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UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

UNITED STATES OF AMERICA,
Plaintiff-Appellee/Cross-Appellant,

v.

SEAN EDWARD HOWLEY (11-6040) and
CLARK ALAN ROBERTS (11-6071),
Defendants-Appellants/Cross-Appellees.

Nos. 11-6040/6071/6194

Appeal from the United States District Court
for the Eastern District of Tennessee at Knoxville.
No. 3:08-cr-175—Thomas W. Phillips, District Judge.

Argued: January 25, 2013

Decided and Filed: February 4, 2013

Before: SILER, SUTTON and McKEAGUE, Circuit Judges.

COUNSEL

ARGUED: David M. Eldridge, ELDRIDGE, BLAKNEY & TRANT, P.C., Knoxville, Tennessee, for Appellant/Cross-Appellee in 11-6040. Stephen Ross Johnson, RITCHIE, DILLARD, DAVIES & JOHNSON, P.C., Knoxville, Tennessee, for Appellant/Cross-Appellee in 11-6071. Debra A. Breneman, UNITED STATES ATTORNEY'S OFFICE, Knoxville, Tennessee, for Appellee/Cross-Appellant. **ON BRIEF:** Douglas A. Trant, ELDRIDGE, BLAKNEY & TRANT, P.C., Knoxville, Tennessee, for Appellant/Cross-Appellee in 11-6040. Stephen Ross Johnson, W. Thomas Dillard, Brian J. Wanamaker, Anne E. Passino, RITCHIE, DILLARD, DAVIES & JOHNSON, P.C., Knoxville, Tennessee, for Appellant/Cross-Appellee in 11-6071. Debra A. Breneman, UNITED STATES ATTORNEY'S OFFICE, Knoxville, Tennessee, for Appellee/Cross-Appellant.

OPINION

SUTTON, Circuit Judge. In this case, a jury convicted Clark Roberts and Sean Howley of seven counts of stealing trade secrets, *see* 18 U.S.C. § 1832(a), and three counts of engaging in wire fraud, *see* 18 U.S.C. §§ 1343 and 1349. We affirm their convictions but reverse their sentences.

I.

Large vehicles need large tires. In the United States, three companies manufacture tires for large earthmoving vehicles: Goodyear, Michelin and Bridgestone. Ranging in diameter from 29 inches to 63 inches, these tires weigh thousands of pounds. Tires this size need reinforcement, and the best ones use rubber-coated steel cords (called “plies”) to support heavy loads.

Manufacturing a steel-reinforced tire is no easy task. To build the body of the tire, a manufacturer must wrap tire material around a steel hoop called a “bead.” This process, called “swabbing down,” transforms a flat band into a barrel-shaped tire. Any wrinkles or folds in the swabbing-down process can trap air and cause a hole in the tire.

Clark Roberts and Sean Howley worked as engineers at Wyko Tire Technology, a Tennessee company that supplied Goodyear with various parts for its tire-assembly machines. Wyko sold parts to Michelin and Bridgestone as well, but in the United States it provided parts for steel tire-assembly machines only for Goodyear.

In November 2006, the head of Wyko’s sales office in China, Bill Jones, met with officials from the HaoHua South China Rubber Company. HaoHua, a company owned by the Chinese government, was interested in building eight tire-assembly machines. Wyko began negotiating with HaoHua to supply four tire-building parts, all related to the swabbing-down process, for \$1.154 million. Under the agreement, Wyko

needed to ship the finished parts by July 2007. If Wyko was late, it would pay HaoHua a penalty of \$2,590 per week.

Wyko faced one serious impediment to completing the deal: It had never built parts like these before. Goodyear, it turned out, used machines like the ones Wyko needed to produce. Jones suggested that Wyko hire Tom Brown, a retired Goodyear employee, as a consultant to help design the parts. Jones also noted that what Wyko engineers “have seen in [Goodyear’s] Topeka plant will be of value re[garding] this project and what we might propose to [HaoHua].” R. 148 at 16–17; Gov’t Ex. 15, App’x at 48. In early May 2007, Wyko sent HaoHua proposed drawings for one of the parts, a “bead turn-down/up and bead set mechanism.” Gov’t Ex. 25, App’x 99–100. These drawings were based on sketches that Brown had provided, but Wyko engineers were “sure” the drawings “got lots of things wrong” because the engineers had “never seen or designed this type of equipment before.” Gov’t Ex. 26, App’x 102–03; Gov’t Ex. 27, App’x 104–06.

Around the same time, Goodyear asked Wyko to repair some of its tire-assembly machines, requesting that a Wyko technician visit its Topeka, Kansas, plant to inspect the machines. Instead of sending a technician, Wyko sent Roberts, one of Wyko’s senior engineers on the HaoHua project, to make the trip. Roberts brought Howley, another engineer, with him. Before their visit, both Roberts and Howley signed secrecy agreements, acknowledging that they might be given access to “Goodyear’s trade secrets or other confidential information” and agreeing that they would not use or disclose that information for ten years, “except for the benefit of Goodyear and as known and permitted by Goodyear in relation to” their visit. Gov’t Exs. 46, 48, App’x at 187–88, 193–94. Before leaving, Roberts asked Wyko’s IT manager, Robert McCarter, for a small camera, one that was just “a little bit larger than credit-card size.” R. 148 at 91–92. McCarter did not have any such cameras.

On May 30, 2007, Roberts and Howley arrived at the Goodyear plant in Topeka. A Goodyear security guard reminded them that no cameras were allowed inside the factory. Goodyear employees escorted the two men as they inspected and repaired the

Wyko-supplied equipment. The next day, Roberts and Howley were left unescorted for a few minutes, during which Howley used his cell-phone camera to take seven photos of a swabbing-down device on one of Goodyear's tire-assembly machines. That night, after Howley had returned to Tennessee, he sent the photos from his personal e-mail account to his Wyko e-mail account.

The next morning, Howley forwarded the photos to Roberts, explaining that the photos were "not all great, but I think that they might tell us enough." Gov't Ex. 33, App'x 366–74; R. 146 at 7–9. That same day, Roberts forwarded the photos to other members of the Wyko design team and to Jones, telling them that Goodyear was "somewhat guarded" because they knew Wyko was "working with competitors," but that Howley had been able to take the photos when Goodyear employees "left us on our own for a while." Gov't Ex. 7, App'x 340. The Wyko engineer designing the parts for HaoHua thanked Roberts, and noted that the photos showed differences between Wyko's initial designs (provided by Brown, the retired Goodyear employee) and the Goodyear machines.

A few weeks later, McCarter, Wyko's IT manager, while apparently in the process of archiving e-mails on the Wyko server, spotted the e-mail Roberts had sent with the pictures attached. Concerned that Roberts had taken the photos illicitly, McCarter used a pseudonym to create a Yahoo! e-mail account and forwarded Roberts' e-mail to a Goodyear employee. Goodyear notified the FBI, and federal investigators searched Wyko's headquarters in September 2007. Indictments followed, and Wyko never delivered any tire-assembly machines to HaoHua.

After a seven-day trial, a jury convicted Roberts and Howley of seven counts related to the theft of trade secrets and three counts related to wire fraud. The district court sentenced each man to four months of home confinement, 150 hours of community service and four years of probation.

II.

A.

Not all business knowledge is a trade secret, and Roberts and Howley deny that the photographs taken at the Goodyear plant meet the statutory definition. Information is a “trade secret” only if its owner has taken “reasonable measures” to keep it secret and the “information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable through proper means by, the public.” 18 U.S.C. § 1839(3). A defendant violates federal law when he “steals” or “without authorization . . . photographs” a trade secret, “intending or knowing that the offense will . . . injure any owner of that trade secret.” *Id.* § 1832(a). The first question presented in this appeal is whether, “after viewing the evidence in the light most favorable to the prosecution, *any* rational trier of fact could have found the essential elements of the crime beyond a reasonable doubt.” *Jackson v. Virginia*, 443 U.S. 307, 319 (1979).

The government met this modest standard for each of the trade-secrets convictions. A reasonable jury could find that Goodyear took reasonable measures to keep the design of its tire-assembly machines secret. Goodyear surrounded its Topeka factory with a fence and required visitors to pass through a security checkpoint. Before Roberts and Howley entered the factory, they had to obtain advance permission from Goodyear, sign confidentiality agreements and agree not to take photographs during their visit. And Goodyear required all of its suppliers, including Wyko, to keep Goodyear’s proprietary information secret. *See United States v. Krumrei*, 258 F.3d 535, 537, 539 (6th Cir. 2001) (finding that a company adequately protected information by requiring a subcontractor to sign a confidentiality agreement). Although Goodyear does not secure its tire-manufacturing machines under lock and key within its Topeka plant, the company’s other security measures make such a step unnecessary. The “reasonable measures” requirement does not mean a company must keep its own employees and suppliers in the dark about machines they need to do their work. *See United States v.*

Lange, 312 F.3d 263, 266 (7th Cir. 2002). All of this sufficed to permit the jury to find that Goodyear took reasonable steps to safeguard the details of its tire manufacturing.

Goodyear's security precautions, along with other evidence, support the second part of the statutory definition: that the information is economically valuable because it is not "readily ascertainable through proper means" by the public. Companies generally do not guard worthless information, and Goodyear is no exception. At trial, witnesses testified that only a few American companies have the know-how to manufacture large steel-reinforced tires, that developing such expertise is time-consuming and costly, and that manufacturers do not share information about tire manufacturing with each other. Had the scheme succeeded, there would have been four U.S. companies, rather than just three, in the market for tire-assembly machines. When all is said and done, Wyko could not have found designs for swabbing-down machines at the public library or on Wikipedia.

The behavior of the key players in this case also shows that Roberts and Howley stole important information that they could not obtain through public means. Wyko was struggling to design parts for HaoHua, and senior Wyko officers thought Goodyear's design expertise would be valuable. If Wyko could have learned how to design tire-assembly machines on its own, why all the fuss? Roberts thought the photos were useful enough to send to other Wyko employees, highlighting differences between Wyko's draft design and Goodyear's actual machines. He also said that Goodyear was "guarded" and that Wyko needed to "tread carefully" because his visit had aroused Goodyear's suspicions. Gov't Ex. 7, App'x at 340. And other Wyko engineers put the photos to use, pointing out differences between Brown's sketches and Goodyear's machines. For his part, Howley thought the photos "might tell us enough" about Goodyear's designs. Gov't Ex. 33, App'x at 366. "Enough" of what, he did not say, but a reasonable juror might fill in "enough to tell us how to copy Goodyear's design so we can ship the machines to HaoHua."

Other circumstantial evidence shows that Roberts and Howley "intend[ed] or kn[e]w[]" that their actions would harm Goodyear. 18 U.S.C. § 1832(a). Roberts and

Howley both knew that HaoHua was one of Goodyear's competitors. Before the trip, Roberts asked Wyko's IT manager for a small camera. The jurors did not need to be experts in industrial espionage to infer that Roberts intended to use a small camera for surreptitious photography at Goodyear's plant, not for a travelogue of his trip to Topeka. When Howley took the pictures, even without a miniature camera, he used something just as discreet—a cell phone—and something that just as easily could evade Goodyear's no-cameras policy. And on previous trips, Roberts had followed Goodyear's policy by requesting that Goodyear employees send approved photographs when Wyko had a legitimate need to study the machines. It was no stretch for the jury to conclude that Roberts and Howley knew the machines they photographed constituted trade secrets and, by extension, that the photographs would help a Goodyear competitor.

For their part, Roberts and Howley maintain that information about the swabbing-down machine could not have been a trade secret because Goodyear had previously shipped its machines to Wyko and allowed Wyko to photograph the machines while they were there. But testimony at trial indicated that the machines Goodyear shipped were smaller than the ones in Goodyear's Topeka plant and lacked key features that Goodyear developed later. Testimony also indicated that Goodyear shipped the machines so Wyko could make improvements, and Goodyear required Wyko to sign a "secrecy agreement" before receiving the machines. *See Rockwell Graphic Sys., Inc. v. DEV Indus., Inc.*, 925 F.2d 174, 177 (7th Cir. 1991) (explaining that disclosing a trade secret to a vendor "imposes a duty of confidentiality" on that vendor). That Goodyear voluntarily would have shared its work with a competitor like HaoHua, no questions asked, strains credibility, and at all events it is a possibility at a minimum that a reasonable jury had every right to reject.

It does not change things that Wyko had hired a former Goodyear engineer, Tom Brown, to help design parts for HaoHua. For one thing, the jury could have found that Brown was bound by a confidentiality agreement for a period of time after he left Goodyear. *See* R. 148 at 83; R. 151 at 62, 65–66 (testimony that Goodyear has always required its employees and contractors to sign confidentiality agreements). If so, Brown

for some period of time would not have had any right to make sketches for Wyko. *See, e.g., Rockwell Graphic Sys.*, 925 F.2d at 177. For another, Wyko was unable to build a swabbing-down device based solely on Brown's sketches. *See, e.g., Gov't Ex. 24, App'x at 97* (e-mail from Wyko engineer Brian Painter stating that the design based on his "best interpretation" of Brown's sketches was "most likely full of holes"). Roberts himself noted the differences between Wyko's designs and the machines at Goodyear, *see Gov't Ex. 7, App'x at 340*, and Wyko engineers used the photographs to help solve problems left open by Brown's sketches, *Gov't Ex. 36, App'x at 135; Gov't Ex. 38, App'x at 144*. On this record, the jury could reasonably conclude that the photographs gave Wyko insight that the company could not obtain from any public source or from Brown himself.

B.

Roberts and Howley also contend that § 1832 is unconstitutionally vague. This contention faces a serious impediment: We considered an identical challenge eleven years ago and rejected it. *United States v. Yang*, 281 F.3d 534, 544 n.2 (6th Cir. 2002). Nor is there anything about this prosecution that suggests Roberts and Howley were trapped by a hopelessly vague line between what the law allows and what it proscribes. Ordinary people in Roberts' and Howley's shoes would readily know that Goodyear's designs were trade secrets. And they would readily know that § 1832 prohibits stealing those designs. Nothing about the statute suggests that it permits arbitrary and discriminatory enforcement, and indeed Roberts and Howley do not argue otherwise. As applied to Roberts and Howley, this statute is not unconstitutionally vague. *See Kolender v. Lawson*, 461 U.S. 352, 357 (1983).

III.

Roberts and Howley also challenge the sufficiency of the evidence to support their wire-fraud convictions. They contend that the government never proved that they made a material misrepresentation or that they intended to deprive Goodyear of any money or property, two elements of 18 U.S.C. § 1343. Much like their challenges to the

sufficiency of the proof to support the trade-secret convictions, this claim faces a steep climb, one they ultimately cannot surmount.

No evidence suggests that Goodyear gave Roberts or Howley permission to take photographs. Quite the opposite: The men promised not to take pictures, yet they took them anyway. They then transmitted those pictures electronically. Those acts alone may constitute a material misrepresentation under the wire-fraud statute. *See, e.g., United States v. Cunningham*, 679 F.3d 355, 371–72 (6th Cir. 2012) (finding that defendants made material misrepresentations by concealing evidence of theft). A trade secret such as the design of a swabbing-down machine likewise is a form of intellectual property, *see Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 478 (1974), and Wyko, as noted, did not have the expertise to recreate the design. A juror could reasonably conclude that Roberts and Howley intended to deprive Goodyear of its exclusive intellectual property.

IV.

The government separately cross-appeals the defendants' sentences, claiming they are procedurally unreasonable. We agree.

At sentencing, the government gave three estimates of how much the theft had cost Goodyear: (1) \$305,000 (the amount Wyko was due to receive from HaoHua for the swabbing-down machine under the contract); (2) \$520,000 (the amount it would have cost Goodyear to recreate the design); or (3) \$20 million (Goodyear's annual sales of tires produced by the machine). The government also offered the testimony of Thomas Frey, a former Goodyear engineer. Frey gave the basis for the \$520,000 estimate by explaining how many hours of work it had taken Goodyear to design the swabbing-down machine and extrapolating from the hourly rate for engineering work.

Determining the value of a trade secret, we acknowledge, is no easy task. But district courts need not reach an exact figure for the loss a victim suffered or the amount of harm a defendant caused or intended to cause; a "reasonable estimate" will do. U.S.S.G. § 2B1.1, cmt. n.3(C). Our role is only to reverse clearly erroneous estimates. *United States v. Warshak*, 631 F.3d 266, 328 (6th Cir. 2010).

Even a reasonable estimate, however, requires some explanation. The district court's reasoning in this instance was less than clear. The court refused to credit Frey's testimony, seemingly on the basis that it failed to meet the standard outlined in *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993). The government's other estimates were equally insufficient in the court's eyes. Without further explanation, the court found that the government had failed to establish any loss at all, notwithstanding beyond-a-reasonable-doubt convictions premised on the reasonable assumption that the Goodyear design—the underlying trade secret—was worth something. Nor was the district court's no-loss finding insignificant. Even the smallest loss the government argued for, \$305,000, would have yielded a guidelines range of 37 to 46 months in prison. In the absence of any loss, Roberts and Howley faced a guidelines range of 4 to 10 months. The district court imposed sentences of four months of home confinement, 150 hours of community service and four years of probation for each defendant. See U.S.S.G. § 5C1.1(c)(3).

The amount of loss was a contested and high-stakes factual question, making it imperative that the district court “engage[] in a more thorough explication of its calculation.” *Warshak*, 631 F.3d at 329. Without more, the district court's zero-loss finding seems at odds with the defendants' convictions for stealing property that had “independent economic value.” 18 U.S.C. § 1839(3)(B). If the district court were dissatisfied with the government's estimates, it could have generated its own. The court, for instance, could have accepted the defendants' argument that they intended to deprive Goodyear only of part of the value of the swabbing-down machine, not the full value, R. 164 at 20–21, and arrived at an estimate that represented a percentage of the machine's total cost. Or it could have asked the parties to present additional evidence. The ultimate decision is up to the district court, which is in a “unique position,” to assess the losses Roberts and Howley intended to cause. U.S.S.G. § 2B1.1 cmt. n.3(C). All we require is that the court provide reasons for its choice. *Warshak*, 631 F.3d at 329.

On remand, the district court need not be exacting. The Guidelines require only a “reasonable” estimate of actual or intended loss within broad ranges. See U.S.S.G.

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§ 2B1.1 cmt. n.3(C); *id.* § 2B1.1(b)(1); *see also, e.g., United States v. McCarty*, 628 F.3d 284, 290–91 (6th Cir. 2010) (upholding a district court’s estimate of a loss somewhere between \$120,000 and \$200,000). But the court must at least provide an estimate and reasons for it. Nor need a loss estimate above zero necessarily tie a sentencing judge’s hands. Yes, all else being equal, an estimate of a substantial loss necessarily will increase the guidelines range, but it will not override the district court’s duty to exercise discretion in deciding what sentences to impose on the defendants, whether within the guidelines range or outside of it.

V.

For these reasons, we affirm the convictions of Roberts and Howley, vacate their sentences and remand for resentencing.