at 504–505, where a detective from Brazil, a detective from the UK, and two other detectives all testified at trial.
7. INTERPOL estimates that of the victims depicted in the 200,000 child pornography images INTERPOL has on its database, only 254 have been identified.
8. *United States v. Guagliardo* (9th Cir. 2002) 278 F.3d 868, *cert. denied,* (2002) 537 U.S. 1004.
9. *Marchand, supra,* 308 F. Supp.2d at 505 (court noting that testimony of doctor regarding progression of sexual development in images consistent with images of real children); *United States v. Bender* (11th Cir. 2002) 290 F.3d 1279, *cert. denied,* 537 U.S. 1037 (2002); *People v. Kurey* (2001) 88 Cal.App.4th 840 (apparent age and actual appearance are forms of evidence allowable for proof of fact of victim's minority status).
10. E.g., *United States v. Hall* (11th Cir. 2002) 312 F.3d 1250, 1260; *United States v. Richardson* (11th Cir. 2002) 304 F.3d 1061, *cert. denied.* (2003) 537 U.S. 1138.
11. See, e.g., *Marchand, supra,* 308 F. Supp.2d at 508–5 10 (discussing difficulty in producing accurate virtual images capturing variables such as lighting, hair growth, etc.); *United States v. Pabon-Cruz* (S.D.N.Y. 2003) 255 F. Supp.2d 200.
12. See, e.g., *United States v. Morton* (11th Cir. 2004) 364 F.3d 1300, 1303 (Internet history of defendant introduced to establish pattern of sexual exploitation of children).
13. See *United States v. Crow* (5th Cir. 1999) 164 F.3d 229, 238, fn. 4, *cert. denied,* (1999) 526 U.S. 1160 (instructions regarding file encryption reflected defendant's knowledge that intended receiver was minor).
14. See, e.g., *Marchand,* 308 F. Supp.2d at 508–509 (discussing defendant's incriminating statements to law enforcement); *United States v. Sims* (D.N.M. 2002) 220 F. Supp.2d 1222, 1227; *United States v. Davis* (3rd Cir. 2002) 41 Fed.Appx. 566, 572 (unpublished opinion), *cert. denied,* (2002) 537 U.S. 989 (discussing incriminating nature of letters exchanged by defendant and undercover special agent and postal inspector).
15. E.g., *United States v. Riccardi* (D.Kan. 2003) 258 F. Supp.2d 1212, 1234–1235 (child erotica intermingled with child pornography proper "other acts" evidence as probative of knowledge, identity of depicted children, and lack of mistake).

16. See Robert D. Fiete, Ph.D., *Living with Fake Images—How Do We Know When We're Being Fooled?,* presented at "Examination of Digital Child Pornography," New York Prosecutors Training Institute (NYPTI) Seminar, Chappaqua, New York, December 2, 2003 (copy on file with author).
17. Robert Morgester, Assistant Attorney General, California Department of Justice, Address at National Association of Attorneys General Cybercrime Conference, Oxford, Mississippi (Feb. 3, 2003). See also Fiete, *supra.*
18. Morgester, *supra.* See also *Virtual Child Pornography: Fact or Fiction?,* CYBERCRIME NEWSLETTER, NAAG (Nat'l Assoc. of Att'ys Gen., Washington, D.C.) April/May 2004, at 3.
19. *United States v. Slanina* (5th Cir. 2004) 359 F.3d 356, *cert. denied,* (2004) 125 S.Ct. 288.
20. *Id.* at 357; see also *Pabon-Cruz,* 255 F. Supp.2d 200.
21. See *People v. Kurey* (2001) 88 Cal.App.4th 840 (apparent age and actual appearance are forms of evidence allowable for proof of fact of victim's minority status); *People v. Normand* (Ill. App. 2 Dist. 2004) 803 N.E.2d 1099; *People v. Phillips* (Ill. App. 3 Dist. 2004) 805 N.E.2d 667; *State v. Holze* (2004) 683 N.W.2d 93 (unpublished opinion).
22. *United States v. Hilton* (1st Cir. 2004) 363 F.3d 58, rehearing granted and judgment vacated by *United States v. Hilton* (1st Cir. 2004) 386 F.3d 13.
23. *Hilton, supra,* 386 F.3d 13.
24. See *Farrelly,* 389 F.3d at 653–655.
25. *Virtual Child Pornography: Fact or Fiction?* at 4. See also *United States v. Rearden* (9th Cir. 2003) 349 F.3d 608; *Marchand,* 308 F. Supp.2d 498; *Commonwealth v. Simone* (Va. Cir. Ct. 2003) 63 Va. Cir. 216, all discussed *supra.*
26. *Id.*
27. *United States v. Reilly* (S.D.N.Y. 2002) 2002 WL 31307170.
28. *Pabon-Cruz,* 255 F. Supp.2d 200.
29. *Reilly,* 2002 WL 31307170 at 6.
30. *Id.* at 5. See also *United States v. Dean* (D. Me. 2002) 231 F. Supp.2d 382, 386, adopting the *Reilly* analysis.
31. *Ibid.*
32. *Id.* at 207–208.
33. *Id.* at 208.
34. *Ibid.*
35. *Marchand, supra,* 308 F. Supp.2d 498.
36. *Id.* at 505.
37. *Id.* at 506.
38. *Ibid.* (citations omitted).
39. *Id.* at 507.
40. *Id.* at 510.
41. *Ibid.*

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