

***Alice*-Tests Enable “Quantifying” Their Inventive Concepts  
and thus Vastly “Increase the Robustness” of ET Patents.  
– A Tutorial about this Key to Increasing Robustness of ET Patents –  
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**I. SURVEY (INCOMPLETE) ABOUT THE TUTORIAL (INCOMPLETE)**

The Supreme Court elaborated on the fundamental notion of “quantifiable inventive concept”<sup>5.b)</sup> – inherent but unnoticed in its *KSR/Bilski/Mayo/Myriad/Biosig/Alice* decisions – for years and now got by it under control the “definiteness” and “patent-eligibility” issues in ET CIs’ SPL testing<sup>1.a)</sup>. To this end, these decisions had to perform a paradigm shift – needed by ETs’ peculiarities – which enables inventors/investors to protect their ET (hence high risk) R&D investments by much more robust patents on ET CIs than hitherto possible. This vast increase of robustness of ET CI patents [92] is now always achievable by quantifying their ET CIs’ inventive concepts. This tutorial explains this extremely important but nontrivial notion of “quantifiable inventive concept” and its use.

Up-front: The classic claim construction for classic technology (“CT”) CIs, hitherto used by SPL precedents, is definitively unable to guarantee to ET CIs the same high protection as to CT CIs – due to ETs’ total destruction of the “CT paradigm”. Hence, a validity attack on a CT paradigm based ET patent is often successful, since *Mayo/Biosig/Alice* (almost) mandatorily. I.e., the notion of an ET CIs’ “quantifiable inventive concept”, as e.g. *Alice* induces, is a disruptive innovation itself – by some felt embarrassing [92,140], but for ET CIs indispensable.

In other words: For increasing the robustness of patents on ET CIs, the Supreme Court’s new paradigm MUST be used – the “refined claim construction” – which it had to underlie its *Mayo* interpretation of 35 USC §§ 101/102/103/112 for achieving this robustness [92]. Without this paradigm shift from some vague classical [121] to the well-defined refined claim construction [121,92], robust patents on ET CIs are logically impossible, due to the former’s incompleteness: It invites the only rudimentary ET understanding of all of us to lead to inconsistent SPL decisions about ET CIs, thus destabilizing patents on them. i.e.: While only vague ideas exist today about bio tech, genetics, molecular bonding forces, nano tech, ..., and complex relations between and the more with them, we yet need legally absolutely safe patents on ET CIs manipulating e.g. such relations, vastly or totally unknown. *Mayo/Biosig/Alice* indeed enable this kind of patents.

Critics of the Supreme Court’s insights as to these ET problems and its adjustment of the paradigm it underlied its interpretation of 35 USC §§ 101/102/103/112 – for fostering ET R&D and encouraging/protecting investments into it, but also requiring a much more careful thinking about patenting ET CIs than needed hitherto – ignore that easy thinking about ET CIs causes problems putting freedom of ET R&D politically into jeopardy, i.e. is socially unacceptable.

Thus, in truth, the Supreme Court puts ET CIs' SPL<sup>1.a)</sup> testing by inventive concept quantification onto a higher stage of development: Just as it happened in many areas, in which initially objective quantification was unthinkable, e.g. in testing floatability, time, bearing strength, voltage, problem complexity, earth quake intensity, .... Now objective quantification is defined also for ET CIs' SPL testing, as the Supreme Court asked for [1217.a)] – though hitherto in vain [9222)] – and is the same for all ET CIs and straight forward, evidently also implying consistency and predictability in ET CIs' SPL precedents<sup>1.b)</sup>.

This is important to notice, as alone the perception, SPL were heading into rough sea, would block urgently needed ET R&D. Actually, this disorientation<sup>1.b)</sup> unfortunately impacts already on many patent examiners, which completely misunderstand this “SPL Initiative” of the Supreme Court as a charter for unscrupulously issuing “non-patent-eligibility/-definiteness” rejections of patent applications for ET CIs as being non-patent-eligible or indefinite.

For healing this damage, this tutorial clarifies the meanings of *Alice*'s key terms – to be used for determining that, for a CI, its “inventive concept” is “significantly more ....” than CIs “elements”/“building blocks of human ingenuity” and their “ordered combination” – by the FSTP-Test: It namely had to define these meanings earlier, already, for its logic modeling the Supreme Court's *Mayo* interpretation of SPL. The FSTP-Test thus enables the tutorial to show

- (a) *that the Biosig/Alice decisions<sup>1.c)</sup> require, from an ET CI's patent-eligible or definiteness test, much more scrutiny – compared to such tests based on classical claim construction – for its unquestionably correct working,*
- (b) *when and where the Supreme Court has determined – in its above line of decisions – the necessary and sufficient set of requirements alias tests an ET CI must pass for unquestionably determining what indication as to this ET CI.*

In total, this tutorial shows: An ET CI's quantified<sup>2.b)</sup> inventive concept is “structurally invariant” over all ET CIs, thus enabling dependably/objectively/unquestionably determining, whether an ET CI's inventivity – modeled by quantifying its structurally invariant inventive concept – overcomes SPL's non-patent-eligibility exemptions, as it exceeds their resp. quantitative thresholds. The higher scrutiny to be applied in figuring out this quantification enables dramatically increasing the robustness of a so based ET CI patent. The tutorial is highly redundant for conveying certainty about correctly grasping everything it tells, i.e. the subsequent elaborations are often recapitulative and never complete.

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<sup>1</sup> .a) ET CI = Emerging Technology Claimed Invention, SPL = Substantive Patent Law. References to “Reference List items” may identify Sec./p./ftn./... therein, e.g. [121~~s.IV~~III], [929], [136\*\*)].  
 .b) Therefore, shouting “§ 101 turmoil” [144], “*Alice* decision will create total chaos” [129], or flat vilifications of the Supreme Court [112,140], just strives for panic and circling the wagons – though there is no enemy, just the fear that at stake were the R&D funds amounting to billions of US\$, every year. Such disorienting “after-dieseling hysteria” to the so motivated honorable but past CAFC rebellion [113] – not really supported by academia [113,146] – doesn't serve the needs of the broad community of patent practitioners as to ET CIs' SPL precedents [137,140].  
 .c) The Biosig-test's public discussion requires additional explanations left to [151], hence.

## II. THE *Alice*-TEST & QUANTIFYING ITS INVENTIVE CONCEPT

The Supreme Court's *Mayo/Alice* opinions<sup>1.c)</sup> directly guide to determining ET CIs' patent-eligibility by quantifying<sup>2.b)</sup> their inventive concepts. I.e.: The *Alice*-test may easily be supplemented by quantification of its inventive concept – especially as it is structurally invariant – such that its result is absolutely objective.

This tutorial shows how to achieve this supplementation for the *Alice*-test (and prepares it also for the *Biosig*-test<sup>1.c)</sup> [151]). It is self-contained<sup>2.a)</sup> and clarifies the Supreme Court's key terms/notions of this ET CI's new *Alice* patent-eligibility test, such as: What, for an ET CI, are the “problem aware” meanings of *Alice*'s terms ● “element(s)”/“building block(s) of human ingenuity”/“ordered combination”, and ● “inventive concept” and its “transforming” building blocks to “significantly more than, >>” just themselves. The problem awareness of these meanings makes them so precise that “>>”, standing for quantification on both its sides, is possible. Otherwise this “more than” ≡ “>>” were often too vague for practical use.

The explanation that/how this supplementation of the *Alice*-test is achievable, by a quantified inventive concept, starts from the FSTP-Test<sup>8)</sup> – which uses all these *Alice* meanings already, as it logically/mathematically models the Supreme Court's *Mayo* interpretation of 35 USC §§ 101/102/103/112 and hence is a complete SPL-test – which may mentally easily and slightly be stripped down to an *Alice*-alike patent-eligibility test, yet without loss of preciseness. This shows:

- (a) *The Alice-test must apply the scrutiny of a refined claim construction, as sparing in its first step the scrutiny about the elements it deals with evidently disables an unquestionable, as objectively quantified, statement as to the “more than” relation in its second step<sup>8.c)</sup>, forcing this “>>” to remain vague.*
- (b) *Any patent-eligibility test of an ET CI must check, whether ET CI's total inventivity<sup>5.c)</sup> – eventually modeled by its 10 BID-inCs<sup>2.c)7)</sup> – meets the 9 (evidently independent) legal concerns/requirements embodied/stated by §§ 112/101/102, whereby any such BID-inC<sup>5.b)</sup> comprises a legal concept, BID-leC, and a BID-crC. I.e., these 10 BID-inCs quantify the total inventive concept of any ET CI as seen by any<sup>2.c)</sup> patent-eligibility test – the *Alice*-test's, too. But note: This disaggregation, for any ET CI, of the ET CI independent §§ 112/101/102/103 into the 10 ET CI dependent BID-inCs is theoretically stereotypic – practically not, i.e. potentially tedious to find!*

The Supreme Court's opinion in *KSR* started quantifying its CI's inventive concept by asking for the normal amount of skill and creativity it embodies. *Alice*'s opinion now asks for additionally quantifying this amount in its inventive concept.

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<sup>2</sup> .a) But, this tutorial often “embeds” its statements into what earlier FSTP-Project publications told already. As it does not first clarify the subtle notion of “transparency” in a CI's SPL test – extremely important in [137] – it is simpler than [136], what is overcompensated by its higher completeness.

.b) By striving for quantification in testing CIs, the Supreme Court follows the developmental pattern in many areas, in which quantification initially was unthinkable, but today is usual, e.g. quantification of time, floatability (Archimedes [121<sup>7.a)</sup>]), strength, voltage, power, complexity, earth quake intensity, criminal energy, creditworthiness, ..., and coming closer to the kind of quantification applied here: “disaggregation”, “compartmentalization”<sup>3.b)</sup>, together with (b) above showing its “**invariant structure**”.

.c) By reason as in *Biosig*, also for RS=∅ § 102 must not be left away, RS≠∅ and § 103 to be clarified!

### III. QUANTIFYING INVENTIVE CONCEPTS FOR ET PRECEDENTS

The Supreme Court introduced the notion of “inventive concept” [5-7,11] for modeling the all decisive property of a TT0, the “inventivity” it embodies – for use by courts’ SPL decision making about TT0 and alike, for nothing else.

For any pTR<sup>6)</sup> (= “pair of TT0 and RS”), there is a metric for its TT0’s inventivity. It maps TT0 to 0,1,2,3,... by determining&counting the least number of “independent thoughts”<sup>3.a)</sup> necessarily having been created by TT0’s inventor for finding this TT0, starting from posc (= “pertinent ordinary skill and creativity”) & RS (= “reference set of prior art”). This number is TT0’s semantic resp. pragmatic “height” – i.e. inventivity embodied by TT0 over posc&RS [5,6,7,11,18,19]. Thereby the semantic resp. pragmatic height counts all resp. only patent-eligible independent thoughts. This metric fits seamlessly into the *Mayo* framework.

Any court/examiner/inventor/investor could objectively proceed, if it applies to TT0 and its *Alice’s* “inventive concept”, the “independent thought” based quantification<sup>2.b)3.b)</sup>: It namely enables uniform/consistent/predictable SPL decisions on TT0s by standardized thresholds<sup>2.c)</sup>, to be defined by SPL precedents to this end.

E.g.: A TT0/S is **a)** not only an abstract idea, **b)**  $\wedge$  patent-eligible, **c)**  $\wedge$  patent-able **iff of S holds** **a)**  $RS=\emptyset S$  passes FSTP-test.1-7<sup>2.c)</sup>, **b)**  $\wedge |RS=\emptyset S^{pat-el+}| \geq 1 \vee 2<sup>4.b)</sup>$ , resp. **c)**  $|RS|=1 S^{pat-el+} \setminus Sa > 1 \vee |RS|=2 \vee 3 S^{pat-el+} \setminus Sa > 2<sup>4.b)2.c)</sup>$ , “ $Sa ::= \max RS$ -anticipation”<sup>5.e)2.c)</sup>.

<sup>3</sup> **a)** Creating independent thoughts is necessary for inventing a TT0 – without having created them, TT0 would not exist. Elementary thoughts here are modeled by binary elementary disclosed BED-crCs/-inCs.<sup>b)5.b)</sup> [6,7,11]. Thus a latter one is created together with any former one (and only then). Such thoughts are called “independent”, then modeled by BID-crCs/-inCs, iff the latter are independent – independence understood as in Mathematics, yet additionally excluding somehow each other conditioning thoughts. Dependent thoughts cannot be avoided but must be filtered out for various logical reasons implied by SPL, especially by its Supreme Court’s *Mayo* interpretation.

The amount of inventivity TT0 embodies is measured by its above metric. It enables – in determining TT0’s patent-eligibility and/or -ability, see the preceding paragraph – replacing by thresholds the indefinite **quantitative** notions about the TT0 (whether these are also qualitative or not), which the Supreme Court’s used in *Mayo/Myriad/Biosig/Alice* when striving for increasing the preciseness of its reasoning, always clearly indicated by quotation marks, e.g. “enough” or “more than” or “sufficient” or “additional” or “markedly different” [121<sup>7.a)</sup>]. This increase is achieved here by quantifying TT0’s total inventive concept<sup>6)</sup>. This metric was induced by Kant/Russell/Wittgenstein-like thinking [7<sup>\*\*)-4)</sup>, early German BGH obviousness decisions (e.g. *Demonstrationsschrank* [5-7,141]), and the US Supreme Court’s *KSR/Bilski/Mayo* decisions.

**b)** The Supreme Court’s *Mayo* notion of “inventive concept”.<sup>a)5.b)</sup> is much simpler than that of the term “concept” in AIT [2], since ever serving for general purpose recursively aggregating compound concepts from originally elementary (= “atomic”) ones. I.e.: Both kinds of concepts serve the same purpose – namely precisely describing somehow derived new concepts, but by opposite “polarities”, as inventive concepts serve for disaggregating originally compound inventive concepts into elementary ones – often also called “quantifying” them as counting the elementary ones<sup>2)</sup>. By contrast to the use of AIT concepts, a court’s decision making about a TT0 proceeds inversely: Here, inventive elementary concepts, modeling all properties of TT0’s total inventivity<sup>5.d)</sup>, are used for ascertaining that its total inventivity is lawfully/correctly/completely/... disclosed, evaluated, and not anticipated – logically evidently impossible with compound alias abstract inventive concepts<sup>5.e)</sup>.

<sup>4</sup> **a)** Any BAD-/BED-inC “sufficiently” defined/able in its leC and crC is patent-eligible [151,64,74].

**b)** The independence of thoughts/BID-inCs implies their being creative<sup>3.a)</sup>, justifying the above low value chosen for **b)**. Assuming  $S = S^{pat-el}$ , **c)** had been practiced by the BGH for years<sup>3.a)</sup>. The strength of the Supreme Court’s “threshold thinking” in **b)** and **c)** seemingly was broadly misunderstood as its mixing-up nonobviousness and patent-eligibility requirements.

#### IV. Alice-TEST – INCREASING THE ROBUSTNESS OF ET PATENTS

This Section explains by footnotes<sup>5)-8)</sup> the crucial aspects of the *Alice*-test by starting from the FSTP-Test<sup>8)</sup> in its (today’s [151]) final form – being the logical/mathematical model of the “*Mayo* framework” interpretation of 35 USC §§ 101/102/103/112. The KR of this exact SPL model evidently uses “basic English” and *Mayo*’s quantifiable inventive concept(s)<sup>5)6)7)8)</sup> that the preceding Section outlined.

<sup>5</sup> .a) The FSTP-Test’s<sup>8)</sup> below presentation is an elaboration on [121<sup>8.b)</sup>,92<sup>8)</sup>]. It identifies by “<...>” lacking precedents [92<sup>19)</sup>], i.e. practically needs adjustment by future SPL precedents, also for e.g.<sup>2.b)</sup>

.b) Starting from the terms/notions clarified in [11,121<sup>1)2)</sup>,92<sup>1)3)</sup>] and modeling by them the “*Alice* transformation”, too – taking place also in the FSTP-Test – any inC is defined to be a pair <“**legal-C, leC**”, “**creative-C, crC**”>, whereby ● leC may transform a patent-ineligible crC into a patent-eligible inC, ● BOD-/BAD-/BED-/BID-inCs are to be disclosed ex- or implicitly by TTO’s specification, ● leC is to be found/input by the *Alice*/FSTP-test user, and ● the question here is left open, of how many such transformations must be identified for achieving TTO’s patent-eligibility (Section III, last paragraph of).

.c) In ftn<sup>7)</sup> becomes evident that the BED-/BID-crCs<sup>5.b)</sup> are located on an “elementary” level of notional resolution (“BED-level”) refining the “abstract” level (“BAD-level”) of notional resolution on which the BAD-crCs<sup>5.b)</sup> are located, which in turn refines the “original” level (“BOD-level”) of notional resolution on which the single BOD-inC<sup>5.b)</sup> is located, its<sup>5.b)</sup> BOD-crC describing TTO and its BOD-leC how BOD-crC is mapped onto SPL. TTO’s o-level is initially wishy-washy logic, its a- & e-levels, once defined, are precise.

Thereby the o-level represents all the relevant original documented information, first of all of the patent/application and of 35 USC (as already touched in Section II(b)). TTO is represented on all 3 levels by its resp. BED/BAD/BOD-inCs. The *Mayo/Alice*-test knows of TTO only its BAD-crCs on the a-level (being its “**building blocks ohi**”, for short), nothing on the o- and e-levels – and is in search of BAD-leC, for figuring out whether the “ $\bigwedge \forall \text{BAD-crC BAD-inC is more than } \bigwedge \forall \text{BAD-crC BAD-crC}$ ” (colloquially: “*Alice inequation*”) – by the *Alice*-test being a (necessary<sup>7.d)</sup> indication for the patent-eligibility of TTO.

.d) For a TTO satisfying SPL, the following definitions are reasonable. Then by *Mayo/Alice*, a TTO’s “**inventivity**” alias “**total inventivity**” is modeled by the conjunction of all its (correct, e.g. verified by the FSTP-Test) BAD-inCs<sup>4.a)</sup>, called TTO’s “**inventive concept**” alias “**total inventive concept**”<sup>7.a)</sup>. The *Alice*-test uses both notions as fiction, i.e. without knowing them in detail, just knowing that they notionally do exist as properly defined by the preceding sentence. By this definition evidently is TTO ::=  $\bigwedge \forall \text{its BAD-inC}$ , more precisely: TTO ::=  $\bigwedge_{1 \leq n \leq N} \text{BAD-inC}_{0n}$  (the index of inC, making it inC<sub>0n</sub> ::= inC<sub>0n</sub>, is imported from<sup>8)</sup>).

Here, for simplicity, all of the N BAD-crC<sub>0n</sub> are assumed to be not-patent-eligible (i.e. to be building blocks ohi) and none of the N BAD-leC<sub>0n</sub> to be known (i.e. *Alice*-test knows no BAD-leC<sub>0n</sub>), implying that of none of the N BAD-inC<sub>0n</sub> ::= <BAD-leC<sub>0n</sub>, BAD-crC<sub>0n</sub>> is know whether it is patent-eligible or not.

If TTO does not satisfy SPL, none of the preceding definitions is reasonable – yet they may often be used in colloquial talks resp. when tightly accompanied by appropriate clarification.

This in particular holds, if a TTO is said “**to be drawn into the patent-eligibility question**” or “**to be drawn into or directed to patent-eligibility**” or alike, meaning that at least 1 of its N BAD-crC<sub>0n</sub>,  $1 \leq n \leq N \geq 1$ , evidently – or potentially<sup>4.a)</sup> – is not-patent-eligible. By<sup>8),f)</sup>, these are TTO’s BID-crC<sub>0n</sub> ∈ S<sup>pat-el</sup>, whereby the above simplification implies S<sup>pat-el</sup> = ∅ (assuming TTO satisfies SPL).

.e) The opposite to this simplification<sup>d)</sup> were that, of the TTO, all N BAD-crC<sub>0n</sub> are patent-eligible<sup>4.a)</sup>, i.e. S<sup>pat-el</sup> = S. Then TTO is patent-eligible, whatever the BAD-leC<sub>0n</sub> are (if there are any).

As a matter of fact, all above definitions must be put to the e-level, otherwise often being nonsense.

But, if TTO shall be proven to satisfy SPL in the general<sup>2.c)</sup> case, it is crucial that a sufficient number  $K^* \leq K^8)$  such BID-leC<sub>0k</sub> also exist. I.e., K\* is to obey the threshold of the III Section’s last paragraph<sup>8)iii)9)</sup>.

.f) Finally, there is a simple relation between these N BAD-crC<sub>0n</sub>,  $1 \leq n \leq N \geq 1$ , and the semantic/pragmatic heights of TTO over posc (i.e. assuming RS = ∅<sup>2.c)</sup>), which the indicators Q<sup>plcs</sup>/Q<sup>pmgp</sup> [121<sup>8.b)</sup>,5-7] represent. One easily sees that in this case holds Q<sup>plcs</sup> = 10 and Q<sup>pmgp</sup> = 10 – |S \ S<sup>pat-el</sup>|, whereby S<sup>pat-el</sup> consists of all those K BID-inC<sub>0k</sub> which are patent-eligible “as such” – potentially supported by the resp. BID-leC<sub>0n</sub>, or not. Evidently, for CT TTOs, usually Q<sup>plcs</sup> = Q<sup>pmgp</sup>.

<sup>6</sup> As the FSTP-Test models the Supreme Court’s *KSR/Bilski/Mayo/Biosig/Alice* interpretation of 35 USC §§ 101/102/103/112, it is a “program scheme” [2] of any CI’s any SPL-test. Any SPL-test in turn is called an “interpretation” of the FSTP-Test program scheme. Often the term “FSTP-Test” is used as comprising an interpretation, i.e. as being some SPL-test, what here is unproblematic and convenient.

For the FSTP-Test (i.e. its 10 test.o’s) holds, due to its modeling the just quoted SPL interpretation: A TTO satisfies SPL if and only if it passes the FSTP-Test. Here is assumed, the ET CI at issue, has only a single interpretation TTO/S<sup>8)</sup> [58,151], for which then holds the same, trivially.

7. **a.)** A TT0 is made up from N elements, having the a-level properties/predicates BAD-inC0n<sup>5.d</sup>.  
 TT0's total inventivity<sup>5.d</sup> is modelled by the mirror concept of  $\bigwedge^{1 \leq o \leq N} \text{BAD-inC0n}$  [18, 19]. I.e.: Any property/predicate is modelled by its "mirror concept", C, the "mirror predicate of which, C" is the former predicate. Here the distinction between the two is superfluous, and any "mirror –" is left away.
- b.)** Stating: "TT0 satisfies SPL" means by<sup>6)</sup>, TT0 passes the FSTP-Test, i.e. its 10 test.o's. This implies:  
 $\exists \{ \text{BAD-inC0o} \mid o = 1, 2, \dots, 10 \} : \text{TT0} = \bigwedge^{1 \leq o \leq 10} \text{BAD-inC0o}$ ,  
 whereby<sup>5.b)</sup>  $\forall \text{BAD-inC0o} ::= \langle \text{BAD-leC0o}, \text{BAD-crC0o} \rangle$ .
- c.)** The original Alice's inequation evidently is slightly reworded (without changing its semantic) as:  
**"A patent-eligible invention integrating non-patent-eligible building block[s] must be more than the latter"**,  
 or in the above terms of FSTP-Technology  
**"If TT0 with 1 BAD-crC0n non-patent-eligible is patent-eligible, it must be more than  $\bigwedge^{1 \leq o \leq N} \text{BAD-crC0n}$ "**.  
 By **b.)** the latter term, i.e. the right side of this alleged inequation, is  $\bigwedge^{1 \leq o \leq 10} \text{BAD-crC0o}$  (due to simplification<sup>5.d)</sup>), which knows nothing of SPL. By contrast, its left side, also comprises  $\bigwedge^{1 \leq o \leq 10} \text{BAD-crC0o}$  (i.e. is = the right side), yet additionally represents the statement "TT0 satisfies SPL".  
 This proves that the above Alice inequation holds for any TT0 satisfying SPL and comprising a building block as such being not-patent-eligible<sup>5.d,5.e)</sup>. I.e.: If for a TT0 this inequality can be shown to hold, this for its patent-eligibility necessary property is not sufficient to guarantee that TT0 is patent-eligible – its up to K BID-crC0n's evidently must also meet the § 112 requirements. I.e.: Often, the quantification/disaggregation of the N BAD-crC0n's into their K TT0 specific BID-crC0k's is indispensable.
- d.)** Yet, even if TT0 met these § 112 requirements, it still were not true that from the above Alice inequation holding for TT0 would follow that TT0 is patent-eligible. The reason being that, in terms of the FSTP-Test – and assuming, TT0's N BAD-crC0n's and just mentioned K BID-inC0k had passed already FSTP-test.o for o=1,2,3 (an example of such a TT0 is the FSTP-Test itself, with N = K = 10) – TT0 need not pass FSTP-test.o for o=4,5,6,7,8. Only if TT0 meets also this latter requirement, TT0's passing FSTP-test.9 may be meaningful<sup>2.c)4.a)5.d)</sup> – continued in [151] for definiteness reasons.
- e.)** Of the practically interesting notion of a TT0's "inventive concept patent-eligibility deficit, inC\_def<sup>pat-el</sup>" – of Mayo's/Alice's inventive concept, if TT0 is directed to patent-ineligibility<sup>5.d)</sup> and the above threshold is assumed to be 2 (Section III, last paragraph, option c)) – the evident value of this important indicator is defined to be:  $\text{inC\_def}^{\text{pat-el}} ::= |\min\{|\text{S}^{\text{pat-el}}| - 2, 0\}|$ .
- f.)** The preceding insights would have been impossible, without having performed the just shown quantification of TT0's total inventive concept (being the left side of the above Alice inequation).
- g.)** It would have been equally impossible to identify the many open questions about SPL – represented by the many [137] references in<sup>8)</sup>, the  $\text{ftn}^{2.c)4.a)iii)}$ , and several hitherto not discussed test.o's<sup>8)</sup>, whereby each of them is of practical significance, as it could emerge anytime (and probably has emerged already several times but has not been recognized as such) – without applying the scrutiny practiced here, being nothing else but adopting the scientific view at SPL precedents for ET CIs.
8. The whole general ET CI case FSTP-Test  $::= \bigwedge^{1 \leq o \leq 10} \text{FSTP-test.o}$  (FSTP-test.o abbr. by **1-10**), reads:
- 1) The FSTP-Test prompts the user to input  $\langle \text{no "multi-interpretable CI", i.e. } \exists 1 \text{ S only [58]} \rangle$ 
    - a)**  $\forall \text{TT.i} \wedge 0 \leq i \leq I = |\text{RS}| \wedge 1 \leq n \leq N : \forall \text{BAD-crCin of TT.O;}$
    - b)**  $\forall 1 \leq n \leq N$  justof: BAD-crC0n is **definite**; <see [137]>
    - c)**  $\text{S} ::= \{ \text{BED-crC0kn} \mid 1 \leq n \leq N : \text{BAD-crC0n} \text{ due} = \bigwedge^{1 \leq k \leq Kn} \text{BED-crC0kn} \wedge K ::= \sum^{1 \leq n \leq N} Kn \}$ ;
    - d)**  $\forall 1 \leq kn \leq Kn \wedge 1 \leq n \leq N$  justof: BED-crC0kn is **definite**;
    - e)**  $\text{TT0} ::= \bigwedge^{1 \leq o \leq N} \bigwedge^{1 \leq kn \leq Kn} \text{BED-inC0kn}$  is **definite**; <i.e. TT0's total inventivity<sup>5.d)5.e)</sup>, see [137]>
  - 2)  $\wedge \forall \epsilon \in \text{S}$  for justof: their **lawful disclosure**;
  - 3)  $\wedge \forall \epsilon \in \text{S}$  for justof: their **enablement of TT.O**;
  - 4)  $\wedge \forall \epsilon \in \text{S}$  for justof: their **independence**; <see [137]>
  - 5)  $\wedge \forall \epsilon \in \text{S}$  for justof by **KSR-test**:  $\text{S} \cap (\text{posc} \cup \text{RS}) = \emptyset$ ; <see [137]>
  - 6)  $\wedge \forall \epsilon \in \text{S}$  for justof by **Biosig-test**: **S is definite**; <see [151]>
  - 7)  $\wedge$  for S justof by **Bilski-test**<sup>i)</sup>: **S is non-preemptive**; <see [137]>
  - 8)  $\wedge$  for S define BED\*-AN matrix by  $\text{BED}^* \text{-inCik} ::= N \forall 1 \leq n \leq N \wedge 1 \leq k \leq Kn \wedge 0 \leq i \leq I$ ;  
 $\text{BED}^* \text{-inC0k} ::= A$  if  $\text{BED-inC0k} \in \text{posc}$ ; <see [137]>  
 $\text{BED}^* \text{-inCik} ::= A$  if  $\text{BED-inCik} = \text{BED-inC0k}$ ,  $1 \leq i \leq I$ ;
  - 9)  $\wedge$  for S justof by **Alice-test**: **S is patent-eligible** as  $\text{PFSTP} \gg \bigwedge^{1 \leq n \leq N} \text{BAD-crC0n}$ ;
  - 10)  $\wedge$  for S justof by **Graham**<sup>ii)</sup>-test: **S is patentable on  $\text{S}^{\text{pat-el}} \subset \text{S}$** ; <see [137]>
- i) The "**Bilski-Test**" – testing TT0 for not being preemptive, as of Alice – prompts the user for input&justof:
- 1)  $\text{P}^{\text{Alice}} ::=$  being more than  $\bigwedge^{1 \leq n \leq N} \text{BAD-crC0n}$ , is **definite**; <i.e.,  $\text{P}^{\text{Alice}}$  may describe a TT0\* embodying less or more inventivity than the known TT0's total inventivity<sup>5.d)</sup> and potentially being  $\epsilon$  scope(TT0)>
  - 2) If enlarging TT0's truth set alternatively its scope [58], any such new TT0\* does not belong to scope(TT0). <If 1) & 2) apply, then TT0 is "not an abstract idea", hence not preemptive [151,137]>

On a TT0 – to be “Alice” tested for its being patent-eligible – most of the scrutiny discussed in this Section IV cannot be exerted unless the elements and building blocks of this TT0 and its inventive concept are disaggregated/quantified into BID-inCs, as done in the FSTP-Test explanation<sup>5)6)7)</sup>. This *Alice*-test, as coarsened FSTP-Test, is very simple but inviting troubles as non-conclusive. It were:

- “The Alice-test alias coarsened FSTP-Test – applied to an arbitrary TT0 – prompts the user to identify:*
- (1)  $\forall 1 \leq n \leq N: \forall \text{BAD-crC}0n \text{ making up TT.0;}$  *<one of these BAD-crC0n comprising a building block ob>*
  - (2) *an inventive concept, transforming a building block and hence the TT0 into a patent-eligible invention.”*

On this crude level of notional resolution of *Alice*’s step (1), it is hard to identify, what TT0’s building blocks are and its inventive concept “*transform[ing] them*” into an application (of them). As shown above, refining TT0’s a-level to its e-level of notional resolution vastly removes all these problems: In particular, as ftn<sup>5)·8)</sup> show, the always same raster of 10 BID-crC provides direct guidance to the above identified structure of TT0’s total inventive concept of the *Alice*-test, for any CI. Namely, a conjunction of 10 BID-inC, of which inC\_def<sup>7.⊖</sup> are unknown, initially, and MUST identified/defined for proving TT0’s patent-eligibility.

As required from tutorials, [151] will provide practical examples, representative for the patent-ineligibility and definiteness issues of an ET CI – e.g. from the *CLS* and other cases. Earlier information is available from the author.

- ii) The “*Graham-Test*” – determining the semantic height of TT0 over RS – works with all non-cherry-picking, i.e. element-wise, “anticipation combinations, ACs” of RS as to S [5,6,7,11]:
  - 1) It starts from the “anticipation/non-anticipation, AN” matrix of FSTP-test.8, any one of the I+1 lines of which shows, by its K column entries for any  $i = 1, 2, \dots, I$ , which of the peer TT.0 entries is anticipated/ non-anticipated by the i-line one, and for  $i=0$  is anticipated/non-anticipated by *posc*.
  - 2) It automatically derives from the AN matrix the set  $\{\forall \text{ACs}\}$  with minimal  $Q_{\text{pmgp}}$  of “N” entries [5,6].
- iii) The above “*FSTP-Test*” requires some explanations.
  - (1) The term “*duc*” before the “=” in line 1)(c) means that its immediate successor is, by the Supreme Court’s *Biosig* decision, to be understood “modulo (definiteness uncertainty)”, explained in detail in [151]. As any test.o considered is in principle subject to this notion, this acronym is left away, here.
  - (2) Except in pathological TT0s – if any should  $\exists$  – S always  $\exists$ , as the CI and SPL are of FFOL [121<sup>3.b)</sup>].
  - (3) The term  $S \cap (\text{posc} \cup \text{RS}) = \emptyset$  in test.5 means that  $\text{BID-crC} \in (\text{posc} \cup \text{RS}) \Rightarrow \text{BID-crC} \notin S$ .
  - (4) As TT0/S must be disclosed by the specification, the *Bilski*-test excludes “over-claiming”, i.e. claiming a TT0\* belongs to the scope(TT0) although TT0\* has not been disclosed by it.
  - (5) The *Bilski*-test excludes granting patent protection to an ET CI being a “**globally abstract idea**”. This is another meaning of the term “abstract idea”, than that qualifying its single BED/BID-inCs, called “**locally abstract idea**”, impacting on ET CI’s *Alice*-test – but potentially not on the *Bilski*-test [151].
  - (6) For  $\text{RS} \neq \emptyset$ , the number K of columns of the AN matrix<sup>ii)</sup> in FSTP-test.8 may (and often would) increase with increasing  $|\text{RS}|$  – the *KSR*-test in test.5) just does an up-front cleaning for test.6-8 [151].
  - (7) And more generally: As the whole FSTP-Test models the requirements, a TT0 must meet for passing the 10 requirements – this number being subject to future Supreme Court decision – stated by 35 USC §§ 101/102/103/112, TT0/S should be considered passing FSTP-test.m, with  $m < 10$  (e.g.  $m=9$ , the *Alice* test), only if TT0/S passes FSTP-test.m  $\forall 1 \leq m \leq 10$  – otherwise test.m (then being necessary only, at best!) would generate the same uncertainty that the Supreme Court by a strong reason rejected to accept in *Biosig* with the CAFC’s non-ambiguity test. I.e.: Of a TT0 all its 10 BID-inCs must pass all 10 FSTP-test.m for stating it positive e.g. as to its patent-eligibility.
  - (8) Vice versa: As long as it is not excluded that this set S of BID-inC.0 exists – which to decide for a normal patent is very easy, once its specification is read and understood, in particular if these are explained to the PTO examiner during the prosecution or an explanation is offered – rejecting a patent application or revoking a patent granted for a TT0 (more precisely: CI [58]) by whatever reason is absolutely untenable, although this currently happens very frequently with the PTO.
  - (9) For  $\text{RS} = \emptyset$ ,  $S^{\text{pat-el}}$  consists, within S, of all BID-inCs being as such patent-eligible, and  $S^{\text{pat-el+}}$  shall denote that superset of  $S^{\text{pat-el}}$  within S additionally comprising those BID-inC  $\in S \setminus S^{\text{pat-el}}$  that became patent-eligible as transformed by their BID-leC. Then holds  $\forall \text{ CIs: } S^{\text{pat-el}} \subseteq S^{\text{pat-el+}} = S$  evidently<sup>7.⊖</sup>, whereby potentially  $|S \setminus S^{\text{pat-el+}}| > 0$ , due to indefiniteness [151].

## V. PRELIMINARY AFTERMATH TO *Mayo/Alice/Biosig*

The author initially tried to deliver a simple tutorial at least about the Supreme Court's *Alice* decision, but this silver bullet does not exist – it left open too many questions. Answering them only briefly, required all the preceding elaborate footnotes. Now it conveys, together with [151], much more information about the Supreme Court's – i.e. the scientific/AIT's – approach to patent-eligibility issue for ET CIs. Unfortunately, they make this tutorial nontrivial. But: While there is no way of achieving a dependable understanding of this issue as long as struggling with this tutorial – after having understood its basics, this issue is next to trivial! This is the common phenomenon of all paradigm changes.

For examiners/patent-lawyers/patent-judges this means that there is no way around grasping what this tutorial basically tells to be the Supreme Court's interpretation of 35 USC §§ 101/102/103/112 – in particular as for AIT it has been evident since its *KSR/Bilski/Mayo* decisions – now confirmed by *Biosig/Alice*. Since then the author told that the Supreme Court thus took SPL precedents to the intellectual level, onto which it belongs, after all AIT's insights into this epistemological problem, completely inaccessible to the bulk of the patent community (e.g. [121<sup>3</sup>]), as it proved by its repeated non-reactions on the Supreme Court's resp. challenges. The good news for this community: For any examiner/patent-lawyer/patent-judge, having acquired this higher level of understanding of SPL, this is also the best legitimization of its deserving adequate professional acknowledgement.

The other side of this beautiful perspective is, e.g. for examiners and their managements within the PTO's of this world, that insisting in a vague entitlement to consider ET CIs as it always was reasonable with CT ETs, simply cannot be justified: The PTOs' top managements know that this means, a delicate conflict is unavoidably coming up between them and their longtime best coworkers – requiring from them to fully understand the Supreme Court's paradigm shift, outline by this tutorial, goes beyond their hitherto practiced learning behavior.

But also this retarding moment of the PTOs' second line staffs, the problematic side of any large organization, will undoubtedly be taken as opportunity by the managements of at least the 5 internationally leading PTOs, to adjust their patent granting practices to support the needs of ET CIs, as in the US vividly – and utmost reasonably, as by the author's feelings – required by the Supreme Court's "ET SPL initiative". While it is clearly inconvenient for the short term thinking of the bulk of the patent community, it enjoys the support of probably all politicians striving for sustainable developments, i.e. the vast majority of them.

The author's feeling is: Many key representatives of the USPTO as well of the other side of the aisle, of the inventors/investors/patent-lawyers/judges, seem to wholeheartedly believe the US Supreme Court as to its understanding of the social need to fostering investments into ET R&D for generating ET CIs [140]. This tutorial is devoted to supporting this utmost reasonable/humanistic trend.

## Abbreviated Reference List of the FSTP-Project

*FSTP = facts screening, transforming, presenting*  
(Version\_of\_18.11.2014, i.e. of this paper, see the complete actual list on\*)

- [2] AIT, “Advanced Information Tech.” or “Artificial Intelligence Tech.”, denotes topical IT areas, e.g. AI, KR, DL, NL, Semantics, System Design Tech.
- [5] S. Schindler: “Math. Model. Substantive Patent Law (SPL) Top-Down vs. Bottom-Up”, Yokohama, JURISIN 2013\*).
- [6] S. Schindler, “FSTP” pat. appl.: “THE FSTP EXPERT SYSTEM”, 2012\*).
- [7] S. Schindler, “DS” pat. appl.: “AN INNOVATION EXPERT SYSTEM, IES, & ITS DATA STRUCTURE, PTR-DS”, 2013\*).
- [11] S. Schindler, “inC” pat. appl.: “inC ENABLED SEMI-AUTOMATIC SPL TESTS”, 2013\*).
- [58] SSBG's Amicus Brief to the Supreme Court as to its (In)Definiteness Quest's, 03.03, 2014\*).
- [64] B. Wegner, S. Schindler: "A Mathematical Structure Modeling Inventions", Coimbra, CICM-2014\*).
- [74] B. Wegner, S. Schindler: "A Mathematical KR Model for Refined Claim Construction, I ", in preparation
- [112] E. Bowen, C. Yates: “Justices Should Back Off Patent Eligibility, ...”, L360, 25.07.2014\*).
- [113] S. Schindler: “The CAFC’s Rebellion is Over – The Supreme Court, by *Mayo/Biosig/Alice*, Provides Clear Guidance as to Patenting Emerging Technology Inventions”, 07.08.2014, sub. for publ.\*).
- [121] SSBG’s Petition for Writ of Certiorari to the Supreme Court in the ‘902 case, 25.08.2014\*).
- [129] G. Quinn: “Judge Michel says *Alice* Decision ‘will create total chaos’”, IPWatchdog, 06.08.2014\*).
- [136] S. Schindler: “High-Level Tutorial I”, submitted for publication\*).
- [137] S. Schindler: “The Rationality of a Claimed Invention’s (CI’s) post-*Mayo* SPL Test – It Increases CI’s Legal Quality and Professional Efficiency in CI’s Use, and Stimulates/Inspires the Inventivity to/in CI’s Further Development”, in prep.
- [138] R. Wetzler, M. Hulicki, S. Schindler: “The Problem of Patent Ineligibility Due to an Abstract Idea in the Light of the Recent ...”, Bangkok, ILCP, 2015.
- [140] S. Schindler: “§ 101 Bashing or § 101 Clarification”, published 27.10.2014.
- [141] BGH, “Demonstrationsschrank” decision\*).
- [144] “Turmoil .....”, see program of AIPLA meeting, DC, 23.10.2014
- [145] “Dark side of Innovation”, ..... to go into [137].....
- [146] D. Kappos: About his recent west coast meetings, AIPLA, DC, 23.10.2014.
- [151] S. Schindler: “*Biosig* also Increases the Robustness of Patents on ET CIs – A Tutorial about this Key to Increasing a Patent’s Robustness –“, emailed soon.

\*) available at [www.fstp-expert-system.com](http://www.fstp-expert-system.com)