

16 *McLean, et al. v. 988011
Ontario Ltd., et al.*

Nos. 99-1663/1664

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ELECTRONIC CITATION: 2000 FED App. 0279P (6th Cir.)
File Name: 00a0279p.06

their negligence theory to a jury. The judgment of the district court is therefore REVERSED, and the case is remanded for trial.

UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

99-1663
JOHN D. MCLEAN, Personal
Representative of the Estate
of Lisa Irene Jiggins,
Deceased,
Plaintiff-Appellant,

v.

988011 ONTARIO, LTD., d/b/a
PLANE PERFECTION; WILLIAM
ALLEN BALL ENTERPRISES,
LTD., d/b/a B&B AIRCRAFT,
Defendants-Appellees.

99-1664
ALBERTA M. JIGGENS and
DAVID BUCKNER, as Personal
Co-Representatives of Brian
E. Jiggins, deceased, and
Kaleb Jiggins, a minor,
deceased,
Plaintiffs-Appellants,

v.

Nos. 99-1663/1664

PIPER AIRCRAFT
CORPORATION, et al.,
Defendants,

988011 ONTARIO, LTD., d/b/a
PLANE PERFECTION,
Defendant-Appellee.

Appeal from the United States District Court
for the Eastern District of Michigan at Detroit.
Nos. 95-73141; 95-75944—Paul D. Borman,
District Judge.

Argued: June 14, 2000

Decided and Filed: August 24, 2000

Before: JONES, BOGGS, and MOORE, Circuit Judges.

COUNSEL

ARGUED: Barbara H. Goldman, LOPATIN, MILLER, FREEDMAN, BLUESTONE & HERSKOVIC, Southfield, Michigan, for Appellant in Case No. 99-1663. Janet Callahan Barnes, KOHL, SECREST, WARDLE, LYNCH, CLARK & HAMPTON, Farmington Hills, Michigan, for Appellees. **ON BRIEF:** Barbara H. Goldman, LOPATIN, MILLER, FREEDMAN, BLUESTONE & HERSKOVIC, Southfield, Michigan, Andrew S. Fowler, BARSKY & FOWLER, Birmingham, Michigan, for Appellants. Janet Callahan Barnes, KOHL, SECREST, WARDLE, LYNCH, CLARK & HAMPTON, Farmington Hills, Michigan, Scott R. Torpey, JAFFE, RAITT, HEUER & WEISS, Detroit, Michigan, for Appellees.

On the other hand, Michigan's courts have allowed a jury to consider a reasonable hypothesis even when supported largely by circumstantial evidence. In *Taylor v. Michigan Power*, a case instructive by comparison, the decedents died in an explosion that also destroyed crucial evidence. The plaintiffs theorized that a gas main near the building broke, leaking gas into a sewage pipe which then flowed through a sewage vent into the building's attic where it collected and exploded. The state appellate court affirmed the jury's verdict for the plaintiffs despite the circumstantial nature of the case, because it concluded that a jury could reasonably have believed the plaintiffs' theory and it was sufficiently supported by the evidence:

Although the evidence in several areas of this case is conflicting, there was sufficient evidence to point to a logical sequence of cause and effect, if believed by the jury. In a case such as this one where much of the evidence was destroyed, the fact that there may have been other plausible theories of cause and effect supported by the evidence does not justify a reversal of the jury's determination.

Taylor v. Michigan Power Co., 206 N.W.2d 815, 817 (Mich. Ct. App. 1973). Here the plaintiffs have also presented a plausible theory, supported by what evidence is available, which if believed by the jury could establish negligence on the part of the defendants.

V

The district court erred by treating Popp's deposition testimony and the NTSB findings as definitive, whereas they are contradicted by expert testimony and may be challenged at trial. The court thus did not view the evidence in the light most favorable to the plaintiffs in granting summary judgment. Plaintiffs' expert testimony is sufficiently rooted in the available evidence to make out a reasonable theory of causation. Thus, plaintiffs should have been allowed to take

wheel came off in the crash. If either theory alone were adequate to demonstrate negligence, then the two together would not prevent a demonstration of negligence even though both could not be true. Here too, each expert provides evidence of negligence even though both accounts cannot be true in their entirety.

In three previous cases under Michigan law where expert testimony has been deemed speculative as a matter of law, the facts were very different. In *Skinner*, the plaintiff's decedent was electrocuted while operating a machine with an allegedly faulty switch. No one saw the accident happen, but plaintiffs argued that a defect in the switch made it appear to be off when it was actually on. There was no proof, however, that decedent was misled by the switch when electrocuted, and the plaintiff's theory was dismissed as conjecture. *See Skinner*, 516 N.W.2d 475. Likewise, in *Pomella*, the district court granted summary judgment to the defendant because the expert's theory that the bus could have avoided colliding with the car in the accident at issue was based on an arbitrary coefficient of friction for the snowy road surface, which was unsupported by any evidence, and the theory assumed uniformly wet pavement in the face of contradicting eyewitness testimony. *See Pomella*, 899 F. Supp. 335. Finally, in *Zettle v. Handy Manufacturing Co.*, 998 F.2d 358, 359-60 (6th Cir. 1993), relied on by the district court, this court upheld a summary judgment award to the defendant manufacturers of a power washer that had electrocuted the plaintiff's deceased son in an unwitnessed accident. Expert opinions on various probabilities notwithstanding, there was no proof that a design incorporating a plastic rather than a metal handle would have prevented the accident. The decedent had plugged the power washer into an ungrounded, partially stripped extension cord, and the court concluded that there was no evidence that the electricity had flowed through the handle in the course of electrocuting the decedent. He might have touched the power washer cabinet, or might have been holding onto a different part of the washer altogether. *See id.* at 362.

OPINION

BOGGS, Circuit Judge. This negligence action arises out of three deaths in the crash of a private plane. Michigan resident Brian Jiggins purchased a used Piper Cherokee airplane in March 1994 from American Flight & Technology. After purchasing the 18-year-old plane, Jiggins hired Plane Perfection of Goderich, Ontario, Canada to paint and refurbish it. Plane Perfection stripped, refinished, and applied new paint, replaced the stabilator tips, dorsal fin fairing, tail cone and patches on the wings, and installed a screw kit. In addition to painting the aircraft, Plane Perfection spent over 50 hours repairing the wing tips, cowlings, and fuselage. Allen Ball and Don White of B&B Aircraft inspected and certified the aircraft, because Plane Perfection was not itself an approved maintenance organization.

Jiggins picked up the finished plane on April 15, 1994 and flew it to Romeo, Michigan, where his wife, Lisa Jiggins, and their son, Kaleb Jiggins, joined him for a trip to Leesburg, Virginia. Since obtaining his visual flight rules pilot's license, Jiggins had approximately 110 flight hours, including two hours flying the make and model of his plane. On the evening of the crash, Jiggins did not file a flight plan, though instrument meteorological conditions prevailed. Jiggins flew to Elyria, Ohio for refueling, then proceeded toward Leesburg. At approximately 1:02 a.m., the Cleveland Air Traffic Control Center provided a traffic advisory to Jiggins, to which he responded. At 1:04 a.m. the center lost radio and radar contact with Jiggins's plane. Later that morning, investigators from the National Transportation Safety Board (NTSB) and the Ohio State Highway Patrol found pieces of Jiggins's plane scattered in a mile-long path near Salem, Ohio. The aircraft allegedly broke apart in flight and crashed, killing all three occupants. Defendants argue that these facts permit an inference that pilot error caused the crash, while

plaintiffs claim that negligent servicing of the craft by Plane Perfection caused the crash.

Following discovery, the district court granted defendants' motion for summary judgment in an August 21, 1998 order, reasoning that plaintiffs had failed to establish the causation element sufficiently to take their negligence action to a jury. Specifically, the court held that the plaintiffs' two expert witnesses contradicted each other as to the cause of the crash, relied on circumstantial evidence whose factual basis was undermined on key points by defendants' evidence, and offered an explanation for the crash no more plausible than that of the defendants. Hence, the district court held that the plaintiffs did not demonstrate substantial evidence forming a reasonable basis for the inference that negligence by the defendants caused the injury. We reverse and remand for trial.

I

This court reviews a grant of summary judgment *de novo*, using the same Rule 56(c) standard as the district court. *See Cox v. Kentucky Dep't of Transp.*, 53 F.3d 146, 149 (6th Cir. 1995), *citing Hansard v. Barrett*, 980 F.2d 1059 (6th Cir. 1992). Summary judgment is appropriate where "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." FED. R. CIV. P. 56(c). In deciding a motion for summary judgment, this court views the factual evidence and draws all reasonable inferences in favor of the nonmoving party. *See Northland Ins. Co. v. Guardsman Prods., Inc.*, 141 F.3d 612, 616 (6th Cir. 1998). To prevail, the nonmovant must show sufficient evidence to create a genuine issue of material fact. *See Klepper v. First Am. Bank*, 916 F.2d 337, 341-42 (6th Cir. 1990), *citing Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986). A mere scintilla of evidence is insufficient, because "there must be evidence on which the jury could reasonably

defendants' negligence was the problem. Plaintiffs analogize to a Washington state case wherein one expert witness identified a manufacturing defect and stated that the effect of the defect could have been avoided with a change in the design, while another expert witness found a different defect in the same part and also testified that a safer design was possible. On appeal the court denied the defendant's claim that the evidence was insufficient for being equally consistent with contradictory hypotheses:

While it is obvious plaintiffs' theories are inconsistent with each other to the extent that if one theory was correct the other could not be correct, they are not inconsistent with the main fact to be established. It is only necessary that the circumstances proved be consistent with each other and lead with reasonable certainty to the fact asserted . . . [T]heories cannot be said to be contradictory when they could logically lead with reasonable certainty to the ultimate fact asserted.

Lamphiear v. Skagit Corp., 493 P.2d 1021, 1023 (Wash. App. 1972). Leaving aside Wilken's deferring to Donham on the flutter issue (and the fact that both experts would not necessarily have been presented at trial), plaintiffs liken this case to *Lamphiear* in that both experts point to the same ultimate fact and either's testimony supports a finding of defendants' negligence with reasonable certainty. Even if the theories of causation here are equally likely, they both point to the same culprit. At trial, as the plaintiffs argue, the defendants would be free to try to cast doubt on the flutter theory, or their role in causing the flutter, but the district court should not have disposed of the case summarily.

One can imagine a case where experts differ as to the cause of an automobile accident. The first expert might conclude the crash happened when the defective right wheel came off, and that the left wheel came off in the crash. The second expert might conclude, contrariwise, that the crash happened when the defective left wheel came off, and that the right

negligence on Plane Perfection's part, and that the rudder horn balance weight was not found upstream of the crash as Donham crucially assumes.

Plaintiffs maintain that, wherever the rudder horn balance weight landed, the mere fact that it separated from the aircraft—that the joint connecting the weight to the aircraft failed—indicates a problem with its installation. According to Donham, in order for the part to have failed:

you would have to have exceeded 36 g's on this assembly . . . And I think that's not a logical expectation except from a standpoint of a flutter instability . . . So the failure of this joint has to be consistent with an improper installation of either a part that's been damaged or the way it was installed or the combination of both, and so that's the only way I believe that could possibly have failed.

Thus, if the rudder horn balance weight separated, either a bad part or an improperly installed part caused the problem, and either way Plane Perfection is culpable. If, as the NTSB report suggests, the rudder horn balance weight did not separate, that does not disprove Donham's theory that flutter caused the plane to crash. Although that fact would discredit Donham's primary theory of how the flutter came about, he pointed to ample unrelated evidence of flutter having occurred that makes the remainder of his testimony far from speculative.

Nor, taken together, do Wilken and Donham fatally contradict one another.¹ Plaintiffs' presenting two experts with differing views of the accident's cause does not preclude proving causation, where both experts have testified that the

¹Wilken did state that the horizontal stabilator was improperly balanced, which Donham did not. But Donham did not independently conclude that it had been properly balanced; he merely accepted Popp's testimony indicating that it was balanced correctly.

find for the [nonmovant].” *Ibid, quoting Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 252 (1986).

II

To establish a *prima facie* case of negligence under Michigan law, plaintiffs must prove: 1) that the defendant owed a duty to the plaintiffs; 2) that the defendant breached that duty; 3) that the defendant's breach was a proximate cause of the plaintiffs' damages, and 4) that the plaintiffs suffered damage. See *Swan v. Wedgwood Christian Youth and Family Servs., Inc.*, 583 N.W.2d 719 (Mich. App. Ct. 1998), *leave denied*, 591 N.W.2d 39 (1999). Only the middle two of these requirements are at issue in this case. The district court never reached the question whether the alleged breach by defendants here was a *proximate* cause of the crash, because the court decided that the plaintiffs did not sufficiently establish that any negligence on the part of the defendants was a contributing cause of the crash at all.

The plaintiff in a Michigan negligence action need only provide proof of “a reasonable likelihood of probability” that his explanation of the injury is correct. *Skinner v. Square D Co.*, 516 N.W.2d 475 (Mich. 1994).

The evidence need not negate all other possible causes, but such evidence must exclude other reasonable hypotheses with a fair amount of certainty. Absolute certainty cannot be achieved in proving negligence circumstantially; but such proof may satisfy where the chain of circumstances leads to a conclusion which is more probable than any other hypothesis reflected by the evidence. However, if such evidence lends equal support to inconsistent conclusions or is equally consistent with contradictory hypotheses, negligence is not established.

Id. at 481.

Circumstantial evidence in a products liability case should “fairly indicate ‘a logical sequence of cause and effect’”

Schedlbauer v. Chris-Craft Corp., 160 N.W.2d 889, 893 (Mich. 1968). The plaintiffs contend that though the experts differed on where the problem originated, both presented a logical sequence of cause and effect between Plane Perfection’s negligence and the aerodynamic instability known as flutter that each concludes caused the crash.

“[A]n expert’s opinion must be supported by ‘more than subjective belief and unsupported speculation’ and should be supported by ‘good grounds,’ based on what is known.” *Pomella v. Regency Coach Lines, Ltd.*, 899 F. Supp. 335, 342 (E.D. Mich. 1995), quoting *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 590 (1993). The expert’s conclusions regarding causation must have a basis in established fact and cannot be premised on mere suppositions. See *Skinner*, 516 N.W.2d at 484. An expert’s opinion, where based on assumed facts, must find some support for those assumptions in the record. See *Shaw v. Strackhouse*, 920 F.2d 1135, 1142 (3d Cir. 1990). However, mere “weaknesses in the factual basis of an expert witness’ opinion . . . bear on the weight of the evidence rather than on its admissibility.” *United States v. L.E. Cooke Co.*, 991 F.2d 336, 342 (6th Cir. 1993).

III

The aircraft section in controversy in this case was the tail section, known collectively as the empennage. It includes the vertical stabilizer (or fin), the rudder, and the horizontal stabilizer (or stabilator), the ends of which are called stabilator tips or tail tips. The rudder has a drag-reducing plastic fairing and a rudder horn balance weight that sits on top of the tail. The stabilator is hinged behind the vertical fin, and contains 3-inch-round balance weights, which the stabilator tips cover.

A Plane Perfection employee named Kenneth Popp, who was not a licensed aircraft mechanic, performed the primary maintenance work on Jiggins’s aircraft. He was assisted by Drew Anderson, an unlicensed apprentice mechanic. Popp

in balancing the stabilator could make a plane harder to fly. It may additionally be noted that Wilken stated that uncalibrated scales are automatically assumed to be out of calibration, that some replacement parts were not certified, and that suspect parts could affect the balance of the aircraft. Wilken’s testimony may not conclusively demonstrate that defendants caused the crash, but his conclusion to that effect is grounded in record evidence.

Turning next to Donham’s testimony, the district court determined that it did not establish a genuine issue of causation for trial, because it too lacked record support. The district court discounted Donham’s testimony that the rudder horn balance weight came off, because the NTSB investigator had identified that part as a tail tip fairing. Plaintiffs respond that NTSB investigator Jeff Guzzetti’s primary expertise is in helicopters, that Donham’s observations about where parts of the plane were found also supported his thesis, and finally that Donham’s fixed-wing-craft expertise in identifying the part was for a jury to weigh. The district court characterized this response as “not refut[ing] Defendant’s assertion that the component was really the tail tip fairing.” In short, both the district court and the defendants treat the NTSB’s determination as dispositive and therefore treat Donham’s expert conclusion as based upon assumptions not supported by the factual record.

Donham admitted that he does not know specifically what Popp did or did not do wrong in removing and reinstalling the rudder horn balance weight. The defendants complain that Donham’s testimony is overly speculative: “The airplane . . . flew a long time before [Plane Perfection] touched it, and it didn’t last very long after . . . and they were the ones that did the work. So it’s my opinion that they did have a chemical, mechanical effect on that interface. Maybe they even dropped a wrench on the horn for all I know . . . I have no idea what happened to the unit, *but the unit no longer functioned as a balance weight in the tail footer.*” Defendants argue that Donham simply does not provide any direct evidence of

flutter. Donham accepted Popp's deposition testimony that he had correctly balanced the horizontal stabilator, but attributed the problem with the vertical fin to improper installation of the rudder balance weight, which could have been caused by installing screws too tightly or too loosely, improperly aligning the screws and washers, or adding paint. Asked if the improperly balanced stabilator was the bottom line problem, Mr. Wilken stated that it was a probability, but that Donham's theory that "improper reattachments of the stabilator counter-weights . . . is also a probable cause of the flutter."

Plaintiffs argue that the strength of the factual basis of an expert's opinion is an issue for the jury and that the experts' alleged contradiction was not a valid reason to dismiss, because both experts stated that defendants' negligence created the flutter that caused the accident. The defendants argue that Wilken's opinion about the improperly balanced stabilator lacks record support and therefore cannot establish a genuine issue of causation for trial (though they still believe that it should be construed as contradicting—and thus fatally undermining— Donham's testimony).

IV

To defeat summary judgment, plaintiffs' experts must establish, either separately or taken together, that there is substantial evidence that defendants' negligence caused the crash. Turning first to Wilken's deposition, the district court held that he did not cite a regulation prohibiting an unlicensed mechanic from servicing the plane, that Popp had testified that he balanced the stabilator "tail heavy," that Wilken did not test the calibration of the scales Popp used, and that no evidence indicated that the nonapproved replacement parts or lack of mechanic licensing caused the crash. However, taken in a light most favorable to the plaintiffs, it may be noted that Popp was never asked directly about the maintenance record that contradicted him, that there is some evidence the improper +/- sign was not just an oversight, and that an error

was supposed to be supervised by licensed mechanics from B&B Aircraft. Popp and Anderson removed the wing tips, ailerons, wing flaps, rudder, gear doors and cowl. Popp put on new stabilator tips, a dorsal fin, dorsal wing fairing, and tail cone. He also installed stainless steel screws and washers on the wing tips, tail tips, tail cone, top of the fin, top of the rudder, dorsal fin and inspection panels. Reinstallation of the rudder and stabilator required balancing them. A Piper Cherokee's stabilator should be balanced to between 0 and -40 inch-pounds of force. Plane Perfection's Maintenance Work Report indicates that Popp balanced the stabilator to "20.125 LBS," without a minus sign. Other balance figures on the same form include a minus sign where there should be one. The maintenance report also includes a note that "(+) = T.E. [tail end] Heavy." However, in his deposition, Popp referred to other parts that he balanced as "tail heavy" when they were to be balanced negative, and he likewise referred to having balanced the stabilator "tail heavy." Allen Ball and Don White of B&B Aircraft certified that they inspected the stabilator and that it was properly balanced.

Plaintiffs retained Rick Wilken as an expert to investigate the accident. In his deposition, Wilken concluded, based on the worksheet notation, the fact that Plane Perfection's scales were neither certified nor calibrated (contrary to Canadian aviation authority requirements), and his observation of Plane Perfection's mechanics (who were neither licensed nor supervised on a step-by-step basis), that the stabilator had been improperly balanced tail heavy and separated in flight. Wilken also testified that Popp had correctly recorded the positive or negative values for other entries, and observed that Popp apparently had not noticed the missing minus sign during his deposition, which would have "popped right out at" a competent mechanic. Wilken also criticized the lack of detail in Popp's description of the steps taken in balancing the stabilator. Wilken stated that the aircraft could have flown even with its stabilator balanced at +20.125 inch-pounds, but that it would have been improperly balanced. Still, because of the sloppy paint job, the lack of calibration, the failure to

describe proper procedures, and the use of replacement parts not from the manufacturer, Wilken ascribed the cause of the accident to negligence by the defendants.

According to Wilken, the plane's faulty repairs caused it to develop aerodynamic flutter while in flight. Wilken found evidence of flutter in parts from the wreckage. This included strain-induced permanent "sets" (bent or twisted places) in the material of the stabilator, damage to the hinge bearings, and other evidence of flutter in the rudder and vertical fin, which were not attributable to the crash itself. Wilken describes flutter as a "destructive harmonic event that virtually destroys the integrity of the control." It develops rapidly and can destroy a part soon after onset. In Jiggins's plane, Wilken believes that flutter began just prior to the aircraft's breaking up, after it had made a right turn in response to a traffic advisory. The stabilator tips enhanced the flutter, causing the stabilator to fail first, followed by the rudder, and then the wings. The combination of many factors induces flutter, including, *inter alia*, air speed, temperature, tension level on the control cables, air flow, bank angle, and the angle of descent combined with the turbulence. The fact that many factors play a role could explain why the plane was able to fly a couple of legs of the journey without incident before the fatal flutter occurred.

Wilken also opined that improper tensioning of the control cables could have induced the flutter. There is a factual dispute whether Plane Perfection employees disassembled or adjusted the control cables. The defendants maintain that since Wilken could not rule out the control cables as the sole cause of the flutter, and Plane Perfection did not service the cables, it is speculative to attribute the crash to any negligence on the part of Plane Perfection employees. Wilken attested that he did not know whether the cable tension was proper, did not know whether the cables had been adjusted, and agreed that the maintenance paperwork did not indicate that Plane Perfection employees had touched the cables; however, Popp's testimony appears to indicate that the cables were

detached and reattached as part of the stabilator-balancing procedure.

Wilken called in a flutter expert, Robert Donham, because flutter was not Wilken's area of expertise, and Donham would "be better prepared to testify as far as the extent and the detailed signature" of flutter. In his deposition, Donham concurred that flutter had destroyed the aircraft in a process taking only 10-15 seconds. He identified many other signs supporting that thesis. In particular, he noted the loss of the stabilator tips due to oscillation in the horizontal portion of the tail, signs of bending in the stabilator, star cracks on the rudder's trailing edge, the fact that what he took to be the balance weight came off in flight despite its being designed to withstand very high pressure, the failure of the center fittings, and deformation of the tail fin.

Donham believed the order in which the plane's parts were located on the ground further supported the flutter hypothesis, though there was not enough information in the NTSB plot of the debris path to be certain where all the parts had fallen. Donham believed that oscillation shook the baggage door open, and it fell first, followed by what the NTSB described as a "tail tip fairing." Donham believed (perhaps erroneously) that the part thus described was actually the rudder horn balance weight, because the tail tip fairings were still present on the stabilator tips in the wreckage.

Though Donham also thought that flutter caused the crash, he believed that it originated in the vertical fin and rudder due to the "loss of adequate structural attachment of the [Fiberglas] support structure for the rudder horn balance weight to the top of the rudder," caused by "mechanical, chemical, or a combination of both effects." In other words, a loose balance weight induced flutter that destroyed the rest of the aircraft. Oscillation of the fin and rudder would have caused the stabilator to fail. The NTSB's crash investigation report did not present any conclusions about the presence of flutter, even though it discussed failures that were signs of