

The USPTO's *Berkheimer* PE-Guideline Talks the US Patent Community onto a Wrong Track¹⁾ and A Question – not asked – as to the USPTO's DataBase-Searching for Patent(-Application)s

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I. Andrei Iancu's and PPAC Representatives' Recent Implicit Criticism on Both above SPL-Issues.

This email clarifies the two above SPL-issues^{1.a)} – the USPTO's PE-philosophy & its 'DataBase, DB'-searching – as well as Andrei Iancu's and PPAC representatives' respective comments on both. None of their comments namely stated explicit criticism on these SPL-issues, but with their wordings their criticisms came implicitly.

Both implicit criticisms are upfront briefly restated:

- The USPTO's recent *Berkheimer* PE-Guideline quite openly concedes that the USPTO may issue further PE-guidance in the future. The below very short Section II suffices to explain that this is indeed necessary as this version does not guide toward a PE-problem's solution – stated by Andrei Iancu, too – but teaches away from it.
- As to the USPTO's DB-searching, several PPAC representatives sarcastically noted that – before a DB-search for an ETCl at issue alias ⁹ETCl – one better first understands it (for knowing what is to be searched for). Section III shows a new & much more efficient DB-search, which likely would have made them happy.

II. Why the USPTO's *Berkheimer* PE-Guideline Talks the US Patent Community onto a Wrong Track.

Andrei Iancu quoted the best example for why this guideline does not guide to certainty as to resolving the PE-problem: This guideline namely depends on unquestionable determination whether an ETCl at issue is '*well-understood, routine, conventional activity*'. And he correctly added that this unquestionability is often not establishable (evidently the case, if something with this ETCl is not *well-understood, e.g. as to an inC*).^{b)}

His statement clearly implies critique. This alleged '*well-understood, routine, conventional activity*'-criterion has at least 3 absolutely untenable deficiencies – for a PE-guideline and a PE-court decision, at least:

- It is a vague legal concept, as it is unclear whether its 3 notions are to be 'anded' or 'ored'.
- It still remains a vague legal concept – whatever such concatenation between them one would define – as the meaning of any of its 3 terms is indefinite (as long as they are not rationalized^{5.b)/.h.3)}).
- It is for many ETCl's PE not a necessary condition (see *DDR, TLI*) or it is necessary but not sufficient for PE, as it still may contradict the Supreme Court's "not-totally-preemptive" requirement, rendering it ⁿPE^{b)}.

In total: ● In its basic intention, this guideline is absolutely fine^{c)}, but ● in its lack of notional scrutiny (just presented) there is no alternative to stating that it is still heavily confusing and/or even misleading^{d)}.

⁷⁾ My thanks for discussing this paper's new patent-DB-search go to: C. Negrutiu, D. Schoenberg, J. Schulze, J. Wang, B. Wegner, R. Wetzler. Due to their criticisms of the intricacies of the preceding V.22, it is replaced by this much simpler V.31 – thereby fixing also some other flaws.

^{1.a} At the USPTO/PPAC- and AIPLA-meetings in Alexandria & Seattle on 03. & 15.-17.05.2018. SPL = Substantive Patent Law.

^b By contrast, the Supreme Court provided in its *Alice* decision (on p. 19) an under scrutiny^[296] solely uniquely interpretable specification of its PE-analysis^[300,332,354,355,401,434,441,454,459,480]. This has in general nothing to do with these 3 notions – i.e. uses them only for "*the most basic functions of a computer*". It is correctly & completely interpreted by the FSTP-Test (see ANNEX_2), being a necessary & sufficient condition for ETCl's 'being PE' – which is by its execution easily/clearly/unquestionably decidable in its lines 1)-7).

^c – as it tries as hard as it can⁹⁾ to stop the widely spread malpractice among examiners as well as judges of inflationarily qualifying an ETCl or one of its inventive concepts as '*well-understood, routine, conventional activity*' without providing any legitimation for this finding^[6-9,441], as clearly required by the Supreme Court and now also by the USPTO (besides its errors) –

^d This guideline is not shy – for trying to indoctrinate (???) this '*well-understood, routine, conventional activity*' were of universal PE-problem-solving capacity – to stereotypically repeat this string of 3 vague terms more than 30 times on only 4 pages. It thus concedes the non-rationalizability of this string's meaning, yet does not state this truth, as Andrei Iancu did in^[473]. It hence is incapable of providing any PE-problem-solving guidance (as just shown by the quoted reasons), thus dragging its readers onto a wrong track (already shown to be disastrous^[459]).

With the emergence of true ETCl's, e.g. in *Diehr*, i.e. long before any §101-guideline, the unpredictability & (potential) inconsistency of ETCl's §101 precedents started fooling/discouraging many excellent inventors and investors – the two most important parties in patent business – more recently amplified by the outrageous BRI^{2.a)}. The latter thus increased the 101-chaos to a by now really disastrous extent.

Finally: The USPTO's/PTAB's rejection statistics do not help fix the two above criticized issues causing them!!!

III. An Unasked Question about the USPTO's DataBase-Searching for Patent(-Application)s.

As said above^{1.d)}, Andrei Iancu recently stopped the USPTO's strange clinging to the BRI^{2.a)} (already mentioned in^[468]). This was his first and remarkably keen 'office action', but overdue, just as the USPTO's tinkering with the PE-problem. The BRI- and the §101-problem have been the biggest stumbling blocks – now the PE-nightmare is hopefully being overcome, too – for the two most important parties of the US society's innovativity^{1.d)} for preserving or even increasing their patenting-engagement and their trust in the USPTO.

Yet, for sustainably reestablishing this engagement & trust, the USPTO's current ETCI examination practice must get rid of still a third heavy stumbling block: The 'gap' that Andrei Iancu rightfully complained about^[466,463]. It also must be eliminated^{b)}.

Some PPAC delegates seemingly hoped this would happen through the USPTO's improving its patent-DB-search. But in vain. And none of them explicitly asked this question. Nevertheless, even a groundbreaking such efficiency increase of today's dissatisfactory classical DB-searching is achievable: With the new 'FSTPDB-search'^[466], explained next.

It leverages, AI-supported, ●SPL & its ETCIs being of FOL, and ●ETCIs being of 'OAE-structure' unless pathological⁵⁾. It refines the ⁰ETCI-properties-ignoring ⁰levelDB-search to a ⁰ETCI-properties-specific ^ElevelDB-search on an E-normed DB^{c)}. It thus often needs more computer power for its DB's 'multi-screening'.^{d)} It yet causes **all deciding 2 efficiency increases** (making the FSTPDB-search future-proof): ●It totally eliminates the USPTO's gap^[466] – as mathematically correct, it finds^{e)} that DB can't anticipate ⁰ETCI if ${}^0\text{ETCI} \text{SR}^{\text{Nct}} = \emptyset$ – and ●it is absolutely robust^[354,355]. This FSTPDB-search is brand-new. Due to these two groundbreaking efficiency increases, it has '**GAME-CHANGER POTENTIAL**' for all PTOs' DB(-searche)s, worldwide. This gap-eliminating capability of the FSTPDB-search is shown in few lines:

Let ${}^n\text{EcrC-cluster}, {}^n\text{EcrCc} ::= \{E\text{-crC}0nk, 1 \leq k \leq K^n\}$, and let $\forall {}^{\text{DB}}\text{ETCI} \in \text{DB}$ 'Search-Result N-cluster-tuple, $\text{SR}^{\text{Nct}} ::= \#{}^{\text{DB}}\text{ETCI} = 3 \prod_{1 \leq n \leq N} ({}^n\text{AASTc})^f$, with ${}^n\text{AASTc}$ peer to ${}^n\text{EcrCc}$ and

- $\forall {}^k\text{EcrC} \in {}^n\text{EcrCc} \exists$ the 'bijective mapping, $\text{bc}': {}^k\text{EcrC} \xleftrightarrow{\text{bc}'} {}^k\text{AASTc} ::= \{({}^k\text{EcrC}) \cup \{\text{all synonyms of } {}^k\text{EcrC}\} \subseteq {}^{\text{DB}}\text{AASTc}$.
- $\forall {}^n\text{EcrCc} \exists$ the 'bijective mapping, $\text{bc}': {}^n\text{EcrCc} \xleftrightarrow{\text{bc}'} \text{EcrC}, {}^n\text{AASTc} ::= \bigcup_{\forall {}^k\text{EcrC} \in {}^n\text{EcrCc}} ({}^k\text{AASTc}) \subseteq {}^{\text{DB}}\text{AASTc}$.

Then holds: "**if** $\text{SR}^{\text{Nct}} = \emptyset$ **then** DB can't anticipate ⁰ETCI **else** any $\text{SR}^{\text{Nct}} \in \text{SR}^{\text{Nct}}$ anticipates ⁰ETCI".^{f/7.c)}

^{2.a} This author has shown in more (FSTP-) publications than anybody else – US-wide and by scientific & AI^[2] reasoning – why the meaning of the term 'broadest reasonable interpretation, BRI' is indefinable, as being highly metaphysical^{5.b)}. Privately he communicated to leading USPTO officers that examiners' hope – nevertheless to be able to preserve the BRI forever, as for them it is just ideal, evidently – is plain wishful thinking, as it would disappear with the sooner or later advent of AI in their professional life.

^b For reducing this gap to 0 for an ⁰ETCI by the FSTPDB-search it is necessary & sufficient that its patent specifies it absolutely robustly, i.e. as a mathematical theorem, e.g. in an English dialect such as IDL^[372]. Then anybody may check (even automatically) any ⁰ETCI's SPL-precedents, consistently & hence predictably. This absolute robustness of ⁰ETCI is achieved by presenting it in its COM(⁰ETCI)-KR.

^c Except in these introductory remarks, the prefix '0' or '⁰ETCI' is often omitted – thus indicating that such context is evident. The part of a patent DB to which a ⁰ETCI belongs is called its '⁰ETCI Art Area, ⁰ETCIAA'. AAs are assumed to be defined such that any ⁰ETCI belongs to exactly 1 AA – always possible (but today ignored). An AA is called '⁰ETCI normed' alias 'normed', if it stores of any ^{DB}ETCI its subset of ⁰ETCI EcrCS, i.e. its norm. Transforming an AA from being non-normed to normed is evident.

^d The cost of automatic multiple screening a DB is by far overcompensated by the advantages returned by these two efficiency increases.

^e The explanation of the FSTPDB-search may assume w.l.o.g.³⁾⁻⁷⁾: ¹⁾ ⁰ETCI has only a single COM(⁰ETCI), ²⁾ ⁰EcrCS is independent, i.e. $\neg \exists k \in [1, K]: \text{EcrCk} \in \text{EcrCS} \wedge \text{EcrCk}$ is elementarily derivable from $\text{EcrCS} \setminus \{\text{EcrCk}\}$ ³⁾ any EcrC is defined by only its name, which hence must be stated extremely precisely^{7.c)}. ⁴⁾ $\forall {}^k\text{EcrC} \in \text{EcrCS} \exists$ only 1 $n \in [1, N]: \text{EcrC} \in \text{A}, n$, ⁵⁾ $\forall {}^k\text{EcrC}$ holds $\text{EcrC} \text{AASTc} \subseteq \text{AASTc}$, By SPL-precedents holds (taken into account below): ⁶⁾ \forall anticipation of ⁰ETCI is combinable of ≤ 3 ^{DB}ETCI $\in \text{DB}$, and ⁷⁾ 'cherry-picking' is excluded, i.e. ${}^k, n \text{AASTc}$ refers to one or more ^{DB}ETCI $\in \text{DB}$ and any such ^{DB}ETCI must anticipate the entire ${}^n\text{EcrCc}$ identified by this ${}^k, n \text{AASTc}$.

^f The right term of $\#{}^{\text{DB}}\text{ETCI} = 3 \prod_{1 \leq n \leq N} ({}^n\text{AASTc})$ generates an N-tuple of ${}^n\text{AASTc}$ -sets, each of their elements anticipating its peer ${}^n\text{EcrCc}$. The prefix meaning ' $\#{}^{\text{DB}}\text{ETCI} = 3$ ' assesses that any 'search-result N-object-tuple' \in 'search-result N-cluster-tuple' combines at most 3 ^{DB}ETCIs.

This (non)anticipation-criterion of a ⁰ETCI by a DB in terms of the FSTPDB-search is still declarative, i.e. not procedural. But evidently there are infinitely many DB-exhausting algorithms on which this criterion is an invariant^{3.a)} – which hence need not be discussed here. AI^{3.a)} thus not only solves the PE-problem as by the Supreme Court required^{b)}, but the AI's SPL-refinement also dramatically increases the qualitative efficiency of any classical ⁰levelDB-search by enabling highly efficient metarational^{5.b)} ^ElevelDB-searches, i.e. a priori avoiding the gap Andrei Iancu goes for – as otherwise to be eliminated a posteriori at much higher cost and devastating damage to US society and the USPTO.

Finally note that the whole patent community is not yet aware of this AI problem implicitly explained here: That AI^{3.a)} is not a nightmare or alike hitting the US patenting business sooner or later in a way not yet clearly understood. The contrary is true! As shown here and by^[468], it is already about dramatically improving the productivity of the patenting business, especially the USPTO – thereby requiring that whichever SPL-problems AI is enabling to innovatively resolve and in particular to vastly automate, it will require reconsidering them in scientific/mathematic KR^[2].

IV. Aftermath of the Current Standing of the US Substantive Patent Law.

As seen by sciences^[2] – indispensable for AI^{3.a)} supported & absolutely robust & (semi-)automatic decision making – the Supreme Court provided with its SPL-framework a guideline for taking US/SPL to the worldwide top level of ETCIs' patenting knowhow. This level enables AI supported & (semi-)automatically deciding whether an ETCI is ●absolutely robustly draft-/predict-/pro-

^{3.a} AI stands here for its hard kernel, meaning conjunctions of deterministically and mathematically precisely modeled elementary concepts or transformations of atomic notions – while the bulk of AI means the scientifically opposite, i.e. various compounds of distribution-less nondeterministic (casually: 'chaotic') vaguely modeled vague concepts or transformations of vague notions. While this vagueness is unavoidable in most real-life situations, from SPL and its precedents about ETCIs, it is eliminatable.

i.e.: The 'gap' (irritating Andrei Iancu in the USPTO's working^[468]) is indeed a socioeconomically untenable luxury!

^b since the Supreme Court's SPL-framework-decisions, at the latest since *Bilski* and its warning in *Mayo* and *Alice* that patenting ETCIs of 'total preemptivity' may socioeconomically threaten the US 'National Patent System, NPS', due to their unavoidable impacts on the US society of uncertainties caused primarily by ETCIs' exceptional characteristics. This fundamental cognition of the Supreme Court – that patented ETCIs of total preemptivity threaten the main source of US society's wealth, being the reason for its requiring that ETCIs are subject to its SPL-framework for barring granting patents to such ETCIs at minimal restriction of the Constitutionally granted right to their inventors (for incentivizing and rewarding their creativity and their investments)^[424] – has been totally ignored/forgotten by the USPTO's original interpretation of the specification of the 2 steps in *Alice*'s PE analysis. Consequently, it did not develop a respective search algorithm – which is what the FSTPDB-search exactly is.

Since then the USPTO has slightly expanded its versions of its PE-guidelines (i.e. of its BRI-based '2-step PE-test') piecemeal – as it cannot deny that it only incompletely interpreted *Alice*'s specification of its PE analysis^[354,355]. Instead it hoped that such expansions would reduce the degree of this legally intolerable/erroneous incompleteness. This time e.g. by interpreting the term 'nature' (not interpreted in the PE-guideline's preceding versions) – yet thereby evidently talking of another nature (of additional elements, but not of the claim being transformed by it) than *Alice*'s specification, while the meaning of the latter's nature is that of the ⁰PE claim being transformed into its PE application. This latter 'nature'-meaning is rationally defined & mathematized primarily in line 5 of the FSTP-Test in ANNEX_2. The former's meaning, determined by misinterpretation, is equally undeniable as the above incompleteness and hence does not rationally reduce the degree of this legally erroneous incompleteness. I.e., ending the USPTO's indefinite §101-tinkering probably requires another courageous office action by the new USPTO director.

^c Probably all known ETCIs of patent(application)s have in their FSTP-Test a small N and K, mostly N≤3 and K≤5. Hence, the sizes of all above sets are (semi-)automatically determinable. For upper bounds for them see^[457] for ETCIs tested in FSTP-mails. The efficiency is further increasable by considering also AA-requirements, which is universal if these are DB-&ETCI-independent.

The FSTPDB-search abstracts from the existence of the N ETCI-elements, yet not from their N functionalities' clusters. Then the residual risk is that a correct N-tuple doesn't anticipate its ⁰ETCI – being a highly academic, pragmatically very unlikely semantical case.

^d The^[468] reasoned that FSTPDB-searches are often much more efficient than ^{classic}DB-searches, without mathematically proving the 'much more', yet by common sense being convincing, if the N A.n are arranged (by renumbering them) such that the A.1-cluster comprises the most innovative EcrCs – as $SR^{Nct}=\Phi$ if $\exists 1 n \in [1,N]: {}^nSR^{Nct}=\Phi$

The efficiency is often further increasable by considering also AA-requirements, which is universal if these are DB-&ETCI-independent, and which are for wild ⁰levelDB-searches impossible, as the latter is highly metaphysical and hence undefinable.

^e I.e.: While FSTP-Technology enables rationally defining all EcrCs – indispensable for enabling rational reasoning about an ETCI satisfying SPL – here is proceeded as today is still practiced in drafting ETCIs. This is likely to change soon as it enables increasing the scope(ETCI).

^f A trivial algorithm for a ⁰ETCI-anticipation is: First screen the normed DB for a ^{DB}ETCI comprising ⁰EcrCS. If none exists, screen it for 2 ^{DB}ETCIs comprising ⁰EcrCS. If none exists, screen it for 3 ^{DB}ETCIs comprising ⁰EcrCS. If none exists, ⁰ETCI is not obvious over the DB.

tectable or not, ●(non)definite, ●(non)useful, ●(non)novel, ●(non)patent-eligible, and ●(non)patentable – whereby all this is already achieved by trusting this guideline. And the USPTO's new director, Andrei Iancu, has the mentality to take the USPTO to this level of extreme appeal to it^[468]. Congress and the Supreme Court will help him to proceed in this American Way to success^[475]. While the Supreme Court and Congress so far have put the US NPS back on track to the number 1, worldwide, there are still the 2 half stumbling blocks on it (reported above), 1 being removed already by Andrei Iancu. Notorious doomsayers are nevertheless warning that all these chances coming with ETs and AI are about to go down the drain. But the Judiciary Committee's chairman, Bob Goodlatte, counters^[475] with the US led development of "AI, SW, cures for diseases" – due to its innovativity – and Andrei Iancu seconds him as evidenced especially by his first speech as USPTO Director^[468] and since then in all his public presentations of these issues.

The FSTP-Project's Reference List (Version of 05.07.2018)

Most of the FSTP-Project papers below are written in preparation of the textbook^[82] – i.e. are not fully self-explanatory independent of their predecessors. WARNING: Some of the final entries in the FSTP-Project's Reference List are here slightly incorrect – the author is begging your pardon for any inconvenience!

- [2] AIT: "Advanced Information Sciences & Technologies" or "Artificial Intelligence Technology", denotes cutting edge IT areas, e.g. Knowledge Representation(KR)/ Description Logic (DL)/ Natural Language (NL)/ Semantics/ Semiotics/ System Design/... just as MAI & MKR: "Mathematical Artificial Intelligence & Mathematical Knowledge Representation", the resilient fundament of AIT and "Facts Screening/Transforming/Presenting, FSTP-Technology, both developed here. – currently much of it still in a 'status nascenti'^[82]
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Yet note the above WARNING: Some of the final entries in the FSTP-project Reference List likely have wrong numbers!!!

ANNEX_1: Refining an ETCI's Notional Resolution – Rationalizing & Mathematizing It.

Notional refinement – alias “keep it simple”, in principle AI’s motto^{2.b)} – was vaguely felt to be important first by Aristotle/Plato then by Kant, clearly recognized as indispensable for rational reasoning only by Analytic Philosophy^[e.g.130,218], and 100+ years later by IT System Design^{[2][278]}. It still is not yet broadly understood as indispensable also for robust SPL-framework based patenting ETCIs^[e.g.5....468]. Yet, the AI supported FSTPDB-Search renders evident that this subtle paradigm refinement is of probably irresistible charm to all PTOs, including the USPTO.

SPL-framework based testing an ETCI, as required by the Supreme Court^{5.a)}, undeniably implies^{3.b)} the ETCI’s ‘OAE-KnowledgeRepresentation, OAE-KR’, being the ETCI’s notional refinement that comprises 3 levels of decreasing ‘notional coarseness’ – proceeding ● from the ETCI’s “**original**” metaphysical level of description by vague O-level predicates, ● over their level of “**aggregated**” (or “**abstract**”) metarational formalization by precise A-level predicates, ● to their “**elementary**” level of notional resolution, comprising only rational predicates of ‘atomic’ notions.

^{5. a 1)} see *Alice*, e.g. the p.5 and p.15, together with^[468/2.a)].

- ²⁾ In both cases an ETCI’s canonical COM(ETCI)-KR models an ETCI’s metaphysicality & metarationality & rationality – whereby the SPL-framework implicitly requires the ETCI’s OAE-KR, while IT System Design is not limited to the ETCIs’ such ‘OAE-layering’ and in particular enables the indispensable much more flexible “sandwich”-structures for refining the computer functionality of virtually any operating system^[182]. Thus, FSTP-Technology is just a special case of system design technology adjusted to the needs of rationally modeling the FOL-structured requirements stated by §§ 101/102/103/112 in the Supreme Court’s interpretation – whereby this FOL limitation is an enormous simplification enabling vastly automating working with AI-supported FSTP-Technology.
- ^b Correctly interpreting the Supreme Court’s SPL-framework indispensably requires the notional scrutiny known since and from Analytic Philosophy that often is felt (misleadingly) to be superfluous. Accordingly, the meaning of a bold term below on the left denotes a notional property – of a legal or factual item of an ETCI – axiomatically defined to the right of it to be: *[Wikipedia would insert here: “Editing Needed!”]*
- **transcendental** – this ETCI is excluded from SPL-satisfiable testing, as embodying a highly speculative notion;
 - **metaphysical** – not being “highly speculative”, but describable such that this property is recognizable to be amenable to metarationalization, hence describable by informal “**O(-level)-predicates**” of this ETCI located on its notional **O-level**;
 - **metarational** – being describable by natural IDL-expressions^[e.g.372,390] describing the semantics of all identifiable & relevant O-predicate parts, i.e. being conjunctions of formal “**A(-level)-predicates**” of notions being a priori axiomized or by this ETCI, located on its notional **A-level**;
 - **rational** – being describable by natural IDL-expressions describing the individual summands of the A-predicates’ such conjunctions, i.e. being mathematizable elementary “**E(-level)predicates**” located on its notional **E-level**;
 - **mathematical** – being describable by E-predicates in mathematical KR.
- Irrationality is that part of Metaphysics that separates it from Metarationality. All metarational notions not belonging to Rationality, yet, are by their axiomatization amenable to rationalization.
- ^c implicitly disclosed by the ETCI’s specification for all by it ex- or implicitly disclosed E-level search terms.
- ^d determined by using the IES and its claim interpretation of the ETCI at issue^[e.g.390..... 453], i.e. part of its COM(ETCI).
- ^e in verbal or mathematical KR^[e.g.453,459]. To fully automate this search and guarantee that any document found/hit does comprise this ETCI, the mathematical ETCI-KR would be needed. This is not elaborated on here, as today such mathematized DBs do not yet exist. Although, the USPTO might consider letting such a DB build up automatically for the patents that it grants, as basis for offering it in the long term as an extremely attractive DB service for searching cutting-edge ETCIs.
- ^f “non-pathological” is the property of an ETCI that its total inventivity is disaggregatable as an EcrCS (see the FSTP-Test in ANNEX_2). It is unclear whether a pathological ETCI has ever been granted a patent.
- ^g Of a “metarational” ETCI at least a part is rationalizable or axiomizable – for at least 1 KR.
- ^h ¹⁾●This extension and refinement of the notional resolution of the famous Kantian dichotomy – ‘reasonability/rationality vs. metaphysics’ – is crucial for thinking and reasoning about ‘innovations’ and their ‘building blocks’. ²⁾●By these 5 definitions – as a whole being transcendental – there is no (meta)rational/mathematical distinction between their top 3 notions. ³⁾●Yet, there is a metamorphosis (by axiomatization) of many notions from metaphysicality into (meta)rationality since the late 19th century – then not understood as such, but now here considered as part of (a refined) claim interpretation^[457] ⁴⁾●While SPL is vastly based on (meta)rationality, substantive copyright & trademark laws vastly refrain from rationality and almost totally reside in transcendence (in spite of their preciseness requirements). ⁵⁾●I.e.: Classical SPL interpretations are worldwide metaphysical – hence patents, too, and some even transcendental – whereas the Supreme Court with its SPL-framework provided the decisive hint at how to metarationalize both, if at all possible. ⁶⁾●Thereby the refining of the notional resolution of the ETCI-KR is absolutely crucial, as the CAFC’s and USPTO’s erroneous PE decisions show – due to their contradicting the SPL-framework. ⁷⁾●The above FOL-precondition – known from early philosophy (then still unable to put it that simply) – applies also to this ‘5 level notional refinement’ of thinking about innovations/inventions. I.e.: Plato/Aristotle & Kant, just as Analytic Philosophy had no chance to perform it without the 20th century scientific recognitions, first in Mathematics & Physics and then in ‘Information Sciences’ (enabling advanced IT). ⁸⁾●All “non-pathologic”⁹⁾ ETCIs embody the thus implicitly defined OAE-KR (see ANNEX_1).

This OAE-KR is a very often used ‘technique’ from AI. It is namely indispensably implied not only by the Supreme Court’s SPL-framework^[296], but also by Cognition Theory as well as Analytic Philosophy, by the state of the art in System Design specification^[122], and very often also in communications trusting partners’ intelligence.

This OAE-understanding of a COM(ETCI)-KR is key to the AI of FSTP-Technology – by the Supreme Court’s SPL-framework for ETCIs necessarily implied, as in sharing intelligent thinking indispensable, otherwise it is impossible – it is next repeated once more:

AI’s notional refining of an ETCI’s OAE-KR comprises 3 levels of notional resolution: •The ETCI’s notionally “**original, O-level**” is defined as the original information representation in the ETCI’s patent. It enables vaguely identifying N ETCI-elements, the properties of any one vaguely modellable by an O-inC, together making up the vague total inventivity that the ETCI embodies, described by its entire vague O-level-predicate, as vaguely derivable from its patent’s specification in its coarsest and partly metaphysical notional resolution^{1.b)}. •Its semantically equivalent yet somewhat preciser “**aggregated, A-level**” of notional resolution of this information about this ETCI is refined such that it enables a vastly precise yet still compound description of this now metarational ETCI-information by mathematical A-level predicates — here precisely specifying the meanings 1-to-1 of the N O-inCs. Finally: •Its lowest “**elementary, E-level**” predicates refine the ETCI’s KR by disaggregating its compound A-inCs (i.e. their compound A-level predicates) into equivalent conjunctions of their rational elementary E-inCs (rational E-level predicates)^[320].

After this still declarative description of the whole structure of an ETCI’s OAE-KR embodied by all of its O/A/E-inCs – completely modeling this ETCI^[271] — the next 3 bullet points outline how this OAE-KR is procedurally derived, as ex- and/or implicitly required by the 6 Supreme Court’s *MBA* decisions as a whole^[354/III]:

- **1. step:** Create the ETCI’s N “**ETCI-elements, Xn**” — being its pillar(s), indicated by keywords in its specification, remaining the same on all 3 levels, and accordingly “separating the ETCI’s OAE-levels’ concerns”^[354,FI61]. This step is trivial, once the ETCI’s specification exists. Prior to that this potentially manifold creative process is highly metaphysical. Input these N O-inCs into the IES^[9.b,283,350,332,320];
- **2. step:** Refine these somewhat vague N O-inCs to precise mathematical A-inC-predicates and input them into the IES;
- **3. step:** Refine any of the N A-inCs to a conjunction of its $K \geq N$ E-crC(s) – each modeling an ‘atomic’, i.e. ‘non-disaggregatable’/‘unrefinable’ notion disclosed by the ETCI’s specification and defined in the “**Innovation Description Language, IDL**”, a syntactically & semantically restricted natural English language, as a ‘conjunction’ of so described E-crCs (and potential E-ncrCs). Input them into the IES^[9.b,320,350,283].

Practical applications of this O/A/E-KR are provided by most FSTP-publications dealing with testing an ETCI for satisfying SPL. To apply this O/A/E-KR in DB search for an ETCI’s prior art – great improvements are urgently needed here, as follows from this PPAC-/USPTO-meeting^[472] – one would use of its canonical COM(ETCI) its ETCI-element-wise clusters of E-level search terms (and their synonyms^{b)}), instead of its current amorphous O-level search terms, the set of which is structured by these E-clusters.

FSTP-Technology has shown that for any ETCI, its FSTP-Test^[459], and its 9 conditions’ conjunction holds:

$\text{ETCI satisfies SPL} \Leftrightarrow \exists \text{EcrCS} \wedge \text{it passes the FSTP-Test} \Leftrightarrow \exists \text{EcrCS} \wedge \text{on it } \bigwedge_{1 \leq i \leq 9} \text{condition}^i = \text{T}$ ^{6.a)} implying:

If an ETCI’s EcrCS is unknown then it is rationally not determinable whether the ETCI is D and PE and PA.^{b)}

⁶ .a The formal proof of this equivalence statement follows from^[300,....], as based on the groundbreaking ‘necessity axiom’ of correct reasoning, eventually recognized in philosophy early in Enlightenment.

.b For an ETCI patent, the CAFC-/USPTO-interpretations – just as the classic/pre-*MBA* SPL-interpretation – know no notional refinement of its claim interpretation^[459/p.1] and hence no EcrCS. I.e. this equivalence statement then says:

None of these 3 statements need to be (meta)rational but may be metaphysical, i.e. not trustworthy alias “gap-equivalent”!!!

The ^{Olevel}DB-Searching’s deficiency is then unavoidably to be accepted – if proceeding as reported during the USPTO/PPAG meeting on 03.05.2018 at the USPTO^[472] (i.e. performing only O-level searches and not a clustering E-level search).

ANNEX_2: The FSTP-Test for 35 USC §§ 101/102/103/112

The upper 2 boxes show the FSTP-Test's claim interpretation (modeling in rational & mathematical KR the § 112 requirements^{7.a)} as interpreted by the CAFC in light of the Supreme Court's *Biosig* decision), whereas the lower 2 boxes show the FSTP-Test's claim construction (modeling in rational & mathematical KR the §§ 101/102/103 requirements^{a)b)c)} as interpreted by the Supreme Court's *KSR/Bilski/Mayo/Myriad/Alice* decisions), in all 4 cases supported by the needs of AI.

<p><ratCI ::= rational claim interpretation in: rational KR = post-MBA-KR = refined claiming KR^{rat} = FSTP KR^{rat}> input \wedge begin:</p> <p>ETCI is a set of 'O-crC0S^{mphys} ::= {O-crC0n ::= IDL-sentence, disclosed by O-MUIS0n^{mphys} ::= {n-IDL-sentences^{mphys}, 1 ≤ n ≤ N} \cup \cup A-crC0S^{mat} ::= {A-crC0n ::= IDL-sentence, disclosed by A-MUIS0n^{rat} ::= {n-IDL-sentences^{rat}, 1 ≤ n ≤ N} \cup \cup E-crC0S^{rat} ::= {E-inC0k \vee E-ninC0k ::= IDL-sentence, disclosed by E-MUIS0k^{rat} ::= {k-IDL-sentences^{rat}, 1 ≤ k ≤ K}.'</p> <p>1) if \forall{E-crC0nk \vee E-ncrC0nk} are lawfully disclosed – including its TT0 and E-cr^{Alice}C(s) – as???) then go on; 2) If $\{[A-crC0n = \bigwedge_{1 \leq k \leq K_n} (E-inC0nk \vee E-ninC0nk), \forall 1 \leq n \leq N \wedge \sum_{1 \leq n \leq N} K_n = K\}$ is enablingly disclosed as???) then go on; 3) If [COM(ETCI) is (E-definite \wedge E-complete \wedge uniquely_defined \wedge useful) as???) then go on;</p> <p style="text-align: right;">output COM(ETCI^{rat}) \wedge stop.</p>
<p><matCI ::= mat claim interpretation in: mathematical KR = post-MBA-KR = refined claiming KR^{mat} = FSTP KR^{rat}> input \wedge begin:</p> <p>ETCI is a set of 'O-crC0S^{mphys} ::= {O-crC0n = IDL-sentence, disclosed by O-MUIS0n^{mphys} ::= {n-IDL-sentences^{mphys}} \cup \cup A-crC0S^{mat} ::= {A-crC0n = IDL-sentence} disclosed by [A-MUIS0n = IDL-sentences^{rat}]' \cup \cup E-crC0S^{mat} ::= {E-inC0k \vee E-ninC0k = IDL-sentence disclosed by E-MUIS0n^{rat} ::= {k-IDL-sentences^{rat}, 1 ≤ k ≤ K} \cup \cup E-crC0S^{mat}_DEF ::= {E-inC0k \vee E-ninC0k axiomized mathematically by IDL-sentences^{math}, 1 ≤ k ≤ K}'.</p> <p>1) If \forall{E-crC0nk \vee E-ncrC0nk} are lawfully disclosed – including its TT0 and E-in^{Alice}C(s) – as???) then go on; 2) If $\{[A-crC0n = \bigwedge_{1 \leq k \leq K_n} (E-inC0nk \vee E-ninC0nk), \forall 1 \leq n \leq N \wedge \sum_{1 \leq n \leq N} K_n = K\}$ is enablingly disclosed as???) then go on; 3) If [COM(ETCI) is (E-definite \wedge E-complete \wedge uniquely_defined \wedge useful) as???) then go on;</p> <p style="text-align: right;">output COM(ETCI^{mat}) \wedge stop.</p>

<p>ratCC ::= input 'COM(ETCI)^{rat} \equiv O-/A-/E-inC0S' \wedge begin:</p> <p>4) if [COM(ETCI) comprises an nPE TT0 as???) then go on; 5) if [COM(ETCI) is an application of TT0's nature as???) then go on; 6) if [COM(ETCI) is significantly more than TT0 as???) then go on; 7) if [COM(ETCI) comprises only independent E-inC0nk as???) then go on; [input COM(RS)^{rat} \equiv O-/A-/E-inCnS, 1 ≤ n ≤ N] 8) if [COM(ETCI) has a definite A/N-Matrix over RS as???) then go on; 9) if [COM(ETCI) is of semantic height over RS is ($\geq 1/2 \geq 2$ if $AC^{1/2 \geq 2} \in RS$) as???) then go on;</p> <p>output 'COM(ETCI)^{rat} satisfies SPL' \wedge stop.</p>

<p>matCC ::= input 'COM(ETCI)^{mat} \equiv O-/A-/E-inC0S' \wedge begin:</p> <p>4) if [scope(E-crCS^{TT0}) $\neq \Phi$] then go on; 5) if $[(\bigcap_{TT0} \text{scope}(E-crCS^{ETCI}) \subseteq \bigcap (E-crCS^{TT0}))]$ then go on; 6) if $[(E-crCS^{Alice} \neq \Phi)]$ then go on; 7) if $[\forall \epsilon \{E-crC0nk \mid 1 \leq n \leq N \wedge 1 \leq k \leq K^n\}$ are independent of each other] then go on; [input COM(RS)^{mat} \equiv O-/A-/E-inCnS, 1 ≤ n ≤ N] 8) if $[\forall^{i,n,k} \exists \Delta^{i,n,k} ::= \text{if } (E-crCink = E-crC0nk) \text{ 'A' else 'N'}]$ then go on; 9) if $[\sum_{1 \leq n \leq N} (\min_{v \in \{1, \dots, \Delta^{i,n,1} = "N", \dots, \Delta^{i,n,K^n} = "N"}\}) \geq 2]$ then go on;</p> <p>output 'COM(ETCI)^{mat} satisfies SPL' \wedge stop.</p>
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One of the purposes of this repetition of the FSTP-Test is to show how it contributes, for an ETCI and a DB the economic transformation of the originally wild ^{Olevel}DB-search^{c)} by the DB's normation into the refined ^{FSTP}DB-search that construes in the DB searched all its prior art combinations of ^{DB}ETCIs^{3.f)} that formally anticipate the ETCI⁰'s N EcrC-clusters^{c)}. Qualitatively the ^{FSTP}DB-search eventually enables eliminating the gap, but also procedurally it has enormous potentials as enabling parallel processing to a degree hitherto unexpected.

^{7.a} to be met by any ETCI for its satisfying SPL – which the ^{FSTP}DB-search assumes, as it goes only for the 100% exhaust- and 100% hit-rates, whereby the latter by today's AI (i.e. math. semantics research) is resolvable only as explained in^{o)}.

^b its notation in the 4 boxes is presently still freestyle IDL, as the latter's detailed specification is determined only preliminarily – and hence may again be slightly modified. If a semantic modification is performed, this is explicitly indicated. E.g.: Above the E-crC0S^{rat/mat} has in the more recent ^{FSTP}DB-search the alias EcrCS, the elements of which are independent, rendering its line7-check superfluous (as it then goes into the line1-check).

^c This problem is much worse with ^{Olevel}DB-searches: These are unable to determine anything rationally.

The notion of ^{Olevel}DB-search¹ in the OAE-context is much better defined than its non-refined 'wild' meaning that is highly speculative^{3.b)}, i.e. is as such often not (meta)rationalizable in particular as additionally ignoring for ETCI⁰ the potential existence of several COM(ETCI⁰)s that are hardly detectable on the ETCI⁰'s coarse O-level (as known from 'ambiguous figures').