

United States Court of Appeals,

Fifth Circuit.

No. 96-60084.

Loretta WATKINS, Administrator of the Estate of Eugene Watkins, Deceased, and Individually as the Wrongful Death Beneficiary of Eugene Watkins, Deceased, Plaintiff-Appellant,

v.

TELSMITH, INC., et al., Defendants,

Telsmith, Inc., Defendant-Appellee.

Sept. 16, 1997.

Appeal from the United States District Court for the Northern District of Mississippi.

Before JOLLY, JONES and WIENER, Circuit Judges.

EDITH H. JONES, Circuit Judge:

Loretta Watkins sued Telsmith, Inc., after a conveyor manufactured by Telsmith's predecessor caused the death of her husband, Eugene Watkins. Telsmith removed the case to federal court, and the case proceeded to trial under the theory that the conveyor embodied an unreasonably dangerous design. Upon a motion by Telsmith, the district court heard outside the jury's presence and then excluded the testimony of Watkins's proffered expert under Fed. Rule of Evidence 702. As this exclusion was fatal to the plaintiff's case, the district court also granted Telsmith's motion for judgment as a matter of law. Watkins appeals, alleging that the court improperly applied *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), to exclude the expert testimony. Finding no abuse of discretion, we affirm.

I.

Eugene Watkins was a superintendent at Memphis Stone and Gravel Co. During a visit to the company's Batesville, Mississippi gravel wash plant on November 16, 1989, Watkins and Tommy Bolton were working with a Model 374 portable conveyor, or "radial stacker," that was manufactured in 1943 by Barber-Greene Company, TelSmith's predecessor-in-interest. In order to move the conveyor, they began clearing away sand accumulated around its base. At some point, Eugene Watkins walked under the conveyor, the wire rope supporting the conveyor snapped, and the conveyor fell on him. He died the next day.

The Model 374 conveyor arm, on which the conveyor belt ran, was attached to a base that sat on wheels. The conveyor was portable and could be towed at low speeds. The conveyor arm could be moved vertically via an elevator system and could also be moved radially. Neither of these functions had been used in recent years. The parties stipulated that the machine had been modified several times by Memphis Stone and Gravel and earlier owners.

The conveyor arm is upheld by a continuous piece of wire rope that runs the length of the conveyor and wraps around both ends. The conveyor arm is raised and lowered by a hydraulic cylinder that acts on the wire rope. At the base of the conveyor, near its wheels, sand that had fallen off the conveyor over time had hidden the wire rope from view, and it was in this area that the wire rope failed.

Loretta Watkins's lawsuit originally alleged negligence,

defective design, and failure to warn claims, but only the defective design claim went to trial. Her theory was that the conveyor was an unreasonably dangerous product because the conveyor arm was only supported by one wire rope.

Watkins offered the testimony of Marcus Dean Williams as an expert to assert that the conveyor was unsafe and that alternative designs were feasible. The alternative designs were: 1) supporting the conveyor with two wire ropes, 2) rerouting the cable to enable easier inspection, 3) supporting the conveyor with two hydraulic cylinders attached to the frame itself, 4) using side posts or "outriggers" to hold the conveyor up in the event the wire rope failed, and 5) using a cross bar or stop plate to lock the conveyor in place when elevated.

Watkins also intended to introduce the 1987 American National Standards Institute (ANSI) Safety Standards for Conveyors and Related Equipment, as well as evidence of Telsmith's post-1943 designs to buttress the feasibility of her proposed design changes. Telsmith filed two motions in limine to exclude Williams's testimony and evidence of the post-manufacture standards.

At trial, relying on his perception that Telsmith had conceded that the proposed alternate designs were feasible, Watkins's counsel agreed not to introduce the 1987 ANSI standards or evidence of subsequent designs.<sup>1</sup>

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<sup>1</sup>The colloquy on this motion went as follows:

THE COURT: Do you have any problem with that [exclusion of the 1987 ANSI standard and evidence of subsequent design] Mr. Smith [plaintiff's counsel]?

The next motion was the exclusion of Williams. As part of the hearing on this motion pursuant to Rule 104(a) of the Federal Rules of Evidence, the court heard testimony from Williams as well as from Dr. Raymond Neathery, the defense expert.

Williams received a Bachelor of Science in Civil Engineering from Mississippi State University in 1949 and was a registered

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MR. SMITH: No, Your Honor. As long as I get in return the fact that these alternate designs that our expert will testify to are feasible. And I think that's what his response says. And that is that—

THE COURT: There's no contest as to feasibility?

MR. SMITH: That's the response that I got to it. And as long as that's understood, then I think that would be absolutely correct.

THE COURT: Well, are we talking about technology that existed in 1943?

MR. BROCK: The technology existed, Your Honor. It's a question of whether it's a good design or better design or bad design.

THE COURT: Yes. Well, you follow me. Under that *Ward v. Hobart* case, I believe it was a ... meat grinder that was manufactured in 1948, and the case was tried in 1966 or something, and the Fifth Circuit ruled it was error ... to hold this manufacturer to the duty, using 1965, 1966 standards, for a machine that was manufactured 20 years earlier. And that's what the *Ward v. Hobart* case held. That's still good law.

MR. SMITH: Your Honor, the only reason I brought up the ANSI standards was if—and any subsequent changes in the product was if the defense were to say, well, that design change is not feasible, and since they've now said that those design changes are feasible, then I have no need to bring that up. I think the Court is absolutely correct.

THE COURT: Well, as long as we understand that I'm going to hold this manufacturer to standards that existed in 1943 when the machine as manufactured, not something that was developed in 1963. That pretty well takes care of that....

professional engineer. He was a B-17 pilot in World War II, and as a part of his duties served as a maintenance supervisor. His work in that capacity at least tangentially exposed him to the use of conveyors. Later, he worked for Boeing in facility engineering and tool design. Williams also served with the Army Corps of Engineers in the early 1960's. He worked for the Mississippi Highway Department for two periods totaling approximately seven years. In addition, Williams taught drafting, surveying, structural design and engineering materials at Northwest Mississippi Junior College.

Williams testified that he had extensive experience in building roads and bridges and other structural engineering projects, in all of which he observed conveyors in use. For the Army, Williams participated in setting up a gravel wash facility. There was a portable conveyor at that wash plant, but he could not remember how the conveyor arm was supported. Williams had seen conveyors using hydraulic cylinders, outriggers, and stop plates or bars, but none using two wire ropes. He could neither remember many of the types and brands of conveyors that he had worked with nor clearly describe whether his work directly utilized conveyors.<sup>2</sup>

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<sup>2</sup>On direct, he testified:

Q. In [your work with the Highway Department in] '49 and '50 and '51, were you involved with transporting materials from place to place?

A. Yes, sir.

Q. Describe what you did with the Highway Department during those three or four years.

A. Well, in the first place, I was not in charge of any of that. The contractors handled all of that operation.

Williams did not know if any conveyors were built in 1943 using his

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But we do the inspection, and so I was involved in the surveying and inspection end of it at that time.

Q. Were there conveyors being used to transport materials from place to place during that operation?

A. Yes, sir.

Q. And was it your job to be familiar with those conveyors?

A. Yes, to some extent, it was.

And then on cross-examination, he testified:

Q. Most of these conveyors that you've seen were not a major concern to you at the time you had them, were they? You were basically the civil engineer on the job?

A. Yes, sir.

Q. You saw them there, but—

A. Yes, sir.

Q. —you didn't bring them in; the contractor brought them in, things like that; right?

A. Lot of them the contractor brought in, yes, sir.

Q. In your accident reconstruction work, you've only dealt with two other conveyors; isn't that right?

A. I think that's right.

Q. And those were auger or screw-type conveyors?

A. No. One of them was a belt conveyor. Maybe it was three of them.

Q. Okay. Do you recall telling me in your deposition that you only had two others and they were both screw conveyors?

A. Yes, sir. I think that's what I told you.

Q. But now you think there's another belt conveyor?

A. Well, I keep remembering some of these things.

alternative proposed designs.

He also stated that he was familiar with the safety factors employed in using wire rope and has tested the strength of wire rope. Williams used his education in materials strength and structural design, information that was "common knowledge" among engineers, and his experience with conveyors to analyze the design in question. He considered the problem "not really enough to be a good engineering project."

Williams lacks education in mechanical engineering, and his experience in machine design is limited to a project he conducted in one of his engineering classes in which he designed the base of a chair. He has never designed a conveyor, although he claimed to have designed "nuts and bolts and that kind of thing one at a time." Williams has performed accident reconstruction for three conveyor cases, but only one was a belt conveyor; in those cases, he investigated whether the conveyors should have been designed with guards to prevent workers from being caught in the conveyor.

Preparing for this case, Williams twice examined the reconstructed conveyor as it operated on site. He reviewed manufacturer's design drawings for the Model 374 conveyor and studied photographs of the conveyor. He also considered the 1987 ANSI standard. Although Williams testified that he made some sketches and calculations as part of his analysis, he had kept none of them because he did not consider them to be important. He made no design drawings and conducted no tests of his proposed alternatives. Williams did not analyze how much the alternative

designs would cost or what impact they would have on the conveyor's utility. He admitted that he reached his opinion in this case after one day's work.

Raymond Neathery testified as an expert for Telsmith. Neathery has a Master of Science degree in Mechanical Engineering and a Ph.D. in Engineering Mechanics and is a professor of mechanical design. He testified that the process of design, although varying slightly by product and company, includes several essential steps: identifying the problem, conceptualizing possible solutions, investigating the present art, evaluating the concept through engineering analysis, modeling, and testing, and selecting the alternative. Neathery described this as an iterative process that requires a number of attempts at each step. He testified that Williams's analysis reveals only an attempt at problem identification and proposing solutions, but no investigation of other designs, analysis, or testing of alternatives.

On cross-examination, Neathery testified that the designs proposed by Williams were "conceptual ways of [supporting the conveyor], and ways which, given time and effort, might be properly designed to do it." But according to Neathery's analysis, Williams's proposed alternatives "interfere with function." Neathery conceded, however, that the conveyor could probably be operated with two cables, and that a locking pin or other device could be used to secure the conveyor at a particular height. Neathery also agreed that the defendant had manufactured a conveyor that used a hydraulic cylinder lift rather than a cable, but he did

not know whether such a conveyor was manufactured in the 1940s. In response to questioning by the court, Neathery stated that the proposed alternatives would not be "exorbitant in cost."

The next day, the district court excluded Williams's testimony. The court found Williams unqualified as an expert because his training is in civil engineering, while the expertise required by this case, of which Williams possesses little, lies in mechanical engineering. The court found Williams's testimony substantively inadequate under Rule 702, *Daubert* and applicable Mississippi products liability law. Watkins now appeals the exclusion of the expert evidence and the resulting judgment as a matter of law.

## II.

District courts enjoy wide latitude in determining the admissibility of expert testimony, and "the discretion of the trial judge and his or her decision will not be disturbed on appeal unless "manifestly erroneous'." *Eiland v. Westinghouse Electric*, 58 F.3d 176, 180 (5th Cir.1995) (quoting *Smogor v. Enke*, 874 F.2d 295 (5th Cir.1989)).

Dispositive of this appeal is the question whether Williams's testimony satisfied the *Daubert* standard of rigor.<sup>3</sup> Watkins contends that the standards articulated in *Daubert* only apply to "scientific knowledge" and expert testimony based on "novel"

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<sup>3</sup>We do not reach Watkins's contentions that the trial court erred in finding Williams insufficiently qualified and in applying the Mississippi case law on products liability. *Sperry-New Holland v. Prestage*, 617 So.2d 248 (Miss.1993).

scientific evidence. This case presents no such novelty, she contends, but merely the application of Williams's experience and common engineering principles to evaluate the safety of this conveyor and envision alternative designs. The jury should have been allowed to hear and evaluate his testimony.

To evaluate these contentions, it is necessary briefly to recapitulate *Daubert*. The Supreme Court held that when expert testimony is offered, the trial judge must perform a screening function to ensure that the expert's opinion is reliable and relevant to the facts at issue in the case. See *Daubert*, 509 U.S. at 589, 113 S.Ct. at 2794-95. *Daubert* went on to make "general observations" intended to guide a district court's evaluation of scientific evidence.<sup>4</sup> The nonexclusive list includes "whether [a theory or technique] can be (and has been) tested," whether it "has been subjected to peer review and publication," the "known or potential rate of error," and the "existence and maintenance of standards controlling the technique's operation," as well as "general acceptance." 509 U.S. at 593-594, 113 S.Ct. at 2796-97. The Court summarized:

The inquiry envisioned by Rule 702 is, we emphasize, a flexible one. Its overarching subject is the scientific validity and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission. The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate.

*Id.* at 594-95, 113 S.Ct. at 2796.

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<sup>4</sup>The *Daubert* case concerned admissibility of novel expert witness testimony on the relation of an expectant mother's taking of Bendectin and the incidence of children's birth defects.

One appellate court case supports Watkins's position that *Daubert* does not apply here. In *Compton v. Subaru of America, Inc.*, 82 F.3d 1513 (10th Cir.), *cert. denied*, --- U.S. ----, 117 S.Ct. 611, 136 L.Ed.2d 536 (1996),<sup>5</sup> the Tenth Circuit held that "*Daubert* sets out additional factors the trial court should consider under Rule 702 if an expert witness offers testimony based upon a particular methodology or technique," but "application of the *Daubert* factors is unwarranted in cases where expert testimony is based solely upon experience or training." *Id.* at 1518-19. The court concluded that *Daubert* did not apply to the proposed testimony of an automotive engineer in a car rollover case because he was not relying on "some particular methodology or technique," but upon "general engineering principles and his twenty-two years of experience as an automotive engineer." *Id.* at 1519.

Two other circuits have, however, disagreed with *Compton* and held that *Daubert* is not limited to novel scientific techniques or methodologies. See *Cummins v. Lyle Indus.*, 93 F.3d 362, 366-371 (7th Cir.1996); *Peitzmeier v. Hennessy Indus., Inc.*, 97 F.3d 293, 296-98 (8th Cir.1996), *cert. denied*, --- U.S. ----, 117 S.Ct. 1552,

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<sup>5</sup>The Ninth Circuit has held that the standards for admission of scientific knowledge do not apply to expert testimony based on specialized knowledge of criminal behavior patterns. See *United States v. Cordoba*, 104 F.3d 225, 230 (9th Cir.1997) (modus operandi of drug traffickers); *United States v. Webb*, 115 F.3d 711 (9th Cir.1997) (expert testimony as to why people typically hide guns in the engine compartments of their cars). However, two judges wrote in separate concurrences in *Webb* to explain that the trial judge still has a significant role in ensuring the reliability of expert testimony based on specialized knowledge. See *Id.* at 715-22 (Jenkins, J. concurring) and *Id.* at 722 (Fletcher, J. concurring). These cases are not particularly relevant to engineering or applied science testimony about product design efficacy and safety.

137 L.Ed.2d 701 (1997).

In *Cummins*, the Seventh Circuit affirmed the exclusion of expert testimony in a products liability case brought against the manufacturer of an industrial trim press. 93 F.3d at 365. The district court excluded testimony by the plaintiff's expert regarding adequacy of warnings and the feasibility of alternative designs because the expert lacked a reliable basis for his opinions under *Daubert*. The court based its decision on the facts that "he had never tested his alternative designs and warnings or read any studies of such tests," and did "not have practical knowledge concerning the use of the alternative components in an industrial, machine-tool production environment." *Id.* at 366. The court of appeals agreed that the proffered expert's testimony did not meet the requirements of Rule 702. *Cummins* outlined how Seventh Circuit cases have interpreted *Daubert*:

First, the district court must determine whether the expert's testimony is reliable.... [A] district judge should assure himself, before admitting expert testimony, that the expert knows whereof he speaks. In the context of theoretical and applied science, this requirement places on the court the obligation to ensure that the proffered testimony pertains to scientific knowledge....[I]t must rule out subjective belief or unsupported speculation.... Second, the district court has to determine whether the evidence or testimony assists the trier of fact in understanding the evidence or in determining a fact in issue.

*Id.* at 367-68 (citations and quotations omitted).

Much like *Watkins*, the plaintiff in *Cummins* argued that the case dealt not with a novel scientific theory but "the application of well-known instruments of the engineering profession to a particular and not-out-of-the-ordinary application." *Id.* at 368,

n. 2. The court responded that although *Daubert*'s holding was limited to the "scientific context," *Daubert*, 509 U.S. at 589-90, n. 8, 113 S.Ct. at 2795, the Supreme Court also stated that "we do not read the requirements of Rule 702 to apply specially or exclusively to unconventional evidence." *Id.* at 593, n. 11, 113 S.Ct. at 2796. As *Cummins* explained, this language "counsels against wholesale abandonment" of *Daubert* in cases involving "the application of science to a concrete and practical problem," particularly because of the difficulty in differentiating between scientific and technical testimony. *Cummins*, 93 F.3d at 368, n. 2.

The court concluded:

The basic task of the district court remains essentially the same—to ensure that the evidentiary submission is of an acceptable level of "evidentiary reliability." It may be that, in some "as applied" situations, some of the non-exhaustive factors noted by the Supreme Court in *Daubert* are worthy of less emphasis than in situations involving more abstract or novel scientific theory. We do not believe, however, that [the plaintiff] has established here that the district court exceeded the bounds of permissible judgment in placing significant emphasis on the lack of any testing of [her expert's] view. Indeed, the witness had acknowledged that testing was a part of the design process.

93 F.3d at 368, n. 2 (citations omitted). Testing is not an "absolute prerequisite" to the admission of expert testimony on alternative designs, but Rule 702 demands that experts "adhere to the same standards of intellectual rigor that are demanded in their professional work." *Id.* at 369.

The Eighth Circuit has also applied *Daubert* to engineering testimony about the efficacy of alternative designs for a

"low-tech" product.<sup>6</sup> In *Peitzmeier*, the court affirmed the exclusion of expert testimony regarding design defects in, and alternative designs to, a tire-changing machine. 97 F.3d at 297. The court noted that the expert had "neither designed nor tested" proposed safety devices, having only made "rough sketches that have not been adapted into engineering drawings, much less prototypes." *Id.* The expert admitted "that he has never designed, built, or tested a platform that has been shown to reduce the launch effect of an exploding tire and wheel assembly while adequately supporting the tire and wheel assembly during the tire-changing process." *Id.* The expert's proposed designs had not been subjected to peer review and could not be evaluated for their "general acceptance" or known rate of error because they had not been designed or tested. *Id.* at 297-98.

We agree for the reasons stated by the Seventh and Eighth Circuits that the *Daubert* analysis applies to the type of expert testimony presented by Williams.<sup>7</sup> Not every guidepost outlined in

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<sup>6</sup>See also *Pestel v. Vermeer Mfg. Co.*, 64 F.3d 382 (8th Cir.1995) (evidence of expert's proposed alternative engineering design excluded on basis of *Daubert*).

<sup>7</sup>Although no Fifth Circuit case has directly addressed the applicability of *Daubert* to a case such as this, the opinion in *United States v. 14.38 Acres of Land*, 80 F.3d 1074, 1078 (5th Cir.1996), which reversed the exclusion of expert valuation evidence in a condemnation case, touches on a related issue. After noting that *Daubert* limited itself to scientific evidence, the court concluded that the decision "did not otherwise work a sea change over federal evidence law." *Id.* However, the panel agreed that *Daubert* articulated the district court's role in ensuring "that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand," while not replacing the adversary system's traditional methods for attacking "shaky evidence." *Id.* (quoting *Daubert*, 509 U.S. at 597, 113 S.Ct. at 2799).

*Daubert* will necessarily apply to expert testimony based on engineering principles and practical experience, but the district court's "preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue" is no less important. *Daubert*, 509 U.S. at 592-93, 113 S.Ct. at 2796. We cannot agree with the *Compton* court's conclusion that *Daubert* only applies when "unique, untested or controversial methodologies or techniques" are relied on by the expert. 82 F.3d at 1518. *Daubert* expressly denies that the precepts of Rule 702 apply only to unconventional evidence. 509 U.S. at 592 n. 11, 113 S.Ct. at 2796 n. 11. And while *Daubert* dealt with expert scientific evidence, 509 U.S. at 590 n. 8, 113 S.Ct. at 2795 n. 8, the decision's focus on a standard of evidentiary reliability and the requirement that proposed expert testimony must be appropriately validated are criteria equally applicable to "technical, or other specialized knowledge...." Fed. Rule of Evid. 702. Moreover, the nonexclusive list of factors relevant under *Daubert* to assessing scientific methodology—testing, peer review, and "general acceptance"—are also relevant to assessing other types of expert evidence. Whether the expert would opine on economic valuation,<sup>8</sup> advertising psychology,<sup>9</sup> or engineering,<sup>10</sup> application

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<sup>8</sup>*Frymire-Brinati v. KPMG Peat Marwick*, 2 F.3d 183, 186 (7th Cir.1993).

<sup>9</sup>*Tyus v. Urban Search Management*, 102 F.3d 256, 262-63 (7th Cir.1996).

<sup>10</sup>*Pestel*, 64 F.3d at 384.

of the *Daubert* factors is germane to evaluating whether the expert is a hired gun or a person whose opinion in the courtroom will withstand the same scrutiny that it would among his professional peers.<sup>11</sup>

*Compton* also suffers from the vagueness of the line it draws between "methodology" and other scientific or technical knowledge. As one of our district judges aptly observed:

An alternative design is by definition a different method of configuring the product. In the *Compton* case, for example, the expert was clearly proposing that the vehicles be constructed by some other method that would embody his proposed standards.

*Tassin v. Sears, Roebuck and Co.*, 946 F.Supp. 1241, 1247 (M.D.La.1996). Alternative designs by definition include elements of science, technology, and methodology. Further, it seems exactly backwards that experts who purport to rely on general engineering principles and practical experience might escape screening by the district court simply by stating that their conclusions were not reached by any particular method or technique. The moral of this approach would be, the less factual support for an expert's opinion, the better. *Compton's* view of the admissibility of expert evidence is untenable.

We conclude that whether an expert's testimony is based on "scientific, technical or other specialized knowledge," *Daubert* and Rule 702 demand that the district court evaluate the methods,

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<sup>11</sup>See *Navarro v. Fuji Heavy Indus.*, 117 F.3d 1027(7th Cir. 1997) ("a conclusion without any support is not one based on expert knowledge and entitled to the dignity of evidence"; under *Daubert*, engineering expert must "show how his conclusion ... is grounded in-follows from-an expert study of the problem").

analysis, and principles relied upon in reaching the opinion. The court should ensure that the opinion comports with applicable professional standards outside the courtroom and that it "will have a reliable basis in the knowledge and experience of [the] discipline." 509 U.S. at 592, 113 S.Ct. at 2796.

### III.

Turning to the testimony of Williams, Watkins defends his analysis because he relied on his experience with conveyors and his familiarity with hydraulic cylinders and other technologies in conveying his design proposals. He reviewed drawings of the conveyor, inspected the rebuilt conveyor, reviewed photographs of the accident aftermath, and reviewed the 1987 ANSI standards. Williams had seen hydraulic cylinders, outriggers, and stop plates on other conveyors.

In support, Watkins cites *Dixon v. International Harvester*, 754 F.2d 573, 579 (5th Cir.1985). In *Dixon*, the expert witness was a design engineer, a member of a committee that performed crash testing and investigations, "was familiar with the standards-making processes of professional societies and ... had experience in investigating crane, tractor, and automobile accidents." *Id.* This court held that the expert's testimony should have been considered in ruling on the motion for directed verdict. Noting that the expert "inspected the design of the [tractor involved] ... [and] the control arrangements of the Harvester tractor, examined a set of blueprints of the tractor, and viewed photographs showing the condition of the tractor at the time of the accident," we concluded

that "[o]nce [he] was properly admitted as an expert, the jury was at liberty to accept or reject his testimony, and to judge his credibility." *Id.* at 580 (citations omitted). *Dixon's* facts are sketchy, and in any event, the opinion's emphasis on qualifications over reliability of the expert testimony reflect a pre-*Daubert* sensibility. *Dixon* is not controlling.

Having evaluated the district court's gate-keeping effort in this case, we conclude that there was no manifest error. Williams's testimony lacked the requisite indicia of reliability to derive from "scientific, technical, or other specialized knowledge." Fed.R.Civ.Ev. 702. First, the proper methodology for proposing alternative designs includes more than just conceptualizing possibilities. The district court appropriately noted the lack of testing of any of the proposed alternatives. See *Daubert*, 509 U.S. 579, 590, 113 S.Ct. 2786, 2795, 125 L.Ed.2d 469; *Cummins*, 93 F.3d at 368-69; *Peitzmeier*, 97 F.3d at 297; *American & Foreign Ins. Co.*, 45 F.3d at 139 (electrical engineer's failure to test theory that circuit breakers should have tripped faster). This is not to say that alternative product designs must always be tested by a plaintiff's expert, but in this case, both Neathery and Williams acknowledged the importance of testing in design. See *Cummins*, 93 F.3d at 368, n. 2 (district court has not "exceeded the bounds of permissible judgment in placing significant emphasis on the lack of any testing of [the expert's] view. Indeed, the witness had acknowledged that testing was a part of the design process"). Second, the fact that Williams had "seen" conveyors

with hydraulic cylinders, outriggers, and stop-plates, without more information regarding the types of conveyors and their intended functions, does not save his testimony from its lack of empirical support. Williams did not investigate designs of other conveyors available today or those available in 1943. When directly asked about his efforts to find similar conveyors, Williams stated: "I've looked around." His testimony about his prior experiences with conveyors was similarly vague. Where an expert bases his opinion in part on his experience with similar machines, we cannot fault the court for demanding a more detailed recollection of the expert's review and understanding of similar machines than was reported by Williams.

Furthermore, Williams did not even make any drawings or perform any calculations that would allow a trier of fact to infer that his theory that the conveyor design was defective and that alternative designs would have prevented the accident without sacrificing utility were supported by valid engineering principles. Any calculations or sketches he made he did not consider important enough to keep. Perhaps a design defect case can be mounted without calculations to support an expert's theories, but the district court did not err in concluding that some such calculations were necessary to demonstrate the feasibility of Williams's ideas. Although he claimed experience in analyzing stresses and the appropriate safety factors in cable wires, Williams did not perform any such calculations (that he thought were important enough to retain) about the load put on the wire in

this conveyor, or about the loads the wire was capable of sustaining, or about the effect of improper maintenance, or about the marginal safety factor of an additional wire or any of the other redundant systems he proposed. See *Rosado v. C.J. Deters*, 5 F.3d 119, 124 (5th Cir.1993) (accident reconstruction expert properly excluded where "he could not independently establish the necessary physical and mathematical bases for his opinion"). In fact, Williams never even asked to examine the wire rope used on this conveyor.

Thus, the district court did not err in concluding that Williams made his assessment of unreasonable dangerousness and proposed his alternative designs "without ... any scientific approach to the proposition at all."

Watkins also argues that because Telsmith conceded that Williams's design alternatives were "feasible," much of the objection to Williams's testimony falls away. A "feasible alternative design" under Mississippi law "is a design that would have to a reasonable probability prevented the harm without impairing the utility, usefulness, practicality or desirability of the product to users or consumers." Miss.Code Ann. § 11-1-63(f)(ii). The concession of feasibility, Watkins argues, means that Telsmith can have no objection to whatever basis Williams has for his opinions. We disagree, because Telsmith did not concede so much. Telsmith's motion to exclude subsequent designs states that "Defendant certainly does not contest feasibility of such designs, although Defendant does claim that subsequent designs do not serve

the identified functions the Model 374 served." Telsmith clearly did not stipulate that the alternative designs do not impair the "utility, usefulness, practicability or desirability of the product to users or consumers." Miss.Code. Ann. § 11-1-63(f)(ii). In open court, Telsmith's counsel stated that "[t]he technology existed," but that there was "a question of whether it's a good design or better design or bad design." Accordingly, the trial judge did not misconstrue the scope or effect of the defendant's concession on this issue in deciding that Williams must still be able to independently establish the technical basis for the utility and safety of the proposed alternative designs.

#### IV.

The district court properly applied the principles of *Daubert* and did not commit manifest error in excluding Williams's testimony for lack of a sufficiently reliable scientific or technical basis. Without the testimony by Williams, the district court's decision to grant judgment as a matter of law was mandated, as the plaintiff had not produced evidence that the utility of the conveyor was outweighed by any dangers in its design. It is unnecessary to reach Watkins's disagreement with the district court's interpretation of Mississippi products liability law.

For the foregoing reasons, we AFFIRM the judgment of the district court.