

The IEG's July 2015 Update & the 'Patent-Eligibility Granted/-ing, PEG' Test

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I. THE *MBA* FRAMEWORK AND THE MATURITY OF THIS IEG UPDATE^{1.a)}

This is a tutorial about: "The USPTO's •'Interim Eligibility Guidance, IEG' [235], the Supreme Court's •'Mayo/Biosig/Alice, *MBA*, framework', and the by it implied •retrospective&prospective PEG test".

This IEG Update shows a greatly improved understanding of the *MBA* framework. Yet, this understanding will rapidly develop and soon unfold much further reaching potentials²⁾ of the *MBA* framework's SPL semiotics^{3.a)} for ETCIs^{1.b)} – especially as to the misbelief the *MBA* framework implied, ETCIs were patent-eligible only if they are nonpreemptive^{1.c)}. This is, where the current IEG discussion of the whole patent community has deep shortcomings: It does not perceive the *MBA* framework as requiring to principally improve the future dealing with SPL precedents about ETCIs – and up-front to remove the big stumbling blocks barring broadly leveraging on the *MBA* framework's powerful rationale. Instead, this patent-eligibility discussion eclectically screens patent-eligibility decisions on a by-case basis, refraining from searching for a general patent-eligibility solution and ignoring the *MBA* framework's pertinent hints.

This reluctance of the IEG to support adjusting SPL precedents about ETCIs to the needs of emerging technologies – as the Supreme Court by *Mayo* clearly required as to the patent-eligibility problem – is socially comfortable, though it puts at stake the US economy's potentials in wealth creation by innovativity. Hence, this paper clarifies these IEG deficiencies the classical way^{3.b)}. Here it leads to the simple procedural PEG test. It completely resolves the really puzzling patent-eligibility problem for ETCIs exactly as the Supreme Court by the *MBA* framework requires, once and forever^{1.d)}. It therefore is of immediate practical usefulness – and hardly identifiable without SPL's rigorous mathematification [9].

This tutorial acquaints with the '*MBA* framework refined' SPL pragmatics³⁾, in principle adjusted by the Supreme Court to the needs of ETCIs and here shown to be indeed capable of solving their patent-eligibility problem^{4.a)} – thus complementing the IEG discussion. This adjustment so enables vastly improving any patent professional's efficiency in dealing with ETCIs and their patent-eligibility problem solution^{4.b)}.

^{*)} Many of the thoughts presented by this paper are stimulated by my excellently qualified coworkers during our endless discussions in the Berlin FSTP-Project, by – in alphabetical order – U. Diaz, T. Hofmann, L. Hunger, D. Schoenberg, J. Schulze, J. Wang, B. Wegner, R. Wetzler.

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- ¹ .a The term "*MBA* framework" is an abbreviation for the Supreme Court's line of unanimous 'SPL decisions' between *Markman* and *Teva*. These *MBA* framework requirements are to be met by ETCIs just as by ETCIs ('Classic Technology Claimed Inventions' resp. 'Emerging Technology Claimed Inventions') for their satisfying 'Substantive Patent Law, SPL', which is verified by these ETCIs/ETCIs passing their SPL tests^{1.b)}.
- .b The acronym 'CTCI' is often omitted, in the future, as the issues discussed here are better exposed by ETCIs – though they apply to CTCIs^{1.a)}, too.
- .c – being a nightmare to any vastly innovations and hence patents depending enterprise.
- .d – not only retrospectively but also prospectively, i.e. 'continuations-proof', hence much further reaching than ever expected.
- ² as indicated in [9,237] with regard to not only an invention alias 'Technical Teaching, TT0', but – by *Alice* – also its patent-(non) eligible 'subject matter <TT0,A>', A being an application of TT0 – here often called ETCI – often omitting the "A" in other notions/abbreviations (if so not causing confusion).
- ³ .a A 'term' is an arbitrary 'identifier' alias 'name' alias 'acronym'. A pair <term>, its 'meaning' is called 'notion', denoted by its name. A notion's meaning, associated to its term/name (based on the latter's preceding 'lexical' and 'syntax' analysis), is called its 'semantics' – and if refined for an application's needs is called 'pragmatics'. Making/Creating/Defining meaning/semantics/pragmatics is called 'semiotics'.
- The *MBA* framework performs 'SPL semiotics' for ETCIs, i.e. defines the post-*MBA* – alias refined – SPL pragmatics^{13.b)}.
- .b This way is recognizable, in hindsight over the millennia, as taking all areas of knowledge since ever to their eventual 'rationality creating' processes. In particular: Important socioeconomic truths based on exact knowledge always are finally broadly accepted by society – even if very slowly (here due to strong impacts by other ones of the above mentioned various difficulties).
- ⁴ .a In conjunction with the below elaborations, it enables clarifying by [245, 251,237] recent CAFC decisions and alike IEG statements [247-250].
- .b – in particular by using the capabilities of FSTP-Technology. For the acronym 'FSTP' see the FSTP Reference List by the end of this paper.

II. SURVEY ABOUT THIS PAPER

As compared to the IEG's preceding guidelines concerning the patent-eligibility problem, the current 'USPTO's July 2015 Update' achieves for this problem's constituents a whole series of valuable clarifications. In total, it represents both: ●The USPTO's confirmation and efforts to implement into its examination business new procedures, which would meet the requirements stated by the Supreme Court's *MBA* framework as to testing ETCIs for their meeting 35 USC SPL, as well as ●various serious difficulties that the USPTO encounters, and with it the whole 'patent community' [247], in fully unfolding the far reaching potentials of the *MBA* framework as to SPL testing of ETCIs.

Of these various difficulties, this paper disregards the hardly predictable as short-term ones and instead focuses on the deterministically predictable mid-term IEG evolvement – warranted by SPL precedents about ETCIs being based on mathematically well-defined axioms implied by the Supreme Court's interpretation^{1.a)} of 35 USC SPL [9,237,241], as history shows^{3.b)}.

This deterministically foreseeable IEG evolvement has to and will overcome the 3 basic deficiencies of the current IEG discussion – all three contradicting the *MBA* framework. These are that the IEG 1.) is based on the current use of the BRIPTO, 2.) refrains from describing ETCIs by their inventive concepts, and 3.) ignores ETCI patent holder's preemptivity control requirements (and robustness requirements, skipped here) evidently needed by all economies depending on investments into long lasting high risk ETCI developments – as not needing only a 'retrospective patent-eligibility granted' test of ETCI patents, but also a 'prospective patent-eligibility granting' test for dependably designing/drafting ETCIs' patents of 'continuations-proof' patent-eligibility, to which granting patent-eligibility is enabled by controlling their ETCIs' preemptivity. Thereby the deficiencies 1.) and 2.) are not of merely notional importance, as the clarification of deficiency 3.) – commercially quite evidently being of fundamental significance – requires up-front notionally clarifying the issues 1.) and 2.) and depends on this result. Hence, all 3 deficiencies massively impact on the US innovation economies.

The Sections III-VI explain, why these 3 deficiencies 1.)-3.) of the IEG are due to its not knowing about the SPL's notional use hierarchy, as seen by the *MBA* framework – anyway blocking the understanding of testing ETCIs for their patent-eligibility, as required by the Supreme Court's *MBA* framework.

Its Section III hence explains, by a toy patent's invention, this 'notional use hierarchy' [122] between these 3 deficiencies caused by the *MBA* framework, hitherto unnoticed by the patent community: As the toy patent's TT0 specification (in III) must – by *Alice* – comprise its application²⁾, it implicitly uses, i.e. notionally depends on, the two notions '(refined²⁾) claim interpretation & construction', hence clarified in IV. These two notions in turn use (i.e. notionally depend on) the notion of 'inventive concept', hence clarified in V. On top of these notional clarifications, the clarification of the notion of ETCIs' 'patent-eligibility' is possible (in VI), too – evidently notionally depending on these preceding notions' clarifications.

These dependencies between the 4 notional layers of the 'notional use hierarchy' [122] that the *MBA* framework implied, after the free style relation between them – 'refined claim interpretation', 'refined claim construction', 'inventive concept', and 'patent-eligibility' – shows: It logically is impossible to clarify the total meaning of one of them, unless the total meaning^{3.a)} is clarified of any notion used by it.

III. A TOY PATENT SHOWING THE NOTIONAL HIERARCHY OF THE *MBA* FRAMEWORK

This toy patent's discussion is broader than that in [241], as it considers also applications A for the toy patent's invention TT0, as the Supreme Court's *Alice* decision requires, i.e. assumes familiarity with its *MBA* framework just as with the patent community's today's uncertainty about it. Its purpose is to create awareness of the above 3 main intellectual gaps in further developing the understanding of the patent-eligibility problem the IEG today presents and how these are interrelated – and that the *MBA* framework clearly indicates how to overcome them. It starts from reemphasizing²⁾:

An 'ETCI' alias its patent-(non)eligible 'subject matter' denotes a pair <TT0,A>^{5.a)}.

The *Alice* decision clearly implies this definition of the meaning of this popular term 'subject matter'.

III.1: The Toy Patent's Specification – Disclosing its Invention TT0 and its Application A

As to TT0, this specification discloses a communications connection ("CC"), a data transfer from CC's entry device to CC's exit device – whereby this data transfer's originator & recipient are 'communicating' with, not 'data exchanging' between each other – and, by its claim's wording, that this transfer

- (1) starts over a packet switching network, the delay times of which^{5.b)} are monitored
 - (a) by one of the monitoring techniques known by the pposc^{5.b)}, resp.^{5.c)}
 - (b) by some novel substance embodying a natural phenomenon,
 in both cases issuing a signal to change-over with this data transfer to a "delay time free" line switching network (e.g. ISDN/PSTN), as soon as a given threshold for this data transfer's delay is exceeded somewhere in the CC,
- (2) for application in
 - (c) a telephone call, resp.^{5.c)}
 - (d) a music or video live transmission.

The specification additionally discloses how to implement this modification of the CC's data transfer such that it always provides this low delay service to this telephony application by operations known to the pposc, that this invented data transfer's delay is "permanently ≤ 0.5 s". It clearly identifies this invented data transfer, with its new kind of change-over for use in a telephony application, as being the subject matter (to be) patented – while this claim's wording does not explicitly repeat a delay time limit of ≤ 0.5 s. The specification even nowhere claims TT0's usefulness for life music/video transmission^{5.b)}.

This wording of the toy specification intended for the pposc – for his/her interpretation of the wording of this specification/claim and for its comparison of this interpretation's results to prior art – got here to be evaluated with regard to this toy subject matters' being preemptive resp. patent-(non)eligible. This is the purpose of this toy patent and its discussion.

⁵ .a More precisely: An ETCI refers to a subject matter, identified by <TT0_name,A _name>, a notional subtlety not required, here, but to be kept in mind.
 .b The pposc (= 'person of pertinent ordinary skill and creativity') knows: It is inherent to +)TT0's packet switching technology that its delay times are deterministically "unpredictable", to +)the application A='telephony' that it is useless, as known since the mid 20s, if TT0's delay times exceed 0.5 [s], and hence no longer patent-eligible, and to +) the application A='music/video live transmission' that its delay times must be ≤ 0.01 [s].
 .c Of the pairs (a)/(b) and (c)/(d) a real claim's wording may comprise only one of their alternatives – which is ignored in this toy patent specification.
 .d An ETCI's alias subject matter's patent-noneligible one or more inCs may be comprised by its TT0, or by its A, or by pairing them.
 .e In this toy patent's subject matter the 2 inCs model its 2 invention's 2 'communications connections', CC, whereby by the ISO/OSI Reference Model [246] a communications connection exists between two partners as soon one knows the other's address, in its 'set-up' phase by its data transfer connects the caller's dialing device to the callee's alarm device and has it ringing, and after completing its set-up by its data transfer connects the speaker's microphone to the listener's loudspeaker. In principle both inCs model natural phenomena. In-depth technical/psychological considerations would namely show: they both embody natural phenomena \equiv 'transcendental' items [237]. This also holds for the 2 inCs in the *KSR* patent modelling its invention's 'human body', HB, resp. its application's usual 'car driving', CD (here both inCs even trivially embody natural phenomena/transcendent items)^{6.a)10.a)}.

III.2: The Toy Patent's <TT0,A> Seen as CTCI or ETCL – and its {inCs} as Patent-(Non)Eligible

Whether a TT0, taken as such, is part of a CTCL or an ETCL is immaterial: Everything presented here applies to both kinds of subject matters^{1.a)}, as the *MBA* framework applies to all patent(application)s.

Yet, testing ETCLs for satisfying SPL will often be intellectually much more demanding than such tests of CTCLs – due to their subject matters' comprising inCs exempted from patent-eligibility^{5.d)5.e)}. The IEG can't address the related questions, as it ignores inCs – why they are clarified here, next.

Subject matters – even if based on their TT0s' inCs not precisely defined^{5.e)} – may per se be sufficiently clear for undoubtedly deciding that they meet all SPL requirements, thus rendering them as a “CTCL”⁶⁾.

This does not apply to a subject matter modeled by an inC ‘**directed to**’ exemption from patent-eligibility as being preemptive^{10.a)} – see below – be it a natural phenomenon inC (e.g. in *Mayo* a ‘morbus C reducing’ or in *Myriad* a ‘BRCA indicating’ property)^{1.a)} or merely an abstract idea inC (e.g. in *Alice* a ‘transaction settling’ property). Such an inC and its subject matter imperatively need precise definitions (non-mathematical or mathematical ones) by models [237] enabling defining them notionally exactly^{7.b)}, e.g. its being a ‘drug’, or a ‘genome segment’^{7.a)} – rendering it as an “ETCL”. Testing such subject matter for SPL satisfaction without such precise-/exactness would cause inconsistencies in their SPL precedents.

Finally, also for the above patent-eligible subject matters rendered as CTCLs, one must be aware that for the TT0s they are based on, also ‘high demand’ applications may exist⁶⁾ such that they imperatively need a precise analysis – thus rendering their subject matters as patent-eligible ETCLs.

Exemplary applications are: ACC^{HD} is a communications connection guaranteeing delay times < 0.01 s, and a human body performing race car driving, ACD^{HD.5.e)7.c)7.d)} What is evident, here: A subject matter's ●)being a CTCL or an ETCL is vastly depending on the application(s) its specification discloses for it (indeed defining the scope of an invention/TT0 independent of its application disclosed by its specification is often totally impossible [237]), ●)patent-eligibility then holds also for all applications of higher complexity than the disclosed one, and ●)patent-eligibility is necessary but not sufficient for its novelty/nonobviousness, which – depending on its TT0 – may be established only by its application A.

Finally, this discussion showed that the meaning of the above term “**directed to**” per se is indefinable, as it depends, in a subject matter's test for satisfying SPL, on the grain of notional resolution to be used, as determined by the pposc (usually based on its capability to recognize the subject matter's ‘enablement’ by its disclosures): The finer the grain, the higher the likeliness that this subject matter's notions must expose some transcendent component involved in making-it up – i.e., making it an ETCL^{7.d)}.

⁶ This happened/-s in very many patents by ignoring e.g. ‘natural phenomena/transcendent inCs’ in their subject matters – i.e. alleging these comprised nothing transcendental^{5.e)10.a)}. This is principally incorrect as erroneously assuming exact knowledge, e.g. Physics/Chemistry/Engineering/..., were fully understood or only understandable [237]. Yet, this ignoring them practically enables massive simplifications without creating uncertainties as they arise with ETCLs today. Such subject matters often need no notional resolution that fine as necessarily applied here for getting under control the hitherto confuse ETCLs' SPL satisfaction testing – they then are taken as comprising no transcendental inCs, i.e. their <TT0,A> as patent-eligible a priori [237].

⁷ **a** In *Mayo* the question is, whether ‘administering’ a medical drug is part of the notion ‘drug’. If so – as rationality sees it – then this *Mayo* ETCL comprises no ‘application’ of this *Mayo* invention/TT0 of ‘morbus C reducing’, to be modeled by a natural phenomenon inC. The same holds in *Myriad*: If ‘isolating’ a genome segment (identified by the *Myriad* specification) today is part of this notion ‘genome segment’ – as rationality sees it – then also this *Myriad* ETCL comprises no ‘application’ of this *Myriad* invention/TT0 of ‘BRCA indication’, to be modeled by a natural phenomenon inC, too.

b For identifying and/or eliminating such questions from a subject matter's SPL test – thus making SPL precedents about ETCLs consistent – the Supreme Court unconditionally prescribes how to proceed: By its clear requirement statements constituting its *MBA* framework. Infringement questions are not considered, here, but unquestionably answering them would evidently be greatly facilitated by applying this SPL notional resolution also there.

c For^{5.e)} also applications ACC^{LC} and ACD^{LC} may exist of complexities so low, that they don't transform their patent-noneligible TT0s into patent-eligibility – e.g. an ACC^{LC} having the CC going to an IVR accepting any delays, resp. an ACD^{LC} if its AHB^{LC} is limited to driving a wooden toy car.

d **The important result:** By the *MBA* framework a patent-noneligible CTCL may be transformed by a nonpreemptive E-inC – involved in making it up, and disclosed by a depending claim or for the pposc by routinely increasing its notional resolution for checking its enablement – into a patent-eligible ETCL. This is very good news for patent applicants/holders the subject matters of which have been found patent-noneligible by some authority (see VI).

III.3: A Patent's 3 Claim Interpretations, the FSTP-Test, and Patent-Eligibility

[241] presented: The patent community is currently haunted by a looming schism between ●the powerful USPTO practicing its BRI^{PTO} and ●courts practicing the BRI^{PHI} of the precedential *Phillips* decision (for many ETCIs much tighter than the BRI^{PTO}). CAFC boards ignore its own BRI^{PHI} for practicing the BRI^{PTO} and completely ignore the BRI^{MBA} (for many ETCIs much tighter than the BRI^{PHI}⁸).

Occasionally using the toy patent, Sections III.3.a/b recapitulate all three BRIs and the FSTP-Test from [241]; III.3.c then outlines how the BRI^{MBA} enables solving the ETCIs' patent-eligibility problem.

III.3.a: BRI^{PTO}/BRI^{PHI}/BRI^{MBA} The BRI^{PTO} – of the invention's specification regarding almost only the claim's wording – concludes: As it quotes no limitation for the invention's delay time, the toy patent is anticipated by the state of the art. The BRI^{PHI} – imperatively starting from the specification's part(s) describing the invention – finds that the invention's specification imposes on its delay time the limitation "permanently ≤ 0.5 sec", i.e. excludes the "unpredictable" delay as contradicting the invention, thus rendering the toy patent patentable. I.e.: The BRI^{PTO} and BRI^{PHI} determine COM^{PTO} ≠ COM^{PHI} – the first one definitively contradicting the *MBA* framework, and the COM^{PHI} here incidentally = COM^{MBA}.

III.3.b: The 3 BRIs and the FSTP-Test The BRI^{PTO} is for the classical claim construction interwoven solely with part of the FSTP-test1, the BRI^{PHI} additionally with its test2. As explained in [241], the BRI^{MBA} is mandatorily refining both classical claim interpretations, and for the refined claim construction completely&tightly interwoven with its test1-9 for meeting all requirements stated by §§101/102/103/112.

Important thereby: For any subject matter <TT0,A>, its BRI^{PTO}/BRI^{PHI} based claim construction considers only its TT0 and totally ignores its application A, solely the BRI^{MBA} limits the use of its TT0 to its A.

The FSTP-Test, after started by its user, stepwise prompts it for inputting the given subject matter information:		
■	\forall ATTO-elements $X0n, 1 \leq n \leq N \wedge \forall A\text{-in}C0n^{9.c), 1 \leq n \leq N \wedge \forall E\text{-in}C0kn^{9.c), 1 \leq kn \leq Kn, 1 \leq n \leq N, K ::= \sum_{1 \leq n \leq N} K^n$;	
■	if RS >0: \forall TTi-elements $X^*in, 1 \leq n \leq N \wedge \forall A\text{-in}C^*in, 1 \leq n \leq N \wedge \forall E\text{-in}C^*ikn, 1 \leq kn \leq Kn, 1 \leq n \leq N \forall 1 \leq i \leq i$;	
■	\forall justifications (provided by the resp. ET pposc, where necessary by a resp. ET expert);	
1)	(a) A-COMA(ATTO) ::= AC ::= {(X0n,A-crC0n) $\forall 1 \leq n \leq N$ }, the N A-crC0n describing the whole subject matter and E-COM(ATTO) ::= AC = C ::= {E-crC0kn $1 \leq n \leq N \wedge 1 \leq kn \leq Kn$: A-crC0n= $\wedge 1 \leq kn \leq Kn$ E-crC0kn} ;	
	(b) justof $\forall 1 \leq n \leq N$:	A-crC0n is definite over posc \wedge AC vaguely (↓)/ exactly (↑) describes <TT0,A>;
	(c) justof $\forall ACUC$:	A-crC0n = $\wedge 1 \leq kn \leq Kn$ E-crC0kn (leaving aside the non-creative concepts);
	(d) justof $\forall ACUC$:	<u>Biosig-test</u> passed: E-crC0kn \wedge A-crC0n ∇ posc;

2)	justof $\forall ACUC$:	C-Lawful-Disclosure-test passed: $\forall \in C$ are lawfully disclosed;
3)	justof $\forall ACUC$:	C-Enabling-test passed: C's implementability is lawfully disclosed;
4)	justof $\forall ACUC$:	<u>Mayo-Myriad-test</u> passed: \forall natural law E-crC0kn's are identified;
5)	justof $\forall ACUC$:	<u>Biiski-test</u> passed: <TT0, Φ > is unlimited preemptive ^{10.a)15.b)} (if app.);
6)	justof $\forall ACUC$:	<u>Alice-test</u> passed: <TT0,A> is patent-eligible ^{10.d)15.b)} (if applicable);

7)	justof $\forall C$:	C-Independence-test passed: $A.NP_{\underline{g}}$ is independent ^{15.b)} (if applicable);
8)	justof $\forall C$:	<u>KSR-test</u> passed: E-crCikn ∇ E-crC0kn;
9)	justof $\forall C$:	<u>Graham-test</u> passed: TT0 is patentable, as $Q^{pmgp} > 0$ over RS.

FIG 1: The FSTP-Test – Checking a TT0 for its Meeting ALL 9 Requirements Stated by USC 35 §§ 101/102/103/112

Legend: The horizontal dashed line separates a TT0's refined claim interpretation (above it) from its refined claim construction (below it), the latter ending at the horizontal double line (terminating any iterative loop in case of $\{ \{ \forall COMs \} \} > 1$). This clear interplay of an ETCI's refined claim interpretation with its refined claim construction has nowhere ever been shown before.

For more information about the FSTP-Test – much of it absolutely nontrivial – see [241,237,142].

I.e.: The *MBA* framework requires considering the ‘**subject matter as a whole**’ when testing it for satisfying SPL^{8.a)}, i.e. extends the “generative set, GS(TT0)”⁹⁾ of inCs of ETCI’s TT0 by the inCs of its application A, making it the ^AGS(ETCI) of this whole subject matter – i.e. by expanding the BRIMBA of this ETCI accordingly and its FSTP-Test (for its refined claim construction) by leading indexes “A”, for brevity here showing A only on the first FSTP-Test’s items – and for remembering A in its results.

III.3.c: BRIMBA/FSTP-Test & patent-eligibility If this toy subject matter’s monitoring&signaling is performed by an inC exempted from patent-eligibility (see III.1), the *MBA* framework by its BRIMBA & refined claim construction imposes a new patent-eligibility limitation on it, that comes down to requiring that A adds to TT0 a nonpreemptive^{10.a)} inC (as VI.1 explains in detail). The *MBA* framework thus implicitly answers already the two key questions: “1.), what makes-up a subject matter being patent-eligible and -noneligible”? and “2.), how may a patent-noneligible^{8.b)} TT0 be transformed by an A into a patent-eligible^{8.b)} subject matter, which is ‘**significantly more**’¹⁷⁾ and ‘**preserves some preemptivity**’^{10.b)}?”

Additionally, an ETCI’s patent-eligibility holds, by its appropriate specification, also for ETCI’s continued version, not only for the present one^{8.c)}. The by the *MBA* framework implied proceeding for achieving this advantage is to use ETCI’s specification – potentially reflected already by its claim’s wording, ideally – for indicating by its inventor what its ETCI’s scope of protection by SPL is today and for the continuation. I.e.: By an ETCI’s such proper specification, its patent-eligibility would hold not only for the current ETCI, but also for its today’s disclosed future modifications^{10.c)}. (see VI.2)

⁸ **a** Given the *MBA* framework by the Supreme Court, by AIT the BRIMBA is the only reasonable claim interpretation.

b Since *Bilski*/the Supreme Court focuses § 101 on its “new and useful” requirement and therein on the notion “useful”, as its *Mayo* decision confirms.

c – due to the consistency of the SPL legislation that may be expected, in particular as to the *MBA* framework –

⁹ The term ‘Technical Teaching, TT0’ of a claim denotes its invention. The meaning of the term ‘invention’ depends, firstly, on the subject matter TT0 is part of, and secondly on the generative set, ^{TT0,A}GS^{9.c)}, describing it – whereby this application A and this ^AGS must be disclosed (for the pposc) by the patent specification comprising it. The reader must know whether an occurrence of ‘^ATT0’ denotes just ‘TT0’ or ‘TT0’s subject matter’, and vice versa^{9.b)}.

‘^ATT0’ is a ‘technical’ matter notion, as considering only this ETCI’s crCs. ‘ETCI resp. ETCI’ is an SPL notion as comprising the limitation of the use of its invention by its application and principally all crCs’ control by peer leCs (see V.2). Both notions are tested by the FSTP-Test for satisfying SPL^{9.a)}.

For simplicity, one may initially assume the SPL tested ETCI had only a single “**elementary realization tuple**, ERT(^ATT0)”, defined to be the K-tuple, the kth component of which then is the single element, “tse^k”, of the truth set^{14.a)} TS^k of s^k. An ETCI’s set of ERT(^ATT0)s is called “**ERTS(^ATT0)**” – in this simplification |ERTS|=1. An ETCI may also have only a single ‘interpretation’ alias C alias COM alias GS standing for ^ATT0’s “**generative set**” (as in FIG 1). Both meanings⁹⁾ are indispensable for exactness&preciseness^{13.a)} in what follows (e.g. fn^{10.a)}) and used in various ways, hence this variety of names^{9.a)}. The general case is |ERTS(^ATT0)|≥1 ∧ |COM(^ATT0)|≥1 ∧ |U^{COM}(^ATT0)ERTS(COM(^ATT0))|≥1.

‘COM’ was introduced by the Supreme Court’s *Alice* decision, assuming the subject matter ^ATT0 had a single COM only (understood as this subject matter’s unique set of E-inCs and their unique particular conjunctions, into which ^ATT0’s A-inCs are disaggregated, as shown by the FSTP-Test).

¹⁰ **a** What the *MBA* framework’s notion ‘preemptivity’ of an ETCI means, ought to be clearly understood: “**An ETCI is called preemptive iff it is hard to exclude that its specification comprises a today not thought of invention*/TT0***”⁹⁾ and for the future this exclusion is principally impossible.”

By this preemptivity definition evidently holds: If an ETCI’s TT0 is obvious today and in the future, then patenting it would make it preemptive.

Section VI clarifies the exact conditions for an ETCI’s preemptivity implying its patent-noneligibility – by separating its A-tied unlimited from its non-tied but limited preemptivity, as the *MBA* framework clearly suggests. Its here useless mathematical definition is provided in [9,208,217]. Now, first^{10.b)}, the simplification is assumed, any preemptivity is caused by one of ETCI’s K s^ks ::= E-crCs (see FIG 1) being a natural phenomenon or an abstract idea.

b For the toy subject matter the *MBA* framework implies: It is patent-eligible, as this subject matter’s preemptive and hence patent-noneligible TT0 (i.e., if a natural phenomenon causes signaling to perform the network change-over) is transformed by its ‘A’ (telephone call) using it – this use generates the inC^{Alice} enabling A to this transformation (see Section VI) – into a still preemptive but now patent-eligible ETCI. TT0 and its prevailing preemptivity thus namely are encapsulated into alias tied to this TT0’s application A (telephone call) – i.e. this TT0 is not protected by SPL if it is used either in the above (technically more demanding) live audio/video transmission or (technically less demanding) CC between an IVR system and its user. Thus, the toy subject matter’s inC^{Alice} ties its patent-noneligible invention/TT0 into its telephony A. This transformation also works for ETCIs with their invention’s patent-noneligibility being caused not by an unlimited preemptive inC^{10.a)}, but by ETCI’s lack of ‘novelty and usefulness’ or being an abstract idea (see VI.1/2).

c Thereby two different aspects are to be distinguished (the first one answering the above 2 questions):

- Today applying for or granting patent protection to an unlimited preemptive ETCI: The *MBA* framework implies – by AIT and common sense^{8.c)} – that this SPL granted & protected unlimited preemptivity of an invention is completely tied to this invention’s application as precisely disclosed by this subject matter’s specification, i.e. both together being described by ETCI’s GS(^ATT0) alias E-COM(^ATT0)⁹⁾. Thereby ERTS(^ATT0) denotes the today’s by the FSTP-Test fully approved subject matter’s scope of SPL protection [9,208].

- The BRIMBA/FSTP-Test may be applied in an appropriate expansion to future ^BTT0*s, enabling recognizing from the ^ATT0 specification what, at priority date already, has been anticipated by the patentee to belong to this subject matter’s scope of SPL protection. Evidently, such alleged anticipations by their disclosures in the subject matters’ specifications cannot be expanded deliberately. AIT and common sense suggest that such claimed – in the future by SPL to be protected subject matter – must be precise, i.e. based on ^BTT0* having passed already the whole FSTP-Test except its test3 (but including test9) – clearly to be shown by the patentee in its specification and/or by the examiners’ records.

d In total: The short-term clarification of the availability of such an *MBA* framework based ‘**patenteligibility granted/granting, PEG**’ test for ETCIs – see Section VI for its details – would be broadly welcome and immediately accepted as a viable ‘patent quality improvement’ measure, substantially incentivizing investments into “**PEG protected**” ETCIs. Launching it by today’s commonly known ‘patent continuation process’ (see VI.2) would greatly facilitate its introduction, whereby the clarification of this process may be performed by future versions of the IEG – thus further increasing IEG’s popularity.

IV. IEG's BRI^{PTO} CONTRADICTS THE *MBA* FRAMEWORK – NOT SO THE “REFINED BRI^{PTO}”

With the advent of ETCIs in SPL precedents, also ETCIs' preemptivity/patent-eligibility problem came along, insolubly interwoven with 'claim interpretation & construction' and questioning the BRI^{PTO}. Moreover, the whole patent community uses the terms/notions²⁾ 'claim interpretation' and 'claim construction' incredibly sloppily – and simply refuses to notice that the Supreme Court by its *MBA* framework implicitly and explicitly exerts several far reaching impacts on these two notions, as explained in detail by [241].

This Section hence refers the reader to [241], which meticulously shows the inevitable need of a 'refined claim interpretation' and 'refined claim construction', in particular for ETCIs' patent-eligibility tests.

While this Section doesn't summarize these absolutely fundamental elaborations from [241] – except its FIG 2 with the above quoted FSTP-Test (here: FIG 1) – it reemphasizes that

- the most massive impact of the *MBA* framework on these two terms/notions 'claim interpretation & claim construction' is that it **multiply** directly^{11.b)} bans the BRI^{PTO} (as currently described in [235]) from use in any legal business. While an examiner's PTO internal work on a patent application's ETCI is not at all affected by these multiple bans (one of them before has already been released, in 2005, by the CAFC's *Phillips* decision) – prior to finally patenting this ETCI or not – [241] shows that, also in any legal business, the BRI^{PTO} does not contradict the Supreme Court's *MBA* framework, if its use therein is refined appropriately, i.e. such that it effectively is the BRI^{MBA}.
- there is no such thing as an isolated 'patent-eligibility test' for all ETCIs. I.e., the FSTP-Test shows: Either an ETCI passes all tests for $1 \leq o \leq 6$ of the FSTP-Test – which significantly exceeds the scrutiny embodied by the BRI^{PTO} – and then it is patent-eligible, or it fails passing one of these 6 tests (no matter which one), and then the statement “ETCI is patent-(non)eligible” is definitively meaningless. Consequently, this ETCI's passing – in an examiner's PTO internal work – of the 'SUBJECT MATTER ELIGIBILITY TEST ...' or not (see the IEG page 9) must be seen as tentative and in any legal business meaningless, unless the term “refined” is inserted in front of its quoting the 'BRI' (as explained by the end of the preceding bullet point).

Finally: Even if the IEG tried to accept the “BRI^{MBA}” and the “refined claim interpretation&construction” – evidently expected by the Supreme Court^{11.a)} and now repeatedly asked for also by the USPTO [243,245,252] – this would remain impossible without an orderly introduction of a third key notion of the *MBA* framework, the “inventive concept(s)” of any ETCI. This lack would still disable the IEG's approach to the patent-eligibility problem from resolving it, leaving it notionally blurring and hence incomprehensible – while it is resolvable by the clear hints by the Supreme Court's *Alice* decision (see Section VI).

¹¹ .a JUSTICE BREYER [69]: “Different judges can have different interpretations. All you're getting is mine, ok? I think it's easy to say that Archimedes can't just go to a boat builder and say, apply my idea [of a law of boats' water displacement]. All right. Everybody agrees with that. But now we try to take that word “apply” and give content to it.

And what I suspect, in my opinion, Mayo did and *Bilski* and the other cases, is to sketch an outer shell of the content, hoping that the experts, you and the other lawyers and the CAFC, could fill in a little better than we had done the content of that shell. So far you're saying, well, this is close enough to Archimedes saying “apply it” that we needn't go further.”

Note the last sentence's criticism: The term “apply it” does need an appropriate refinement of Archimedes' water displacement semiotics being the “outer shell” of a new boat building technique – but hitherto there was nothing alike developed by the patent community and filled into this “outer shell”, being the set of new notions that the Supreme Court introduced by its line of unanimous decisions in *KSR/Bilski/Mayo/Myriad/Biosig/Alice*.

.b There is an indirect ban of the BRI^{PTO} by the *MBA* framework, too (neither mentioned in the tutorial [241] nor elaborated on in this one as patent practitioners not interesting as based on pure MAI [2]): The BRI^{PTO} is not at all precisely/exactly^{13.a)} definable! It namely uses the “all quantor” on the indefinable infinite set of all (always infinitely refinable) interpretations in natural language of an ETCI (explained in MAI detail in an earlier FSTP paper). By contrast, the *MBA* framework requires that an ETCI be specified by 'discrete' inCs, thus for it enabling only a finite ERTS(ETCI)^{9)14.a)}. I.e.: The BRI^{MBA} cannot remove this fundamental problem – but reduces it to (by the inCs defining this ETCI's ERTS) “controllable marginality”.

V. IEG's OMITTING "INVENTIVE CONCEPTS" CONTRADICTS THE *MBA* FRAMEWORK

This Section fixes the problem in [241] of only rudimentarily introducing the for the *MBA* framework fundamental notion of "inventive concept". As this paper is a tutorial, it leaves to [237] all philosophical and purely mathematical remarks that this key notion otherwise would require and deserve.

The patent community still considers this notion of 'inventive concept' as mysterious [247]: *Mayo/Alice* namely left its details open – as, in principle, it was known since long [2], how to precisely model any real-world issue (here: an invention) by its issue specific concepts (here: its inventive concepts). For presenting details, V.1 starts with outlining 5 aspects of 'inventive concepts', on which the *Mayo/Alice* framework requires to base an ETCI's SPL test. V.2 then outlines how such inCs are mathematized for preciseness and excluding misunderstandings – otherwise often unavoidable, as all ETCIs are invisible/intangible/fictional and therefore embody serious new SPL problems not existing with CTCIs^{12.a)}.

V.1: Inventive Concepts' Inherent Properties

The subsections V.1.a-e present that, for an ETCI, its inCs' semantics/pragmatics^{1.b)12.b)12.c)} inherently has certain SPL semiotics³⁾ properties – thus providing a basic overall understanding of all inCs.

V.1.a: An ETCI's 'inventive concepts' are nothing else but increments of its total inventivity, disclosed by the patent's specification and in total making-up this subject matter. An inventive concept hence needs not even be quoted by the claim's wording of an ETCI, if only the latter's specification im- or explicitly discloses its meaning and this wording comprises it (see the CAFC's *DDR* case [156,160]). This evidently finishes the evergreen nonsense that "limitations must not be imported into claims' wordings" – a rule anyway by many granted patents not obeyed, e.g. as by their ETCIs not realizable without rendering this wording incomprehensible as its total inventivity is made-up from many subtleties indispensably requiring detailed/elaborate descriptions [8].

Yet, a patent specification may disclose, for one of its ETCIs, one or several sets of inCs⁹⁾, each making-up this ETCI's whole inventivity, thus disclosing for this ETCI a single or finitely many different 'interpretations' – all of these being assumed to represent the same invention^{12.d)} [6,7,45, 142].

^{12.a} – why a CTCI's SPL test may get along without using this CTCI's inventive concepts. Semiotically hitherto many CTCI's SPL tests were so porous – e.g. due to using the BRI^{PTO} and moreover the classical claim construction (see FIG 1 in [241]) – that their use of inCs wouldn't make them meaningful.

^b The notion of semiotics³⁾ and its derivatives, such as semiotical and semiotic, may be used as a substantive in singular or plural, or as adverb, or as adjectives, in present/past/future, ..., no grammatical alias syntactical limitation exists, just as for the notion "meaning-making". Thereby "Semiotics in SPL" is not meaning "esoterics in SPL" [191], but exact and precise^{13.a)} improvement – by Kant & Analytic Philosophy [237] – of scientized 'SPL Metaphysics' based on the *MBA* framework. The latter is located in fundamental Mathematics (e.g. Arithmetic, Set Theory, Logic, ...) as SPL deals with Intellectual Property Rights, underlying Mathematics for supporting Natural Sciences (such as Analysis, Function Theory, Differential Equations, ...). Hence, the exact and precise^{13.a)} Pragmatics in SPL is located below the most fundamental Natural Science, Physics^{2.b)}.

In the US Wikipedia, Semiotics is outlined as AIT [2] focused on linguistic "meaning-making" in any area of semantics/pragmatics whatever, e.g. in the area of SPL precedents about ETCIs. Semiotics may be seen as the unnoticed giant not only in the evolvement of ETCIs' SPL precedents, but in all ET areas: While R&D investments are indispensable for creating ETCIs, sufficient such investments may be raised only by anticipating them semiotically.

This is brought to the point by Justice Breyer's "Archimedes metaphor"^{14.a)}. It invites to improving¹³⁾ the *MBA* framework of SPL (Metaphysics about ETCIs, located on top of the allegedly precise SPL Metaphysics about CTCIs) – just as "boat building" Metaphysics (referred to by this metaphor) has been improved to powerful naval technologies. The here discussed FSTP-Technology indeed achieved such improvements of the *MBA* framework's Metaphysics, especially by scientizing the Metaphysics of SPL precedents about ETCIs (comprising the respective CTCIs' based Metaphysics).

^c This meaning of an invention's "inventive concept(s)" was used in CTCIs' pre-Mayo SPL testing [117,234,248]. Yet, it allegedly was made superfluous by the simpler – but often just absurd (see Sections III/IV) – vastly "claims wordings' limitations based" interpretation of CTCIs' by the BRI^{PTO}.

^d Otherwise the ETCI is called "pathologic", probably not existing at all, especially not with ETCIs that are of FFOL over their independent thoughts creating them [142] – whereby a thus non-FFOL patented ETCI shouldn't exist either, both currently unknown^{13.c)14.a)}.

V.1.b: Next, an AIT [2] survey is provided about what the overall structure is of the preparatory analysis of a patent (application) that the *MBA* framework requires for enabling a dependable *MBA* framework based SPL test of an ETCI. Yet, the *MBA* framework's notions – especially of an ETCI's inventive concepts and its other groundbreaking *Mayo* semiotics³), by *Alice* confirmed [150,151] – are too coarse [5-7] for reasoning as precisely as required by the *MBA* framework. It itself nowhere is precise, but just indicates how to refine them by the patent community, as the Supreme Court asked repeatedly, implicitly by its above quoted decisions and even explicitly¹²).

The FSTP-test1 of FIG 1 checks, for any ETCI, the final steps of such a refinement, i.e. whether ETCI's alleged E-inCs are refinements of its alleged A-inCs. These final steps ideally are performed before the input to test1(a) is started, practically iteratively overlapping with it. These initial steps – before and/or in FSTP-test1, checking ETCI's inCs created already – take place on basically 3 levels of notional resolution: On the ETCI's notionally 'original, O'-level as the coarsest as totally informal one, on its 'abstract, A'-level notionally refined as semi-formal, and on the latter's notional refinement being the totally formal 'elementary, E'-level. Without getting aware of them, these 3 levels of notional resolution are passed everyday by everybody in any process of getting precise about anything.

Any O-/A-/E-level consists of initially plainly mental O-/A-/E-level statements. Thereby means the ●total informality of the O-level that it represents its one or several O-level statements as conjunctions of quotations from the ETCI's documented specification, any quotation being a set of its specification's original natural language wordings and graphics supporting them (hence the "O"), ●semi-formality of the A-level that it represents any O-level statement as technically and legally equivalent refinement into a resp. conjunction of one or several of A-level statements in a very simple natural language and therein put as formal binary predicates, ●total formality of the E-level that it represents any A-level statement as technically and legally equivalent refinement into a resp. conjunction of one or several elementary inCs alias E-inCs, modeling (mathematizably, see V.2) elementary alias E-level statements – hence the "E".

It is evident, that – for any practically existing ETCI –

- while FSTP-test1(a) prompts for inputting to it the (O-/A-/E-level statements, test1(b-d) prompt also for their justification under various aspects – today requiring clean thinking about these refinements;
- originally its O-level statements are pretty verbose and therefore somewhat vague (and hence here skipped), the A-level statements are less verbose and less vague (due to their binary predicate form, called 'abstract' for distinguishing these informal A-predicates from the mathematically defined/-able E-predicates, being potentially subject to further limitations, see V.2), while the E-level statements are of only 'also in Mathematics unavoidable verbosity' and therefore precise;
- after having exactly and precisely^{14.a)} determined ETCI's E-inCs^{9.c)} – which normally requires several iterations over all its O-/A-/E-level statements by repeating the below operational steps – also its A-inCs and even its O-inCs are precisely defined by them, though not necessarily unique but just isomorphic [7,64]. About an ETCI no such precise SPL knowledge exists prior to knowing its E-inCs.

After this declarative description of the structure alias outer shell¹²⁾ of all SPL knowledge about an ETCI embodied by all O-/A-/E-level statements about it, the next bullet points outline how this structure's content¹²⁾ is procedurally gained – as required by the Supreme Court's *MBA* framework (by Kantian thinking induced). I.e.: Gaining it got to be based on the mental instrument of “inventive concepts” (here and until V.2 ignoring the legal properties they also model):

- Initially: creating/finding/guessing its inventive concept(s) on the O-level is trivial, once the ETCI's specification exists – prior to its existence this multiply creative process is highly metaphysical but nevertheless supported by FSTP-Technology, as discussed elsewhere;
- Thereafter also is straightforward: deriving/guessing from this/these O-inC/s this ETCI's one or several A-inCs, all refining all O-inC/s, thus getting more precisely about the ETCI, by
 - first determining, of this subject matter, its notional ‘carrying pillars’, called the “**ETCI-element(s)**” of ETCI's pair <invention, application>^{5.b)} – these ETCI-element(s) are indicated by keywords in the ETCI's specification, remain the same also for its E-level, and separate its concerns – and
 - then “modeling” (alias precisely and exactly describing¹⁴⁾) the properties of any ETCI-element by using a restricted natural language, almost exclusively based on “**atomic**” notions only [238],
- Finally: deriving/guessing from this/these A-inC/s the always several E-inCs – any one representing only a single thought^{14.a)} [5-9], i.e. defined in a very restricted natural language exclusively based on atomic notions, thus getting totally precise about the ETCI^{13.d)}^{14.c)} – such that any A-inC is a ‘conjunction’ of E-inCs and potential E-Cs (whereby A/E-inC are ETCI specific, the missing “in” indicates that it is an ordinary concept, not inventive but known prior to the ETCI, and A-Cs are superfluous, as they are seen as parts of A-inCs, which must be made explicit only on the E-level).

This disaggregation of the ETCI's complexity by notionally ‘refining’ alias ‘layering’ [123] – of (usually compound) A-inCs into legally and logically equivalent conjunctions of E-inCs/E-Cs – is an ETCI modelling procedure. It (usually) requires a preceding such procedure by ‘separation of concerns’ [122], see FIG 1 [241]. Both these procedures are fundamental in System Design Technique [2,122]. They here are used for A-inC disaggregation, indispensable for most ETCIs. For such an ETCI to be tested under SPL, the complexity of the knowledge about it, modeled by its A-inCs, is opaque. I.e., for achieving the transparency of most ETCIs' A/E representations necessary for their logically systematic test under SPL, both procedures are imperative – but absolutely unknown to the patent community.

I.e., in determining an ETCI's ‘SPL properties’, applying these two uniquely powerful complexity reducing procedures – separation of its concerns [122] and layered refining its notions [123], directly leading to a COM^{9.c)} – is indispensable for dependably construing its refined claim interpretation & construction as required by the Supreme Court's *MBA* framework. And this to understand is equally impossible, as without applying also to it these two complexity reducing procedures [241], it is absolutely impossible to recognize that it indispensably needs the refined claim interpretation & construction for the ETCI at issue.

V.1.c: The Supreme Court's notion of "inventive concept" (required by *Mayo/Alice*) – used here for modeling inventions – is a rigorous simplification of the "AIT-concept" notion (not used here).

The latter is used, since the late 60s, for general purpose recursively aggregating compound concepts from more elementary (= "atomic") ones. Yet, both kinds of concepts serve the same basic purpose, though of opposite "polarities": Precisely describing how new compound concepts are to be aggregated from given elementary ones, resp. how given compound concepts are to be disaggregated into new elementary ones. inCs serve the latter purpose: for disaggregating given compound concepts (O&A-inCs) exactly^{13.a)} into 'conjunctions' of elementary ones (E-inCs and E-Cs), E-Cs being known and belonging to posc or prior art while E-inCs are new and do not belong to posc or prior art.

Thus, O-/A-/E-concepts facilitate modelling courts' SPL based decision making about ETCIs – by contrast to AIT-concepts, lacking this capability due to their today being too sophisticated mathematically.

V.1.d: *Alice's* "Combination" of a subject matter's A-inCs and E-inCs is an important issue^{9.c)}. Had the courts started, for any ETCI of the *MBA* framework its SPL test by its refined claim interpretation & construction – and thereby determined its COM(s) of inCs (by the FSTP-test1) – they would immediately have encountered the fundamental question: Does this COM at all correctly describe this ETCI's inventivity as disclosed for the pposc by its specification?¹³⁾ Checking this question up-front, hand-in-hand with construing ETCI's COM based refined claim construction [241], i.e. by the *BRI^{MBA}* would have avoided, in and between the courts involved in it, its unfortunate dissents. They were always due to the non-awareness of the exact and precise^{13.a)} scrutiny required for determining its COM(s).

V.1.e: The *MBA* framework hinted at another big chunk of Metaphysics to be scientized Kant's way: Determining the precise bounds for uniformly granting patents to all ETCIs. This uniformity rationale is indispensably needed for sustainably consistent interpretation of 35 USC § 101, in spite of the today 'unlimited preemptive' ETCIs, comprised by the inC category of natural phenomena and, broader, of abstract ideas, which 35 USC SPL must exempt from patent-eligibility as evidently violating Kant's "categorical imperative, CI" embodied by the US Constitution. Its *Alice* decision clearly hints at the logical way out from this only seemingly existing ethical dilemma: It requires granting patents only to ETCIs of controlled preemptivity and for this uniform control to use ETCI's own "inventive concept(s)".

For mathematically modelling these notions of "inC categories exempted from patent-eligibility" and of "inCs transforming a patent-noneligible invention into a patent-eligible subject matter applying this invention", three kinds of inCs must be distinguished – ordinary, 'improvement prone', and 'transformation warranting' ones – explained in detail in [237] and mathematized in [142].

^{13. a} "Exact" shall reemphasize that this determination must seamlessly represent the *MBA* framework (including its social/preemptivity aspect), "precise" that this determination must not stay within the vague pre-*MBA* SPL semantics, but take an ETCI's SPL test to the here described level of development and hence scrutiny, prior to this semiotic process just unthinkable by logical reasons. Both properties are indispensable only when dealing with ETCIs.

^b One could argue that none of these Supreme Court decisions explicitly requires the degree of preciseness/scrutiny as required here, for this high level SPL test of an ETCI. But this would mean forgetting about the *MBA* framework's striving for consistency in such precedents – about the social requirements the Supreme Court clearly stated in *Mayo* to be unconditionally met by its accordingly refined interpretation of 35 USC SPL. I.e.: The classic "materialistic only" SPL satisfiability tests (i.e. non-metaphysical in Kant's sense, i.e. ethics ignoring [237]) are deficient – by the *MBA* framework.

^c If the ETCI's specification doesn't disclose enough such 'only 1 thought representing' E-inCs, it is called "pathologic" and here not considered^{12.d)}^{14.a)}.

V.2: Inventive Concepts' Being and their Meta-Mathematical Definition

The mathematication of SPL – culturally a truly historical process, as hitherto no section of law has ever been mathematized – starts by the below meta-mathematical definition of the notion of inCs, as induced by the *Markman & MBA* framework decisions. The groundbreaking advantages coming along with this SPL scientification are overwhelming, first of all its enabling drafting absolutely robust ETCIs patents – being ‘unassailable by SPL’, if only exactly/precisely^{13.a)} described by their inCs. Section V.2 focuses on this start, i.e. vastly leaves preemptivity/patent-eligibility aspects of ETCIs and inCs to Section VI.

This exactness/preciseness of inCs is achieved by their following *MBA* framework based meta-mathematical definitions of the semantics³⁾ of all their E-inCs^{14.a)} (skipping ‘pragmatics’³⁾ in the future).

Any inC is a pair “<legal concept, leC’, ‘creative concept, crC’>” or shorter <leTS, crTS>, whereby:

- Any E-leC & E-leTS is ‘ETCI independent’, defined on top of the sole ‘SPL-model’ for all ETCIs, representing a justification as to one of the 9 stereotypical SPL-aspects/leTSes^{9),14.a)} (input by its user by a multiple-choice selection), and formally parameterized for ETCIs actual parameters.

While any E-leC is comprised by its E-leTS, an A-leTS often is too complex for supporting a verbal reasoning about an ETCI – being one of the objectives of the FSTP-Technology developed ^{9),14.a)}.

- Any E-crC is ETCI dependent and to be defined, on top of this specific E-crC’s “E-crC-model”, by the user of this ETCI’s FSTP-Test by defining this E-crC’s finite^{14.a)} “truth set, E-crTS” – which must be disclosed for the pposc by the ETCI’s specification (while no E-leTS needs to be disclosed) and is the same in all 9 FSTP-testo of this ETCI.

I.e.: crCs are often precisely definable only on the E-level of notional resolution, as the A-level does not meet the notional “atomicity” requirement and thus is mentally uncontrollable – and as a consequence also the A-level-predicates’ mathematical compounds [6,7,8,64,142].

By the truth sets of an A/E-inC’s pair < A/E-leTS, A/E-crTS > an A/E-inC is only ‘metaphysically’ defined, as today an A/E-leTS is not defined at all and the definition of its A/E-crTS is left to the reader’s intuition, as these TSes only are meta-mathematically defined by using intuitive notions of informal languages. This currently exceeds the public’s understanding of the preciseness ETCIs need – while any average AIT Compiler/Interpreter expert would immediately understand this requirement³⁾.

But, any E-crC is defined/-able also mathematically, after the model underlying it is so far clarified that its atomic E-notions are well-defined, on top of which its E-crTS then may easily be mathematically described in any formal predicate notation (as SPL and any hitherto encountered ETCI are of FFOL), and its E-leTS is trivially definable anyway – thus potentially enabling, finally, the A-inC’s comprehensible mathematical definitions, too.

^{14.a} This totally fundamental Kant-like insight “1 E-crC models 1 independent thought” and vice versa^{12.d)13.c)} – here put into FSTP language and significantly deepened – originates in the BGH’s *Gegenstandstraeger* decision (1996) in a CTCl’s nonobviousness case (after several quite similarly justified nonobviousness BGH decisions), which then went completely unnoticed by the patent community. More about this rationale is provided by [6,7,9,237].

Accordingly, any E-crTS is seen to be finite alias ‘discrete’^{11.b)}. This does not mean that the elements of a TS are finite sets only, but may consist e.g. of intervals of real numbers. The peer leTSes are trivially finite.

.b – as automatically translatable into SPL equivalent “Legal Argument Chain, LAC” for human perception in various presentations, here skipped.

VI. THE ‘PEG’ TEST EXHAUSTS THE *MBA* FRAMEWORK – RETRO- & PROSPECTIVELY

This Section shows: The exhaustive interpretation of the *MBA* framework enables ETCIs’ PEG test, in

- retrospective form checking it for its patent-eligibility by its preemptivity^{10.a)}, and in
- prospective form warranting the patent-eligibility of ETCI’s continuations by designing and drafting its specification controlled by its retrospective PEG test.

In total, Section VI shows, how to dependably achieve ETCI’s patent-eligibility and preserve it over ETCI’s continuations. This is what any on innovations depending enterprise urgently needs^{10.d)}.

The IEG alias patent community is not yet aware of this tight interrelation between preemptivity^{10.a)} and patent-eligibility, i.e. has an intellectual “**preemptivity white spot**” – due to its refraining too vastly from accepting the Supreme Court’s *MBA* framework, as explained by the preceding Sections of this paper.

Thus, it erroneously assumes there were a “missing link” in the *MBA* framework: The line that separates patent-eligible ETCIs of some limited preemptivity^{10.a)} (urgently needed by investors^{10.d)} and supported by social consensus, as by the Supreme Court’s *Mayo* decision clearly identified) from patent-noneligible as totally unlimited preemptive ETCIs (hence being socially intolerable by several strong reasons, see *Mayo*). But the *MBA* framework unquestionably does define this line – as clarified next.

While *Mayo/Alice* indeed solely tell that it is socioeconomically very problematic to grant patents to sweepingly preemptive ETCIs – thus causing their patent-eligibility problem – they both refrain from requiring to grant patents only to totally nonpreemptive ETCIs. Especially *Alice* clearly tells: “An unlimited preemptive TT0⁹⁾ may be transformed by an application A with an inventive concept into a patent-eligible subject matter <TT0,A> being **α)** substantially more and **β)** of limited preemptivity”.

By the rationale of Subsection V.1.e this mean that A and its inventive concept achieve this ETCI’s patent-eligibility iff <TT0,A>’s preemptivity **α’)** exemplifies a uniform necessary&sufficient condition **β’)** for its being limited to acceptability by tying all its unlimited preemptivity to A’s use of TT0. The conjunction of these “**two Alice requirements**” – **α)/α’)** and **β)/β’)**^{15.a)} – is refined such that it exposes, what exactly is its ‘uniform necessary & sufficient condition’ (for transforming an unlimited preemptive TT0 into a patent-eligible subject matter).

I.e., this refinement clarifies the above allegedly missing link in the Supreme Court’s *MBA* framework. It is solely hard to recognize, due to the hitherto non-clarified notion of preemptivity^{10.a)} – yet not missing.

^{15.a)} The below items (i)-(x) show that **α)∧β’)** enables the broadest *MBA* framework based criterion for achieving this transformation of an unlimited preemptive and hence patent-noneligible <TT0,Φ> into a patent-eligible <TT0,A> by granting patent protection to TT0’s unlimited preemptivity iff TT0 is applied in conjunction with A, whether used by A or not [122]. This may be seen as excluding A modifies TT0 (by overwriting one of its properties) – as then it is not TT0 that is transformed into subject matter <A,TT0>, but some TT0* from TT0 derived by A – yet otherwise nothing of the following changes.

b) “ε” stands for: “disclosed (by, e.g. specification of ETCI)”; ε is broader than “e” as comprising also implicit disclosures by the pposc – this ε and/or “(…)” being omitted where evident.

“s^k” stands for: “E-crC0k ε AC, 1≤k≤AK”; see FIG 1, the pposc taking: s^kε<TT0,A>C, whereby “A”≡“<TT0,A>”.

“i^{psk}” stands for: “s^k is an improvement prone i^{psk}εAC iff s^k is a natural phenomenon or abstract idea”; an i^{psk} (= A*i*^{psk} = <TT0,A>.i^{psk}) is called ‘preemptive’ as causing ETCI’s preemptivity^{10.a)}.

“ULIP_{s^k}/LIP_{s^k}/NP_{s^k}” stands for: “s^k is unlimited-/limited-/non-preemptive”; the meanings of the terms unlimited-/limited-/non-preemptive E-crCs are intuitively clear (see [9,208]), AK is > 0K and 0K’s indices “k” are the first 0K ones in 1≤k≤AK, and AAK ::= AK- 0K ≥ 1.

“A_{ULIP_{s^k}}/A_{LIP_{s^k}}/A_{NP_{s^k}}” stands for: “{∇s^kεAC being unlimited-/limited-/non-preemptive}”; i.e.: all 3 sets are disjoint and A_{ULIP_{s^k}} ∪ A_{LIP_{s^k}} ∪ A_{NP_{s^k}} = AC.

VI.1: The Retrospective PEG Test of an ETCI

The simple notions^{3)15.b)} perform this refinement of *Alice*'s – α/α') and β/β') – compound notion and thus facilitate showing exactly & precisely¹³⁾ what, for such an ETCI alias subject matter $\langle TT0, A \rangle$, by *Alice* this uniform necessary&sufficient condition is – explained in detail by the items (i)-(x), after showing its truth. Then this uniform necessary&sufficient condition for an ETCI alias subject matter $\langle TT0, A \rangle$ to be patent-eligible – although its $TT0$, i.e. its $\langle TT0, \Phi \rangle$, is unlimited preemptive – may be represented as:

“An ETCI alias subject matter $\langle TT0, A \rangle$, with $\langle TT0, \Phi \rangle$ patent-noneligible as unlimited preemptive, is by A transformed to patent-eligibility iff ETCI passes the FSTP-test1-5 \wedge $AC \setminus COM(\Phi TT0) \neq \Phi$ ”.

NOTE: This is the first truly objective *MBA* framework based criterion, whether some subject matter is patent-eligible or not! ^{16.a)}

Its truth is shown best by means of the key *Alice* notion of ‘inventive concept’ – implied by this criterion – which hence is clarified first.

DEFINITION: The notion of “**inventive *Alice* concept**, $TT0, A \text{ in } C^{Alice}$ ” is by the above criterion defined to be the set $AC \setminus COM(\Phi TT0)$ ^{16.a)}, which consists of \forall this transformation warranting “**elementary inventive *Alice* concept(s)**, $\langle TT0, A \rangle \text{ E-in } C^{Alice}$ ”.

The truth of the above criterion is easy to recognize by means of this notion of ‘inventive *Alice* concept’. Iff $TT0, A \text{ in } C^{Alice} \neq \Phi$ it implies: Any of its $E-TT0, A \text{ in } C^{Alice}$ s $::: A_s^k \in AC$ transforms this subject matter $\langle TT0, \Phi \rangle$ into a quantitative “more”, namely into $\langle TT0, \Phi \rangle \cup \{A_s^k\} \supset \langle TT0, \Phi \rangle$, as $A_s^k \notin COM(\Phi TT0)$.

Yet, the *Alice* decision’s requirement that this quantitative “more” of $\langle TT0, A \rangle$ – as logically $\langle TT0, \Phi \rangle \cup \{A_s^k\} \subseteq \langle TT0, A \rangle$ – also is a ‘**significantly more**’, tells: This criterion and its A_s^k must not only represent a purely quantitative but also a qualitative “more” property of the subject matter $\langle TT0, A \rangle$, as above explained by the two ‘*Alice* requirements’ (i.e. α/α') and β/β'). And these imply: The so understood also qualitative and hence ‘significantly more’ property of $\langle TT0, A \rangle$, is by *Alice* established by uniformly and objectively tying any unlimited preemptivity of $\langle TT0, A \rangle$ to this subject matter $\langle TT0, A \rangle$, i.e. by limiting the scope of patent protection for $\langle TT0, A \rangle$ ’s unlimited preemption(s) to $\langle TT0, A \rangle$ ’s scope.

And this quality – i.e. this limitation of granting patent protection only to $\langle TT0, A \rangle$ ’s unlimited preemption(s) and to no other $\langle TT0, B \rangle$ ’s unlimited preemption(s) if $B \neq A$ – is indeed established, as follows from assuming the contrary were true^{16.b)}.

^{16. a} The existence of this broadest objective & uniform criterion for a subject matter’s patent-eligibility consistent to the *MBA* framework evidently bars all the hitherto esoteric views on this issue and hopefully terminates all the accordingly nonsense decisions about it, complained of by virtually all innovations depending economies to the USPTO [252]. This hope is supported by the fact that this is the only the *MBA* framework exhausting such criterion.

^{.b} **Proof by Contradiction:** Preserving the simplification⁹⁾ in assuming the contrary means to assume: $\exists B \neq A : ERT(\wedge TT0) = ERT(\# TT0)$.

From this assumption and $AC \setminus COM(\Phi TT0)$ follows that holds $\bullet \wedge A^k = \wedge B^k \geq 1^{15.b)}$ and, further going, also holds $\bullet \wedge tse^k = \wedge tse^k \forall k \in [\Phi K + 1, \Phi K] = [\Phi K + 1, \Phi K]$. As this equality a priori holds for the first ΦK crCs, this evidently contradicts the assumption that \exists such a $B \neq A$. **q.e.d.**

The correctness proof – of the necessity & sufficiency w.l.o.g. of the above asserted condition for meeting the above identified ‘two *Alice* requirements’ – follows tightly the just presented rationale. It is nevertheless omitted here, from this tutorial, as being notionally slightly more complex, and also as today not yet really needed, due to all the patent community’s still practicing this simplification in analyzing ETCIs for their satisfying SPL.

The remarks (i)-(x) help grasping this necessary&sufficient condition for such an ETCI's patent-eligibility. For this condition – it is a declarative statement (i.e. nonprocedural, i.e. not immediately executable) of the *MBA* framework exhausting^{11.b)} and result determinative significance – namely holds: It

- (i) is indeed exhaustive, as imposing on an ETCI tested exactly the limitations that *Alice* imposes on it.
- (ii) is decidable [2] as composed of one or finitely many inCs, each being finite^{14.a)}
- (iii) is trivially to check also procedurally – once ETCI's $GS(\langle TT0, A \rangle)$ ⁹⁾ is determined and approved by FSTP-test1-5
- (iv) is met, if \exists a single whatsoever $E_{-TT0, A \text{ in } C^{Alice}}$, no matter whether $TT0, A \text{ in } C^{Alice} \setminus \{E_{-TT0, A \text{ in } C^{Alice}}\} \neq \Phi$.
- (v) is met by any ETCI with $GS(TT0) = \Phi$ if only $A \text{ in } C^{Alice} \neq \Phi$. This is the case in *DDR* and the toy ETCI: Its TT0s are obvious in both cases, but their specifications disclose an $\epsilon_{TT0, A \text{ in } C^{Alice}}$, each.
- (vi) is not met by an ETCI with $TT0, A \text{ in } C^{Alice} = \Phi$, as TT0 by its specification then cannot be disclosed to be composed from a simpler $TT0^*$ and an A^* with A^*C such that for $\langle TT0^*, A^* \rangle$ holds $TT0, A^* \text{ in } C^{Alice} \neq \Phi$ – as this would imply that already holds $TT0, A \text{ in } C^{Alice} \neq \Phi$, contradicting the precondition. This is the case in *Alice* due to its negligent specification of application A of the resp. patent (explained in earlier FSTP papers).
- (vii) may be tightened by adding a further restriction to this condition, e.g. that $A \cdot LP_{\underline{S}} = \Phi$. This tightened condition preserves its sufficiency but loses its necessity, i.e. evidently simplifies procedurally figuring out that an ETCI satisfies SPL – although would erroneously determine the contrary for other ETCIs, while this contrary would be wrong by *Alice* and the above criterion.
- (viii) may be relaxed, e.g. by setting $A \text{ in } C^{Alice} = \Phi$ if $|AC| \leq 2$, achieving a similar simplification as the one from (vii), but the opposite failure.
- (ix) may no longer be sufficiently powerful for an ETCI only 1 second after being granted its patent – though its patent-eligibility remains preserved – due to ETCI being made-up by means of a natural phenomenon $E\text{-cr}C$, for which during this 1 second became evident that its $E\text{-cr}TS$ must be expanded to comprise an additional element, for preserving its commercial appeal. If this expansion cannot be achieved, the original ETCI may be commercially seriously hampered.
- (x) is easily usable by the prospective PEG test, as indicated by (ix) and explained in Section VI.2 – as hitherto thought of never before by the patent community's patent-eligibility discussion, always focused on only ETCIs' retrospective patent-eligibility tests only. I.e.: Any innovations based enterprise definitively needs this absolutely dependable look-ahead capability of an ETCI's patent-eligibility test, as by the prospective PEG test provided.

Finally: At the first glance, this notion of an 'inventive *Alice* concept, $TT0, A \text{ in } C^{Alice}$ ' normally seems oversophisticated. Yet, at a second glance one would recognize that the trivialities of its mathematical representation – though for preciseness sake being unavoidable, as otherwise it were impossible to model exactly&precisely¹³⁾ the indispensable refinement¹¹⁾ of the *MBA* framework, in particular its extremely meaningful (see the next paragraph) tying an invention's/TT0's unlimited preemptivity to an application,

without unnecessarily restricting this subject matter's specific preemptivity – are misleadingly pretending an additional nonexistent sophistication. I.e., principally the *Alice* decision resolved the patent-eligibility problem in a straightforward way (if the 'mathematical frills' are ignored, indispensable for finding and communicating it precisely).

It remains to be seen, whether the patent community will take this way, i.e. will perceive the above conjunctive patent-eligibility criterion to be met by an ETCl, $\alpha \wedge \beta \equiv \alpha' \wedge \beta'$, as too limiting or as too relaxing. While it is ●)simple to relax this criterion, this would invite patent applications the SPL precedents about which necessarily were inconsistent, it is ●)challenging to tighten it and still achieve its vast acceptability and investment incentivivity. Consequently, this criterion will prevail as it is, by all likelihood.

Note finally: The objective PEG test's decision about an ETCl being patent-eligible – uniform across all areas of emerging technologies – is by the *MBA* framework totally based on this ETCl's preemptivity properties. Vastly dropping preemptivity as the basis for this patent-eligibility decision would again raise the question, what the rationale should be to uniformly and objectively base it on. And vastly dropping the uniformity and objectivity requirement as to ETCl's SPL precedents is multiply excluded by the Supreme Court's *MBA* framework.

VI.2: The Prospective PEG-Test of an ETCl

After the retrospective 'patent-eligibility granted' test of an ETCl in Section VI.1, now the prospective 'patent-eligibility granting' test of an ETCl is developed, i.e. the PEG test warranting that – once patent-eligibility has been granted to its ETCl's patent (application) and its specification – it will be granted also to its continuations, as usual to be based on disclosures comprised by its specification.

The prospective PEG test is designed to work for all foreseen continuations of the ETCl's patent, i.e. disclosed by its specification^{17.a)}. Specific simple classes of continuations are briefly identified by the next sentences for outlining how to proceed in a general continuation: The prospective PEG test may e.g. leverage on the fact that, for an ETCl = <TT0,A>, in the specification of its patent (application) the disclosures of 'its currently unused E-inCs of A' [251] usually are designable/editable to some extent independently of the disclosures of its TT0's E-inCs, and vice versa^{15.a)}. To this extent, this simplifies representing ETCl's above necessary and sufficient patent-eligibility condition, especially its $A_{inC}^{Alice} \neq \emptyset$, such that it depends only on A's or only on TT0's or on only both kinds of disclosures in this specification.

¹⁷ .a A continuation's specification may be augmented for clarification, obeying the known restrictions (see the toy spec) – here not elaborated on^{17.d)}.

.b Thus, any occurrence of a leading index "A" in FIG 1 and in the sequel may be replaced by any $B \in \underline{A}$.

.c Achievable by accordingly designing B and editing its disclosure in this subject matter ¹⁷⁾TT0's specification such that its inC^{Alice} is $\neq \emptyset$.

.d The prospective PEG test enables designing an infinite variety of patent-eligible potential continuations by drafting different complexities and/or variations of the specification of an ETCl's patent application^{17.a)} such that they already envision these continuations (see the toy specification and its 'novel substance').

By contrast to the retrospective PEG test problem (having a single A only defined by one/several inC(s) and hence being of FFOL), the prospective PEG test problem is not a finite problem (as just stated) and its infiniteness may not be marginalized (due to the infiniteness of \underline{A}) as that above^{11.b)} of the original ETCl. Consequently, it is not exhaustive and hence has no finite sequencing – though by the just mentioned admissibility of a high variety/complexity, it is extremely powerful.

Designing/Drafting a specification's disclosures in this hitherto unused way – such that by them the above necessary and sufficient condition may be met by a later continuation – establishes the fundament for the usefulness of the prospective 'patent-eligibility granting, PEG' test^{17.d)}, evidently being procedural.

To this end, again a further refinement^{15.b)} – here of the notion of an ETCI's specification – is performed:

" \underline{RA} " stands for: "**A's equivalence class, $E_{\underline{A}}$** – defined by requiring that \underline{AC} is the same $\forall B \in E_{\underline{A}}$, i.e. $\underline{AC} \subseteq \underline{BC}$ and $\underline{BC} \setminus \underline{AC}$ is irrelevant^{17.b)} – reduced to \underline{RA} by excluding any $B \in E_{\underline{A}}$, unless the specification firstly discloses B (which would be verified for B by its meeting the retrospective PEG test, except its test3) and secondly explains that and why its subject matter $\langle \underline{TT0}, B \rangle$ is useful^{17.c)}".

If an ETCI specification is so^{17.d)} drafted, ETCI's continuation would not again raise its SPL satisfaction up-to/including its patent-eligibility FSTP-test6 (see FIG 1) – otherwise usually occurring – except test3.

The "**Patent-Eligibility Granting**" test alias "**prospective PEG**' test, warrants the patent-eligibility for any continuation of a patent-eligible ETCI = $\langle \underline{TT0}, A \rangle$ with patent-noneligible $\underline{TT0}$ iff ETCI's specification is designed/drafted such that $\forall \langle \underline{TT0}^*, B \rangle$ it discloses also holds: $B \in \underline{RA} \wedge \langle \underline{TT0}^*, B \rangle \in C_{\text{Alice}} \neq \emptyset$.

FIG 2: The "Patent-Eligibility Granting, PEG"-Test

In total, the intended advantage enabled by the PEG test ought to be: It should unfold all only possible SPL potentials in favor of supporting generating and protecting ETCIs, which depend on strong funding as being of long term & high risk nature. The pace of such ETCIs' broadening their penetration into e.g. all areas of the life-cycle as widely understood by emerging technologies – always being model-based, i.e. merely intellectually justified and more and more becoming unlike the classical inventions hitherto protected by patent law, yet – catapults such ETCIs into a key role as to assessing not only the wealth of the US society, but also as to improving its well-feelings as evidently facilitating everyday life and prolongating life time.

VI.3: A Disclaimer as to the PEG Test

Based on the *MBA* framework notions, in particular the 'refined claim interpretation&construction' of ETCIs, their 'inventive concepts' and their 'preemptivity', the PEG test enables defining for their patents and their continuations the separation line between their being patent-eligible and -noneligible. But, one must not assume that the tutorial elaborations in IV-VI to this end would answer already all questions raised by these notions' definitions. Such questions address in particular the evident and topical

- practical issues of correctly applying the PEG test – being the *Alice* test elaborated on for achieving its straightforward executability – by starting it on an ETCI with adequately refining this subject matter's representation by E-crCs [247,249,250], soon to be discussed¹⁸⁾ in [251], leaving
- theoretical MAI issues to later papers [237,142,182], as not of immediate impact on patent practitioners' every day business.

¹⁸⁾ – showing that the CAFC has failed to perform this initial notional refinement of the ETCIs at issue.

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