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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JUNE T.W. WONG and CLEMENT K.L. MA<sup>1</sup>

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Appeal 2013-010045  
Application 11/934,024  
Technology Center 1600

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Before ERIC B. GRIMES, LORA M. GREEN, and JOHN G. NEW,  
*Administrative Patent Judges.*

GRIMES, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a computer-implemented method of genetic investigation, which have been rejected as obvious and directed to non-statutory subject matter. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

“The invention provides a method and system for conducting genetic research using DNA sampling, preferably via an online social network,

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<sup>1</sup> Appellants identify the Real Parties in Interest as the inventors. (Appeal Br. 3.)

using a set of family members related by defined genealogical relationships to identify carriers of a DNA of interest for obtaining DNA information.”

(Spec. ¶ 12.)

Claims 1, 2, 5, 6, and 12–45 are on appeal. Claim 1 is illustrative and reads as follows:

Claim 1: A computer-implemented method of conducting genetic investigation to determine genetic information about one or more individuals using a set of individuals related by defined genealogical relationships, wherein a plurality of individuals in the set are linked by an interactive computer network comprising a social network accessible to said plurality of individuals in the set by means of said computer network, said social network comprising a web server, email server, database and data storage, said method comprising:

- a) defining a set of living or deceased individuals related by defined genealogical relationships to said one or more individuals thereby forming a family tree including said plurality of individuals in said set, said family tree being stored in said database;
- b) defining at least one DNA type of interest;
- c) defining the inheritance pattern associated with each said at least one DNA type of interest;
- d) determining the information associated with each said at least one DNA type of interest;
- e) determining genetic information about said one or more individuals, by i) carrying out one or more inquiries using the results obtained from steps a), b), c) and d) wherein said one or more inquiries comprises determining which individuals in said set carry said DNA type of interest and determining which genetically-related information can be obtained by testing said individuals in said set for said DNA type of interest; and ii) obtaining via said social network said genetically-related information from one or more of the individuals in said set who carry said DNA type of interest.

The claims stand rejected as follows:

Claims 1, 2, 5, 6, and 12–44 under 35 U.S.C. § 101, on the basis that the claims are directed to non-statutory subject matter (Final Rej.<sup>2</sup> 3);

Claims 1, 2, 5, 6, 12, 13, 15–27, 29–36, and 42–45 under 35 U.S.C. § 103(a) as obvious based on Sorenson,<sup>3</sup> Eaton,<sup>4</sup> Bennett,<sup>5</sup> and Struewing<sup>6</sup> (Final Rej. 4);

Claim 14 under 35 U.S.C. § 103(a) as obvious based on Sorenson, Eaton, Bennett, Struewing, and Fey<sup>7</sup> (Final Rej. 8); and

Claims 28 and 39–41 under 35 U.S.C. § 103(a) as obvious based on Sorenson, Eaton, Bennett, Struewing, and Ricciardio<sup>8</sup> (Final Rej. 9).

## I

The Examiner has rejected claims 1, 2, 5, 6, and 12–44 on the basis that they are directed to non-statutory subject matter. The Examiner finds that claim 1 fails the “machine or transformation” test of *Bilski v. Kappos*, 130 S.Ct. 3218 (2010), because “[t]he claimed method transforms only data; it does not transform an article into another state or thing” and “even though the

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<sup>2</sup> Office Action mailed Apr. 6, 2012.

<sup>3</sup> Sorenson et al., US 2003/0172065 A1, published Sept. 11, 2003.

<sup>4</sup> Eaton, US 6,570,567 B1, patented May 27, 2003.

<sup>5</sup> Bennett, R. L. *Using a Pedigree to Recognize Individuals with an Increased Susceptibility to Cancer*, in *The Practical Guide to the Genetic Family History*, pp. 129–144, Wiley-Liss, Inc. (1999).

<sup>6</sup> Struewing, J. P., et al., *Anticipated Uptake and Impact of Genetic Testing In Hereditary Breast and Ovarian Cancer Families*, 4 *Cancer Epidemiology, Biomarkers & Prevention* 169–173 (1995).

<sup>7</sup> Fey et al., US 2002/0052761 A1, published May 2, 2002.

<sup>8</sup> Ricciardio et al., US 2001/0007750 A1, published July 12, 2001.

claimed method is nominally tied to a particular machine (*i.e.*, a ‘social network’), the machine is used only in information retrieval or communication.” (Final Rej. 3.) The Examiner concludes that “[s]ince the use of the sole non-abstract element (*i.e.* the ‘social network’) is merely tangential to the practice of the invention, the claim as currently recited is directed to an abstract idea. As such, it fails to meet the standard for statutory eligibility.” (*Id.*)

Appellants argue that “the claim as presented does tie the method to the social network in that the family tree is stored in the database of the social network (step (a)) and the inquiries of step e) are carried out using the result of step a); and the results of the investigation in step e) are obtained via the social network.” (Appeal Br. 7.)

The Examiner responds that the database of claim 1 merely stores and retrieves the family tree, and hence “is no more than ‘extrasolution activity,’” while the social network “is simply a communications medium over which genetic data are communicated.” (Ans. 3.) The Examiner concludes that “[t]he ‘database’ and the ‘social network’ are merely tangentially involved in the practice of the method, and therefore the recitation of these elements does not constitute a sufficient tie to a particular machine.” (*Id.*)

We agree with the Examiner’s reasoning. While the machine-or-transformation test is not the exclusive test for a patent-eligible process, it does provide “a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101.” *Bilski v. Kappos*, 130 S.Ct. 3218, 3226 (2010). More recently, the Court

held that “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S.Ct. 2347, 2358 (2014).

In this case, we agree with the Examiner that claim 1 is directed to non-statutory subject matter. Claim 1 recites the abstract idea of using a family tree to identify people, and obtain genetic information about them, based on a certain DNA type of interest. While claim 1 requires a “social network comprising a web server, email server, database and data storage,” where the database stores a family tree, that generic limitation does not convert the otherwise unpatentable abstract idea into a patent-eligible method. *See id.*:

Stating an abstract idea “while adding the words ‘apply it’” is not enough for patent eligibility. Nor is limiting the use of an abstract idea “to a particular technological environment.” Stating an abstract idea while adding the words “apply it with a computer” simply combines those two steps, with the same deficient result. Thus, if a patent’s recitation of a computer amounts to a mere instruction to “implemen[t]” an abstract idea “on . . . a computer,” that addition cannot impart patent eligibility.

(Citations omitted.)

Because claim 1 is directed to an abstract idea implemented on a generic computer, it is directed to non-statutory subject matter. The rejection of claim 1 under 35 U.S.C. § 101 is affirmed. Claims 2, 5, 6, and 12–44 have not been argued separately and therefore fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

II

The Examiner has rejected claims 1, 2, 5, 6, 12, 13, 15–27, 29–36, and 42–45 as obvious based on Sorenson, Eaton, Bennett, and Struewing. The Examiner finds that Sorenson teaches creating a database that includes a family tree; selecting a marker (“DNA type”) of interest and defining its inheritance pattern; determining physical characteristics associated with the marker; and determining the allelic state (“genetic information”) of the marker for the individual. (Final Rej. 5.)

The Examiner finds that “Eaton teaches a networked computer system for performing genealogy” comprising all of the hardware components of the “social network” recited in claim 1. (*Id.*) The Examiner finds that Bennett teaches that molecular genetics, combined with family history, can help identify individuals at increased cancer risk (*id.* at 6) and Struewing teaches that people in families with a history of breast and ovarian cancer are often interested in being tested for genetic susceptibility (*id.*).

The Examiner concludes that it would have been obvious “to combine the computerized genetic genealogy method of Sorenson with the genealogical social networking method of Eaton to achieve the benefits of a computerized social network: convenient collaboration among users.” (*Id.* at 7–8.) The Examiner also concludes that it would have been obvious “to use the system of Eaton and Sorenson to facilitate genetic testing of family members, because Bennett and Struewing teach that genetic testing of individuals and their relatives has medical and personal benefits.” (*Id.* at 8.)

We agree with the Examiner that the claimed method would have been obvious based on the cited references. Sorenson discloses “a system

and method particularly useful in corroborating and improving the accuracy of genealogical records.” (Sorenson ¶ 2.) Sorenson teaches that “genetic characteristics may be identified among intra familial relations as a portion of a broader lineal genetic inheritance, such as a proclivity toward cancers, heart disease, obesity and other conditions in some family lines.” (*Id.* at ¶ 9.)

Sorenson teaches that its system includes “database 25 [that] can store data sets including genetic data 30 for a plurality of members and corresponding genealogical records 40. . . . Preferably, the genetic data 30 includes at least one genetic marker, or chromosomal fragment, that is substantially identical by descent.” (*Id.* at ¶ 33.) Sorenson states that the genealogical records extend at least three family generations. (*Id.*)

Sorenson teaches that its database “may be created by obtaining a genetic sample and genealogical information from a plurality of individuals. . . . A plurality of tests may be performed on the genetic sample to identify an allelic state of the individual at a plurality of loci. The genetic information obtained through analysis of the genetic sample is entered into the database.” (*Id.* at ¶ 34.) Sorenson teaches that different types of DNA (Y-chromosome, mitochondrial, and autosomal) have specific inheritance patterns. (*Id.* at ¶¶ 40–41.)

Eaton discloses “methods and systems for displaying a pedigree chart on a display device of a computer system.” (Eaton 2:29–31.) Eaton’s system includes a computer with data storage that provides for nonvolatile storage of, among other things, data structures (i.e., a database). (*Id.* at 5:19–32.) Eaton states that the computer “may operate in a networked



environment” with connections to remote computers, including servers. (*Id.* at 5:59–63.) “Such networking environments are commonplace in office-wide or enterprise-wide computer networks, intranets and the Internet.” (*Id.* at 6:5–7.) Eaton discloses that its application software can allow users to leave messages for each other, including offers to provide more information by email. (*Id.* at 10:51 to 11:2.) “[T]he messages may be used to collaborate efforts in genealogy work.” (*Id.* at 11:3–4.)

Bennett teaches that “[t]he instruments of molecular genetics, in concert with a precise genetic family history, provide clinicians with powerful investigative tools to identify individuals with an increased risk to develop various cancers. . . . Testing, if performed, must be interpreted in the context of the family history.” (Bennett 140.) Struewing teaches that, among families at high risk of breast and ovarian cancer because of possible mutation of the BRCA1 gene, 79% would definitely want to be tested for BRCA1 mutations. (Struewing 169, abstract.)

We agree with the Examiner that these disclosures would have made obvious the method of claim 1. Specifically, it would have been obvious to implement Sorenson’s method of storing genetic data and genealogical records in a networked computer environment because Eaton teaches that such networks are commonplace (e.g., on the Internet) and allow collaboration among users. The networked system described by Eaton meets all of the recited limitations of the “social network” of claim 1.

It also would have been obvious to use the resulting system to determine and track patients’ BRCA1 status (DNA type of interest) because BRCA1 mutations are inherited autosomally (inheritance pattern) and

BRCA1 mutations result in familial high risk of breast and ovarian cancer (information associated with the DNA type of interest). Thus, it would have been obvious to use the networked database made obvious by Sorenson and Eaton to identify individuals in high-risk families and obtain their BRCA1 status (if known) or a genetic sample for use in testing for BRCA1 mutations.

Appellants argue that “Sorenson does not address how the plurality of individuals who are sampled are determined. Sorenson thus does not contemplate the problem of how to determine what further inquiries (testing) of which individuals should be made in order to determine the genetic information of interest about the individual in question.” (Appeal Br. 9.)

This argument is unpersuasive, because Sorenson expressly discloses that its database includes both genetic data and genealogical records for at least three generations of a family. (Sorenson ¶ 33.) Viewed in combination with Bennett’s teaching that molecular genetics test results must be interpreted in the context of family history, and Struewing’s teaching that many patients in high-risk families wish to be tested for BRCA1 mutations, it would have been obvious to use Sorenson’s system to identify individuals in high-risk families in order to test them for BRCA1 mutations.

Appellants also argue that “Eaton discloses the use of a computer network for conducting genealogical research. Eaton does not address genetic research. There is nothing in Eaton even combined with Bennett and Struewing therefore which would motivate the person skilled in the art to modify Sorenson to arrive at the method claimed in Claim 1.” (Appeal Br. 9.)

This argument is also unpersuasive. Eaton’s computer system includes all of the components of the “social network” of claim 1, and Eaton

discloses that its system allows collaborative genealogical research. A skilled worker would have realized that the same benefits of collaboration disclosed by Eaton (e.g., avoiding duplicative work) would also apply to a computer network used in Sorenson's system and method.

Finally, Appellants argue that “[b]y merely teaching that genetic testing of individuals and their relatives has medical and personal benefits, Bennett and Struewing do not provide motivation to modify Sorenson and Eaton to arrive at the features of the claimed method of Claim 1.” (Appeal Br. 8.)

This argument is unpersuasive because both Sorenson and Bennett teach the benefit of combining molecular genetics testing with genealogical information. (Sorenson ¶ 33, Bennett 140.) Thus, it would have been obvious to use Sorenson's system to identify families at high risk of BRCA1 mutation and to identify individuals within such families for possible genetic testing.

Appellants argue that “Claim 45 claims a computer-implemented system for carrying out the method of Claim 1.” (Appeal Br. 9.) However, Appellants provide no reasoned basis for concluding that the system recited in claim 45 would not have been obvious for the same reason that the method of claim 1 would have been obvious.

Claims 2, 5, 6, 12, 13, 15–27, 29–36, and 42–44 have not been argued separately and therefore fall with claims 1 and 45. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner rejected claim 14 under 35 U.S.C. § 103(a) based on Sorenson, Eaton, Bennett, Struewing, and Fey; and rejected claims 28 and

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39–41 under 35 U.S.C. § 103(a) based on Sorenson, Eaton, Bennett, Struewing, and Ricciardio. Appellants have waived arguments based on Fey or Ricciardio. (*See* Appeal Br. 7–9.) We therefore affirm these rejections as well. MPEP § 1205.02 (“If a ground of rejection stated by the Examiner is not addressed in the appellant’s brief, that ground of rejection will be summarily sustained by the Board.”).

#### SUMMARY

We affirm all of the rejections on appeal.

#### TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED