

United States District Court  
For the Northern District of California

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IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA

SYNOPSYS, INC.,

No. C 12-6467 MMC

Plaintiff,

**ORDER ON MOTIONS FOR SUMMARY  
JUDGMENT**

v.

MENTOR GRAPHICS CORPORATION,

Defendant.

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Before the Court are cross-motions for summary judgment, filed October 3, 2014, by plaintiff Synopsys Inc. (“Synopsys”) and defendant Mentor Graphics Corporation (“Mentor”), by which the parties set forth their respective positions as to the patent eligibility of eight claims as recited in three patents held by Synopsys,<sup>1</sup> specifically, claims 1, 2, 8, and 9 of U.S. Patent No. 5,748,488 (“488 patent”), claim 1 of U.S. Patent No. 5,530,841 (“841 patent”), and claims 32, 35, and 36 of U.S. Patent No. 5,680,318 (“318 patent”).<sup>2</sup>

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<sup>1</sup> Synopsys’ motion addresses other issues as well. This order concerns only the issue of patent eligibility.

<sup>2</sup> The patents are attached to the Complaint as Exhibits A, B, and C, respectively.

1 **BACKGROUND<sup>3</sup>**

2 The three patents at issue (hereinafter “the Gregory patents”) relate generally to the  
3 field of integrated circuit (“IC” or “chip”) design. ICs are composed of logic circuits and  
4 memory circuits, which themselves are composed of “tens, hundreds, or even potentially  
5 thousands, of transistors, resistors, capacitors, or other hardware components.” (See Decl.  
6 of Ronald D. Blanton, Ph.D. (“Blanton Decl.”), filed October 3, 2014, ¶ 8.) In the 1950s,  
7 when ICs were first developed, engineers would hand draw the chip designs with symbols  
8 or schematics representing the hardware components to be used. In the mid-1980s, a  
9 method of automating chip design, EDA, was developed to help solve the problem of the  
10 ever-increasing number of hardware components capable of being integrated on a chip.  
11 EDA “involves the use of computers to, among other things, create integrated circuit  
12 designs, simulate the designs using only software, and emulate the designs using a  
13 combination of hardware and software.” (Id. ¶ 14.)

14 The Gregory patents are directed to a form of EDA known as “logic synthesis.” In  
15 the subject field, logic synthesis is generally understood to mean the process of “using a  
16 computer tool to interpret or ‘synthesize’ a human designer’s descriptions of the operations  
17 of the integrated circuit” and then “generat[ing],” typically as a “netlist,” the “electronic circuit  
18 components (e.g., logic circuits) . . . that perform those operations.” (See id. ¶ 15.) The  
19 human-generated descriptions are written by an engineer, or “user,” in a hardware  
20 description language (HDL), one of several languages developed specifically for EDA. (Id.  
21 at ¶ 16.)

22 The Gregory patents claim a way of performing synthesis, described therein as “[a]  
23 method and system . . . for generating a logic network using a hardware independent  
24 description means.” See ‘841 patent, Abstract. Prior to the issuance of the Gregory  
25 patents, chip design required “detailed logic knowledge for most practical circuits.” Id., col.

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27 <sup>3</sup> The facts set forth below are derived from the patents and the declarations  
28 submitted by the parties, and are undisputed.

1 2:9-10. In particular, for more complex circuit elements, such as “high impedance drivers,  
2 level sensitive latches and edge sensitive flip-flops,” the designer, using HDL, was required  
3 to specify the circuit element and the desired connections. Id., col. 2:5-7. The Gregory  
4 patents describe a method for synthesizing a complex logic circuit from a “user description  
5 specifying only signals and the circumstances under which the signals are produced, i.e.,  
6 without requiring the designer to specify the hardware components or connections needed  
7 to implement them. As set forth below, the patents claim a method for taking two types of  
8 HDL statements, “flow control statements” and “directive statements,” see id., col. 62:62-  
9 64, and converting them into “assignment conditions,” id. col. 63:2,<sup>4</sup> which, in turn, are used  
10 to determine the appropriate hardware and connections.

11 Claim 1 of the ‘841 patent, which is representative of the asserted claims, states:

12 1. A method for converting a hardware independent user description of a  
13 logic circuit, that includes flow control statements including an IF statement  
14 and a GOTO statement, and directive statements that define levels of logic  
15 signals, into logic circuit hardware components comprising:

16 converting the flow control statements and directive statements in the  
17 user description for a logic signal Q into an assignment condition AL(Q) for  
18 an asynchronous load function AL( ) and an assignment condition AD(Q) for  
19 an asynchronous data function AD( ); and

20 generating a level sensitive latch when both said assignment  
21 condition AL(Q) and said assignment condition AD(Q) are non-constant;

22 wherein said assignment condition AD(Q) is a signal on a data input  
23 line of said flow through latch;

24 said assignment condition AL(Q) is a signal on a latch gate line of  
25 said flow through latch; and

26 an output signal of said flow through latch is said logic signal Q.

27 Id., col. 62:60-col. 63:12.

28 Each of the steps in the claimed methods can be performed by a skilled designer

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29 <sup>4</sup> An “assignment condition” is “the condition under which the hardware description  
30 function is true for a particular variable in the user description.” (See Order Construing  
31 Claims, Doc. No. 100, at 5:3-4); see also ‘841 Patent, col.15:66-16:1 (stating hardware  
32 description functions “represent specific operations that are implemented with specific  
33 hardware”).

1 either mentally or with pencil and paper, and the examples in the patents were created by  
2 the inventors without use of a computer. Although the claims themselves do not expressly  
3 call for a computer or other piece of equipment, the method is primarily intended for use  
4 with a computer, and the patents append source code for a computer program  
5 implementing the claimed inventions. (See Decl. of Maria Beier, filed October 3, 2014, Ex.  
6 F (Deposition of Russ Segal) at 26:13-27 (stating “we emulated what a computer would do  
7 in order to generate these tables”); see also ‘841 Patent, col. 9:42-45 (stating “[t]he system  
8 and method of this invention are operable in a computer system that includes a data input  
9 device, such as a keyboard, a processing unit, and an output display device”).

#### 10 **LEGAL STANDARD**

11 Pursuant to Rule 56 of the Federal Rules of Civil Procedure, a “court shall grant  
12 summary judgment if the movant shows that there is no genuine issue as to any material  
13 fact and that the movant is entitled to judgment as a matter of law.” See Fed. R. Civ. P.  
14 56(a).

15 The Supreme Court’s 1986 “trilogy” of Celotex Corp. v. Catrett, 477 U.S. 317 (1986),  
16 Anderson v. Liberty Lobby, Inc., 477 U.S. 242 (1986), and Matsushita Electric Industrial Co.  
17 v. Zenith Radio Corp., 475 U.S. 574 (1986), requires that a party seeking summary  
18 judgment show the absence of a genuine issue of material fact. Once the moving party  
19 has done so, the nonmoving party must “go beyond the pleadings and by [its] own  
20 affidavits, or by the depositions, answers to interrogatories, and admissions on file,  
21 designate specific facts showing that there is a genuine issue for trial.” See Celotex, 477  
22 U.S. at 324 (citation and quotation omitted). “When the moving party has carried its burden  
23 under Rule 56(c), its opponent must do more than simply show that there is some  
24 metaphysical doubt as to the material facts.” Matsushita, 475 U.S. at 586. “If the  
25 [opposing party’s] evidence is merely colorable, or is not significantly probative, summary  
26 judgment may be granted.” Liberty Lobby, 477 U.S. at 249-50 (citations omitted).  
27 “[I]nferences to be drawn from the underlying facts,” however, “must be viewed in the light  
28 most favorable to the party opposing the motion.” See Matsushita, 475 U.S. at 587

1 (citation and quotation omitted).<sup>5</sup>

2 Additionally, as patents are presumed to be valid, see 35 U.S.C. § 282, an alleged  
3 infringer asserting an invalidity defense pursuant to § 101 bears the burden of  
4 proving invalidity by clear and convincing evidence. Microsoft Corp. v. i4i L.P., 131 S.Ct.  
5 2238, 2242 (2011).

## 6 DISCUSSION

7 As set forth in § 101, “whoever invents or discovers any new and useful process,  
8 machine, manufacture, or composition of matter, or any new and useful improvement  
9 thereof, may obtain a patent therefor.” See 35 U.S.C. § 101. The Supreme Court,  
10 however, has carved out “three specific exceptions to § 101's broad patent-eligibility  
11 principles,” Bilski v. Kappos, 561 U.S. 593, 601 (2010), namely, “laws of nature, physical  
12 phenomena, and abstract ideas.” See id. ( internal quotation and citation omitted); see also  
13 Gottschalk v. Benson, 409 U.S. 63, 67 (1972) (holding “[p]henomena of nature, though just  
14 discovered, mental processes, and abstract intellectual concepts are not patentable, as  
15 they are the basic tools of scientific and technological work”).

16 Most recently, in Alice Corp. Pty. Ltd. v. CLS Bank Int'l, — U.S. —, —, 134  
17 S.Ct. 2347 (2014), the Supreme Court provided the following “framework” for distinguishing  
18 patents that claim laws of nature, natural phenomena, abstract ideas and mental processes  
19 from those that claim patent-eligible applications of those concepts:

20 First, [a court] determine[s] whether the claims at issue are directed to one  
21 of those patent-ineligible concepts. If so, [the court] then ask[s], “[w]hat else  
22 is there in the claims before [it]?” To answer that question, [the court]  
23 consider[s] the elements of each claim both individually and as an ordered  
24 combination to determine whether the additional elements transform the  
25 nature of the claim into a patent-eligible application. . . . [S]tep two of this  
26 analysis [has been described] as a search for an “inventive concept”—i.e.,  
27 an element or combination of elements that is sufficient to ensure that the  
28 patent in practice amounts to significantly more than a patent upon the  
[ineligible concept] itself.

Id. at 2355 ( internal quotations and citations omitted).

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27 <sup>5</sup> Here, as noted, the parties have filed cross-motions. Consequently, as to each  
28 said motion, the Court, in deciding whether to enter judgment as requested therein, has  
viewed the evidence in the light most favorable to the opposing party.

1 Mentor contends the claims at issue cover patent-ineligible abstract ideas and that  
2 there are no additional elements transforming the abstract ideas into patent-eligible  
3 applications of such ideas. Synopsys argues to the contrary.

4 **A. Abstract Idea**

5 “The ‘abstract ideas’ category embodies the longstanding rationale that an idea of  
6 itself is not patentable.” Alice, 134 S.Ct. at 2355. Indeed, more than 150 years ago, the  
7 Supreme Court made clear that “[a] principle, in the abstract, is a fundamental truth; an  
8 original cause; a motive; these cannot be patented, as no one can claim in either of them  
9 an exclusive right.” Le Roy v. Tatham, 55 U.S. 156, 175 (1852). Since that time, “the  
10 unpatentable nature of abstract ideas has repeatedly been confirmed.” In re Comiskey,  
11 554 F.3d 967, 977–78 (Fed. Cir. 2009).

12 The claimed methods here at issue do not entail anything physical. Rather, as  
13 discussed above, the asserted claims are directed to the process of inference, which is  
14 fundamental to IC design and can be performed mentally. The claims describe, in  
15 essence, various algorithms for determining the hardware components and layout of an IC  
16 from a user’s description of what the user needs the chip to do, i.e., the “specified signals  
17 and circumstances under which the signals are produced.” (See ‘841 patent, Abstract.) In  
18 other words, the claims are directed to a mental process. A “mental process [is] a  
19 subcategory of unpatentable abstract ideas.” Cybersource Corporation v. Retail Decisions,  
20 Inc., 654 F.3d 1366, 1371 (Fed. Cir. 2011).

21 Synopsys’ contention that the asserted claims are not directed to an abstract idea  
22 because they describe “concrete steps in a computerized process for creating a netlist of  
23 hardware elements” (Synopsys Mot. at 9:16-17) is unpersuasive. As Mentor points out,  
24 however, there is an abundance of Supreme Court and Federal Circuit authority  
25 invalidating on § 101 grounds patents that likewise could be described as including  
26 “concrete steps.” See, e.g., Alice, 134 S.Ct. 2357-58 (discussing cases wherein claimed  
27 methods were held to constitute unpatentable abstract ideas); (see also Mentor Opp’n at  
28 4:22-27) (listing cases)). Further, even if the claims are read to require implementation with

1 a computer, although none is specifically mentioned therein, the Supreme Court has made  
2 clear that “merely requir[ing] generic computer implementation” will not serve to transform  
3 the nature of the instant claims from an abstract idea into something else. See Alice, 134  
4 S. Ct. at 2357; see e.g., DietGoal Innovations LLC v. Bravo Media LLC, 2014 WL 3582914,  
5 at \*10 (S.D.N.Y. July 8, 2014) (holding plaintiff’s “attempts to dress up the claims as a  
6 computerized process” unavailing).

7 The Court also finds unpersuasive Synopsys’ argument that any distinction as to the  
8 “subject matter” of the claimed abstract idea (see Synopsys Mot. at 10:7-9) is significant at  
9 step one of the analysis. Although, as Synopsys points out, a number of cases  
10 characterizing patents as directed to abstract ideas have considered “claims for processes  
11 for organizing human activities” (see id. (internal quotation and citation omitted)); see, e.g.,  
12 Alice, 134 S.Ct. at 2352 (considering method for mitigating settlement risk in financial  
13 transactions); Bilski, 561 U.S. at 597-98 (considering method for hedging risk in field of  
14 commodities trading), others concern claims directed to a field of technology, see, e.g.,  
15 Benson, 409 U.S. at 65 (considering method for converting signals from binary-coded  
16 decimal form into pure binary form); Parker v. Flook, 437 U.S. 584 (1978) (considering  
17 method for updating alarm limits in catalytic conversion).

18 Similarly unpersuasive is Synopsys’ argument that the claimed methods somehow  
19 lose their quality as abstract ideas because they are not as “simple” (Synopsys Mot. at  
20 11:1) as the methods held to be abstract in some of the cases cited to this Court. First, the  
21 claimed methods do not require complex calculations; as noted, the claimed steps were  
22 performed mentally by the inventors and can be performed by a skilled designer either  
23 mentally or with the aid of a pencil and paper. Moreover, and more importantly, Synopsys  
24 points to nothing in the authority it endeavors to distinguish that would suggest that at this  
25 stage of the analysis, any such decision hinged in any manner on the complexity of the  
26 abstract idea at issue therein.

27 Accordingly, the Court finds the asserted claims in the Gregory patents are directed  
28 to an abstract idea. The Court next turns to the second step of the analysis.

1           **B. Inventive Concept**

2           An invention is not necessarily ineligible for patent protection because it involves an  
3 abstract idea. As set forth above, once a court determines a claim is directed to a  
4 patent-ineligible concept, it must “consider the elements of each claim both individually and  
5 as an ordered combination to determine whether the additional elements transform the  
6 nature of the claim into a patent-eligible application.” Alice, 134 S.Ct. at 2355 (internal  
7 quotation and citation omitted). “A claim that recites an abstract idea must include  
8 ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to  
9 monopolize the [abstract idea].’” Id. at 2357 (quoting Mayo, 132 S.Ct. at 1294, 1298)  
10 (alterations in original). Neither adding the words “apply it” nor limiting its use to a specified  
11 technological environment will suffice to transform an abstract idea into a patent-eligible  
12 invention. See id. at 2358. Rather, as noted, the added element or combination of  
13 elements must be such that “the patent in practice amounts to significantly more than a  
14 patent upon the [ineligible concept] itself.” Id. at 2355 (quoting Mayo, 132 S.Ct. at 1294)  
15 (alteration in original).

16           Here, in an effort to demonstrate the requisite “inventive concept,” Synopsys first  
17 points to the lack of any reference to the claimed methods in the prior art. Synopsys’  
18 reliance on a lack of prior art is misplaced, however. As one district court has noted, “[i]t is  
19 important to distinguish novelty and obviousness from the ‘inventive feature’ inquiry  
20 required by the Supreme Court in Alice.” See Cogent Med., Inc. v. Elsevier Inc., 2014 WL  
21 4966326, at \*4, n.3 (N.D. Cal. Sept. 30, 2014) (distinguishing § 101 inquiry from § 102  
22 inquiry; finding method patent-ineligible “even if [plaintiff] is right that no previous software  
23 system implemented a similar feature”).

24           Similarly unavailing is Synopsys’ argument that the asserted claims do not “pose a  
25 risk of preemption,” as logic synthesis can be performed “without using assignment  
26 conditions.” (See Synopsys Mot. at 12:10-21.) Certainly, Alice cautioned courts to  
27 “distinguish between patents that claim the building blocks of human ingenuity and those  
28 that integrate the building blocks into something more.” Alice, 132 S. Ct. At 2354 (internal

1 quotation, alterations, and citation omitted). Here, however, the asserted claims do  
2 preempt a building block of human ingenuity, a mental process, albeit a specific one. As  
3 was observed in Mayo, the Supreme Court has “not distinguished among differing laws of  
4 nature according to whether or not the principles they embody are sufficiently narrow.” See  
5 Mayo, 132 S.Ct. at 1303 (citing Flook, 437 U.S. 584); Flook, 437 U.S. at 586 (finding claims  
6 incorporating narrow mathematical formula patent-ineligible). Further, and consistent  
7 therewith, “[t]he prohibition against patenting abstract ideas cannot be circumvented by  
8 attempting to limit the use of [a] formula to a particular technological environment.” See  
9 Bilski, 561 U.S. at 610-11 (internal quotation and citation omitted). As the Supreme Court  
10 in Mayo explained, “[c]ourts and judges are not institutionally well suited to making the  
11 kinds of judgments needed to distinguish among different laws of nature[;] [a]nd so the  
12 cases have endorsed a bright-line prohibition against patenting laws of nature, mathematic  
13 formulas and the like, which serves as a somewhat more easily administered proxy for the  
14 underlying building-block’ concern.” Mayo, 132 S.Ct. At 1303.

15         Synopsisys also argues the claims here at issue recite more than the “conventional  
16 steps” found ineligible in Alice and Mayo. (See Synopsisys Mot. at 11:19-23 (citing Alice,  
17 134 S.Ct. at 2357).)<sup>6</sup> The claims here, however, as in Alice and Mayo, concern “well-  
18 understood, routine, conventional activity, previously engaged in by those in the field.” See  
19 Mayo, 132 S.Ct. at 1299. As acknowledged in the specification, skilled designers had been  
20 inferring the necessary parts and connections for ICs long before the Gregory patents  
21 issued. See ‘841 patent, col. 1:41-44.

22         The asserted claims, like those in Alice and Mayo, add nothing other than a way to  
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24         <sup>6</sup> Synopsisys also notes that the Gregory patents’ “disclosure includes 64 columns of  
25 drawings, explanation, and examples, and approximately 200 pages of computer code for a  
26 program implementing the claimed inventions.” (See Synopsisys Mot. at 11:24-25.) “The  
27 complexity of the implementing software or the level of detail in the specification does not  
28 transform a claim reciting only an abstract concept into a patent-eligible system or method,”  
however. See Accenture Global Servs., GmbH v. Guidewire Software, Inc., 728 F.3d 1336,  
1345 (Fed. Cir. 2013).

1 implement that mental process on a computer. As one of the two named inventors  
2 explained:

3 [T]he methods that humans were using to convert HDLs to circuits  
4 weren't methods that were – that you could run on a computer and do  
automatically.

5 So the thing that Russ and I were charged with was figuring out how  
to take this manual process that human beings were doing . . . and figure  
out how we could come up with a method so a computer could do it.

6 And that's sort of the essence of, I think, what we were asked to do  
and what we did.

7 (Gregory Dep. at 239:2-12; see also id. at 238:23-239:1 (“All of [the claims’] concepts and  
8 ideas are what Russ and I came up with in order to automate what the humans were doing  
9 to convert it into such a method that a computer could run.”).)

10 The fact that previously a designer would not have followed the exact same thought  
11 process does not change the analysis. A method primarily designed for use by a computer  
12 is, almost by definition, going to differ from the manner in which a natural person thinks  
13 through a problem. (See Gregory Dep. at 237:15-19 (describing claimed method as “really  
14 tuned for a computer[,] which operates differently from a human being”).) In Benson, for  
15 example, the Supreme Court found the claims asserted therein patent ineligible although the  
16 method claimed “varie[d] the ordinary arithmetic steps a human would use by changing the  
17 order of the steps, changing the symbolism for writing the multiplier used in some steps, and  
18 by taking subtotals after each successive operation.” See Benson, 409 U.S. at 67.  
19 Similarly, in Flook, the Supreme Court held ineligible a “new and presumably better method”  
20 that added a novel algorithm to otherwise conventional methods. See Flook, 437 U.S. at  
21 586.

22 Lastly, Synopsys contends the claimed methods qualify as transformative under the  
23 “machine-or-transformation test,” see Bilski, 561 U.S. at 602, 604 (explaining, under  
24 machine-or-transformation test, process is patent-eligible if it is “tied to a particular machine  
25 or apparatus” or “transforms a particular article into a different state or thing”). In that  
26 regard, the Court first acknowledges that the machine-or-transformation test is not the  
27 exclusive test for patent eligibility, see id. at 604 (holding, although machine-or-  
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