

Case No. 2012-1014

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**UNITED STATES COURTS OF APPEALS FOR THE FEDERAL CIRCUIT**

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**LIGHTING BALLAST CONTROL LLC,**  
*Plaintiff-Appellee,*

v.

**PHILIPS ELECTRONICS NORTH AMERICA  
CORPORATION,**  
*Defendant,*

AND

**UNIVERSAL LIGHTING TECHNOLOGIES, INC.,**  
*Defendant-Appellant.*

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Appeal from the United States District Court for the Northern District of Texas in  
Case no. 09-CV-0029, Judge Reed O'Connor.

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**BRIEF OF AMICUS CURIAE Sigram Schindler Beteiligungsgesellschaft  
mbH,  
IN SUPPORT OF NEITHER PARTY**

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May 28, 2013

## CERTIFICATE OF INTEREST

Pursuant to Federal Circuit Rules 29(a) and 47.4, counsel for Amicus Curiae certifies that:

1. The full name of the amicus is :

Sigram Schindler Beteiligungsgesellschaft mbH

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) is:

N/A

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the amicus curiae are:

None.

4. The name of all law firms and the partners or associates for the party or amicus expected to appear in this Court is: Chidambaram S. Iyer, Sigram Schindler Beteiligungsgesellschaft mbH, Berlin, Germany.

May 28, 2013

/Chidambaram.S.Iyer/  
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## **TABLE OF AUTHORITIES**

### **Cases**

- [A] *Bilski v. Kappos*, 130 S. Ct. 3218 (2010)
- [B] *CLS Bank Int'l v. Alice Corp.*, No. 2011-1301 (Fed. Cir. July 9, 2012)
- [C] *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012)
- [D] *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007)
- [E] *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F. 3d 1266, 1278 (Fed. Cir. 2012)
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- [I] *AMP v. Myriad Genetics.*, 653 F. 3d 1329 (Fed. Cir. 2011)
- [J] *Philips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)
- [K] *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (en banc),  
*aff'd*, 517 U.S. 370 (1996)
- [L] *Cybor Corp. v. Fas Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998)
- [M] *Lighting Ballast Control LLC v. Philips Electronics North America Corp. et al.*, Nos. 2012-1014, -1015 (Fed. Cir. Mar. 15, 2013)

### **Statutes**

- 35 U.S.C. § 101  
35 U.S.C. § 102  
35 U.S.C. § 103  
35 U.S.C. § 112

## **Other Authorities / Contributions**

- [1] “Intellectual Property and the U.S. Economy: Industries in Focus”, Kappos, March 2012.
- [2] “The Description Logic Handbook”:  
Baader/Calvanese/McGuinness/Nardi/Patel-Schneider, 2010, Cam. Univ. Press.
- [3] “*Knowledge Representation and Reasoning*”: Levesque/Brachmann, 2004, Elsevier.
- [4] Brief of Amicus Curiae Sigram Schindler Beteiligungsgesellschaft mbH in support of neither party, filed on December 06, 2012, *CLS Bank Int’l v. Alice Corp.*, No. 2011-1301 (Fed. Cir., July 9, 2012), [www.fstp-expert-system.com](http://www.fstp-expert-system.com).
- [5] Brief of Amicus Curiae Sigram Schindler Beteiligungsgesellschaft mbH in support of neither party, filed on January 31, 2013, *AMP v. Myriad Genetics*, CA No. 12-398 (USSC, pending), [www.fstp-expert-system.com](http://www.fstp-expert-system.com).
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- [7] US Patent Appl. No. 13/777,416, “AN INNOVATION EXPERT SYSTEM, IES, AND ITS DATA STRUCTURE, PTR-DS”, Sigram Schindler, [www.fstp-expert-system.com](http://www.fstp-expert-system.com).
- [8] Prelim. US Patent Appl. No. 61/820,932, “INVENTIVE CONCEPTS ENABLED SEMI-AUTOMATIC TESTS OF PATENTS”, Sigram Schindler, [www.fstp-expert-system.com](http://www.fstp-expert-system.com).
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**STATEMENT OF IDENTITY AND INTEREST**

Sigram Schindler Beteiligungsgesellschaft mbH and its subsidiaries (collectively “SSBG”) are research-based high technology companies located in Berlin, Germany, developing and selling products and services all over the world, including the US, via TELES AG, listed on the Prime Standard segment of the Frankfurt Stock Exchange. SSBG is a majority shareholder of TELES AG, originally founded by Sigram Schindler, at that time full professor of the Comp. Sc. Dep. at the Technical University of Berlin. Due to its economic success, TELES paid significant dividends to its shareholders, in particular to SSBG.

SSBG’s ability to invest in high-tech research is dependent upon the intellectual property protections accorded under the global patent systems, in particular in the United States and Europe. Strong patent systems require that their PTOs and courts consistently interpret patents so that the metes and bound of the protected subject matter is clear. SSBG, therefore, has a vested interest in supporting the US patent system in its current attempts to adjust itself to the needs of sectors of the economy based on emerging technologies. This requires taking US patent precedence – internationally leading – to the higher level of development requested by the Supreme Court’s *KSR/Bilski/Mayo* line of decisions.

This brief, in support of neither party, is filed on behalf of *Amicus Curiae* SSBG. SSBG has no financial interest in either side. No party, no counsel representing a party, and no person, other than SSBG, contributed money that was intended to fund the preparation and submission of this brief. It is written by its owner, Sigram Schindler.

## INTRODUCTION / SUMMARY

This brief approaches the two main questions, raised by the CAFC in its invitation for amicus briefs in the *LBS* case, by putting them into the light of the Supreme Courts' *KSR/Bilski/Mayo* decisions. Thus highlighting them, they may be rephrased as

- A. Should the CAFC overrule its *Cybor* decision – if so, due to which new and/or today improved understandings of what “aspects” in claim construction?
- B. Should the CAFC afford deference to any “aspect” of a District Court’s claim construction – if so, to which “aspects”?

This shows that the CAFC starts identifying additional firm ground for patent precedents – by asking for such “aspects” of the notion of claim construction. This is explained first.

- By its *KSR/Bilski/Mayo* line of unanimous decisions the US Supreme Court (“USSC”) requested this development – adjusting patent precedents to the needs of emerging technologies, to using the potentials of advanced IT, and to following the known pattern of development of any nature science. Hence, as a first step to this end, it introduced into claiming an invention its “inventive concepts”, identifying therein the elementary building blocks of its creativity/inventivity – as the basis for checking its patentability and patent-eligibility. The driving force, in this line of decisions of the Supreme Court, is its responsibility to warrant that the economic requirements of the US society, as stated by the USSC, are met by the US patent system also in the future by patenting model based (i.e. intangible subject matter based) inventions, as typical for emerging technologies.

## JUST THE FONT CHANGED – FOR BETTER PRESENTATION STRUCTURE

- The CAFC is constitutionally responsible for developing the US patent precedents within the framework of 35 USC and these USSC's decisions, but is split about its key-words/-notions, such as “inventive concept”, “abstract idea”, “preemption” [M]. In this invitation of amicus briefs the CAFC implicitly addresses them by asking for “aspects” of refined claim construction, as evidently within this USSC refined framework.

Mathematical Knowledge Representation (KR) research, focused on this framework, shows [4-8] that it actually already took patent precedents to a level of development unimaginable prior to this line of decisions. The CAFC's split induced scientifically rapidly recognizing – what had been heralded by the preceding decisions of both Highest Courts anyway – that these controversial notions actually are absolutely crucial for avoiding future troubles for patent precedents when granting patent protection to “model based” inventions, typical in emerging but also in established technologies. This line of USSC and resp. CAFC decisions unfolded – after its nontrivial epistemological clarification [6-8] – trail blazing potentials for developing a patent technology which leads to an innovation technology [8]. In the US the economical importance of innovation is clearly recognized [1].

Summarizing the result of this advanced IT research – of both Highest Courts' resp. patent precedents – there are two important insights as to defining a claimed invention's refined claim construction according to 35 USC 112 such that it enables this claimed invention's test under 35 USC §§ 102/103/101, all as interpreted by these 3 USSC's decisions, whether it is indicated patentable and paten-eligible. Putting this in other words:

## JUST THE FONT CHANGED – FOR BETTER PRESENTATION STRUCTURE

- The classical claim construction for a claimed invention is to be expanded – to a refined claim construction of its claim – by appending to anyone of the elements comprised by its wording a list of the claimed invention’s inventive concepts, the conjunction of the mirror predicates of which [7, 8] describes this element’s invented property.
- For a claimed invention’s so refined claim construction holds: It has 10 testable aspects, which all are true if and only if (“**iff**”) it is patentable and patent-eligible, as it meets all requirements stated by these 4 sections of USC 35 up to this line of USSC decisions. I.e.: The 10 resp. tests, at best partially known to classical claim construction, are enabled by the elementary inventive concepts of its refined claim construction [8].

This necessary and sufficient testable criterion for a claimed invention, to be patentable and patent-eligible, induced developing advanced IT dramatically impacting the work of all kinds of patent professionals [7-8]: These 10 aspect tests are even capable of automatically guiding their users through them, in explorative and in affirmative execution mode [8].

Thus, this refined claim construction provides a resilient fundament on which future patent precedents may be based and developed such that it will be consistent and predictable also over all emerging technologies, even over all “model based” inventions.

The clear understanding – coming along with this refined claim construction – of what a claimed invention’s legal resp. technical (= subject matter) facts are, that the CACF asks for, also shows the space for affording deference by the CAFC to District Courts’ opinions. Its discussion, anyway evident, is totally omitted here due to word count limitation.

## ARGUMENT

### I. THE USSC REQUESTS REFINING CLAIM CONSTRUCTION

The USSC clearly requests, by its *KSR* and *Bilski* and in particular *Mayo* decisions that patent precedents cater to needs of the sectors of economy based on innovations, i.e. in particular emerging technologies. In *Mayo* it requests checking a claimed “natural law” using invention under USC § 101 such that the claim, if granted, is not preemptive and the claimed invention embodies a patenting deserving amount of patent-eligible creativity/inventivity, the latter to be representable by at least one inventive concept.

The USSC thus requests that several issues are to be checked in a claimed invention’s test under 35 USC §§ 102/103/101, which hitherto were unknown – in the future hence to be comprised by the claim construction according to § 112 for a claimed invention. The *Mayo* decision requests to make sure that of a patented invention

- its **inventive concepts** are identifying and quantifying its **patent-eligible creativity** only – considering its (not qualified yet) creativity it requested in *KSR* already –
- its claim’s scope is not **preemptive**,
- while in *Bilski* it requested already that a claimed invention is not an **abstract idea** only.

Thus, these 3 USSC decisions require that the § 112 claim construction performs resp. enables hitherto unknown checks. This brief presents only in an introductory style these new “aspects” of claim construction. Their complete presentations are provided in [8] by their mathematical modelling, e.g. by graphs.

## II. NEW “ASPECTS” IN INTERPRETING 35 USC § 112, i.e. IN CLAIM CONSTRUCTION

The *Mayo* decision requests to refine the classical § 112 claim construction for a claimed invention by identifying its disclosed inventive concepts, if these are substantial for its test under §§ 102/103/101. The so refined claim construction’s “aspects”, the CAFC asks for, are these inventive concepts defined by their disclosed properties and used in its test under §§ 102/103/101, e.g. being (in)definite/(non)enabling/(no)natural-law.

Thus, a claimed invention’s refined claim construction requires defining 10 “aspects” – depending on its inventive concepts’ selections/definitions – for which holds: The claimed invention is patentable and patent-eligible, i.e. it meets all requirements stated by these 4 §§ of 35 USC iff all 10 aspects are true. These 10 “aspects” of a refined claim construction are:

- § 112, “well-definedness of the inventive concepts”, i.e. their being 1) (disaggregated into elementary ones, and disclosed 2) lawfully, 3) definitively, and 4) enablingly;
- §§ 102/103, “novelty/nonobviousness of the invention”, i.e. its 7) sufficient amount of creativity/inventivity, after having assessed their 5) independence, and 6) nonequivalence;
- § 101, “patent-eligibility of the invention”, i.e. its not being 8) only a natural law, or 9) idempotent, or 10) only an abstract idea alias its claim being preemptive.

A classical § 112 claim construction ignores aspects 2)-4) of its inventive concepts, i.e. their §§ 102/103/101 aspects. A claimed invention’s refined claim construction meets all requirements stated by §§ 112, 102/103, and 101 – i.e. is possible – iff all aspects 2)-9) of its inventive concepts (= of its elements’ properties) are true. Verifying this is possible iff also aspect 1) is true, i.e. all inventive concepts are disaggregated into elementary ones.

### III. THE USSC’S INVENTIVE CONCEPTS OF A CLAIMED INVENTION REPRESENT ITS LEGAL AND TECHNICAL FACTS

Before addressing problem A. in Sections IV – and there clarifying the semantics of the 10 aspects of a refined claim construction – first the notion of “inventive concept” is explained in Subsections III.1 and III.2. This notion is here defined such that it enables replying to the above questions A. and B. absolutely consistently to the quoted Highest Courts’ precedents (as explained in detail earlier [7] by means of e.g. [A-J]).

**III.1 – Basic Notions as to Inventive Concepts and their KRs.** Putting it colloquially, an “inventive concept” – that is with what Mayo requests to be used in claiming an invention – is nothing else but a simple statement, which describes an inventive property  $\underline{X}$  of an element X of this claimed invention. Patent precedents gets along with simple such statements, which have the form: “X has (this inventive) property  $\underline{X}$ ” [6]. Here, any such statement may be solely true or false and hence is called a “binary inventive concept”<sup>1)</sup>. The same holds for a non-inventive concept of a claimed invention’s element, describing one of its non-inventive properties [7]. Both kinds of concepts may also be of the legal or the subject matter alias technical kind – their statements then are of legal resp. subject matter semantics.

Although the use of the notion “concepts” by a patent practitioner has nothing to do with mathematics, part of the following definitions is put (somewhat misleadingly) mathematically<sup>1)</sup> for excluding misunderstanding, being precise, and showing its triviality. The notion of “concept” is for everybody as easy to learn and use practically, as swimming or riding a bike.

## JUST THE FONT CHANGED – FOR BETTER PRESENTATION STRUCTURE

A claimed invention – often abbr. by “**TT.0, technical teaching 0**” – is precisely describable<sup>1)</sup> by a set of “**inventive concepts, {i-C}**” being a subset of the set of all concepts {C} useful, here. {C} comprises 3 sub sets, **{o-C} ∪ {AD-C} ∪ {BID-C}**, the o-/AD-/BID- identifying 3 KRs of TT.0, i.e. 3 levels of abstractions of describing the claimed invention alias TT.0.

Any i-C of TT.0, no matter of what KR of TT.0 [7], is defined to be a le-C including a cr-C, whereby the “**legal-C, le-C**” models i-C as a “**legal**”-fact of TT.0, justifying that the “**creative-C, cr-C**” models i-C as “**technical**”- alias “**subject matter**”-fact of TT.0<sup>2)</sup>. Colloquially, again: A claimed invention’s inventive concept, as understood by patent precedents, is a legal concept including a creative concept, both concepts disclosed ex- or implicitly [6, 7] by its patent subject to 35 USC §§ 112/102/102/101 and patent precedents.

The preceding paragraphs show that modeling the refined claim construction requested by the USSC in its interpretation of these 4 sections of 35 USC proves that a technical fact only exists as implied by a legal fact, and the notion “inventive concept” stands for a legal notion embodying a technical notion. The USSC and CAFC hence denoted in *Markman [K]* claim construction as a “mongrel” notion/activity. Colloquially speaking this means: Any question about an i-C of a claimed invention is a “**legal question**”, which always implies a question as to the subject matter disclosed by its patent. Consequently, claim construction deals with both kinds of questions – though only with technical questions as implied by legal questions.

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<sup>1</sup> A C has a “**domain, dC or d(C) or d<sup>C</sup>**” as area of definition and a “**universe, U(C)**”, being a unique mapping M of C’s domain onto C’s “**value set, vC or v(C) or v<sup>C</sup>**” [7, 8]. I.e.:  $U(C) ::= \{(x, y) \mid x \in dC \wedge y = M(x) \in vC\}$ . A C is called “**binary**” if  $vC = \{T, F\}$ . In IT terms: A C is a (potentially parameterized) “**class**” declaration or an “**instantiation**” thereof, with all instantiations being the same.

## JUST THE FONT CHANGED – FOR BETTER PRESENTATION STRUCTURE

The just said is summarized and explicated as follows. Binary inventive concepts, B-i-Cs, are (probably) ideal means for precisely describing – in detail as well as a whole – of a claimed invention its elements' properties up to the USSC's refined claim construction, asked for by the CAFC's "aspects" (in Section IV shown to be 10 aspects of specific indicativities).

In this description, any element's binary compound (= aggregate) disclosed original B-i-C, i.e. of TT.0's o-KR [7], is usually easily disaggregatable into a logically absolutely equivalent conjunction of next-to-trivial binary elementary disclosed i-Cs, i.e. of TT.0's BED-KR. This KR transformation of an element's disclosed original i-C of a claimed invention's o-KR into a logically equivalent set of i-Cs in BED-KR, enables verifying these elements' disclosed i-Cs do meet also the requirements of 35 USC §§ 102/103 and 101, which presupposes these properties are meeting the so understood 35 USC § 112 requirements – as only then they provide a basis whether TT.0 meets §§ 102/103/101. Then and only then these i-Cs may be cleared to be ●) independent and nonequivalent (aspects 5-6) and thus enable determining the claimed invention's novelty/nonobviousness indication (aspect 7), and ●) not-only-a-natural-law or nonidempotent (aspects 8-9) and thus enable determining the claimed invention to be also nonpreemptive alias not-only-an-abstract-idea (aspect 10).

The so refined claim construction takes US patent precedents to a significantly higher level of development than the classical claim construction is on. This higher level of US patent precedents is indispensable for enabling it to be consistent and predictable over the whole range of model-based claimed inventions, in particular of emerging technologies.

**III.2 – Disaggregating Compound Inventive Concepts<sup>2)</sup> into Elementary Ones.** There are two different sounding yet vastly identical guidelines for disaggregating compound inventive concepts into elementary ones. They deal with “levels of abstraction”, here “grains of mental resolution” achieved by this disaggregation resp. with “degrees of separation of concerns”, here “elementarity” – both guidelines being used in refined claim construction. For simplicity, the following presentations they leave away le-Cs and talk only about the cr-Cs.

- The “level of abstraction”, i.e. “grain of mental resolution”, of concepts. The higher the level of abstraction is of a TT.0 description, the coarser is its grain of mental resolution of its – level-independent – elements’/Xes’ properties/attribute/predicate Xes or cr-Cs they use. Their prefix “**o/AD/BED/BID**” identifies the “level of abstraction”/“grain of mental resolution” of TT.0’s KR using an X or a cr-C of it – “**original, o**”, “**aggregated^disclosed, AD**” or “**binary^independent^disclosed, BID**”, resp. “**binary^elementary^disclosed, BED**”. Any KR’s cr-C disclosure is comprised by “**marked-up items, MUI**” in the patent.

Determining only the “compound” AD-cr-Cs – or their original o-cr-Cs – is often misleading<sup>2)</sup>. I.e., their grains of notional resolutions are simply not fine enough for deciding about several of the above aspects: While the o- and AD-levels are needed for a claimed invention’s “structural analysis” – identifying its Xes and their compound properties – the refined claim construction’s checks of aspects 2)-9) must involve the BED/BID-cr-Cs’ level of abstraction, i.e. their finer grain of notional resolution, having nothing to do with the NOAI test<sup>5)</sup>.

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<sup>2</sup> See [6-8] for more details of the notions inventive and non-inventive concepts and of TT.0’s KR’s..

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- The “separation of concerns” by and “elementarity” of concepts: While the above qualities of descriptions (on higher and lower levels of abstraction) are known from everyday life, the supporting of thinking by “separation of concerns” is not commonly known – though it is around since quite a while – and thus needs some explanation, provided next.

Since centuries Mathematics/Physics/Engineering know the need of an unquestionable basis for making precise statements about systems they deal with: “Coordinates” there serve as such a basis for this need of separation of its concerns – these being always the same: This system’s location(s) and impulse(s) put in these coordinates.

Since the 1970s’ IT, Data Base Modelling techniques use the much more powerful “concepts” than coordinates, later also Artificial Intelligence (AI), Natural Language (NL), Description Logic (DL), KR, ....., here jointly called “**advanced IT**”. The term/notion of “concept” survived all these changes of names in research on the common denominator “human intelligence created” concerns, and today it is fundamental in advanced IT.

Concepts probably would not have become this evergreen without their aptitude for precisely modelling “separation of concerns” in requirement statements – discovered, also in the 1970s, by David Parnas, one of the godfathers of SW-System-Design technique. In IT system design, since then, any compound requirement is disaggregated into its separate/elementary concerns. For human intelligence compound concepts are intuitive and hence ubiquitous in NL (e.g. in wordings of patent claims), yet for designing a consistent system of patent precedents they are too error-prone – as proven in system design.

## JUST THE FONT CHANGED – FOR BETTER PRESENTATION STRUCTURE

Since its *Mayo* decision, the Supreme Court builds on this extremely successful technique of separation of concerns of Mathematics/Physics/IT, by explicitly requesting to use this notion of inventive concept for describing a claimed invention's creativity. The "inventive concepts" of a claimed invention span its state space just as any mathematical/physical/IT system's "coordinates" span its state space. Experience shows that any elementary inventive concept is next to trivial as it represents a single/separated concern, solely – in particular if made "binary", always trivially achievable. Hence BED-cr-Cs are logically extremely error resistant.

Although this Section III is just plain analytic philosophy – i.e. AI, here applied to patent jurisdiction – it yet helps everyday patent professionals: For making them aware, that there are indeed the best thinkable grounds for trusting in inventive concepts when developing the notion of a refined claim construction, as this notion is powerful enough to

- first of all, contribute to optimally stimulating all kinds of innovation activities in all areas of economy – thereby serving the various constitutional rights of the society – while it is
  - at the same time, stimulating the development of advanced IT matching patent precedents' needs as to improving its efficiency and predictability, but also as to preserving its consistency, in particular as to emerging technologies
- as does the Supreme Court when unanimously insisting in proceeding this way by its above quoted decisions.

#### **IV. THE SEMANTICS OF THE REFINED CLAIM CONSTRUCTION'S 10 ASPECTS**

Much of the currently sometimes irritating courts' decisions – as to testing a claimed invention via its classical claim construction under the above 4 §§ of 35 USC – is due to trying to become clear about the relations of the meanings of these four sections of 35 USC to the meanings of the invention's features, which its claim protects. These decisions strive for this clarity without first clarifying what the invention's inventive concepts are and disaggregating them into their elementary inventive concepts, more precisely: without separating the various concerns of this claim's features, first. Yet, it in this way clarity is not achievable, as these concerns' meanings and interrelations are not separated from each other, although this logically is indispensable for making statements about them as to their meanings the above 4 sections of 35 USC [6-7] – i.e., on this basis also no consistency or predictability of patent precedents is achievable..

By contrast, the use of the USSC's "inventive concepts" enables any patent business professional to instantly eliminate any such unclarity arising from classical claim construction. I.e., the claimed invention's refined claim construction enables – as it refers to this invention's elementary inventive concepts – becoming clear about the just quoted features' relations to these 4 §§ of 35 USC. This, in turn, enables regaining the currently lost consistency in patent precedents – as required for enabling the community of patent practitioners to recognizing that patent interpretation by the person of posc, an expert, an Examiner, a lawyer, and a court is the same and hence highly predictable. As a legal system ought to be.

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The CAFC's suggestion as to screening a claimed invention's classical claim construction for its "aspects" potentially subject to affording deference, means first identifying them, i.e. the claimed invention's semantic aspects. The *Mayo* decision requests, this identification of such aspects of a claimed invention's claim construction must comprise identifying its inventive concepts – which must to be broken down into elementary inventive concepts [6-8].

For a claimed invention – described by its inventive concepts, i.e. representing it, i.e. the invented technical teaching, TT.0, alias the CAFC's "**baseline**" [J] – the below list **(i)-(iv)** of the 10 aspects of its refined claim construction explains, why anyone such aspect meets at least one of the requirements stated by at least one of the above 4 §§ of 35 USC. Thereby this explanation of anyone of these aspects only colloquially outlines its resp. specific semantics, as today usual in patent business communications on legal issues. How to specify the semantics of such an in-C at least its cr-C also precisely, by its mathematical description, has exemplarily been shown earlier [6-7] – and need not be discussed, here.

Finally, it is evident that – after a refined claim construction for a claimed invention has been completed – the confirmation by a pertinent expert may be needed for anyone of this claim construction's 10 aspects as to the actual decision, whether this aspect's specific requirement statement is met as implied by the requirement statements of the above 4 §§ of 35 USC (which are met by this claimed invention iff it is indicated being patentable and patent-eligible). Thereby holds, as shown by **(i)-(iv)**, that the set of all requirement statements of these 4 §§ (to be met by TT.0 to this end) is logically totally equivalent to that of the 10 aspects.

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- (i) The **aspect 1** of the refined claim construction represents the concern, whether – in some KR of the claimed invention – its compound inventive concepts in this KR are disaggregated into BED-in-Cs.

Clarifying this concern is indispensable for enabling the decision, whether the refined claim construction – and hence the claimed invention – meets the various requirements stated by the above 4 §§ of 35 USC for it to be patentable and patent-eligible or not. This statement often must be confirmed by an expert, as it may be difficult to recognize and define all the compound and elementary inventive concepts of the claimed invention and the relations between them, although they all are disclosed quite precisely by its specification.

For the other 9 aspects, the same remarks as to the expert need not be repeated.

- (ii) The **aspects 2, 3, 4** of the refined claim construction represent the concerns, whether there are BED-in-Cs as of aspect 1 “**well defined**” for use in (iii) and (iv), and if so which.

“Well defined” is defined to mean that § 112 and the resp. USSC/CAFC precedents show which of these BED inventive concepts, BED-in-Cs, are disclosed in the KR as of (i)

- lawfully (aspect 2), according to the *Markman/Phillips* decisions testing, under § 112, TT.0 as a whole – as considering, here, the inventive concepts’ descriptions also as to the aspects 3-10 – thus establishing the inventive concepts as “**legal facts**”, which must be lawfully described as to all these aspects by the specification, and which in turn comprise their individual “**technical facts**”, these clearly described for the posc.

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- definitely (aspect 3), complementing the *Phillips* decision as to § 112.6 by e.g. the CAFC’s *Intuit vs. Noah* decision, and
- enablingly (aspect 4) as to the solution of the problem set out by the specification to be solved by the claimed invention, i.e. not just somehow – as classically seen – but specifically as enabling this particular solution alias claimed invention (required only for the BED-in-Cs of which implementing them is not known a priori by the posc),

whereby the aspects 3-10 may exert substantial feedback, on the claimed invention’s claim construction under test, as to the selection of a suitable KR for it, comprising the selection of a suitable subset of BID-in-Cs from the set of all BED-in-Cs.

**(iii)**The **aspects 5, 6, 7** of the refined claim construction represent the concerns, whether the claimed invention is indicated novel and nonobvious. Assuming its refined claim construction’s inventive concepts have passed the tests for aspects 1-4, these 3 aspects are concerned with TT.0’s minimal creativity over all these BED-in-Cs, taking into account the claimed invention’s “pragmatics” [6] – if there is any [7, 8] – being these BED-in-Cs’ legal § 101 aspects, here dealt with in **(iv)**.

Aspect 5 is concerned with the independency of the BED-in-Cs selected as BID-in-Cs in aspect 7, aspect 6 with their non-equivalence [6-8], and aspect 7 with TT.0’s novelty and nonobviousness, using the “FSTP test” for both questions (classically understood as requiring 2 tests). These aspects were discussed earlier [6] and are skipped here. Note: In **(iii)-(iv)** it is often more convenient not to talk of their aspects but of their tests.

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(iv) The **aspects 8, 9, 10** of the refined claim construction represent the concerns, whether its BID-in-Cs (having passed the tests for aspects 1-7) are representing ●) nothing but one or several natural laws (aspect 8), or besides them in total ●) nothing but an idempotent issue (aspect 9), or ●) an issue being only an abstract idea (aspect 10). If one of these aspects is true, TT.0 is not patent-eligible – as implied by the above USSC’s decisions .

The aspects discussed in (iv) (and already those of (iii)) completely exceed the notion of the classical claim construction, but not that of the refined claim construction – to be practised, as implied by the *Mayo* decision due to one of the 3 just quoted aspects potentially true for certain claimed inventions from emerging technologies, here denoted as “model based” claimed inventions. Caused by this reason, the aspects discussed in (iv) need clarification: Hence, for model based claimed inventions patent-(non)eligibility has recently come up as a central issue in all kinds of emerging technologies: Advanced ITs, business technologies, life science technologies, nano technologies, ..... Topical examples are the Supreme Court’s and the CAFC’s decisions in e.g. the cases *ksr/Bilski/Mayo/Myriad/CLS/ Intuit/LBC/....*

The uncertainties as to these 3 fundamental aspects, as indicated by both Highest Courts’ Amicus Briefs [4, 5] and confirmed by [M], are increased by two additional peculiar features of these new technologies: Their and their problems’ descriptions<sup>4)</sup> are always i) “**model-based**” – invoking a preciseness of thinking totally absent from even the smartest “machine or transformation” type invention – and often moreover ii) implemented as and/or by a “**software system**”<sup>3)</sup>.

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Clarifying the impacts of these features **i)** and **ii)**, hitherto not really reflected by patent precedents<sup>3)</sup>, on the § 101 aspects of **(iv)** requires separation of concerns within them for enabling recognizing, which of these 2 features' – potentially many and very versatile – concerns are related how to which one of these 3 aspects/concerns of the claimed invention's refined claim construction. This in turn implies cracking them even further going: By breaking them down from their compound inventive concept orientation in the o-KR into a BID-KR of the

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<sup>3</sup> Both features **i)** and **ii)** complicate patent precedents [M].

**Aspect i)** encourages to sloppiness in drafting and/or interpreting in particular claims (but also their patents' specifications), as the model as such underlying a claimed invention often is not clearly understood (see e.g. the model discussion in the amicus brief in the Myriad case, a counterexample of a more mature model is that underlying telecommunications [5]). Then this claimed invention – notionally always to be described as an application on top of its model and using it, this model as such comprising a conglomerate of patent-illegible natural laws and/or abstract ideas thereof – is described/interpreted in a way mixing it up with this model, on which it inevitably is based. This absurdly involves it in patent protection discussion in [5].

**Aspect ii)** is another source of uncertainty, as a claim on a software-implemented invention is a claim on a whole set of inventive methods/apparatus, established by the set of all its possible implementations. These may technically so dramatically differ from each other that the question arises, whether the claimed invention is “not only an abstract idea” of an invention, in that its inventor has only vaguely delimited the boundaries of its applicability (see e.g. the amicus brief in the CLS case [4]). This is the case, if its specification, including its claim's wording, has been drafted such that it does not exclude that the scope of protection of the claimed invention may comprise a new and nonobvious solution of a problem, which the specification does not disclose as actually being known and/or understood by the inventor at priority date as being solved and/or comprised by his invention.

This § 101 exclusion requirement is not met, according to the *Mayo* decision, by a patent (application) if

- ) the solution of the problem set out for solution<sup>4)</sup> is not clearly described by the specification, and/or
- ) its solution, as described by its inventive concepts enabled by the claimed invention's specification, consists of only one or several natural laws, and/or
- ) the non-natural law inventive concepts in total are idempotent, and/or
- ) a solution of this problem is achievable by leaving away one of the inventive concepts described by the specification as allegedly needed for achieving g this solution or by reducing its truth set, as it then is an abstract/vague idea only of this problem's solution. All of these § 101 pre-assumptions are evidently massively impacting on the requirements to be met by a claimed invention's refined claim construction, as stated by the §§ 112/102/103. E.g., a claimed invention being only a so understood abstract idea of it, should not be patent-eligible, as granting to it a patent may award its inventor by a monopoly on a new and nonobvious solution of a problem, of which he had not disclosed that he knew it already at priority date and/or his invention would solve it.

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problem at issue, i.e. to their use of some appropriate set of its binary independent disclosed inventive concepts.

Nothing of this subtlety of the objective interrelations between the patent law and model based inventions could ever have been stated by patent precedents prior to the USSC's *KSR/Bilski/Mayo* line of decisions. Yet, due to its groundbreaking insights into these interrelations – requesting their further development – a canonical way of assessing that a claimed invention's refined claim construction meets all requirements stated for it by the above 35 USC §§ 112/102/103/101 is provided by the tests [8] of its in so far necessary and sufficient 10 aspects: They are not only complete – as seen by their user – but even partially automated and thus represent a large step forward on the way of developing a powerful “patent technology”, at least an amazingly powerful “Innovation Expert System” [8].

Checking these 3 aspects of **(iv)** for a claimed invention as to its § 101 compliance prior to performing the tests as to its aspects 1-7 from **(i)-(iii)** with it – i.e. prior to checking its BID-cr-Cs – is logically impossible: These 7 tests first provide the notionally and logically consistent basis for these final 3 checks of a claimed invention's refined claim construction, as clearly indicated by the *Mayo* decision. Moreover: Without determining these unquestionable legal and technical facts of a claimed invention, first, there also is no firm ground on which to base patent-eligibility decisions consistent over the whole range of claimed inventions on top of model based and/or computer-implemented systems. In other words: Only after a claimed invention's refined claim construction has passed the tests for aspects 1-7 in **(i)-(iii)** – thereby selecting a

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maximal set of BID-in-Cs, yet this TT.0's creative height over RS being invariant over all such sets [7].

To this end, first the two most sophisticated notions encountered here are clarified: The notion of the “nonpreemptive” aspect/concern of a claimed invention's refined claim construction and this key aspect's sibling aspect of its “not being an abstract idea” of a claimed invention only [5]. Its here remaining dangling aspect of “not being a natural law” means what intuitively is felt and seemingly needs no further elaborations, currently at least.

As outlined above but now put more precisely, the first one of these two groundbreaking notions of the above line of the Supreme Court decisions, the “nonpreemptivity”, felt simple but taken meticulously actually very intriguing – which the CAFC wants to be commented on as being one of the aspects of the refined claim construction *[M]* – basically [8] means:

**TT.0's is nonpreemptive iff the scope(TT.0) of TT.0's patent protection  
does not comprise a  $TT^* \neq TT.0$  being a solution of a whatsoever problem  $P^*$ ,  
with  $TT^* \leq TT.0$  and  $P^* \geq P.0$ ,**

TT.0 being described by its refined claim construction, P.0 being set out for solution by TT.0's specification, and the relations “ $\leq/\geq$ ” standing for “less-equal/more-equal limited than” and presupposed to be KR invariant [8] – all as outlined in i.)-iii.) below.

But, the so defined notion of TT.0's nonpreemptivity does not meet the pragmatic needs of 35 USC. Assuming the inventor to be a person of also ordinary ambition (additionally to ordinary skill and ordinary creativity, abbr. “**posca**”) – which implies that it ex- or implicitly

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discloses, in the patent's specification of TT.0, all the problems it knows to be solved by its invention and which it rightfully is entitled (by 35 USC) to understand as being comprised by the scope of TT.0's refined claim construction and hence to belong to the monopoly defined by its patent – the paragraphs i.)-iii.) explain pragmatic aspects necessitating replacing in TT.0's non-preemptivity definition considering potential TT\*s by potentially limiting the scope(TT.0).

- i.) Seen from the lawmaker's point of view, although there is no rationale for extending a patent owner's patent monopoly on its invention to a solution of a problem<sup>4)</sup> not explicitly disclosed in the specification to be solved by the invention, i.e. it therein didn't indicate that it knew its invention solves this problem, nevertheless this socially unreasonable extension of its granted patent monopoly potentially cannot be excluded, if it argues that straightforward KR considerations (see end of ii.)) implicitly disclose this indication, which case specifically may be undeniable and then implies this also counterintuitive extension.
- ii.) Seen from the patent precedents makers point of view, currently 35 USC provides no clause addressing the KR issues in patent interpretation the above scope definition uses – e.g. stating, for a claimed invention's evident o-KR and a BID-KR\* for it explicitly disclosed by TT.0's specification, that this problem's presentations in both KR's describe exactly the same problem<sup>4)</sup> set out for solution by TT.0's specification for its o-KR (though this is straightforwardly definable epistemologically/mathematically and absolutely consistently to established patent precedents [8]), i.e. stating that  $P.0 = P^*$  in the above scope definition – and thus would require a Highest Court's respective new patent precedents.

iii.) Seen from the point of view of the patent holder, this “broadest preemption interpretation” for determining the scope( $TT^*$ ) (not to be mixed up with the USPTO’s “broadest reasonable claim interpretation” [9] for determining the scope( $TT.0$ ), the relation of which to the here discussed line of Highest Courts’ decisions is being clarified) would imply totally counterintuitive and irrational refusals of applied for resp. destructions of granted patents if  $\text{scope}(TT^*) \neq \Phi$ . This namely would occur e.g., if – after having granted patent protection to a claimed invention  $TT.0$  being subject of certain limitations and solving a certain problem<sup>4</sup>)  $P.0$  disclosed by its specification – some new patent application discloses a claimed invention  $TT^*$  subject to a “relaxed” limitation, i.e.  $TT^* \leq TT.0$ , but this relaxation being an additional limitation on one of  $TT.0$ ’s inventive concepts (see end of **ii**)), and solving exactly the same problem disclosed by its specification,  $P^* = P.0$ . Then – as already at priority date of  $TT.0$  the  $TT^*$  belonging to the so defined scope of  $TT.0$  – it ought not have been granted (as being preemptive and therefore patent-noneligible) and therefore would now be destroyed. At the same time  $TT^*$  – classically potentially indicated patentable (as to aspect 7, i.e. being novel and nonobvious) now may be challenged to be idempotent (by aspect 9, see below), i.e. though being potentially patent-illegible (see **ii**)).

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<sup>4</sup> This problem (set out for solution by the claimed invention) may be parameterized, i.e. be a range of problems, or it may comprise several isolated problems, ..., i.e. may be a compound of several “**component problems**”. In any case, the “not-only-an abstract-idea” aspect<sup>5</sup>) of a claimed invention requires that the latter solves all such component problems. If it does not solve one of these component problems, patent protection should not be granted to this invention as being a solution of this “**compound problem**”. If no problem is explicitly disclosed by the specification as to be solved by the invention claimed by this claim, this pair <claim, its claimed invention> should not be patent-eligible – unless the posc considers it implicitly disclosed by it.

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As too trappy, this tentative definition of nonpreemptivity of a claimed invention to be tested for it (see i.)-iii.) – as criterion for the claimed invention’s patent-eligibility – should be replaced by the “**not-only-an-abstract-idea, NOAI**” criterion<sup>5</sup>).

This NOAI criterion’s/aspect’s three main advantages are summarized as follows: ●)  
It is self-contained, i.e. testable independently of prior or posterior art, ●) a claim passing/having it is nonpreemptive, and ●) it is also necessary for its nonpreemptivity [8].

**i.e.: TT.0 is nonpreemptive (in the USSC’s sense) iff it passes the NOAI test<sup>5</sup>).**

But the *Mayo* decision induced also the notion of “idempotence”<sup>6</sup>), being indispensable in systematic thinking about the questions of a claimed invention being patent-eligibility. Indeed, the Supreme Court explicitly noticed in its *Mayo* decision that there is a logical gap in the current patent precedents when dealing with a natural law based invention: It hitherto has no

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<sup>5</sup> The NOAI test of a claimed invention has been originally suggested in slightly less precise form [4, 5]. Thus, it is repeated, next, becoming more accurate (though still assuming it raises no KR questions [8]).

The complete NOAI test starts with disaggregating the compound inventive concepts of the claimed invention into a maximal set of their BID-in-Cs, as explained above in Section III.1 and taken care of by checking for the aspects 1-7 of the claimed invention’s refined claim construction. I.e.: If applied here, performing this refined claim construction has already performed this – otherwise being – first step. Yet, all BID-in-Cs may be patent-eligible or not. For brevity considering only the BID-cr-Cs embodied by these BID-in-Cs, the NOAI test here therefore

- 1) verifies, that the TT.0’s specification of the patent (application) discloses ex- or implicitly a problem to be solved by the claimed invention/TT.0 as described by its refined claim construction’s aspects 1-7;
- 2) verifies, using the above BID-cr-Cs, that the so described TT.0 actually solves this problem of 1);
- 3) verifies, for anyone BID-cr-C of the above set of BID-cr-Cs tested for aspect 7, that this problem of 1) is not solved by any TT\* derived from TT.0 by ignoring therein this BID-in-C’s limitation completely or relaxing its limitation by increasing its d(BID-in-C);
- 4) states, if all steps in 1)-3) are executed successfully, that the so described claimed invention/TT.0 is not only an “abstract idea” of this problem’s solution.

Note: The Supreme Court’s *Mayo* decision implicitly assumes something as to the requirement to be met by this problem’s description – just as by that of TT.0 – hence needed to be clarified by currently not yet existing Highest Courts’ patent precedents.

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recipe how to deal with the distinction between patent-eligible inventive concepts and patent-illegible ones (see next paragraph). This gap is closed by the “idempotence” aspect<sup>6</sup>) of a refined claim construction – being, as a side-effect, a notion suitable also for approaching the problem of trivial and/or useless patents [8].

From a point of view of systematic thinking, for a claimed invention the refined claim construction of which has proven to have all the aspects 1-7, its idempotency is a kind of logical complement to its preemptivity (= being only an abstract idea of it) and/or being-only-a-natural-law – as noticed by the *Mayo* decision, implicitly assuming this claimed invention has passed already test 7 (in particular if it delivered its strong semantic height  $Q_{pics/strong}$  to be  $> 2$ , i.e. strongly indicates it to be novel and nonobvious). The *Mayo* decision namely states – logically correctly – that, if this claimed invention is nonpreemptive (= not-only-an-abstract-idea of it) as well not-only-a-natural-law, it is patent-eligible (and hence this claimed invention is indicated to deserve patenting as of aspects 1-7), if and only if already its “non-natural-law” inventive concepts altogether would have made it pass test 7. I.e., the nonidempotence requirement to be met by a claimed invention may significantly exceed the nonobviousness requirement. I.e. that patent-eligible of a claimed invention’s creativity must exceed not only ordinary pertinent skill and creativity, but also ordinary non-natural-law pertinent triviality.

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<sup>6</sup> In mathematics, the term/notion “idempotence” of an element as to an operation comprising it, denotes that this element does not change the result of this operation. Examples are: the element “0” as to addition operations of real numbers, or the element “1” as to multiplication operations of real numbers, or the element “T” as to conjunction operations of predicates.

## CONCLUSION

From the point of view of advanced IT, the *KSR/Bilski/Mayo* line of Supreme Court decisions requests refining classical claim construction – at least for a model based invention, i.e. a “non-machine-or-transformation”-type invention, as typical for emerging technologies. This refined claim construction should assert that all “aspects” of such a claimed invention – checked when testing it whether it meets the requirements stated by 35 USC § 102, 103, 101 – properly meet, as to their disclosures, the requirements stated by 35 USC § 112 for them.

The first step of this refined claim construction is its “compound inventive concepts disaggregation”. Its result, a set of equivalent “elementary inventive concepts”, is indispensable for complementing the classical claim construction by determining also the legal and technical facts identified by these Supreme Court decisions and addressed by the term “aspects” in the CAFC’s questions **A.** and **B.** – thus performing this refined claim construction.

Mathematical Knowledge Representation based research shows that ●) these 4 sections of 35 USC interpreted by these 3 unanimous USSC decisions ●) imply identifying exactly 10 such aspects necessary and sufficient for regaining, on this basis and also backwards looking, consistency and predictability in patent precedents, ●) show the principle governing the cooperation between District Courts and the CAFC in patent interpretation, and ●) whereby, if these objectives got to be achieved, no alternative is known to putting the refined claim construction onto this constitutionally and scientifically secure fundament<sup>7)</sup>.

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<sup>7)</sup> Comments are highly appreciated on [www.fstp-expert-system.com](http://www.fstp-expert-system.com)

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**CERTIFICATE OF SERVICE**

I hereby certify that on May 28, 2013, I electronically filed the foregoing BRIEF OF AMICUS CURIAE IN SUPPORT OF NEITHER PARTY FOR SIGRAM SCHINDLER BETEILIGUNGSGESELLSCHAFT MBH using the Court's CM/ECF filing system. Counsel for the parties was electronically served via e-mail through and by the electronic filing system per Fed. R. App. P. 25 and Fed. CIR. R. 25(a) and 25(b).

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