

IN THE
UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

No. 1:11-cv-08540

APPLE, INC. and NeXT SOFTWARE INC.,
(f/k/a NeXT COMPUTER, INC.),

Plaintiffs,

v.

MOTOROLA, INC.,
and MOTOROLA MOBILITY, INC.,

Defendants.

OPINION and ORDER of May 22, 2012

POSNER, *Circuit Judge*, sitting by designation. On May 16, I conducted a *Daubert* hearing to consider challenges based on Fed. R. Evid. 702 and 703 to four party damages experts: Michael J. Wagner (Motorola), Brian W. Napper (Apple), Carla S. Mulhern (Motorola), and Charles R. Donohoe (Motorola). The four experts, besides having submitted reports pursuant to Fed. R. Civ. P. 26(a)(2), testified at the hearing, followed by oral argument by counsel for Apple and Motorola.

The only issue of any significance concerning Donohoe was a possible conflict of interest owing to his former employment by

Samsung, a firm whose interests so far they relate to this case parallel those of Motorola. He testified without being contradicted that he has no financial stake in Samsung; he neither owns stock in nor has a pension from the company. I reject the challenge to his proposed expert testimony.

The challenges to the other damages experts encompass testimony on all six patents that remain in this litigation, and I will discuss the challenges patent by patent.

But I begin with a few general remarks about *Daubert* hearings. Their purpose is to enable the judge to screen expert evidence in advance of trial. By the time the hearing is held, the expert will have submitted a report and been deposed, the objecting party will have filed a brief in support of its challenge to the expert, and the party desiring to call the expert as a witness at trial will have had an opportunity to file a response to the objecting party's brief. The purpose of the hearing and submissions is to enable the judge to decide whether the expert's proposed evidence is sufficiently reliable to be considered by the jury, if, as in this case, trial is to be to a jury, or by the judge if it is to be a bench trial. The burden of persuading the judge to allow the expert to testify is on the party tendering the expert, and is by a preponderance of the evidence. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 592 n. 10 (1993); *Bourjaily v. United States*, 483 U.S. 171, 175–76 (1987); *Lewis v. CITGO Petroleum Corp.*, 561 F.3d 698, 705 (7th Cir. 2009); Committee Notes on 2000 Amendment to Fed. R. Evid. 702.

The biggest challenge to the judge at a *Daubert* hearing, if as in this case the subject matter of the proposed expert testimony is within the judge's comprehension, is to distinguish between disabling problems with the proposed testimony, which are a ground for excluding it, and weaknesses in the testimony, which are properly resolved at the trial itself on the basis of evidence and cross-examination. "Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the

burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, *supra*, 509 U.S. at 596; see also *Bielskis v. Louisville Ladder, Inc.*, 663 F.3d 887, 894 (7th Cir. 2011); *Heller v. Shaw Industries, Inc.*, 167 F.3d 146, 152, 160 (3d Cir. 1999); *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717, 746 (3d Cir. 1994) (“the judge should not exclude evidence simply because he or she thinks that there is a flaw in the expert’s investigative process which renders the expert’s conclusions incorrect. The judge should only exclude the evidence if the flaw is large enough that the expert lacks ‘good grounds’ for his or her conclusions”). The focus thus is not on results but on methodology. The expert must use a “proper methodology,” an “acceptable methodology.” *Walker v. Soo Line R.R.*, 208 F.3d 581, 587 (7th Cir. 2000).

An important test for deciding whether a problem with proposed expert testimony is disabling, or merely a weakness, is whether the expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999); see also *Zenith Electronics Corp. v. WH-TV Broadcasting Corp.*, 395 F.3d 416, 419 (7th Cir. 2005); *Sheehan v. Daily Racing Form, Inc.*, 104 F.3d 940, 942 (7th Cir. 1997); *Best v. Lowe’s Home Centers, Inc.*, 563 F.3d 171, 181–82 (6th Cir. 2009). If so, then with possible exceptions not necessary to examine in this opinion the testimony is admissible and its weaknesses are to be left to be explored at trial. If not—if the expert, though he could have used in the lawsuit the same approach that he would have been required by the applicable professional standards to use to deal with an identical issue outside the litigation context, failed to do so—then (again with possible exceptions inapplicable to this case) his proposed testimony should be barred. *Id.*; *Guinn v. AstraZeneca Pharmaceuticals LP*, 602 F.3d 1245, 1255 (11th Cir. 2010) (per curiam).

Another test of the adequacy of proposed expert testimony is whether the expert has sufficiently explained how he derived his opinion from the evidence that he considered. In other words the judge must determine whether the methods used by the expert were properly applied to the facts of the case. See Fed. R. Evid. 702(c), (d). “[A]ny step that renders the analysis unreliable...renders the expert’s testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology.” *In re Paoli R.R. Yard PCB Litigation*, *supra*, 35 F.3d at 745 (emphasis omitted). A trial court “may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997); see also *United States v. Mamah*, 332 F.3d 475, 478 (7th Cir. 2003); *Milward v. Acuity Specialty Products Group, Inc.*, 639 F.3d 11, 15 (1st Cir. 2011); Committee Notes to 2000 Amendment of Fed. R. Evid. 702.

It remains to note that even where expert testimony is admissible, it may be too weak to get the case past summary judgment. Thus *Hirsch v. CSX Transportation, Inc.*, 656 F.3d 359, 362 (6th Cir. 2011), distinguishes between the admissibility of evidence and its sufficiency, and upheld a grant of summary judgment on the ground that the expert testimony offered in opposition to a motion for summary judgment, though admissible under the *Daubert* standard, did not preclude summary judgment.

The reader should bear this background discussion in mind as I proceed through the patents.

Apple ‘002 is the patent feature on the toolbar notification window that gives the user basic information about the state of his device, such as battery strength; it’s analogous to an automobile’s dashboard. Apple contends that Motorola infringes the patent by including on its cell phones (and other handheld devices, such as tablets—but for simplicity I’ll pretend in this opin-

ion that the case involves just cell phones) Apple's patented invention of a software program that prevents the notification window from being partially obstructed by an application program selected by the user. Total, as opposed to partial, obstruction occurs when, for example, the user selects the camera program on the iPhone, which fills the entire screen; the patented invention does not prevent total obstruction.

Mr. Wagner asserts that a reasonable royalty for Motorola's use of Apple's invention would be \$100,000. Motorola would pay no more, he contends, because creating the allegedly infringing notification window in the first place had cost only \$67,000, and so it would (he reasons) cost even less to alter the code for the notification window slightly so that it would not prevent applications from partially obstructing the window, thus avoiding infringement. Wagner interviewed Dr. Richard Cooper, one of Motorola's technical experts in this litigation, who wrote a bit of code into the application window program that allowed it to be partially obstructed by other application windows. Apparently he was able to do this in a single afternoon. Wagner further asserts that consumers wouldn't be put off by an occasional partial obstruction, which if true means that Motorola has obtained no revenue from its infringement and so owes Apple no royalty beyond the meager cost savings that it derived from not inventing around. Wagner rounded up to \$100,000 out of an excess of generosity.

Wagner's proposed testimony that the infringing notification window cost Motorola \$67,000 to develop is not expert testimony but fact testimony. The special limitations that Rule 26(a)(2) places on expert testimony are not intended for a witness who merely testifies that his company spent \$x to make something. It also is not the best evidence of that fact, if it is a fact; and while an expert witness is permitted to base an opinion on hearsay evidence, he isn't permitted to use that privilege

merely to shield the source of the evidence from cross-examination.

As for Wagner's report of his conversation with Cooper, it is, like the \$67,000 figure, a mere echo of another witness—another interested witness—and it thus violates the principle that a testifying expert must use the same approach (if it is feasible for him to do so) that he would use outside the litigation context. So imagine that Motorola had not been sued, but had approached Wagner and told him "we're concerned that we may be accused of infringing Apple's patent '002; we'd like you to advise us how much it would cost us to invent around the patented invention." Wagner would not ask an engineer at Motorola; Motorola would ask an engineer at Motorola. Wagner would canvass software firms in search of the lowest price and report back to Motorola. The same approach applied in this case would have required Wagner to shop around. He would not have asked a Motorola engineer, because Motorola doesn't have to hire an outside consultant who is not an engineer to ask an engineering question of a Motorola engineer.

The inadequacy of Wagner's proposed testimony (surprising in light of his careful expert testimony upheld against *Daubert* challenge in *i4i Ltd. Partnership v. Microsoft Corp.*, 598 F.3d 831, 853–55 (Fed. Cir. 2010)) compels me to exclude it. But we are about to see that its exclusion is academic.

Apple's damages expert with respect to patent '002, Mr. Napper, estimates that a reasonable royalty (covering the period up until the trial) would be a lump sum of \$14 million. In other words, he differs with Mr. Wagner by a factor of 140. The size of the disparity is a warning sign. Either one of the experts is way off base, or the estimation of a reasonable royalty is guesswork remote from the application of expert knowledge to a manageable issue within the scope of that knowledge.

Napper bases his \$14 million estimate on a consumer survey conducted by Motorola, in which the survey respondents were

asked to pick, from a list of the attributes of a Motorola cell phone, those attributes that were among the respondent's top five "main reasons" for buying the \$270 phone. Fifteen percent of the respondents selected "appealing features & functions" as among their top five "main reasons" for buying the phone; and Napper, multiplying \$270 by .15, assigned \$40 in consumer value to "appealing features & functions." Napper further assumed that the only "appealing features & functions" that contribute to the phone's value to consumers are those used by a consumer every day. That is an unreasonable assumption. The owner of a cell phone may not use it every day to make a telephone call, but the capability to make a call is obviously a feature that drives consumer demand for a cell phone, just as the fact that a car had airbags might be important to a consumer even though in all likelihood he would never use them.

Four percent of the survey respondents replied that they "reviewed notifications" every day. That is vague—what does "notification" in the cell phone context mean, exactly? When the user clicks on email, for example, he is "notified" of the latest emails he's received. But I'll assume—very generously to Mr. Napper—that the survey respondents assumed it to mean that they look at the notification window at least once a day. Napper multiplied \$40 by .04, yielding \$1.60, then divided that by two (a totally arbitrary choice of divisor) to reach \$0.80. He did this because "reviewed notifications" might not be limited to looking at the notifications window (indeed). He multiplied that figure by the number of cell phones that Motorola sold, and the product of the multiplication was \$14 million.

The survey asked users to name the five attributes that were their main reasons for buying, rather than just the top attribute. Napper in his report assigns to each attribute a value equal to the total cost of the device multiplied by the percentage of people who listed that attribute among their top five. By this methodology, the total value of all the attributes on each respon-

dent's list would come to 500 percent of the value of the phone. That's impossible.

All other objections to Napper's method to one side, it depended on the unverified, indeed arbitrary, assumption that occasional partial obstruction of the notification window would force Motorola to reduce the price of its cell phone from \$270 to \$269.20 (\$270 - \$0.80). Critically, Napper failed to compare a cell phone that has a notification window that can't be partially obstructed with one that has a notification window that can be. So at most all he established is that a small percentage of Motorola consumers value the notification window enough to consult it at least once a day (assuming "reviewed notifications" refers exclusively to viewing the notification window). Suppose they consult it before opening any windows; then they would be indifferent to partial obstruction, because it would never occur when they wanted to look at the notification window.

Now imagine how Mr. Napper would have proceeded had he been hired by Motorola to determine the value to consumers of an unobstructed notification window. Suppose there were no question of infringement; Motorola just didn't know whether it should bother with providing an unobstructed notification window rather than a window that provides notifications but sometimes is obstructed by other applications. It needed to get a sense of the value of such a window to consumers. Suppose Napper conducted the identical survey that he used in this litigation (that is, a Motorola survey) and reported back to Motorola that the average value to the consumer was \$0.80. Motorola would say to him: "Dummy! You haven't estimated the value of the non-obstruction feature. You've just estimated the value of the notification window. What you need to do is find out how many consumers think it worthwhile to pay a higher price for a Motorola phone to avoid occasional partial obstruction of that window. So you'll have to ask the survey respondents: How often do you look at the notification window in an

average day? What windows do you open most frequently in an average day? Suppose the answer includes three windows which when opened would partially obstruct the notification window. The next question would be: If each of these windows, when opened, partially obstructed the notification window, would that be a big annoyance, a little annoyance, or no annoyance? How much lower would the price of a smartphone have to be to compensate you for the occasional partial obstruction caused by these windows?"

I'm not trying to draft a consumer survey. I am merely asserting that the survey that Motorola did conduct, which did not look for aversion to partial obstruction and so far as I can tell had nothing to do with pricing, but rather with helping the company to determine which programs and features are particularly important to cell phone users, is not the kind of survey that Napper—assuming him to be a responsible adviser on marketing or consumer behavior—would have conducted had he been hired outside the litigation context to determine the relative values to Motorola's consumers of a notification window that can be partially obstructed and one that cannot be.

Granted, the Motorola survey isn't quite all that Napper relied on. His report also mentioned an application called "List Notifier Widget," which smartphone users can download for \$1.33 and which performs some of the same functions as the patented notification window. To eliminate from comparison the features of List Notifier Widget that do not duplicate the patented invention, he halved the price, thereby obtaining an estimated value for the notification window of \$0.66, which is close to the \$0.80 estimate that he got from the survey. But by ignoring the non-obstruction feature he opens himself to the same criticism as his use of the survey.

I am mindful that a degree of speculation is permitted in calculating damages, *J. Truett Payne Co. v. Chrysler Motors Corp.*, 451 U.S. 557, 566–67 (1981); *BCS Services, Inc. v. Heartwood 88, LLC*,

637 F.3d 750, 759 (7th Cir. 2011), especially but not only in cases in which the defendant's wrongful conduct has made the calculation of damages difficult. *Haslund v. Simon Property Group, Inc.*, 378 F.3d 653, 658 (7th Cir. 2004). That doesn't seem to be a factor in this case, but nevertheless when the plaintiff has done his best to prove damages his inability to dispel uncertainty concerning the accuracy of his claim is not fatal. But if an expert witness fails to conduct a responsible inquiry that would have been feasible to conduct, his failure cannot be excused by reference to the principle that speculation is permitted in the calculation of damages; that permission presupposes the exhaustion of feasible means of dispelling uncertainty. Uncertainty is a bad; it is tolerated only when the cost of eliminating it would exceed the benefit. Apple could have conducted a survey of Motorola customers (or consumers, or would-be consumers, of cell phones generally) targeted on determining the value consumers attach to having a notification window that is never partially obstructed by another window; consumer surveys designed to determine the value of a particular feature or property of a consumer product are a common and acceptable form of evidence in patent cases. E.g., *i4i Ltd. Partnership v. Microsoft Corp.*, *supra*, 598 F.3d at 855–56; *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1333–34 (Fed. Cir. 2009). Such a survey might well have dispelled the uncertainty that I conclude vitiates Mr. Napper's proposed testimony about the '002.

Remember that “a court may conclude that there is simply too great an analytical gap between the data and the opinion proffered,” *General Electric Co. v. Joiner*, *supra*, 522 U.S. at 146—a judge must exclude expert evidence that fails to meet a minimum threshold of reasonableness. The patentee therefore “must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and unpatented features, and such evidence must be reliable and tangible, and not conjectural or specula-

tive.” *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1318 (Fed. Cir. 2011), quoting *Garretson v. Clark*, 111 U.S. 120, 121 (1884). Apple thinks it enough that Napper used actual numbers from Motorola’s own consumer survey—it doesn’t defend the bizarre way in which he threw those numbers together to come up with his unsupportably high damages figure. No lower figure can be extracted from his report, so there is no basis for a damages estimate that Apple can fall back upon. And so Napper’s evidence with regard to damages for the alleged infringement of patent ‘002 must be excluded.

Apple ‘949. Wagner’s procedure (as well as conclusion—damages of \$100,000) in estimating a reasonable royalty for a license to use this patent (assuming infringement) was identical to the procedure he employed to generate his estimate of damages from the alleged infringement of the ‘002. I granted summary judgment of noninfringement on this patent except with regard to cell phones that come preloaded with Amazon’s Kindle Reader application (those are the only Motorola cell phones that employ the “tap for next item” heuristic claimed by the patent). So, to avoid the alleged infringement, Motorola would have had either to (1) remove the tap gesture from the Kindle Reader application, so that the user could turn the page only with a swiping motion, or (2) not ship cell phones preloaded with the application, since a consumer who wants the application can download it at no charge. Motorola would not have paid more to license the patent from Apple than the cost of the cheaper of those two options. The second alternative would impose an inconvenience on some consumers, though probably a slight one; but Wagner provided no analysis of it. The first alternative he estimated to cost only \$18,000, and rounded up to \$100,000 only (I am guessing) because jurors would be more skeptical of the lower number, especially in light of the extremely high number that Wagner could anticipate from Apple’s expert witness. Again his procedure for cost estimation

was improper. The \$18,000 figure came from an interview he conducted with the supervisor of the Google engineer who added the swipe gesture functionality to the Android operating system (the operating system used in Motorola cell phones, which was created by Google). Wagner calculated that the engineer's salary allocable to that project was \$18,000. But his assumption that the tap functionality is similar to the swipe functionality and that removing a function takes no more time than adding it did is not within Wagner's competence. His proposed testimony must therefore be excluded, but again the exclusion has only academic significance because the procedure used by Apple's expert, again Mr. Napper, was improper.

Napper estimated Apple's damages from the alleged infringement of the '949 at \$35 million (\$2 per Motorola cell phone sold during the damages period). This figure is based on the price that Apple charges for a device called Magic Trackpad which can be plugged into a desktop computer and used as an alternative to a mouse. Whereas a mouse operates by the user's moving it on a mouse pad and pushing its buttons to move the cursor on the computer screen and select items with it, a track pad operates by the user's moving his finger on the pad and then clicking; it is that movement that moves the cursor on the computer screen. The fact that some consumers will pay more for Magic Trackpad than for a mouse—\$69.99, according to Napper's report, versus \$49.99 for Apple's mouse—suggests that some consumers indeed value gestural as opposed to mouse-driven control of the cursor.

At this point in the litigation the dispositive element of the '949 patent is the use of a tap on the right-hand side of the screen to switch to the next page of a Kindle book that has been loaded on the cell phone. The value of that feature to the consumer is again a question the answer to which could be elicited, within a permissible (because unavoidable) range of uncertainty, by a properly designed and executed consumer survey.

Napper's comparison with the Magic Trackpad fails to isolate the value to consumers of the "tap for next item" function. That a consumer will pay something for gestural control does not enable an estimation of how much he will pay for a particular improvement in a system of such control, such as the addition of a new gesture to perform a function that can already be performed with another gesture. The next-item function can be performed with a swipe of the finger as well as a tap, and I've ruled that the tap but not the swipe is covered by the patent.

This is one fatal defect in Napper's proposed testimony but there is another, and that is a failure to consider alternatives to a \$35 million royalty that would enable Motorola to provide the superior gestural control enabled by the relevant claim in the Apple patent. There is no basis in any expert report for supposing that it would cost Motorola millions of dollars, either in invent-around software development or in loss of consumer goodwill (resulting in a loss of sales revenue), to drop the tap for turning the page in the Kindle application (though to do this it would need Amazon's permission) or to drop the Kindle application itself, leading consumers who wanted it to download it themselves (which costs nothing). As it is, Motorola sells many of its cell phones without the Kindle application.

Apple argues that as long as its expert produces a plausible method of avoiding infringement (here, licensing the patent) and thus a basis for estimating a reasonable royalty (the royalty being the cost of the method), the existence of alternative methods that might be substantially cheaper is an issue to be resolved at trial by a comparison of the patentee's evidence with adverse evidence presented, or cross-examination by the lawyer for the alleged infringer, and is irrelevant to the admissibility of the expert's testimony. That cannot be correct, for again one must consider how the expert would proceed in a parallel non-litigation context. So suppose Motorola came to Mr. Napper and said: find out for us how we can at lowest cost, whether in soft-

ware development or loss of consumer goodwill, avoid infringing Apple's patent; we need to know that lowest cost because it will be the ceiling on our willingness to pay for a patent license. If we can avoid infringement at \$1 a phone, we will not pay a royalty in excess of \$1.

In response to such an assignment the expert would not say: It will cost you \$35 million to buy a chip that will duplicate the functionality of Apple's patent without infringing it. Because Motorola would ask him: Is that the only way we can avoid infringement? The expert would reply: Well actually you can drop the tap heuristic from your Kindle application or you can drop the application and tell your consumers that if they want it they can download it without charge; and this is what each of these alternatives would cost you in lost sales, contract damages, or whatever. An expert witness "must provide reasons for rejecting alternative hypotheses 'using scientific methods and procedures' and the elimination of those hypotheses must be founded on more than 'subjective beliefs or unsupported speculation,'" *Clausen v. M/V NEW CARISSA*, 339 F.3d 1049, 1058 (9th Cir. 2003), quoting *Clair v. Burlington Northern R.R.*, 29 F.3d 499, 502 (9th Cir. 1994); see also Committee Notes on 2000 Amendment to Fed. R. Evid. 702, as an aspect of his more general duty to be as "as careful [in his litigation work] as he would be in his regular professional work outside his paid litigation consulting." *Sheehan v. Daily Racing Form, Inc.*, *supra*, 104 F.3d at 942; see also *Kumho Tire Co. v. Carmichael*, *supra*, 526 U.S. at 152.

But I cannot end my analysis of Napper's proposed testimony here, because Napper's report was submitted before my pretrial rulings on the scope of the '949 patent. He had proceeded on the assumption that the patent claim would not be limited to the right-tap heuristic on the Kindle application, but would encompass the use of a horizontal swipe to turn a page or otherwise change screens. I ruled that the claim was limited to the tap, and this narrowed the case to the Kindle Reader

application because that's the only case in which Motorola's cell phones use a "tap for next item." The part of the patent claim on which Napper's proposed testimony is mainly based is a heuristic (an instruction to the cell phone) that "tells" the cell phone to treat an upward or downward motion of the finger as a vertical swipe even if it is not perfectly vertical; as long as it is within a specified range to right and left of vertical (think of a fan), the cell phone interprets the gesture as a perfectly vertical gesture. This is almost certainly a more valuable feature of a cell phone than the finger-tap heuristic for turning pages in pre-installed Kindle applications.

But Napper's proposed testimony does not provide a reliable basis for inferring the value even of the vertical scrolling feature. The fact that many consumers will pay more for a Magic Trackpad than for a mouse tells one nothing about what they will pay to avoid occasionally swiping unsuccessfully because their swiping finger wasn't actually vertical to the screen. Maybe consumers would pay \$2, but there is no evidence they would, or at least none furnished by Napper.

Against this background, the question whether he should be allowed to supplement his expert report to provide an estimate of a reasonable royalty for the Kindle Reader application finger-tap page-turning feature is easily answered: no. For if as I have just said his methodology (the Magic Trackpad comparison) is inadequate to provide a reliable estimate of the value of the vertical-scrolling-in-a-range program, how can it provide a reliable estimate of the value of the page-turning program?

It is conceivable that there is some program or device other than Magic Trackpad that could be matched with the page-turning program to provide an estimate of the value of the latter. But if so it should have been in Napper's report. He was asked to provide an estimate of Apple's damages from the alleged infringement of its '949 patent, and one of the components of those damages was damages for infringing the

finger-tap page-turning element of the patent. He mentioned the component in his expert report as an advance over existing methods but he did not estimate its value. Either that component is buried somewhere in the \$35 million, with the Magic Trackpad meant to provide an analogy to the page-turning program (though this seems unlikely, since tapping as distinct from swiping seems more like clicking on a mouse than moving one's finger on a track pad), or Napper considered the damages likely to be applicable to such an infringement too slight to bother about, as he has provided no evidence on which to base an estimate of a reasonable royalty for that program, let alone for the subprogram applicable only to the Kindle application. So far as appears, the only evidence that could be provided would be consumer-survey evidence; it is much too late for Apple to be permitted to conduct a survey.

Napper's testimony about Apple patent '949 is excluded.

Apple '263. This is a patent on a system for making sure that programs which present video or aural material in real time (rather than storing it for later viewing/hearing) are able to present that material smoothly, without interruption or distortion. This unquestionably is a valuable feature of a smartphone as of other types of computer. Mr. Napper asserts in his expert report that it would cost Motorola \$29 to \$31 million to add a chip to its smartphones that would replace the functionality of the '263 patent. The disabling objection is similar to the objection to Wagner's damages estimate for the '002: in both cases the party's damages expert obtained the essential information, namely the identity of the chip that would avoid infringement, from an agent of the party rather than from a disinterested source. The agent in this case is Nathaniel Polish, Apple's principal technical expert.

Suppose Napper had been hired by Motorola to advise on how at lowest cost Motorola might obtain the functionality of the '263 without infringing that patent. Obviously Napper

would not have gone to the patentee for that information! For it would be in the patentee's interest to suggest a method of inventing around that was extremely costly, because the costlier the invent-around, the higher the ceiling on a reasonable royalty. Of course Polish is not Apple; he is an independent contractor. And if he were the only person competent to opine on substitutes for the '263, his evidence would be admissible, and the jury would be warned that he had a conflict of interest because he is handsomely compensated by Apple to provide technical evidence in support of Apple's claim that Motorola has infringed the '263. But there is no evidence that he is the only engineer who is familiar with computer hardware (or software) that duplicates the functionality of the '263. So again imagine this imaginary conversation between Napper and Motorola, which I'll pretend hired Napper to advise on how at lowest cost to duplicate the patent's functionality without infringement: Motorola: "What will it cost us to invent around, for that will place a ceiling on the royalty we'll pay Apple?" Napper: "Brace yourself: \$35 million greenbacks." Motorola: "That sounds high; where did you get the figure?" Napper: "I asked an engineer who works for Apple." Motorola: "*Dummkopf!* You're fired."

Napper's proposed testimony regarding damages for alleged infringement of Apple's patent '263 is excluded.

Apple '647 (structure detection and linking). Napper's report states that it would cost Motorola \$10.5 million to duplicate the functionality of Apple's patent without infringement. He based this estimate on the price of a program called "Clipboard Manager" which is available for download by iPhone users from the iPhone app store for \$1. Napper apportioned \$0.60 of the \$1 to the functionality covered by the patent and multiplied by the number of Motorola cell phones sold during the damages period to reach the \$10.5 million figure.

"Clipboard manager" is actually a generic term; the capitalized name refers to a specific version offered in the iPhone app

store. During the damages period, Clipboard Manager (the Apple version) was a set of five sub-applications (that is, it did five different things). Three of the sub-applications related to structure detection and linking, the other two to alphabetization and images—that's why Napper apportioned three-fifths of the application's \$1 price to the '647 invention. The three that relate to structure detection and linking are redundant to the superior technology for structure detection and linking that is included in the iPhone—the superior technology is the technology covered by the '647. Napper's report acknowledges both that the '647 technology comes preloaded on the iPhone and that it is superior to Clipboard Manager's version of that functionality. From this it follows that any knowledgeable consumer who buys Clipboard Manager is buying it solely for its alphabetization and images functionality, because its structure detection and linking technology has no value to someone who owns an iPhone; and iPhone users are the only individuals who would be downloading the Clipboard Manager application from the iPhone app store. If all consumers are knowledgeable, the purchase of Clipboard Manager provides zero information on the value to consumers of structure detection and linking, because they already have that functionality; and if so, then Napper's allocation of \$0.60 of the \$1 price to that functionality is senseless.

Of course not all consumers are knowledgeable, and doubtless most value structure detection and linking (not in that terminology of course, but the terms refer to the cell phone's ability to recognize patterns in text such as phone numbers, web addresses, and dates and then to present the user with a list of the actions he or she can take in regard to the patterns, such as calling the phone number or creating a calendar entry). Many of those who don't realize they have it already may indeed be willing to pay \$0.60 to get it (though it seems odd to base damages on sales revenues obtained as a result of mistakes by consumers

for which the seller seems largely responsible). But Napper provided no estimate of how many such ignorant consumers there are, still another question that could be answered within the limits of tolerable uncertainty by a competently designed and administered consumer survey. So once again I must exclude Napper's evidence.

Motorola '559 (preamble sequence) and '898 (countdown). I can discuss these two Motorola patents together. They provide for telecommunication between cell phones and cellular base stations. I assume for purposes of the *Daubert* analysis that these are "standards essential" patents, which is to say patents that cell phone makers must have a license for in order to communicate over specified telecommunications networks, and therefore that Motorola must license to Apple at fair, reasonable, and nondiscriminatory ("FRAND") rates.

Motorola's damages expert Mulhern estimates that a proper FRAND royalty would have cost Apple \$347 million; I assume in this opinion that this figure satisfies FRAND. But Mulhern failed to consider the range of plausible alternatives (to licensing Motorola's patents) facing Apple, alternatives that she would doubtless have considered in non-litigation consulting if asked by Apple (say), what is the lowest-cost method of obtaining access to the functionality of these patents? The answer is to contract with another carrier, rather than AT&T, because Motorola's cellular patents are necessary only in communications over AT&T's network. Apple chose AT&T over the alternatives, of which the most attractive, it appears, would have been Verizon. So presumably any other alternative would have been inferior, and therefore Apple obtained a benefit from contracting with AT&T instead of Verizon, and if that benefit was a fruit of infringement it is a proper basis for computing a reasonable royalty. But Mulhern has not tried to quantify the benefit; nor does she argue that the benefit, though substantial, *cannot* be quantified.

She began her testimony at the *Daubert* hearing by explaining that \$347 million, while a seemingly large number, is nothing to Apple—a company that made some \$30 billion in revenue from the products that Motorola contends infringe the Motorola patents. The implication is that even if Apple could have saved, say, \$100 million by launching on Verizon, what's the difference to Apple of having to pay \$347 million versus \$247 million? Either figure is less than 1 percent of Apple's total profits during the damages period. Obviously a damages estimate cannot be based on such reasoning. For imagine her being hired by Apple for advice on how to minimize its liability to Motorola, and her advising Apple that although her highest estimate of the cost of avoiding infringement is \$347 million, that's probably too high by a couple of hundred million dollars, but that she hasn't bothered to consider avoidance measures that would cost less than \$347 million because one hundred million dollars or so is chicken feed to Apple and so it wouldn't want to pay an additional fee to her to search the alternatives. That is nonsense.

Motorola points out that the contract that AT&T signed was exclusive; during its term, Apple could not have switched to Verizon. That is incorrect. If it could not have negotiated a modification or abrogation of the contract, it could simply have broken it, at a cost measured by the damages to which AT&T would have been entitled. Mulhern made no effort to estimate those damages. She devoted only one page of her report to the possibility of Apple's having contracted with Verizon instead of AT&T; all she says is that Apple and Verizon were unable to strike a deal. True; but the question is, had Apple known that it was infringing Motorola's cellular patents, would it have struck a deal with Verizon? Mulhern gives no reason to doubt that it would have. The deal would have been inferior to the deal with AT&T if there were no issue of infringement, as otherwise Apple would have negotiated a contract with Verizon rather than with AT&T in the first place. But Mulhern offers no evidence

that it would have been \$347 million more costly to Apple. Her failure to analyze Apple's alternative of contracting with Verizon marks her approach to calculating a reasonable royalty for Apple's cellular patents as unreliable; and she offers no backup estimate based on a reliable methodology.

She does offer an alternative measure of damages to her \$347 million estimate of a reasonable royalty. The alternative is \$468 million and includes lost profits of Motorola plus a reasonable royalty on sales not subject to a lost-profits analysis.

The lost-profits estimate posits a counterfactual world in which there is no Apple product on the market because Apple doesn't have a license to use Motorola's cellular patents. This is science fiction. Apple infringes those patents only on the AT&T network, and at worst Apple could have paid the 2.25 percent royalty demanded by Motorola. The alternative-universe approach must take account of alternatives the alleged infringer would have embraced in order to avoid a trip to that universe. *Grain Processing Corp. v. American Maize-Products Co.*, 185 F.3d 1341, 1350–51 (Fed. Cir. 1999). Apple would not have said to itself that because it couldn't launch the iPhone on AT&T without infringing the Motorola patents it would not make a cell phone.

I exclude Mulhern's evidence.

Motorola complains that Napper's references to Motorola's FRAND obligations in his rebuttal report to Mulhern are prejudicial and asks me to strike all FRAND references under Fed. R. Evid. 403. But Motorola's obligation to license its standards-essential patents on FRAND terms—the content of those terms to be determined in the bench trial immediately upon the liability trials—is highly relevant to the royalty it would have been able to extract from Apple had they successfully negotiated a reasonable royalty *ex ante*. I therefore decline to strike Napper's mention of FRAND.

There are several other issues relating to damages for the alleged infringement by Apple of Motorola's cellular patents gov-

erned by FRAND. But they are best deferred to the FRAND trial, in which the central issue will be whether in its dealings with Apple over the cellular patents Motorola violated its obligation to offer licenses that comply with FRAND.