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Disclosure of Expert Computer Simulations, 8 Computer L.J. 51 (1987)

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NOTES

DISCLOSURE OF EXPERT COMPUTER SIMULATIONS

Introduction.....	51
I. Disclosure during Trial.....	53
A. Admissibility under FRE 705.....	54
B. Admissibility under FRE 703.....	55
C. Discovery under FRE 612.....	58
D. Restricting Testimony under FRE 403.....	60
E. Lack of Attorney Preparation.....	61
II. Pretrial Discovery of Experts.....	62
A. Requirements of FRCP 26(b)(4)(A)(i).....	63
B. Requirements of FRCP 26(b)(4)(A)(ii).....	64
1. Effective Cross-examination Requires Advance Preparation.....	65
2. Narrowing of Issues and Trial Organization.....	66
3. Trial Judges' Decisions under FRE 104(a).....	67
4. Preventing a Sanitized Trial.....	67
5. Encouraging Accurate Settlements.....	67
C. Effect of FRE 612.....	68
D. Effect of Work Product—FRCP 26(b)(3).....	68
III. Restricting Non-Disclosed Expert Evidence.....	70
Conclusion.....	72

INTRODUCTION

Computer simulations and modeling¹ can provide significant evidence to a trier of fact. Typically, a party retains an expert who

1. Simulations and modeling mathematically predict how a phenomenon has or will occur based on assumptions. Simulations and modeling are extremely sophisticated and are as much an art as a science. See I. MITRANI, SIMULATION TECHNIQUES FOR DISCRETE EVENT SYSTEMS 1-3 (1982). Computers are useful in simulating and modeling because they can be programmed to manipulate the large number of input data and mathematical instructions which are usually necessary. Examples of simulations and models are found in: *Perma Research & Dev. v. Singer Co.*, 542 F.2d 111 (2d Cir. 1976), *cert. denied*, 429 U.S. 987 (1976) (in breach of contract action, computer simulation used to prove that an automotive anti-skid device could be perfected); *Pearl Brewing Co. v. Jos. Schlitz Brewing Co.*,

prepares a simulation and testifies at trial based on conclusions drawn from the simulation. In cross-examining the expert, the opposing party attempts to show that the simulation does not support the expert's conclusion because one or more of the assumptions on which the simulation is based is incorrect.²

The ability of the opposing party to expose unsupported conclusions or inaccurate simulations depends, to a great extent, on the thoroughness of pretrial discovery of the expert, and disclosure by the expert at trial. Despite the importance of discovery of the expert, courts vary on the amount of disclosure required.

An extraordinary example of a court limiting the requirement of disclosure is found in *Perma Research & Development v. Singer Co.*³ In *Perma*, the Second Circuit affirmed a judgment for nearly \$7,000,000 for defendant's breach of an alleged agreement to use best efforts to perfect an automotive anti-skid device. Plaintiff's evidence was provided almost exclusively by testimony of two expert witnesses. Their testimony was based on the results of a computer simulation developed by one of the experts to determine if the anti-skid device could be perfected. When defendant asked plaintiff's expert witness to disclose the underlying data and theorems employed in the computer simulation, he refused on the ground that it was his "private work product" and proprietary information.⁴ Defendant was not allowed access to the program.

On appeal, the majority held that defendant "had not shown that it did not have an adequate basis on which to cross-examine plaintiff's experts."⁵ One judge dissented.⁶ He stated that considering the complex-

415 F. Supp. 1122 (S.D. Tex. 1976) (econometric model used to simulate market conditions in appropriate sub-markets in antitrust action).

2. Designing an accurate simulation involves mathematically modeling the phenomenon (including picking meaningful input data), incorporating the model into a computer program, and verifying the program by comparing its output with empirical data. Examples of inaccurate assumptions include using linear functions where there are substantial nonlinearities, and incorrectly assuming that a particular parameter is independent of another parameter. J. SMITH, *MATHEMATICAL MODELING AND DIGITAL SIMULATION FOR ENGINEERS AND SCIENTISTS* (1977). The results of a simulation of an automotive anti-skid device might be inaccurate if the program assumed constant coefficients of friction where they were actually heat sensitive, or the input data was only valid for dry pavement. See generally A. LAW & W. KELTON, *SIMULATION MODELING AND ANALYSIS* (1982).

3. 542 F.2d 111 (2d Cir. 1976), cert. denied, 429 U.S. 987 (1976).

4. *Id.* at 124. Neither the trial judge nor the majority stated any legal theory under which plaintiff's expert's program should be protected.

5. *Id.* at 115. While it is not known what defendant asserted on appeal, defendant could not comprehensively attack a complex simulation without knowing the assumptions it was based on. The majority stated "it might have been better practice for opposing counsel to arrange for the delivery of all details of the underlying data and theorems employed in these simulations in advance of trial to . . . avoid unnecessarily belabored discus-

ity of computer simulations and automobile anti-skid systems, the expert's lack of disclosure was a prejudicial error because defendant could not properly attack the credibility of the computer simulation on cross-examination.⁷ He further stated that "it is of utmost importance that appropriate standards be set for the introduction of computerized evidence."⁸

This Note will argue that, while not perfect, the Federal Rules of Evidence (FRE) and the Federal Rules of Civil Procedure (FRCP) provide an outline for the standards of the discovery of computer simulations. Extensive pretrial discovery of details of an expert witness' computer simulation should be liberally permitted within the context of FRCP 26(b)(4)(A) so that opposing counsel can effectively cross-examine an expert at trial.

Part I of the Note will discuss the extent of a court's discretion in controlling the cross-examination of experts at trial. It will then explain the roles of probity of evidence, jury confusion, and judicial economy in determining how much underlying detail an expert must disclose upon cross-examination. Part II will discuss the court's discretion in allowing pretrial discovery of the details of an expert's computer simulation. Additionally, Part II will compare the role of pretrial discovery with trial disclosure, and show that pretrial disclosure is essential for effective cross-examination and for judicial economy. Part III will argue that an expert should be foreclosed from introducing evidence at trial which was not disclosed prior to trial, provided a proper request for discovery was made.

I. DISCLOSURE DURING TRIAL

FRE 702-705 provide guidelines for expert testimony and cross-examination at trial. Under these rules, federal district court judges have considerable discretion in determining the admissibility of expert testimony and the disclosure that an expert must make upon cross-examination.⁹

FRE 702¹⁰ establishes that, where specialized knowledge will assist

sion of highly technical, tangential issues at trial. . . ." *Id.* In both the trial and appellate opinions, it is not clear to what extent defendant requested and received simulation details during pretrial discovery. Under the principles developed in this Note, a court is not obligated to waste trial time to allow a party to become familiar with computer simulations that it should have learned of during pretrial discovery.

6. J. Van Graafeiland.

7. *Perma*, 542 F.2d at 121-26.

8. *Id.* at 124.

9. *Polk v. Ford Motor Co.*, 529 F.2d 259, 271 (8th Cir. 1976), *cert. denied*, 426 U.S. 907 (1976).

10. FED. R. EVID. 702 states: "If scientific, technical, or other specialized knowledge

a trier of fact, an expert may testify concerning that knowledge in the form of opinion or otherwise. The court must make a threshold determination under FRE 702 whether the expert is qualified to testify as an expert because of his "knowledge, skill, experience, training, or education."¹¹ Beyond this threshold, an expert's lack of qualifications affects only the weight to be given to his testimony.¹²

FRE 703¹³ provides that facts or data relied on by an expert in forming opinions or inferences need not be admissible in evidence if the facts or data are a type reasonably relied on other experts in the particular field.

FRE 705¹⁴ determines that, within the court's discretion, an expert may testify as to his or her opinion and give reasons for it without prior disclosure of the underlying facts or data. While the expert may be required to divulge the data on which the opinion is based during cross-examination, the elimination of preliminary disclosure under FRE 703 and 705 allow the trial court more control over the amount and detail of evidence offered at trial.¹⁵

A. ADMISSIBILITY UNDER FRE 705

Unless the court directs otherwise, FRE 705 authorizes an expert to give opinion testimony prior to disclosing the underlying facts and data used to reach the opinion. The purpose is to make expert testimony more understandable to a trier of fact. An expert is allowed to offer an opinion without encumbering and obscuring it with details used in arriving at the opinion.¹⁶ The second sentence of FRE 705, however,

will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise."

11. *Admiral Theatre Corp. v. Douglas Theatre Co.*, 437 F. Supp. 1268, 1297 (D. Neb. 1977), *modified*, 585 F.2d 877 (8th Cir. 1978).

12. *Id.*

13. FED. R. EVID. 703 states:

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to him at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

14. FED. R. EVID. 705 states: "The expert may testify in terms of opinion or inference and give his reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination."

15. FED. R. EVID. 705 advisory committee's note.

16. FED. R. EVID. 705 specifically designed to avoid the need for hypothetical questions. The "hypothetical question asks the expert to assume as true certain enumerated facts which are in evidence and could be found true by the trier. [The] expert [then gives] his opinion based on the facts . . . [and] the trier may then accept the opinion if the

states that an expert "may" be required to disclose the underlying facts and data upon cross-examination.¹⁷

Underlying facts and data are subject to cross-examination.¹⁸ In fact, "unduly harsh limitation on cross-examination of a key expert witness can amount to prejudicial error."¹⁹ In determining whether to allow an expert to testify to the facts underlying an opinion, the court must consider whether the testimony should be excluded under FRE 403. Exclusion is warranted where the testimony's probative value is outweighed by such dangers as confusion of the issues, misleading the jury, or wasting the court's time.²⁰

To avoid confusing the jury and wasting the court's time, opposing counsel must be prepared to cross-examine an expert witness concerning specific, relevant underlying facts and data. The advisory committee notes to FRE 705 establish that advance preparation is necessary:

If the objection is made that leaving it to the cross-examiner to bring out the supporting data is essentially unfair, the answer is that he is under no compulsion to bring out any facts or data except those unfavorable to the opinion. The answer assumes that the cross-examiner has advance knowledge which is essential for effective cross-examination. . . . Rule 26(b)(4) of the Federal Rules of Civil Procedure, as revised, provides for substantial discovery in this area²¹

B. ADMISSIBILITY UNDER FRE 703

FRE 703 authorizes an expert to testify in terms of opinion based on facts and data not necessarily admissible into evidence, if of a type reasonably relied on by experts in the particular field.²² The court must determine whether the facts and data are of such type.²³

For example, an expert, within limits, is allowed to testify based on

trier finds" the facts true. 11 J. Moore & H. Bendix, *Moore's Federal Practice*, section 705.10, at VII-71 (2d ed. 1985).

Hypothetical questions were often so long and detailed that juries could not follow the question or understand the expert's answer. *See, e.g., Smith v. Ford Motor Co.*, 626 F.2d 784, 791 (10th Cir. 1980) ("A hypothetical question was propounded to a physician The question took half an hour to propound; it was necessarily long because plaintiff's medical history was long. It was objected that a few of the multitudinous statements of the hypothesis lacked meticulous accuracy.")

17. FED. R. EVID. 705.

18. *Maatschappij Voor Industriële Waarden v. A.O. Smith Corp.*, 590 F.2d 415, 421 (2d Cir. 1978).

19. *Id.*

20. *United States v. Gillis*, 773 F.2d 549, 554 (4th Cir. 1985).

21. FED. R. EVID. 705 (Advisory Committee's note).

22. Whether the expert must disclose what these facts and opinions are is governed by FRE 705. FED. R. EVID. 703 (Advisory Committee's note).

23. *American Bearing Co. v. Litton Industries*, 540 F. Supp. 1163, 1169 (E.D. Pa. 1982), *aff'd*, 729 F.2d 943 (3d Cir. 1984), *cert. denied*, 469 U.S. 854 (1984).

hearsay, which is usually inadmissible evidence. It is assumed the expert possesses the skill to properly evaluate hearsay in his area of expertise, and weigh it appropriately under the circumstances.²⁴ FRE 703 was designed to "bring the judicial practice into line with the practice of the experts themselves when not in court."²⁵ For example:

a physician in his own practice bases his diagnosis on information from numerous sources, [most of which would be admissible in evidence only after a substantial authentication process,] yet the physician makes life-and-death decisions in reliance upon them. His validation, expertly performed and subject to cross-examination, ought to suffice for judicial purposes.²⁶

Yet, where the individual expert witness relies on facts and data that are not in evidence, and experts in the field would not reasonably rely upon those facts and data, the expert witness' testimony does not, in the absence of other indicia, have the requisite trustworthiness.²⁷

In determining whether facts and data are reasonably relied upon by experts in the field, the courts must make a preliminary factual inquiry, out of the jury's presence, under FRE 104(a).²⁸ Ordinary rules of evidence do not apply during this inquiry. "[T]he judge will of necessity receive evidence pro and con on the issue."²⁹ Opposing counsel is present when a party presents its evidence. This, in effect, provides disclosure of underlying facts and data of the expert's simulation not otherwise obtainable by opposing counsel. The amount of disclosure that a party must make during the FRE 104 inquiry depends upon the criteria the court uses to determine whether facts are reasonably relied upon.

Several approaches have been used to determine whether the facts and data are reasonably relied upon by experts in the field. Elements of these approaches include assessing the reliability of the expert's opinion and its foundation,³⁰ determining whether there are facts in the rec-

24. *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1223, 1245 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987).

25. FED. R. EVID. 703 (Advisory Committee's notes).

26. *Id.*

27. *In re "Agent Orange,"* 611 F. Supp. at 1245.

28. FED. R. EVID. 104(a) states:

Preliminary questions concerning the qualifications of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b). In making its determination it is not bound by the rules of evidence except those with respect to privileges.

29. FED. R. EVID. 104 (Advisory Committee's notes).

30. *See Soden v. Freightliner Corp.*, 714 F.2d 498, 503 (5th Cir. 1983) (expert testimony in products liability case not reasonably relied on under FRE 703 because data was provided by sister company in anticipation of litigation without explanation as to method of gathering data); *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1223, 1244

ord to support the expert's opinion,³¹ and whether there is any proof offered to show that the opinion is reasonably relied on.³²

The various approaches used by courts can be broadly classified into two views. The more restrictive view requires the trial court to determine not only whether the data are of a type reasonably relied on by experts in the field, but also whether the underlying data are trustworthy for hearsay or other reasons. The more liberal view allows the expert to base an opinion on data of the type reasonably relied on without separately determining the trustworthiness of the particular data involved.³³

The more liberal view is in harmony with the intent of FRE 703. The guarantee of trustworthiness is that the data be of a type reasonably relied on by experts in the field. A further requirement of trustworthiness is not required by the rule. For the same reason, assessing the reliability of the foundation, or determining whether there are facts already in the record is not required by FRE 703.

The following cases illustrate some of the approaches used by courts to determine whether facts and data are reasonably relied upon under FRE 703. In *Soden v. Freightliner Corp.*,³⁴ the Fifth Circuit affirmed the trial court's decision to exclude under FRE 703 an expert's opinion testimony which was based on statistical data concerning the frequency of truck engine fires. The court stated that the trial court's inquiry into whether the data was reasonably relied on must be made on a case-by-case basis and should focus on the reliability of the expert's opinion and its foundation. The factors used to measure the reliability of the data, included whether the data was part of a published study or prepared strictly in anticipation of litigation, presented in a formal manner into evidence, and gathered pursuant to an explained method.³⁵

In *Wilder Enterprises, Inc. v. Allied Artists Pictures Corp.*,³⁶ the

(E.D.N.Y. 1985) (expert testimony excluded under FRE 703 because expert physician relied upon plaintiff's hearsay checklists providing medical information).

31. See *Wilder Enterprises, Inc. v. Allied Artists Pictures Corp.*, 632 F.2d 1135, 1143-44 (4th Cir. 1980) (expert economist's testimony was properly excluded in antitrust action where he testified based on local real estate values without having a real estate expert to verify the values); *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1267, 1281 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987) (expert testimony excluded as not reasonably relied on because the expert relied almost exclusively on hearsay information without examining the victim); *Polk v. Ford Motor Co.*, 529 F.2d 259, 271 (8th Cir. 1976), *cert. denied*, 426 U.S. 907 (1976) (expert testimony allowed concerning automobile roof support in negligence and strict liability case).

32. See *Wilder Enterprises*, 632 F.2d at 1143-44.

33. *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1223, 1244 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987).

34. 714 F.2d 498 (5th Cir. 1983).

35. *Id.* at 503-04.

36. 632 F.2d 1135 (4th Cir. 1980).

Fourth Circuit upheld the district court's exclusion of an expert economist's testimony under FRE 703 in an antitrust case. The expert, who admitted he was not an expert in local real estate values, made calculations based on local real estate values. There were no facts presented to support his calculations and no proof offered to show that his calculations and the underlying data were of a type reasonably relied on by experts in the local real estate valuation field.³⁷

In *Polk v. Ford Motor Co.*,³⁸ plaintiff's expert testified concerning a defective roof support based on the number of times a car rolled over in an accident. In upholding the trial court's decision to admit the expert's testimony, the court stated that "[t]here must, of course, be sufficient facts already in evidence or disclosed by the witness as a result of his investigation to take such testimony out of the realm of guesswork and speculation."³⁹

In *Shu-Tao Lin v. McDonnell Douglas Corp.*,⁴⁰ plaintiff's expert used a computer model to estimate the future earnings of the deceased in a wrongful death action. The court held the expert was qualified to make computer model projections, but those projections required a stronger basis than simple arithmetic computations to qualify under FRE 703.⁴¹ For example, no foundation was established for using a constant income tax rate in the calculations.⁴²

Although it seems that courts making an inquiry under FRE 703 should focus on what experts in the field rely on, they often tend to focus on facts in the record and the foundation for the expert's opinion. For this reason, a party may be forced to disclose more of the underlying facts of a computer simulation than would otherwise be necessary. While this may provide some help for opposing counsel in cross-examination, the complexity of computer simulations usually makes this disclosure inadequate to prepare opposing counsel to cross-examine experts without extensive pretrial discovery.

C. DISCOVERY UNDER FRE 612

FRE 612⁴³ provides that where a witness uses a document to refresh his memory for testifying, an adverse party may require the document to be produced and cross-examine the witness concerning it. FRE 612 applies when the witness uses the writing either "(1) while testify-

37. *Id.* at 1143-44.

38. 529 F.2d 259 (8th Cir. 1976), *cert. denied*, 426 U.S. 907 (1976).

39. *Id.* at 271.

40. 574 F. Supp. 1407 (S.D.N.Y. 1983), *aff'd in part, rev'd in part*, 742 F.2d 45 (2d Cir. 1984).

41. *Id.* at 1410.

42. *Id.*

43. FED. R. EVID. 612 states in relevant part:

ing, or (2) before testifying, if the court in its discretion determines it is necessary in the interests of justice. . . ."⁴⁴ FRE 612 applies both when the witness testifies in a deposition and at trial.⁴⁵

The purpose of FRE 612 is to assist opposing counsel in free and well-informed cross-examination of witnesses.⁴⁶ If a witness uses the document to refresh his memory at trial, the document must be produced as a matter of right. If used before trial, then the court must exercise its discretion in determining whether to require production of the document. This is to prevent opposing counsel from engaging in a "fishing expedition" of the documents that the witness used in preparing for trial.⁴⁷ It is reasonable to expect that an expert will review documents that he used in forming his opinions before testifying. The documents may involve numerous details, and the expert may be called to testify a substantial period of time after he used the documents in forming his opinion.

There is very little case law dealing with the application of FRE 612 to experts. In civil cases, FRE 612 has little impact on the production of documents used by experts because of the broad scope of pre-trial discovery of experts authorized by FRCP 26(b)(4)(A).⁴⁸ However, if a document is denied discovery under FRCP 26(b)(4)(A)(ii), and is used by an expert to refresh his memory while testifying, then FRE 612 requires that the document be produced. If the expert uses the document prior to testifying, then the court should balance the possibility of more effective cross-examination with the harm caused to the producing party. Where the expert uses a specific document to prepare to testify, there is more reason to compel production than where the facts are known to experts in general. Because of this, a judge may properly require production under FRE 612, even if it would not be required under FRCP 26(b)(4)(A)(ii).

When the writing used by a witness is privileged by the work product doctrine, there is a tension between the policies of requiring production under FRE 612 and refusing production under FRCP 26(b)(3).⁴⁹

[I]f a witness uses a writing to refresh his memory for the purposes of testifying, either—

- (1) while testifying, or
 - (2) before testifying, if the court in its discretion determines it is necessary in the interests of justice,
- an adverse party is entitled to have the writing produced at the hearing, to inspect it, to cross-examine the witness thereon, and to introduce in evidence those portions which relate to the testimony of the witness.

44. FED. R. EVID. 612.

45. See *In re Comair Air Disaster Litig.*, 100 F.R.D. 350 (E.D. Ky. 1983).

46. *Id.* at 353.

47. FED. R. EVID. 612 (Judiciary Committee's report).

48. See *infra* text accompanying notes 76-98, for a discussion of FRCP 26(b)(4)(A).

49. See *infra* text accompanying notes 100-112, for a discussion of Rule 26(b)(3).

The concern is that a party's lawyer could shape an expert witness's testimony with items of work product and then prevent effective rebuttal of the expert's testimony by denying access to the items.⁵⁰ The court in *In re Comair Air Disaster Litigation* reasoned that "without reviewing these materials opposing counsel 'cannot know or inquire into the extent to which witnesses' testimony has been shaded by counsel's presentation of the factual background.'"⁵¹ The *Berkey* court stated that in some cases the work product doctrine could be waived or qualified, "where an attempt is made to exceed decent limits of preparation" or concealment.⁵²

D. RESTRICTING TESTIMONY UNDER FRE 403

FRE 403⁵³ provides that relevant evidence may be excluded at trial if "its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence." There are several instances in which FRE 403 could appropriately be used to exclude the testimony of an expert concerning a computer simulation. FRE 403 can be used to exclude an expert from voluntarily presenting evidence and from involuntarily answering an opposing counsel's question on cross-examination because one of the FRE 403 dangers substantially outweighs the probative value of the evidence.

Two scenarios illustrate how juries can be misled regarding expert's testimony about a computer simulation. One scenario is where an expert is not required to disclose the underlying basis for his simulation, misleading the jury as to the results of a severely flawed computer program. Computer simulations generally involve a degree of mathematical sophistication not easily comprehended by most jurors.⁵⁴ Experts typically have impressive credentials and speak persuasively.⁵⁵ In many cases, opposing counsel might have been able to expose the flaws in the simulation if permitted to cross-examine the expert about them.

A second scenario is where an expert is required to disclose the

50. *Berkey Photo, Inc. v. Eastman Kodak Co.*, 74 F.R.D. 613 (S.D.N.Y. 1977).

51. 100 F.R.D. 350, 353 (E.D. Ky. 1983) (quoting *James Julian, Inc. v. Raymtheon Co.*, 93 F.R.D. 138, 146 (D. Del. 1982)) (aircraft owner entitled to production of manufacturer's accident report used by expert to prepare for deposition).

52. *Berkey*, 74 F.R.D. at 617.

53. FED. R. EVID. 403.

54. See *Perma Research & Dev. v. Singer*, 542 F.2d 111, 121-26 (2d Cir. 1976), cert. denied, 429 U.S. 987 (1976). Cf. *City of Cleveland v. Cleveland Electric Illuminating Co.*, 538 F. Supp. 1257, 1266-67 (N.D. Ohio 1980) (stating that computer simulations are generally complicated and confusing).

55. See *In re "Agent Orange" Prod. Liab. Litig.* 611 F. Supp. 1223, 1256 (E.D.N.Y. 1985), aff'd, 818 F.2d 187 (2d Cir. 1987).

simulation in detail on cross-examination. The jury may be confused by the technical difficulty of the simulation, and may decide the facts based on inappropriate reasons. Some courts restrict cross-examination when the jury does not possess the requisite level of comprehension.

While trial courts are reluctant to exclude relevant evidence, "[e]xclusion of evidence of low probative value is particularly appropriate when admission would result in expenditures of substantial trial time and jury confusion."⁵⁶ Courts have refused to allow expert testimony where "[e]stablishing the testimony's low probative value would embroil the jury in a protracted and fruitless inquiry into complex issues."⁵⁷

In order to avoid the dangers illustrated in the scenarios and the possibility of exclusion of evidence under FRE 403, opposing counsel must be prepared for cross-examination of experts. For reasons of judicial economy, that preparation must occur prior to trial.

E. LACK OF ATTORNEY PREPARATION

Where an attorney has not properly prepared himself to cross-examine an expert witness, courts generally will not provide extra time for preparation. In *Abernathy v. Superior Hardwood, Inc.*,⁵⁸ plaintiff used a medical expert to testify concerning plaintiff's back injury. At trial, defendant argued that plaintiff's expert witness should not have been allowed to testify concerning the results of an electromyograph test, because defendant's counsel did not have a reasonable opportunity to prepare for cross-examination or to introduce rebuttal testimony. The trial court refused both to exclude the expert's testimony and to grant a continuance to allow defendant's counsel time to prepare rebuttal testimony. The trial judge stated that he did not think the expert's testimony had a significant impact on the jury, and had a continuance been granted, the judge would have had to postpone his next trial.⁵⁹

The Seventh Circuit upheld the trial court's decision noting that "in most cases . . . surprise is a poor reason to exclude expert testimony, or to recess a trial for the purpose of allowing rebuttal testimony to be obtained . . . when FRCP 26(b)(4) makes it so easy to get pretrial discovery of the other side's expert evidence."⁶⁰ The court also noted the need for an attorney to retain his own expert to help prepare for trial. "A lawyer who undertakes to cross-examine a medical expert without having his own expert at his elbow has only himself to blame if the wit-

56. *Id.* at 1255.

57. *Id.* at 1283.

58. 704 F.2d 963 (7th Cir. 1983).

59. *Id.* at 969.

60. *Id.*

ness utters some arcanum that the lawyer cannot understand."⁶¹

Courts must have discretion to control what an expert discloses at trial for judicial economy and to avoid misleading or confusing the jury. Opposing counsel must obtain extensive discovery of the underlying facts of a computer simulation prior to trial for effective cross-examination.

II. PRETRIAL DISCOVERY OF EXPERTS

Part I demonstrated that in order to promote judicial economy and to avoid jury confusion, trial courts may restrict disclosure by experts upon cross-examination. However, where opposing counsel is properly prepared for trial by thoroughly understanding the expert's computer simulation in advance of trial, he should be able to present evidence and conduct cross-examination in an orderly and effective manner. The result is a reduction in wasted trial time and minimum jury confusion. Part II of this Note argues that extensive pretrial discovery of experts should be liberally permitted within the context of FRCP 26(b)(4)(A).

FRC 26-37 provide for pretrial discovery and depositions. These rules were "intended to insure 'proper litigations, . . . making the trial less a game of blindman's bluff and more a fair contest with the basic issues and facts disclosed to the fullest practicable extent.'"⁶² In the landmark case *Hickman v. Taylor*,⁶³ the Supreme Court stated that the deposition-discovery rules should be interpreted to enable "parties to obtain the fullest possible knowledge of the issues and facts before trial."⁶⁴ The notes of the Advisory Committee to FRE 705, allowing an expert to testify without disclosing underlying facts and data, states that effective cross-examination depends on the substantial pretrial discovery provided for by FRCP 26(b)(4).⁶⁵

FRCP 26 contains general provisions governing discovery. FRCP 26(b)(4)⁶⁶ provides guidelines for the discovery of experts in prepara-

61. *Id.*

62. *Scott & Fetzer Co. v. Dile*, 643 F.2d 670, 674 (9th Cir. 1981) (quoting *United States v. Proctor & Gamble Co.*, 356 U.S. 677, 682 (1958)) (citations omitted).

63. 329 U.S. 495 (1947).

64. *Id.* at 501 (attorney for defendant was not required to produce statements made by personal injury survivors during the attorney's interviews).

65. FED. R. EVID. 705 (Advisory Committee's notes).

66. FED. R. CIV. P. 26(b)(4) states:

Discovery of facts known and opinions held by experts, otherwise discoverable under the provisions of subdivision (b)(1) of this rule and acquired or developed in anticipation of litigation or for trial, may be obtained only as follows:

(A)(i) A party may through interrogatories require any other party to identify each person whom the other party expects to call as an expert witness at trial, to state the subject matter on which the expert is expected to testify, and to state the substance of the facts and opinions to which the expert is expected to testify and a summary of the grounds for each opinion. (ii) Upon motion, the

tion for trial. FRCP 26(b)(4) is generally interpreted to "override and limit the more general provisions of the remaining discovery machinery described in FRCP 27 through 37."⁶⁷ Although some cases hold to the contrary, FRCP 26(b)(3),⁶⁸ which governs work product protection, is not applicable in limiting discovery of material, such as a computer simulation, prepared by an expert in anticipation of trial.⁶⁹ "FRCP 26(b)(4) sets down the sole method by which discovery of facts known and opinions held by experts" may be obtained."⁷⁰

FRCP 26(b)(4)(A) concerns discovery of experts who are expected to testify at trial. FRCP 26(4)(A)(i) provides that a party may through interrogatories require any other party to 1) identify each expert who the party intends to call at trial, 2) state the subject matter on which the witness is expected to testify, and 3) state the substance of the facts and opinions to which the expert is expected to testify and a summary of the grounds for each opinion. FRCP 26(b)(4)(A)(ii) states that upon motion, the court may order further discovery by other means, e.g., deposition. This Note argues that through FRCP 26(b)(4)(A)(ii) courts should allow liberal discovery of experts who are expected to testify at trial.

A. REQUIREMENTS OF FRCP 26(b)(4)(A)(i)

Very little case law dealing with the requirements for FRCP 26(b)(4)(A)(i) exists.⁷¹ The requirement of identifying experts is relatively straightforward. However, the degree to which a party is required to state the subject matter, the substance of the facts and opinions, and a summary of the grounds of the opinion is not clear.

In *Hockley v. Zent, Inc.*,⁷² the court determined that to satisfy the FRCP 26(b)(4)(A)(i) requirement it is necessary to "state the substance of the facts and opinions to which an expert is expected to testify and a summary of the grounds for each opinion."⁷³ The court noted that

court may order further discovery by other means, subject to such restrictions as to scope and such provisions, pursuant to subdivision (b)(4)(C) of this rule, concerning fees and expenses as the court may deem appropriate.

67. *Seiffer v. Topsy's International, Inc.*, 69 F.R.D. 69, 72 (D. Kan. 1975).

68. See *infra* text accompanying notes 100-112.

69. See *Dennis v. BASF Wyandotte Corp.*, 101 F.R.D. 301, 303 (E.D. Pa. 1983); *Graham, Discovery of Experts Under Rule 26(b)(4) of the Federal Rules of Civil Procedure: Part One, an Analytical Study*, 1976 U. ILL. L.F. 895, 923-29 (1976).

70. *Shackelford v. Vermeer Mfg. Co.*, 93 F.R.D. 512, 513 (W.D. Tex. 1982); see also *Beverage Marketing Corp. v. Ogilvy & Mather Direct Response, Inc.*, 563 F. Supp. 1013, 1014 (S.D.N.Y. 1983).

71. See *Hockley v. Zent, Inc.*, 89 F.R.D. 26, 30 (M.D. Pa. 1980) (court held that the discovering party must file FRCP 26(b)(4)(A)(ii) motion to compel discovery to obtain further discovery).

72. 89 F.R.D. 26 (M.D. Pa. 1980).

73. *Id.*

FRCP 26(b)(4)(A)(i) interrogatories "are designed to afford the questioner notice of the basic arguments the responding litigant intends to press at trial."⁷⁴ In addition, the court quoted a Second Circuit opinion stating that "[t]he policy which prompted amendment to FRCP 26(b)(4) . . . to allow more liberal discovery of potential expert testimony was . . . intended to make the task of the trier of fact more manageable by means of an orderly presentation of complex issues of fact."⁷⁵

B. REQUIREMENTS OF FRCP 26(B)(4)(A)(II)

Courts take a wide variety of views on the showing that a party must make to have a FRCP 26(b)(4)(A)(ii) motion granted. The extent of the discovery allowed under Rule 26(b)(4)(A)(ii) also varies. The language of FRCP 26(b)(4)(A)(ii) provides essentially no direction, "delegating the question entirely to the discretion of the court."⁷⁶

Courts generally take the view that requests for interrogatories under FRCP 26(b)(4)(A)(i) must be made before the court will grant a motion for further discovery under the rule.⁷⁷ This seems to be a valid requirement since answers to interrogatories provide direction for further discovery, increasing the efficiency of the discovery process. Some courts require the opposing party to completely answer the interrogatory before granting a motion for further discovery.⁷⁸ This appears inappropriate because it encourages the opposing party to provide inappropriate answers to interrogatories to stall the requesting party's discovery.

Two rationales exist for limiting discovery of experts who testify at trial. First, discovery of documents prepared by an expert is subject to the special showing of need that is required under FRCP 26(b)(3).⁷⁹ This argument fails because the discovery of documents prepared by experts is not governed by FRCP 26(b)(3).⁸⁰

Second, it is unfair to have one party pay for an expert to prepare for trial while the discovery party takes advantage of the preparation without bearing the expense.⁸¹ FRCP 26(b)(4)(c) provides the solution

74. *Id.*

75. *Id.* (quoting *Weiss v. Chrysler Motors Corp.*, 513 F.2d 449, 456-57 (2d Cir. 1975)).

76. *Herbst v. Int'l Tel. & Tel. Corp.*, 65 F.R.D. 528, 529 (D. Conn. 1975) (The court noted that the comments of the advisory committee on the 1970 amendment to the rules offers guidance on the exercise of this discretion).

77. *See Hockley v. Zent, Inc.*, 89 F.R.D. 26, 29-31 (M.D. Pa. 1980).

78. *Id.*

79. *Wilson v. Resnick*, 51 F.R.D. 510, 511-12 (E.D. Pa. 1970).

80. *See Graham*, *supra* note 69, at 923-29.

81. *See Smith v. Ford Motor Co.*, 626 F.2d 784, 792 (10th Cir. 1980) (includes a discussion of the historical development of FRCP 26(b)(4) in this context), *reh'g denied*, 626 F.2d 784 (10th Cir. 1980), *cert. denied*, 450 U.S. 918 (1981).

that the parties share the expense of the expert. "The language of FRCP 26 suggests that experts hired solely to testify at trial are entitled to no greater protection than any other witness, once the problem of allowing an adversary to receive the benefit of another's expert without cost to the adversary is resolved."⁸²

There are at least five persuasive reasons to allow liberal discovery under FRCP 26(b)(4)(A) of experts who are expected to testify at trial.

1. *Effective Cross-examination Requires Advance Preparation*

Notions of justice require that judges and juries have access to all relevant information when deciding law and fact. "Mutual knowledge of all the relevant facts gathered by both parties is essential to proper litigation."⁸³

FRCP 26(b)(4)(A) was designed to provide relevant information through liberal discovery of experts in preparation for cross-examination at trial. The notes of the Advisory Committee to FRCP 26(b)(4) state that "a prohibition against discovery of information held by expert witnesses produces in acute form the very evils that discovery has been created to prevent. Effective cross-examination of an expert witness requires advance preparation."⁸⁴ FRE 705, which governs the disclosure of experts at trial, was also fashioned with the expectation of substantial pretrial discovery. The notes of the Advisory Committee to FRE 705 states that the practice of "leaving it to the cross-examiner to bring out the supporting data" [underlying an expert's opinion,] "assumes that the cross-examiner has the advance knowledge which is essential for effective cross-examination." The committee concludes that FRCP 26(b)(4) "obviate[s] in large measure the obstacles which have been raised in some instances to discovery of findings, underlying data, and even the identity of the experts."⁸⁵

Even if an inordinate amount of time at trial is spent in cross-examination, there is little chance of presenting all of the pertinent information without advance preparation, including extensive discovery. This is particularly true when computer simulations are involved. There are many ways to mathematically approach a problem. "[A] lawyer even with the help of his own experts frequently cannot anticipate the particular approach his adversary's expert will take or the data on which he will base his judgment on the stand."⁸⁶

82. *Dennis v. BASF Wyandotte Corp.*, 101 F.R.D. 301, 304 (E.D. Pa. 1983).

83. *Hickman v. Taylor*, 329 U.S. 495, 507 (1947).

84. FED. R. CIV. P. 26(b)(4) (Advisory Committee's note).

85. FED. R. EVID. 705 (Advisory Committee's note).

86. FED. R. CIV. P. 26(b)(4) (Advisory Committee's note).

In a widely quoted law review article, Professor Friedenthal discussed the difficulties of preparing to cross-examine experts:

It is fundamental that opportunity be had for full cross-examination, and this cannot be done properly in many cases without resort to pre-trial discovery, particularly when expert witnesses are involved. Unlike two eye witnesses who disagree, two experts who disagree are not necessarily basing their testimony on their views of the same objective features. Instead they may rely on entirely separate data, since the theoretical bases underlying their respective approaches may differ rationally. Before an attorney can even hope to deal on cross-examination with an unfavorable expert opinion he must have some idea of the bases of that opinion and the data relied upon. If the attorney is required to await examination at trial to get this information, he often will have too little time to recognize and expose vulnerable spots in the testimony.⁸⁷

A significant and persuasive way to determine if a computer simulation is based on inaccurate assumptions is to compare the results of the simulation with actual test data. When an opposing party discovers the details of the simulation in advance of trial, it can make such comparisons. At trial, the opposing party can require the expert to justify these discrepancies. Without extensive pretrial discovery of the underlying facts and data relied on in a computer simulation, including a copy of the computer program, a lawyer can only be partially prepared to cross-examine an expert.

2. *Narrowing Issues and Trial Organization*

Liberal pretrial discovery allows a party the time and information necessary to prepare for an organized, orderly trial. This decreases jury confusion and increases judicial economy. "The policy which prompted amendment to FRCP 26(b)(4) . . . to allow more liberal discovery of potential expert testimony . . . was intended to make the task of the trier of fact more manageable by means of an orderly presentation of complex issues of fact."⁸⁸

In *City of Cleveland v. Cleveland Electric Illuminating Co.*,⁸⁹ the court granted defendant's motion to compel pretrial production of data and calculations underlying plaintiff's experts' reports based on computer simulations. The court noted the importance of pretrial discovery in narrowing complex issues to prepare for cross-examination of experts at trial.⁹⁰ It held that where the expert reports were based on

87. Friedenthal, *Discovery and Use of an Adverse Party's Expert Information*, 14 STAN. L. REV. 455, 485 (1962).

88. *Hockley v. Zent, Inc.*, 89 F.R.D. 26, 30 (M.D. Pa. 1980) (quoting *Weiss v. Chrysler Motors Corp.*, 515 F.2d 449, 456-57 (2d Cir. 1975)).

89. 538 F. Supp. 1257 (N.D. Ohio 1980).

90. *Id.* at 1266.

"complex data, calculations and computer simulations which are [not] deducible from the written reports, [pretrial discovery of the underlying details is essential to] effective and efficient examination of [the] experts at trial."⁹¹

3. *Trial Judges' Decisions Regarding Admissibility Under FRE 104(a)*

Arguing effectively before a judge requires advance preparation. Part I evidenced that a judge must make a preliminary decision whether to admit evidence or allow experts to testify under FRE 104(a). It is essential that opposing counsel be prepared to argue before the judge.

In *Shu-Tao Lin v. McDonnell Douglas Corp.*,⁹² plaintiff's expert used a computer model to estimate the future earnings of the deceased in a wrongful death action. The trial court held that defendant did not receive a fair trial because the expert's computer methodology and data were not adequately disclosed during pretrial discovery.⁹³ Agreeing with the trial court, the appellate court noted that pretrial "discovery not only affords the parties an opportunity to prepare cross-examination but also affords the district court an opportunity to assess the admissibility of testimony before the jury hears it."⁹⁴

4. *Preventing a Sanitized Trial*

By allowing pretrial discovery of experts, an opposing party can get the expert's data and facts on the record before trial. This will make it more difficult for the expert to dishonestly change his opinion to match later developments in the litigation or at trial.⁹⁵

5. *Encouraging Accurate Settlements*

A case is much more likely to properly settle before trial if the parties can assess the relative strengths of each party's position before trial.⁹⁶ For reasons of judicial economy and fairness to the litigants, liberal discovery should be allowed to facilitate early and fair settlements.

For the five reasons given, extensive discovery of experts an opposing party expects to call should be liberally allowed. In explaining its

91. *Id.* at 1267.

92. 742 F.2d 45 (2d Cir. 1984).

93. 574 F. Supp. 1407 (S.D.N.Y. 1983).

94. *Shu-tao*, 742 F.2d at 48 n.3.

95. See *Dennis v. BASF Wyandotte Corp.*, 101 F.R.D. 301, 303-04 (E.D. Pa. 1983); see also *Scott & Fetzer Co. v. Dile*, 643 F.2d 670, 676 (9th Cir. 1981) (district court abused its discretion in allowing undisclosed witness and exhibits, and use of a new theory of the case).

96. *Dennis*, 101 F.R.D. at 303.

reasons for allowing discovery of an expert, the court in *Dennis*⁹⁷ gave an excellent summary of the five above stated reasons:

By deposing the expert witness, trial counsel can far better assess the value of the case. A deposition should improve the prospects of an amicable settlement, or if settlement is not reached, a greater likelihood of a fair trial with all the relevant facts presented to a jury for its ultimate decision. It avoids trial by surprise. It further reduces the possibility that an expert witness may alter or amend his generalized opinion to fit the evidence presented at trial (citation omitted). Finally, taking the oral deposition of plaintiff's expert witness in no way prejudices plaintiff's case.⁹⁸

C. EFFECT OF FRE 612

As discussed in Part I(C),⁹⁹ situations may exist where an expert relies on documents to refresh his memory in preparation to testify which documents have not previously been required to be produced under FRCP 26(b)(4)(A). In that case, FRE 612 provides a more compelling reason to produce the document that does FRCP 26(b)(4)(A)(ii), because there is a greater likelihood that the document will be relevant to the expert's testimony.

D. EFFECT OF WORK PRODUCT—FRCP 26(B)(3)

The analysis used to determine whether an expert must disclose facts he knows under FRCP 26(b)(4)(A) is complicated where the facts are attorney work-product under FRCP 26(b)(3).¹⁰⁰ The second sentence of FRCP 26(b)(3) provides that "the court shall protect against disclosure of the mental impressions, conclusions, opinions, or legal theories of an attorney or other representative of a party concerning the litigation."¹⁰¹ Where facts known to an expert are attorney work product, there is tension between the need for liberal discovery of experts

97. 101 F.R.D. 301 (E.D. Pa. 1983).

98. *Id.* at 303-04.

99. See *supra* text accompanying notes 43-52.

100. FED. R. CIV. P. 26(b)(3).

101. The second sentence of FRCP 26(b)(3) states: "In ordering discovery of such materials when the required showing has been made, the court shall protect against disclosure of the mental impressions, conclusions, opinions, or legal theories of an attorney or other representative of a party concerning the litigation." The first sentence of FRCP 26(b)(3) expressly does not limit discovery under FRCP 26(b)(4). It has been held that the second sentence is not limited by FRCP 26(b)(4). See *Bogosian v. Gulf Oil Corp.*, 738 F.2d 587, 594 (3d Cir. 1984). Some courts have applied the "substantial need" test of the first sentence of FRCP 26(b)(3) in deciding whether materials given to experts containing work product are discoverable. See, e.g., *Baise v. Alewel's, Inc.*, 99 F.R.D. 95 (W.D. Mo. 1983) (defendant had not shown "substantial need" and "undue hardship" in motion to compel discovery of expert's correspondence from counsel).

under FRCP 26(b)(4)(A) and the need to protect an attorney's work product under FRCP 26(b)(3).

The major policy reason for protecting attorney work product, as discussed in *Hickman v. Taylor*,¹⁰² is that were materials containing lawyers' mental and legal impressions "open to opposing counsel on mere demand, much of what is now put down in writing would remain unwritten."¹⁰³ As a result, "[i]nefficiency, unfairness and sharp practices would inevitably develop in the giving of legal advice and in the preparation of cases for trial. . . . [T]he interests of the clients and the cause of justice would be poorly served."¹⁰⁴

In *Boring v. Keller*,¹⁰⁵ to prepare for being deposed, defendant's expert inadvertently received an unedited version of defendant's attorney's summary of plaintiff's deposition. Plaintiff sought to inspect a copy of the document, but defendant refused claiming work-product protection. In requiring defendant to produce the document, the court reasoned that while opinion work product is normally given a very high degree of immunity, "it is subject to discovery when the need for such information is at issue and compelling."¹⁰⁶ The court gave two reasons opinion work product is not protected where it has been used by an expert to formulate his opinion. First, the work product privilege may be waived where counsel gives work product to an expert to influence and shape his testimony and counsel subsequently withholds the material from the opposing party. Second, withholding information after it has been used to shape the expert's opinion frustrates the policy of allowing preparation for effective cross-examination in FRCP 26(b)(4)(A).¹⁰⁷

A different approach was taken by the court in *Bogosian v. Gulf Oil Corp.*,¹⁰⁸ in which the Third Circuit held that the plaintiff in an antitrust suit was not required under FRCP 26(b)(4)(A) to produce documents shown to an expert that constituted work product. The court first established that showing the documents to an expert did not waive the work product privilege.¹⁰⁹ It next noted that the second sentence of FRCP 26(b)(3) is not limited by FRCP 26(b)(4).¹¹⁰ Finally, the court held that cross-examination could be "comprehensive and effective" when questioning the basis of an expert's opinion without having access to the lawyer's work product used in assisting the expert in formulating

102. 329 U.S. 495 (1947) (attorney for defendant not required to produce statements made by personal injury survivors during the attorney's interviews).

103. *Id.* at 511.

104. *Id.*

105. 97 F.R.D. 404 (D. Colo. 1983).

106. *Id.* at 407.

107. *Id.* at 407-08.

108. 738 F.2d 587 (3d Cir. 1984) (Becker, J., dissenting).

109. *Id.* at 593.

110. *Id.* at 594.

his opinion.¹¹¹

The approach in *Boring v. Keller* is more desirable because under the second sentence of FRE 705¹¹² the expert will probably be required to disclose the underlying facts and data supporting his conclusions. In order to promote advance preparation for cross-examination of experts, the work-product privilege should be waived where there is a strong reason to believe that the expert has substantially relied on the privileged information.

III. Restricting Non-Disclosed Expert Evidence

For reasons of fairness and judicial economy, a party should be precluded from introducing evidence at trial that was not seasonably disclosed before trial after a proper FRCP 26(b)(4)(A) request was made. This conclusion follows from Parts I and II because without restricting the introduction of undisclosed evidence at trial, a party could effectively undermine the policies behind liberal discovery to facilitate efficient and effective cross-examination of experts at trial.

FRCP 26(e)(1)(B)¹¹³ requires a party to seasonably supplement its response to a request for discovery, with respect to questions answered under FRCP 26(b)(4)(A)(i), with information obtained after the answer.¹¹⁴ FRCP 26(e)(3) gives the court power to impose a duty to supplement responses. A court should impose the duty with respect to discovery required by FRCP 26(b)(4)(A)(ii).

Tests used by courts in deciding whether to exclude an expert from testifying with evidence that was not properly disclosed "are intimately tied to factual questions of prejudice, surprise . . . and the effect upon the progress of the trial" caused by allowing or disallowing the testimony.¹¹⁵ Whether to exclude expert testimony is "not capable of resolution generically or in a factual void."¹¹⁶

In *Meyers v. Pennypack Woods Home Ownership Assoc.*,¹¹⁷ the

111. *Id.* at 595.

112. *See supra* text accompanying notes 14-21.

113. FED. R. CIV. P. 26(e)(1)(B) states:

Supplementation of Responses. A party who has responded to a request for discovery with a response that was complete when made is under no duty to supplement his response to include information thereafter acquired, except as follows: (1)(B) the identity of each person expected to be called as an expert witness at trial, the subject matter on which he is expected to testify, and the substance of his testimony.

114. *See* FED. R. CIV. P. 26(c) (Advisory Committee's note).

115. *Stacey v. Bangor Punta Corp.*, 107 F.R.D. 786, 789 (D. Me. 1985) (court refused to consider restricting expert testimony until after a party calls an expert witness offering nondisclosed testimony).

116. *Id.* at 789.

117. 559 F.2d 894 (3d Cir. 1977) (trial court abused its discretion in excluding two ex-

court enumerated the following four basic considerations to be used in deciding whether to limit or exclude expert testimony:

- (1) the prejudice or surprise in fact of the party against whom the excluded witnesses would have testified, (2) the ability of that party to cure the prejudice, (3) the extent to which waiver of the rule against calling unlisted witnesses would disrupt the orderly and efficient trial of the case or of other cases in the court, and (4) bad faith or willfulness in failing to comply with the court's order.¹¹⁸

The court should use its discretion in weighing these considerations, except where there is willful concealment of expert information. In that case, the expert should not be allowed to testify concerning the information, absent the most compelling circumstances.

In *Scott and Fetzer Co. v. Dile*,¹¹⁹ the Ninth Circuit held that the district court abused its discretion in allowing plaintiff to call an expert witness at trial where plaintiff did not give notice of the identity of the witness until after trial had begun. The lack of notice denied defendant his right to prepare for effective cross-examination and rebuttal.¹²⁰ In *Scott*, plaintiff knew that it would call the expert witness after the time of their initial answer to interrogatories but before trial. Plaintiff claimed it did not give a supplemental response because it was waiting for defendant to reciprocate with a simultaneous supplemental response. The Ninth Circuit noted that FRCP 26(e) does not require simultaneous supplementation of answers to interrogatories.¹²¹ The withholding of evidence was held willful and substantially prejudicial to the defendant.

In *Gorby v. Schneider Tank Lines, Inc.*,¹²² defendant-appellant deliberately refrained from disclosing a particular statement to its experts until after their depositions had been taken. The trial judge refused to allow the expert's testimony concerning the statement. In affirming the trial court's ruling, the Seventh Circuit stated that the lack of disclosure created an unfair surprise and impaired the appellee's ability to prepare an effective rebuttal, which were "two of the evils FRCP 26(b)(4) sought to eliminate."¹²³

*Abernathy v. Superior Hardwood, Inc.*¹²⁴ takes a more liberal view of admitting previously undisclosed evidence. In *Abernathy*, plaintiff performed a test one week before trial and did not inform defendant

pert witnesses offered by plaintiff on the ground that they were not listed in pretrial memorandum in racial discrimination case).

118. *Id.* at 904-05.

119. 643 F.2d 670 (9th Cir. 1981).

120. *Id.* at 673.

121. *Id.* at 673-74.

122. 741 F.2d 1015 (7th Cir. 1984).

123. *Id.* at 1019.

124. 704 F.2d 963 (7th Cir. 1983) (personal injury action).

the test had been made or of its positive result until one half hour before trial was scheduled to begin. Defendant's counsel did not object to proceeding with the trial. Defendant was given a copy of the test results the next day. At trial, the judge refused to either exclude the expert's testimony concerning the test or to grant a continuance of trial to give defendant time to prepare for rebuttal. In affirming the trial court's decision, the Seventh Circuit noted that pretrial discovery is easy to obtain under FRCP 26(b)(4), and that plaintiff's expert had indicated during a deposition (approximately one month before trial) that he might perform the test. The court stated that defendant's counsel "could have sought a commitment from plaintiff's counsel to make the results of any such test available to him well before trial, but he did not."¹²⁵

The court's holding in *Abernathy* places a high burden on opposing counsel to request specific evidence before trial. This is inappropriate because the party calling the expert is in a superior position to understand its own test results. Judges should routinely place the burden for supplementing FRCP 26(b)(4)(A)(ii) responses through FRCP 26(e)(3) orders, and acknowledging the burden for supplementing FRCP 26(b)(4)(A)(i) responses required by FRCP 26(e)(1)(B) on the calling party.

CONCLUSION

Effective cross-examination of expert witnesses requires advance preparation. This is particularly true where the expert uses computer simulations, because of the variety of methods and approaches that can be used to mathematically model or simulate a phenomenon. The court should have the flexibility to control the amount of detail that an expert witness is required to provide on cross-examination at trial. Extensive pretrial discovery should be allowed under FRCP 26(b)(4)(A)(ii). Judicial economy and fairness rationales require a party to be foreclosed from introducing evidence at trial that was not seasonably disclosed before trial provided it is properly requested.

Alan Aldous

125. *Id.* at 969-70.