No. 18-956

In The
Supreme Court of the United States

GOOGLE LLC,

Petitioner,

v.

ORACLE AMERICA, INC.,

Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

BRIEF OF PROFESSOR GLYNN LUNNEY AS *AMICUS CURIAE* IN SUPPORT OF THE PETITIONER

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INTEREST OF *AMICUS CURIAE*[1]

The author of this brief is a Professor of Law and Engineering who teaches and writes in the field of intellectual property law. *Amicus* has no direct interest in the outcome of this litigation. His interest in filing this brief is to promote an interpretation of copyright law that rationally advances copyright's constitutional purpose: "the Progress of Science."[2] *Amicus* is concerned that the Court of Appeals for the Federal Circuit's decision below utterly fails to do so.

SUMMARY OF THE ARGUMENT

Congress effectively added copyright protection for computer programs to the Copyright Act in 1980,[3] but this Court has not yet addressed the proper scope for that protection. As a result, the Court is writing on something of a blank slate in defining the appropriate scope for that protection. The questions presented in this case ask this Court, in essence, whether broader or narrower copyright protection for computer

[1] Pursuant to Rule 37.6, *Amicus* affirms that no counsel for a party authored this brief in whole or in part and that no person other than *Amicus* made a monetary contribution to its preparation or submission. Petitioner's consent to the filing of amicus briefs is filed with the Clerk, and Respondent has consented to the filing. *Amicus* provided timely notice to both Petitioner and Respondent of his intention to file this *amicus* brief.

[2] U.S. CONST., ART. I, § 8, CL. 8.

[3] Act of Dec. 12, 1980, Pub. L. No. 96–517, § 10(a), 94 Stat. 3028 (1980).

programs will better "promote the Progress of Science."[4] A ruling in favor of broader copyright would conclude that Google is an infringer. Such a ruling would favor "original" authors,[5] such as Oracle and others similarly situated, and may provide additional licensing fees, or incentives, for such authors moving forward. These incentives may in turn lead to more original authorship, such as Java, in the future. A ruling in favor of narrower copyright, on the other hand, would leave Google free to market its Android operating system without a license from Oracle. Such a ruling would favor "follow-on" authors, such as Google and others similarly situated, and would leave more room for follow-on authorship moving forward. It may thereby lead to more works of follow-on authorship, such as the Android operating system, in the future. The question thus becomes whether favoring original authors, such as Oracle, or follow-on authors, such as Google, in this case would better advance, on balance, copyright's constitutional purpose.

This is fundamentally an empirical question. While Congress is better positioned to answer this question, the statutory language is sufficiently general

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[4] U.S. CONST., ART. I, § 8, CL. 8.

[5] The "original" and "follow-on" identifications follow from the parties' positions in the litigation. Outside of that specific context, Oracle and Google are both original authors, and they are both follow-on authors. All authors are. The issue is therefore reciprocal. Whatever infringement rule the Court adopts defines what any given author may: (i) copy from earlier authors; and (ii) prohibit later authors from copying.

to leave room for either outcome,[6] as the back and forth between the trial and appellate courts in this case establishes. The question is thus left for this Court to answer. Yet, the Court lacks the data necessary to answer the question. To assist the Court, *Amicus* offers a summary of recent empirical research on one of the key issues in deciding this case: Do more incentives lead to more creative output? For hundreds of years, we have told ourselves that broader copyright is desirable because more copyright means more revenue for copyright owners, and more revenue for copyright owners means more creative works for society. While this two-step incentives story is simple, intuitive, and plausible, recent empirical research suggests it is likely false. Although a correlation between incentives and creative output has long been casually assumed, the rise of file sharing has given us an opportunity to test for such a correlation empirically and rigorously. In the music industry, for example, the rise of file sharing was associated with a sharp fall in revenue from sales of recorded music. By the conventional assumption, this fall in revenue should have led to a corresponding decrease in creative output. Yet, it did not. Indeed, a comprehensive examination of the relationship between revenue

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[6] Alternatively, the Court could interpret the statute literally. It is undisputed that Google created a whole new program, in the Android operating system, and in doing so, Google reused only a very small fraction of the Java program. As a result, in the literal and ordinary sense of the statutory language, the Android computer program does not "reproduce the copyrighted work," *i.e.*, the Java program as a whole, nor is it "based upon" the Java program. 17 U.S.C. §§ 101 (definition of a derivative work), 106(1), (2) (2019).

and popular music output for the United States since 1962 found no positive and statistically significant correlation between revenue from sales of recorded music and music output.[7] As revenue rose substantially from the early 1960s through the 1970s and 1980s and into the peak revenue 1990s, there was no measurable improvement in the quantity or quality of popular music output. As revenue fell sharply in the post-file sharing 2000s, there was no measurable decrease in the quantity or quality of popular music output. To the contrary, where a statistically significant correlation was found, it was negative. More money led to less music, *ceteris paribus*.

While these findings focus on music and not computer programs, three reasons suggest that the findings likely extend to computer programs. First, copyright itself presupposes that the relationship between incentives and creative output is the same across the range of authorship it protects. Second, creativity in both music and computer programs alike is subject to the certainty of diminishing marginal returns. Ever increasing incentives will not lead to ever increasing creative output. Third, the markets for both music and computer programs are winner takes all, or more accurately, winner takes most. The vast majority of the incentives copyright provides goes not to encourage additional creative work at the margins of profitability, but to the winners in these markets in the form

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[7] Glynn Lunney, COPYRIGHT'S EXCESS: MONEY AND MUSIC IN THE US RECORDING INDUSTRY (2018) (hereinafter Lunney, COPYRIGHT'S EXCESS).

of monopoly profits. While these recent empirical studies focus on music and not computer programs, they present the only hard data we have on the actual effects of copyright in the real world. So far, they are the first and only studies of whether the long assumed link between additional incentives and additional creative output actually exists. They find that it does not.

The demonstrated lack of a causal link between additional incentives and additional creative output suggests that the Court should favor narrower, rather than broader, copyright, as a general matter. In terms of the precise doctrinal issues before the Court, the lack of such a link further suggests that the Court should not place undue weight on the fourth fair use factor in particular. In the music industry, even a substantial loss in the actual market value of copyrighted works caused no decline in creative output.

In this case, the Court faces a choice between broader and narrower copyright. Broader copyright may increase Oracle's incentives, but that increase serves copyright's constitutional purpose only if those additional incentives lead to increased creative output. The available empirical studies tend to disprove the necessary causal link. Although the studies focus on music and not computer programs, their findings offer reason to doubt that providing additional incentives to Oracle and others similarly situated would lead to increased creative output of original works, such as Java, moving forward. In contrast, there is no similar reason to doubt that a ruling in favor of narrower copyright would increase follow-on authorship. The Court should

therefore rule in favor of narrower copyright. Whether it reaches that result by application of the limits in section 102(b), or by affirming the jury's finding of fair use under section 107, the Court should rule that Google has not infringed Oracle's copyright.

ARGUMENT

The Court should reverse the Federal Circuit and hold that Google did not infringe Oracle's copyright in the Java program. For hundreds of years, we have justified and expanded copyright protection based upon a simple two-step story: (i) broader copyright will generate more incentives for copyright owners; and (ii) more incentives for copyright owners will increase creative output. Recent empirical research demonstrates that the second step in this two-step story is likely false. The Court should therefore favor narrower, rather than broader, copyright protection.

In this case, the doctrinal complexities can make it difficult to see the copyright forest for the doctrinal trees. Yet, if we put the doctrinal complexities to one side, the question presented can be phrased simply: Should Google have to pay Oracle a licensing fee for reusing a portion of the Java program in creating the Android operating system? This in turn leads to an equally simple policy question: Would a ruling favoring the "original" author, Oracle, or the "follow-on" author,[8]

[8] See footnote 5 supra for a discussion of the descriptive and normative character of the "original" and "follow-on" labels.

Google, in this case, better promote "the Progress of Science"?[9] While these questions can be phrased simply, they are almost impossible to answer definitively.[10]

Certainly, these questions cannot be answered by logic, intuition, or by reasoning from an idealized set of first principles. These questions can only be answered empirically. Ruling in favor of Oracle might force Google to pay Oracle a licensing fee. But would requiring such a fee lead to more and better programs, such as Java, moving forward? And if so, to what extent? Ruling in favor of Google would leave Google free to market its Android program without paying a license fee. But would such a ruling lead to more follow-on authorship, such as the Android operating system, moving forward, and if so how much? Moreover, because these are empirical questions, their answers may change as the technology, and hence the economics, of authoring and distributing original works of authorship change.[11] Digital technology, for example, has radically reduced the cost of authoring and distributing

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[9] U.S. CONST. ART. I, § 8, CL. 8.

[10] If it is simply a question of whether Google or Oracle captures more of the monopoly rents available, then the law should simply let the rents fall where they may. The expensive mechanism of litigation should not be employed to force Google to share some of its monopoly rents with Oracle, unless that forced sharing leads to increased authorial output.

[11] See *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 430 (1984) ("From its beginning, the law of copyright has developed in response to significant changes in technology. Indeed, it was the invention of a new form of copying equipment—the printing press—that gave rise to the original need for copyright protection.").

works of authorship. In the analog era, only a privileged few could have their novels read or their songs heard widely by others. Today in the digital era, anyone can. As a result, historical precedents and once reliable proxies may lead this Court astray if extended too readily from the analog to the digital era.

If we look at the available empirical evidence directly, it suggests that a ruling favoring the follow-on author, Google, would better promote "the Progress of Science" in this case. To be clear, the available empirical evidence does not definitively answer the question. On balance, however, it supports narrower, rather than broader, copyright both generally and in this case.

From an empirical perspective, the initial and central question is whether the marginal additional incentives that requiring a license fee from Google, and others like Google, would provide, would lead to more original authorship of programs like Java moving forward. If it does, then we can balance those potential original authorship gains against the potential lost follow-on authorship from broader protection. If it does not, then we have nothing to balance against the lost follow-on authorship. The Federal Circuit's working assumption seems to be that the only way to be sure that we avoid any loss in creative output is to maximize incentives for Oracle.[12] As a result, in the Federal

[12] The Federal Circuit's belief in this regard and its consequential desire to expand the subject matter and availability of legal prohibitions on imitation in every possible way has led this Court to correct the Federal Circuit before, on issues as varied as patentable subject matter, see, e.g., *Alice Corp. v. CLS Bank Int'l*,

Circuit's view, any loss in potential licensing opportunities should weigh heavily against fair use under the fourth factor.[13] But recent empirical research suggests that this is not the case. At the outset, we must first recognize that even without a license fee from Google, original authors, such as Oracle, have substantial incentives. First-mover advantages, reputational rents, consumer self-interest, sales of complementary products or services, and the ordinary workings of the market more generally provide substantial incentives for creativity, even in the absence of copyright.[14] For four

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573 U.S. 208 (2014) (reversing the Federal Circuit's overly broad interpretation of patent-eligible subject matter); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012) (same); the nonobviousness requirement in patent law, see *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (reversing the Federal Circuit's too-easy-to-satisfy nonobviousness standard); and the functionality doctrine in trademark law. See *TrafFix Devices, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23 (2001) (rejecting the role of alternative designs that the Federal Circuit had added to create a too-easy-to-satisfy functionality limitation on trade dress protection).

[13] A purely incentives-based or property-based approach offers no basis for preferring original authors, such as Oracle, over follow-on authors, such as Google. We should not be confused by the labels. All original authors are follow-on authors, and all follow-on authors are original authors. Putting to one side the framing this case imposes, who then are the true "original" authors that broader copyright protects? Every author copies. At some point, broader copyright becomes mutually assured destruction, where every author can sue every later author and be sued by every earlier author—lawsuits without end. We are already seeing this in the music industry.

[14] See Stephen Breyer, The Uneasy Case for Copyright—A Study of Copyright in Books, Photocopies, and Computer Programs, 84 HARV. L. REV. 281, 301-07 (1970); Jessica Silbey, THE

hundred years, the Stationers Guild's story of the copying competitor has loomed over us,[15] warning us that markets will fail and no books will be published at all if the law does not intervene to stop copying. Yet, recent research has identified any number of markets where creativity flourishes even in the absence of legal protection against copiers. From innovation in football plays to recipes to fashion to open-source software, markets can find ways to work around the copying competitor problem and incentivize creativity without copyright.[16] Moreover, whether or not Oracle is entitled

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EUREKA MYTH: CREATORS, INNOVATORS AND EVERYDAY INTELLECTUAL PROPERTY 118-19, 126-28, 134, 230-31 (2015) (exploring the role that first-mover advantages, sales of complementary services, and other market mechanisms play in incentivizing innovation).

[15] In a 1586 petition to the Star Chamber, the Stationers Guild asserted:

> And further if priuileges be revoked no bookes at all shoulde be prynted, within shorte tyme, for comonlie the first prynter is at charge for the Authors paynes, and somme other suche like extraordinarie cost, where an other that will print it after hym, commeth to the Copie gratis, and so maie he sell better cheaper then the first prynter, and then the first prynter shall never vtter [sell] his bookes.

The Arguments of the Patentees in Favour of Privileges for Books (May 4, 1586), *in* 2 A TRANSCRIPT OF THE REGISTERS OF THE COMPANY OF STATIONERS OF LONDON, 1554-1640 A.D., at 805 (Edward Arber ed., 1875) (alteration in original).

[16] See Christopher Kelty, TWO BITS: THE CULTURAL SIGNIFICANCE OF FREE SOFTWARE (2008) (exploring the fundamental importance of openness and copying to software development); Jessica Litman, The Exclusive Right to Read, 13 CARDOZO ARTS & ENT. L.J. 29, 44-46 (1994); Kal Raustiala & Christopher Sprigman, The Piracy Paradox: Innovation and Intellectual Property

to collect a licensing fee from Google, Oracle undoubtedly retains copyright protection against unauthorized verbatim and non-transformative copying of the entire Java program. This provides Oracle with a second-layer of incentives, over and above those the market alone would generate in the absence of copyright. The question thus becomes whether adding a third layer of incentives from licensing uses such as Google's on top of those first two would generate any additional original authorship, such as Java, and if so, how much.

Recent empirical research suggests that adding a third layer of incentives will not lead to any increase in creative authorship.[17] As mentioned at the outset, the recent research uses the rise of file sharing as a natural experiment to test for the long supposed causal link between incentives and creative output. The research focuses on the music industry because revenues from sales of recorded music began to fall, and fall sharply, after the introduction of file sharing in 1999. Whether as a direct or indirect result of file sharing,[18]

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in Fashion Design, 92 VA. L. REV. 1687, 1689 (2006); Yochai Benkler, Coase's Penguin, or, Linux and The Nature of the Firm, 112 YALE L.J. 369 (2002); Josh Lerner & Jean Tirole, Some Simple Economics of Open Source, 50 J. INDUS. ECON. 197 (2002).

[17] Lunney, COPYRIGHT'S EXCESS, supra note 7; Christian Handke, Digital copying and the supply of sound recordings, 24 INFORMATION ECONS. & POLICY 15 (2012); Joel Waldfogel, Copyright Protection, Technological Change, and the Quality of New Products: Evidence from Recorded Music Since Napster, 55 J.L. & ECON. 715 (2012).

[18] Revenue would fall as a direct result of file sharing to the extent that a copy obtained by file sharing directly displaces an authorized sale. Revenue fell as an indirect result of file sharing

or for some other reason entirely, after the introduction of file sharing in 1999, industry revenue from sales of recorded music in the United States fell from over $20 billion in constant 2013 dollars ("$2013") in 1999 to under $7 billion by 2014, according to the Recording Industry Association of America.[19] If there is a direct causal link between incentives and creative authorship, as the Federal Circuit seemed to assume for copyright generally, then such a substantial fall in revenue should have produced some observable reduction in music output. Yet, it did not. Music output continued apace.[20]

While two of the empirical studies covered the period immediately before and after the introduction of file sharing, the third examined the relationship between revenue and music output over a much longer, fifty-four year period from 1962 through 2015. During this period, in constant dollar terms, revenues from sales of recorded music initially rose from under $5 billion ($2013) in the early 1960s to over $20 billion

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to the extent that the competitive pressure of file sharing enabled Steve Jobs to obtain licenses to sell individual singles at the Apple iTunes store. As a result, instead of buying a full album to obtain copies of three hit songs, a consumer could simply buy the three hit songs instead. See Lunney, COPYRIGHT'S EXCESS, supra note 7, at 74-77.

[19] Lunney, COPYRIGHT'S EXCESS, supra note 7, at 81. Note that both before Congress enacted the sound recording copyright and after the rise of file sharing, the revenues from sales of recorded music were not zero.

[20] Lunney, COPYRIGHT'S EXCESS, supra note 7, at 95-99, 112-18, 125-33, 135-38; Handke, supra note 17, at 15-16, 20; Waldfogel, supra note 17, at 717, 735, 737-39.

($2013) in 1999, and then fell to under $7 billion ($2013) in 2014. The study attempted to account for other changes in the music industry,[21] as well as other sources of revenue,[22] and used regression analysis to isolate and test for a relationship between revenue and music output.[23] Yet, despite running hundreds of regressions, it found no statistically significant and positive correlation between revenue and music output.[24] When revenues were increasing from the early 1960s into the 1990s, there was no corresponding increase in popular music output. As revenues began to collapse after the rise of file sharing, there was no

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[21] In addition to examining the role of revenue and the rise of file sharing on music output, the study also accounted for the possible roles of: (i) the performance of the economy generally; (ii) the size of the U.S. population, ages 15-19; (iii) the rise of Clear Channel radio; (iv) the rise of digital distribution; (v) the rise of alternative promotional channels, such as social media; and (vi) declining costs in the recording industry generally. Lunney, COPYRIGHT'S EXCESS, supra note 7, at 124-25.

[22] Id. at 77 (noting that revenue from concerts grew from $2.3 billion ($2013) in 2000 to $5.1 billion ($2013) in 2013 and thus offset some of the decline in sales of recorded music).

[23] The study used four different measures of music output: (i) SoundScan's count of the number of albums released annually from 1996 through 2012; (ii) the *Rolling Stone*'s ranking of the five hundred greatest albums of all time; (iii) the number of new songs that appeared on the Billboard Hot 100 chart each year from 1962 through 2015; and (iv) the number of songs and the stream count for each song in the top 1,001 songs initially released from 1960 through 2005, based upon worldwide stream count on Spotify in 2014. Lunney, COPYRIGHT'S EXCESS, supra note 7, at 84-121.

[24] Lunney, COPYRIGHT'S EXCESS, supra note 7, at 95-99, 112-18, 125-33, 135-38.

corresponding fall in popular music output. To the contrary, where a statistically significant correlation was found, it was negative. More money in one year meant less music in the next, *ceteris paribus*.[25]

These results are not just surprising. They are, in truth, shocking. They upend the assumption that we have so casually made for hundreds of years that more incentives will necessarily lead to more creative output. By doing so, they undermine copyright's very foundation. For purposes of this litigation, however, the more limited question is whether these empirical findings for music apply more generally, and extend, for example, to computer programs. Certainly, copyright itself presupposes the same relationship between incentives and creative output across the range of authorship that it protects. Thus, evidence that more incentives did not increase creative output for one type of authorship raises doubts as to all the rest. Beyond that, there are at least two reasons why the finding of no positive correlation between incentives and creative output in the music industry likely applies to other copyrighted works, including computer programs.

First, the finding that more incentives did not lead to more creative output simply acknowledges the certainty of diminishing marginal returns. For both music and computer programs alike, there may be some base level of incentives necessary to encourage creative authorship. However, once that base level is reached, piling on more and more incentives will not lead to

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[25] Id.

corresponding increases in creative output. Copyright is not an economic perpetual motion machine.[26] Ever more incentives will not lead to ever more creative output. Beyond some level, further incentives will not increase creative output. For music, by at least two of the three measures that cover the entire period, creative output peaked in the late 1960s and early 1970s.[27] In other words, popular music output peaked before Congress enacted the sound recording copyright.[28] This suggests that the market alone, even without a sound recording copyright, provided near-optimal incentives for authorship in the music industry. Even doubling or trebling those base-line incentives led to no discernible increase in creative output. It simply forced consumers to pay more for music they would have gotten anyway.

Second, markets for both computer programs and music reflect a winner-takes-all dynamic. In music, the

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[26] If we could put a dollar's worth of authorship in and get more than a dollar's worth of creative output out, no matter how many dollars we put in, then ever broader copyright would be a recipe for infinite social wealth.

[27] Lunney, COPYRIGHT'S EXCESS, supra note 7, at 89, 110. The unique song count for the Billboard Hot 100 chart peaked at 743 new songs in 1966. For the *Rolling Stone* magazine's list of 500 greatest albums, 1970 was the best year, with 25 albums making the list. The available Spotify data was based upon worldwide streaming in 2014. In that year, the Beatles' music was not yet on Spotify. Had it been, the pre-sound recording era may have been the best era for music by all three measures.

[28] Congress created the sound recording copyright by amendment in 1971 for recordings made after February 15, 1972. See Sound Recording Amendment, Pub. L. No. 92–140, § 3, 85 Stat. 391, 392 (1971).

top ten percent of copyrighted works, by popularity, capture more than ninety percent of revenues.[29] To put this in context, this 90-10 rule means that if copyright provides ten dollars of incentives to ten works, the single most popular work will capture nine of those ten dollars. The rest will capture, on average, eleven cents each. Because of this 90-10 rule, when revenues to the music industry peaked in the 1990s, ninety percent of that increase went to the most popular superstar artists and authors. While more effective copyright protection in the 1990s generated more incentives for authorship, most of those additional incentives were, from the perspective of copyright's constitutional purpose, simply wasted. Rather than support additional creative work at the margins of profitability, the vast majority of those additional incentives went towards overpaying superstar artists. Rather than ensure a livable wage for the average or marginal artist, the additional incentives primarily enabled superstars to capture monopoly profits far in excess of their persuasion costs.[30]

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[29] BuzzAngle Music, 2018 YEAR-END REPORT: U.S. MUSIC INDUSTRY CONSUMPTION 31, 34 (2019) (available at https://www.buzzanglemusic.com/buzzangle-music-2018-report-on-music-consumption/) (last visited Oct. 7, 2019) (providing data that shows that the top ten percent of albums captured over 98.5 percent of sales and showing that the top ten percent of music videos received 87.1 percent of the total music video streams).

[30] In our ten dollars for ten works hypothetical, there is a 90-to-1 ratio between the earnings for the most popular work and the average earnings for the remaining works. Of course, that ratio is merely hypothetical. The reality is far worse. The available data suggests that today's copyright creates markets that pay $4.29

We find this same winner-takes-all, or more accurately, winner-takes-most, dynamic in other copyright markets as well. For PC videogame players on Steam, the top ten percent of the videogames captured 89.28 percent of the players.[31] Of the domestic box office for theatrical releases, the top ten percent of the films captured 75.5 percent of the revenue.[32] For literary authors in the United Kingdom, seventy percent of the royalty income flowed to the top ten percent of authors.[33]

As this Court has recognized, the purpose of copyright is not primarily to bestow monopoly profits on superstar authors and artists.[34] The purpose of copyright

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million in royalties to the copyright owners of the most popular song on Spotify for every dollar in royalties those markets pay to the copyright owners of the median song on Spotify. Glynn S. Lunney, Jr., Copyright and the 1%, at 50, STAN. TECH. L. REV. (forthcoming 2020) (available on www.ssrn.com).

[31] Lunney, Copyright and the 1%, supra note 30, at 40-41.

[32] Calculated based upon data at Box Office Mojo, Yearly Box Office: 2019 Domestic Grosses, Oct. 7, 2019 (available at https://www.boxofficemojo.com/yearly/chart/?page=1&view=releasedate&view2=domestic&yr=2019&p=.htm) (last visited Oct. 7, 2019).

[33] See Martin Kretschmer, Andres Azqueta Gavaldon, Jaakko Miettinen, and Sukhpreet Singh, UK AUTHORS' EARNINGS AND CONTRACTS 2018: A SURVEY OF 50,000 WRITERS 19 (2019) (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3389685).

[34] *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 429 (1984) ("The monopoly privileges that Congress may authorize are neither unlimited nor primarily designed to provide a special private benefit."); *United States v. Paramount Picts., Inc.*, 334 U.S. 131, 158 (1948) ("The copyright law, like the patent statute, makes reward to the owner a secondary consideration."); *Fox Film*

is to encourage the creation and dissemination of additional original works at the margins.[35] Unfortunately, for both music and computer programs alike, the vast majority of the incentives copyright provides go to overpaying the winners in copyright's winner-takes-all markets. Only a small fraction flow directly to more marginal works.

Of course, we tell stories about how maximizing the prize that our winners take home might encourage creative output at the margins. We say that maximizing the prize will lead more would-be authors to enter the copyright lottery and so increase creative output. We say that some of the winning authors' excess rents will be used to cover losses on works that prove unexpectedly unpopular and so increase creative output. But neither of these stories, nor any other reason why more incentives might lead to more creative output, proved true in the music industry over the last sixty years. During the 1990s, when effective copyright protection and industry revenues both peaked, popular music output fell to its lowest level over the entire fifty-four year period studied. Fewer new songs appeared on the Hot 100 chart annually during the 1990s than in

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Corp. v. Doyal, 286 U.S. 123, 127 (1932) ("The sole interest of the United States and the primary object in conferring the monopoly lie in the general benefits derived by the public from the labors of authors.").

[35] *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975) ("The immediate effect of our copyright law is to secure a fair return for an 'author's' creative labor. But the ultimate aim is, by this incentive, to stimulate artistic creativity for the general public good.").

the 1960s, 1970s, 1980s, or from 2000-2015.[36] And the most popular songs from the peak revenue 1990s had far fewer streams, on an age-adjusted basis, on Spotify worldwide in 2014, than the most popular songs from the 1960s, 1970s, 1980s, or from 2000-2005.[37] In the music industry, more incentives did not mean more creative output. More incentives simply meant more monopoly profits and more highly overpaid superstars.

For the music industry, these studies establish that more incentives did not increase creative output, and fewer incentives did not reduce it. Even very large increases and decreases in incentives produced no corresponding change in popular music output. Indeed,

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[36] See Lunney, COPYRIGHT'S EXCESS, supra note 7, at 95-97. The Hot 100 is released weekly, fifty-two weeks a year. As a result, every year, a total of five thousand two hundred songs appear on the chart. Most of those songs, however, repeat from week to week. If we count the number of new, unique, or non-repeating songs on the chart in a year, the number peaked in 1966 with 743 new songs appearing on the chart. It then began to fall, reaching its nadir of only 294 new songs in 2002. As revenues continued to decline, the unique song count began to rebound and reached a second peak of 477 new songs in 2010. From 1962 through 1969, an average of 703 new songs appeared annually on the Hot 100 Chart. During the 1970s, an average of 541.8 new songs appeared annually on the chart. During the 1980s, that number fell to 417.2. The average reached its lowest point in the peak revenue 1990s, with only 350.9 new songs annually. From 2000 through 2015, as revenues fell, the number of new songs appearing on the Hot 100 chart annually increased to an average of 368.5. This new song count represents an unbiased measure of popular music output. Id. at 129.

[37] See Glynn S. Lunney, Jr., Copyright's Excess Revisited, at 8, TEXAS A&M PROP. L.J. (forthcoming 2020) (available at www.ssrn.com).

where a statistically significant correlation between incentives and creative output was found, more incentives were associated with the production of fewer and poorer quality hit songs, *ceteris paribus*. While these studies focus on music, rather than computer programs, these empirical studies provide the only hard data we have on copyright's actual effects in the real world. Their finding of a lack of correlation between incentives and creative output suggests, more likely than not, that requiring Google to pay a licensing fee to Oracle for Google's reuse of a small part of Java in Google's Android operating system will not increase original authorship of programs, such as Java, going forward.

In terms of the precise doctrinal issues before the Court, these studies strongly suggest that the Court should not place undue weight on the fourth fair use factor. Although Congress directed courts to consider "the effect of the use upon the potential market for or value of the copyrighted work" as part of the fair use inquiry,[38] Congress did not dictate what size effect would weigh against fair use nor indicate how any given effect on value should be balanced against the other factors. In the light of this Court's repeated statements that the purpose of copyright is not primarily to enrich copyright owners,[39] presumably the fourth

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[38] 17 U.S.C. § 107(4) (2019).

[39] *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, (1984) ("The monopoly privileges that Congress may authorize are neither unlimited nor primarily designed to provide a special private benefit."); *United States v. Paramount Picts., Inc.*, 334

factor is included in the fair use balance not because the lost market value is itself a harm that copyright seeks to avoid,[40] but because it serves as a rough proxy for the loss in creative output that the lost market value may cause. Yet, in the music industry, incentives increased and decreased by factors of two and three with no discernible effect on creative output. This empirical finding suggests three conclusions with respect to the fourth fair use factor. First, incentives are not generally a good proxy for creative output. As a result,

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U.S. 131, 158 (1948) ("The copyright law, like the patent statute, makes reward to the owner a secondary consideration."); *Fox Film Corp. v. Doyal*, 286 U.S. 123, 127 (1932) ("The sole interest of the United States and the primary object in conferring the monopoly lie in the general benefits derived by the public from the labors of authors.").

[40] Of course, one can insist that any loss in value infringes on Oracle's property, but that is a conclusion masquerading as a reason. The issue before the Court is whether: (i) Oracle has the legal right, or property, to bar the copying at issue; or (ii) Google has the legal right, or property, to undertake the copying at issue. It is always true that Oracle would have captured more licensing fees with a broader definition of its rights than it would with a narrower definition. But that is not a sufficient basis for favoring ever-broader copyright protection. From a property or rights-based perspective, the issue is a zero sum game. To give more property, in the sense of a broader right to prohibit copying, to Oracle and other similarly situated original authors, the Court would necessarily have to give that much less property, in the sense of a narrower right to copy, to Google and other similarly situated follow-on authors. For that reason, favoring property rights provides no basis for deciding where to place the boundary line between Oracle's property, *i.e.*, its right to bar copying, and Google's property, *i.e.*, its right to copy. *Amicus* suggests that the Court place that boundary line where it best promotes copyright's constitutional purpose—"the Progress of Science."

the fourth factor deserves little weight generally. Second, only substantial effects on value plausibly create a risk of true market failure.[41] As a result, only substantial effects should weigh against fair use. Third, even substantial effects on value may not reduce creative output. As a result, even where a use threatens a substantial loss in value, evidence that the use is fair from the other fair use factors should readily outweigh that lost value.

More generally in this litigation, the Court faces a choice between broader copyright and narrower copyright. Broader copyright may generate additional licensing fees for Oracle and others similarly situated. Yet, that wealth transfer serves copyright's constitutional purpose only if it leads somehow to more original works, such as Java, in the future. The available empirical research tends to disprove the necessary causal link. Narrower copyright, on the other hand, will allow Google to distribute its follow-on work without a licensing fee. It will thereby leave more room for follow-on creators to build upon Java and other computer programs. Such follow-on creativity advances copyright's constitutional purpose both directly and unquestionably. At the same time, narrower copyright does not mean no copyright. Oracle retains the right to

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[41] To be precise, an effect is substantial and creates a true risk of market failure if and only if the use at issue reduces the value of the copyrighted work to such an extent that the original author, had it been aware that a court would allow the use as fair under the circumstances presented, would not have authored and distributed the copyrighted work in the first place. See Lunney, supra note 30, at 54-59 (proposing such an approach for fair use).

pursue those who reproduce, without authorization, the copyrighted Java program in its entirety or otherwise in ways less transformative than Google's use in this litigation. This right, together with the ordinary workings of the market, likely secures Oracle's ability to recoup its persuasion costs for authoring and disseminating Java, minimizes the risk of market failure, and thereby ensures that society will not be deprived of Java or of similar original works going forward.

In this case, the Court must essentially guess whether broader or narrower copyright will, on balance, better promote "the Progress of Science." While Congress is better positioned to resolve the issue, Congress left sufficient ambiguity in the statute to force this Court to strike the correct balance. In striking that balance, *Amicus* would urge the Court not to rely on assumptions, intuitions, or other heuristic shortcuts, but to consider the available empirical evidence on the relationship, or more precisely, the lack of relationship, between incentives and creative output. While the available empirical research focuses on music, rather than computer programs, it is the only evidence that we have on the supposed link between incentives and creative output. While it does not resolve the issue definitively, it suggests that, in this case, narrower copyright is more likely to promote "the Progress of Science." The Court should therefore hold that Google did not infringe Oracle's copyright in the Java program.

CONCLUSION

The Court should reverse the Federal Circuit and hold that Google has not infringed Oracle's copyright.

Respectfully submitted,

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