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## *GOOGLE V. ORACLE* ROUND TWO: WHY THE FEDERAL CIRCUIT GOT IT WRONG

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# Google v. Oracle Round Two: Why the Federal Circuit Got it Wrong

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Yue Deng-Wu

## I. Introduction

When Google developed its mobile platform, Android, the company copied some of the code as well as the structure, sequence, and organization (SSO) of 37 Java Application Programming Interfaces (APIs).<sup>1</sup> Oracle gained ownership of Java, a widely-used open-source software language, when it acquired Sun Microsystems in 2010.<sup>2</sup> Java has 166 API packages, which is essentially a library of pre-written code for common programming functions.<sup>3</sup> An API's SSO is the name of the API, its structure, and its function.<sup>4</sup>

Oracle filed an action for copyright infringement against Google for its use of 37 Java APIs. In 2014, the Federal Circuit overturned the lower court's ruling and held that APIs are copyrightable.<sup>5</sup> A second trial followed this decision on the issue of fair use.<sup>6</sup> After nine days of trial and four days of deliberation, the jury found for Google.<sup>7</sup> On December 7, 2017, the parties returned to the Federal Circuit to argue the merits of Google's fair use defense.<sup>8</sup> On March 27, 2018, Federal Circuit issued an opinion, holding that Google's use of Java APIs was not fair use as matter of law.<sup>9</sup>

This paper seeks to show that Google's use of Java APIs was fair and, more generally, that courts should consider use of API declaration codes to be fair use in future cases. Part II details the development of Java and Android and an overview of the technology at issue, namely Java

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<sup>1</sup> Oracle Am., Inc. v. Google Inc., 872 F. Supp. 2d 974, 978-79 (N.D. Cal. 2012).

<sup>2</sup> See Peter S. Menell, *API Copyrightability Bleak House: Unraveling and Repairing the Oracle v. Google Jurisdictional Mess*, 31 BERKELEY TECH. L.J. 1515, 1545-48 (2016).

<sup>3</sup> Oracle, 872 F. Supp. 2d at 978.

<sup>4</sup> *Id.*

<sup>5</sup> Oracle Am., Inc. v. Google LLC, 886 F.3d 1179, 1186 (Fed. Cir. 2018).

<sup>6</sup> Brief of Defendant-Appellee/Cross-Appellant Google Inc. at 22, Oracle Am., Inc. v. Google Inc., (Nos. 17-1118, -1202) (Fed. Cir. 2018).

<sup>7</sup> *Id.* at 23.

<sup>8</sup> Oral Argument, Oracle Am., Inc. v. Google LLC, (Fed. Cir. 2018) (Nos. 17-1118, -1202),

<http://www.cafc.uscourts.gov/node/22701>.

<sup>9</sup> Oracle, 886 F.3d at 1210.

programming language and Android platform. Part III discusses the Federal Circuit’s most recent opinion and will show that Google’s use of Java API declaration codes should be considered fair use.

## **II. Development of Java and Android**

Sun Microsystems first released the Java programming language and platform in 1996.<sup>10</sup> By 2005, when Google started its development of Android, an operating platform<sup>11</sup> for mobile devices, Java had become one of the most widely used programming languages.<sup>12</sup> In addition to dominating web development, Java-based technology ran on more than 2.5 billion devices, including desktop, cameras, command and control center for Mars Rovers, ATM machines, mobile phones, personal organizers, games and game machines, and servers.<sup>13</sup>

Java’s popularity made it a more attractive option than Google as the programming language for the Android platform.<sup>14</sup> Since many developers were familiar with Java, programmers would be able to quickly adapt to Android so that the community for developing Android applications would grow rapidly.

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<sup>10</sup> Oracle Am., Inc. v. Google Inc., 872 F. Supp. 2d 974, 977 (N.D. Cal. 2012).

<sup>11</sup> Operating platform or environment refers to the hardware and/or software architecture on which applications are built. In the mobile context, the hardware is the type of processor or central computing unit (CPU) along with the operating system, and the software manages the multiple operations of the computer (e.g. user interface, time and sequence applications run, data storage, communication to peripheral devices, and security). The Android platform means the ARM CPU and Android operating system. *See Platform*, PCMAG: ENCYCLOPEDIA, <https://www.pcmag.com/encyclopedia/term/49362/platform> (last visited Apr. 13, 2018); *Operating System*, PCMAG: ENCYCLOPEDIA, <https://www.pcmag.com/encyclopedia/term/48510/operating-system> (last visited Apr. 13, 2018); *CPU*, PCMAG: ENCYCLOPEDIA, <https://www.pcmag.com/encyclopedia/term/40436/cpu> (last visited Apr. 13, 2018).

<sup>12</sup> From 2005-2006, in multiple rankings of programming languages’ popularity by popular computing websites, Java consistently ranked among the top two. *See* Tim Toady, *Most Popular Programming Languages*, DEVTOPICS: SOFTWARE DEVELOPMENT TOPICS (May 30, 2007), <http://www.devtopics.com/most-popular-programming-languages>; *see also 10 Interesting Facts about Java* (May 22, 2016), <https://www.techworm.net/2016/05/10-interesting-facts-java.html> (stating that Java was the second most popular programming language in 2016). In 2005, Sun Microsystems reported that Java developers worldwide totaled more than 4.5 million. *Java Timeline*, ORACLE, <http://oracle.com.edgesuite.net/timeline/java> (last visited Apr. 13, 2018).

<sup>13</sup> Opening Brief and Addendum for Oracle Am., Inc., at 9, Oracle Am., Inc. v. Google Inc., (Fed. Cir. 2018) (Nos. 17-1118, -1202); Java Timeline, *supra* note 12.

<sup>14</sup> *See Oracle*, 886 F.3d at 1187 (“The jury heard evidence that Google wanted to move quickly to develop a platform that would attract Java developers to build apps for Android”).

Furthermore, Google thought it would be helpful to programmers if Android used the declaration codes and organization for 37 of the 166 Java Application Programming Interfaces (APIs) from the Java Standard Edition (SE).<sup>15</sup> APIs are pre-written templates programmers can use when writing their own programs.<sup>16</sup> Each template serves a certain function, such as painting graphics or changing fonts. The intention is to provide programmers with a template that serves as a foundation they can build off of, instead of having to write the code for common functions from scratch for each application.<sup>17</sup>

It is important to note that Google did write its own implementations for 37 APIs and developed its own API libraries.<sup>18</sup> Declaring codes defines the method<sup>19</sup> name, and the type of input and outputs the methods that follow expects.<sup>20</sup> Inputs are like variables and outputs are like the solutions. Outputs can be integers, characters, or Boolean (true/false).<sup>21</sup> Implementing code is the pre-written program which takes the input and run it through functions to generate outputs.<sup>22</sup> SSO refers to the names of the methods and classes<sup>23</sup> in the APIs, the organization of these methods and classes, and their functions.<sup>24</sup>

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<sup>15</sup> *Id.* at 978. Java SE is one version of the programming language which was developed for desktops and servers. *Java SE at a Glance*, ORACLE, <http://www.oracle.com/technetwork/java/javase/overview/index.html> (last visited May 2, 2018).

<sup>16</sup> *Oracle Am., Inc. v. Google LLC*, 886 F.3d 1179, 1186 (Fed. Cir. 2018).

<sup>17</sup> *See Id.*

<sup>18</sup> Menell, *supra* note 1, at 1543–44.

<sup>19</sup> Java is an object-oriented programming language. *What is an Object?*, ORACLE, <https://docs.oracle.com/javase/tutorial/java/concepts/object.html> (last visited Apr. 16, 2018). The software object resembles an object in the real world. Take, for example, a cellphone. Like all objects, the cellphone has state and behavior. State refers to the properties of a cellphone, including the color, processor speed, and camera resolution. Behavior refers to the kinds of actions the cellphone can perform, including making a call and sending a text. In the programming context, an object is a bundle of code that has state and behavior. Fields represent an object's state and methods represents its behavior. *What is a Class?*, ORACLE, <https://docs.oracle.com/javase/tutorial/java/concepts/class.html> (last visited Apr. 16, 2018).

<sup>20</sup> *See Oracle*, 872 F. Supp. 2d at 979-80.

<sup>21</sup> *Oracle Am., Inc. v. Google Inc.*, 872 F. Supp. 2d 974, 892 (N.D. Cal. 2012).

<sup>22</sup> *Oracle Am., Inc. v. Google Inc.*, No. C 10-3561 WHA, 2016 WL 3181206, at \*5 (N.D. Cal. 2016).

<sup>23</sup> A class in the Java programming world is a group of objects that have the same components and can be made from the same blueprint. For example, there are many cellphones of the same make and model, thus, a single cellphone can be said to belong to a class of cellphones. *See What is a Class?*, *supra* note 19.

<sup>24</sup> *Oracle*, 2016 WL 3181206, at \*3.

Oracle acquired Sun in early 2010, three years after the release of Android.<sup>25</sup> Oracle immediately reached out to Google to discuss Android's use of Java.<sup>26</sup> For Oracle, being able to participate in the rapidly growing Android community would be profitable as it would help establish Oracle as a major player in the lucrative mobile phone operating system market. After six months of negotiations, however, Oracle brought suit alleging Google infringed on Oracle's patents and copyrights by using Java in Android.<sup>27</sup>

Oracle recognizes that Java programming language is free to use, along with 62 classes that are necessary for writing in the language.<sup>28</sup> The Oracle and Google litigation saga focuses on the narrow question of whether copying the declarations and SSOs from 37 out of 166 Java packages constitutes as fair use.<sup>29</sup>

### III. Fair Use Analysis

The fair use doctrine emerged in English common law as a defense to copyright infringement to accommodate instances where strong copyright protection would impede progress and innovation.<sup>30</sup> The American courts adopted the fair use doctrine,<sup>31</sup> and in the 1976 Copyright Act, Congress codified the common law doctrine in § 107.<sup>32</sup>

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<sup>25</sup> *Oracle*, 872 F. Supp. 2d at 975.

<sup>26</sup> Menell *supra* note 1, at 1548.

<sup>27</sup> *Id.* at 1549.

<sup>28</sup> *Oracle*, 2016 WL 3181206, at \*5.

<sup>29</sup> *Id.*

<sup>30</sup> *See Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 576–77 (1994).

<sup>31</sup> By writing § 107, Congress simply meant “to restate the present judicial doctrine of fair use, not to change, narrow, or enlarge it,” and not to create a bright-line rule. *See id.* at 577 (quoting H.R. REP. NO. 94-1476, at 66 (1976)).

<sup>32</sup> In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—

- (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
- (2) the nature of the copyrighted work;
- (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- (4) the effect of the use upon the potential market for or value of the copyrighted work.

The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors.

Copyright Act of 1976 §101, 17 U.S.C. §107 (2012).

In the most recent opinion, the Federal Circuit found for Oracle on three out of the four fair use factors, and held that Google’s copying of Java APIs was not fair use as a matter of law.<sup>33</sup> This Part will show that, contrary to the court’s holding, those three factors weigh in favor of Google and, thus, Google’s use of Java code is fair use.

### **A. Purpose and Character of the Use**

In its most recent opinion, the Federal Circuit characterized the first fair use factor, “the purpose and character of the use,” as having two primary components: 1) whether the use of the copyrighted work is commercial in nature or for nonprofit educational purposes; and 2) whether the new work is transformative.<sup>34</sup> “The more transformative the new work, the less will be the significance of other factors, like commercialism, that may weigh against a finding of fair use.”<sup>35</sup>

#### **1. Commercial Nature of the Use**

The Federal Circuit found that the use of the copyrighted work was “overwhelmingly commercial,” which weighs against a finding of fair use.<sup>36</sup> In its analysis, the court focused on the fact that Google indirectly gained revenue from operating Android.<sup>37</sup> Google’s main income stream was from AdWords<sup>38</sup>, Google’s online advertising service, where advertisers pay Google a fee to ensure that their advertisements reach users who have already indicated interest in their products and/or services.<sup>39</sup> AdWords uses the data Google gathers from users of its applications (e.g., Chrome browser, Google Docs, Gmail) to achieve this targeted marketing. Android made it possible for Google to gain a more complete picture of user preferences and to improve AdWords to generate more revenue.<sup>40</sup>

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<sup>33</sup> Oracle Am., Inc. v. Google LLC, 886 F.3d 1179, 1210 (Fed. Cir. 2018).

<sup>34</sup> *Id.* at 1196.

<sup>35</sup> *Campbell*, 510 U.S. at 569.

<sup>36</sup> *Oracle*, 886 F.3d at 1198.

<sup>37</sup> *Id.* at 1197.

<sup>38</sup> Google rebranded Adwords and changed the name to “Google Ads” in 2018. Anthony Ha, *Google Rebrands its ad line-up, with Adwords becoming Google Ads*, TECHCRUNCH (June 26, 2018), <https://techcrunch.com/2018/06/26/google-ads-rebrand>.

<sup>39</sup> Alejandro Crawford & Lisa Chau, *Why Google’s Business Model Works*, U.S. NEWS: ECONOMIC INTELLIGENCE (June 25, 2013, 10:35 AM), <https://www.usnews.com/opinion/blogs/economic-intelligence/2013/06/25/why-googles-business-model-works>.

<sup>40</sup> *Id.*; see also Oracle’s Trial Br. 3, Oracle Am., Inc. v. Google Inc., No. CV 10-03561 WHA (N.D. Cal. Apr. 21, 2016), ECF No. 1708 (Google stating that “[n]obody is claiming that Google created Android as part of a charitable mission. The evidence is pretty clear that they created it to provide a platform on which other Google products could do better.”).

It is difficult to argue that Google’s purpose was not commercial, but there is an argument that the commercial nature of the use is not so significant because, contrary to Federal Circuit’s holding, Google’s use of Java APIs is transformative.<sup>41</sup>

## 2. Transformative

The U.S. Supreme Court in *Campbell v. Acuff-Rose Music, Inc.* explained that a new work is transformative when it “adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message,” and is “[not] merely supersed[ing] the objects of the original creation.”<sup>42</sup> This factor is not required for finding fair use, but “the goal of copyright, to promote science and the arts, is generally furthered by the creation of transformative works.”<sup>43</sup>

In their briefs to the Federal Circuit, Oracle and Google framed the relevant inquiry for transformative character in two different ways. In *Campbell*, the Court concluded that the new work could reasonably be interpreted as commenting or criticizing the old work, qualifying it as parody.<sup>44</sup> In its opening brief to the Federal Circuit, Oracle interpreted this to mean that if the copyrighted work is copied verbatim and used for the same purpose in the new work, the new work is not transformative.<sup>45</sup>

But, as Google pointed out in its opposition brief, the Supreme Court started the transformative analysis in *Campbell* with a general discussion about parodies and provided guidance for when a parody might be considered transformative.<sup>46</sup> Also, the Court defined transformative as whether the “new work merely ‘supersedes the objects’ of the *original creation*,” further suggesting that the purpose of the new work is relevant.<sup>47</sup>

The Federal Circuit takes the position that the transformative analysis should be focused on whether the copied portions serve a function in the new work different than the function it served in the copyrighted work.<sup>48</sup> The court explained that API declarations and SSOs perform the

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<sup>41</sup> *Oracle*, 886 F.3d at 1202 (“[W]here . . . the copying is verbatim, for an identical function and purpose, and there are no changes to the expressive content or message, a mere change in format . . . is insufficient as a matter of law to qualify as a transformative use.”).

<sup>42</sup> *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994).

<sup>43</sup> *Id.*

<sup>44</sup> *Id.* at 582–584.

<sup>45</sup> See Opening Br. and Addendum for Oracle Am. Inc., 31–33, *Oracle Am., Inc. v. Google Inc.*, Nos. 17-1118, -1202 (Fed. Cir. Feb. 10, 2017), ECF No. 41.

<sup>46</sup> *Campbell*, 510 U.S. at 579.

<sup>47</sup> *Id.* (quoting *Folsom v. Marsh*, 9 F. Cas. 342 (No. 4,901) (CCD Mass. 1841)) (emphasis added).

<sup>48</sup> *Oracle Am., Inc. v. Google LLC*, 886 F.3d 1179, 1200 (Fed. Cir. 2018).

same function in Java and Android and found that this seriously weakens Google’s fair use defense.<sup>49</sup>

This analysis of whether the copied content serves a different purpose in the new work is more meaningful in art and literature because there are ways to use the copied material for a new useful purpose in a new work. For example, a sentence from a book can be used in a new book, unchanged, and depending on the way the author uses the sentence, the sentence can take on a new meaning or serve a different function. But it is very difficult to use a line of code for a new purpose in a new work, as long as both works are software programs. As Judge Alsup described in the opinion issued after the first trial in the *Oracle v. Google* legal battle, each element of a line of Java code carries a specific predefined meaning.<sup>50</sup> Take this line of declaration code for example:

```
public static int max (int x, int y) {
```

“Max” is a name for the variable. “(int x, int y)” is a parameter.<sup>51</sup> This tells the program that if we provide a value for x and y, they will be integers.<sup>52</sup> The “{” marks the beginning of the method, which follows on the next line.<sup>53</sup> The point being, if a programmer changes any of these words or even removes the curly brace, the function of the code will change. It is simply not possible for this exact line of code to perform another function without being altered. This means any time an infringer copies a line of code verbatim, it is always going to be true that the copied code has the exact same function in the copyrighted and new work, as long as both works use the code as part of a program. Thus, the focus of the transformative analysis in a software case should not be so singularly focused on whether the copied material serve a different function in the new work than it does as part of the copyrighted work.

Instead, the Federal Circuit should have taken into consideration the purpose of the new work, as the Supreme Court did in *Campbell*.<sup>54</sup> *Sony Computer Entertainment Inc. v. Connectix Corp* is useful for illustrating why.<sup>55</sup> In *Sony*, Connectix created the Virtual Game Station, a software program that allows Sony PlayStation games to be played on a personal computer.<sup>56</sup> During development of this product, Connectix copied the software that operates the PlayStation.<sup>57</sup> The

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<sup>49</sup> *Id.*

<sup>50</sup> *Oracle Am., Inc. v. Google Inc.*, 872 F. Supp. 2d 974, 979 (N.D.Cal. 2012).

<sup>51</sup> *Id.* at 981.

<sup>52</sup> *See Id.*; *Passing Information to a Method or a Constructor*, ORACLE, <https://docs.oracle.com/javase/tutorial/java/javaOO/arguments.html> (last visited May 7, 2018).

<sup>53</sup> *Oracle*, 872 F. Supp. 2d at 981.

<sup>54</sup> *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994).

<sup>55</sup> *Sony Computer Entm’t, Inc. v. Connectix Corp.*, 203 F.3d 596 (9th Cir. 2000).

<sup>56</sup> *Id.* at 598.

<sup>57</sup> *Id.*



court found this to be “modestly” transformative because Connectix created a product that did not exist before.<sup>58</sup> In other words, the court was focused on the purpose of the new work. As a matter of policy, in this narrow circumstance where the new work is innovative technology, it would be good for progress to lower the protection for the copyrighted material as fear of copyright infringement can chill desire to create innovative products.

In contrast, the Federal Circuit did not consider the innovative qualities of the Android platform and, instead, focused on the fact that Java was already in the mobile market.<sup>59</sup> In its analysis, the Federal Circuit ignored a crucial fact: the Android platform introduced features that made mobile phones more powerful than what they were previously.<sup>60</sup> The first Android smartphone was called T-Mobile G1 and was released in 2008 with features that were previously unavailable on mobile phones, including the Android Market application for downloading applications and updates.<sup>61</sup> Other novel features that came with the first version of Android include multitasking, copy and paste, pull-down notifications, and integration with Google services such as Gmail and Maps.<sup>62</sup> Thus, like Connectix’s Virtual Game Station in *Sony*, the Android platform is a new product offering features that existing, analogous products did not.<sup>63</sup>

Further, in *Campbell*, the court considered the social value of the new work and held that having social value weighs in favor of finding the work to be transformative.<sup>64</sup> The *Campbell* court explained that parodies “can provide social benefit, by shedding light on an earlier work, and, in the process, creating a new one.”<sup>65</sup> The social benefit of Android is likely greater than the social benefit of the Virtual Game Station, considering the percentage of the population using a mobile phone on a daily basis is surely higher than the percentage of the population seeking to play Sony PlayStation games on a personal computer.<sup>66</sup> Thus, if the court in *Sony* found the use of

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<sup>58</sup> *Id.* at 606.

<sup>59</sup> *Oracle*, 886 F.3d at 1201.

<sup>60</sup> See Neha B. Thakkar, Google Android: *An Emerging Innovative Software Platform for Mobile Devices*, 1 INT’L J. FOR INNOVATIVE RES. IN SCI. & TECH. 272(2014) (“Android . . . has emerged as a new mobile development option that offers many benefits over competing platforms.”); *The Android Story*, [X]CUBE LABS, <https://www.xcubelabs.com/infographic-android-story> (“Android has simply transformed the mobile landscape with its feature richness, app ecosystem and cost-effectiveness.”).

<sup>61</sup> Jon Turi, *Gadget Rewind 2008: T-Mobile G1 (HTC Dream)*, ENGADGET (June 22, 2014), <https://www.engadget.com/2014/06/22/gadget-rewind-2008-t-mobile-g1-htc-dream>.

<sup>62</sup> *Id.*

<sup>63</sup> *Sony Computer Entm’t, Inc. v. Connectix Corp.*, 203 F.3d 596, 606 (9th Cir. 2000).

<sup>64</sup> *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994).

<sup>65</sup> *Id.*

<sup>66</sup> By August 2018, Sony had just passed the 500 million mark for the number of Playstations sold since the release of the first generation of the console in 1994. Chaim Gartenberg, *Sony Celebrates Selling 500 Million Playstations with a Limited Edition 2TB PS4 Pro*, THE VERGE (Aug. 9, 2018, 9:55 AM), <https://www.theverge.com/circuitbreaker/2018/8/9/17670260/sony-500-million-playstation-console->

the Sony PlayStation code to be transformative because the Virtual Game Station was innovative and, thus, qualified as a new context,<sup>67</sup> then Google’s use of Java code should also be considered transformative.

At the same time, Android is not highly transformative. The Ninth Circuit held in *Perfect 10* that Google’s use of images as thumbnails would be highly transformative in its search engine because the new work, the search engine, gives the copyrighted work an entirely new purpose.<sup>68</sup> In contrast, the copied Java API in the Android platform serves the same functional purposes as it did in the Java mobile platform.<sup>69</sup>

Still, Google’s use of Java API can be considered transformative, even if moderately so. The transformative nature of the use decreases the significance of its commercial nature and weighs in favor of finding of fair use.

### **B. Amount and Substantiality of the Portion Used**

The third factor, “amount and substantiality of the portion used relation to the copyrighted work as a whole,” is more likely to weigh in favor of fair use when the new work uses less of the copyrighted work.<sup>70</sup> Even a small portion of a copyrighted work can be considered qualitatively substantial if the portion used is part of the “heart” of the work.<sup>71</sup> Where the intended use is a transformative one, this factor will not weigh against the infringer that copies the whole work if he only takes what is necessary for the intended use.<sup>72</sup>

The Federal Circuit found under the first fair use factor analysis that Google’s use was not transformative. In light of this conclusion, the court defined the extent of allowable copying as the amount of code necessary to write in the Java language.<sup>73</sup> It found that Google copied more than necessary. The parties stipulated during the proceeding at the lower court level that to write in the Java language, Google only needed 170 lines of code from three API packages, and

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limited-edition-translucent-2tb-ps4-pro. In May 2017, there were already over 2 billion monthly active devices on Android. Ben Popper, *Google Announces Over 2 Billion Monthly Active Devices on Android*, THE VERGE (May 17, 2017, 1:21 PM) <https://www.theverge.com/2017/5/17/15654454/android-reaches-2-billion-monthly-active-users>.

<sup>67</sup> *Connectix*, 203 F.3d at 606.

<sup>68</sup> *Perfect 10, Inc. v. Amazon.com, Inc.*, 508 F.3d 1146, 1165 (9th Cir. 2007).

<sup>69</sup> *Oracle Am., Inc. v. Google LLC*, 886 F.3d 1179, 1186 (Fed. Cir. 2018).

<sup>70</sup> *See Campbell*, 510 U.S. at 586–88.

<sup>71</sup> *See Harper & Row Publ’n, Inc. v. Nation Enters.*, 471 U.S. 539, 564–65, 568 (1985) (holding the 300 words taken out of President Ford’s memoir was the “heart of the book”).

<sup>72</sup> *Oracle*, 886 F.3d at 1202 (citing *Kelly v. Arriba Soft Corp.*, 336 F.3d 811, 820–21 (9th Cir. 2003)).

<sup>73</sup> *Id.* at 1206 (stating that Google used more lines than necessary to write in Java).

Google used much more.<sup>74</sup> Google copied 11,500 lines of code from 37 API packages, even though it could have written the code differently to achieve the same functions.<sup>75</sup> Further, because Google also copied SSO for 37 API packages, the court held that the amount Google copied is also qualitatively substantial.<sup>76</sup>

Even with the 11,500 lines of code that Google copied, it is not quantitatively substantial. The 11,500 lines of code Google copied only amount to 3% of the code in the 37 API packages Google copied.<sup>77</sup> But it is debatable whether this set of copied code is qualitatively substantial and constitutes the “heart” of the copyrighted work. In previous cases, the “heart” of the copyrighted work has been characterized as the most valuable part of the copyrighted work or the most interesting and moving part.<sup>78</sup>

In the software context, it can be hard to determine which part of the code is the most valuable. Recall that Google copied only the declaring code, not the implementing code.<sup>79</sup> On the one hand, it seems that the valuable part of the program is the implementation code. Without it, we would just have a list of method names and input and output types that perform no particular function.<sup>80</sup> At the same time, declarations are valuable as well. The purpose of APIs is to provide programmers boiler-plate code they can use so they do not have to start from scratch.<sup>81</sup> When programmers want to use a method in an API, programmers refer to it by name in their

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<sup>74</sup> See *Id.*; Opening Br. and Addendum for Oracle Am. Inc., 31–33, Oracle Am., Inc. v. Google Inc., Nos. 17-1118, -1202 (Fed. Cir. Feb. 10, 2017), ECF No. 41. (“The parties stipulated on remand that 170 lines of code in three packages of the 37 copied packages were necessary to write in the Java language.”).

<sup>75</sup> The Federal Circuit also argued that the portion of Java that Google copied was qualitatively significant, as evidenced by Google conceding that the copied material was important to creating Android. Whether the copied material was useful to creating the new work is not relevant to the analysis of this factor. The relevant inquiry is whether the material copied is quantitatively and qualitatively significant to the copyrighted work. *Oracle*, 886 F.3d at 1205–07.

<sup>76</sup> *Id.* at 1206–07.

<sup>77</sup> Oracle Am., Inc. v. Google Inc., 872 F. Supp. 2d 974, 979 (N.D. Cal. 2012).

<sup>78</sup> See *L.A. News Serv. v. Tullo*, 973 F.2d 791, 798 (9th Cir. 1992) (holding that the portion of copyrighted work used was substantial where the infringer copied the most valuable part of the copyrighted footage, namely the part of the footage the copyright holder’s customers thought was the best); *Harper*, 471 U.S. at 564–65 (holding that the amount of the copyrighted work used was substantial because the chapter the infringer copied was the most interesting and moving).

<sup>79</sup> Oracle Am., Inc. v. Google Inc., 872 F. Supp. 2d 974, 979 (N.D. Cal. 2012).

<sup>80</sup> See Oracle Am., Inc. v. Google Inc., No. C 10-3561 WHA, 2016 WL 3181206, at \*4-5, \*10 (N.D. Cal. 2016). (holding that Google did not copy a substantial amount of Oracle’s program in part because it did not copy the implementation code, the pre-written code that does the work of performing the functions the programmer wants).

<sup>81</sup> *Oracle*, 886 F.3d at 1186.

own programs.<sup>82</sup> Thus, programmers are not able to tell the program to use the boiler-plate code if lines of code do not have names programmers can reference.<sup>83</sup> The point is that in software, every line of code plays a necessary role and it is not always clear which roles are more important, which means that conducting the qualitative analysis of determining which line of code is more valuable may often lead to an inconclusive result. Thus, when infringers use copyrighted software code, courts should avoid attempting to assess whether a section of code is more or less valuable than another section of code in the same program.

The Federal Circuit also made an error in pointing to Google's copying of SSO as a reason to conclude that the copied material was qualitatively significant.<sup>84</sup> SSO refers to the way methods and classes in an API are organized and the functions these methods and classes perform.<sup>85</sup> If the purpose of APIs is to provide programmers with a template, then the most valuable part of APIs should be the code itself, not the way the code is organized or the list of functions it allows programmers to perform. Thus, the organization and functions of the methods and classes in APIs cannot be the most valuable part of APIs, and are not qualitatively significant.

### **C. Effect of Use Upon Potential Market of the Copyrighted Work**

Section 107 also requires an inquiry into the "effect of use upon potential market of the copyrighted work."<sup>86</sup> This requires courts to consider the effects of the infringer's use on the copyright holder's current and potential markets.<sup>87</sup> According to the Federal Circuit, courts have treated this as the most important of the four fair use factors in the past, but the Supreme Court seems to have backed away from this position.<sup>88</sup>

It may be that Android did negatively impact the licensing of Java SE to smartphone makers. But ending the inquiry there, as the court did, fails to consider the full story. The story here is not that Android entered the market with a comparable product and supplanted Java SE. The more accurate story is that Google developed Android, a product that allowed smartphones to have support features they did not before.<sup>89</sup> The availability of this new mobile platform would inevitably impact the consumer demand for phones with more limited capabilities, which were

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<sup>82</sup> See *Oracle*, 2016 WL 3181206, at \*4.

<sup>83</sup> Programmers only need to know the names of the methods and not the method's implementation code as all they need to do to use the method is write its name in their own program. *Id.*, at \*4.

<sup>84</sup> See *Oracle*, 886 F.3d at 1206.

<sup>85</sup> *Oracle*, 872 F. Supp. 2d at 978.

<sup>86</sup> See *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 590 (1994).

<sup>87</sup> *Id.*

<sup>88</sup> See *Harper & Row Publ'n, Inc. v. Nation Enters.*, 471 U.S. 539, 602 (1985).

<sup>89</sup> See Turi, *supra* note 61.

running operating systems built using Java SE.<sup>90</sup> The analysis of this fourth fair use factor should take into consideration the fact that Android was an innovative product that moved the smartphone market into the future.

In *Sony*, the Ninth Circuit considered the innovative qualities of the infringing product.<sup>91</sup> The court held that even though allowing the infringer to continue to sell its products would adversely affect the copyright holder's profits, the fourth fair use factor favored the infringer.<sup>92</sup> The rationale was that because the infringing party created something new, its use was transformative and it did not "merely supplant" the copyright holder, making it "a legitimate competitor in the market."<sup>93</sup> Following *Sony*, Google should also be considered as a legitimate competitor in the market. As discussed in Part A when analyzing the first fair use factor, "purpose and character of the use," Google's use should be considered transformative just like that of the infringer's in *Sony*, because Android is an innovative product. As in *Sony*, this means Google is a legitimate competitor, and a decrease in Oracle's profits due to competition with Android should not weigh against Google.

The Federal Circuit also considered the impact of Android's market presence on Oracle's potential market.<sup>94</sup> The court reasoned that because the negotiation between Oracle and Google demonstrated that Oracle was trying to enter the mobile phone market by licensing Java, smartphone was a reasonable potential market.<sup>95</sup> The fact that Oracle had not yet developed a smartphone platform was irrelevant to the court.<sup>96</sup> The court explained that the law protects a copyright holder's right to enter potential markets, and "a market is potential market even where the copyright holder has no immediate plans to enter it or is unsuccessful in doing so."<sup>97</sup>

As a matter of policy, smartphones should not be considered a reasonable potential market for Oracle. Android, a mobile platform, is distinct from Oracle's Java SE. Android is a mobile phone platform which includes the ARM CPU and the Android operating system.<sup>98</sup> An

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<sup>90</sup> The first Android phone offered features that did not exist in other smartphones at the time, including a marketplace for downloading applications, multitasking, copy and paste, pull-down notifications, and home screen widgets. *See id.*

<sup>91</sup> *Sony Computer Entm't, Inc. v. Connectix Corp.*, 203 F.3d 596, 606 (9th Cir. 2000).

<sup>92</sup> *Id.* at 607.

<sup>93</sup> *Id.*

<sup>94</sup> *Oracle Am., Inc. v. Google LLC*, 886 F.3d 1179, 1208–10 (Fed. Cir. 2018).

<sup>95</sup> *Id.* at 1210.

<sup>96</sup> *Id.*

<sup>97</sup> *Id.* at 1209–10.

<sup>98</sup> *See Platform*, PCMAG: ENCYCLOPEDIA,

<https://www.pcmag.com/encyclopedia/term/49362/platform> (last visited Apr. 13, 2018); *Operating System*, PCMAG: ENCYCLOPEDIA, <https://www.pcmag.com/encyclopedia/term/48510/operating-system>

operating system is a device's master control program.<sup>99</sup> It manages the user interface, which is all the graphics on the phone screen that users interact with, including windows and icons.<sup>100</sup> It also manages the data stored on the phone, communication with peripheral devices like Bluetooth speakers, provides security services like password protection and content backup, and allows for multitasking so multiple programs can run at once.<sup>101</sup> Java SE is a programming language<sup>102</sup> that can be used to create Android.<sup>103</sup> Given that the goal of copyright is to promote progress in science<sup>104</sup>, where Google created a product with features previously unavailable to consumers and distinct from the copyrighted work, the law should encourage Google to continue to innovate by allowing it to compete in the market place, unobstructed.

Therefore, where the product that the infringer used the copied material to create incorporates new technology, and the copyright holder does not have the knowledge or capacity to create that technology before the infringer, there is little to be gained from considering the effect of the infringer's activities on the potential market. Instead, as in Sony, the infringer should be considered a legitimate competitor and the fourth fair use factor should weigh in favor of the infringer.

#### **IV. Conclusion**

Contrary to the Federal Circuit's holding, all four factors weigh in favor of fair use.<sup>105</sup> When analyzing the Federal Circuit's opinion, a recurring theme is that the court seems reluctant to consider the innovative aspects of Android. Not once did the Federal Circuit discuss the features that make Android innovative. Instead, the court treated Android, a mobile platform, as a comparable product to Java SE, a programming language. Given that the purpose of copyright is

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(last visited Apr. 13, 2018); CPU, PCMAG: ENCYCLOPEDIA, <https://www.pcmag.com/encyclopedia/term/40436/cpu> (last visited Apr. 13, 2018).

<sup>99</sup> *Id.*

<sup>100</sup> *Id.*

<sup>101</sup> *Operating System*, PCMAG: ENCYCLOPEDIA, <https://www.pcmag.com/encyclopedia/term/48510/operating-system> (last visited Apr. 13, 2018).

<sup>102</sup> *Java SE at a Glance*, ORACLE, <http://www.oracle.com/technetwork/java/javase/overview/index.html> (last visited May 2, 2018).

<sup>103</sup> *Oracle Am., Inc. v. Google Inc.*, 872 F. Supp. 2d 974, 978-79 (N.D. Cal. 2012) (Google used the Java language to develop Android).

<sup>104</sup> *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994).

<sup>105</sup> *See Oracle Am., Inc. v. Google LLC*, 886 F.3d 1179, 1186-1210 (Fed. Cir. 2018). (holding that only the second factor, "nature of the use," weighs in favor of finding fair use).

to promote the sciences,<sup>106</sup> the innovative qualities of Android are relevant, and, at a minimum, should have been considered.

The worry with the outcome of the case is that it will impede innovation. Those who want to use Java APIs moving forward must scramble the taxonomy of the APIs and change the declaration codes as well as write new implementations. The organization of APIs has no bearing on the function of the program, except that to call on a class or method, programmers have to write the name correctly in their program.<sup>107</sup> Requiring programmers to rearrange the API seems like busy work that has no net gain for the industry as a whole. If this requirement was in place when Google was developing Android, it would have simply delayed the release of the highly innovative mobile operating system.

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<sup>106</sup> *Campbell*, 510 U.S. at 579.

<sup>107</sup> *See Oracle Am., Inc. v. Google Inc.*, No. C 10-3561 WHA, 2016 WL 3181206, at \*2–6 (N.D. Cal. 2016).