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1F Ho v. Taflove

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In the United States Court of Appeals For the Seventh Circuit
No. 10-2144

SENG-TIONG HO, et al., Plaintiffs-Appellants,
v.
ALLEN TAFLOVE, et al., Defendants-Appellees.

Ho v. Taflove, 648 F.3d 489 (7th Cir. 2011)

Appeal from the United States District Court for the Northern District of Illinois, Eastern Division. No. 1:07-cv-04305—Elaine E. Bucklo, Judge.

ARGUED JANUARY 20, 2011—DECIDED JUNE 6, 2011

Before RIPPLE and HAMILTON, Circuit Judges, and MURPHY, District Judge.

* The Honorable G. Patrick Murphy, United States District Judge for the Southern District of Illinois, is sitting by designation.

RIPPLE, Circuit Judge. Seng-Tiong Ho and Yingyan Huang brought this action against Allen Taflove and Shi-Hui Chang in the United States District Court for the Northern District of Illinois. They alleged that the defendants, members of another research team at the same university, violated the Copyright Act by publishing equations, figures and text copied from the plaintiffs' work. The plaintiffs also raised several state law claims against the defendants based on the alleged copying. The defendants filed a motion for summary judgment and a motion to dismiss. The district court granted the defendants' motion for summary judgment as to all claims and therefore declined to address the motion to dismiss.

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I BACKGROUND

A. Facts

Professors Ho and Taflove are both engineering professors at Northwestern University, and, during the relevant period, Ms. Huang and Mr. Chang were engineering graduate students at Northwestern University.[1]

[1] Ms. Huang is currently an employee of Professor Ho. Mr. Chang is now a professor at National Cheng Kung University in Taiwan. For the purposes of this opinion, we use the titles the parties had during the relevant time period (i.e., Mr. Chang, not Professor Chang).

Starting in 1997, Mr. Chang worked as a graduate student with Professor Ho. In 1998, Professor Ho conceived of and first formulated a "4-level 2-electron atomic model with Pauli Exclusion Principle for simulating the dynamics of active media in a photonic device ('the Model')." Appellants' Br. 4. It is not contested that the Model significantly advanced previous models. By 1999, Professor Ho had completed mathematical derivations of the Model, which comprised

sixty-nine pages of notes and equations. The Model currently has no known commercial use.

Professor Ho then tasked Mr. Chang with creating a computer program code, using the derived equations, for the purpose of running Model simulations. The computer program code was based on an earlier program that Mr. Chang had helped create. Mr. Chang, however, was unsuccessful in this task because of programming errors.

In June 2002, Mr. Chang switched to Professor Taflove's research group. When Mr. Chang switched groups, he was warned by the head of the department not to continue any work previously done in Professor Ho's group and to avoid misappropriating Professor Ho's work. Mr. Chang returned several of Professor Ho's notebooks, but he failed to return an original copy of one of Professor Ho's notebooks previously issued to him in early 2002 to record his work.

Ms. Huang began to work for Professor Ho in September 2000. Until 2001, Ms. Huang's work focused on applying the Model to different mediums. With permission from Professor Ho, some results from the plaintiffs' research were mentioned briefly in a conference paper published in 2001[2] and then were published in full in 2002 in Ms. Huang's master's thesis. Mr. Chang, who already had switched to Professor Taflove's research group, asked Ms. Huang to provide him with two figures from her work and copies of her master's thesis.

> [2] The conference paper was prepared by Seongsik Chang, a postdoctoral fellow in Professor Ho's group, and listed Professor Ho, Mr. Chang (the defendant) and Ms. Huang as co-authors.

Professor Taflove and Mr. Chang submitted a symposium paper to the IEEE Antennas and Propagation Society ("APS paper") and an article to the journal Optics Express ("OE article"). These submissions described the Model and its applications: The APS paper provided a brief summary, and the OE article described the Model in detail. Some of the figures in Ms. Huang's master's thesis also were included in these submissions. The APS paper was published in 2003, and the OE article was published in 2004. Professor Taflove and Mr. Chang did not attribute any of the contents of the OE article or the APS paper to Professor Ho or Ms. Huang.

Professor Ho first became aware of the alleged wrongdoing in 2004, when he submitted his project for publication in Optics Communications, and it was rejected because of a previously published paper on the same topic, namely Professor Taflove and Mr. Chang's APS paper. In 2007, the plaintiffs received certificates of copyright in Professor Ho's 1998 and 1999 notebooks, Ms. Huang's master's thesis, two figures used within Ms. Huang's master's thesis and a visual presentation given by Ms. Huang that discussed the Model.

Professor Ho and Ms. Huang allege that Professor Taflove and Mr. Chang infringed upon their copyrights six times, by using the copyrighted materials without permission in the following documents, listed chronologically: (1) the APS paper; (2) Mr. Chang's Ph.D. thesis; (3) the OE article; (4) Professor Taflove and Mr. Chang's book chapter, published by Artech House in 2005; (5) Professor Taflove's presentation in 2006; and (6) Professor Taflove's presentation in 2007. "[T]he two main infringing documents" are the APS symposium paper and the OE article, as the

other incidents of infringement involve parts of these two documents. Appellants' Br. 7.

Professor Ho and Ms. Huang assert that the OE article has twenty-one items copied from their work and that the APS symposium paper has twelve, creating thirty-three infringements in total. Professor Ho and Ms. Huang calculate that, from that list of copied items, fifty-five percent are text, thirty percent are equations and fifteen percent are figures.

B. District Court Proceedings

Professor Ho and Ms. Huang brought this action against Professor Taflove and Mr. Chang, alleging copyright infringement and state law claims of false designation of origin, unfair competition, conversion, fraud and misappropriation of trade secrets. The district court granted summary judgment in favor of the defendants for all claims, see *Ho v. Taflove*, 696 F. Supp. 2d 950 (N.D. Ill. 2010), and subsequently denied the plaintiffs' motion for reconsideration, see R.139.

1. Summary Judgment Motion

The district court addressed separately each of the plaintiffs' five claims. On appeal, Professor Ho and Ms. Huang challenge only the district court's summary judgment ruling on their claims of copyright infringement, conversion, fraud and trade secrets misappropriation. We therefore shall examine the district court's rulings only on those claims.

With respect to copyright infringement, the district court held that the equations, figures and text were "unprotectable concepts, ideas, methods, procedures, processes, systems, and/or discoveries" and that the merger doctrine is applicable because there are limited ways of mathematically expressing the Model. Ho, 696 F. Supp. 2d at 954. The district court rejected the plaintiffs' analogy that, just as Mickey Mouse is a particular expression of a mouse, the Model is a creative expression of a scientific phenomenon. In the district court's view, Mickey Mouse is entirely fictitious, but the Model mimics reality. The district court remained unpersuaded by the plaintiffs' contention that "unique assumptions" indicate that the Model is fictional because the plaintiffs were unable to identify what unique assumptions existed. Id.

With respect to the conversion claim, the district court first dismissed any claim that the defendants converted physical copies of the plaintiffs' work because, based on the presented evidence, the plaintiffs had access to such items at all times.[3] As for conversion of the intangible ideas claim, the court noted that there was no evidence that the defendants prevented Professor Ho and Ms. Huang "from conducting, controlling, accessing, using, or publishing their research." Id. at 957.

[3] Before the district court, the plaintiffs made no specific claim that Professor Ho's 2002 notebook was given to Mr. Chang and never returned. In fact, Professor Ho admitted in his deposition that, to his knowledge, the defendants never physically had taken anything of his. R.82, Ex. E (Ho Dep.) at 471-72.

The district court also found insufficient evidence to support a claim of fraud: "By taking credit for plaintiffs' work, defendants may have misled publishers or readers as to proper authorship, but they clearly did not mislead plaintiffs." Id.

In the district court's view, no trade secrets misappropriation occurred because the Model was not kept secret. It reasoned that the Model was published by Professor Ho and Ms. Huang in 2001 and 2002. Moreover, a trade secret is not dependent on whether proper attribution is given in later publications.

In support of a trade secrets misappropriation claim, Professor Ho also had asserted that Professor Taflove and Mr. Chang's article and book chapter contained some materials from the notebooks that were not previously published. The district court, however, found this statement "unsupported" and "nebulous." Id. at 958. Thus, the assertion by Professor Ho was insufficient to support a claim of trade secrets misappropriation.

In the alternative, the district court found all the state law claims preempted by the Copyright Act. The court noted that preemption can apply even when the allegedly copied material is not subject to protection under the Copyright Act. Otherwise, the district court noted, the state could give copyright-like protection to material that Congress had decided not to protect by copyright. Accordingly, the district court granted summary judgment in favor of Professor Taflove and Mr. Chang for all claims.

… Professor Ho and Ms. Huang timely appealed the district court's decision.

II. DISCUSSION

… Professor Ho and Ms. Huang challenge the district court's grant of summary judgment in favor of the defendant on their copyright infringement, conversion, fraud and trade secrets misappropriation claims. We address each claim in turn.

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1. Copyright Infringement Claim

In granting summary judgment, the district court accepted Professor Taflove and Mr. Chang's view that the allegedly copied materials were not protected by the Copyright Act because the Model is an idea. Specifically, according to the defendants, the Model is "a new mathematical model of how electrons behave under certain circumstances." R.81 at 7. Moreover, the equation, figures and text are the only ways to express this idea, and so, under the merger doctrine, these expressions are not copyrightable. Professor Ho and Ms. Huang counter, in their response to the summary judgment motion and now on appeal, that the nature of the Model is fictitious because it describes reality under hypothetical conditions; accordingly, all of the Model's expressions are protected. In their summary judgment filings, however, they failed to address whether the equations, figures and text are the only possible expressions of the Model.

Protection under the Copyright Act is subject to statutory exceptions. Section 102(b) of the Copyright Act provides that:

> In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

17 U.S.C. § 102(b). We have described § 102(b) of the Copyright Act as codifying a "fact-expression dichotomy." *American Dental Ass'n v. Delta Dental Plans Ass'n*, 126 F.3d 977, 981 (7th Cir. 1997). In essence, "the Copyright Act protects the expression of ideas, but exempts the ideas themselves from protection." *Wildlife Express Corp. v. Carol Wright Sales, Inc.*, 18 F.3d 502, 507 (7th Cir. 1994). This limitation on copyright protection promotes the purpose of the Copyright Act by assuring "authors the right to their original expression," but also by "encourag[ing] others to build freely upon the ideas and information conveyed by a work." *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.,* 499 U.S. 340, 349-50 (1991); see also *Wildlife Express Corp.*, 18 F.3d at 507; *Erickson v. Trinity Theatre, Inc.*, 13 F.3d 1061, 1069 (7th Cir. 1994). Under the merger doctrine, when "there is only one feasible way of expressing an idea, so that if the expression were copyrightable it would mean that the idea was copyrightable," the expression is not protected. *Bucklew v. Hawkins, Ash, Baptie & Co.*, LLP, 329 F.3d 923, 928 (7th Cir. 2003). Thus, even though an individual can have a valid copyright in a document, facts and ideas contained in the document are not subject to copyright. See *American Dental Ass'n*, 126 F.3d at 979.[6]

> [6] Professor Ho and Ms. Huang maintain that the infringed work enjoys a presumption of protectability because they obtained certificates of copyright for that work. They can own valid copyrights in a work, but that work may contain facts and ideas that are not subject to copyright. Moreover, they misunderstand the presumption: Ownership of a copyright creates a presumption of validity of the copyright, not that an infringement of that copyright occurred. See *JCW Inv., Inc. v. Novelty, Inc.*, 482 F.3d 910, 914-15 (7th Cir. 2007) ("The owner of a copyright may obtain a certificate of copyright, which is 'prima facie evidence' of its validity.").

The fact-expression distinction in copyright protection has roots in the Nation's jurisprudence that go back long before the Copyright Act of 1976. See *Mazer v. Stein*, 347 U.S. 201, 217-18 (1954)

(stating that "[copyright] protection is given only to the expression of the idea—not the idea itself" and discussing pre-Copyright Act cases). Indeed, the Supreme Court recognized this dichotomy in *Baker v. Selden*, 101 U.S. 99, 103 (1879), and explained the rationale for limiting copyright protection in certain areas:

> The copyright of a work on mathematical science cannot give to the author an exclusive right to the methods of operation which he propounds, or to the diagrams which he employs to explain them, so as to prevent an engineer from using them whenever occasion requires. The very object of publishing a book on science or the useful arts is to communicate to the world the useful knowledge which it contains. But this object would be frustrated if the knowledge could not be used without incurring the guilt of piracy of the book. And where the art it teaches cannot be used without employing the methods and diagrams used to illustrate the book, or such as are similar to them, such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public; not given for the purpose of publication in other works explanatory of the art, but for the purpose of practical application.

We have recognized that the Court's explanation in Baker is reflected in § 102(b) of the Copyright Act. See *American Dental Ass'n*, 126 F.3d at 981.

Although the line between an expression and an idea can be difficult to determine at times,[7] we do not believe that the record in this case presents a particularly difficult situation. The Model is an idea. In Professor Ho and Ms. Huang's own words, the Model "mimic[s] . . . certain behaviors of millions of particles in a photonic device." Appellants' Br. 4. That is, the Model attempts to represent and describe reality for scientific purposes. This scientific reality was not created by the plaintiffs. Rather, the Model embodies certain newly discovered scientific principles. Granted, as the plaintiffs note, the Model makes certain hypothetical assumptions, but those hypothetical assumptions do not render the Model fictitious. Rather, the Model strives to describe reality, and, as conceded at oral arguments, the value of the Model is its ability to accurately mimic nature. See *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823, 842-43 (10th Cir. 1993) ("The constants in the Design Flex program represent scientific observations of physical relationships concerning the load that a particular belt can carry around certain sized gears at certain speeds given a number of other variables. These relationships are not invented or created; they already exist and are merely observed, discovered and recorded. Such a discovery does not give rise to copyright protection."). As the Supreme Court put it in *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340, 347 (1991), "facts do not owe their origin to an act of authorship. The distinction is one between creation and discovery: The first person to find and report a particular fact has not created the fact; he or she has merely discovered its existence."

> [7] See *Nash v. CBS, Inc.*, 899 F.2d 1537, 1540-41 (7th Cir. 1990) (discussing the fact-expression dichotomy).

Professor Ho and Ms. Huang rely on two cases that are not relevant to this appeal because they involve alleged copying of the creative presentation, not the substance, of facts or ideas. In *Flick-Reedy Corp. v. Hydro-Line Manufacturing Co.*, 351 F.2d 546, 548 (7th Cir. 1965), the plaintiff

claimed that the defendant had copied the "expression and presentation of the computations, formulae and explanations." We concluded that the "arrangement, expression and manner of presentation" of the mathematical data could be protected by copyright, even if the equations and formulae themselves were in the public domain. Id. Specifically, we commented on the coloring, wording and location of titles and type of shading used by the parties. In short, the issue in Flick-Reedy centered around the creative arrangement, expression and manner of presentation, and we were not concerned with whether the substance of the mathematical data was copyrightable.

Similarly, in *Situation Management Systems, Inc. v. ASP Consulting LLC*, 560 F.3d 53 (1st Cir. 2009), our colleagues in the First Circuit concluded that materials used to train employees in communication and negotiation skills were subject to the Copyright Act as expressions of a process or system. The court observed that the plaintiff made "creative choices in describing those processes and systems, including the works' overall arrangement and structure." Id. at 61.

In this case, by contrast, Professor Ho and Ms. Huang do not contend that the defendants appropriated their creative presentation of the Model through copying such aspects as the color or font employed by the plaintiffs. Rather, the plaintiffs contend that the defendants copied the substance of the equations, figures and text. See R.82, Ex. D (Huang Dep.) at 265-67 (Ms. Huang affirming that the copying of the substance of the Model, not its presentation, was what mattered). Unlike the plaintiffs in Flick-Reedy and Situation Management Systems, Inc., Professor Ho and Ms. Huang claim a copyright interest in the substance—not presentation— of the equations, figures and text.

On appeal, Professor Ho and Ms. Huang maintain that there are numerous ways to express the Model and therefore that, as a consequence, the merger doctrine does not apply. The plaintiffs, however, failed to support sufficiently this argument before the district court in their summary judgment filings. In their summary judgment papers, the plaintiffs offered no evidence of how the Model could be expressed through other equations or figures. Equations and figures are common components of mathematical science used to depict ideas. Although equations can be rearranged through the laws of mathematics, the substance of the equation nevertheless remains the same. Without any evidence that the Model could be expressed by equations and figures other than those used by the plaintiffs, we conclude that these equations and figures are "required by" the Model, see *Wildlife Express Corp.*, 18 F.3d at 508 (emphasis in original), and as such, are not subject to copyright.

Whether text, as opposed to equations and figures, is required by the Model or has other possible expressions is a more difficult question. We have recognized that text describing scientific ideas may be subject to copyright. See *American Dental Ass'n*, 126 F.3d at 979 ("Einstein's articles laying out the special and general theories of relativity were original works even though many of the core equations, such as the famous $E=mc^2$, express 'facts' and therefore are not copyrightable."). Here as well, however, the plaintiffs did not raise adequately this argument in their summary judgment papers.[8] Professor Taflove and Mr. Chang maintained in their summary judgment motion that the allegedly copied text was "one of only a few ways . . . to express" the

Model. R.81 at 8. Professor Ho and Ms. Huang failed to refute that assertion in their response to the summary judgment motion. In fact, before the district court, the plaintiffs observed that "[i]t is irrelevant to copyright rights whether the expression is in words or mathematical symbols, just as an author's choice of the English or German language is irrelevant to copyrightability." R.91 at 6. Exactly how the text, defining the variables and offering technical explanations, could have been expressed differently is unclear.

Thus, in their summary judgment motions, the plaintiffs failed to show that the text at issue is one of many possible expressions. Based on the nature of the Model and the plaintiffs' failure to raise arguments adequately and to provide specific evidence in their summary judgment filings, the district court did not err in concluding that the equations, figures and text were not subject to copyright.

> [8] In their summary judgment papers and on appeal, the plaintiffs maintained that there are multiple ways of expressing the Model. This blanket statement seems to cover the expressions of the Model whether in equations, figures, or text. In their summary judgment papers, however, the plaintiffs offered no examples of alternative expressions or any other further elaboration. In their motion for reconsideration and on appeal, the plaintiffs offer several examples of how the text could have been written differently. See R.126, Ex. 1K.

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CONCLUSION

We conclude that the district court properly granted summary judgment on all claims in favor of Professor Taflove and Mr. Chang and that the district court did not abuse its discretion in denying Professor Ho and Ms. Huang's motion for reconsideration. Accordingly, its judgment is affirmed.

AFFIRMED