AN ARMCHAIR ANALYSIS OF G 2/21: SPECULATING ON THE IMPACT

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ABSTRACT

A patent grants a significant property right: a monopoly to exclude others from the sale, use, and manufacture of a claimed invention. Such a property right should only go to an inventor who has shown their claimed invention works. Granting exclusionary property rights to an inventor who has merely contemplated an invention would flood the patent system with nonsense inventions that would inhibit innovation by monopolizing potential discoveries that have not been actualized. When an invention is pure speculation, a monopoly should not be granted, but the line begins to blur when researchers submit patent applications purporting to disclose an invention yet lacking the requisite proof. These applications raise doubts as to whether the inventor is in actual possession of the invention. In Europe, the line has blurred due to differing standards of evaluating whether a claimed invention has been *plausibly* disclosed. The G 2/21 decision by the Enlarged Board of Appeals for the European Patent Office sought to unify these standards. However, G 2/21 and its subsequent interpretations have opened the door for more speculative patents than before, especially outside of the chemical arts.

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INTRODUCTION

An inventor is not automatically given legal protection when she makes a novel invention.[1] She must seek protection by filing a patent application.[2] If her application is granted, she receives a monopoly on her application's claimed subject matter.[3] That is, she may "exclude others from making, using, [or] selling" her invention.[4] In exchange for this legal monopoly, the knowledge disclosed in the patent application is disseminated to the public and scientific community.[5] This allows others to benefit from the inventor's disclosure by building off of her invention

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1 *See, e.g.*, Convention on the Grant of European Patents (European Patent Convention) art. 60(2), Oct. 5, 1973, 1065 U.N.T.S. 199 (amended Nov. 29, 2000) [hereinafter EPC].

2 *See id.*

3 Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 125 (2006); *see generally* HAROLD G. FOX, MONOPOLIES AND PATENTS: A STUDY OF THE HISTORY AND FUTURE OF THE PATENT MONOPOLY (W.P.M. Kennedy ed., 1947).

4 5 DONALD S. CHISUM, CHISUM ON PATENTS § 16.02[1] (2024) (emphasis omitted); *see also* EPC, *supra* note 1, art. 64(1) (describing that rights granted by European patent in a member country are the same as would be if the patent had issued in said country).

5 FOX, *supra* note 3, at 17.

to create future technologies.[6] Accomplishing this exchange requires the patent application to disclose the claimed invention in a way that allows a person skilled in the art[7] to understand and carry out the invention on their own.[8] This seemingly simple exchange, however, is complicated by the structure of modern patent law—especially when it is not clear if the invention disclosed is plausible.

Most patent systems award the right to exclude to the first inventor to file their patent application.[9] The filing date is crucial because other applications or scientific publications disclosing the same, or a significantly similar, invention may preempt a subsequent application's invention.[10] For a patent to be granted, the claimed invention must be novel in light of these prior art documents.[11] An invention already available to the public is not eligible for patent protection.[12] Presenting an invention that is already known to the world demonstrates that the inventor has, in fact, done "nothing at all."[13] The inventor is not responsible for any scientific contribution and thus is not entitled to reap the rewards granted through a patent monopoly.[14] But, in reality, two inventors performing concurrent research may arrive at essentially the same invention.[15] This creates a race to the patent office.

There is an inherent tension between the temporal filing issue and the disclosure requirements of a patent application. Under the European

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[6] Travis A. Dyer et al., *The Effect of Patent Disclosure Quality on Innovation*, J. ACCT. & ECON., April–May 2024, at 1, 2.

[7] A person skilled in the art is a legal concept defined by the European Patent Office (EPO) as a person "presumed to be a skilled practitioner in the relevant field of technology who is possessed of average knowledge and ability" and is aware of the "common general knowledge in the art at the relevant date." EUR. PAT. OFF., GUIDELINES FOR EXAMINATION IN THE EUROPEAN PATENT OFFICE pt. G, ch. VII-1, § 3 (Mar. 2024 ed.), https://link.epo.org/web/legal/guidelines-epc/en-epc-guidelines-2024-hyperlinked.pdf [https://perma.cc/7N5C-U4E3] [hereinafter EPO EXAMINATION GUIDELINES].

[8] RICHARD BEETZ JR. ET AL., EUROPEAN PATENT LAW: PRACTICING UNDER THE EUROPEAN PATENT CONVENTION (EPC) 76 (J. Georg Seka ed. & trans., 1979).

[9] Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 269 (1977).

[10] *E.g.*, EPC, *supra* note 1, art. 54 (stating that the content of European patent applications filed prior to the filing date of an application comprise the state of the art).

[11] *Id.*

[12] *See id.* (stating that an invention does not meet the novelty requirement if it is already part of the state of the art).

[13] Andres Sawicki, *The Central Claiming Renaissance*, 103 CORNELL L. REV. 645, 686 (2018).

[14] *Id.* at 688.

[15] Steve P. Calandrillo, *An Economic Analysis of Property Rights in Information: Justifications and Problems of Exclusive Rights, Incentives to Generate Information, and the Alternative of a Government-Run Reward System*, 9 FORDHAM INTELL. PROP., MEDIA & ENT. L.J. 301, 329 (1998).

Patent Convention (EPC), a patent application's disclosure must only be complete enough to "enable a person skilled in the art to perform the invention without undue burden."[16] A person skilled in the art is not required, however, to have full scientific understanding of the claimed invention.[17] Furthermore, the disclosure need only assert that an invention works, not purport that the invention is fully developed.[18] These lax requirements can incentivize inventors to file applications when they are still in the development or testing phase of innovation.[19] In other words, to file when the inventor is not in possession of the claimed invention.[20]

A patent may issue for a claimed invention even if the inventor was not in possession of said invention at the time of filing the original application.[21] This grants the inventor a monopoly on the patented invention, to which they were not entitled.[22] In the European Patent Office (EPO), opponents may challenge these patents by raising a lack of inventive step argument.[23] These challenges assert that the invention does not contribute anything to the existing state of the art in the scientific field of the invention.[24] The opponent asserts that the application has not shown that the invention achieves a "technical effect" to solve a problem present in the prior art.[25] One approach is to question whether the technical effect purported by the inventor is *plausibly* disclosed in the patent application.[26] Plausibility is not a codified requirement of the EPC[27] but is, instead, an

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[16] Mari Minn, *Assessment of Disclosure in European Prodrug Patent Claims*, 18 CHI.-KENT J. INTELL. PROP. 429, 434 (2019).

[17] *Id.*

[18] Kitch, *supra* note 9, at 270.

[19] *Id.*

[20] *See* Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 HASTINGS L.J. 65, 73–74 (2009).

[21] *See* Lisa Larrimore Ouellette, *Pierson, Peer Review, and Patent Law*, 69 VAND. L. REV. 1825, 1833 (2016).

[22] *Cf.* Michael A. Carrier, *Post-Grant Opposition: A Proposal and a Comparison to the America Invents Act*, 45 U.C. DAVIS L. REV. 103, 128 (2011).

[23] EPC, *supra* note 1, art. 52(1), 100(a); EPO EXAMINATION GUIDELINES, *supra* note 7, at pt. D, ch. III-2, § 5.

[24] EPC, *supra* note 1, art. 56.

[25] EPO EXAMINATION GUIDELINES, *supra* note 7, at pt. G, ch. VII-4, § 5.2.

[26] *E.g.*, Paul England, *Patents and Plausibility*, 9 J. INTELL. PROP. L. & PRAC. 22, 22 (2014).

[27] Thorsten Bausch & Adam Lacy, *Plausibility in G2/21: Has the Elephant Left the Room?*, WOLTERS KLUWER: KLUWER PAT. BLOG (Mar. 29, 2023), https://patentblog.kluweriplaw.com/2023/03/29/plausibility-in-g2-21-has-the-elephant-left-the-room/ [https://perma.cc/U6JL-K7EH].

inherent component of the inventive step requirement.[28] To satisfy the plausibility threshold, the specification needs to provide a reasonably predictable, fairly assumed, or credible basis for the purported technical contribution.[29] Therefore, if a person skilled in the art is unable to derive the claimed invention's purported technical effect and believe it to be a plausible solution to the technical problem posed, the application lacks an inventive step, thereby rendering the patent invalid.[30]

An inventor facing a plausibility challenge may seek to remedy this by arguing that the opposing party misunderstands either the prior art or the technical knowledge disclosed in the application.[31] To support this contention, the inventor may point to experimental data and exhibits in the original application that demonstrate the purported technical effect of the claimed invention.[32] But, what happens when the original application fails the plausibility threshold and satisfaction of the inventive step requirement relies solely on experimental data the patent owner presents for the first time at the opposition? Can this so-called post-published evidence be used to satisfy the inventive step requirement, even if it was not filed with the original application? The EPO's Enlarged Board of Appeals (EBA) answered "yes" in its G 2/21 decision.[33]

Prophetic, or hypothetical, examples are acceptable in patent applications submitted to the EPO.[34] Such examples, often appearing in the biotechnology or chemical fields, may demonstrate how an inventor expects their invention to work. While an entirely prophetic application is unlikely to be granted by the EPO, it is not out of the question that some

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[28] Case No. G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 92–94, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV] [hereinafter G 2/21].

[29] PAUL ENGLAND, A PRACTITIONER'S GUIDE TO EUROPEAN PATENT LAW 385 (2d ed. 2022).

[30] *E.g.*, Case No. T 0939/92, *Triazoles*, Decision of Technical Board of Appeal 3.3.1 (Sept. 12, 1995), Reason 2.6.2, https://www.epo.org/boards-of-appeal/decisions/pdf/t920939ex1.pdf [https://perma.cc/9WYH-NPX9].

[31] *See, e.g.*, William Ponder, *Getting Your Facts Straight at the EPO*, REDDIE & GROSE (July 4, 2022), https://www.reddie.co.uk/2022/07/04/getting-your-facts-straight-at-the-epo/ [https://perma.cc/8ZP9-MRTM].

[32] Ash Earl, *Chemical Oppositions—Can Experimental Data Be the Key to Success? Part 2*, GJE (Nov. 1, 2019), https://www.gje.com/resources/chemical-oppositions-can-experimental-data-be-the-key-to-success-part-2/ [https://perma.cc/U9CA-HTDA].

[33] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 91, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[34] *See id.*

prophetic examples may provide enough support to cover the breadth of the filed claims. Under the framework established in G 2/21, an application may include claims covering the results of computational research methods, and the inventor may proffer the actual laboratory testing data later, so long as the description and examples in the application encompass the technical teaching proven by the later presented data.[35] While this has been commonplace in the chemistry and pharmaceutical fields, with the G 2/21 decision, the EPO sanctioned this kind of "disclose now, prove later" framework for nascent fields such as generative AI, where disclosure is difficult and the direction of the field is unknown. Allowing broad claims for burgeoning technologies permits inventors to gain prospective monopolies over research territory they are not entitled to, causing a possible chilling effect on competitors and innovation.

This Note will dissect the plausibility doctrine at the EPO by analyzing the recent G 2/21 decision and its impact on the EPO and European patent community. Part I will discuss the patent at issue and the initial proceedings leading to the G 2/21 case. Part II will discuss the holdings of the G 2/21 decision and how the EBA arrived at their decision. Part III will discuss the consequences of the G 2/21 decision on the EPO, including the case's impact on emerging technologies, such as generative AI.

I. THE FACTS

The G 2/21 case centers on a patent dispute. Competitors challenged a chemical patent, asserting that the purported technical effect was not supported by the original patent application. The patent and the dispute's procedural history are discussed below.

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[35] *See id.* at Reason 91, 93–94.

A. EUROPEAN PATENT 2484209

In 2015, the EPO received a notice of an opposition[36] calling into question the validity of European Patent 2484209 ('209).[37] '209 is directed to compositions exhibiting insecticidal action.[38] The patent identifies a need for an insecticidal substance that reduces the amount of chemicals released into the environment, particularly in agricultural settings.[39] The patent purports to solve this problem through a chemical composition exhibiting an unexpected synergistic effect[40] that reduces the needed application rate[41] of insecticide.[42] The inventors state that the claimed composition controls insect pests in an extremely effective manner while maintaining extremely low toxicity.[43] The claims delineate the technical elements of the composition the inventor seeks to own.[44] Claim 1 reads:

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[36] Within nine months of the grant of a European patent, a person may file with the EPO notice of "opposition to the European patent granted, invoking lack of patentability, e.g., lack of novelty or inventive step or lack of sufficiently clear and complete disclosure of the invention, or the fact that the granted patent extends beyond the application as filed." *Opposition*, INTELLECTUAL PROPERTY LAW DICTIONARY § 2 (2020).

[37] Case No. T 116/18, *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116ex1.pdf [https://perma.cc/4JK6-XP4N] [hereinafter T 116/18 (I)].

[38] European Patent No. 2484209 (A1) Insecticide compositions.

[39] *Id.*

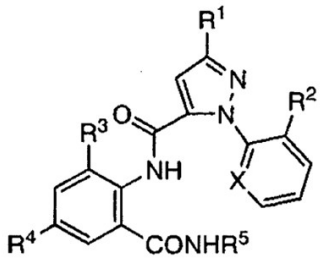
[40] A synergistic effect occurs when the effect of two or more compounds working in combination is greater than the expected additive effect of said compounds. Kyle R. Roell et al., *An Introduction to Terminology and Methodology of Chemical Synergy—Perspectives from Across Disciplines*, FRONTIERS PHARMACOLOGY, Apr. 20, 2017, at 1, 1.

[41] The application rate is the amount of active ingredient per acre. *Doing the Math*, PESTICIDE ENV'T STEWARDSHIP, https://pesticidestewardship.org/calibration/doing-the-math/ [https://perma.cc/K3F5-54XM] (last visited Mar. 10, 2025).

[42] European Patent No. 2484209 (A1) Insecticide compositions.

[43] *Id.*

[44] *Id.*; *see also* EUR. PAT. OFF., EUROPEAN PATENT GUIDE ch. 4.2.018 (24th ed. 2024), https://www.epo.org/en/legal/guide-epc/2024/ga_c4_2_6.html [https://perma.cc/TXF7-4E9F] (stating "claims must define the matter for which protection is sought in terms of the technical features of the invention").

> 1. An insecticide composition which comprises thiamethoxam and one or not less than two kinds of compounds being selected from a compound represented by the formula [Ia]:
>
> 
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> wherein R1 is a halogen atom or a C1-6 haloalkyl group, R2 is a halogen atom, R3 and R5 each are a C 1-6 alkyl group, R4 is a hydrogen or halogen atom, and X is N, or a salt thereof.[45]

The inventor claims a composition of compounds that demonstrate the disclosed insecticidal activity.[46] The claim defines this composition in two parts.[47] First, the composition must contain thiamethoxam.[48] Second, the composition must contain at least one compound defined by the generalized structural formula [Ia].[49] A conservative calculation estimates that formula [Ia] covers over 10 million compounds.[50] Thus, the claim covers more than just a single composition. Because the structural definition includes groups named as alternatives,[51] the claim is broad and encompasses all combinations that can be defined by the claimed formula.[52]

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[45] European Patent No. 2484209 (A1) Insecticide compositions.

[46] *Id.*

[47] *Id.*

[48] *Id.*

[49] *Id.*; *see also* BENGT DOMEIJ, PHARMACEUTICAL PATENTS IN EUROPE 40 (2000).

[50] T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, Reason 12.5.1, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116ex1.pdf [https://perma.cc/4JK6-XP4N].

[51] The alternatives are R1, R2, R3, R5, R4 and X. European Patent No. 2484209 (A1) Insecticide compositions.

[52] DOMEIJ, *supra* note 49, at 204–05.

Claiming in the alternative is commonly used in chemical or pharmaceutical patents.[53] Drafting in this way allows an applicant to succinctly define a large number of permutations of a chemical formula in a single claim, instead of drafting individual claims to cover each alternative.[54] But, all compounds covered by the claimed formula must address the technical problem presented in the application to satisfy the EPC's inventive step requirement.[55] So, if a patent application states that the technical problem is the need for chemical compounds demonstrating insecticidal activity with a reduced application rate and purports to solve this need with a technical effect of a composition of compounds exhibiting unexpected, synergistic insecticidal properties, every permutation covered by the claimed formula must demonstrate that behavior.

Claiming subject matter through a generalized formula can raise concerns about the scope of the claim.[56] A person skilled in the art must be able to grasp the entire scope of alternatives defined.[57] This style of claiming is inappropriate when the alternatives are too obscure or difficult to construe or when the description does not support the breadth of the claim in a sufficiently clear and complete manner.[58] The reliance on examples to support the breadth of the claim often depends on the predictability of the scientific field of the claimed subject matter.[59] Biological responses and chemical reactions are inherently more unpredictable than a mechanical or electrical invention.[60] Consistent relationships between chemical structures and given properties are rare, so patent applications must rely on empirical data to prove legitimacy of a claimed composition's properties.[61] Minor structural differences may radically change a biological effect, so claims with many alternatives of a chemical compound will require many examples and embodiments in the application to demonstrate the purported technical effect.[62] Despite these potential issues, the EPO's guidelines do allow inventors to define their invention in broad chemical formulas, so long as the alternatives of a

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[53] Standing Comm. on the L. of Pats., *Further Study on Inventive Step (Part III)*, ¶¶ 193–95, WIPO Doc. SCP/30/4 (May 7, 2019).

[54] *Id.* ¶ 194.

[55] *Id.* ¶¶ 13–14.

[56] *See id.*

[57] *Id.* ¶ 195.

[58] *Id.*

[59] DOMEIJ, *supra* note 49, at 50.

[60] *Id.*

[61] *Id.*

[62] *Id.* at 50–51.

claimed compound have a common property and share a significant structural element.[63]

The '209 patent disclosure did not neglect to address scope concerns. To demonstrate the unexpected synergistic behavior, the application provides comparative examples of the insecticidal properties.[64] First, the application provides examples of the death rate of insects when exposed to a certain level of insecticide where the insecticide is thiamethoxam alone and where the insecticide is a compound defined by formula [Ia] alone.[65] Then, the expected activity of the joint use of the two insecticides—the predicted additive insecticidal activity—is calculated using a standard equation.[66] Finally, the patent provides examples demonstrating the increased death rate of insects when exposed to the claimed composition of thiamethoxam and at least one compound defined by formula [Ia].[67] Because the claimed insecticidal activity is greater than the predicted additive insecticidal activity, the application purports that the composition, as defined by Claim 1, has a synergistic insecticidal effect.[68] The examples and data provided by the application were intended to support the scope of Claim 1 and render plausible the technical effect across all possible alternative compounds. But, an opposition called the breadth of Claim 1 into question, despite the application's examples.[69]

B. THE TBA'S REFERRAL

Under the EPC, patent filing and opposition proceedings occur centrally at the EPO.[70] An opposition begins with an oral hearing and decision by the Opposition Division on patent validity.[71] The Technical Boards of Appeal (TBA) hear all subsequent appeals.[72] Here, the Opposition Division swiftly denied the opposition to the '209 patent,

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63 *See* EPO EXAMINATION GUIDELINES, *supra* note 7, pt. F, ch. V-2, § 2.

64 European Patent No. 2484209 (A1) Insecticide compositions.

65 *Id.*

66 *Id.* (using Colby's equation to determine expected additive properties).

67 *Id.*

68 *Id.*

69 T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, XII, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116ex1.pdf [https://perma.cc/4JK6-XP4N].

70 Sarah R. Wasserman Rajec, *Evaluating Flexibility in International Patent Law*, 65 HASTINGS L.J. 153, 173 (2013).

71 ENGLAND, *supra* note 29, at 488.

72 *Id.* at 3.

stating that the application disclosed a solution to a technical problem that was per se unpredictable, thus meeting the inventive step requirement.[73] In response, an appeal was filed with the TBA.[74]

The TBA appeal concerned the patent owner's reliance on post-published data to evidence the purported technical effect.[75] Each party proffered their own experimental evidence, the opponent showing the invention did not work as claimed, and the patent owner showing the invention did work as claimed.[76] The opponent argued that their data showed that the composition of thiamethoxam and a compound covered by formula [Ia] did not elicit synergistic insecticidal behavior against two species of insects.[77] The compound selected and the species of insects used in the experiment were not the same as those disclosed in the patent application's examples, so the opponent asserted that the purported synergistic effect was not achieved over the entire breadth of the claim.[78] If the opposition's data was accepted, the claim would be too broad and not allowable.[79] To counter the opposition's data, the patent owner presented their own experimental data.[80]

This data, the board determined, showed that the synergistic effect *was* achieved over the entire breadth of the claim.[81] However, the board held that the patent's disclosure alone could not sustain the inventive step requirement.[82] The TBA found that the '209 patent disclosed "arbitrarily combining compounds known to achieve an alternative insecticide composition," which alone did not contribute to the state of the art.[83] The allowability, and therefore validity, was entirely dependent on the patent owner's experimental evidence.[84] But, because this evidence was

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[73] T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, XII, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116ex1.pdf [https://perma.cc/4JK6-XP4N].

[74] *See id.*

[75] *Id.* at Reason 11.

[76] *Id.* at IV–V.

[77] *Id.* at XII ("The appellant's data . . . showed that the combination of thiamethoxam with chlorantraniliprole did not act synergistically at certain weight ratios against the same and a very similar insect species as those used in the patent in suit.").

[78] *Id.* at Reason 12.4.6.

[79] *Id.* at Reason 12.4.9.

[80] *Id.* at Reason 12.5.1.

[81] *Id.*

[82] *Id.* at Reason 12.5.3.

[83] *Id.* at Reason 12.4.8.

[84] *Id.* at Reason 12.4.9.

proffered to counter the opposition, it was only known to the public after the filing date of the patent; it was post-published evidence.[85]

Post-published evidence poses an issue because the assessment of the inventive step occurs at the filing date of the patent. The requirement is assessed in view of the application's disclosure and general common knowledge.[86] If an application is filed, but the inventive step component does not need to be demonstrated until later, the claims may be speculative in nature.[87] Because the TBA determined that the original disclosure did not demonstrate the inventive step, Claim 1 would not be allowable without introducing proof of the synergistic effect via the post-published evidence.[88]

Determining whether to admit post-published evidence is not a straightforward process at the EPO. The decisions of the boards have resulted in diverging lines of case law dealing with post-published evidence, all of which relate to the concept of plausibility.[89] The plausibility doctrine examines a patent application and determines whether the invention appears to accomplish what is claimed based on the credibility, or, plausibility, of the disclosures contained therein.[90] The primary disagreement in the assessment of plausibility is whether the decision is based on an affirmative or negative assumption.[91] *Ab initio plausibility* considers whether the application affirmatively presents a credible and reasonable technical contribution.[92] *Ab initio implausibility* considers whether there is negative evidence discrediting, or proving implausible, the technical contribution as claimed.[93] Because diverging EPO case law presents an issue of fundamental importance, the TBA

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[85] *Id.* at XII.

[86] EUR. PAT. OFF., CASE LAW OF THE BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE pt. I, ch. D, § 4.3.3 (10th ed. 2022, rev. 2023), https://www.epo.org/en/legal/case-law/2022/clr_i_d_4_3_3_a.html [https://perma.cc/NMY3-Q53H].

[87] *See* Jan Krauß & David Kuttenkeuler, *When to File for a Patent? The Scientist's Perspective*, 60 NEW BIOTECHNOLOGY 124, 128 (2021).

[88] T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, Reason 12.6, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116ex1.pdf [https://perma.cc/4JK6-XP4N].

[89] *Id.* at Reason 13.2.

[90] *Id.* at Reason 13.3.2.

[91] *Id.* at Reason 13.4.

[92] *Id.* at Reason 13.4.3.

[93] *Id.* at Reason 13.5.

posed their questions to the EBA to be the arbiter of the diverging case law.[94] The TBA issued the following referral:

> If for acknowledgement of inventive step the patent proprietor relies on a technical effect and has submitted evidence, such as experimental data, to prove such an effect, this evidence not having been public before the filing date of the patent in suit and having been filed after that date (post-published evidence):
>
> 1. Should an exception to the principle of free evaluation of evidence be accepted in that post-published evidence must be disregarded on the ground that the proof of the effect rests **exclusively** on the post-published evidence?
>
> 2. If the answer is yes, (the post-published evidence must be disregarded if the proof of the effect rests exclusively on this evidence), can the post-published evidence be taken into consideration if, based on the information in the patent application in suit or the general common knowledge, the skilled person at the filing date of the patent application in suit would have considered the effect plausible (ab initio plausibility)?
>
> 3. If the answer to the first question is yes (the post-published evidence must be disregarded if the proof of the effect rests exclusively on this evidence), can the post-published evidence be taken into consideration if, based on the information in the patent application in suit or the common general knowledge, the skilled person at the filing date of the patent application in suit would have seen no reason to consider the effect implausible (ab initio implausibility)?[95]

The TBA commented that the differing standards pose extremes that are incompatible with each other.[96] Where ab initio plausibility is applied strictly, claims would only be allowed where an application discloses the exact embodiments that can be supported with experimental data, effectively narrowing any possible claim's scope.[97] On the other hand, where plausibility is not considered at all, the result is surely a form of "speculative patenting" where there is no requirement that the applicant have possession of their claimed invention.[98] Because neither of these results are desirable, and case law can support both, the EBA was asked to decide how to proceed.[99]

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[94] The EPO's highest appellate board, the Enlarged Board of Appeals (EBA), ensures uniform application of the EPC and issues decisions on points of law of fundamental importance. *Enlarged Board of Appeal*, EPO, https://www.epo.org/en/case-law-appeals/organisation/eba [https://perma.cc/8649-DU9U] (last visited Feb. 26, 2025).

[95] T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, https://www.epo.org/en/boards-of-appeal/decisions/t180116ex1 [https://perma.cc/6EQK-SKCL].

[96] *Id.* at Reason 13.7.

[97] *Id.* at Reason 13.7.1.

[98] *Id.*

[99] *Id.* at Reason 14.

II. THE HOLDING OF G 2/21 AND THE EBA'S RATIONALE

The EBA did not answer the three questions in the manner requested by the TBA.[100] In lieu, it offered two holdings on the points of law encompassed within the TBA's questions.[101] In its answer, the EBA disposed of the "generic catchword"[102] plausibility in an attempt to eliminate the plausibility doctrine from EPO jurisprudence.[103] The EBA held:

> (1) Evidence submitted by a patent applicant or proprietor to prove a technical effect relied upon for acknowledgment of inventive step of the claimed subject-matter may not be disregarded solely on the ground that such evidence, on which the effect rests, had not been public before the filing date of the patent in suit and was filed after that date.
>
> (2) A patent applicant or proprietor may rely upon a technical effect for inventive step if the skilled person, having the common general knowledge in mind, and based on the application as originally filed, would derive said effect as being encompassed by the technical teaching and embodied by the same originally disclosed invention.[104]

To arrive at these conclusions, the EBA discussed three main points of law: the principle of free evaluation of evidence, jurisprudence on reliance on a technical effect for inventive step, and the EPC's sufficiency of disclosure requirement.[105]

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[100] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 57, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373] (stating that the EBA "accepts that the gist of the matter underlying the present referral extends beyond the literal wording of question 1").

[101] *See id.*

[102] *Id.* at Reason 92.

[103] *G2/21: Post-Filed Data and the End of 'Plausibility'*, ELKINGTON & FIFE (Mar. 24, 2023), https://www.elkfife.com/news-and-views/2023/03/24/g221-post-filed-data-and-the-end-of-plausibility [https://perma.cc/8BXA-HKAC] (describing the "demise" of the term plausibility but that the underlying approach will likely remain the same).

[104] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373].

[105] *Id.*

A. THE EPO'S FREE EVALUATION OF EVIDENCE

Neither the EPC nor EPO case law have formal evidentiary rules.[106] The EBA, however, has held that EPO proceedings follow the principle of free evaluation of evidence.[107] This principle gives EPO appellate boards the power to issue rulings based on all evidence available and to arrive at their factual decisions freely.[108] Thus, each respective EPO judicial body is empowered to make its decision based on any evidence available to it in the proceedings.[109] But even with this judicial discretion, the principle of free evaluation of evidence cannot justify "refusal of a relevant and appropriate offer of evidence."[110] Further, a piece of evidence supporting an inference that the opposing party has challenged may not be per se disregarded because said piece of evidence is decisive for the final decision.[111] Under this principle, evidence that is offered by a party should be considered unless it lacks prima facie relevance.[112]

The EBA stated that the principle of free evaluation of evidence qualifies as a "universally applicable principle" when assessing all evidence before an EPO board.[113] Therefore, it concluded that evidence submitted to prove a technical effect cannot be "disregarded solely on the ground that such evidence . . . had not been public before the filing date of the patent."[114] With this intermediate conclusion, however, the EBA noted that it was not answering the first referred question in the negative.[115] If it were, referred questions 2 and 3 would be moot because they depended on an affirmative answer to question 1.[116] The EBA reasoned that the true

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[106] *Id.* at Reason 29.

[107] *Id.* EPO EXAMINATION GUIDELINES, *supra* note 7, at pt. E, ch. IV-13, § 4.1.

[108] *Id.*

[109] EUR. PAT. OFF., CASE LAW OF THE BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE pt. III, ch. G, § 4.1 (10th ed. 2022, rev. 2023), https://www.epo.org/en/legal/case-law/2022/clr_iii_g_4_1.html [https://perma.cc/7GMB-VC4Q].

[110] *Id.*

[111] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 32, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373].

[112] *Id.* at Reason 43.

[113] *Id.* at Reason 55.

[114] *Id.* at Reason 56.

[115] *Id.* at Reason 57.

[116] *Id.*

matter at hand "extend[ed] beyond the literal wording" of the first question.[117]

B. THE DIVERGING EPO CASE LAW ON RELIANCE OF A TECHNICAL EFFECT FOR INVENTIVE STEP

Referred questions 2[118] and 3[119] concern a disagreement on how to evaluate the plausibility of a patent application.[120] The concept of plausibility has arisen from EPO jurisprudence to address the issue of speculative claiming.[121] The EPO addresses issues of speculative claiming when addressing the inventive step requirement of the EPC. At this step, a technical effect is derived from the application and compared to the prior art. Technical effects, assessed from the perspective of one skilled in the art, must be plausible. Over time, the case law concerning the threshold test of whether a technical effect is plausible has diverged, leaving the EPO boards with two distinct tests: ab initio plausibility and ab initio implausibility.

A patent application may contain speculative claiming when it is filed early in the scientific research stage.[122] When an invention is in development, the inventor may not have a full understanding of every aspect of the invention.[123] There may be questions as to the invention's true technical viability or technical composition.[124] Thus, an application

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[117] *Id.*

[118] Question 2 reads, "If the answer is yes, (the post-published evidence must be disregarded if the proof of the effect rests exclusively on this evidence), can the post-published evidence be taken into consideration if, based on the information in the patent application in suit or the general common knowledge, the skilled person at the filing date of the patent application in suit would have considered the effect plausible (ab initio plausibility)?" *Id.*

[119] Question 3 reads, "If the answer to the first question is yes (the post-published evidence must be disregarded if the proof of the effect rests exclusively on this evidence), can the post-published evidence be taken into consideration if, based on the information in the patent application in suit or the common general knowledge, the skilled person at the filing date of the patent application in suit would have seen no reason to consider the effect implausible (ab initio implausibility)?" *Id.*

[120] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 54, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373].

[121] Kyu Yun Kim et al., *Drafting for Multiple Jurisdictions Miniseries: Part 2 – Data Considerations When Drafting*, FINNEGAN (Sept. 11, 2020), https://www.finnegan.com/en/insights/blogs/at-the-ptab-blog/unitary-patent-series-part-2-data-considerations-when-drafting.html [https://perma.cc/2Q6E-65ZA].

[122] Cotropia, *supra* note 20.

[123] *Id.* at 6.

[124] *Id.* at 36.

written at this stage will likely include an element of technical uncertainty.[125] If the claims encompass this technical uncertainty (usually because the claim language is minimal or vague) the claims may be a "mere proposal" and considered speculative.[126]

Speculative claims can be revealed when evaluating the EPC's inventive step requirement.[127] To comply with the inventive step requirement, an invention must be an improvement over the prior art.[128] The improvement, called the technical contribution, must be derivable from the patent application.[129] Alleged improvements must be supported by the application's disclosure such that there is a reasonably predictable, fairly assumed, or credible basis for the purported technical contribution of the invention.[130] Thus, a speculative claim may be revealed where the application's disclosure does not make the technical contribution believable to a person skilled in the art.

The EPO employs a problem-and-solution framework to determine the technical contribution.[131] To do this, a patent examiner performs the following steps:

(1) Determine the "closest prior art"

(2) Establish the "objective technical problem" to be solved, and

(3) Consider whether or not the claimed invention, starting from the closest prior art and the objective technical problem, would have been obvious to the skilled person.[132]

The differences that the examiner finds between the closest prior art[133] and the application in question are called the *technical effect* of the

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[125] *Id.*

[126] *See* ENGLAND, *supra* note 29, at 242.

[127] Kim et al., *supra* note 121.

[128] ENGLAND, *supra* note 29, at 316.

[129] *See* Case No. T 20/81, Decision of Technical Board of Appeal 3.3.1 (Feb. 10, 1982), O.J. E.P.O. 1982, A6, https://www.epo.org/xx/legal/official-journal/1982/06/p217/1982-p217.pdf [https://perma.cc/RME9-MMBF].

[130] ENGLAND, *supra* note 29, at 316.

[131] *Id.* at 246.

[132] EPO EXAMINATION GUIDELINES, *supra* note 7, at pt. G, ch. VII-1, § 2–3.

[133] The EPO defines the closest prior art as "that which in one single reference discloses the combination of features which constitutes the most promising starting point for a development leading to the invention." EPO EXAMINATION GUIDELINES, *supra* note 7, at pt. G, ch. VII-4, § 5.2.

patent application.[134] The EPO requires that patentable claims contain a technical effect that is at least plausible.[135] Thus, in evaluating the technical effect under the inventive step analysis through the problem-and-solution framework, the EPO is simultaneously examining plausibility.[136]

The appellate boards of the EPO have applied two types of analysis when examining the threshold test of plausibility.[137] These approaches can be divided into two types: Type I, ab initio plausibility, and Type II, ab initio implausibility.[138] Type I considers whether a skilled person would find the technical effect plausible in the application as filed, and Type II considers whether a skilled person would find the technical effect implausible in the application as filed.[139]

Type I, ab initio plausibility, analysis requires evidence in an application to make "at least plausible that a solution had been found to the problem which was purportedly solved."[140] This approach considers whether an application provides enough information to conclude that the applicant has made the claimed invention and, thus, the claimed invention is truly in the applicant's possession.[141] The problem identified through the problem-solution approach is shown to be solved and "not merely put forward at the filing date of the application."[142]

The boards in these cases rely heavily on the disclosure of experimental tests demonstrating the technical effect.[143] Further, disclosures containing only a mere verbal assertion that the technical effect is achieved instead of proving that it had been with verifiable evidence, were found by the boards to not be plausible.[144] When the post-published

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[134] ENGLAND, *supra* note 29, at 322.

[135] *Id.*

[136] *Id.*

[137] Constance Crawford & Laura Reynolds, *Plausibility in Patent Law: An Unsettled Concept*, 5 PHARM. PAT. ANALYST 289, 290 (2016).

[138] *See* G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 2–7, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373].

[139] *Id.* at Reasons 6–7.

[140] *Id.* at XVI.

[141] T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, Reason 13.4.1, https://www.epo.org/en/boards-of-appeal/decisions/t180116ex1 [https://perma.cc/6EQK-SKCL].

[142] *Id.* at Reason 13.4.1.

[143] *Id.*

[144] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 67,

documents are the *first* evidence or disclosure to show and prove that the technical problem has been solved, the documents are not admissible for proof of inventive step.[145] Supporting post-published evidence may, therefore, only be taken into consideration "if it is already plausible from the disclosure of the patent that the problem is indeed solved."[146] Cases in this line of reasoning are almost always found to be implausible based on the application alone.[147]

Type II ab initio implausibility, analyses takes a different approach. Post-published evidence is disregarded only if a person skilled in the art would have a legitimate reason to doubt that the technical effect had been achieved.[148] This line of reasoning takes a more optimistic approach, assuming that the technical effect has been achieved unless a legitimate reason instills doubt. Post-published data must be taken into account but for "serious doubt that the claimed [technical effect] can be obtained."[149]

An example of this reasoning appears in T 919/15, where the opponent argued that a synergistic effect was inherently unpredictable and the disclosure did not plausibly prove, through examples, the synergistic effect for all alternative compounds of the claim.[150] Thus post-published evidence could not be considered.[151] But, because the Board took the ab initio implausibility approach, it held that "in the absence of evidence to the contrary . . . it cannot simply be assumed that a synergistic interaction would be per se implausible for the combinations not tested in the application as filed."[152] Thus, for ab initio implausibility, without a reason

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https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373].

[145] *Id.* at XXII.

[146] Case No. T 488/16, *Dasatinib/Bristol-Myers Squib*, Decision of Technical Board of Appeal 3.3.01 (Feb. 1, 2017), O.J. E.P.O. A61, Reason 4.2, https://www.epo.org/en/boards-of-appeal/decisions/t160488eu1 [https://perma.cc/HCX9-E9A7].

[147] *See* T 116/18 (I), *Interlocutory Decision*, Decision of Technical Board of Appeal 3.3.02 (Oct. 11, 2021), O.J. E.P.O. 2022, A76, Reason 13.4.4, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116ex1.pdf [https://perma.cc/4JK6-XP4N].

[148] *See id.* at Reason 13.4.

[149] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 69, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/2HL8-H373] (citing T 1677/11).

[150] *Id.* at VI(1).

[151] *Id.*

[152] *Id.* at Reason 69 (originally, "Somit kann ohne gegenteilige Anhaltspunkte im allgemeinen Fachwissen für das Herbizid (A) enthaltende Herbizidkombinationen gerade nicht davon ausgegangen werden, dass ein Synergismus zwischen den in der ursprünglichen Anmeldung nicht

to doubt the claimed invention, an EPO board must consider the post-published evidence when assessing the inventive step requirement.[153]

In examining these two diverging lines of cases, the EBA ultimately found a commonality between the two types.[154] It states that the "core issue rests with the question of what the skilled person, with the common general knowledge in mind, understands at the filing date from the application as originally filed as the technical teaching of the claimed invention."[155] The EBA goes on to posit that, in each identified case, the respective board would have reached the same conclusion, regardless of whether it was designated as Type I or Type II, because the reasoning ultimately comes down to how the person skilled in the art would understand the technical effect.[156] The EBA, while not unifying the two types nor accepting the idea of plausibility, found that any technical effect relied upon through post-published evidence must not change the nature of the claimed invention as originally filed.[157]

C. THE EBA'S CONCLUSION

After reasoning through the EPO's case law, the EBA examined how each of the contracting states have ruled on and interpreted the plausibility standard.[158] It found that common ground exists in similar cases.[159] The EBA posited that each state looks at the "technical teaching of the claimed subject-matter that the person skilled in the art, with the common general knowledge in mind, understands from the patent application."[160] This common ground is shared with the boards of appeal of the EPO.[161]

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getesteten Kombinationen per se unplausibel wäre.[. . .] Aus den oben enannten Gründen erkennt die Kammer im vorliegenden Fall an, dass ein Synergismus plausibel erscheint. Daher werden die nachveröffentlichten Dokumente [. . .] von er Kammer bei der Beurteilung der erfinderischen Tätigkeit berücksichtigt.") (Ger.).

153 *Id.*

154 *Id.* at Reason 71.

155 *Id.*

156 *Id.* at Reason 72.

157 *Id.* at Reason 93.

158 *Id.* at Reason 78.

159 *Id.* at Reason 87.

160 *Id.*

161 *Id.* at Reason 92.

The EBA concluded that the term *plausibility* is not a distinctive legal concept nor a specific requirement under the EPC.[162] Therefore, it does not endorse or dismiss either Type I, ab initio plausibility, or Type II, ab initio implausibility, as standards by which to evaluate a patent application.[163] In the absence of plausibility, the EBA provided two holdings clarifying when an EPO board may admit post-published data to show a purported technical effect. First, it held that an EPO board may not disregard post-published evidence "solely on the ground that such evidence, on which the effect rests, had not been public before the filing date of the patent in suit and was filed after that date."[164] Second, it held that reliance on a technical effect for inventive step is appropriate where a "skilled person, having the common general knowledge in mind, would derive said effect as being encompassed by the technical teaching" in the originally disclosed application.[165] Thus, the second holding has two requirements: (1) that the technical effect be encompassed by the technical teaching and (2) that the technical effect be embodied by the same originally disclosed invention.[166] The EBA acknowledged that this criterion contains an element of "abstractness" and will depend on the circumstances of any particular case.[167] But, the EBA concluded by stating that the guiding principles in its decision "should allow the competent board of appeal or other deciding body to take (*sic*) a decision."[168]

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[162] *Id.*

[163] Arnie Clarke & Ash Earl, *G 2/21: Making Sense of the Enlarged Board's Abstract Criteria for Relying on Post-published Evidence at the EPO*, GJE (Mar. 27, 2023), https://www.gje.com/resources/g-2-21-enlarged-boards-abstract-criteria-for-relying-on-post-published-evidence-at-the-epo/ [https://perma.cc/UD7M-TGHP].

[164] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 8, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[165] *Id.* at II.

[166] *See id.*; Eva Ehlich & Anja Fux, *Decision on Inventive Step Casts New Light on EBA's 'Plausibility' Guidance: T 0116/18 and a Review After 10 Months of G 2/21*, MAIWALD BLOG (Jan. 23, 2024), https://www.maiwald.eu/en/maiwald-blog/decision-on-inventive-step-casts-new-light-on-ebas-plausibility-guidance-t-0116-18-and-a-review-after-10-months-of-g-2-21/ [https://perma.cc/6C8A-RR7Q].

[167] Clarke & Earl, *supra* note 163.

[168] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, .2023), O.J. E.P.O. 2023, A85, Reason 8, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

III. EPO INTERPRETATION OF G 2/21

The G 2/21 decision was a long-awaited ruling on the concept of plausibility in the EU.[169] But, despite resolving the "split" within the EPO's adjudicative boards on the plausibility doctrine, the decision has received mixed views.[170] Practitioners have been disillusioned with the abstractness of the guidelines provided in the decision.[171] Some feel as though the removal of the word *plausibility* from the decision has not changed the conversation, but obfuscated the terms.[172] Others view the decision as moving the issue to whether the application discloses a concrete "technical teaching."[173]

Even with mixed reviews, the patent law community views the holding as a win for applicants;[174] under the new framework, applicants can still rely on post-published evidence for proof of a purported technical effect.[175] Professionals have nonetheless cautioned applicants to consider their filing strategy carefully.[176] Because the EBA's decision pertained *only* to the inventive step requirement, and it explicitly stated in the reasoning that post-published evidence alone is insufficient to meet the sufficiency of disclosure requirement under the EPC, the ability to file in

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[169] K. Victoria Barker et al., *The EPO's Latest Plausibility Decision is Good News for Applicants and Patentees*, FINNEGAN (Apr. 21, 2023), https://www.finnegan.com/en/insights/articles/the-epos-latest-plausibility-decision-is-good-news-for-applicants-and-patentees.html [https://perma.cc/C4K8-5XT5]; *G2/21: Post-Filed Data and the End of 'Plausibility'*, *supra* note 104.

[170] *See* Daniel X. Thomas, *G 2/21 – Plausibility or Not Plausibility? – That is the Question!*, IP.APPIFY BLOG (Mar. 27, 2023), https://blog.ipappify.de/g-2-21-plausibility-or-not-plausibility-that-is-the-question/ [https://perma.cc/6FXN-FQ7S].

[171] Ehlich & Fux, *supra* note 166.

[172] Neil Nachshen, *G 2/21: Has Anything Changed?*, D YOUNG & CO. (June 2, 2023), https://www.dyoung.com/en/knowledgebank/articles/g-2-21 [https://perma.cc/NDS8-2Z4S]; Massimiliano Tiberio, *Plausibility of Inventions: The Decision of the EPO Enlarged Board of Appeal in G 2/21*, DLA PIPER (Apr. 17, 2023), https://lifesciences.dlapiper.com/post/102icwj/plausibility-of-inventions-the-decision-of-the-epo-enlarged-board-of-appeal-in-g [https://perma.cc/9N68-XTEP].

[173] Ash Earl & Tom Blackburn, *T 873/21 – A Stable Decision or More Plausibility Fences to Jump?*, GJE (Sept. 12, 2023), https://www.gje.com/resources/t-873-21-a-stable-decision-or-more-plausibility-fences-to-jump/ [https://perma.cc/7ATR-CU7D].

[174] Barker et al., *supra* note 169.

[175] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, .2023), O.J. E.P.O. 2023, A85, Reason 8, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[176] Barker et al., *supra* note 169.

reliance on post-published data may be limited by the claim scope, technical field, and the predictability of the disclosed technology.[177]

Critics of the decision point out that the EBA did not provide clear direction on how to apply the "test" handed down.[178] In fact, critics suggest that the "test"—whether a skilled person would derive a technical effect as being encompassed by the technical teaching and embodied by the disclosed invention based on the application as filed—sets a low bar for accepting post-published evidence.[179] Furthermore, because the test does not provide direction, the conditions where the decision from G 2/21 will be relevant must be evaluated on a case-by-case basis.[180] EU patent attorneys desired a clear holding laying out the circumstances under which post-published evidence may be relied upon for the inventive step, not just how such evidence is evaluated.[181] Subsequent decisions by the EPO judicial boards and the national courts have provided some of that requested guidance.

A. EPO GUIDANCE ON G 2/21

The TBA decision T 0116/18 decided the fate of the '209 patent on remand, and practitioners have touted it as a clarifying decision for the murky G 2/21 holding.[182] In the decision, the TBA limited the proceeding to applying the legal principles of G 2/21.[183] Thus, the sole question was whether the post-published evidence supporting the '209 purported technical effect of synergistic insecticide was encompassed in the technical teaching and embodied by the same originally disclosed invention.[184]

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[177] *Id.*

[178] Bausch & Lacy, *supra* note 27.

[179] *Id.*

[180] Denis Bourgarel et al., *Enlarged Board of Appeal of EPO Issued Its Much Awaited Decision G 2/21 ("Plausibility")*, PLASSERAUD (May 31, 2023), https://www.plass.com/en/articles/enlarged-board-appeal-epo-issued-its-much-awaited-decision-g-221-plausibility [https://perma.cc/23R9-TS75].

[181] Clarke & Earl, *supra* note 163.

[182] Rose Hughes, *Clarity on the Interpretation of G2/21 from the Referring Board (T 0116/18)*, IPKAT (Nov. 27, 2023), https://ipkitten.blogspot.com/2023/11/clarity-on-interpretation-of-g221-from.html [https://perma.cc/77FU-XP8C].

[183] Case No. T 116/18, Decision of Technical Board of Appeal 3.3.02 (July 28, 2023), Reasons 9.3–9.4, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116eu2.pdf [https://perma.cc/U4BY-NR65] [hereinafter T 116/18 (II)].

[184] *Id.* at Reason 9.4.

The TBA explicitly stated at the outset that the EBA did not hold that a patent application can always rely on a purported technical effect.[185] The G 2/21 decision did not provide a framework for "carte blanche" reliance on a purported technical effect.[186] It claimed that looking at the application as filed and the filing date together prevents "the filing of applications directed purely to speculative (armchair) inventions."[187] The TBA turned to the scope of the application as filed stating that "the broader the application as filed, the more likely it is that the invention defined in it was speculative from the outset."[188] However, in the next line, the TBA stated that when determining if the technical effect is embodied and encompassed in the application as filed, the assessment must rely on the broadest technical teaching of said application.[189] The TBA held that for the technical effect to be encompassed by the technical teaching of the application, the effect need only be "conceptually comprised."[190] The technical effect relied upon for the inventive step, therefore, does not need to be literally disclosed or spelled out in the application as originally filed.

The TBA introduced a two-part test to assess the second holding of the G 2/21 decision. The relied upon technical effect must be (1) encompassed by the technical teaching; and (2) embodied by the same originally disclosed invention.[191] The first requirement is met where the technical effect is within the broadest technical teaching.[192] This is a low bar to meet. Having determined this threshold for requirement 1, the TBA turned to requirement 2.[193]

The second part of the framework established by G 2/21 is that the technical effect be derivable as being embodied by the same originally disclosed invention.[194] To assess this requirement, it posed a question to illustrate its understanding of how this is determined: "Would the skilled person, having the common general knowledge on the filing date in mind, and based on the application as filed, have legitimate reason to doubt that the purported technical effect can be achieved with the claimed subject-

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[185] *Id.* at Reason 11.1.
[186] *Id.*
[187] *Id.*
[188] *Id.* at Reason 11.8.
[189] *Id.* at Reason 11.9.
[190] *Id.* at Reason 11.10.
[191] *Id.* at Reasons 11.10–11.11.
[192] *Id.*
[193] *Id.* at Reason 11.10.
[194] *Id.* at Reason 11.11.

matter?"[195] The TBA stated that the requirement is met if answered in the negative.[196] Furthermore, the TBA held that neither experimental proof nor a positive verbal statement is necessarily required to meet this requirement.[197] The TBA pointed explicitly to the EBA's decision to endorse previous cases where experimental data or results were not required to be disclosed in the application to establish patentability.[198] The holding additionally noted the choice of the EBA to use "derivable" not "directly and unambiguously derivable" as appears in other standards for patentability.[199] Finally, a strict reading of requirement 2, the TBA asserted, would render requirement 1 superfluous, which could not have been the EBA's intent.[200]

After interpreting the guidance provided by the G 2/21 framework, the TBA moved to the patent in suit.[201] The purported technical effect at issue was "the synergistic activity against *Chilo suppressalis*."[202] Claim 1 relies on this technical effect.[203] The broadest technical teaching of Claim 1 encompasses all compositions defined by the alternatives of formula [Ia] as having a synergistic effect on any insect.[204] The technical effect purported is easily encompassed by this teaching.[205] Next, it looked at whether the synergistic activity was embodied in the original application.[206] The TBA focused on the wording of the application that compounds of the formula claimed "**can** result in the development or elicitation of a . . . synergistic effect."[207] Though this may appear to be speculative, the TBA held that the patent's use of the word "can" is in no way dispositive to the reliance on the technical effect.[208] The TBA also considered whether the experimental evidence contained in the original application was enough to support the technical

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[195] *Cf. id.*
[196] *Id.* at Reason 11.12.
[197] *Id.*
[198] *Id.* at Reason 11.12.2.
[199] *Id.* at Reason 11.13.1.
[200] *Id.* at Reason 11.13.2.
[201] *Id.* at Reason 13.
[202] *Id.*
[203] *Id.*
[204] *Id.* at Reason 16.
[205] *Id.* at Reason 17.1.
[206] *Id.*
[207] *Id.*
[208] *Id.*

effect.[209] It concluded it was.[210] Because the compound in the purported technical effect was structurally very similar, the TBA determined that a skilled person would "have no legitimate reason to doubt that the synergistic effect would be maintained" when replacing the similar compounds.[211]

This interpretation of G 2/21 sets a low threshold for whether the technical effect was encompassed by the technical teaching and embodied by the same as originally claimed. The EPO may be opening itself up to issuing patents with speculative claims.

IV. POST G 2/21 CONSIDERATIONS

The ramifications of a decision such as G 2/21 can have reverberations in patent law worldwide. Primarily, these decisions may call into question the underlying rationales and logic of patent systems and intellectual property rights. One of the primary rationales for granting patent rights is the contribution of scientific advancements to the public.[212] But, at what point in the scientific process is the grant of a monopoly most effective in incentivizing scientists and researchers? Finding the line that provides researchers with the most return on their investment is important in furthering the goals of patent law.[213] G 2/21 and its subsequent interpretation in T 0116/18 provided a basic framework for future researchers and applicants to show an inventive step in their application when relying on post-published evidence. In considering future cases, the EPO should consider how its decisions align with the goals of patent law. One way to evaluate this is through the prospect theory of patent law.

A. THE PROSPECT THEORY OF PATENT LAW AS A RATIONALE FOR PLAUSIBILITY

The prospect theory of patents, originally introduced by Edmund Kitch, has remained a relevant yet controversial topic in patent law scholarship.[214] The justification for patent rights posited by Kitch was not solely for the protection of an invention, but also for protection of an

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[209] *Id.* at Reason 17.2.
[210] *Id.*
[211] *Id.* at Reason 17.4.1.
[212] *See* Dyer et al., *supra* note 6.
[213] *See* Holbrook, *supra* note 3.
[214] John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439 (2004).

investment in a technological prospect following the grant of a property right.[215] Thus, firms who have been granted rights will theoretically continue to perform research and development on the technology, and competitor firms will not continue inefficient rival development.[216] Succinctly, the patent prospect theory views patent rights as "a particular opportunity to develop a known technological possibility."[217] Patent systems recognizing the utility of a prospect theory of patents would embrace early filing as standard practice. The EPC surely does not embrace this theory,[218] but the decisions in G 2/21 and T 0116/18 pull the EPO closer to such a system.

According to the EBA, a technical effect must only be *derivable* by one skilled in the art at the time of filing to allow for a patent right to be granted early in the development stage.[219] The TBA clarified this holding, stating that the purported technical effect need only be *conceptually comprised* within the application as filed.[220] This language sets a low bar. With this understanding, a specification may contain only

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[215] *Id.* at 440.

[216] *Id.*

[217] Nari Lee, *Toward a Pluralistic Theory on an Efficacious Patent Institution*, 6 J. MARSHALL REV. INTELL. PROP. L. 224, 243 (2007) (quoting Edmund W. Kitch, The Nature and Function of The Patent System, 20 J. L. & ECON. 265, 265 (1977)).

[218] *See* David Kitchin, *Some Recent Patent Cases in England and Wales*, Special edition OJ EPO 2013, 256 (indicating a general principle of the TBA is that "a vague and speculative indication of possible objectives that might or might not be achievable will not do."); *see* Case No. T 609/02, *Methods Mediated by the Proto-oncogenic Protein Complex AP-1*, Decision of the Technical Board of Appeals 3.3.8 (Oct. 27, 2004), O.J. E.P.O. 2004, https://www.epo.org/boards-of-appeal/decisions/pdf/t020609eu1.pdf [https://perma.cc/5J4Y-MDUP] (invalidating claim 6 because the claim's subject matter covers "limitless and untried downstream developments in relation to yet to be demonstrated molecular mechanisms" and "amounts to no more than an invitation to set up further research programs."); *see also*, *Compulsory licensing in Europe: A country-by-country overview*, EPO (2018) (discussing the contracting members regulations on compulsory licensing for lack of exploitation by the patent owner.); *but see,* Katarina Foss-Solbrekk, *The Divisional Game: Using Procedural Rights to Impede Generic/Biosimilar Market Entry*, 53 INTERNAL REV. INTELL. PROP. & COMPETITION LAW 1007 (Aug. 4, 2022) (criticizing the EPO for ineffective procedures that allow large pharmaceutical companies to benefit from evergreening and patent thickets which allow said companies to profit as they continue research and development of new uses for chemical compounds). For a further discussion on patent evergreening, see Muhammad Z Abbas, *Evergreening of Pharmaceutical Patents: A Blithe Disregard for the Rational of the Patent System*, 15 J. GENERIC MED.'S 53 (2019).

[219] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of the Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, XXIV, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[220] T 116/18 (II), Decision of Technical Board of Appeal 3.3.02 (July 28, 2023), Reason 11.10, https://www.epo.org/boards-of-appeal/decisions/pdf/t180116eu2.pdf [https://perma.cc/FPY7-J26R].

enough information to allow a person skilled in the art to infer the ultimate technical effect presented *later*. A technical effect that arises later might be covered by the disclosure, and thus moot any later invalidity challenge or defense.

Take for example a patent covering a new molecule with no known uses.[221] If this molecule has never existed before, and the patent application can demonstrate how to synthesize it, the novelty and disclosure requirements are likely met.[222] That would leave the inventive step requirement. If this molecule is so new that there are no prior art references,[223] the threshold for inventive step under the EPO's problem-solution test would be low. If a patent disclosure contains broad technical teachings, an EPO board may dismiss a later challenge for invalidity because the patent owner can proffer and rely on post-published evidence for a technical effect. This demonstrates how these decisions may steer EU patent law towards a more prospect theory-oriented scheme, particularly for new or emerging technologies.

Adoption of a prospect theory approach to patent law by the EU would result in public harm. To be granted a patent, one must have possession of their invention.[224] In a prospect theory approach, an inventor may only have an idea for an invention, or a promising start.[225] The concept of possession is found not only in intellectual property law, but also in real property law, and is often exemplified by the dispute in *Pierson v. Post*.[226] In *Pierson*, a dispute arose over who was in rightful possession of a fox caught during a hunt. Pierson argued that his pursuit of the fox was the cause of Post's ultimate capture, and thus Post wrongfully reaped the reward of his work. Does the reward go to the person who has begun the endeavor, or who has successfully completed the endeavor? The problem becomes more challenging when the person beginning the endeavor has made it easier for another to complete it.[227] Rewarding the

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[221] Sawicki, *supra* note 13, at 698.

[222] *Id.*

[223] *Id.*

[224] Ouellette, *supra* note 21, at 1826.

[225] *Cf.* Sawicki, *supra* note 13, at 698.

[226] Pierson v. Post, 3 Cai. 175 (N.Y. Sup. Ct. 1805); Ouellette, *supra* note 21, at 1826.

[227] *See* Pierson v. Post, 3 Cai. R. 175 (N.Y. Sup. Ct. 1805); *see also* Brian J. Love, *Interring the Pioneer Invention Doctrine*, 90 N.C. L. REV. 379, 409 (2012) (discussing how inventors in a new technical field may enable market competitors).

start of an endeavor, however, creates a risk that the person will fail to "complete the proverbial chase."[228]

Granting the patent to the inventor who originally pursues the endeavor rewards the development and investment, but at the cost of a monopoly that may not produce marketable or useful technology.[229] Additionally, if a patent owner finds their invention to be less valuable than expected, development may cease altogether, even if the invention is of great importance like pharmaceuticals.[230] A prospect theory increases the chance of nondevelopment.[231]

Further, a prospect theory approach can chill competitor research and innovation. If competitors believe that an area of invention has been claimed, they will not waste money on development or research in that same area if they believe it is unlikely to be patentable. A low bar to patentability will incentivize inventors to file early regardless of whether or not they believe to have found a "prospect" invention, just to ensure they do not lose out on an opportunity.[232] The EBA's decision and the TBA's interpretation create a low threshold for patent owners to produce post-published evidence in support of the inventive step requirement. This incentivizes broad and early patents, which conflict with the goals of patent law.

The EPO will likely hear more cases related to G 2/21 in the coming months. As subsequent cases are heard, the boards should carefully consider how they define the contours of the EBA's decision. Patentability standards at the EPO may cause repercussions in other major patent schemes such as those in the United States, Brazil, China, or India. If EU courts take a more lenient approach, applicants may file more pre-possession patents with the EPO. This can lead to unwarranted patents and a decline in the legitimacy of both the patent system and the investment in research and development, both of which are detrimental to technological progress in society. This is further important to consider given recent technological advances that are significantly more complex and

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[228] Dota Oliar & James Y. Stern, *Right on Time: First Possession in Property and Intellectual Property*, 99 B.U. L. REV. 395, 407-08 (2019).

[229] *See* Ouellette, *supra* note 22; *see also* DOMEIJ, *supra* note 50, at 89-90 (positing that while prospect theory may incentivize pharmaceutical companies to go through expensive work like clinical trials, a monopoly under the prospect theory will result in a negative incentive for others to search for new or unknown opportunities for the invention).

[230] *See* Michael Abramowicz, *The Danger of Underdeveloped Patent Prospects*, 92 CORNELL L. REV. 1065, 1074 (2007).

[231] *Id.* at 1082.

[232] *Id.* at 1130.

misunderstood by the general public and scientists themselves, such as generative AI.

B. PROSPECT THEORY AND AI

The prospect theory arises in conversations on AI, and particularly generative AI, when considering how new technologies develop and stem from "pioneer" patents.[233] When new fields of science and technologies arise, an initial patentee is unlikely to fully grasp the future advancements of the field.[234] The claims drafted to protect these initial patents are, therefore, drafted in a way that leaves "ample room for future competitors to design around their patent."[235] This leads to an unfair tension between a pioneer in a field and the loss of market share by rivals using his disclosed knowledge.[236] While AI may not be a completely new field, patents directed to inventions in this field pose similar concerns.

Between 2015 and 2019 the number of European patent applications on AI grew by about 40 percent.[237] The use of machine learning per se does not alone provide an invention with a technical effect nor does it alone satisfy the inventive step requirement under the EPC.[238] The threshold requirements for patentability of machine learning algorithms include that the software deal with a technical problem motivated by technical considerations of a computer's internal functioning and that the algorithm only take into account technical parameters.[239]

Demonstrating that AI has satisfied these requirements may be challenging to inventors due to the inherent nature of AI and machine learning. AI implementations create an "algorithm black box."[240] This occurs because the base underlying algorithm and mathematical network are often simple to describe, but the outputs may be unpredictable or unable to be replicated based on the training set or other factors.[241]

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[233] Love, *supra* note 227, at 409.

[234] *Id.*

[235] *Id.*

[236] *Id.*

[237] Rebeca Ferrero Guillén & Altair Breckwoldt Jurado, *Vagueness in Artificial Intelligence: The 'Fuzzy Logic' of AI-Related Patent Claims*, DIGITAL SOC'Y (Jan. 2, 2023), https://doi.org/10.1007/s44206-022-00032-0 [https://perma.cc/32MT-LPNT].

[238] Eleni Tzoulia, *The Patentability of AI-Related Subject Matter According to the EPC as Implemented by the EPO*, 59 LAW, GOVERNANCE, & TECH. SERIES 147, 157 (2023).

[239] *Id.* at 158.

[240] *Id.* at 149.

[241] Guillén & Jurado, *supra* note 237, at 2, 21.

Machine learning enables computer algorithms to respond and react to situations and develop their own decision rules.[242] Inferences and rules stem from fact-specific scenarios or cases, and therefore become opaque to anyone but the algorithm itself.[243] This raises questions as to whether a person skilled in the art could "learn" from the patent application and determine whether the technical effect has been achieved.[244] Because patents involving AI are often mixed-applications, meaning they involve different components from different scientific fields (e.g., a mechanical invention that uses AI for path planning), a person skilled in the art may find that the disclosed invention is plausible under a lenient standard.[245]

As AI, and specifically generative AI, is a "nascent, quickly evolving"[246] field, claim drafters may have a difficult time predicting the scope of coverage an inventor needs to prevent competitors from designing around their patent.[247] New technologies tend to be amorphous and require extensive experimentation and testing.[248] But, because of the difficulty of disclosing and understanding inventions involving AI, patent offices may grant patents with broad and unclear claims. This will incentivize inventors to file applications even if their AI invention is unfinished and untested.[249] The EBA and TBA's decisions make it clear that an inventor may bring in later acquired evidence to support their claims; therefore, the EPO has opened the door for speculative, untested AI inventions.

Inventors may now file applications with a broad scope that will only require proof if challenged later. The current state of the field allows inventors to disclose anything that *could* work and later choose what proof to submit based on the successful use of the invention and the direction of the field as a whole. A patent that can be construed broadly to cover a wide area of a field is difficult to challenge when proof that the invention works for a specific application is only required after there has been a challenge to the patent for said specific application. This has a chilling effect on

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[242] Tzoulia, *supra* note 238, at 148-49.

[243] *Id.* at 149.

[244] Guillén & Jurado, *supra* note 237, at 18-19.

[245] *Id.* at 9-10.

[246] Love, *supra* note 227, at 409; *see also* Matthew Chun, *Artificial Intelligence for Drug Discovery: A New Frontier for Patent Law*, 104 J. PAT. & TRADEMARK OFF. SOC'Y 5 (2024).

[247] *See* Carrie Arnold, *Inside the Nascent Industry of AI-Designed Drugs*, 29 NATURE MED. 1292 (2023); Chun, *supra* note 247.

[248] Chun, *supra* note 246, at 25 (discussing challenges related to evidence of therapeutic effect in the context of the US's utility requirement for patents).

[249] *Id.* at 29.

competition and innovation, because there is no guarantee that an inventor will reap the rewards of their investment.

V. CONCLUSION

A central tenet of patent law is that to promote innovation, one who invents something new is granted a monopoly over that invention. But, modern patent law creates tensions that may alter that tenet. To avoid being preempted, inventors seek patent protection as early as possible. This can sometimes lead to a legal monopoly grant that the inventor was not entitled to. When an inventor is not truly in possession of their invention, and is merely speculating on possible future research, most patent law rationales state that the inventor is not entitled to a monopoly. However, the prospect theory of patents posits that granting a monopoly early in the research and development stages incentivizes firms to spend more money on innovation and future advances. The prospect theory fails, however, to consider the exchange patent law promises: that an inventor is granted a monopoly in exchange for early knowledge disclosure. The public does not receive a substantive disclosure when a patent is issued on a possible, but not yet created invention.

Despite the wide criticism of prospect theory, the recent decisions by the boards of the EPO, G 2/21 and T 0116/18, have opened the door for prospective patents. The EBA took on the plausibility doctrine that had emerged from EPO jurisprudence.[250] The plausibility doctrine was used to determine whether reliance on post-published evidence for a technical effect could support the inventive step requirement of the EPC.[251] This doctrine, which had become a maze of diverging reasoning, looked at the patent application's disclosure as originally filed to determine whether the purported technical contribution was plausible or credible.[252] The impetus was to prevent speculative claiming where, like in the prospect theory, a patent asserted a possible invention, not an actualized one.[253] In the EBA's

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[250] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 58, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[251] *Id.* at Reason 60.

[252] *Id.* at Reason 71.

[253] *See* G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV]; *see also* Kitch, *supra* note 9.

holding, purporting to clarify the diverging case law on plausibility, the EBA issued an abstract and elusive decision. It held that a board may consider post-published evidence where the purported technical effect is derivable by a person ordinarily skilled in the art and is embodied by the invention as originally disclosed.[254] The terms *derivable* and *embodied* were not defined.[255]

Prophetic, or hypothetical, examples are acceptable in patent applications submitted to the EPO.[256] Such examples, often appearing in the biotechnology or chemical fields, may demonstrate how an inventor expects their invention to work.[257] While the EPO is unlikely to grant an entirely prophetic application, it is not out of the question that some prophetic examples may provide enough support to cover the breadth of the filed claims. Under the framework established in G 2/21, an application's claims could cover the results of computational research methods and the actual laboratory testing data proffered later, so long as the description and examples in the application encompassed the technical teaching proven by the later proffered data.[258] Thus, a patent application based solely on prophetic examples is not out of the realm of possibility.

This concern is exacerbated by the decision in T 0116/18.[259] Here, while claiming to not condone "armchair" inventions or give carte blanche to speculative patents, the TBA seemingly allowed what some could consider a speculative claim to pass muster under the G 2/21 framework.[260] To prevent speculative claiming, the TBA suggested that the technical effect supported by the post-published data be compared to the broadest

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[254] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[255] *See id.*

[256] Troy Groetken & Scott McBride, *Sufficiency of Disclosure and the Great Divide Between the U.S. and Europe*, MCANDREWS: NEWS & INSIGHTS (Feb. 26, 2014), https://www.mcandrews-ip.com/sufficiency-disclosure-and-the/ [https://perma.cc/3KVG-YLBY]; *see, e.g.*, Case No. T 0792/00, *Varied binding proteins*, Decision of Technical Board of Appeal 3.3.04 (July 2, 2002), https://www.epo.org/en/boards-of-appeal/decisions/t000792eu1 [https://perma.cc/DZG4-A55A] (discussing burden of proof when a patent discloses a hypothetical example).

[257] *See* Ouellette, *supra* note 21.

[258] *See* G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[259] *See* T 116/18 (II), Decision of Technical Board of Appeal 3.3.02 (July 28, 2023), https://www.epo.org/boards-of-appeal/decisions/pdf/t180116eu2.pdf [https://perma.cc/A54P-FGYL].

[260] *Id.* at Reason 13.7.1.

technical teaching of the claims and disclosure.[261] While this will catch technical effects that are completely outside the scope of possibility, in close cases this will favor the patent owner and favor a finding of validity. Further, the TBA strained the terms *embodied* and *encompassed* by suggesting that the use of the term *can* is enough to support a purported technical effect.[262]

The EPO's decisions in G 2/21 and T 0116/18 open the door for armchair inventors to attempt to gain a monopoly on research plans and potential future technologies. The increase of patents directed to emerging technologies, such as generative AI, will lead to further confusion and debate surrounding these decisions. AI inventions are increasing rapidly, but the standards for their disclosure and the ability of examiners to fully understand the scope of the claims are not changing. The incentives to patent early and broadly are abundant and include cutting off market rivals and speculating on research advancements.

The one saving grace for the EPO and advocates against speculative and prospective patents is the other requirements for patentability imposed by the EPC.[263] In the G 2/21 decision, the board stated that post-published evidence cannot be used to remedy lack of sufficient disclosure.[264] The patent application must still allow a person ordinarily skilled in the art to carry out the invention.[265] This requirement imposes a higher standard for those seeking patents on outlandishly speculative claims. The EPO's holdings here, however, are not harmless. They signify a lower standard for relying on post-published evidence that has the potential to be misused by bad actors and armchair inventors hoping to get an early stake in the generative AI market.

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[261] *Id.* at Reason 11.10.

[262] *Id.* at Reason 11.14.

[263] Zaneta Zemla-Pacud, *To Have Your Cake and Eat It Too: Sufficient Disclosure of Inventions in the Light of the Polish Supreme Administrative Court's Judgment of 24 April 2022, II GSK 1724/18*, 54 INT'L REV. INTELL. PROP. & COMPETITION L. 1105, 1112 (2023) (mentioning G 2/21 in the analysis of Polish patent law).

[264] G 2/21, *Reliance on a purported technical effect for inventive step (plausibility)*, Decision of Enlarged Board of Appeal (Mar. 23, 2023), O.J. E.P.O. 2023, A85, Reason 77, https://legacy.epo.org/boards-of-appeal/decisions/pdf/g210002ex1.pdf [https://perma.cc/G8A9-5RLV].

[265] *See id*.